

GLOBAL CHALLENGE TO LOCAL PRODUCTION SYSTEMS:
THE TRANSFORMATION OF MEXICAN CLUSTERS AFTER THE
OPENING TO TRADE

Thesis submitted for the degree
of Doctor of Philosophy (Ph.D.)

by

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Abstract

In recent years the world has gone through significant changes in terms of trade liberalisation, globalisation of industry and economic integration between different types of countries. The global context calls for new arrangements of industry, leading to an adjustment in the regions where production actually takes place. In this context, local productions systems (LPSs) need to adapt to the change in trade regimes. The challenge appears bigger for less developed countries, which in many cases have relied on productive structures of import substitution industrialisation (ISI).

This thesis studies different types of clusters in Mexico after trade liberalisation and economic integration. The main aim of this thesis is to examine the capacity of different LPSs to adapt and learn in conditions of higher competition. Using empirical evidence, three clusters specialised in clothing production that originally shared similarities during ISI but that then followed different forms of organisation and trajectories during the open economy were assessed using both the flexible industrial district and value chain approaches. Industrial organisation and linkages are traced to identify to what extent LPSs have improved or weakened in the open economy in comparison to the ISI times.

The research found that LPSs that have restructured their production towards international production systems have not only survived the change in trade regime but have also benefited from the new context. They have adjusted their industrial organisation, upgraded knowledge and strengthened their LPSs, leading to greater local spillovers. Foreign partners have been crucial for product and process upgrading in the export-oriented LPSs, and notably NAFTA reduced and eliminated trade and production barriers, thereby permitting functional upgrading. In contrast, nationally-oriented LPSs have not adapted their organisation and production practices and lack internationalisation, strong linkages and innovation. This kind of cluster stays in the same traditional platform and is unable to upgrade and benefit from the new environment. Results suggest the rising of new, stronger and more competitive LPSs under a new trade regime.

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Abbreviations and Acronyms

ASEAN	Association of Southeast Asian Nations
BANCOMEXT	Banco Nacional de Comercio Exterior (National Bank of Foreign Trade)
CIMO	Programa Integral de Modernización y Calidad
CNIV	Cámara Nacional de la Industria del Vestido (National Chamber of the Clothing Industry)
COCITEVA	Consejo de la Cadena Textil y del Vestido de Aguascalientes (Aguascalientes' Council of the Textile and Clothing Chain)
EU	European Union
FDI	Foreign Direct Investment
FOMEC	Fomento Económico –Local Economic Development Agency
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GSP	Generalised System of Preferences
ILO	International Labour Organisation
INEGI	Instituto Nacional de Estadística, Geografía e Informática (Mexican National Institute of Statistics, Geography & Informatics)
ISI	Import Substitution Industrialisation
JIT	'Just In Time'
LDCs	Less Developed Countries
LPS	Local Production System
MERCOSUR	Southern Common Market
MFA	Multi-Fibre Agreement
NAFTA	North American Free Trade Agreement
NICs	Newly Industrialised Countries
OECD	Organisation for Economic Co-operation and Development
OPT	Outward-Processing Transaction
RDAs	Regional Development Agencies
R&D	Research & Development
SACU	Southern African Customs Union
SECOFI	Secretaría de Comercio y Fomento Industrial (Trade and Industrial Promotion Ministry)
USA	United States of North America
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
USITC	United States International Trade Commission
WB	World Bank
WTO	World Trade Organization

CHAPTER 1

Introduction

In recent years, increasing levels of trade liberalisation, economic integration and important changes in production and distribution systems have been experienced throughout the world. Greater flows of capital and trade between both individual countries and regional trade blocks, together with a more open international regulatory framework and significant new developments in telecommunications, have contributed towards new arrangements of industrial production around the world (OECD, 1996). Trade restrictions have been lessened and major competition has been unleashed as a result. Increasing competition has meant the restructuring of the different industrial sectors at the international, national and local levels.

The process of globalisation is not only inherent to more advanced economies but also to less developed countries (hereinafter referred to as LDCs), which are actively involved in this process. However, the ability to compete varies from country to country, and even from region to region within the same country. That ability seems to be more accentuated when looking at the differences between developed countries and LDCs. Hence, the challenges appear to be greater for the latter group of countries, which in many cases relied on the production structures of semi-closed economies that hindered internal competition.¹ Therefore, LDCs require important adjustments to their productive structures to succeed in a more open environment.

¹ The efficient use of resources, rational investment decisions and incentives for the development of new products and processes in most LDCs were not stimulated through competition until the early 1980s (OECD, 1987:34).

During the 1980s, several LDCs and former socialist countries suffered economic shocks that led to significant economic reforms and to more reliance on trade liberalisation and market mechanisms (Dornbush, 1991; Dornbush & Edwards, 1991; Wellisz, 1995). Various bilateral trade agreements were signed, and since 1980 63 new countries have become members of the General Agreement on Tariffs and Trade (GATT) and then the World Trade Organization (WTO, 2004).² Another feature of further trade liberalisation in LDCs is their participation in regional trade blocks with similar countries (i.e. the Southern Common Market –MERCOSUR), as well as trade integration with more advanced economies (i.e. the NAFTA and the European Union).

From the 1980s, LDCs, mainly newly industrialised countries (NICs) and transitional economies, have increasingly received trade and financial flows from developed countries (Parker et al., 1995; J. Markusen, 1998). LDCs have also become important players in the relocation of industry. There is a trend towards the relocation of stages of production in LDCs, while the more advanced countries retain higher value added activities such as design and marketing (Gereffi, 1994). In fact, the division of company operations into separate segments carried out in different countries is a feature of globalisation (UNIDO, 2002). The Organisation for Economic Co-operation and Development (hereafter referred to as OECD) defines the globalisation of industry as ‘an evolving pattern of cross-border activities of firms involving international investment, trade and collaboration for purposes of product development, production and sourcing, and marketing’ (OECD, 1996: 9). Hence, production systems and the localisation of different industrial sectors around the world are contributing to the shaping of local and national industries (OECD, 1996).

² This represented around 43 per cent of the 147 members states of the WTO in April 2004.

The location of production processes around the world is therefore considered in this thesis as a measure of globalisation of industry.

In this new context of globalisation, the region³ has been highlighted as an important player both as a source of competitiveness and in the relocation of the production process. Production is a localised process and the external economies arising from agglomeration influence the performance of firms and the economic development of such regions (Marshall, 1920; Piore & Sabel, 1984; Storper, 1997). The importance of external economies lies in the cost reductions and the interaction of different agents within the agglomeration to create, encourage and take advantage of clustering. It is in agglomerations that competitive industries are located (Porter, 1990, 2003). Localisation economies and innovation are considered the most important forces in agglomerations (Piore & Sabel, 1994; Becattini, 1990; Cook & Morgan, 1994; Audrestch & Feldman, 1996; Storper 1997).

Throughout the literature on flexible industrial agglomerations, important theoretical propositions have been drawn from the analysis of successful cases localised mainly in Western Europe and North America (i.e. the Third Italy, Silicon Valley, Baden-Württemberg). The Neo-Marshallian version of industrial districts attracted a great deal of interest from economists, geographers and sociologists (see, for example, the two special issues of *World Development* edited by Humphrey in 1995 and by Nadvi & Schmitz in 1999). Such agglomerations were also considered by international organisations, donors and governments to be a means of economic development in LDCs (Pyke & Sengenber, 1990: Intro, 1996). However, fewer analyses and theoretical studies considering the new context of the international division of labour,

globalisation of industry and trade integration have been carried out in LDCs.⁴ The globalisation of industry is advancing at a rapid pace and that group of countries are playing a key role in the relocation of industrial production from more industrialised countries, while some have further exposed their local industry to international competition.

In this way, the emergence of LDCs in the globalisation process may trigger national/regional transformations not only by increasing competition in traditional local production systems (hereinafter referred to as LPSs)⁵ but also by incorporating firms and regions into international specialisation. Firms and clusters now have access to international production-sharing as an alternative to compete in global markets. Insertion into the globalisation process is a challenge but it also offers LDCs the possibility to improve local industry. Hence the interest in assessing LPSs in an LDC that has transited different trade regimes.

Mexico has experienced important transformations since its integration into the international economy. The semi-closed economy was abandoned when Mexico opened up to trade and became a member of the GATT in 1986. Greater openness was sought in order to induce microeconomic effects that would improve the efficiency and competitiveness of Mexican firms, while seeking to reduce national prices (Aspe, 1994). Further liberalisation was set underway when the North

³ The term region used in the thesis refers to a national sub-unit.

⁴ Comparisons to the 'model of industrial districts' have been described in Mexico to exemplify the underdevelopment of LPSs in LDCs (Rabellotti, 1996, 1997, 1999). The comparison extensively is based on a comparison of linkages and flows of knowledge in Mexican clusters originated during the ISI period and does not take into account the whole possible spectrum of successful regions and LPSs in a context of the globalisation of industry and economic integration.

⁵ A local production system is defined as a geographical agglomeration of firms operating in the same or related industries and which are interconnected by a series of linkages —clients, contractors, suppliers, subcontractors, other firms, business chambers, universities, colleges and R&D institutions.

American Free Trade Agreement (NAFTA) entered into effect in 1994. Mexico was one of the first LDC to follow economic integration with more advanced economies. The insertion of Mexico to world trade coincided with a significant globalisation of industry, which appears to encourage the international specialisation of production. In this sense, trade integration not only enlarged markets in North America but also created an environment of strong competition and a major incentive for the relocation of production stages to Mexico.

The economic changes precipitated an adjustment of industry and the transformation of local productive structures. Major spatial transformations have coincided with trade liberalisation and integration. The homogeneous local production system that characterised Mexican industry during the period of import substitution industrialisation (hereafter referred to as ISI) split after trade liberalisation and NAFTA. Industrial activity has spread to non-traditional production sites, located in the northern part of the country and has expanded to register remarkable levels of performance. Meanwhile, traditional production sites originating from ISI have declined. Traditional sites still cater for the domestic market, seeking to retain power along the value chain, while non-traditional sites base their production system on international production-sharing. Thus, regions that shared similarities in the organisation of production and the market during ISI transformed with trade liberalisation and integration and have followed different paths and registered different performances.

In this way, trade liberalisation and trade integration have not only coincided with a sectoral spatial reorganisation of employment (Hanson, 1994) but, most importantly,

with a change in the productive specialisation of regions, therefore leading to important differences between LPSs in Mexico.

The uneven performance of Mexican regions based on different types of local production system hints at the existence of clusters of a higher order capable of adapting in an open economy and hence taking advantage of international trade. It also suggests that the characteristics and driving factors of LPSs may also have changed under different trade regimes and with the international rearrangements of industry. Thus, in order to assess the Mexican local production system after trade liberalisation and integration, I examine three clusters specialised in clothing production that originally catered for the national market and that shared industry organisation but that have adopted different strategies since the opening of the economy: 1) a traditional clothing site catering for the domestic market and a paradigmatic case of industrial clusters in Mexico (The Guadalajara region); 2) an export-oriented cluster engaged in international production-sharing and adapted to the globalisation process (La Laguna region); and 3) a traditional cluster that has adapted after trade integration and is now also involved in international production-sharing (Aguascalientes).

The main hypothesis of this thesis is that *trade liberalisation and integration has benefited those local production systems that have been capable of restructuring their production for international markets through international production-sharing. In contrast, systems that have continued to cater for the national markets are losing out (and may ultimately disappear).*

This thesis assesses the extent to which the opening to trade has affected the attitudes, organisation, structure, learning and innovation of agglomerated firms after trade liberalisation and integration took place. For that purpose, it seeks to evaluate the strengths of the selected LPSs through an examination of the networks and linkages within and outside the cluster, thereby identifying sources of knowledge and agglomeration effects. It assesses the structure and organisation of LPSs, namely, industry organisation, innovation, productive linkages and institutional linkages. Thus, linkages are traced to identify to what extent the LPSs have improved or weakened in the open economy in comparison to their performance in the ISI period. The industrial structure of clusters is analysed to assess possible organisational changes that enable them to benefit from the open economy. Furthermore, the value chain of the case studies is traced to identify their specialisation and competition in the international garment industry.

The approach in this thesis follows both the flexible agglomeration and the value chain framework. These are two complementary theoretical approaches that traditionally have not been linked together to explain successful local production systems in integrated economies.⁶ The outcome, typology and characteristics of new industrial places in LDCs have not been sufficiently analysed in the light of the globalisation of economic activity that characterises the twenty-first century. Traditional flexible industrial district theory failed to explain the role of LDC clusters in the globalisation process and their impact on LPSs. This theory explained the advantages of clustering from the perspective of a semi-closed economy and not

⁶ Nonetheless, there are recent works that look at the upgrading of clusters in developing countries in a more global framework (i.e. Schmitz et al., 2004). This approach, however, falls short when analysing the global arrangements of individual industries. See Chapter 2 for a discussion of different theoretical approaches to LPSs in LDCs.

in a global context. There are no outside agents and trade liberalisation, economic integration, the globalisation of industry and the relocation of production are not taken into account. To complement the analysis, the value chain approach is used to assess the split of the value chain of industry between countries and as a tool for tracing the external linkages of agglomerations.

Thus, unlike traditional industrial district analysis,⁷ this thesis is approached from the viewpoint that clusters cannot be studied in isolation but rather need to be studied in relation to the industry in which they are embedded, given the peculiar features that characterise learning and innovation patterns in specific industries (Pavitt, 1984; Bel & Pavitt, 1993). The approach suggested in this thesis is to complement the study of LPSs with that of the industry in which a region is embedded. Thus, thinking globally means understanding interconnected processes; that is to say, to place the role of agglomerations both within the local and international spheres, while bearing in mind the context of the globalisation of industry.

The literature on global value chains and the flexible specialised industrial districts in developing countries (i.e. Humphrey & Schmitz, 2002 and the articles compiled by Schmitz, 2004) lacks the analysis of different types of local production systems in the same industry and country when assessing regional structures. This assumes particular importance when taking into account the globalisation of industry and the advance of export processing zones. For instance, according to the Database on Export Processing Zones of the International Labour Organisation (ILO), these special zones represent a considerable source of employment and account for

⁷ Industrial district theory is cluster-centred rather than industry-centred (i.e. adapting to the changes and logics of a particular industry).

between 60 and 90 per cent of total industrial exports in many developing countries (Singa-Boyenge, 2003:1–15). Thus, studies on industrial districts seem to fall short in terms of identifying and comparing different types of industrial clusters, and they do not give sufficient weight to the global logics of different industrial sectors, nor to the way that these might affect local industrial organisation under different trade regimes.

An examination of clusters specialising along a global value chain would help to identify not only the Italianate industrial district type but also different types of industrial agglomerations (as demonstrated by Markusen's typology of industrial agglomerations, 1996), while providing a comparison of the strength of different types of structures⁸ and their capacity to take advantage of the global context. With this thesis I attempt to go further towards addressing such aspects and offer a more comprehensive framework with which to assess the relative strengths/weaknesses of different LPSs after the opening up of the Mexican economy. The results of the research suggest the rise of a new, stronger and more competitive form of LPS in Mexico, which display a different form of organisation to any identified in the literature on flexible specialised industrial districts.

Thesis structure

Chapter 1 introduces the main objectives of the research, the context and the structure of the thesis. The thesis is then organised in three parts. Part I reviews the relevant theoretical approaches used to analyse and understand LPSs in LDCs. Chapter 2 discusses the theoretical importance of clustering and the factors and

driving forces behind competitive LPSs, with a special emphasis on industrial districts and their relevance for LDCs. The chapter also presents a review of the literature on cluster experience in LDCs and on the ways that the globalisation of industry and different trade regimes might affect LPSs in developing countries. The chapter also incorporates Markusen's typology of new industrial spaces and the value chain approach as important tools for the analysis of different types of LPSs in the global world.

The reader is provided with the broader context of the research in Part II. Chapter 3 examines the reforms to Mexican trade, with particular attention given to the development of the manufacturing industry. This chapter starts with an overview of the Mexican economy during ISI and describes the industrial and macroeconomic imbalances that led to a change in economic policy. This is followed by an account of the economic crisis and the policy changes. The chapter then analyses the transformations of industry after the opening to trade in terms of: 1) export specialisation; 2) industrial specialisation; 3) the blossoming of international production-sharing; 4) the spatial transformation of industry; 5) the rise and decline of regions; and 6) the divide in the LPS. The analysis pays particular attention to the changes in the local organisation of industry since the abandoning of the semi-closed economy.

Chapter 4 analyses the global context of the clothing industry as it affected the Mexican LPSs. This chapter starts with a discussion of the importance of the clothing industry in Mexico and the world. An account of adjustments in the world clothing

⁸ In their review of clusters, Martin and Sunley (2003: 13) pointed out that little comparative work has been carried out in different clusters profile.

industry is followed by an analysis of the Mexican garment industry from protectionism through sector adjustment and booming production to its present position as a leading export country. The chapter then examines the transformations in the Mexican clothing industry after the opening to trade, namely the expansion of international production-sharing, regional transformations and the divide in firm size, market orientation and the LPSs.

The third part presents the results of empirical research conducted in the year 2000 in three Mexican LPSs and analyses the findings according to the theoretical approaches reviewed in the first section. Chapter 5 outlines the methodology for choosing case studies in the garment industry. The chapter describes the background of the selected cases, their homogeneous features in terms of industrial organisation during ISI and then compares their performance after the opening to trade. Chapter 6 presents the results of the fieldwork, which describe, analyse and compare the strength of the LPSs in Aguascalientes, Guadalajara and La Laguna regions, as well as their relative position along the value chain. The results are presented in three main subsections (industry organisation, innovation and productive linkages, and institutional linkages) that define the structure, organisation and strength of LPSs, which are preceded by a brief account of linkages during ISI.

Chapter 7 systematises the information from previous chapters and presents LPSs as an entire system. It also makes use of history and empirical findings to illustrate the path that the case studies have followed from ISI to trade integration. The chapter then analyses the main factors strengthening/weakening clusters in the context of trade integration. Different types of clusters are then held up against the theory

described in Chapter 2. Then, a broader assessment of the current situation of LPSs in Mexico is offered. Chapter 8 presents some conclusions and the policy implications of the main findings of the research, as well as proposals for further research.

CHAPTER 2

Clusters: The Theoretical Framework

2.1 Introduction

The clustering of economic activity has emerged as a factor of competitiveness at a time when the world is witnessing the increasing globalisation of industry (Storper, 1995; Krugman, 1995; Porter, 2003). The economies arising from the geographic concentration of sectorally specialised firms have attracted the attention of economists, geographers, governments and international organisations (Markusen, 1996; UNCTAD, 1998, 2001; UNIDO, 2001). Meanwhile, clusters have been regarded as an important means through which lagging regions and less developed countries can prosper (Humphrey & Schmitz, 1995; Malmberg & Maskell, 1997).

Foreign direct investment, international trade and international inter-firm collaboration are the most important features of globalisation (OECD, 1996:15). Arrangements of industry and clusters around the world are being challenged by globalisation. Increasing flows of capital and trade in combination with the liberalisation of trade, economic integration and major developments in telecommunications have pushed towards new arrangements in production systems (OECD, 1996). Following the reduction of international trade barriers, businesses face more competition in national markets, while finding it advantageous to outsource parts of the productive process at an international level, thereby ‘slicing the value chain’ (Krugman 1996; Feenstra, 1998). Thus, in order to respond to trade competition and in the search for efficiency maximisation, the economics of

production has encouraged the dispersal of manufacturing activities (OECD, 1994), leading to the international specialisation of industry (ILO, 1992:4). Parts of the production process have been moved to countries with lower labour costs, which are becoming key players in global industries (OECD, 1994:3; Smith, 2003, 2004; Begg et al., 2003).

Some industrial sectors are more involved in these activities and therefore more globalised. These sectors include the electronics, aerospace, telecommunications, computer, automobile and clothing industries (OECD, 1996: 16). These industries are among the most competitive sectors leading the way that production is organised,⁹ and accounting for a significant share of world production, trade and employment in manufacturing (ILO, 1992: 3).¹⁰ In these industries, the process of relocation of parts of the productive process to another site is important for maintaining competitiveness in the market (ILO, 1993:14). There is not only geographical dispersion of production arrangements but also in terms of organisational scope (linkages among different economic actors, including suppliers, firms, retailers and traders) along the productive chain (Gereffi, 1994:96). In this new context, the world is witnessing increasing competition in national markets and the increasing international relocation and organisation of production systems.

Since the 1980s, many developing countries have carried out economic reforms leading to trade liberalisation and to more involvement in the globalisation process. Integration into this context requires internal adjustments, which seem to be more

⁹ The experiences of industries may well be an indication of what will happen to other industries in the future in terms of industry organisation.

¹⁰ Although they differ in other characteristics such as ownership, labour employment and degree of concentration.

challenging for those countries that have relied on the internal productive structures of a semi-closed economy. In the Mexican case, the face of industry has changed since trade liberalisation took place in 1986, when Mexico became a member of the GATT. Furthermore, the signing of the NAFTA in 1994 resulted in further tariff reductions, which not only have created an environment of high competition but also a major incentive for the relocation of some phases of the productive system to Mexico.

The 'new global economy' is global 'because the core activities of production, consumption and circulation, as well as their components (capital, labour, raw materials, management, information, technology, markets) are organised on a global scale, either directly or through a network of linkages between economic agents.' (Castells, 1999:66).

Globalisation processes have had two important implications for the localisation of the economic activity. The first relates to the need to increase competitiveness due to the high levels of competition that globalisation brings in itself, and the second relates the re-allocation of the productive process. The importance of clustering lies in the advantages derived from localisation economies, which can increase firm competitiveness (Storper, 1997, OECD, 1996: 17). Meanwhile, the specialisation of firms and countries along the productive chain suggests the integration and specialisation of clusters along international value chains. However, despite the spatial concentration of economic activity, not all clusters perform well, especially not those located in LDCs (Storper, 1997).

With the increasing globalisation of economic activity and trade liberalisation, the organisation of local clusters has been challenged. To this purpose the present chapter presents a review of the literature on the way that the globalisation of industry and different trade regimes may affect local production systems in developing countries. The aims of this theoretical framework are threefold: a review of theories on the underlying importance of clustering; a literature review on the research on clusters in LDCs, with an emphasis on the way that clusters have been affected by the change in trade regimes; while the last subsection reviews the global value chain perspective and the way that global production chains affect clusters in LDCs.

2.2 The origins of the debate on clusters in LDCs

Academics, governments and international organisations have recognised the importance of clustering to advance lagging regions, transitional economies and less developed countries (UNIDO, 2002; Smith, 2003; Martin & Sunley, 2003). Industrial districts have been regarded as an important source of increased competitiveness, as well as a new form of industrial organisation in the global world (Storper, 1997; Pietrobelli, 1998; Porter, 2003; Smith et al., 2001). Nadvi and Schmitz (1994: 5) pointed out that the debate on clusters in LDCs is relatively recent, ‘going back no further than 1989’. Humphrey (1995) acknowledged that by early 1990s the little material available offered limited evidence on cluster organisation and little comparison to those located in more advanced economies.

In a literature review of the subject, Humphrey (1995) identified that large firms in developing countries often became inefficient during import substitution and

protectionism, whereas micro and small sized firms were regarded as an alternative solution to enhance industry and economy competitiveness after economic crises and trade liberalisation. In fact, the study of clusters in developing countries grew out of the debate around small-scale industry as a growth and export prospect (Schmitz & Nadvi, 1999: 1503). From the early 1980s onwards, the growing importance of small-scale economic activities in industrialised countries meant increased attention to this kind of enterprise. Small-scale economic activity was increasingly seen as a way out of the crisis that had affected large-scale industry in many advanced industrialised countries (Giaoutzi et al., 1988; Commission of the European Communities, 1989). This optimistic assessment was based on evidence of a rising share of employment in small and medium-size enterprises in Western economies at a time when national economies were experiencing unemployment problems (Sengenberger et al., 1990; Gray & Matt, 1994; Eurostat, 1996).

The justification for promoting small-scale firms in LDCs traditionally focused on their importance in terms of employment creation and their impact on equitable development through the fostering of entrepreneurship and the opportunities they provided for the wider distribution of wealth and opportunities (Nanjundan, 1987). Conventional analysis discussed the static efficiency or productivity of such firms (Little et al., 1987). These firms have also been described as lagging behind technologically and less innovative than their counterparts in advanced countries (Ruiz-Durán, 1995). Small firms often concentrate in traditional sectors catering to the domestic market, typically with low value added per worker and with significant needs to catch up with international competition (Giaoutzi et al., 1988).

New forms of industrial organisation in developed countries encouraged new approaches towards small-scale firms in LDCs based on flexible specialisation production and agglomeration of production. In these approaches, firms are seen as part of a system or network and not as isolated identities. In fact, the application of flexible specialisation has been regarded as an important means of organising successful small-scale production (Storper, 1997). The flexible specialisation school first contributed towards identifying new forms of organisation based on specialisation, flexibility and institutions, where a wider number of agents play an important role in increasing firm and industry competitiveness. Piore and Sabel (1984) made theoretical advances in explaining features of agglomerated industrial systems, while identifying a possible divide in the production system. Flexibility and specialisation are considered as evidence for the possibility of a historical divide in the form of production, where this industrial divide separates an era of mass production from a new form of production called *flexible specialisation* (Piore, 1990). Using evidence from Japan and from industrial agglomerations in Italy and Southern Germany, these scholars identified flexibility and specialisation as factors explaining the success of their production systems.

In the flexible specialisation of production, the horizontal integration of production is based on networks among firms and subcontracting relations, which are often spatially concentrated (Garofoli, 1992a). Producers shift rapidly from one process or product to another, and/or carry out backward and forward quantitative adjustments in the short term according to economic cycles, without great loss in levels of productivity (Scott & Storper, 1992). Increases in productivity are obtained from working capital increases. Flexible arrangements make use of general multipurpose

equipment used by skilled workers capable of improving the production of different products for constantly changing markets (van Dijk, 1993). Moreover, the organisation and co-ordination of different technical tasks implies the importance of economies of scope in this form of production (Asheim, 1992).

Institutions also play an important role in the functioning of production. According to Sabel (1989), specialisation facilitates the intervention of institutions in order to increase co-operation and the transfer of technology. Institutions are embedded territorially and are considered important for linking firms, communities and government. They play an important role in decreasing uncertainty among firms, and in spreading the benefits resulting from flexible specialisation. Sabel (1989) also pointed out that closely related to this emerging new pattern is the increasing importance of localities and regions as hosts for those network structures.

In relation to developing countries, flexible specialisation has often been discussed in the context of industrial clusters pursuing flexible production (Weiss, 2002: 117). It is argued that the spatial concentration of firms operating under conditions of flexible specialisation induces cost reductions and learning and quality improvements associated with the functioning of clusters (Humphrey, 1995: 151). The initial impetus for the promotion of clusters of small firms in LDCs stems from the successful experience of industrial districts in developed countries, particularly the Italian case. Before moving on to the industrial cluster experience in LDCs, the following subsection presents a review on the theoretical importance of the agglomeration of economic activity. This, in turn, defines the local production systems able to engender economies arising from clustering.

2.3 The theoretical importance of industrial agglomeration

2.3.1 The Italian school of industrial districts

The contemporary study of industrial clusters as a source of competitiveness was first developed in the late 1970s by Italian economists interested in explaining the remarkable performance of regions located in North Central and North-Eastern Italy (Abruzzi, Marche, Emilia-Romagna, Tuscany, and Veneto), now better known as the Third Italy.¹¹ A number of dynamic industrial agglomerations dominated by small firms of similar character, specialised in traditional industries¹² and capable of competing in international markets attracted the study of such agglomerations (Bagnasco, 1977; Becattini, 1978, 1989; Brusco, 1982, 1986; Garofoli, 1984; Sforzi, 1990). Becattini (1978) argued that the connection between economic and socio-cultural aspects was an important factor in explaining the formation and the success of the Third Italy. Becattini (1989) suggested that the territorial concentration of small manufacturing firms involved in the same economic activity in the Third Italy constituted industrial districts equivalent to those analysed by Alfred Marshall in his *Principles of Economics* (1920).

Marshall (1920) viewed the geographic concentration of economic activity as an important source of increased competitiveness of agglomerated firms. The importance of agglomeration was highlighted through the concept of external economies, which explains different means — external to firms, but internal to the

¹¹ The term Third Italy was coined by Bagnasco in 1977 to differentiate industrial agglomerations in North Central and North-Eastern Italy from the traditionally industrialised and developed northern part of Italy and the less developed south.

¹² A number of industries and towns became economically successful, the most notable of these being: the textile industry in Carpi and Prato, the furniture industry in Brianza and Cascina, knitwear in Modena and the footwear industry in Vigevano (Brusco, 1990; Lazerson, 1993).

district — of decreasing costs and increasing the innovation of located individual firms, thereby increasing competitiveness. Marshall pointed out that external economies ‘can often be secured by the concentration of many small businesses of a similar character in particular localities: or, as is commonly said, by the localization of industry’. (Marshall, 1920: 221). Marshall described many types of external economies: the split in the production process, the availability of specialised suppliers and subsidiaries and knowledge spillovers between nearby firms allowing the reproduction and improvement of ideas that are also a source of hereditary skills for the localised industry.¹³

The concept of industrial districts elaborated by Becattini was based on the assumption that districts in the Third Italy had features identified in Marshallian industrial districts, both in economic and social terms: spatial concentration of small firms specialised in the same sector, local specialisation along the value chain and

¹³ External economies have been classified in terms of pecuniary and technological external economies (Scitovsky, 1954). Those of the pecuniary kind relate to market transactions and result in reductions in the prices of particular inputs (Scitovsky, 1954: 147). *Pecuniary externalities* allow agglomerated firms to access traded inputs and labour at lower prices (given the concentration of suppliers and a specialised labour force), as they pass through market interactions. These kind of external economies follow from the interdependencies between producers through the market mechanism that affects input prices and the profit function. Meanwhile, *technological* external economies involve non-market transactions and, in principle, are accessible to all members in the agglomeration. Thus, for instance, ‘a firm benefits from the labour market created by the establishment of other firms and that in which is free but limited in supply’ (Scitovsky, 1954: 145). These kind of untraded externalities also result in a more efficient use of inputs via mechanisms such as better organisation and improved production techniques. Thus, technological external economies also include spillovers of knowledge that spread between neighbouring firms and give way to a process of accumulation of knowledge in a specific sector. More formally, by technological spillovers Grossman and Helpman (1991: 16) denote ‘(1) firms can acquire information created by others without paying for that information... and (2) the creators (or current owners) of the information have no effective recourse, under prevailing laws, if other firms utilize information so acquired’. Another classification of external economies distinguishes between *static* and *dynamic external economies* (Glaeser, et al., 1992). The former type of economies are also known as ‘knowledge spillovers’, which are comparable to technological externalities; while the latter type of economies are related in general to productive linkages. Static external economies reduce production and transaction costs and give rise to a geographical concentration of a specific type of industry. Meanwhile, dynamic external economies refer to the accumulation of know-how, knowledge and the promotion of innovation. Dynamic external economies thus entail cumulative efforts to ensure continuous rather than one-off improvements for agglomerated firms. Thus external economies are the result of the interdependence between the decisions and actions of various agents in a cluster.

the differentiation and customisation of products. Regarding the social aspect, Becattini went further and considered that local knowledge is transmitted through a homogeneous system of values, which are transmitted across generations and geared by institutions, which in turn support inter-firm co-operation. In this way, Sforzi (1990) considers clusters as the localised 'thickening' of the different networks between institutions and social actors.¹⁴ Thus, the origin and performance of an industrial district is not only explained by economic relations but also by its interaction with social conditions, embedded in the territory (Bellandi, 1989). Becattini thus put forward the idea that the unit of analysis was not a single firm but a cluster of interconnected firms located in a geographic area (Brusco, 1990).¹⁵ An account of the Italianate version of industrial districts is presented next, which divides the LPS into productive linkages and institutional cooperation.

Productive linkages. The division of work in industrial districts increases efficiency and firms' expertise: firms tend to specialise in one or a few stages of the production process, facilitating greater efficiency in every phase of the production and stimulating the accumulation of specialised knowledge (Becattini, 1978; Brusco, 1986). Despite the vertical division of labour there is often no single dominant firm within the system (Garofoli, 1991). Brusco (1990:14) distinguished between firms producing a final product (up to 30 per cent of firms in a district have direct access to the final market) and the 'stage-firms', which are specialised in one or a few phases of the production¹⁶. The relationship between final firms and subcontractors in the

¹⁴ Whereas Marshall stresses the importance of market forces for the working of an industrial district, more recent observers of the phenomenon put increasing emphasis on the institutional framework as the coordinating mechanism (Wilkinson & You, 1992).

¹⁵ Hence, the concept of an industrial district is considered a socio-territorial and economic concept (Becattini 1989), generating a local system (Sforzi, 1990).

¹⁶ This is not a rigid category because it is possible that a firm, at a given moment, works as subcontractor and, at another time as a 'final firm', see, for instance, Capechi (1990).

Third Italy is characterised by strong co-operation and sharing and the diffusion of ideas and know-how (Brusco, 1992). Innovations thus arise from interaction between ‘final firms’ and ‘stage firms’, while innovations rarely spread to the world market (Sabel, 1982). Decentralisation of production is carried out exclusively within the district boundaries, which concentrates the benefits deriving from clustering (Pyke & Sengenberger, 1996, chapter 1).

The division of labour into specialised phases is considered an important source of externalities, allowing for the formation of supporting industries (i.e. input firms, transport and financial services) and a competitive network of specialised suppliers and skilled labour (Brusco, 1990; Garofoli, 1992b). Meanwhile, the concentration of a significant number of buyers in the district promotes economies of scale to local suppliers (Becattini, 1990).

The specialisation and skills of workers are conceived as public goods for the district. Workers frequently change their positions within a wide range of production activities. This process supports collective learning based on extended and frequent interaction among people and firms. The industrial district benefits from the personal-embodied knowledge that reproduces in the cluster over time, enhancing the competitive character of the region. Acquired skills are not only transmitted through technical and factory training, but are integrated ‘by a spontaneous exchange and reorganisation of notions and opinions by “face to face” and “convivial” relationships, which daily life in the district offers with unusual frequency’ (Becattini, 1990:42). The mobility of workers beyond the region is considered inexistent given the opportunities and wages offered within the local cluster (Best,

1990). This concentration of strong local skills in the industrial district is Becattini's (1990) interpretation of what Marshall labelled 'industrial atmosphere'. Thus, this environment spreads ideas quickly, since the pooling of skilled labour is an important type of external economy which favours a process of mutual training and the process of learning by doing (Trigilia, 1989).

The Marshallian approach considers the existence of a large base of home-workers and part-time workers, connecting two important institutions: firms and families. This system is considered important for the district because these activities can absorb fluctuations in demand by extending or reducing these workers' participation according to market variations. Brutti and Calistri (1990) see this as one important factor of labour flexibility upon which the success of the Italian industrial districts relies. Amin and Robins (1990b), however, stressed the importance of self-exploitation and unpaid family-labour as sources of numerical labour flexibility within industrial districts.

In addition to vertical cooperation along the production chain there is also horizontal cooperation either directly between firms or through the mediation of bodies within the business environment. Trust among district members is important to encourage cooperation and collective efficiency (Harrison, 1992; Rabellotti, 1997).¹⁷ Entrepreneurs also regularly exchange information with colleagues and friends and thereby acquire 'an even closer knowledge of the economic and social structure, and hence of the productive capacity of the district' (Becattini, 1990: 43). Cooperation is seen as unwritten rules fixing standards of services and products along with

attachment to habits and local institutions, establishing local prices (Best, 1990; Becattini, 1993).

However, firms producing the same product or working in the same activity are in constant competition. Sengenberger and Pyke (1992) point out that competition is important to differentiate products and to increase sales, mainly through quality, design, flexibility of adjustment and marketing strategies. Furthermore, cooperation and competition are also seen as important incentives to increase imitation as a way of spreading innovation (Crestanello, 1996). Therefore, cooperation and competition among different members of the district become important factors in the performance of the LPS.

Institutional linkages complement the industrial district system. According to Scott and Storper (1992) institutional arrangements shape the nexus of transactions among firms and institutions. Garofoli (1992b) points out that ‘face-to-face’ relationships among economic actors favour the diffusion of technological and organisational

¹⁷ According to Granovetter (1985), trust arises from the ‘digestion’ of experience. Trust accumulates from repeated interactions between firms and other actors in which they contract and re-contract, formally and informally, strike deals, and help each other out in times of crisis.

improvements in the local system.¹⁸ However, the distribution of knowledge through informal information channels will be uneven, due to the fact that ‘networks of social relations penetrate irregularly’ the economic atmosphere (Granovetter, 1985: 491). These deficiencies, along with other market imperfections, are addressed by institutions of formalised cooperation (Brusco, 1992). They are designed to strengthen ‘the economic links between firms and relationships with the economic milieu’ (Garofoli 1991: 131) and can take the forms of business associations, local or regional development agencies, consortia or collective service centres (Best, 1990). Those kinds of institutions are thus important for the dissemination of information about long-term market developments that take place outside the district (Julien, 1992; Cossentino, 1996).

In this way, the formal institutional superstructure can also support the innovative process in the industrial district, which is widely seen as one of the key characteristics of industrial districts (Brusco, 1982, 1986). However, it is important to note that these formal institutions only complement the innovative capacity that is already inherent in the local production system (Garofoli, 1991). Innovations in industrial districts usually take the form of ‘a continuous process of a large number of incremental technological changes, all of them small, cumulative and interdependent’ (Garofoli, 1991:131). Furthermore, Garofoli argues that the multiplicity of technical solutions developed by the interdependent firms within the district ensures the successful generation of product ideas. Again, the unobstructed flow of information within the district facilitates the diffusion of successful ideas and imitation is one of the most important means by which successful methods or product

¹⁸ Garofoli uses the term ‘system area’ to define a high degree of division of labour characterised by strong interactions among firms working in specialised stages.

ideas are spread (Brusco, 1982). Thus, firms' membership in industrial districts is key to increase productivity of localised firms (Cainelli & De Liso, 2005).

Drawing from the flexible specialisation approach and the Italian school of industrial districts, Michael Storper and Allen Scott found that the agglomeration of industry is also an important source of decreased transaction costs in input-output relations (Scott, 1988, Storper, 1989, Storper & Scott, 1989, 1992; Storper, 1997). They found that the vertical disintegration of production and inter-firm linkages within clusters enable the minimisation of transaction costs through flexible specialisation and risk minimisation among networking firms and institutions. Transaction costs thus emerge as external economies, which reinforce the advantage of localised firms, characterised by flexible specialisation production (Storper, 1989).

Patterns similar to those outlined above for the case of the Third Italy were subsequently identified in regions of other advanced countries. Frequently cited examples of Italianate industrial spaces include clusters of firms in the United States of America (USA), Germany, Denmark, Spain and Canada, among others (see Pyke & Sengenberger, 1990, 1992; Berger & Locke, 2000). Further successful cases that present similarities in the organisation of clusters have also been found in clusters of different firm size and in services and high-tech industries (Scott, 1986; Pyke & Sengenberger, 1990; Saxenian, 1994).¹⁹ In those analyses, the linkages of firms and institutions in agglomerations are once again identified as the source of competitiveness for agglomerated firms.

¹⁹ Among the foremost case studies are Silicon Valley, the M4 corridor and Baden-Württemberg.

In addition to the range of work on Italianate industrial districts, other recent approaches have highlighted the importance of agglomeration in inducing and propagating learning and innovation. It is, in fact, the study of industrial agglomerations that has led to the ‘discovery’ of proximity and the local dimension of technological progress (Belussi & Gottardi, 2000). The following subsection thus gives an account of the economic importance of innovation and the importance of the local cluster in this process, while highlighting innovation as a sector specific process.

2.3.2 Learning, innovation and spatial agglomeration

Since technology has been highlighted as an important factor for engineering the growth of economic activity (Trajtenberg, 1990), technical change has widely been seen by economists as a key to increasing competitiveness and long-run growth (Dosi, 1988a; Freeman, 1989; Barro, 1997, chapter 1). Technological capabilities are enhanced by innovations aimed at competing and increasing industrial production. Hence, constant innovation is important to increase the competitiveness of regions and countries.

Innovation concerns the creation and development of new products and processes or new techniques for making existing products (Aoki, 1990). Schumpeter (1954) considered innovation to be a process of invention, innovation and diffusion. These three levels are associated with one another and cannot be considered as separate processes. Invention refers to the creation of new devices or ideas within or outside the firm, while innovation is the first commercial use of that idea. In turn, diffusion relates to the spreading of ideas or inventions through the appropriate industry.

Freeman (1989) argues that managerial skills and creativity at all levels, including 'learning by doing' and 'learning by using', as well as original scientific discovery and innovation, are important in the process of diffusion of innovation. Diffusion can also be considered as a socially desirable good because when it is spread widely, innovation may increase the competitive level of firms, leading in turn to a reduction of monopoly in the market. The successful diffusion of innovations between firms increases the productivity and competitive situation of other firms. This situation can also be considered at an aggregate level. Less developed areas or countries may share innovations through imitation, which to some extent might decrease the gap between them and the cutting-edge economies or regions, due to the fact that imitation is cheaper than innovation (Barro, 1997, chapter 1). Therefore, when social benefits are considered, the successful diffusion of innovation results in benefits to the economic system, thus enhancing economic growth.

In this way, inventions and the production of new ideas are only important factors in promoting technological change when they lead to innovation and its diffusion. Cooke et al. (1998:1564) calculated that, in Schumpeterian terms, processes of innovation account for about 80 to 90 per cent of the growth in productivity in advanced countries, which have an important impact on gross domestic product growth.

Despite the fact that innovation implies combined processes, attention in the literature on innovation has traditionally been focused on the production of new ideas and inventions through highly formalised and planned efforts. In fact, R&D has consistently been highlighted as a measure of innovation and technological

performance (Teece, 1988). In orthodox theories, technical progress has been considered the mechanical consequence of research and development (R&D) activities, while its dynamics are associated with a given probability distribution function, or alternatively with exogenous factors (Belussi & Gottardi, 2000). Within endogenous growth theory, R&D activities are considered to be the promoters of technological advance²⁰ of countries (Romer, 1990; Grossman & Helpman, 1991). However, traditional theory on innovation, mainly centred on formal R&D and patents, has tended to overlook the other phases of the innovative process, in particular the type of non-codified, tacit and localised knowledge (Stiglitz, 1987). Moreover, the new trend of international production-sharing limits the scope of any analysis based on R&D and patents. Innovation can now take place at any stage along a value chain and not necessarily at the product level. Thus, orthodox approaches neglect other explanations as to why other sectors and firms innovate.

Innovation not only relies on the internal ability of the firm to create it, but also on external sources and linkages. Tacit knowledge can have multiplier effects with the interaction of people and organisations. In addition, and in many ways complementary to R&D, ‘learning-by-doing’, ‘learning-by-using’ and ‘learning by interacting’ have been considered important inputs in promoting innovations. These processes take place when ‘people and organisations, primarily firms, can learn how to use/improve/produce things by the very process of doing them through their “informal” activities of solving production problems, meeting specific customers’ requirements, overcoming various sorts of “bottlenecks”, etc.’ (Dosi, 1988b: 223). Since not all innovation is produced within a firm, external agents interact to transmit

²⁰ According to this school of thought R&D is compensated by a certain form of (ex post) monopoly power.

knowledge and information across firms, whereby innovation is cumulative and path dependant (Dosi et al., 1988). That is to say, technology and the possibility of innovation not only rely on technology that is generally applicable and easy to reproduce (Arrow, 1962), but also on the knowledge embodied in people and organisations, which are enhanced by untraded interdependencies (Pavitt, 1986).

According to Dosi (1988a: 1147) untraded dependencies arise from the interaction between sectors, technologies and firms capable of determining different incentives/stimuli/constraints to the innovation process. Interdependencies generate technological externalities capable of reducing costs and increasing competitiveness for the network of firms. Therefore, non-tradable flows are seen as a collective asset of firms, countries and regions embodied in people and organisations capable of organising contextual conditions; country-specific, region-specific, industry specific or even company-specific (Dosi, 1988b: 226).

Thus, the interaction between users and producers results in an *interactive learning* process involving technical, communicative and social learning (Lundvall, 1993). Its adoption depends entirely on the characteristics of its diffusion process, while technology is frequently developed in combination with, or in response to the activities of, other firms (Belussi & Gottardi, 2000). However, when this set-up is not appropriate to take advantage of new opportunities, agencies outside the network of firms such as financial institutions, trade associations, universities and the government can play an important role in connecting users and producers of innovation and in re-establishing an adequate system (Lundvall, 1993). Thus, external institutions are considered important for their research facilities and their

capability to quickly spread information on new products and processes within the relevant industry, which, in turn, enhances the productivity of firms connected to such institutions.

Accordingly, the unit of analysis considered is a group of firms, interchanging knowledge, interacting with institutions and generating non-commodity flows, which, in turn, increase their knowledge and their capabilities to adapt, produce and/or transmit innovation (Dosi, 1988a). Drawing from this evolutionary perspective, there is a debate on the importance of geographical proximity and the role of the region in increasing the innovative capacity of firms.

The evolutionary economics school,²¹ together with the traditional flexible industrial district approach, opened up the possibility to integrate an explicative framework on the importance of clustering. According to Morgan (1997), Michael Storper has made one of the most significant attempts to link the two disciplines. Storper (1997) highlighted the association between organisational and technological learning within agglomerations. Technological spillovers are achieved in networks of firms and/or institutions through untraded interdependencies capable of organising learning. First, it is assumed that the performance of firms depends on the decisions of other firms and institutions. Second, untraded interdependencies²² are also considered capable of organising learning. Since untraded interdependencies are territory specific and localised, the region is considered a key and necessary element for learning and

²¹ According to this school, capitalism is an evolutionary process driven by technological, technical and institutional change, where firms are facing uncertainty and instability in which the institutional framework, more than the market, influences the technical and structural change (see, Dosi, Freeman, Nelson, Silverberg and Soete, 1988).

²² Storper considered these to be regional conventions, informal rules and habits, public and semi-public institutions.

innovation (Storper, 1997). This idea is reinforced by the fact that learning is more likely to be achieved at regional level because physical proximity facilitates the integration of person-embodied knowledge, the sharing of this knowledge and the generation of knowledge spillovers, while the costs of this process increase according to the distance (Dosi, 1988a; Audretsch, 1995, chapter 8; Audretsch & Feldman, 1996). In this way, innovations are not mainly the result of individual firms, but instead are the result of knowledge, relationships and other inputs and capabilities localised in specific places (Malmberg & Maskell, 1997).

Industrial production systems are thus based not only on input-output relations, but also on the exchange of information, know-how and technological expertise between firms, both in traded and untraded form (Storper & Scott, 1995). Therefore, technological innovation and its contribution to economic growth is described by a non-linear process which takes place in the synergy of spatial agglomeration and inter-linkage of an externalised core and complementary competencies and learning capabilities (Jin & Stough, 1998).

The implications of innovation as an interactive process not only involve interaction at the productive level, but also with other institutions such as research centres, education and training, technology transfer, finance and government policies. This system of innovation plays an important role in producing, transmitting, reproducing, adapting and determining the technological learning and innovation process of a region. Thus, the regional system of innovation has been considered an important instrument for articulating traded and untraded relations, increasing productivity and the output of localised firms (Trajtenberg, 1990). In addition, the local-social

structure may also shape institutions, which can increase the rate of technological learning and decrease the time taken to adapt and to transform innovation into economic activity (Rodríguez-Pose, 1999). Since the ability to use existing knowledge is important for the learning economy, the main implication arising from this approach is the fact that institutions should be structured in such a way that the region can take advantage of localised learning (Gregersen & Johnson, 1997).

According to this perspective, local production systems can take advantage of both tacit knowledge (that is local) and codified knowledge promoted through efficient institutions. The interaction between these two types of knowledge is important both to promote further innovations and to determine development (Brusco, 1996). In this way, knowledge is the most fundamental resource and learning is the most important process to foster innovation and economic growth (Lundvall & Johnson, 1994).

To this effect, technological innovation is based on a collective learning process; and inter-regional linkages facilitating the firms' access to different localised innovative capabilities lead to processes of innovation (Camagni, 1991). As a result of the spatial agglomeration of economic activity promoting untraded interdependencies, an increase in the capabilities and knowledge of one firm will tend to increase the learning and innovative capability of other firms which will try to internalise such knowledge. Hence, the development of knowledge is a social and economic process (Belussi & Gottardi, 2000). For Asheim and Isaksen (1997) the importance of agglomerations for learning and innovation constitute the material basis for a new form of comparative advantage for regions in the global economy or what Florida

(1995: 528) named the revival of the region as a key element in 'the new age of global, knowledge-based capitalism'.

Many of the researchers connecting economic geography with some aspects of learning, innovation and the role of institutions have come to the same conclusion: learning is a localised process enhancing innovation and competitiveness.²³ This has been highlighted in the literature under different terms such as 'institutional thickness' (Amin & Thrift, 1995), 'intelligent regions' (Cooke & Morgan, 1994), 'the learning region' (Florida, 1995; Asheim, 1996, Morgan 1997), 'innovative milieu' (Camagni, 1991) and 'regional innovation systems' (Asheim, 1996; Asheim & Isaksen, 1997); all of them encompassed by Moulaert and Sekia (2003) as 'territorial innovation models'.

Agglomerations thus offer important lessons to upgrade learning and innovation in LDCs. As mentioned in the first section of this chapter, productive structures in developing countries are characterised by a base of small-scale firms, with low-tech or subsistence firms accounting for lower levels of productivity and value added (Weiss, 2002). Most enterprises in LDCs lack the capital and human resources to invest in R&D, and thus their capacity to generate both product and process innovation tends to be limited (Rodríguez-Pose & Refolo, 2003). In this context, clustering has been regarded as key to improving competitiveness in LDCs.

²³ It is also considered as a social system due to the fact that innovation is the result of social interactions between economic actors.

2.4 Industrial districts in LDCs

Nadvi and Schmitz (1994:12) in their survey of industrial clusters in LDCs pointed out 'sectoral and spatial small firm clusters are neither infrequent nor insignificant. They are found across a wide range of developing countries.' A significant number of clusters of LDCs have been identified in Africa, Latin America and Asia (Cawthorne, 1995; Schmitz, 1995; Rabellotti, 1995; Visser, 1997; Knorringa, 1999; Tewari, 1999; Pietrobelli & Barrera, 2002; Pietrobelli & Rabellotti, 2004; Schmitz, 2004). Documented cases often specialise in traditional industries. This is not surprising, given the importance of traditional sectors in the industry of most LDCs. For instance, textiles and clothing dominate the manufacturing and industrial exports of countries such as South Africa, Pakistan, India and Brazil (WTO, 1998: xiii; WTO, 2001: xi; WTO, 2002: x). Paradigmatic cases include clusters with some export production, namely the basic surgical instruments produced in Sialkot, Pakistan (Nadvi, 1999) and the footwear clusters of the Sinos Valley in Brazil (Schmitz, 1995, 1999); intermediate cases of success have been studied in the footwear clusters of Guadalajara and Guanajuato in Mexico (Rabellotti, 1995, 1997, 1999); while very few successful cases have been documented among African clusters (Cawthorne, 1995).

The initial impetus to promote clusters in LDCs stems from the experience of industrial districts in Europe, particularly the Italian experience, on which most of the industrial district system is based. The bulk of the research on clusters in LDCs has been carried out by researchers of the Italianate version of industrial districts in developing countries (i.e. Humphrey & Schmitz, 1995; Rabellotti, 1995, 1997; Nadvi, 1999; Knorringa, 1999; Schmitz, 1999). Traditionally, the 'industrial district

model', which draws on stylised facts from clusters in developed countries, has been used as a reference point against which the experience of LDCs has traditionally been compared (Weiss, 2002: 118).

The cluster experience in developing countries has often differed from that found in more advanced economies (see, for instance, Rabellotti, 1995). Clusters in LDCs are not homogeneous and their industrial organisation and strengths of linkages differ across countries. Humphrey (1995) found different types of cluster organisation in LDCs: 'Vertical relationships range from orchestration by large firms to arrangements among small firms, and the density and nature of interfirm linkages varies considerably' (Humphrey, 1995: 3).

It has been noted that despite sector specialisation, division of labour and spatial concentration, most clusters in LDCs have underdeveloped linkages and low levels of competition, as well as low external economies and joint action. Rabellotti (1995, 1997) showed how limited the development of inter-firm linkages were in Mexico. Pietrobelli and Barrera (2002) also found weak enterprise networks in Colombia, a problem observed in most clusters in Latin America. Lagging behind are African clusters with an underdeveloped inter-firm division of labour and institutional support (Humphrey & Schmitz, 1995:13).

The problems of clusters in developing countries often include: limited development of suppliers, poor quality of products and inputs, poor backward, forward and institutional linkages within the cluster, delays in input delivery (Rabellotti, 1997), as well as low level of competence of local entrepreneurs and labour force (Pietrobelli

& Barrera, 2002). An important difference also lies in the low level of technological development in LDCs, which are lagging behind in comparison to more advanced economies. Furthermore, most agglomerations in LDCs, as opposed to clusters in developed countries, still leave much to be desired in terms of wage levels and working conditions (Cawthorne, 1995; Schmitz, 1995, 1999; Rabellotti, 1997; Nadvi, 1999). Meanwhile, regarding institutional linkages, Nadvi and Schmitz (1994: 24) noted that only a few sectoral and business associations provide real services or lobby for the collective interests of clusters in LDCs. Poorly targeted support for clusters is reported in the literature, either at federal and/or local level. Industrial policy, when it exists, is elaborated and managed at federal level (Nadvi & Schmitz, 1994; Weiss, 2002: 119).

It is to be expected that clusters evolve according to the environment in which they are immersed. Traditionally, literature on the subject has paid little attention to the shift in trade regimes experienced by LDCs in the advent of economic crises and trade liberalisation. Different trade regimes may lead to different local adjustments in order to succeed in more competitive scenarios. Moreover, clusters in LDCs face significant competition and local transformations as the globalisation of industry moves apace throughout the world. Therefore, it could be expected for LPSs in developing countries to undergo transformations when adapting to different trade regimes.

2.5 LDC clusters under different trade regimes

The way of doing business appears to change according to different trade regimes, which in turn also affects cluster organisation and performance. Competition,

industrial organisation, specialisation, the quality of linkages and competitiveness of clusters are challenged under open economic structures. In this way, the local factors of clustering *per se* are not the only factors affecting cluster performance, but rather it is also related to the trade regime in which the cluster is immersed. This is important for firms involved in international trade and particularly relevant for firms in countries following global trends in trade liberalisation and economic integration. To this effect, the present subsection gives a literature review on how clusters in LDCs have been affected in their transition from economies semi-closed to trade towards more open trade regimes.

2.5.1 Cluster transition towards new trade regimes

The challenge of globalisation is pressing the productive structure of LDCs, which in many cases have relied on import substitution industrialisation. Long-standing trade policies protected domestic industries in support of an inward-looking industrialisation strategy that was considered a means to industrialisation, growth and job creation (Bhagwati, 1968). Tariff and non-tariff barriers, as well as overvalued exchange rates were among the main policy instruments used to encourage the development of local industry (Todaro, 1997: 465). Among the larger Latin American, Asian and African countries following ISI were Mexico, Brazil, Argentina, India, Pakistan, Bangladesh, Nigeria, Ghana, Morocco, but many other developing nations also embarked on such a strategy (Kirkpatrick, 1987: 71-72). However, ISI policies encouraged the development of industries with high costs and contributed little to increasing productivity over time (Rodrik, 1995).

During the 1980s and 1990s, LDCs and former socialist countries experienced a shift towards a greater reliance on market mechanisms and trade liberalisation (Dornbusch, 1991; Dornbush & Edwards, 1991; Wellisz, 1995). In many cases, economic crises led the way to policy reform. There was also a growing disenchantment with the development strategy and new strategies were aimed at correcting ISI failures, chiefly assisted by the International Monetary Fund (IMF) and the World Bank (WB) (see Krueger, 1997; Bora et al., 2000). Trade liberalisation, exchange rate correction and the gradual removal of restrictions to foreign direct investment (FDI) became the basis of the transit from ISI to more open trade regimes and to what Berg and Taylor (2001: 11) refer to as the central features of globalisation for LDCs.

Furthermore, bilateral and multilateral trade agreements have also contributed to the insertion of LDCs in the process of globalisation. Since 1980, 63 new countries have joined the GATT and its successor, the WTO; such countries represented 43 per cent of the 147 member states of the WTO in April 2004 (WTO, 2004). Since the mid-1980s, 15 Latin American countries have become members of the former international organisation (Singh, 2005:91). Developed countries, accounting for the largest markets, have also been active in promoting bilateral and regional trade and investment agreements with LDCs. The USA has signed trade agreements with Singapore, Chile, Central America, Morocco and the Dominican Republic. The European Union completed the accession process with 10 new member states and has signed bilateral agreements with Mediterranean countries, Chile, Mexico and South Africa, and has preferential relationships with African and Caribbean countries (Cosbey et al., 2004).

Tariff rates in Latin America fell from an average of around 49 per cent in the mid-1980s to around 11 per cent in the late 1990s (Singh et al., 2005:91). Average tariff rates in South Asia decreased from around 65 per cent in 1986 to 30 per cent in 1998; while African countries accounted for an average tariff rate of 22 per cent in 1998 (World Bank, 2004: 2). In this way, trade liberalisation in LDCs has increased substantially since the 1990s: average tariffs have been reduced considerably, quantity restrictions have been phased out, along with the liberalisation of exchange regimes. This in turn, has contributed to increasing trade, financial and productive flows with more advanced economies (Markusen, 1998).

The economic reforms in LDCs are expected to have impacts on the organisation of LPSs. In theoretical terms, the mainstream economic discourse on trade liberalisation has emphasised supply-side arguments. Berg and Taylor (2001) pointed out that the main justification for economic reforms in LDCs was stated in terms of improving economic resource allocation, economic efficiency and output growth. Accordingly, McCulloch et al. (2002) in their survey observed that, theoretically, trade reform stimulates the efficiency of production in: 1) the way static resources are used; 2) encouraging specialisation and re-allocating resources towards products that reflect the country's comparative advantage; and 3) increasing economies of scale due to improved access to international markets. In turn, Taylor (2001) states 'the purpose of trade reform is to switch production from non-tradable goods and inefficient import-substitutes towards exportable goods in which poor countries should have a comparative advantage' (Taylor, 2001: 2). The United Nations Industrial Development Organization (UNIDO, 1996: 65) also argues that the dismantling of

trade barriers could encourage FDI and outward processing trade with developed nations.

Rodrik (1995) and Feenstra et al. (1997) acknowledge the dynamic effects of openness such as learning and technological change, which may give national producers access to new management techniques and to ideas and technologies embodied in foreign products and firms, leading to local productivity improvements. According to Balassa (1988: 45) increased competition boosts the way that businesses operate and firms try to keep up to date with technology to improve or maintain markets. Trade liberalisation thus is expected to boost productivity, employment and incomes (Taylor, 2001). In this way, an improvement in dynamic efficiency is expected to lead to a permanently higher growth rate (Baldwin, 1994). This may be the result of a permanently higher rate of investment, of more investment in R&D and more technical innovation, and of higher levels of learning in the economy, and consequently higher productivity growth.

Rodrik (1995) notes that trade liberalisation also reduces the waste stemming from rent-seeking activities. On the demand side, it is expected that trade liberalisation enhances competition and leads to lower prices for imported goods, which in turn reduces the profit margins that have previously been secured by domestic producers (McCulloch et al., 2002). Furthermore, the competition from imported goods will force domestic producers of import competing goods to lower costs and be more efficient. If producers do not succeed in improving their efficiency and if their production costs are too high, it is expected that they will go out of business.

2.5.2 Cluster transformations after the opening to trade

Clusters in developing countries, despite being agglomerated, accounted for low levels of national competition and weak cooperative linkages during import substitution. According to Rabellotti (1995, 1997), protectionism and low levels of domestic competition hindered the development of cooperative backward and forward linkages in the Mexican footwear clusters of Guadalajara and León. Altenburg and Meyer-Stamer (1999: 1700) pointed out that the lack of reliable suppliers and subcontractors hindered inter-firm transactions and cooperation in the clusters of developing nations. Todaro (1997: 473) argues that poor linkages were related to the protective trade regime; for instance, weak backward linkages were the result of LDC tariff structures that favoured high rates of effective protection to final-good industries, while capital and intermediate goods received considerably less effective protection. The clusters in LDCs, however, were on the verge of change after economic crises and economic reform.

The literature on clusters in LDCs has stressed the increasing competition that LPSs face in the aftermath of trade liberalisation. After further tariff reductions in the 1990s, the new competition in local markets has led to the closure of less competitive firms with significant repercussions for employment and production (McCormick, 1998; Rabellotti, 1999). According to the OECD (2001:23) and the Economist Intelligence Unit (2004), the impact of trade liberalisation in Brazil (one of the developing countries leading the way in opening to trade) in 1990s has hit its clothing and footwear industries particularly hard, given the strength of imported brands and the consumer preference for foreign, labelled goods. In international

markets, firms in previously successful clusters during the 1980s, such as the Sinos Valley in Brazil and Sialkot in Pakistan have met with increasing competition and now account for little advance in global markets: their exports have declined and profit margins have also fallen (Ghani, 1996; Nadvi, 1999; Schmitz, 1999).

Besides increasing international competition, new quality standards in developed countries have further contributed to challenging clusters with some export orientation. For instance, in the case of surgical instrument producers in Sialkot in Pakistan, increasing competition from Malaysia, Poland and Hungary (Halder, 2004), in combination with new quality certifications by the USA and the European Union (EU) countries, has proved to be a serious challenge for local firms, since most producers and subcontractors lack certification, many of them still use child labour and it is difficult to upgrade the quality of a 'cottage-based subcontracting system with craftsmen sitting on the floor with piles of material around' (Ghani, 1996:12). This new context makes it increasingly difficult for the small exporter to compete. Surviving firms across different clusters in LDCs have had to adapt costs, quality, production times, flexibility and the quality of linkages (Rabellotti, 1998; Knorringa, 1999; Nadvi, 1999; Schmitz, 1999; Tewari, 1999).

The response of leading firms has been vertical integration, and the number of subcontracted firms has decreased, while cooperation has improved (Rabellotti, 1999; Schmitz, 2000). Training and production is offered within the firm in order to control and monitor quality, while previously production had been carried out by home-based subcontracted firms (Ghani, 1996).

Although few quantitative indicators of cluster performance *vis-à-vis* other national regions or national averages have been presented in the literature, it does emerge that change in trade regimes has coincided with improvements in vertical cooperation in most clusters.²⁴ The literature has emphasised the theoretical approach of the Italianate version of industrial districts in developing countries (collective efficiency and, most importantly, joint action) to explain cluster transformations after trade liberalisation.²⁵ The approach infers that greater clustering advantages arise from cooperation and joint action within the cluster in facing new global challenges²⁶ (see for instance Rabellotti, 1999: 1575, and Schmitz, 2000). Accordingly, results from selected case studies of this approach emphasise that trade liberalisation favoured the strengthening of selected linkages in the researched cases. LPSs in Mexico, India, Pakistan and Brazil started to strengthen linkages with suppliers and subcontracted firms, although horizontal linkages remained weak (Rabellotti, 1998). Uneven cooperation persists and widens within clusters after trade liberalisation, as pointed out by Schmitz and Nadvi (1999) ‘some forms of co-operation increased more than others and cooperation tended to be selective rather than cluster-wide’ (Schmitz & Nadvi, 1999: 1508).

²⁴ Exceptions persist as in Peruvian clusters, where cooperation and linkages have remained low (see Visser, 1999).

²⁵ Schmitz (1995) distinguishes between passively acquired benefits that arise by virtue of their location within the cluster and actively generated gains that accrue from the *joint action* of local agents consciously cooperating. Such joint actions, both between firms and local institutions bring further benefits than may be appropriated by agglomerated firms (Humphrey & Schmitz, 1996). Local institutions such as business chambers can assist agglomerated firms to acquire further skills, provide representation and promote regional business abroad, thereby enhancing the benefits for firms. Cooperation effects differ between external economies because of their character of exclusion (benefits accruing only to firms engaged in such cooperation) and compensation (e.g. exchange of information and technology leading to higher productivity or better position in the market). Schmitz thus defines collective efficiency as the sum of external economies and joint action, which varies between clusters and over time (Schmitz, 1997).

²⁶ Schmitz and Nadvi (1999: 1508) also highlighted the importance of the local sphere in facing globalisation: ‘... responding to major challenges requires greater local co-operation’.

Clusters experienced the differentiation of firms within clusters, in terms of market segment, firm size and the quality of linkages. Medium and large enterprises now account for better performance and are also associated with dynamic segments of the market. In the cluster of Ludhiana in India, Tewari (1999) found that competition fostered better organisation in dynamic segments of foreign and domestic markets. In Agra, India, Knorringa (1999) pointed out that local producers in those segments also increased cooperation in forward and backward linkages more than those producing for low segments of the market. In Guadalajara, Mexico, subcontracting, supplier and forward linkages have improved in the reduced number of large and export firms (Rabellotti, 1999). Meanwhile, export-oriented firms in the Sinos Valley in Brazil and in Sialkot, Pakistan improved cooperation with suppliers as a response to global competition and the quality requirements of foreign markets; while benefiting from cooperation with foreign buyers (Nadvi, 1999; Schmitz 1999; 2004). While large enterprises aim at international markets and greater vertical cooperation, small-size firms continue producing for the domestic market and show weak forward and backward linkages. In this way Schmitz and Nadvi (1999) suggest that following liberalisation, medium and large enterprises are becoming stronger and that they are playing an important role in the governance of clusters.

The literature also suggests that marketing activities of clusters is weakened after the opening to trade. According to Rabellotti (1998) commercialisation and marketing remain underdeveloped in Mexican clusters. This author also added that Mexican footwear firms 'have limited control over their market and little knowledge of it; they depend on non-exclusive agents and they are not used to adopting an active commercial strategy to sell their products in a competitive market' (Rabellotti, 1998:

252). Following trade integration new firms have emerged in the Mexican market, especially foreign companies, which now dominate marketing channels (Altenburg & Meyer-Stamer, 1999: 1700). Forward linkages have been developed with large foreign retailers in Colombia's fashion sector (Pietrobelli & Barrera, 2002). Meanwhile, traditional forms of retailing are still carried out in less liberalised economies, with strong constraints to foreign investment such as Brazil, in which travelling salesmen control the retailing system, although with an increasing participation of international companies (Schmitz, 1995: 15; Schmitz, 2004). Thus, trade liberalisation is leading to the major participation of external agents in clusters of LDCs.

Regarding the use of technology, it appears that despite the opening to trade, clusters have often not overcome the barriers to innovation inherited from import substitution. Imported machinery, patterns, licensing and the copying of products were normal practice under the import substitution system. In their survey of the literature on clusters in Latin America Altenburg and Meyer-Stamer (1999) still found little innovation, little knowledge upgrading and a culture based on imitation in both survival clusters and more advanced and differentiated mass production clusters. McCormick (1998) also reached the same conclusions on African clusters, which have been unable to expand and to produce cutting-edge innovation. Meanwhile, export-oriented firms in clusters such as Sialkot in Pakistan and the Sinos Valley in Brazil rely heavily on innovation from foreign buyers (Schmitz, 1995b, 1999). Although it has not been implicitly pointed out in the literature of clusters in LDCs, the former results suggest that, as trade liberalisation advances,

clusters in LDCs are often becoming specialised in production activities and less involved in innovation and marketing activities.

The institutional response to trade liberalisation has been uneven across clusters in LDCs. Business chambers have started to play a more active role in business support to promote innovation and quality assurance in Pakistan (Nadvi, 1999). In Mexico, there is more engagement of local business chambers in developing marketing strategies for local producers (Rabellotti, 1997). However, Altenburg and Meyer-Stamer (1999) argued that business chambers are still not strong in Latin America. Business chambers and local government in India (Agra) and Brazil (Sinos Valley) have started to collaborate in order to promote cluster recovery, although they have not played a significant role for the local industry (Schmitz 1995, 2004). Meanwhile, institutionalised cooperation has failed altogether in African clusters (McCormick, 1998: 44).

Among the clusters studied in developing nations there is, however, a significant variance in their degree of openness. The literature has neglected the fact that LDCs are immersed in different stages of trade liberalisation and, hence, experience different levels of protection, competition and industrial organisation. As suggested by McCulloch et al. (2002: 26) different levels of trade liberalisation will lead to country-specific impacts.

Some countries such as India, Bangladesh and Pakistan, despite substantial reform, still remain among the most protected economies in the world, in comparison to Mexico, which has embarked on superior forms of trade liberalisation through trade

integration with more advanced economies (World Bank, 2004: 27). Being a member country of the WTO does not imply homogeneous tariff structures. By the end of the 1990s, average tariff rates²⁷ for a sample of six Latin American countries (Argentina, Brazil, Chile, Colombia, the Dominican Republic and Mexico) were similar to those in East Asian economies and European transition economies, while the South Asian countries were among the most protected economies (Sigh, 2005). Moreover, despite significant tariff cuts in recent years, not all countries have bound all their tariffs into the WTO. Bangladesh had bound only 0.9 per cent of its industrial tariff lines in 2003; India, 68.2 per cent, Pakistan 35 per cent, Sri Lanka 26 per cent, Turkey 36.3 per cent, Singapore 65.5 per cent, Hong Kong, China 23.5 per cent; while Brazil and Mexico have bound 100 per cent of industrial tariffs lines (Baccetta & Bora, 2003: 15; World Bank 2004: 30).

Furthermore, clusters in developing countries are often protected from external competition. While many LDCs carry out exports through most favoured nation and special and differential preferences,²⁸ many of them have managed to continue protecting local industries in their own countries, even in the export sectors (World Bank, 2004).²⁹ In addition, tariffs in competitive sectors are still higher, preventing

²⁷ Tariff levels only indicate the protection available from tariffs.

²⁸ Special and differential treatment constitutes the centrepiece of the WTO's strategy for integrating LDCs into the trading system. The Generalised System of Preferences (GSP) was designated to allow industrialised countries to grant selective waivers or non-reciprocal tariff reduction to developing countries. In addition to the GSP, some developed nations provide special and more favourable tariff preferences to limited groups of developing countries, usually linked to them through previous colonial or regional political relationships (Conconi & Perroni, 2004).

²⁹ To compensate for decreasing tariffs and quantity restrictions, many LDCs have become major users of other duties and charges to protect their markets: para-tariffs (import taxes), specific duties, anti-dumping, local contents, tariff rate quotas, health and safety regulations. India applies high tariffs protecting competitive sectors, namely the textile, garment, leather and automobile industries (World Bank, 2004: 37). Regulatory taxes, which provide extra protection to specific industries, have also been mainly applied to the steel industry in Pakistan (WB, 1994: 48). Meanwhile, Bangladesh's main export sectors also receive very levels of high protection in the domestic market: clothing accounts for a total protection rate of 85 per cent, sportswear 53 per cent and footwear 66 per cent (World Bank, 2004:58).

competition from other developing countries. For instance, Brazil has provided protection in the form of higher than average tariffs to export activities such as beverages, transport equipment, automobiles and footwear (WTO, 2004: xvii). Studies in South Asian countries suggest that there is significant tariff escalation³⁰ in important product chains, including processed food, textiles and clothing, tobacco, wood products and automobiles (see Laird et al., 2002). Thus, even though the overall average tariff rates have been reduced, the prevalence of tariff escalation means that the effective protection of manufactured goods remains high. In terms of protection to small-scale industry, economies relatively closed to trade such as India, excise partial or full tax exemptions, which give a tax advantage and benefit firms (mostly textile and garment firms) in competing with imports that pay the equivalent of the normal domestic excise taxes (World Bank, 2004:42).

The insertion of LDCs into multilateral agreements is one step forward towards free trade regimes. The trend, however, appears to be continuing through regional integration, which, in turn, will further challenge the LPSs in developing countries. The degree of openness and economic integration of a country appears to affect the level of competition and the local response to global challenges. This denotes their degree of protectionism in local markets and their integration in international markets, implied in different responses and forms of organisation within different trade regimes.

³⁰ Tariff escalation describes instances in which more protection is given to higher-value-added products than to raw materials or less-processed inputs.

2.5.3 Economic integration and clusters in LDCs

Regional trade agreements are becoming an important feature of globalisation and it would be expected that further liberalisation through economic integration may affect the organisation and performance of clusters. Regional trade agreements contribute to lowering average levels of protection and reducing investment restrictions, leading to more trade and competition within a region. Agreements include commitments to liberalise and introduce a large number of concessions, schedules for tariff phase-outs and a relatively high degree of reciprocity (UNIDO, 1996). In productive terms, regional trade agreements influence investment rules, capital controls and intellectual property rights, as well as environmental aspects, although the degree of influence depends on the type of agreement (Cosbey et al., 2004).

Classified in terms of the different development levels of countries, there are a number of examples of trade agreements between LDCs (South-South agreements) such as the MERCOSUR between Argentina, Brazil, Paraguay and Uruguay; the Association of Southeast Asian Nations (ASEAN) formed by Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam; and; the Southern African Customs Union (SACU) which includes Botswana, Lesotho Namibia, South Africa, and Swaziland. In their survey of the literature on trade agreements Cosbey et al. found that despite the fact that they focus on market access, tariff barriers and, to a lesser extent, on non-tariff barriers, South-South agreements tend to be shallow, even in terms of the trade liberalisation of goods, and they allow for more exceptions and more scope for government intervention.

They bypass elements of deeper integration such as investment and intellectual property rights (Cosbey et al., 2004).

There are other regions, such as the South Asian countries (Bangladesh, Bhutan, India, Nepal and Pakistan) that still lag behind in regional trade agreements. The World Bank (2004) identified that intra-regional trade is very low since independence and that trade has been even more restricted within the region as compared to trade with the rest of the world. Intra-regional trade accounted for 19 per cent in 1948, to then shrink to four per cent in 1974 and stood at five per cent in 1999 (World Bank, 2004:122-123).

On the other side of regional trade agreements is the new trend for LDCs to integrate with more advanced countries (North-South agreements), such as the NAFTA and the EU. Participation in this type of agreement may be seen for a LDC as a step forward towards more comprehensive integration into globalisation. Deeper integration occurs in North-South agreements, which go further in the liberalisation of trade, investment, services and the environment (Schiff & Winters, 2003). Bhagwati et al. (1999) and Singh et al. (2005) have stressed that trade integration of developing countries with more advanced economies may contribute to greater investment flows and technology transfers, improvement of regulatory standards and competition policies. Schiff and Winters (2003) show that the creation of a larger integrated market is a clear potential win for the smaller player in such agreements, leading to increased investment and exports. Nonetheless, authors like de la Torre and Kelly (1992) argue that there is no case in which a regional integration scheme has contributed materially to the evolution of a LDC. However, the new wave of

regional economic integration is a relatively new phenomenon and further exploration is needed of its impact on competition, organisation and the linkages of local production systems, where production is actually articulated. Integrating with more advanced economies represents a greater challenge for the productive structures of LDCs and successful resulting structures may be regarded as superior forms of organisation to those in protected economies or to those immersed in South-South regional economic agreements.

2.6 International production-sharing and clusters in LDCs

Decreasing trade and investment barriers have contributed to the expansion of international businesses and to the decentralisation of production to LDCs. According to the United Nations Conference on Trade and Development (UNCTAD) (2001: 1), between 1991 and 2000 out of the 1,185 regulatory changes in the national laws governing FDI, 95 per cent created a more favourable environment for FDI.³¹ In addition, the world has witnessed a remarkable increase in the number of bilateral investment treaties aimed at protecting and promoting partner's investments. By the year 1980 there were only 181 such treaties worldwide; this figure had reached 1,856 in 2000 involving more than 160 countries (Hill, 2004: 12). Meanwhile, FDI grew by an annual average of 28 per cent during the 1990s, driven by more than 60,000 transnational companies with over 800,000 affiliates abroad (UNCTAD, 2001: 1-2). In fact, transnational companies and international production account for two-thirds of world trade in commodities (Weiss, 2002:141).

³¹ During the year 2000 alone, 69 countries made 150 regulatory changes, and 98 per cent of them were more favourable to foreign investors (UNCTAD, 2001: 12).

From the 1980s, LDCs, mainly new industrialised countries (NICs) and transitional economies, have increasingly received significant trade and financial flows from developed countries (Parker et al., 1995; Markusen, 1998), contributing to the relocation of production to LDCs, especially in labour intensive activities through international production-sharing (Gereffi, 1994, 2000; Feenstra, 1998). In fact, the decentralisation of the industrial activity to LDCs is also a relatively new characteristic of the globalisation of industry (OECD, 1996).

New industrial spaces specialised in international production-sharing have been developed in LDCs. The most evident forms of clusters specialising along the value chain are areas with special regimes such as export processing zones, which represent an important source of employment and exports in developing countries. The International Labour Organisation (ILO) Database on Export Processing Zones calls attention to this special regime which represents a considerable source of employment and accounts for 88 per cent of total industrial exports from China, 83 per cent from Mexico, 60 per cent from Brazil, 90 per cent from Argentina, 88 per cent from the Czech Republic, 80 per cent from Kenya, 60 per cent from Bangladesh, 83 per cent from Malaysia and 80 per cent from Senegal, among others (Singa-Boyenge, 2003: 1-15). Since the early 1980s, some scholars have seen these special zones as an indicator of a new international division of labour (Balassa, 1981; Castells, 1985), as well as a new form of industrial agglomeration (Markusen, 1995). This is a rapidly growing industrial district type, which dominates the industrial structure of many developing countries (Markusen & DiGiovanna, 1999).

Markusen (1996) identified other types of clusters in addition to the Italianate version of industrial districts.³² Markusen (1996) defined a satellite platform as:

a congregation of branch facilities of externally based multiplant firms. Often these are assembled at a distance from major conurbations by national governments or entrepreneurial provincial governments as a way of stimulating regional development in outlying areas and simultaneously lowering the costs of business for competitively squeezed firms bristling under relatively high urban wages, rents, and taxation. (Markusen, 1996: 304).

These clusters often adopt names such as export-processing zones (Park & Markusen, 1995; Markusen & DiGiovanna, 1999).

The business structure in satellite platforms is dominated by large, externally based firms, mainly transnational firms, which means that major investment decisions are not taken within the district. In satellite clusters, plants mostly have links with parent firms and contractors located outside the agglomeration. They have intense contact with the parent company, with significant co-operation and interchange of information. Exchanges of personnel are common between the satellite firm and its parent company, but not between local satellite firms. This type of district differs from the Italianate form in its minimal intra-district trade, low interaction with other actors and low local embeddedness. Relationships and commitments with local suppliers are non-existent (Park & Markusen, 1995). Meanwhile, institutional linkages are underdeveloped. Industry-specific trade associations are inexistent and

³² The tracing of linkages in which firms are embedded, as in the flexible industrial district theory, has been used by Markusen to identify different types of agglomerations. Markusen's typology of different types of industrial districts, which defines the range of possibilities for cluster organisation include: 1) the Marshallian industrial district, with the Italianate variety; 2) the hub-and-spoke district; 3) the satellite industrial platform; and 4) the state-centred district. The differences between the industrial districts are to a great extent attributable to the relations with agents located outside the agglomeration boundaries, hub firms and firm size. While Markusen's typology emphasises the characteristics of successful clusters in developed countries, the satellite industrial platform type becomes of special interest for developing countries.

clusters rely on national and local government to provide their infrastructure, land and tax incentives.

Unlike traditional clusters in LDCs, satellite platforms specialise in highly technological and/or global industries (Altenburg & Meyer-Stamer, 1999). Examples of satellite platforms include the textile and electronic platform of Kumi in South Korea (Park & Markusen, 1999), the export-import zone of Manaus in Brazil (Campolina & Borges, 1999) and the maquila³³ clusters in the northern part of Mexico (Wong-Gonzalez, 1992; Carrillo & Hualde, 2000). Other clusters include export-processing zones in India, China, Sri Lanka, Thailand, Egypt and Senegal.

In a review of the literature on export-processing zones, Campolina and Borges (1999) identified a series of factors explaining why these clusters have been promoted by governments in LDCs: 1) to attract FDI, allowing controlled and localised liberalisation of the economy; 2) to promote non-traditional exports; 3) to facilitate the transfer of technology; 4) to produce positive effects on the balance of payments and; 5) to improve employment levels and act as an instrument for regional development.

Despite the increasing importance of satellite platform clusters in national exports and job creation, these industrial districts have been widely regarded by certain authors as weak structures of regional development (see Sklair, 1993). Altenburg and Meyer-Stamer (1999) and George (1990) point out that export processing zones in developing countries indeed generate some basic externalities, such as the formation

³³ In-bound industry in Mexico is often referred to as maquila industry. A detailed definition and analysis of the maquila industry are presented in chapters 3 and 4 of this thesis.

of a pool of semi-skilled labour, although the benefits are limited given their weak local forward and backward linkages. For Chrispin (1990), parent companies are more interested in production capacity and the economies of scale, rather than in developing local suppliers. Thus, low local content of inputs is another constraint for the development of satellite platforms (see González-Aréchiga & Barajas-Escamilla, 1989; Wilson, 1992; Mendiola, 1997). Furthermore, scholars like Anderson (1990) and Sklair (1993) argue that by specialising in low value activities a region ceases to develop its creativity and entrepreneurial capabilities. Campolina and Borges (1999) emphasized the negative effects of satellite platforms, which may include a fall in the balance of payments, a reduction of tax revenue, negative effects on the existing industrial structure, an inability to guarantee technical progress and limited effects on employment creation and labour qualification.

Unlike the Italianate variant of industrial district, which neglected external linkages and assumes the form of a semi-closed-economy to trade, the cluster types presented by Markusen offer different possibilities of cluster organisation in open economies. Markusen's theoretical typology suggests that *not all industrial districts are equal to one another given the variety of specialisation, industrial organisation and network systems*. In fact, Markusen (1996, 1999) has argued that many successful and rapidly growing industrial agglomerations in developing countries do not show the characteristics of the Italianate version of industrial districts. In this way, the classification of different types of successful agglomerations provides an important analytical framework that opens up the discussion on the globalisation of industry and the role of local-local linkages, local-external linkages, the industrial organisation and that of key agents in clusters in boosting competitive LPSs.

Scholars of the Italianate version of clusters in developing countries — which most of the literature in the subject has drawn upon — have paid insufficient attention to the trend of decentralising production to LDCs and the thriving of clusters specialising in a segment along an international value chain. Key debates have taken place on the accuracy and applicability of the Italianate industrial district approach, with some criticism and challenges being raised (see Amin & Robins, 1990; Florida & Kennedy, 1990; Amin & Thrift, 1992; Harrison, 1992; Park & Markusen, 1995). Since the studies are not industry-centred, they lack the influence of global industrial transformations and international trade liberalisation, which may affect a country's clusters organisation and their performance.

With the major involvement of LDCs in trade liberalisation and in international production-sharing, new cluster arrangements are expected to take place. In this way, the organisation, transformation or creation of clusters in LDCs seems to be affected by the globalising trend of the industry and, therefore, new instruments for analysing factors affecting cluster performance are needed. For this purpose, the global value chain approach is an important tool to assess key external actors and activities occurring inside and outside the cluster. The commodity chains framework that links the geography of production, global industry and international division of labour is used in this thesis as a theoretical tool to complement the industrial district approach on intra-cluster dynamics and organisation.

2.7 Global commodity chains and external linkages

The global value chains perspective is in keeping with the analysis of industrial district literature and can be applied to analyse the integration of industrial districts into a global market. This framework provides a way to map the dispersed spatial and organisational dimensions of production and distribution of different cluster types. The global commodity chain approach contributes to the analysis of features and changes in trans-national production systems both in space and time, thus assisting in the evaluation of the structure and dynamics of global industries.

The global value chain approach focuses on processes and it is based on the flow of goods in the production and distribution of products, where all the links are between enterprises rather than between countries. A commodity chain refers to the whole range of activities involved in the design, production, and marketing of a product (Gereffi et al., 1994; Gereffi, 2000). This perspective also focuses attention on the relationships among the various agents involved in the value chain and on the possibilities for industrial upgrading (Appelbaum et al., 1994; Kaplinsky, 2000). Local, regional, national and world economies are seen as structures linking those chains. In global commodity chains a group of firms, mostly located in different countries, carry out the totality of activities required to take a product or a service to the market. Within this hierarchy, less wealth accrues to the nodes involving intensive labour (production) and increases proportionally as movement proceeds to distribution and innovation. It is also considered that organisational strategies are shaped by competition, which varies across chains and within nodes (Gereffi et al., 1994).

According to Gereffi (1994), global commodity chains have three characteristics that are important for the coordination of transnational production systems:

(1) an input-output structure (i.e., a set of products and services linked together in a sequence of value adding economic activities); (2) a territoriality (i.e., spatial dispersion or concentration of production and distribution networks, comprised of enterprises of different sizes and types); and (3) a governance structure (i.e., authority and power relationships that determine how financial, material and human resources are allocated and flow within a chain). (Gereffi, 1994: 96-97).

The literature on global value chains stresses the importance of two types of governance, coordination or international economic network: those coordinated by buyers (buyer-driven) and those by producers (producer-driven global commodity chains) (Gereffi, 1994, 1995, 1999a).

Producer-driven commodity chains refer to those industries in which large manufacturers, generally transnational corporations, are in charge of coordinating production networks — including backward (sourcing) and forward linkages (marketing) — and the profit that accrues at each stage of the chain. This characterises the automobile, aircraft and computer industries. In contrast, *buyer-driven commodity chains* refer to those industries in which marketers, large retailers and branded manufacturers play an important role in shaping and decentralising production networks in a diversity of exporting countries, mostly located in LDCs (Gereffi, 1994; Gereffi, 2000). This arrangement is common in labour-intensive industries such as garments, footwear, toys, crafts and consumer electronics. Lead firms in these networks undertake high value added activities (i.e. design and marketing), coordinate other network relationships ensuring functionality in the network and control access to major resources (i.e. product design, new technologies,

brand names and consumer demand) (Gereffi et al., 1994, Gereffi, 1999b). Of those two types of international economic network, it is the buyer-driven chain that has become a growing phenomenon given the increasing concentration of marketing in developed countries, to a great extent carried out by transnational companies (Gereffi, 1999a). Thus, from the global value chains perspective the structural arrangements of industries vary across industrial sectors as well as across geographical areas (Gereffi, 1994).

The global value chains approach has important connections with the flexible specialisation approach (Piore & Sabel, 1994) and Michael Porter's value chain approach (Porter, 1990). According to this approach, flexible specialisation is not seen as a superior manufacturing system that might eventually crowd out mass production, rather buyer-driven and supplier-driven commodity chains are seen as two possibilities for industrial organisation (Gereffi, 1994:99). While having some bearing on the debate on mass production and flexible specialisation systems of production, the global value chains approach deals with the organisational properties of global industries and not with the organisation of production in national economies and local industrial districts, as does the flexible specialisation perspective (Gereffi, 1995).

Porter uses the idea of value chains to analyse the benefits for firms of splitting the production process into different segments, which helps firms to find innovative organisational and managerial practices to improve profits and productivity. In this way, one activity affects the costs or effectiveness of other activities along the value chain (Porter, 1990: 41). Gereffi et al. (1994: 6) pointed out that it is within an

industrial global value chain that competitive advantage is won or lost,³⁴ and hence a firm in a global industry requires coordination of the different activities along the value chain.

The global value chain approach suggests that to analyse competition and innovation in an industry it is necessary to pay attention to activities all along the value chain rather than focus exclusively on production. Products are brought to the market through a combination of activities. Coordination of the entire chain is a key source of competitive advantage. From this perspective the use of networks becomes an important strategic asset for coordinating the chain and increasing competitiveness in the industry. To this effect, transnational linkages between firms are built and become important to increase industrial and network competitiveness. Hence, Gereffi et al. (1994) assume that lead firms, to compete in global markets, look worldwide for low wage costs and flexibility in the organisation of production.

Thus, 'the entire debate about development strategies shifts to encompass regional - (and even firm-) specific efforts at industrial upgrading, thereby allowing these actors to control global marketing channels' (Appelbaum et al., 1994:189). Therefore, if an LDC is to take advantage of globalisation, it must make the move to more sophisticated, high value niches along the value chain (Gereffi, 1995). The value chain perspective suggests that for a region or a country to improve it must engage in industrial upgrading, because that is the key strategy to advance in the global industry.

³⁴ This is because competitiveness is embodied in a multistage sequence of activities. Thus, it is in the global value chain, instead of the industry as otherwise pointed out by Porter.

The global commodity chains framework also identifies the driving forces behind industrial upgrading or industrial decline (loss of chain activities in a given territory of a LDC). Drawing conclusions extensively from East-Asian cases in the clothing industry, this approach assumes that firms improve their position on the chain by using organisational learning as a means for industrial upgrading (Gereffi, 1999a). In the clothing sector, industrial upgrading is conceptualised, as ‘shifts in the export roles of garment suppliers in the world market, and the corporate strategies of the leading firms in the clothing commodity chain are the main drivers of change’ (Gereffi, 2000: 47).

Building on Gereffi (1999a: 52, 1999b: 16), Humphrey and Schmitz (2000) proposed four paths of upgrading options for enterprises working in value chains: process, product, functional and inter-sectoral upgrading. *Process upgrading* refers to the transforming of inputs into outputs more efficiently by reorganising the production system or introducing superior technology. *Product upgrading* entails moving into more sophisticated lines. *Functional upgrading* occurs when firms acquire new functions in the chain, such as design and marketing or moving from simple assembly to more integrated forms such as original equipment manufacturing (OEM), also known as full package, or to original brandname manufacturing (OBM) production (e.g. producers in Torreón upgrading from assemblers to OEM production; see Gereffi & Martínez, 2000).³⁵ *Intersectoral upgrading* refers to the use of knowledge acquired in a particular function to move into a new and more profitable chain (e.g. Taiwanese TV monitor producers upgrading into the computer

³⁵ See Gereffi (1995) for a detailed definition of these export roles in which firms are embedded along global value chains.

industry; see Humphrey & Schmitz, 2002). A region or cluster upgrades when it manages to control more activities along the value chain.

According to the global value chain approach, leader firms promote innovation and learning.³⁶ Leading firms such as retailers and marketers provide cooperation and the transfer of technology to lower-end firms through product specifications to manufacturers. This access to information on standards is frequently seen as an advantage accrued from taking part in a value chain. This flow of information is seen as a critical mechanism by which firms try to improve or consolidate positions within the chain. In fact, development in value chains means linking up with the most significant lead firms in an industry (UNIDO, 2002). Thus, participation in global value chains is seen as a necessary step for industrial upgrading in LDCs because it places firms and countries on dynamic learning curves, where learning occurs across different segments of the value chain (Gereffi, 1999b).³⁷

In recent years the global value chain framework has been linked to the study of clusters in LDCs (Humphrey & Schmitz, 2000, 2002; Vera-García, 2001, 2002; Smith, 2003; Pietrobelli & Rabellotti, 2004). In their research on East-Central European clusters Smith (2003) and Smith et al. (2001) made use of the value chain perspective to stress the relationships of power and the appropriation and distribution of value in inter-firm relations in the European clothing industry. To a large extent research linking industrial districts and the global value chain has been related to scholars applying the Italianate version of industrial districts in developing countries

³⁶ This approach also coincides with the study from Ergas (1984) on systems of innovation, who considers that most of the research remains in the home country of transnational firms.

³⁷ Thus, participation in assembly is considered the first step in the upgrading process because it teaches producers about price, quality and delivery standards used in global markets.

(see Humphrey & Schmitz 2000, 2002; Giuliani, Pietrobelli & Rabellotti, 2004; and the articles edited by Schmitz, 2004). Bair and Gereffi (2001), while taking the value chains approach, also proposed to link this strand with industrial district theory by proposing the study of global value chains as a tool to analyse external linkages and upgrading in the industrial clusters of developing countries.

The two former approaches coincide in their focus on firm upgrading through participation in international value chains. Analysing again the same industrial clusters that have been the subject of diverse analysis, the scholars of the Italianate version of industrial districts in LDCs have recently acknowledged the importance of foreign buyers for the cluster segment of export firms. Drawing largely from three cases with some export production (Sinos Valley in Brazil, Sialkot in Pakistan and Tirappur in India)³⁸ the latter approach identified that exports and particularly foreign buyers or traders have played an important role in the survival of local firms by opening up markets and transferring technology (see Bazan & Navas-Alemán, 2004; Schmitz, 2004). This experience has in turn fed research on the participation of producers in different value chains or forms of governance *within the same cluster*. This approach, however, is less optimistic than the value chain perspective. Pietrobelli and Rabellotti (2004) argue that the role played by firms in higher value activities in supporting the upgrading process is still blurred in LDCs. Likewise, Humphrey and Schmitz (2000) stress that networks offer favourable upgrading conditions but hinder functional upgrading and, what is more important, such upgrading is unlikely to take place among LDC producers. Pietrobelli and Rabellotti

³⁸ The so-called successful export-oriented agglomeration of Sinos Valley accounts for only 11 per cent of total firms involved in exports, 54 per cent cater to the domestic market and 35 per cent cater to both markets (Bazan & Navas-Alemán, 2004:111). Meanwhile, 50 per cent of total firms, mostly small firms, cater to the domestic market in Tiruppur (Cawthorpe, 1995).

(2004) also found that functional upgrading is seldom achieved in clusters analysed in Latin America.

However, there are important differences in the approaches. On the one hand, scholars from the global value chain perspective focus on the role of firms in shaping local development outcomes and continue to stress the international geography of production and the role of international linkages. Upgrading is sector-specific and the roles of local institutions and local external economies are not sufficiently analysed (see Bair & Gereffi, 2001; Gereffi et al., 2002). Meanwhile, recent literature on Marshallian-Italianate clusters in developing countries emphasises the role of clusters in the process of development through forms of governance in value chains, without taking into account the broader context of globalisation of industry (i.e. the focus of the global value chain analysis) in which the clusters are immersed. Moreover, this approach has neglected any Markusen-style assessment of the spectrum of possible local and external linkages under different trade regimes, i.e. the changes in local arrangements of industry and the dynamics of different types of LPSs in developing countries, especially those advanced in trade liberalisation and immersed in international production-sharing.

Moreover, the types of industrial clusters analysed by the value chain analysis in its local perspective are different to those analysed by the Italianate version of industrial clusters in LDCs. While the value chain analysis draws extensively from the paradigmatic case of Torreón,³⁹ Mexico, a *satellite platform type* of industrial district conformed by maquila firms (see Gereffi & Martínez, 2000; Gereffi & Bair, 2001;

³⁹ Moreover, their analysis was based on just one municipality, while the Torreón is just one of three municipalities that make up one clothing cluster, see Chapter 5 of this thesis.

Gereffi et al., 2002), the literature on Italianate clusters in developing countries continues to draw conclusions from *traditional* LPSs. The purpose of the study was also to compare the LDC cluster experience with the ‘industrial district model’ under the Italianate framework of industrial districts (surgical instruments in Sialkot, Pakistan and the footwear clusters in Agra, India, Sinos Valley in Brazil and Guadalajara, Mexico — see Knorringa, 1999; Schmitz, 1995b, 1998, 2000; Natvi, 1999; Rabellotti 1995, 1997, and the articles edited by Schmitz, 2004).

Therefore, the studies on clusters in LDCs have little to say with regard to comparisons of the different types of clusters in developing nations following significant trade liberalisation and integration into the globalisation of industry. Thus, research into the subject has not taken a more comprehensive approach that includes the globalisation of industry, the diversity of trade regimes in LDCs (i.e. countries at different stages of trade liberalisation and economic integration) and has normally lacked comparative analysis of different types of LPSs in the same industry and country in assessing regional structures.⁴⁰

2.8 Conclusions

This chapter has given an overview of the literature on clusters, with an emphasis on LDCs. Establishing the wider framework on the importance of agglomeration to increase industrial competitiveness, the first subsection reviewed different socio-economic theoretical approaches in examining the organisation and the leading

⁴⁰ Informality is another important part of agglomerations that has been underemphasized in the literature on industrial clusters in LDCs.

forces of clusters. Subsequent subsections went on to survey the literature on LDC clusters under different trade regimes and conditions of industrial globalisation.

The cluster literature has stressed the importance of clustering as a means of economic development for developing countries and lagging regions. A great deal of the literature has focused on the comparison of clusters in LDCs with the 'industrial district model', based on features identified in Italianate industrial districts, suggesting the strengthening of local linkages to advanced clusters in developing nations. However, this literature emphasises the importance of internal forces in agglomerations in increasing the competitiveness of agglomerated industries, while failing to take into account the global changes affecting LPSs such as the major participation of LDCs in trade liberalisation and the globalisation of industry.

Researchers of the Italianate version of industrial districts in developing countries have recently acknowledged the increasing competition and the adjustment of such clusters after trade liberalisation. In this regard, they have emphasised its theoretical approach of collective efficiency, acknowledging again the role of local cooperation and joint action in facing new global challenges.⁴¹ The literature, however has tended to compare clusters in different countries, neglecting the fact that LDCs are immersed in different trade regimes (see, for instance, Rabellotti & Schmitz, 1999 and Schmitz, 2000). For example, India and Pakistan are among the most protected economies; while Mexico is one of the most open to trade economies in the world and pioneering integration in North-South regional trade agreements. Moreover, results from such studies are limited, since they have neglected to compare different

⁴¹ Schmitz and Nadvi (1999: 1508) in their literature review on industrial districts pointed out: 'responding to major challenges requires greater local co-operation'.

clusters in the same sector and country. Furthermore, there is little analysis and comparison of LDC clusters with different types of successful agglomerations after the opening to trade.

Theory has drawn stylised facts from agglomerations in developed countries while little evidence has been produced on the role of LPSs in LDCs in a global world. By increasing trade liberalisation and decreasing restrictions to FDI, developing countries have since the 1990s received increasing flows of foreign direct investment (Markusen, 1998: 735) and are playing an important role in international production-sharing, especially in global industries such as automobiles and clothing (Gereffi, 2000). As presented in this chapter, new industrial spaces specialised along international value chains, such as export processing zones, have thrived in the era of industrial globalisation. Those new types of clusters are the ones that Markusen (1996, 1999) named satellite platforms.

As suggested by Markusen (1996), there are a variety of successful agglomerations around the world that do not follow the typical patterns analysed in the industrial district literature. This has important implications for the analysis of industrial agglomerations in LDCs, which are actively participating in the relocation of some phases of the productive process (Gereffi, 1994) and, hence contributing to globalisation of industry (OECD, 1996). In this way, the global commodity chains emerge as a complementary tool useful in the analysis of different types of local production systems in a global context.

The approaches reviewed in this chapter offer a theoretical base for the analysis of LPSs in Mexico under different trade regimes, both in terms of local-external linkages and the new types of agglomerations that have thrived in the open economy. In this way, the theoretical approach of global value chains complements the theory on clusters to assess transformations in LPSs, while bringing globalisation of industry into the analysis.

The insertion in globalisation through trade liberalisation and economic integration may affect the local organisation of production, leading to new arrangements and superior forms of organisation in facing competitive trade regimes. The process of globalisation represents challenges and opportunities for local production systems in LDCs, hence the interest of this thesis in analysing different types of LPSs in Mexico, a country that has transited different trade regimes. This country relied on import-substitution, then went through a process of trade liberalisation and is a step ahead of other developing countries in its trade regime through its regional integration with more advanced economies.

The distinct feature of this study is the comparison of Mexican clusters that were relatively homogeneous during import substitution but then followed different market strategies, registering different levels of performance, consequently generating different types of local production systems after trade liberalisation and economic integration. The following chapters thus evaluate industry transformations in Mexico in the aftermath of the opening to trade, before going on to evaluate different types of LPSs under different trade regimes, applying the theoretical approaches presented in this chapter.

CHAPTER 3

The Economic Context: Trade Liberalisation and Transformations in the Mexican Manufacturing Industry

3.1 Introduction

Mexico has undergone significant economic transformations since 1982 and more profound ones since the opening to trade in 1986. Mexico transited from a semi-protected economy to an open economy, which have coincided with production transformations. This chapter thus analyses the change in trade regimes that spelled out the new economic environment. The chapter is organised as follows: the first section gives an account of the ISI; then, there is a review of the economic crisis and reform. The last section examines the transformations in the Mexican industry, which shows sectoral, regional and local production system transformations after the opening to trade.

3.2 The ISI period

Mexico, as many other Latin American countries, started an inward-oriented growth in the 1930s as a response to the difficult economic situation experienced throughout the world after the Great Depression. Following the 1929 crisis, international demand decreased and developed countries erected trade barriers to protect their economies from foreign competition (Bulmer-Thomas, 1994). World War II stimulated demand for manufactured goods and primary products from countries not participating in the

conflict, and it also encouraged third countries to produce for their own national markets.

International demand for Mexican agricultural products decreased, affecting this leading sector in the economy, pressing Mexico to rethink its development policy (Izquierdo, 1973). With depressed international markets and with the country's trading partners favouring highly protected markets Mexico embarked on a strategy for economic growth based on industrialisation and orientation towards the national market.⁴² The Mexican government established economic policy guidelines for the industrial sector, which was regarded as the backbone of the long-term strategy for economic growth (Solís, 1973:145).

By 1940 the process of industrialisation had become widely regarded by policy-makers as the road to Mexico's economic development (Solís, 1973:145). In the Havana Conference of 1947, which led to the creation of the GATT,⁴³ the Mexican government decided not to take part in the Agreement. The country instead opted for protectionist industrialisation and formally based its policy for industrial development on a trade protection model (Izquierdo, 1973:247). The aim behind the promotion of the industrial sector was first to decrease imports of manufactured goods, thus saving foreign exchange, providing jobs and reducing dependency on overseas markets (Bulmer-Thomas, 1994).

⁴² Industrial production was placed at the core of the strategy based on the assumption that international terms of trade for manufacturing products were higher than those for agricultural products.

⁴³ The Protocol of Provisional Application of the trade pact came into effect at the start of 1948 with the goal of abolishing quotas and reducing tariffs among the Contracting Parties.

The underlying idea of the ISI strategy was to promote an environment that was conducive to the development of nascent industries. In a protected environment, entrepreneurs would learn and increase productive capabilities in order to, at a later stage, compete internationally (Todaro, 1997: Ch.13).

The tariff policy and the import controls were the most influential instruments of industrial policy throughout the entire protective period (Bueno, 1973; Secretaría de Promoción y Presupuesto, 1985). The import licences, in force from July 1947, were in fact the main instrument used to control and to channel imports and to ensure that they would only serve as a complement to national production (Izquierdo, 1973:248; Nacional Financiera, 1973:200). By 1970, goods imported through import licences accounted for around 70 per cent of total imports, while 80 per cent of the tariff fractions were covered by import permits (Balassa, 1973: 431). The only products exempt from import licence requirements were inputs that were not produced in Mexico.

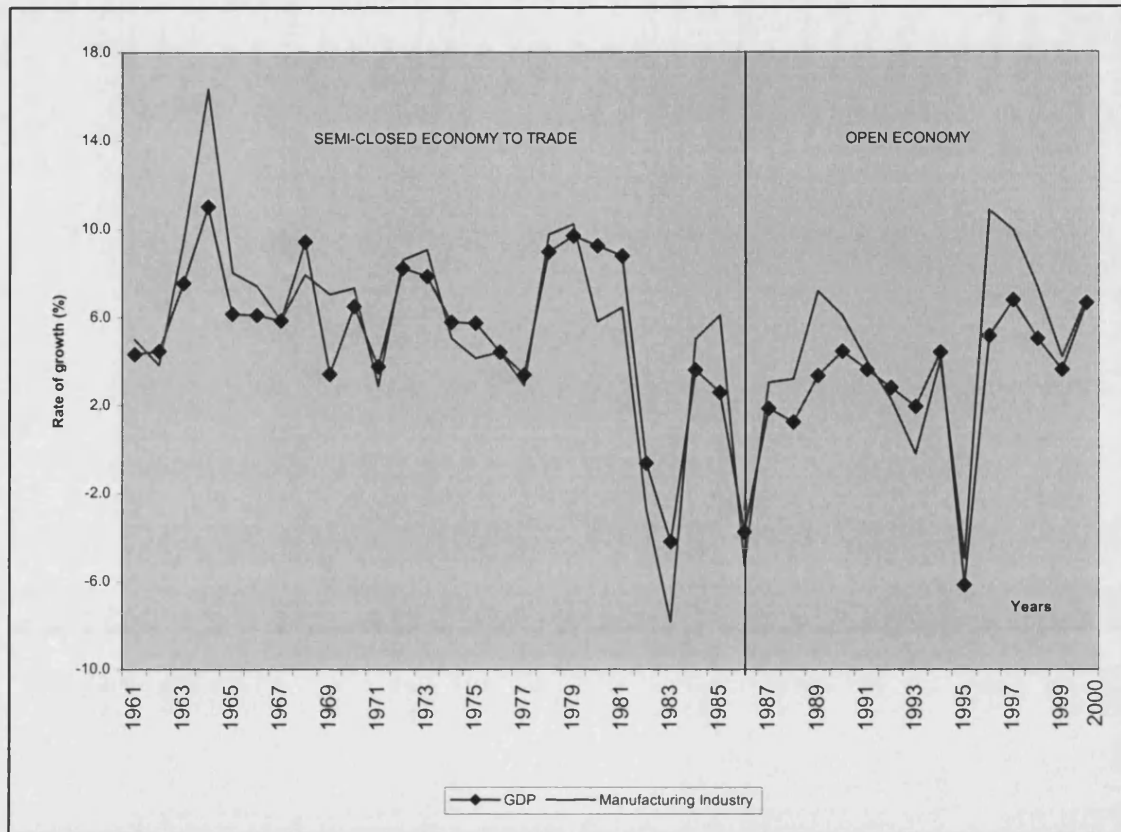
Benefiting from a fast-growing internal market, Mexican industry grew at an impressive pace and had become the main source of economic growth by the early 1960s (Aspe, 1993). The manufacturing sector grew at an annual average rate of 8.3 per cent during the period 1953–1965, 1.3 percentage points higher than the average growth of GDP (Bueno, 1973:221; Solís, 1973:145).

Fixed investment, leading the expansion of the industry, was concentrated in sectors where import substitution was significant. Industries such as footwear, clothing and manufacture of paper were the leading sectors at the beginning of the 1950s; while

more sophisticated manufacturing industries developed throughout the 1950s and 1960s with the noteworthy presence of foreign companies. Foreign investment was highly concentrated in the sectors that produced for the domestic market: transport equipment, electrical and non-electrical machinery, chemicals and rubber goods. According to Peres-Nuñez (1990), the main aim was to get past the trade barriers that protected the domestic market.

By the second half of the 1960s, the industrial sector started to experience internal structural problems. With limited foreign competition and a captive market, the industry had developed a profit scheme based on high costs, low efficiency and low levels of employment creation (Izquierdo, 1973). By then the industrial agents that led the expansion in the 1950s and 1960s had lost dynamism and the process of ISI had reached its maximum limits, as determined by the size of the Mexican national market (Peres-Nuñez, 1990). Moreover, as the industry advanced to more sophisticated production, the sector evidenced a strong dependency on inputs not produced in the country (Bueno, 1973). The structural problems of the production system sector then shifted to macroeconomic imbalances. The growth slowdown at the end of the 1960s was a consequence of the economy's dependency on an inefficient industrial sector (Hernández-Laos, 1985) (see also Figure 3.1).

Figure 3.1 Growth of Real GDP and Manufacturing



Source: Calculated based on INEGI, S.N.C.M., many years.

As a response to decelerating growth and in order to continue with the ISI strategy, the Mexican government began to take a more active role through public spending (Aspe, 1993:22). The new economic policy was set underway in 1970 by the then

al., 1994). Thus, the protectionist policy was complemented by the active participation of the state in the economy.

Public spending became the driving force for the growth of industry and the economy. The expansionary policy gave a further boost to Mexican industry during the 1970s and up until 1981, during which time the industrial sector grew on average by 6.5 per cent per annum, as shown in Figure 3.1. Additionally, the protectionist wall was reinforced as a response to the international oil shocks: between 1979 and 1982, 100 per cent of imports were controlled through import permits (Sanchez-Ugarte et al., 1994:22).

The Mexican government went further in protecting Mexican industry during the 1970s and enacted the 1973 Law, stipulating that foreign ownership would be gradually limited to a 49 per cent equity share. However, by 1980, 63 per cent of the total number of foreign firms⁴⁵ in the manufacturing industry — accounting for 71 per cent of the manufacturing production value of all foreign firms — was completely owned by foreign subsidiaries (Peres-Nuñez, 1990: 20). The main difference in the 1970s compared to previous years was that the participation of foreign firms was reduced in the chemical and oil by-products sectors, where large state-owned firms were developed. However, foreign firms gained share participation in more technologically advanced industries. Foreign firms dominated the following manufacturing branches in 1980: tobacco (78%), rubber products (67%), pharmaceuticals and cosmetics (72%), electrical machinery (58%) and transport equipment (69%) (Peres-Nuñez, 1990:21). Thus, in the last decade of ISI, foreign companies concentrated in modern consumer goods, machinery and equipment,

while national private firms led in traditional and basic consumer goods,⁴⁵ and state-owned firms had a strong presence in widely used inputs (Casar & Pérez, 1988).

3.2.1 Industrial and macroeconomic imbalances in the last years of ISI

The last years of ISI were characterised by low efficiency in industry, imbalances in the economy and a high dependency on overseas financing. The productive tissue was unable to take advantage of protectionism to enhance its competitiveness. Early reforms would have allowed Mexico to remove trade protectionism, explore other markets and become a self-sustainable source of economic development over the long run, as were the original objectives of the ISI strategy. On the contrary, public spending during the 1970s further exacerbated the inefficiencies in the production sector, which already had evidenced structural problems in the 1960s, as described above.

Protectionism from foreign competition continued during the 1970s and producers continued to dominate captive markets (Sanchez-Ugarte et al., 1994). Given the unavailability of imported products in the market, consumers became accustomed to acquiring low quality products. Prices of goods and inputs substituted in Mexico were higher than those of their international counterparts and the quality never reached international standards (Balassa, 1973). Supply matched the demand at low production levels and high prices in producer-led markets. Industrialists benefited from low-cost inputs and an expansion of demand, while production continued with a scheme of high costs and low efficiency (Bueno, 1973; Aspe, 1993). High levels of

⁴⁵ Defined as firms with 15 per cent or more of foreign-owned equity.

⁴⁶ Micro and small firms dominated the foodstuffs, wooden products, clothing and footwear industries, accounting for more than 70 per cent of total production in 1980.

trade protectionism accompanied by a continuous overvaluation of the Mexican peso culminated in the promotion of an industrial sector with low levels of competitiveness and weak backward and forward linkages (Balassa, 1973; OECD, 1996b).

The manufacturing sector continued to develop unable to cover its own requirements of production and foreign exchange, leading to inflation pressures and trade imbalances. Import substitution of more advanced manufactures was never achieved and the industrial sector was incapable of generating the industrial inputs required for production: intermediate inputs and capital goods that accounted for 72 per cent of total imports in 1940 had reached 80 per cent of that total by 1980 (Poder Ejecutivo Federal, 1983:98). Foreign firms accounted for about one third of total imports during the 1970s. In fact, foreign firms by definition had trade deficits, given their development based on the domestic market (Peres-Nuñez, 1990).

The kind of industry resulting from ISI was unable to generate its own requirements of foreign exchange for the entire ISI period, and developed a dependency on other foreign exchange sources to finance its substantial needs for imported inputs and capital goods. During the 1950s and 1960s, industry requirements were to a large extent financed by exports from the agricultural sector, and by oil exports and foreign debt during the 1970s and the beginning of the 1980s (Trejo-Reyes, 1988). Manufacturing exports, on the other hand, played a limited role in the economy, since the bulk of the industry catered to the national market (OECD, 1997). Less competitive firms, restrictions to foreign trade, an overvalued exchange rate and very

poor incentives to export contributed to an anti-export bias in the Mexican production system (Balassa, 1973; Aspe, 1993).

Contrary to what would have been expected, foreign firms in Mexico did not contribute to increasing the competitiveness of Mexican firms. Foreign firms were competitive in the market due to their access to technology and prestige brands, and to the size and power of their parent firms to lead the market and obtain large benefits in the then expanding Mexican market. Their efficiency was counteracted by their limited use of economies of scale and their use of obsolete technology and equipment in comparison with firms operating in their home countries (Katz, 1987). Firm size in industries dominated by foreign companies (in markets with high product differentiation) was smaller than in developed countries (Poder Ejecutivo Federal, 1983). A study carried out for the OECD (Peres-Nuñez, 1990) points out that foreign firms were not isolated entities but concentrated in leading import substitution industries. Furthermore, Peres-Nuñez concludes that during the 1970s the impact of foreign firms on the transfer of technology was limited, which held back competition in the Mexican domestic market.

The structural problems of the production sector were translated in macroeconomic imbalances at the beginning of the 1980s. The expansionist policy, unlike a model of semi-closed economy, was heavily financed by foreign savings. The extension of ISI through public spending during the 1970s was not supported by increasing government revenues, rather it was financed primarily by foreign debt (1971–1981) and oil exports (1978–1981) (Gurría, 1992). At the beginning of the 1980s, the Mexican ISI strategy supported by economic and monetary controls, and government

expenditure,⁴⁷ contributed to high inflation and serious budget and trade deficits for the Mexican economy (OECD, 1997; OECD, 2002a). The public deficit increased from 2.0 per cent of GDP in 1969 to 9.1 per cent in 1976, reaching 14.1 per cent in 1981 (Aspe, 1993:75). Foreign public debt also increased dramatically: from US\$6.8 billion in 1972, to US\$21 billion in 1976 and US\$58 billion by 1982 (Ponce de León-Zedillo, 1992:17).

The economic model of development was challenged at the time when world forces led the way to globalisation in the early 1980s. The inheritance of more than 50 years of inward-oriented growth could no longer support the combination of imbalances in public finances and in the current account (Aspe, 1993; OECD, 1997). Structural problems in the economy and the production system together with an about turn in international oil prices and a rise in world interest rates led to a suspension of external financing, which heralded the collapse of the exchange rate and the beginning of the 1982 Mexican crisis. The capacity to promote ISI through foreign debt and public expenditure had come to an end.

3.3. Economic crisis and reform

In the early 1980s Mexico was overwhelmed by the international fall in oil prices, higher world interest rates, rising inflation and a deteriorating balance of payments that spurred massive capital flight. These disequilibria, along with the virtual disappearance of Mexico's international reserves forced the government to devalue the Mexican peso three times during 1982, leading to the country's worst recession

⁴⁷ The international boom in oil prices served Mexico both as source of government income and as a guarantee for international loans, which helped to postpone economic reforms during the second half

since the Great Depression (Zedillo-Ponce de León, 1992). The 1982 crisis thus marked the starting period of high inflation and low economic growth in Mexico (see Figure 3.1).

The need for restructuring of the economic strategy was evident and the new policy was presented by the incoming government in the 1982–1988 National Development Plan (Plan Nacional de Desarrollo). As part of this policy, the government established a stabilisation programme to control inflation and to reduce the public deficit, as well as a strategy aimed at promoting export-led growth (Poder Ejecutivo Federal, 1983).

Anti-inflationary measures were set in place by the government in the Programa Inmediato de Reordenación Económica (Immediate Economic Reorganisation Programme). This Programme was aimed at reducing the public deficit through decreased public spending, adjusted public fares and privatisation. Measures were also taken to keep real wages down (Aspe, 1993).⁴⁸ The government abandoned its entrepreneurial role and decided to concentrate on regulating economic activity and on improving infrastructure — roads, ports, airports and electricity — in co-investment with the private sector. As a strategy for economic growth, the National Development Plan was focused on the reorientation of the macroeconomic policy to improve the microeconomic structure and to develop an export-oriented manufacturing sector (Poder Ejecutivo Federal, 1983, 1989; Dussel-Peters et al., 1997).

of the 1970s.

⁴⁸ In 1984 wages, in real terms, had fallen 25 per cent from 1981 levels.

The rationale behind the change of strategy was the promotion of an efficient and competitive industry able to increase domestic savings, to finance its own import requirements and to generate foreign currency for the country (Poder Ejecutivo Federal, 1983). To reach these objectives, the under-valuation of the currency was the short-term tool used to control imports and to promote industrial exports. Imports of inputs and capital goods for potential export firms were facilitated through favourable exchange rates. Once the foreign exchange market improved in 1984, the government sought to improve export procedures and to rationalise protection,⁴⁹ see Table 3.1.

National and foreign private investments together with exports then served to fuel industrial growth in the new strategy for economic development, substituting the foreign debt and oil exports of the last years of ISI (Poder Ejecutivo Federal, 1983). Restrictions on foreign investment were removed and procedures became more flexible during the administrations of Presidents Miguel de la Madrid and Carlos Salinas. In 1986 and 1990 the government revised Mexico's 1973 Foreign Investment law, opening up to foreign investment certain sectors of the economy which previously had been restricted to Mexican nationals or to the state. There was a liberal approach to investments made by small and medium size foreign firms and to investment in the in-bond industry. The new regulations authorised foreign individuals or corporations to acquire 100 per cent equity ownership of a Mexican company. On the other hand, foreign firms were required to have a positive balance of payments (Peres-Nuñez, 1990).

⁴⁹ In 1984 the import permit was removed for 17 per cent of the import value (35 per cent of the tariff lines). However, to compensate the removal, tariff levels were increased.

3.3.1 Further reform through trade liberalisation

The Mexican government introduced new reforms in 1985 that greatly changed the economic strategy. High inflation rates and the trade surplus erosion during the mild recovery of 1984 led to an adjustment policy package in June 1985: the current public expenditure suffered further cuts, the trade liberalisation programme was launched, while a currency devaluation of 20 per cent took effect (Lustig & Ross, 1987). Major adjustments followed in the second half of 1985, when quantitative restrictions and import licensing gradually began to disappear (Aspe, 1993; OECD, 1996b). Import licence coverage, as a percentage of imports covered, decreased drastically from 83 per cent in 1984 to 35 per cent in 1985.

As part of the liberalisation process, Mexico became a member of GATT in 1986, establishing progressive tariff reduction that opened the door to comprehensive trade liberalisation. Table 3.1 shows the evolution of the liberalisation of trade restrictions. In just one year the tariff ceiling of 100 per cent in effect in 1985 fell to a maximum of 50 per cent in 1986. The process was necessary in order to join the GATT, which in general terms did not allow for tariffs exceeding 50 per cent (Aspe, 1993). Thus, trade liberalisation in 1986 meant the abandonment of the protective trade system and a shift towards the fostering of market mechanisms and trade liberalisation (Clavijo & Valdivieso, 1994; Sanchez-Ugarte et al., 1994).

Table 3.1 Liberation of Trade Restrictions (Per cent)

	1982	1984	1985	1986	1987	1988	1989	1990	1991	1992
Import licence coverage ¹	100.0	83.0	35.0	28.0	27.0	21.0	18.0	14.0	10.0	11.0
Average tariff rate	n.a.	23.3	25.4	22.6	10.0	9.7	10.4	13.1	13.1	13.1
Maximum tariff	n.a.	100.0	100.0	50.0	40.0	20.0	20.0	20.0	20.0	20.0
Real exchange rate	86.8	97.2	100.9	69.1	63.6	77.4	84.1	83.1	92.6	98.9

Note¹: Percentage of imports covered.

Source: Clavijo & Valdivieso, 1994:40.

In 1986, the combination of a substantial drop in international oil prices, annual domestic inflation rates rising to more than 100 per cent and a large public deficit, accentuated by the emergency measures taken in response to the 1985 earthquake led to a new crisis (OECD, 1997). Economic activity slowed down and production decreased in 1986, as shown in Figure 3.1. Imports were then to be used as a mechanism of inflationary control, and the progressive strategy of liberalisation was abandoned in 1987 when the stabilisation programme did not yield the expected results (Lustig & Ross, 1987).

The new adjustment led to a unilateral acceleration of trade liberalisation in 1987. Trade liberalisation measures became more pronounced and, by the end of the 1980s, the use of import licences was reduced substantially: the maximum tariff was further slashed from 50 per cent in 1986 (when Mexico joined the GATT) to 20 per cent in 1988; while the average tariff rate was reduced from 22 per cent in 1986 to ten per cent in 1988, as shown in Table 3.1.

Overall tariff rates were significantly reduced in all manufacturing sectors, with the exception of a handful of activities (oil refining, the pharmaceutical, automobile, microcomputer industries and for some agricultural products), which were initially exempt from trade liberalisation in 1987. Transnational companies were the largest producers, exporters and importers in these sectors (Ruiz-Durán et al., 1997:6).

In parallel, economic reforms sought to promote competitiveness in the Mexican productive system. Opening to trade and economic deregulation were considered by the Mexican government to be the appropriate mechanisms to promote microeconomic efficiency and to create the export sector base (SECOFI, 1990). The view of the government was that international competition in the national market would contribute to the formation of a more efficient and competitive industrial sector in both the national and international arenas.

The economic reforms of the 1980s laid down the path of transition from an economy closed to trade to an open market economy. Having been semi-isolated from international trade for more than 50 years, Mexico was inserted into the global economy through trade liberalisation. The process of integration into the global world was further augmented through trade integration. In the 1990s Mexico signed free trade agreements with several Latin American countries, including Costa Rica and Chile, and subsequently with the European Union and Japan. However, the entry into force of NAFTA on 1 January 1994 overshadowed all other trade agreements.

NAFTA goes beyond trade issues: intellectual property, investment, labour regulations and ecological aspects, among others, were included to enhance

economic relations between Canada, the USA and Mexico. Provisions to access NAFTA markets establish a wide range of tariff and non-tariff barriers on commodities and services at the product level. In general, tariff and non-tariff barriers on commodities and services are to be phased out in a maximum of 15 years, starting from 1994 (SECOFI, 1992). Under the NAFTA, to receive preferential treatment, goods must comply with specific rules of origin to be considered North American. The tariffs on manufacturing and consumption goods will gradually decrease, while manufacturing branches such as automobiles, electronics, textiles, garments, agriculture and financial services have specific market access provisions.

NAFTA led Mexico to adopt further tariff reductions, to increased competition and integration into the global economy. Regional trade integration with the USA and Canada represented the last stage of trade liberalisation and the consolidation of the trade liberalisation strategy. Thus, Mexico shifted from having one of the most closed trade regimes to become one of the most open economies to trade in the world (OECD, 1996b).

Economic reforms in Mexico have thus challenged the industry's capacity to respond to and compete in new markets. Increasing competition, adjustment and the search for strategies to increase competitiveness marked the new era of the Mexican productive system. A new openness and economic integration in combination with international production adjustment emerge as mechanisms to promote or discourage industry organisation and consequently, patterns of industrialisation. The transition towards an open economy suggests challenges and adjustments in industrial sector, but what is the outcome for the Mexican case? To give an answer to this question the

next subsections will deal with changes in manufacturing patterns, industry specialisation and the location of industry in Mexico after the opening to trade.

3.4 Transformation of the manufacturing sector: The second wave of industrialisation in Mexico after the opening to trade

3.4.1 Export specialisation transformation

Trade liberalisation did not only mean a greater integration of Mexico into the world economy but it also triggered a second wave of industrialisation in the country. Contrary to what would have been expected, the manufacturing sector acquired more importance in the economy after the economic reforms. Major industrial transformations were observed after liberalisation took place, namely the manufacturing sector acquired more importance in the country's international trade. Manufacturing exports rose from US\$ 5 billion in 1985 to US\$ 145 billion in the year 2000, highlighting an impressive pace of growth since the opening to trade (see Table 3.2).

During the 1982 crisis, Mexican exports accounted for US\$15.5 billion, of which oil exports accounted for nearly 80 per cent of that total. The manufacturing sector represented only 14 per cent of that total, as shown in Table 3.2. The oil sector not only led the exports during the protectionist era but also represented an important source of financing for the ISI strategy during the 1970s and the beginning of the 1980s (Secretaría de Promoción y Presupuesto, 1985).

During the GATT period (1986—1993) the country transformed the composition of its exports: oil exports declined drastically from around 70 per cent of the export

value in 1985 to only 14 per cent at the end of that period, as shown in Table 3.2. On the other hand, the export-led strategy for growth based on manufacturing started to show positive signs with escalating manufacturing exports. Manufacturing exports increased sharply, rising from 23 per cent of total exports in 1985 to 80 per cent in 1993. By the end of the GATT period, total exports had tripled, amounting to US\$51.9 billion.

Table 3.1 Share Composition of Exports in Mexico, 1980–2000

	Total Exports U.S.A. billions	Total Exports %	Oil %	Agricultural %	Mining %	Manufacturing %
1980	15.5	100.0	67.3	9.8	3.3	19.5
1981	20.1	100.0	72.5	7.4	3.4	16.7
1982	21.2	100.0	77.6	5.8	2.4	14.2
1983	22.3	100.0	71.8	5.3	2.3	20.5
1984	24.2	100.0	68.6	6.0	2.2	23.1
1985	21.7	100.0	68.2	6.5	2.4	23.0
1986	16.2	100.0	39.0	13.0	3.2	44.8
1987	20.5	100.0	42.1	7.5	2.8	47.6
1988	20.5	100.0	32.7	8.1	3.2	56.0
1989	22.8	100.0	34.5	7.7	2.6	55.2
1990	26.8	100.0	37.6	8.1	2.3	52.0
1991/1	42.7	100.0	19.1	5.6	1.3	74.0
1992	46.2	100.0	18.0	4.6	0.8	76.7
1993	51.9	100.0	14.3	4.8	0.5	80.3
1994	60.9	100.0	12.2	4.4	0.6	82.8
1995	79.5	100.0	10.6	5.0	0.7	83.7
1996	96.0	100.0	12.1	3.7	0.5	83.7
1997	110.4	100.0	10.3	3.5	0.4	85.8
1998	117.5	100.0	6.1	3.2	0.4	90.3
1999	136.4	100.0	7.3	2.9	0.3	89.5
2000	166.5	100.0	9.8	2.5	0.3	87.3

Note: 1/ From this date the National Statistics Institute (INEGI) changed the methodology and maquiladora activities are taken into account in the total exports.

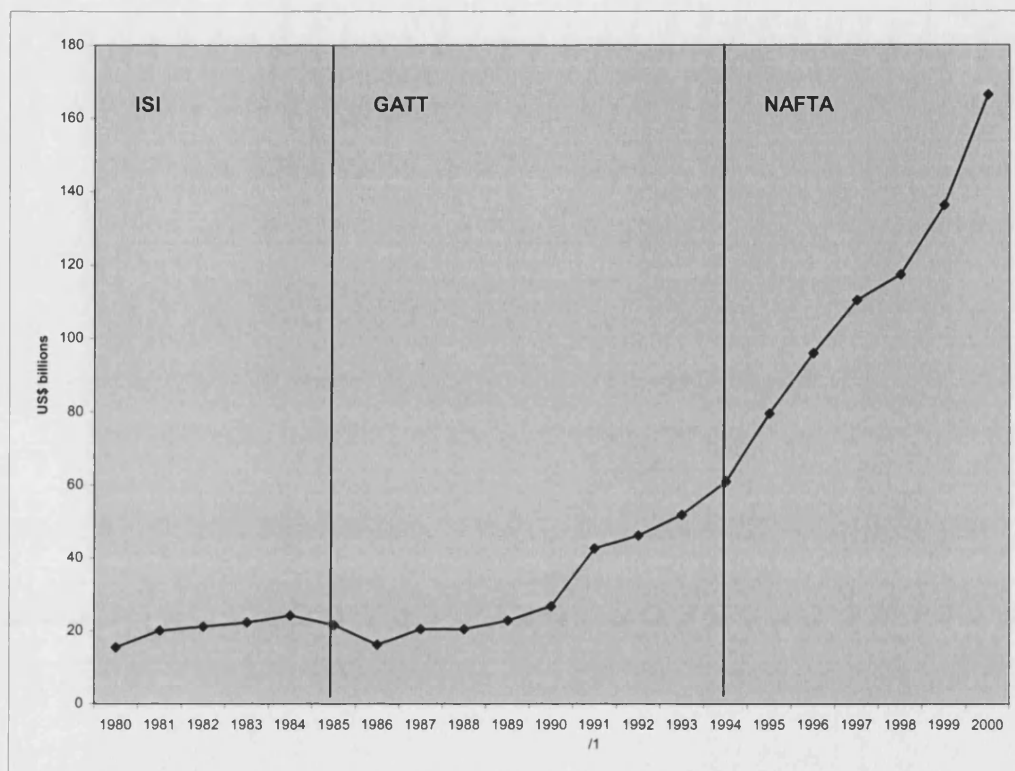
Source: Calculated based on INEGI, Banco de Información Económica, many years.

Total exports grew on average by 18 per cent per year during the 1994–2000 period and exports grew threefold over the same period of time, which consolidated Mexico's position as an export country and the leading exporter in Latin America. Mexican exports in the year 2000 represented 2.6 per cent of world merchandise exports, far greater than the exports from Brazil, Spain or Ireland (WTO, 2001).⁵⁰

The remarkable performance of Mexican exports since the GATT period is illustrated in Figure 3.2. Exports rose remarkably during the period of trade integration. The manufacturing sector grew steadily during the NAFTA period and accounted for nearly 90 per cent of total exports in the year 2000, as shown in Table 3.2. Thus, by the year 2000, Mexico had consolidated the export-led strategy based on manufacturing exports, which accounted for 28 per cent of GDP (Borjas, 2000). Meanwhile, the agricultural and mining sectors reduced even further their already low contribution to total exports after the economic opening. Agricultural exports reached their peak in 1986, accounting for 13 per cent of total exports but then their relative share in the open economy progressively decreased to 2.5 per cent of total exports in the year 2000.

⁵⁰ Share of world merchandise exports is in parenthesis. Portugal (0.4%), Ireland (1.2%), Brazil (0.9%), Argentina (0.4%), Chile (0.3%), Spain (1.8%).

Figure 3.2 From Inward-Looking to Export Growth: Mexican Exports, 1980–2000



Source: Calculated based on INEGI, Sistema de Cuentas Nacionales de México, many years.

A complex set of factors seems to have encouraged Mexican exports. Among the internal factors, the real devaluation of the currency, a drop in real wages, reduction of the size of the domestic market, the trade liberalisation policy and geographical proximity to the US market (Aspe, 1993; Hanson 1994a; Piore & Ruiz-Durán 1998).

As for the external factors, the dynamics of US production and the international

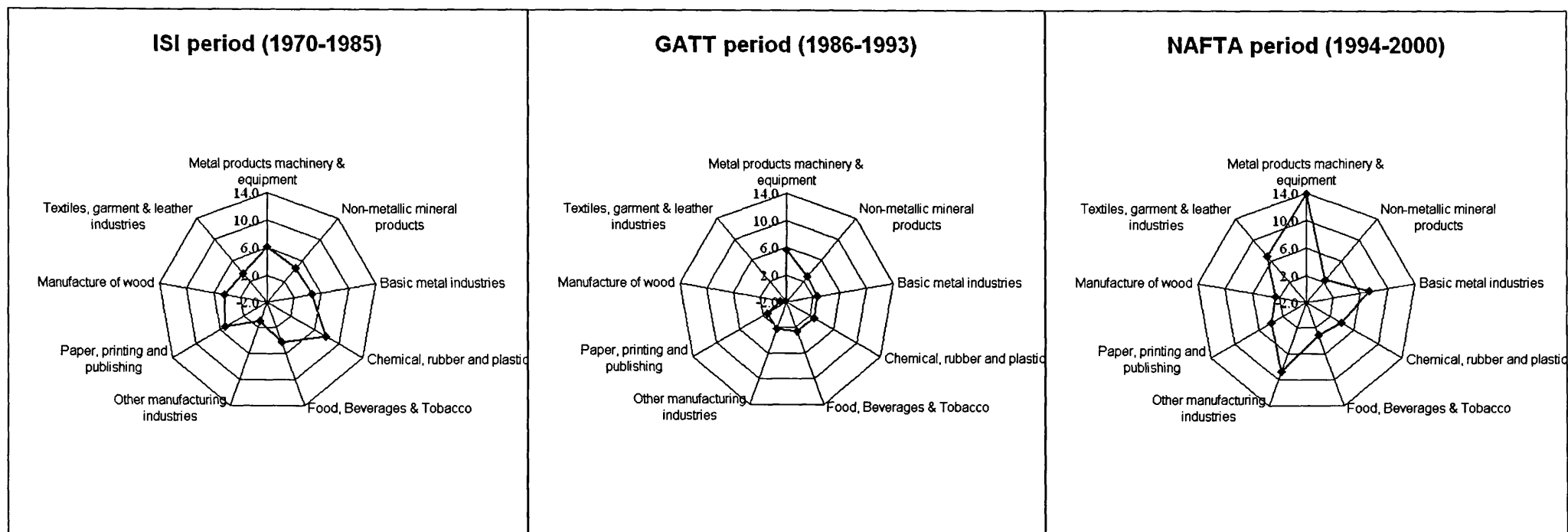
3.4.2 The transformation in industrial specialisation

Another important change that has taken place in the Mexican manufacturing sector after trade liberalisation has been in the pattern of manufacturing specialisation. After a long period with a semi-closed economy, the manufacturing industry changed and reorganised its productive system and experienced deep internal transformations.

New leading sectors have emerged in the Mexican economy according to the trade policy followed. Figure 3.3 shows three radar graphs illustrating Mexican manufacturing specialisation in the ISI, GATT and NAFTA periods, respectively. The axes measure the growth rate of different manufacturing sectors for the respective periods. During the ISI period, oil-related industries — promoted by state-owned firms — were among the most dynamic manufacturing sectors, as can be seen in the first graph in Figure 3.3. In the period between 1970 and 1985, the production of the chemical, rubber and plastic sectors grew at an annual average rate of 7.8 per cent, three percentage points above the manufacturing average (4.8 percent). Basic petrochemical and synthetic resins and chemical fibres were the most dynamic branches, with an annual production growth of 12.3 and 11.8 per cent per annum, respectively over the same period (INEGI, Banco de Información Económica, 2001).

The metal products, machinery and equipment division was the second most dynamic division under protectionism. Large foreign companies were concentrated in these manufacturing branches, mainly in machinery and equipment and transport and communications (Peres-Nuñez, 1990). The paper, printing and publishing sector was the other leading division, growing above the manufacturing average, as shown in Figure 3.3.

Figure 3.3. Manufacturing Specialisation in Different Trade Regimes: Growth of Real Sector Production



Source: Own elaboration based on INEGI, Banco de Información Económica (BIE), many years.

After the opening to trade, the manufacturing sector changed and new dynamic sectors expanded in the open economy. During the GATT period, the manufacturing sector faced strong international competition and a slow-down in domestic demand. The growth rate of the industry declined, hence I consider this period to be a phase of adjustment for the Mexican industry. In this adjustment period, the growth in manufacturing slowed down and grew on average at an annual rate of 2.5 per cent, compared to the annual average of 4.8 per cent during the 1970–1985 period. The oil-related sectors were hit hard by the economic reform and started to decline in the Mexican manufacturing sector soon after the opening to trade, as illustrated in the second graph of Figure 3.3. The traditional sectors (the textile, garment, leather and wood industries), concentrating most of the nationally-owned industry, also declined during this period. These sectors registered negative growth rates, suggesting strong competition and complicated adjustment.

On the other hand, the pattern of manufacturing specialisation displayed early signs of transformation during the GATT period. Sectors with important intra-industry and intra-firm trade soon made their appearance, which also coincided with the international transformation of the industry. Figure 3.3 shows that metal products, machinery and equipment was the only sector to sustain production growth levels comparable to those attained during the ISI period. The motor vehicle industry, an intra-industry and intra-firm trade sector, was in fact the manufacturing branch with the best performance, growing at 15 per cent per annum and accounting for half of total exports in 1987 (Peres-Nuñez, 1990:61). However, it is important to note that a large part of the automobile and microcomputer industries initially were among the

few branches exempt from trade liberalisation in 1986.⁵¹ Even after liberalisation, transnational companies continued to be the largest producers and exporters in these sectors (Ruiz-Durán et al., 1997:6).

The changing pattern of specialisation in the manufacturing sector accelerated further after NAFTA. It was during the NAFTA period (1994–2000) that the manufacturing sector achieved higher growth rates and global industries were consolidated at the forefront of manufacturing activities. The transformation in the specialisation of manufacturing industry after the economic opening is shown in Figure 3.3. Once the dynamic industries of the protective period, the oil-related industries registered one of the lowest growth rates during the NAFTA period. Conversely, global activities, where the in-bond industry and trans-national companies were concentrated, developed at an impressive pace.

From being highly dependent on oil-related industries during ISI, the manufacturing sector was completely transformed into one led by global manufacturing activities. The new dynamic industries in Mexico are peculiarly those where intra-industry and intra-firm trade patterns dominate (Peres-Nuñez, 1990; Dussel-Peters, 2000). Those manufacturing industries are the electrical and electronic equipment and apparatus, automobile and clothing industries (OECD, 1996). In fact, production, exports and employment growth concentrated in these global industries. Exports from these manufacturing branches accounted for around 80 per cent of total Mexican exports in

⁵¹ The automobile industry is in fact the only manufacturing branch that has been favoured in both the protected and open economy. During ISI, this branch not only enjoyed high protection but was also by far the sector most benefited by government financing (Nacional Financiera, 1981). When trade liberalisation took place, this industry experienced a gradual and slow process of liberalisation and the control of imports was effective until the year 2003, within the NAFTA limits (Ruiz-Durán et al., 1997:25).

1999, about 40 per cent of the manufacturing employment and the most dynamic performance in manufacturing production.⁵² Thus, change in the specialisation of the Mexican manufacturing sector is an important outcome of economic liberalisation and trade integration.

3.4.3 The flourishing of international production sharing

During ISI, Mexican industry catered primarily to the domestic market and international production sharing was limited. Greater openness of the economy coincided with an impressive development of international production sharing. The maquila programme is a scheme promoted by the Mexican government, in which subscribed firms (maquila firms) have a permit to temporarily import, without duty, goods for their further processing, transformation, or reparation. The finished or semi-finished products are then re-exported out of Mexico, to the country of origin or to a third country (INEGI, 2001a: 3). The Mexican government launched this industry in May 1965 through the North Border Industrialisation Programme. The Programme was aimed at fostering industrialisation and at promoting exports along the US-Mexico border, taking advantage of a US customs regulation.

The US government encouraged offshore production under lines 806.30 and 807.00 of the US Tariff Schedule, which permit goods that have been sent abroad for processing or assembly to be admitted subject to duty only on the value added abroad. Item 806.30 stems from the Tariff Act of 1930, referring to certain manufactured metal articles, and originally intended to facilitate the production of US metal goods in nearby areas of Canada in the event of breakdowns or

⁵² See Chapter 4, especially Table 4.1 'Manufacturing branches growing above the national average

emergencies in the US plants. Item 807.00, established in 1954, covers imported products assembled abroad using US-made components and allows their duty-free entry as long as the product has not been advanced in value by any process of manufacture while abroad. Of the two provisions, imports under item 807.00 account for about 98 per cent of all imports annually entering the USA under the offshore assembly provision (Clark, 1989).

A combination of the relatively low cost of Mexican labour in comparison to their US counterparts, reduced tariff access to US markets and the modification of the maquila programme in 1972 allowing up to 100 per cent of foreign ownership, gave a push for the development of this industry in Mexico during the 1970s (González-Aréchiga & Barajas-Escamilla, 1989). The industry also benefited from the devaluation of the Mexican peso in 1976 and the support of President López-Portillo, who introduced a promotional programme for the maquila industry, called Alliance for Production, which reduced constraints in establishing maquila firms and financed the construction of industrial parks and infrastructure in the border municipalities (Sklaire, 1989).

It was not until after 1987 that the maquila programme underwent important amendments. Following the trade liberalisation and trade integration important modifications were made to the maquila programme and the Mexican government forcefully promoted the establishment and development of the maquila industry. After the 1986–87 crises, the maquila also became a means for the Mexican government to generate employment and foreign currency for the country.

The Mexican government passed a new maquiladora decree in 1989 (Decreto para el Fomento y Operación de la Industria Maquiladora de Exportación), a wider legal framework for the promotion and operation of the maquila industry (SECOFI, 1989). The 1989 Decree simplified and encouraged devolution of all procedures for this industry. The framework also established new incentives. The decree implemented a one-stop permit procedure for maquila firms at the regional offices of the Trade and Industrial Promotion Ministry (SECOFI) and simplified customs administration. Among the most important incentives were the tariff exemptions on production equipment and on non-direct production equipment such as telecommunications and computing, trailer boxes and containers. The provisions for duty-free imports were also extended to service companies supplying maquiladoras and to subcontractors of maquila plants (Wilson, 1992). Sub-maquila was also established; that is to say, maquila firms were allowed to subcontract firms not registered in the programme.

The 1993 amendment to the Maquila Programme Decree abolished the requirement of an equal foreign exchange balance as of 1994 (SECOFI, 1993). The restriction on sales in the domestic market was lifted in this reform, so that the domestic sales of those firms would be gradually liberalised until the year 2000. In 1994, maquila firms were allowed to sell up to 55 per cent of the value of their annual export sales from the preceding year. Thereafter, that percentage was increased by an additional five per cent per annum. That increase terminated at the end of the year 2000, from which time maquila firms faced no limits regarding domestic sales. In this way, the maquila programme also encouraged competition in the domestic market.

3.4.3.1 Performance of the maquila industry

Despite the fact that the maquila industry was established in 1965, it was only after trade liberalisation that this industry began to have a substantial impact on the Mexican economy. The maquila industry accounted for only 3.8 per cent of national manufacturing employment and 4.8 per cent of Mexican exports in 1980. The devaluation of the peso in 1982 stimulated investment in maquila activities and employment increased from 119,000 employees in 1980 to 217,000 in 1985. Exports rose to 5.6 per cent of total exports, as shown in Table 3.3.

Table 3.2 Evolution of the Maquila Industry in Mexico

	Total maquila firms	Employment	% of total manufacturing employment	% of total exports	Geographical location of maquila employment (% in the Northern industrialised states*)
<i>1965</i>	12	3,107	0.1	0.2	100.0
<i>1970</i>	120	20,327	0.9	2.1	100.0
<i>1975</i>	454	67,241	1.9	3.2	99.3
<i>1980</i>	578	119,546	3.8	4.8	98.1
<i>1985</i>	789	217,544	8.4	5.6	95.2
<i>1993</i>	2,143	526,351	15.9	43.0	91.5
<i>1998</i>	3,130	1,014,023	24.0	46.7	86.3
<i>2000</i>	3,703	1,291,498	31.5	51.2	84.5

Note* They comprise the border states (Baja California, Coahuila, Chihuahua, Nuevo León, Sonora, Tamaulipas) and the northern state of Durango.

Source: calculated based on INEGI, Estadística de la Maquiladora de Exportación, many years; INEGI, Sistema de Cuentas Nacionales de México, many years.

A combination of the international adjustment of industry, trade liberalisation, the low price of labour (as a consequence of the previous Mexican economic crisis) and the promotion of the scheme as an export strategy by the Mexican government⁵³ encouraged the establishment of maquila plants in Mexican territory after 1985 (Carrillo, 1989, 2000). As shown in Table 3.3, the number of maquila firms increased and the maquila industry became a significant sector for the Mexican economy after the opening to trade and particularly after economic integration.

The intense development of the maquila industry after the opening to trade greatly contributed to the Mexican economy: around one in three manufacturing employees are now employed in the maquila industry. Moreover, while maquila exports only constituted six per cent of total Mexican exports in 1985, that figure had risen to over 50 per cent of total exports in the year 2000, as shown in Table 3.3.

The maquila industry also constitutes an important source of foreign exchange revenue for Mexico. Trade balances for the maquila, non-maquila and total manufacturing sectors are shown in Figure 3.4. The maquila sector has a positive trade balance, which has risen constantly the NAFTA period, as shown in Figure 3.4. On the other hand, the non-maquila industry displays a negative trade balance, suggesting a still high dependency on foreign components, which in turn has a negative impact on Mexico's balance of payments. The only time that non-maquila manufacturing was capable of generating a surplus was in 1995 and 1996, as a consequence of the major devaluation of the currency at the end of 1994.

⁵³ Given the low dynamism and capabilities of the national production system the government encouraged the maquila as an export strategy to generate currency and employment in Mexico.

Year	Total manufacturing	Maquila	Non-Maquila
1991	-7,000	4,000	-11,000
1992	-16,000	4,800	-20,800
1993	-13,500	5,500	-18,800
1994	-18,500	6,000	-24,000
1995	7,000	5,000	2,000
1996	6,500	6,500	0
1997	500	9,000	-8,500
1998	-8,000	10,500	-18,500
1999	-5,500	13,500	-19,000
2000	-8,000	18,000	-26,000
2001	-10,000	19,500	-29,000

The maquila industry has become the main source of foreign currency for Mexico after the opening to trade. It represents more than half of total Mexican exports. Table 3.2 shows the boom of maquila exports in the open economy: in 1985 maquila exports accounted for 5.6 per cent of the total exports, a figure that increased dramatically following the opening to trade: by 1993 maquila exports had reached 43 per cent of total exports, increasing to 51 per cent in the year 2000. This figure, in turn, accounted for nearly 60 per cent of total manufacturing exports. Of the remaining 50 per cent of total Mexican exports in the year 2000, 40 per cent

percentage, companies such as General Motors, Ford, Chrysler and Volkswagen account for 18 per cent of total exports (Orozco, 2002). Thus, intra-firm and intra-industry trade are important characteristics of Mexican exports, which are greatly concentrated in a few manufacturing sectors. In fact, 90 per cent of manufacturing exports are concentrated in the sectors of automobile parts, electronics, clothing, plastics and artificial fibres (Borjas, 2000; Peres-Núñez, 1990: 69).

In addition, the maquila industry has also been built around specific sectors after trade liberalisation. The maquila industry in Mexico is classified by the Mexican National Institute of Statistics (INEGI) into 12 manufacturing branches and hundreds of products (INEGI, 2001). However, since the mid-1980s, there are three main economic activities that stand out in terms of production, employment and exports: electronics, auto-parts and clothing. In 1997, only six products dominated 56 per cent of the total maquila exports, being in order of importance: clothing, electric cables of harnesses, computer equipment, auto-parts, spare parts for machinery, and televisions, radios and their parts (Carrillo & Hualde, 2000: 49). In 1990, these industries concentrated 67 per cent of total employment and 68 per cent of the value added, and it was estimated that in the year 2003 they concentrated 77 per cent of total employment and 71 per cent of the value added (Carrillo & Hualde, 2000:46).

So far, I have identified an expansion of the manufacturing sector, a change in its specialisation and the thriving of international production sharing in Mexico. But what about the location of industry? Has it also changed with the dynamism of new industries? These questions become important since the region is generally perceived to be a key player in encouraging competitiveness of manufacturing sectors.

3.4.4 Spatial transformation of industry

The opening to trade also coincided with a change in the spatial organisation of production. The shift from a semi-closed economy to an open economy triggered industrialisation in non-traditional regions. The LPS in which the actual process of production is embedded was also altered and new spatial arrangements emerged in Mexico. The following subsections present a regional manufacturing analysis of the production systems since the times of ISI, in an attempt to evaluate local industry transformations in Mexico after trade liberalisation and economic integration.

3.4.4.1 Industrial concentration during ISI

Before liberalisation took place, the most important industrial and economic sites in Mexico were located around the main population agglomerations. Despite the fact that Mexico is a constitutional federation of 31 states plus the Federal District of Mexico (Mexico City), both manufacturing activity and the population were concentrated in a few sites during the ISI period.

The 1982–1988 National Development Plan highlighted that the industrial process of import substitution industrialisation had greatly contributed to the concentration of the economic activity in a few sites (Poder Ejecutivo Federal, 1983: 93). It was during the ISI period that the three main Mexican manufacturing agglomerations emerged, namely Guadalajara in Jalisco State, Monterrey in Nuevo León and Mexico City and Mexico State (Garza, 1985; Altenburg et al., 1998:19). By the end of the ISI period in 1985 these four states together accounted for 63 per cent of national manufacturing production and for 57 per cent of total manufacturing employment (INEGI, Banco de Información Económica, 2001).

The centre of the country was the main engine of industrial development, production and supply for both local and national markets (Aguilar & Graizbord, 1995). In 1965, 56 per cent of industrial production originated in Mexico City and Mexico State (Nacional Financiera, 1973: 226). Even by 1980, that region accounted for around 50 per cent of national manufacturing production (INEGI, Banco de Información Económica, 2002). Monterrey (the capital of Nuevo León) was oriented towards supplying the northeastern part of the country, while Guadalajara supplied the western part (Garza, 1985). Since a significant part of the production from those regions catered for the main market concentrations, other regions complemented the national markets by producing small quantities for the local/regional markets.

The active role of the state in the economy and the centralisation of policy formulation and administration also boosted the development of industrial regions (Trejo, 1988; OECD, 2002b).⁵⁴ There had been a long tradition of centralisation in Mexico's modern history, but the tendency increased even more during the ISI years (Díaz-Cayeros, 1995: 35). Between 1970 and 1982, the bulk of public investment in economic and social infrastructure was allocated to the most industrialised regions (Palacios, 1985). Nevertheless, public resources were heavily oriented towards the centre of the country and, Mexico City became a pole for attracting fiscal, budgetary, and financial and human resources (Hernández-Laos, 1985).⁵⁵

⁵⁴ Mostly as a result of the authoritarian nature of the political system that prevailed during the twentieth century.

⁵⁵ In fact, the decision-making of private and development banks was greatly centralised in Mexico City (Tamayo-Flores, 1997: 16).

The production centres also attracted the labour force to the new industrial areas, increasing the urban mass. People migrated from rural to industrial areas seeking better living opportunities (Nacional Financiera, 1973). On the other hand, the concentration of population demanded an active role of policies in those sites. The considerable size of these urban concentrations and their political weight led to increased subsidies in infrastructure, services and goods by the state, which in turn attracted more population and entrepreneurs (Trejo-Reyes, 1988). Livas and Krugman (1992) also suggest that the concentration of production in a few urban sites was a by-product of the closed market: producers chose such sites because of the concentration of demand and inputs. Hence, the size of the mega-producer sites was the result of a self-reinforcing process of agglomeration.

3.4.4.2 The local production system in the semi-closed economy

The semi-closed economy created a homogeneous system of industrial organisation across LPSs. During the ISI period, producers and suppliers catered to regional or national markets. Firms controlled all segments of the value chain. In an environment free of international competition, products were sold regardless of quality, design and costs; a situation which encouraged producers not to increase production or to improve productivity and technology. Producers and suppliers in the LPSs took little advantage of ISI to increase competitiveness and attain international standards. As in many developing countries, industries were composed of isolated sets of firms with very limited productive streams due to the lack of competitive suppliers (OECD, 2002b).

On the institutional side, local and regional institutions were not important players in formulating local economic policies. Studies carried out by the OECD in 1997 and 2002 point out that LPSs throughout the country followed centralised nationally-oriented policies lacking an explicit regional dimension, while local policy-making was non-existent (OECD, 1997; OECD, 2002a). Industrial promotion was considered to operate in homogeneous regions and the territory was never considered to be a factor of economic development (Ruiz-Durán, 1997). Severe fiscal constraints also limited most state governments from playing a role in industrial promotion (Tamayo-Flores, 1997). In addition, the ISI strategy followed by the central government, relying heavily on the import of inputs and capital goods, also contributed to weaken the development of local productive linkages.

Nor did local business chambers play a major role in the promotion of the local economy, but rather these developed as an important mechanism of the corporative state in which entrepreneurs were compulsory organised for electoral purposes (Mújica, 1997).⁵⁶ Consequently, local/regional institutions played little part in promoting the competitiveness of LPSs during ISI.

A study from the OECD in 2002 emphasises the low external economies achieved from clustering during the semi-closed economy:

Spill-over effects were limited: nearby rural areas (around the main production centres) benefited from the increasing demand for foodstuffs and raw materials, but further diffusion of development was extremely slow or non-existent. (OECD, 2002a: 3).

⁵⁶ For a study on the evolution of the business chamber in Mexico see Mújica, 1997.

In this sense, the local production systems in Mexico, concentrated in few locations, shared similar features and the same policy, which protected them from competition and also impeded them from taking advantage of clustering. The location of industrial activity was, however, about to change in the open economy.

3.4.4.3 The spatial spread of industry in the open economy

A new wave of industrialisation was seen in Mexico after trade liberalisation and integration. Industry spread to other regions. Location quotients for the Mexican states were calculated and then plotted on a map to measure the degree of manufacturing specialisation of a region with respect to the national average.

Location quotients are traditionally used to measure the specialisation of a region in comparison to the rest of the nation. Data for the analysis come from the Industrial censuses produced by the Mexican National Institute of Statistics (INEGI), which are normally carried out every five years and are the only source of both sectoral and regional data in Mexico. Thus, the Isard method (1956; 1998) was followed to calculate location quotients for the 31 states and Mexico City for the years 1980 and 1998:

$$L_Q = \frac{E_i^J / E^J}{E_i / E}$$

Where:

L_Q = location quotient

E_i^J = employment in manufacturing i in a given state J

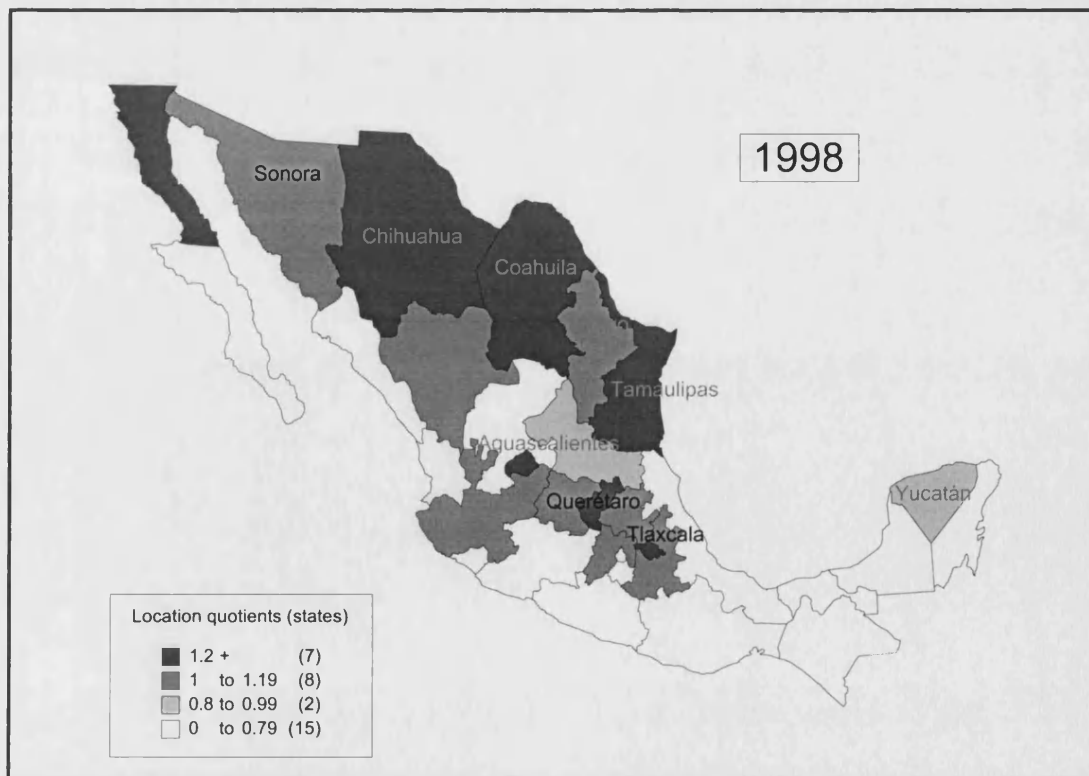
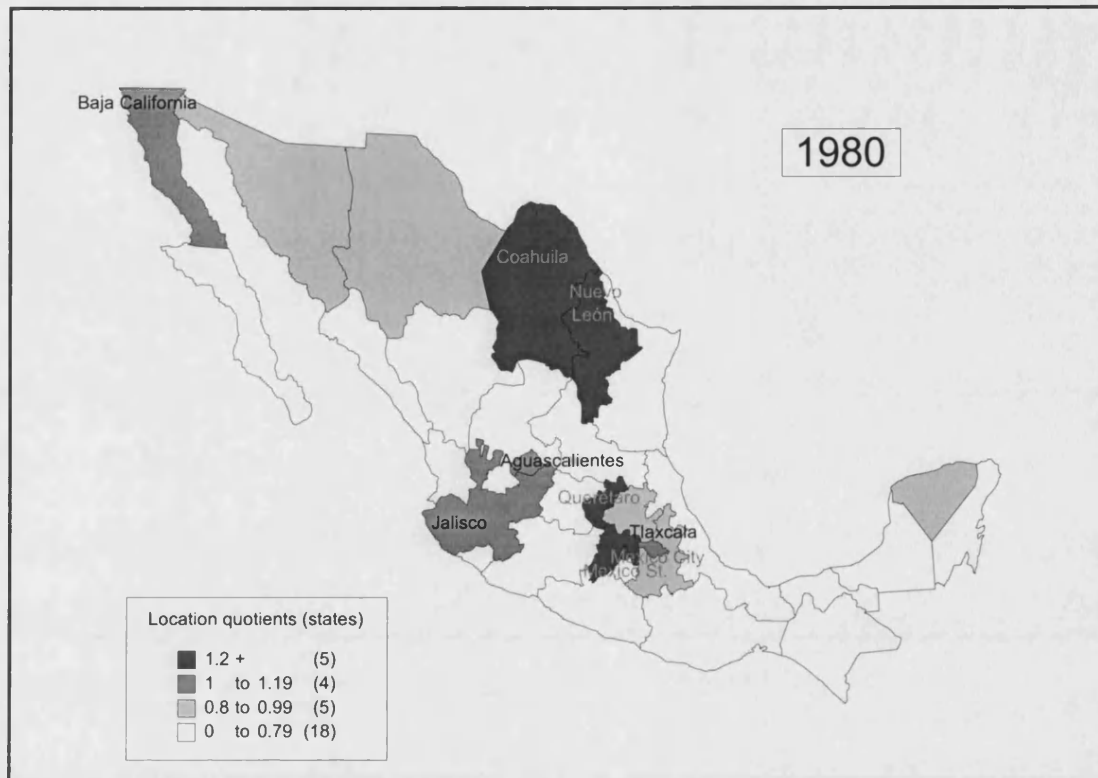
E_i = employment in manufacturing i in the nation

E^J = total employment in state J

E = total employment in the nation

The formula denotes the proportion of industry in the local economy weighted by the national proportion of manufacturing in the economy. The quotients were calculated for 1980 to represent the ISI period and for 1998, using the most recent available regional data. The resulting location quotients were then plotted on a map to provide a clear picture of the spatial specialisation of industry. The dark colours on the maps in Figure 3.5 show those regions with a manufacturing specialisation; that is to say, those states with a coefficient higher than 1. The top map in the Figure represents the manufacturing specialisation map for 1980, while the bottom one corresponds to 1998.

Figure 3.5 Spatial Transformation in Manufacturing Specialisation, 1980–1998



Source: Elaborated based on INEGI, Censos Económicos, various years and, INEGI, Banco de Información Económica, various years.

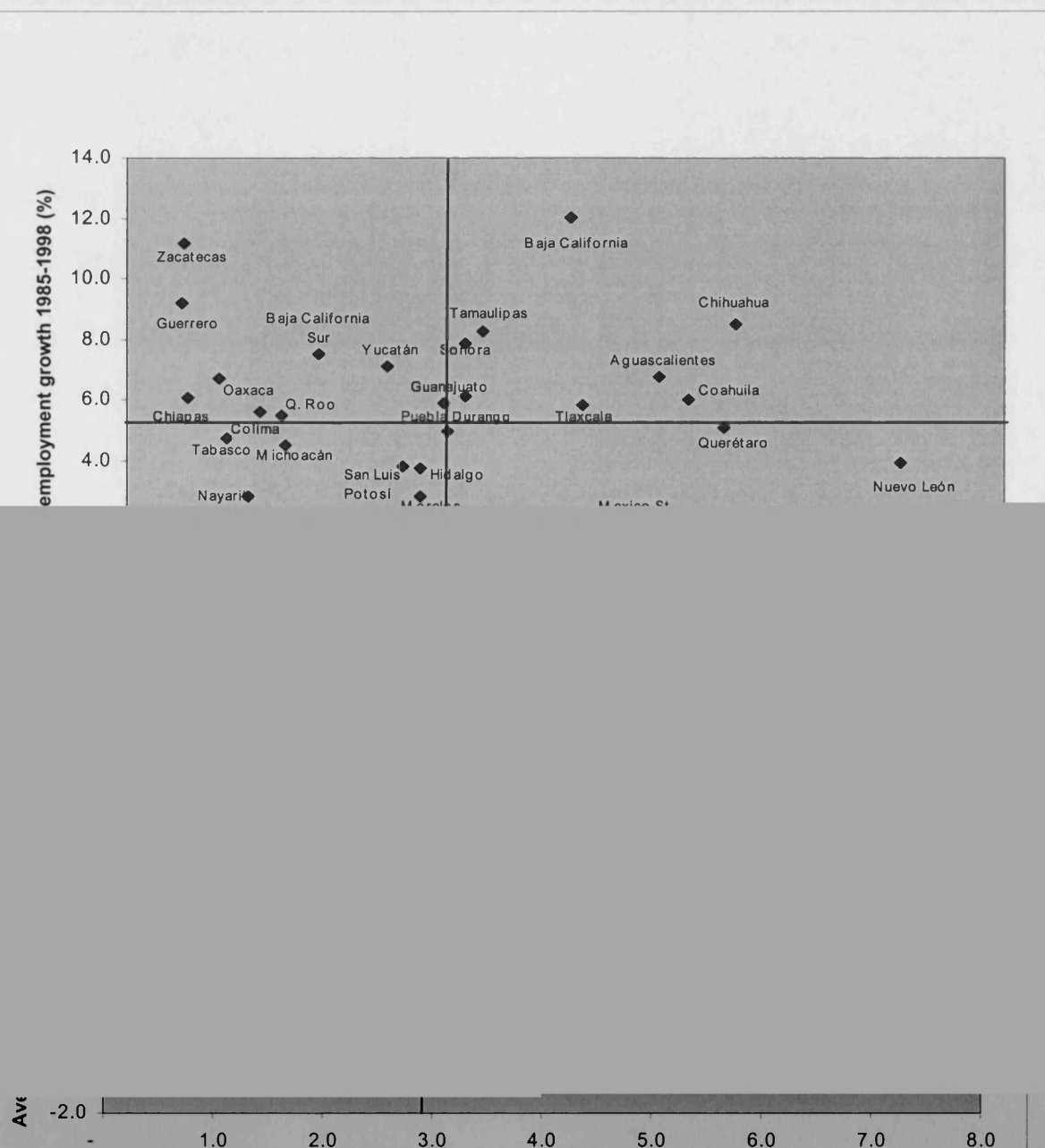
During ISI, only a few areas specialised in manufacturing activities. The mass producers of Mexico City, Mexico State, Jalisco and Nuevo León were among the nine industrial sites shown on the first map of Figure 3.5. The bottom map in the same figure shows that industry broadened after trade integration with a greater concentration along the US border. During this period industry appears to be less spatially concentrated than during the last years of the protective period. Industrial specialisation spread to eight new states, bringing the total to some 16 states specialising in industrial production by 1998. Meanwhile, the mega-producer sites of the protective period diminished their industrial specialisation. In fact, the mass-producing region of Mexico City lost industrial specialisation in the open economy. Thus, the concentration of production in few production sites that characterised the ISI phase changed in the aftermath of liberalisation, giving rise to the spread of industry into other non-traditional regions — mainly to the north of Mexico.

3.4.4.3 The rise and decline of regions

Figure 3.6 shows the scatter plot of the average annual employment growth rates for the period 1985–1998 and the employment level in 1985. The Figure 3.6 shows two major changes in Mexico's regional industry: the declining trend in traditional urban sites and the expansion of industry in non-traditional sites, highly concentrated in the northern region. The scatter plot is divided into four quadrants. The horizontal line denotes the national average employment growth in manufacturing in 1985–1998 and the vertical line the percentage average of manufacturing employees per state in 1985. The mega-producers of ISI show a lower level of manufacturing employment growth over the period. The massive production centres resulting from ISI (i.e. Mexico City, Mexico State, Jalisco and Nuevo León) lost dynamism and declined

after the opening to trade (see also Chamboux-Leroux, 2001). The metropolis of Mexico City and Monterrey, specialised in capital goods and lasting goods, alone lost almost 100,000 manufacturing jobs between 1982 and 1988 (Olivera-Lozano, 1997: 268–69). Similarly, the main metropolitan areas of Mexico experienced a population slowdown, which was parallel to the reorientation of migration flows to small- and medium-sized cities (OECD, 2002a).

Figure 3.6 Changes in Manufacturing Distribution, 1985-1998



The manufacturing industry has continued to under-perform in those states where major state-run projects were established during ISI. The federal government invested heavily in projects considered crucial for the supply of inputs to the protected industry. Some of those projects became the focus for local industrial development during ISI: Oil in Campeche, Tabasco and Veracruz and, the iron and steel industry in Michoacán state (Palacios-Lara, 1988, 1989). Those states have been unable to expand their industrial sector in the open economy, as shown in the lower left quadrant of Figure 3.6. It is important to emphasise the diminishing role of the state in the open economy, as already studied in previous subsections.

Despite the fact that there has been significant industrial expansion in Mexico, there is an uneven spatial distribution of industrial activities. Industry has remained concentrated in two major areas of the country after liberalisation, and development has not been generalised throughout the country. Traditional urban areas and the northern states retained around 70 per cent of the national manufacturing employment in the 1985–1998 period. That is, before and after the opening to trade.

Mexico City, Mexico State, Jalisco and Nuevo León accounted for 54 per cent of manufacturing employment in 1985, with their share declining to 39 per cent of manufacturing employment in 1998. Meanwhile, the employment contribution of the northern states is equal to the losses of the traditional urban areas. The northern region increased its percentage share of employment in the total manufacturing sector, from representing 16 per cent in 1985 to 28 per cent in 1998 (see also de León-Arias, 2000: 37). Thus, the northern states increased their share of participation

and traditional sites lost dynamism, while other regions remained essentially stable in their contribution to national manufacturing (Chamboux-Leroux, 2001: 608).

As pointed out by Thurow (1989), the rise and decline of regions can be attributed to their productive specialisation. The northern states have tended to specialise in production for international markets, while traditional production centres and other regions continued to cater to the national market. Traditional industrial sites and other regions catering to the domestic market have struggled with their region's initial industry mix, which were to a large extent concentrated in the chemical, rubber and plastics sector, as well as the paper, printing and publishing sector, which were among the more sluggish industries after the opening to trade (Olivera-Lozano; 1997). The relocation of automobile plants outside Mexico City and Mexico State has also contributed to the decline of industry in traditional sites (Ruiz-Durán et al., 1997). Additionally, the fall in income levels and local markets broke down the dynamism in traditional industrial regions.

On the other hand, since the economic opening the northern states have specialised in export activities and in the manufacturing divisions of metallic products, machinery and equipment, and the division of textiles and clothing, a sector which has experienced higher growth rates than the rest of manufacturing sectors since economic opening (see previous subsections; see also Ruiz-Durán, 1997, 1999). Thus, the productive specialisation of regions, geographical location and local competitiveness have become important factors in explaining different manufacturing growth levels in Mexican regions.

3.4.5 Trade integration and the new local production system

Economic integration appears to have altered local production in Mexico. International trade regulations between Mexico, Canada and the USA changed with NAFTA. Since the maquila industry was tied to special provisions of US law (i.e. quotas, rules of origin), it was not until NAFTA came into effect that various limitations were gradually lifted. Economic integration provided an opportunity to upgrade the maquila industry in Mexico and new industrial arrangements emerged as a consequence.

3.4.5.1 The maquila enclave before NAFTA

Despite the fact that maquila plants were located around industrial parks and spatially clustered with similar industries,⁵⁷ the maquila industry was unable, at least before NAFTA, to generate linkages in the local economy and to take advantage of clustering (George, 1990; Wilson, 1992; INEGI, 2001). A maquila plant was an entity with no linkages with other agents in the local economy. Interaction and cooperation among maquila firms, universities and local governments and universities to promote the LPS were almost non-existent (González-Aréchiga & Barajas-Escamilla, 1989).

Scarce transfer of technology to the LPS was a hallmark of the maquila industry. An international seminar held in the late-1980s with the participation of the most important scholars on the maquila industry at that time concluded that technological advances were found in the maquila plants but with little effect on the rest of the

production system, representing an important source of waste in this industry (González-Aréchiga & Barajas-Escamilla, 1989 conclusions; see also Trejo- Reyes, 1988).

A maquila plant only had contact with its counterparts in other countries. Maquila firms received the components and pieces, mostly from North American companies, that were then assembled in Mexico to be exported. The production, by its nature of an assembly process, did not require active cooperation between foreign contractors and maquila plants. The parent firm supplied operating systems and processes and then the maquila firms carried out the production. Firms agreed on production requirements and delivery times, but the most important feature for the parent firm was the production capacity of the maquila plants (Chrispin, 1990).

Another major weakness of the maquila industry was its inability to develop contacts with suppliers at the local/national level (González-Aréchiga & Barajas-Escamilla, 1989; George, 1990; Wilson, 1992; Mendiola, 1997). In fact, the low degree of Mexican content in the final products and the inability to integrate with the rest of the economy have been seen as the greatest limitations and failures of the maquila industry. Mexican inputs accounted for only 1.6 per cent of total inputs used in the maquila industry in 1993 (Chrispin, 1990). However, the low degree of Mexican inputs in the maquila production was the consequence of the US regulation. According to Item 807 of the US. Tariff Schedule assembly alone and no further fabrication could be done in the foreign country, otherwise the firms would lose their tax exemption (Anderson, 1990; Wilson, 1992).

⁵⁷ Matamoros and Chihuahua have specialised in auto-parts; Ciudad Juarez and Tijuana in auto-parts and household appliances (Carrillo & Hualde, 2000) and, Gómez Palacio in the clothing industry

As a consequence, the maquila industry lacked important ties at the local/regional level to take advantage of the potential external economies arising from clustering. Low interaction and cooperation of maquila firms within the LPS suggested the idea of an industrial *enclave* unable to strengthen linkages within the LPS. This conception however, was altered after the NAFTA regulation and the industry was strengthened with further support from different levels of government.

3.4.5.2 Establishing the bases for the new LPS in the NAFTA era

The signing of NAFTA implied a two-phase change to the Maquila Programme. The first phase, commenced on 1 January 1994 and ended on 31 December 2000. During this first phase maquila plants continued to benefit from the waiver of Mexican import duties on raw materials while also benefiting from the preferential duty rates on those products that satisfied NAFTA rules of origin. During the second phase, the NAFTA in its Article 303 stipulated that from the beginning of 2001, Mexico is unable to exempt or refund duties for inputs and machinery that originate in a non-NAFTA country and are then exported to the USA or Canada (SECOFI, 1998a). Thus, from January 2001, maquila plants that meet the North American rules of origin enjoy the benefits of regional free trade and, hence, need not be registered in the maquila programme to any further extent, rather they are treated as Mexican firms. Thus, maquila plants became part of the Mexican manufacturing industry in 2001 (Carillo & Hualde, 2000). Consequently, the number of maquila plants is expected to decrease in number as of the year 2001. On the other hand, maquila firms using products not generated in NAFTA countries and catering to the North American market have to pay import tariffs and are subject to quotas on entering the US market (INEGI, 2001).

The integration framework also allows for subcontracting relationships to be developed between US and Mexican firms that are free to purchase inputs in any part of North American countries (Piore & Ruiz-Durán, 1998). These changes encourage production within the NAFTA region and the potential establishment of other productive phases in Mexico. Before the signing of the Agreement, all the production that was generated in Mexican plants had to return to the country of origin or had to go to a third country. In this way, economic integration has affected production and the incentives to locate further production stages along the value chain in Mexico.

Thus, the maquila industry could also perform more value-added activities than the assembly stage. There are recent studies that show signs of this transformation towards higher value-added activities rather than merely assembly activities as during the early years of trade integration (Carrillo & Hualde, 2000, with reference to the electronics and automobile industry, Gereffi & Bair, 2001, and Vera-García, 2001, the clothing industry). In this way, *trade integration has favoured* a major insertion of Mexico into the global production system.

Furthermore, the trade liberalisation has allowed maquila firms to establish linkages with other firms, suppliers, and with local and national institutions. This, in turn, and bearing in mind concentration of production, lays down the framework for the establishment of another type of LPS in Mexico: a LPS specialised in global production sharing. Thus, a new type of industry organisation rooted in the practices of international production sharing emerged with trade integration.

3.4.5.3 The spreading of industry through export-oriented LPSs: Maquila and non-maquila specialisation in Mexican regions

The manufacturing organisation of the northern states is based on a different production system. International production sharing, and to a great extent the in-bond industry, dominates the industrial organisation of the northern industrial regions. Maquila specialisation in the north of Mexico has been associated with the location of national maquila industry in that region (see Mendiola, 1997; Besnainou & Davezies, 1998). However, those studies do not take into account the extent of non-maquila industry existence. That is to say, the proportions of maquila and non-maquila industry are unclear in those regions.

To measure the maquila and non-maquila specialisation within Mexican states, location quotients were calculated for each state. An advantage of using this tool is the possibility it offers to identify regional specialisation and hence local production systems within a given territory. For the purpose of this thesis, I differentiate between maquila and non-maquila production systems.

Since its origins, the maquila industry was established in the northern part of Mexico and mainly in the border states. Initially, the maquila programme operated within just a 20-kilometre strip along the Mexican-US border, but amendments to the Programme in 1972 allowed maquila plants to locate anywhere in the country (Clark, 1989)⁵⁸. Despite this modification, maquila firms continued to locate in the border

⁵⁸ In fact, the Mexican government changed the name of the Border Industrialisation Programme to the Mexican Industrialisation Programme in 1972 (George, 1990). A restriction of this programme was that maquila firms were not allowed to establish in the mega-industrial urban areas of Mexico City, Monterrey and Guadalajara.

area during ISI (Pérez-Gabriel, 1990).⁵⁹ The incipient employment of the maquila industry was concentrated in the northern industrialised states (comprising Durango and the border states), accounting for the bulk of maquila exports and for around 95 per cent of the total maquila employment before trade liberalisation, as shown in Table 3.3.

Since practically all maquila industry was concentrated in the border states during ISI, data for the end of the GATT period and the latest data available were used to show the evolution of maquila specialisation in Mexican regions. Location quotients were calculated following Isard (1956; 1998). Total employment, as described in the previous subsection, was substituted with total manufacturing employment (see Malmberg & Maskell, 1997). This change in turn also explains the weight of the maquila industry in the total manufacturing sector of a region or nation. For that purpose the data on maquila industry were weighted with the economic census, which accounts for data at the branch and regional levels. Thus, the formula for the location quotients is now:

$$L_Q = \frac{E_m^J / E^J}{E_m / E}$$

⁵⁹ In fact, 85 per cent of maquila employment was concentrated in border municipalities in 1986 (González-Arechanga & Barajas-Escamilla, 1989: 20).

Where:

E_m^J = employment in maquila m in a given state J

E_m = employment in maquila m in the nation

E^J = total manufacturing employment in state J

E = total manufacturing employment in the nation

Location quotients are presented in the Table 3.4. The table contains data for 23 states of the total 32 regions, since the National Institute of Statistics (INEGI) does not report data for the remaining nine states because of their non-existent participation in the maquila programme (INEGI, Estadísticas de la Industria Maquiladora de Exportación, 2000). Coefficients higher or equal to 1 show a greater specialisation in maquila than the rest of the country.

Table 3.3 Location Quotients for the Maquila Industry

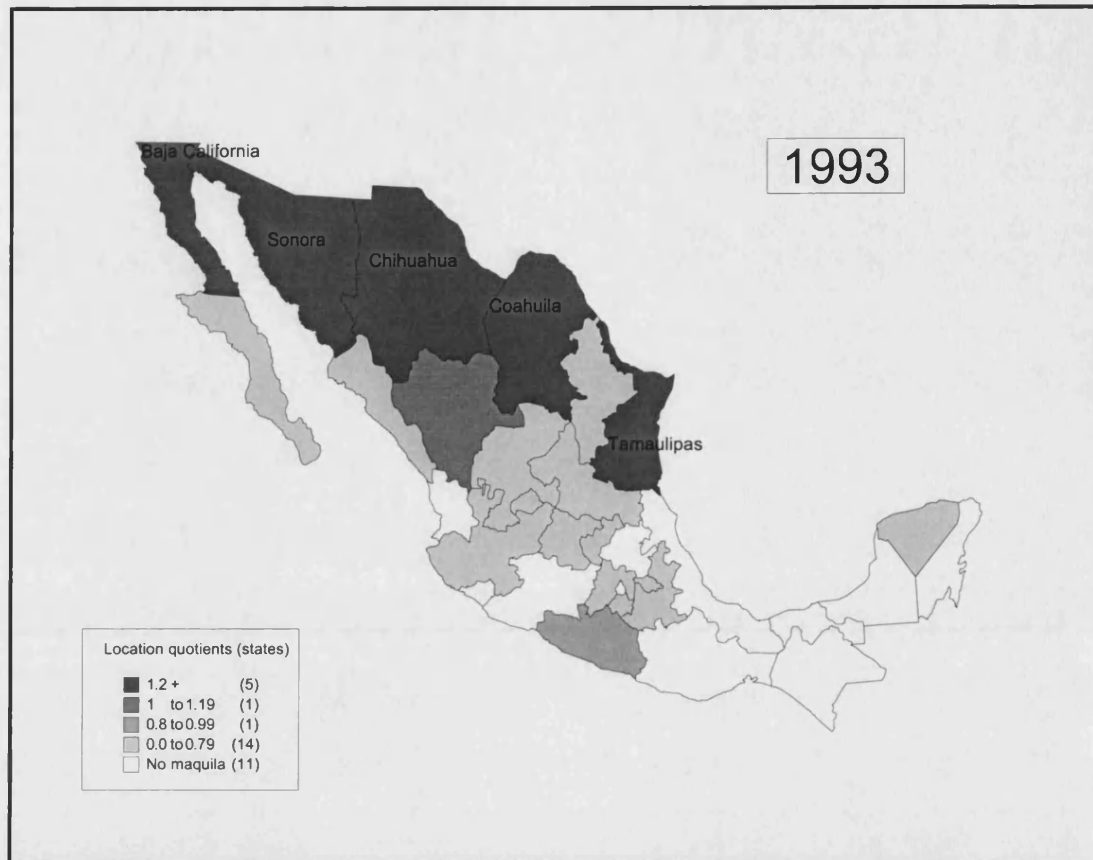
Sorted according to 1998 index

States	1993 Index	1998 Index	1998–1993 Change
Baja California	4.76	3.65	-1.11
Tamaulipas	4.12	3.24	-0.88
Chihuahua	4.53	3.12	-1.41
Sonora	3.12	2.71	-0.41
Coahuila	2.17	1.93	-0.24
Durango	1.04	1.36	0.32
Aguascalientes	0.33	1.20	0.87
Nation	1.00	1.00	0.00
Yucatán	0.60	0.96	0.36
Baja California Sur	0.71	0.95	0.24
Zacatecas	0.28	0.65	0.37
Nuevo León	0.56	0.60	0.04
Tlaxcala	0.13	0.43	0.30
Puebla	0.18	0.43	0.25
Jalisco	0.24	0.37	0.13
San Luis Potosí	0.32	0.31	-0.01
Guerrero	0.80	0.25	-0.55
Querétaro	0.30	0.22	-0.08
Guanajuato	0.29	0.20	-0.09
Morelos	0.06	0.09	0.03
Sinaloa	0.15	0.09	-0.06
Mexico State	0.04	0.08	0.04
Hidalgo	0.00	0.03	0.03
Mexico City	0.00	0.01	0.01

Source: Calculations based on data from INEGI, Banco de Información Económica, various years and, INEGI, Censo Industrial, various years.

Location quotients for the Mexican regions specialising in maquila industry were plotted on maps. The map in Figure 3.7 shows those states specialising in maquila in 1993, a year before trade integration, while Figure 3.8 refers to the latest data available for 1998.

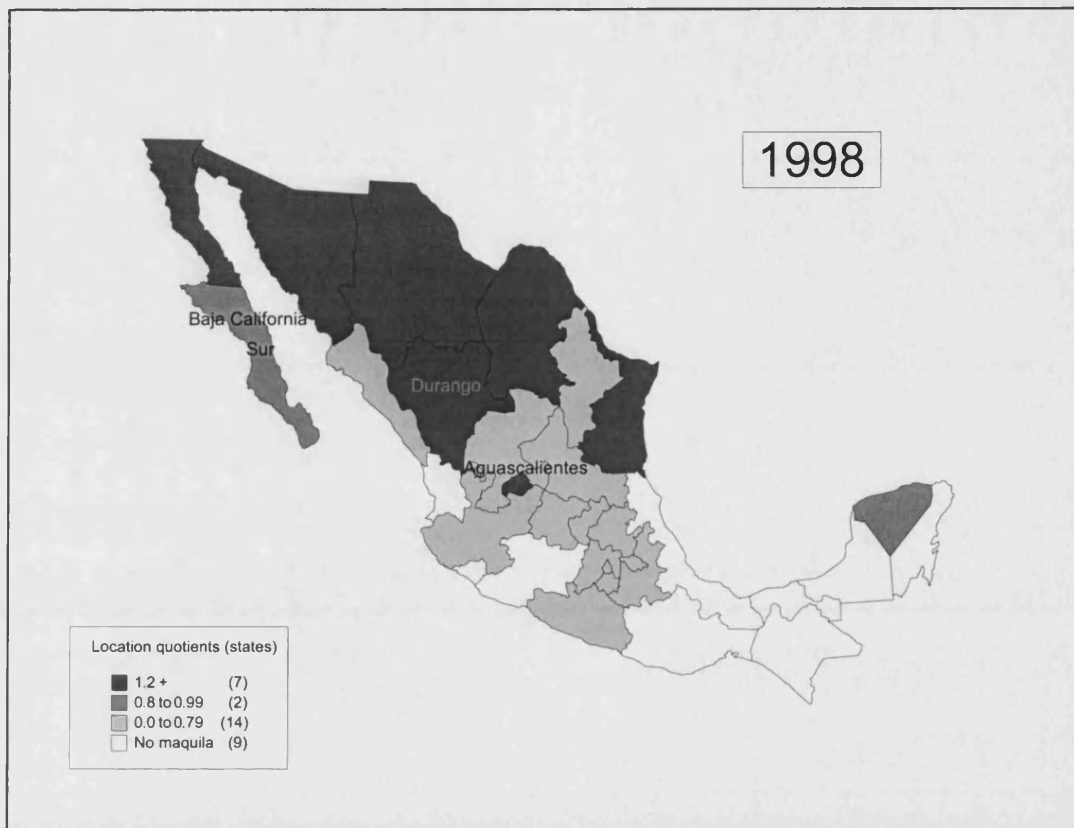
Figure 3.7 Location of Maquila LPSs in the GATT Period



Source: Elaborated based on INEGI, Censos Económicos, 1994 and, INEGI, Banco de Información Económica, 2000.

The data shows that the northern part of the country specialises in maquila activities. However, one of the border states does not specialise in maquila activities. This is state of Nuevo León, where the pattern of industrialisation corresponds to that of traditional sites developed during ISI (de León-Arias, 2000: 37). Nuevo León State accounted for only four per cent of the total maquila employment in the 1985–2000 period. Meanwhile, the other border states together accounted for more than 86 per cent of the maquila employment at the end of the GATT period in 1993 and for around 80 per cent in the year 2000.

Figure 3.8 Location of Maquila LPSs After the Trade Integration



Source: Calculated based on INEGI, Censos Económicos, 2001 and, INEGI, Banco de Información Económica, 2001.

It was not until trade liberalisation and further reforms to the programme that the maquila industry spread noticeably to other non-border municipalities and states (see Table 3.3). During the trade integration period another state joined the group of states specialised in maquila activities. Aguascalientes rapidly specialised in maquila activities only after NAFTA came into effect. This state presented a low location index at the end of the GATT period, but accounted for the highest change during the integration period. Maquila clearly spread to other states as seen in Table 3.4. The low degree of industrialisation during the protective period in non-traditional sites, such as Durango, Baja California and Yucatán, also explains the rapid expansion of

maquila activities in the local industry and hence the higher coefficient for those regions.

The expansion of maquila activities to the interior of the country may also be seen as a response to the amendment of the maquila programme, which from 1994 allowed maquila plants to produce for the Mexican market.⁶⁰ Nevertheless, the northern states (except Nuevo León state) were the regions in which the maquila industry was the most important regional industry, surpassing the non-maquila industry. The maquila industry became the most important form of industrial organisation in the northern region after trade liberalisation and especially after NAFTA came into effect (see also Carrillo 2000; OECD, 2002). Thus, my analysis confirms the suggestions that international production sharing dominates the industrial organisation of the northern regions.

The recent industrialisation of the state of Chihuahua through maquila specialisation illustrates the transformation in the northern regional economy after trade liberalisation. During the protective period, Chihuahua's incipient industry specialised in timber and mining. With the economic changes witnessed at the local level, regional specialisation changed and major industrialisation thrived as a result. From the early 1980s agricultural production decreased and the once state-dominated mining sector virtually disappeared, while manufacturing and services increased their share in that state's GDP (Ampudia-Rueda 2000: 58). During the 1990s the manufacturing sector greatly increased in importance in the state economy and

⁶⁰ By 1998, 38 per cent of the maquila plants, generating 35 per cent of national maquila employment, were located outside the border municipalities with the USA (INEGI, BIE, 1999). Nevertheless, by the year 2000, about 85 per cent of the maquila industry was concentrated in the northern industrialised states, as shown in Table 3.3.

concentrated around two municipalities. The industry developed, as in other northern regions, based on maquila activities (Olivera-Lozano, 1997: 268). The state and local governments were transformed into active entities promoting maquila activities in Chihuahua from the second half of 1980s. Two of the most significant support measures for the maquila industry were the government-granted state fiscal relief and the direct promotion of the development of infrastructure around industrial parks. Between 1980 and 1991, the number of maquila firms in Chihuahua increased by 156 per cent and employment by 276 per cent. The maquila industry in that state developed substantially during the 1990s, specialising in the production of electrical and electronic goods and in auto-parts (Olivera-Lozano, 1997). On the other hand, traditional industries such as the wood and printing, iron and steel industries and the small- and medium-sized firms operating in textiles, construction and food processing originating from ISI faced serious difficulties and their importance in the local economy diminished (Ampudia-Rueda 2000:59).

With regard to spatial impacts, the northern part of Mexico benefited from international production sharing due to its lower transport costs *in comparison to other Mexican regions*.⁶¹ In this context, it is important to emphasise that this region was under-industrialised during ISI and developed its industry only after trade liberalisation and therefore has not experienced major changes in market orientation after trade liberalisation, contrary to what New Economic Geographers suggest for the Mexican case (See Livas & Krugman, 1992; Hanson, 1994a; de León-Arias,

⁶¹ If production costs (in this case wages) were similar across countries, production would remain located close to the market, in this case the USA. Transport costs are important to consider in the context of investments and production sharing among different countries. At the regional level, transport costs are also important for the location of industry within a country.

2000; Chamboux-Leroux, 2001).⁶² Traditional analysis considered de-concentration of production from traditional sites (Mexico City, Mexico State, Jalisco and Nuevo León). Such analysis supposes a change in the market of peripheral regions (directed towards the main concentrations). However they do not take into account the fact that those regions catered largely to local/regional markets and that their industrialisation is linked to international production sharing.⁶³ What it is more relevant here, as pointed out by Thurow (1989), is the productive specialisation and the competitiveness of regions to expand or decline production.

The significant development of the northern part of Mexico also coincided with a restructuring of industry in the USA and with production activities moving to Mexico. Low-production costs and trade liberalisation were essential to US-Mexican production sharing. Proximity to the US market was an important factor that influenced the decision of American firms to engage in offshore assembly (Clement & Jenner, 1989). Thus, the USA became the hub-market for Mexican northern regions (Livas & Krugman, 1992; Hanson, 1994a, 1994b). While on the other side of the border, the maquila programme and labour costs⁶⁴ encouraged the establishment and development of assembly firms.

Outside the shaded regions in Figures 3.7 and 3.8, the non-maquila type of industry remains the main system of local production. As shown in the location quotients, the mass-producing regions of Mexico State and Mexico City have coefficients close to

⁶² In fact, the large Mexican production centres originating from ISI did not change market orientation and continued to cater to the domestic market.

⁶³ It is important to bear in mind that exports are based on production sharing and not on exclusively Mexican-owned production.

⁶⁴ The difference in wages between Mexico and the USA was 9:1 in 1991 (Ampudia-Rueda, 2000: 58).

zero, which shows non-maquila specialisation in these traditional agglomerations originating from ISI. Thus, the growing importance of the maquila industry in regions that were underdeveloped during the ISI period suggests that another form of local production organisation has emerged in Mexico. This level of concentration of maquila in the northern part of Mexico and its boom after economic opening show that those states feature local production systems specialised in export production and maquila activities.

New specialised industrial regions thus followed a different path from the rest of the country and from the traditional industrial sites. Thus, this important change suggests different arrangements in Mexico's LPS in the aftermath of liberalisation. Regions have adjusted to the open economy, which in turn reshaped regional manufacturing industry in Mexico.

3.5 Conclusion: The divide in the Mexican local production system

The analysis carried out in this chapter suggests a second wave of industrialisation in Mexico. More industrialisation in the country, a loss of dynamism in traditional industrial sites and an adjustment in the market orientation of the new industrial regions are the three major features that the local industry organisation experienced since the abandoning of the semi-closed economy. In this sense, the spatial distribution of production has widened and new industrial regions have emerged as important players in the integrated and open economy.

The LPSs have moved away from the homogeneous structure that characterised them during the ISI period. The LPSs catered in the broader sense to the national market

during ISI but after the opening to trade the LPSs followed two main production systems: those producing for national markets and those catering to export markets through international production sharing.⁶⁵ This fragmentation of the LPS has geographical implications in two areas. On the one hand, most northern producers are involved in international production sharing and represent an important source of Mexican exports. On the other hand, producers established during ISI and in the southern regions have significantly continued to cater to the domestic market and are diminishing in terms of performance. In this way, insertion in globalisation also coincided with a transformation at the local level in Mexico. However, the impacts of trade liberalisation and economic integration on the local production systems have not been analysed for the Mexican case. The two types of LPSs may have been transformed, benefited or left behind with the opening to trade. The outcomes, which are based on empirical research, will be presented in the following chapters.

⁶⁵ Although it is necessary to bear in mind that local production systems may have companies producing for the other market or either markets. For the purpose of this research, market orientation of the local production systems is explained when most of the region (firms) are either producing for national or international markets.

CHAPTER 4

The Clothing Industry in Mexico: Global Changes and Local Transformations

4.1 Introduction

As described in the previous chapter, the Mexican manufacturing industry has undergone important transformations since the opening to trade. Trade liberalisation and economic integration coincided with significant adjustments that have affected the productive specialisation and spatial arrangements of production in Mexico. The present chapter will attempt to explain such fundamental changes at the branch level, given the fact that manufacturing branches follow different arrangements and logics of production. Internationalisation, market orientation, production-sharing, sources of innovation, firm size, global and local adjustments are different for every sector, making it difficult to generalise from any analysis of diverse industries in a global world. This chapter will therefore focus on the case of the clothing industry in Mexico. This is one of the country's key industries, which has experienced important adjustments and it is now adapting to the globalisation process.

The Mexican clothing industry is inserted in the logics of production at broader level and cannot be isolated from the international adjustment of this industry. The chapter provides an account of the economic importance of this industry around the world, as well as of the transformations the sector has undergone over the last few decades (i.e. protectionism and international production-sharing). The chapter will then examine

the evolution and transformation of the Mexican clothing industry from the ISI period to the year 2001.

The Mexican clothing industry enjoyed one of the highest levels of industrial protection during ISI but was then capable of adapting in the open economy. In a competitive environment, the Mexican clothing industry developed at an impressive pace. This industry went through one of the most significant transformations in the Mexican manufacturing industry. Production, employment and exports boomed after trade integration. This has positioned the sector among the most dynamic manufacturing sectors in the Mexican economy and has made Mexico one of the most important producers of garments in the world. To reach this point, the clothing industry went through major productive and spatial transformations.

4.2 The clothing industry in the world and in Mexico

4.2.1 The importance of the clothing industry at world level

The clothing industry is a key part of the manufacturing industry around the world and constitutes an important source of income and employment in both developed nations and LDCs. In 1999, this industrial branch accounted for '5.7 percent of the production value of world manufacturing output, 8.3 percent of the value of manufactured goods traded in the world, and more than 14 percent of world employment' (European Commission, 2001: 20).

The garment industry is one of the most globalised industries with growing trade flows and international production networks all over the world (Bonacich et al., 1994: chapter 1; OECD, 1996a). The OECD (1994) pointed out that

globalisation in the clothing industry is seen in the increasing level of import penetration of clothing in national markets (globalisation of supply) and an emerging trend in which the production process is separated between pre-assembly and assembly activities on a global basis. (OECD, 1994: 5)

This industry is made up by a large number of small and medium-sized firms, which are frequently geographically concentrated. Although the clothing industry is highly populated by micro- and small firms, a large proportion of its turnover is generated by a limited number of large firms. In the year 2000, the largest five companies in developed countries accounted for a large share of national clothing turnover: 46 per cent in Germany, 35 per cent in France, 33 per cent in the United Kingdom and 25 per cent in Italy. Meanwhile, four companies in the USA⁶⁶ reported the highest turnover among clothing companies in the world for the same year (European Commission, 2001: 10, 52).

The garment industry has played an important role in the expansion of industrial production in many LDCs. A report prepared for the International Labour Organisation indicates that the success of South Korea, Hong Kong, Singapore and Taiwan in following an export-led strategy based on the clothing and textile sector influenced many countries to follow the same road to industrialisation (Hoffman & Rush, 1988). The greater participation of LDCs in the clothing industry during the 1980s also led to the expansion of the international clothing trade. One important advantage enjoyed by garment producers is the availability of low wage labour, since

⁶⁶ Sara Lee, Levi Strauss Associates, VF Corporation and Calvin Klein.

proficiency can be achieved in a few weeks by workers with little formal education (Bailey & Eicher, 1992). Since the garment production involves low-cost technology and hence relatively low start-up costs in comparison to other industries, many LDCs have developed their clothing production. The sector is now an important source of foreign currency, employment and growth in this group of countries.

4.2.2 The importance of the clothing industry in the Mexican economy

The clothing industry ranks among the most important manufacturing branches in the Mexican economy. Of the 48 branches constituting the Mexican manufacturing industry, the clothing industry was among the top five contributors to manufacturing employment, production and exports in the year 2000, as shown in Table 4.1. The clothing industry is, in fact, the main source of jobs in the manufacturing industry: one in ten manufacturing jobs is created in the clothing industry.⁶⁷

The clothing industry along with a number of other global sectors, namely the automobile, electrical and electronics sectors, have greatly contributed to the performance of the Mexican economy in recent years. In the year 2000, those industries accounted for 66 per cent of total Mexican exports, 43 per cent of manufacturing employment and for 46 per cent of manufacturing production. Those industries are leading the other manufacturing branches, growing above the national average, as shown in Table 4.1.

⁶⁷ The data vary according to the source. The latest industrial census attributes 11 per cent of the total manufacturing employment to this sector, while the Ministry of Trade and Industrial Promotion (SECOFI) reports a contribution of 14.4 per cent (SECOFI, 2000a).

Table 4.1 Manufacturing Branches Growing above the National Average after Trade Liberalisation

	Average annual production growth			% of manufacturing production (2000)	% of manufacturing employment (2000)	% of national exports (2000)
	1970–1985	1986–1993	1994–2000			
Bodywork, engines, parts and accessories for motor vehicles	9.0	3.3	10.4	7.6	9.6	7.7
Clothing	3.3	0.5	9.4	3.5	10.1	5.1
Electrical apparatus and machinery	6.1	2.9	13.9	2.2	2.7	6.9
Electrical equipment and apparatus	6.1	4.3	14.5	2.6	2.8	28.9**
Electrical household appliances	7.2	2.4	9.9	1.2	1.3	
Electronic equipment and apparatus	6.5	5.2	18.4	13.4	8.5	
Iron and steel basic industries	4.8	2.7	8.0	3.3	0.9	2.2
Motor vehicles	9.8	15.1	9.8	7.5	1.5	12.1
Other metal products, except machinery	4.1	1.9	8.0	2.5	3.3	1.6
Other textile industries	7.2	1.4	8.8	1.9	2.8	1.4
<i>Total Manufacturing Industry</i>	<i>4.8</i>	<i>2.5</i>	<i>7.4</i>	<i>100.0</i>	<i>100.0</i>	<i>87.3</i>

Notes: * Main products within the branches. Exports are not classified at the manufacturing branch level in the Mexican statistics

** Breakdown data for individual branches are not available, only at aggregate level.

Source: Calculated based on INEGI, Banco de Información Económica and Sistema de Cuentas Nacionales, various years.

Unlike other dynamic industries, the clothing industry only registered such a remarkable performance in the aftermath of trade integration. Other global industries (electrical, electronics and automobile) registered growth rates above the national manufacturing average even during the protective period, as shown in Table 4.1. However, the growth rates of production in the clothing industry were the lowest among this group during the ISI (1970–1985) and GATT periods (1986–1993). This industry improved dramatically with trade integration and in 1996 Mexico became the world number one exporter of garments to the USA (Bair & Gereffi, 2002).

These figures suggest a different industrial pattern from the rest of the dynamic industries in the open economy.

The clothing industry, unlike other global industries, is heavily dominated by national ownership and characterised by low foreign direct investment (Dussel-Peters et al., 1997; Orozco, 2002). The textile and clothing industries together received only two per cent of the total FDI in Mexico during the 1990s and early 2000s (Werner International, 2002: 23). Moreover, the clothing industry is a labour intensive industry in which LDCs have a comparative advantage and in which investment requirements are relatively lower than in other industries. The move from relative lethargy during the import-substitution period to high levels of dynamism in the aftermath of economic integration makes the clothing industry an interesting case to study.

The advance of the Mexican clothing industry cannot be viewed in isolation from the international adjustment of the industry. The functioning of the industry is no longer centred on the local and national context, as in the times of ISI. With trade liberalisation and integration, the clothing industry has been inserted in the logics of production at a broader level. Competition and transformations of the industry at the international level have become the paradigm for the garment industry in Mexico. Transformations in the garment industry have meant important changes to the organisation of production. In order to understand the new context of Mexican garment producers, the next subsection gives a brief account of the most important changes of the industry at the international level.

4.3 The world context: adjustment in the clothing industry since the 1970s

Until the 1960s developed countries had been both the main consumers and exporters of garments in the world. The industry was challenged by some LDCs that rapidly accelerated their production and exports of clothing in the 1960s. Throughout the 1970s and 1980s, markets in developed countries were dominated by garments from Taiwan, Hong Kong, Singapore and South Korea (Bailey & Eicher, 1992). Their production was almost non-existent before the 1950s (Hoffman & Rush, 1988). By 1980 exports from LDCs accounted for more than 80 per cent of all garments imported in the USA, while a similar trend was noted in Canada, Japan and Western European countries (Hoffman & Rush, 1988). For advanced economies more competition has translated into lower production rates and a lower contribution to trade and employment in the world clothing industry (Bonacich et al., 1994: chapter 1).

Developed countries have experienced significant difficulties in their attempts to match the growth of clothing production in LDCs over the last 20 years. Western Europe lost 40 per cent of its clothing employment over the period 1980–95, experiencing a dramatic decrease in production and employment at the end of the 1990s. From 1995 to 1999, clothing production decreased by 20 per cent, while the employment dropped by 13 per cent. The figures were more dramatic for Belgium, Germany and Austria where jobs in the clothing industry fell by more than 25 per cent during that period (European Commission, 2001: 17). During the 1999-2002 period, employment in the EU textile and clothing industries fell from 2,404,000 to 2,072,000 jobs (Smith et al., 2005:83). Employment also decreased in the USA,

falling from 1,120,400 jobs in 1985 to 633,200 in the year 2000, equivalent to a 56 per cent decrease (Spener et al., 2002: 5).

To respond to such competition and loss of dynamism, the clothing industry in developed countries underwent significant transformations, which in turn, had implications for the industry around the world. The first of these, observed during the 1970s and 1980s, was the trade protectionism measures set in place by the USA and Western European countries, the main markets in the world.⁶⁸ The second, and the most important, transformation that has taken place since the late 1980s has been a restructuring of the industry through outsourcing and international production-sharing (Rush & Hoffman, 1988). The latter contributed significantly to the globalisation of the clothing industry.

Protectionism was institutionalised in the Multi-Fibre Agreement (MFA), which from 1974 governed world trade in textiles and clothing. The MFA consisted of a set of bilateral quotas imposed by developed countries on the exports of textiles and garments originating in LDCs. The tariff-equivalent of MFA quotas was estimated to be around 25 per cent for clothing in OECD countries (OECD, 1994: 25). However, trade liberalisation, adjustment and international production-sharing all served to reverse the protectionist trend in the 1990s. In the Uruguay round of the GATT held in 1994, country members agreed to integrate trade in textiles and garments into the mainstream rules of the World Trade Organisation (WTO)⁶⁹ over a period of ten years. The MFA permitted the use of quotas without compensation, which was

⁶⁸ The USA and the European Union accounted for 55 per cent of world clothing imports (BANCOMEXT, 1998:6).

⁶⁹ The WTO encourages the expansion of international trade through the progressive removal of quotas and tariffs.

contrary to the general prohibition against their use under the GATT. Thus, in order to remove such protectionism, the MFA has been phased out since 1995 and all products will be integrated into the WTO rules by 2005 (WTO, 2002).

The second and most important restructuring of the clothing industry has been linked to international production-sharing. In response to competition, firms in developed countries have decentralised production, thus reshaping the world garment industry⁷⁰. Operating affiliates and subcontracting arrangements have been established with LDCs. Developed countries have established provisions in tariff codes to allow international production-sharing processes. Duties are paid only on the value added created abroad. Developed countries retain innovation and marketing along the production chain, while labour-intensive activities have moved to LDCs (Gereffi, 1994, 1999, 2001; Smith et al., 2005). The use of modern telecommunication networks has also contributed to the splitting of the industry, without sacrificing quality and process efficiency (OECD, 1994: 11).

The countries of the European Union have increased outsourcing to transitional economies in Europe (mainly Poland and Romania) and to countries in the Mediterranean Rim (Morocco and Tunisia) (Graziani, 1998; European Commission, 2001; Begg et al., 2003). The USA developed production outsourcing to Asian countries during the 1980s and, most recently to Mexico, Central America and the Caribbean region (Bonacich, 1994). Meanwhile, dominant garment producers in Hong Kong, South Korea and Taiwan are now subcontracting in low-wage countries such as China, Indonesia and Vietnam (Gereffi, 1999a).

With the expansion of trade liberalisation, the clothing industry has developed international production-sharing and the relocation of production phases between developed countries and LDCs. International production-sharing started to develop in the late 1960s, but accelerated in the 1990s. In the late 1970s, subcontracting arrangements between firms based in developed countries and overseas producers were estimated to account for between 15 and 30 per cent of all international trade in clothing (Hoffman & Rush, 1988: 44). International production-sharing in the USA increased from ten per cent of total clothing imports in 1989, to 14 per cent in 1992, with that figure rising to 20 per cent in the year 2000 (OECD, 1994: 12; Bair & Gereffi, 2002: 32). Arrangements with Mexico and the Caribbean Basin countries accounted for 95 per cent of that total. Estimates from 1994 indicate that more than 50 per cent of the clothing production of suppliers based in Belgium, France, the Netherlands and Germany was manufactured abroad — either in wholly-owned factories, through joint ventures, subcontracting or as outward processing (TCSG, 2000).

However, accurate figures for international production-sharing are difficult to obtain, given the presentation of national accounts. Trade classification systems do not usually take into account separate classification items for clothing parts (OECD, 1994: 19). The extent of trade liberalisation throughout the world (i.e. the removal of quotas and tariff reductions) has affected the outward-processing transactions (OPT) reported in trade statistics. Previously, operators declared such transactions as OPT in order to benefit from lower tariff rates, given the fact that duty was charged only for the value added abroad. However, with new preferential regimes among countries

⁷⁰ Prices are also falling as garments become commodities (The Economist, 2003).

and economic integration, registration of these transactions is no longer necessary, and firms avoid the unnecessary administrative work involved in their reporting (OECD, 1994; European Commission, 2001; Smith, 2004).

Arrangements among North American countries in recent years represented a special case in international production-sharing. NAFTA altered traditional regulations between Mexico and the USA for the international production-sharing of garments. As analysed in the previous chapter, under the new trade regulations, tariffs and quotas were eliminated for garments produced with 100 per cent North American content. This in turn, allowed the transfer of different stages of the production process among member countries, without those activities necessarily being reported as international production-sharing activities. This represents a further step in international trade and in the arrangements of the international clothing industry. In the case of Mexico it has further implications in terms of competition and the organisation and location of production. These implications will be analysed in the following subsections and in subsequent chapters of this thesis. The Mexican clothing industry is now integrated into the global industry and is directly affected by international changes in the industry.

In a global industry, international competition calls for constant advances in production in order to remain competitive in national and international markets. New paradigms have been established. The clothing sector has also introduced new practices and innovations in industry. The traditional two-season cycle has broken down (Piore & Sabel, 1984). Changes in design, fabric and colour are made more frequently to satisfy different strata of demand. This, in turn, involves short lead

times, short runs, low stocks and a quick response to demand (TCSG, 2000). Competition has widened and new agents have emerged in the garment industry. The OECD (1994: 10) estimated that the order delivery cycle for land delivery orders has been reduced from a typical 15–22 week period to a 2–8 week period. Retailers are now involved in practices geared towards holding the right stocks to meet customer demand, hence the importance of geographical proximity to production sites. Thus, production proximity has become vital in order to quickly respond to changes in market demand and to ease the management of the value chain in a global industry. In view of this international context, the following subsections explore the performance and transformations of the Mexican clothing industry from ISI to the NAFTA period.

4.4. The clothing industry in Mexico from ISI to trade integration

4.4.1 From protectionism to sector adjustment

The Mexican clothing industry developed in an environment protected from international competition. The organisation of production, market orientation, quality and spatial concentration followed the patterns of a self-driven economy.

The Mexican clothing industry during ISI was characterised by excessive protection. The sector had one of the highest protection rates and lowest production growth rates in the manufacturing industry. In 1979 the effective tariff protection⁷¹ of garments was around 2.5 times greater than the average for the manufacturing industry, as

presented in Table 4.2. The average production growth rate in the clothing industry during the 1970–1985 period was 3.3 per cent, 1.5 percentage points below the manufacturing average (see Table 4.1). Mexican producers had a captive market and significant benefits that ended up limiting the competitiveness of firms, as shown in the previous chapter. These figures suggest that high protectionism encouraged oligopoly profits via prices rather than via increased production. The President of the National Chamber of the Clothing Industry pointed out that under protectionism, competition was inexistent and all garments were sold regardless of price and quality (West, 2000: 2).

The situation started to change for garment producers with the demise of the domestic market as a consequence of increased inflation and the loss of the population's purchasing power, following the 1982 crisis. Later, the clothing industry was faced with a crossroads when previous protection was eliminated with trade liberalisation. Import licences as a percentage of domestic clothing production decreased from 99.1 per cent in June 1985 to 81.4 per cent in December of that same year, and they were subsequently eliminated in 1988, as shown in Table 4.2 (see also Suárez-Aguilar & Rivera-Ríos, 1994: 137). The production-weighted average tariffs fell from 49.8 per cent in June 1985 to 39.9 per cent in June 1987, and then to the maximum allowed tariff of 20 per cent in December 1987 (Hanson, 1994b: 12).

⁷¹ The effective tariff protection measures the way in which the tariff structure protects the value added in a given branch. This concept takes into account the net effect of the tariff burden of both the finished good and inputs.

Table 4.2 Protectionism and Liberalisation in the Garment Industry

Effective tariff protection in the garment industry						
	1979		1990		1994	
Garment industry	156.08		20.16		18.80	
Manufacturing industry average	66.32		14.53		9.45	

National protected production through import licence (percentages)						
	1985 Jun.	1985 Dec.	1986	1987	1988	1989
Garment Industry	99.1	81.4	81.4	52.9	0	0

Source: elaborated based on 1) Clavijo & Valdivieso, 1994: 41 and; 2) Sánchez-Ugarte et al. 1994: 124.

When Mexico became integrated into the world economy, the rules that governed its clothing market changed. The productive sector had to adjust in order to compete in international markets. The GATT period was difficult for most entrepreneurs, who lacked international exposure and the basis for exporting (Trejo-Reyes, 1988). The clothing industry plunged into a period of stagnation. Productive utilisation in the industry fell to 40 per cent of its installed capacity in 1987 (Martínez-Aznárez, 1997: 61). The annual average production growth of the clothing industry was one of the lowest in Mexican industry in the 1986–1993 period: it fell to 0.5 per cent per annum, compared to the annual average growth of 2.5 per cent for manufacturing as a whole over the same period, as shown in Table 4.1.

Faced with overwhelming competition, garment firms lost their market share: demand for Mexican products decreased when customers were given the alternative to select imported products of better quality, design and price. Clothing imports

increased from US\$ 48.9 million in 1986 to US\$ 441.6 million in 1991 (see Table 4.3). This trend continued with imports in the textiles, clothing and footwear sector increasing by 87 per cent over the 1991–1994 period. Taking into account smuggling activities and imports of second hand goods, the real increase of imports was estimated at 175 per cent for the aforementioned period. Exports also grew during that period, but by only 76 per cent (Dussel et al., 1997:28).

The clothing industry, as with the rest of industry, had to adjust in order to stay competitive not only in an open and competitive market but also in an era of high inflation that increased production costs, decreased profits and adjusted prices in line with competing imported products. The Mexican clothing industry faced a period of natural selection in the market. The GATT period was important for the restructuring of the clothing industry; surviving firms improved or changed their strategies to attain a more competitive position in the market. The outlook for the industry started to change when the macroeconomic situation improved at the beginning of the 1990s. The performance of the clothing industry was changing with trade integration. It was, in fact, during the NAFTA era that the garment industry registered one of the most impressive performances within the Mexican economy.

4.4.2 Trade integration and booming production

The Mexican clothing industry boomed in the era of trade integration. The industry underwent major developments in a short period of time. Clothing production grew on average by 9.4 per cent per annum during the 1994–2000 period, two percentage points higher than the national average, as shown in Table 4.1. The most remarkable feature of the clothing industry is its striking export performance, which consolidated

the clothing industry as one of the main export branches in the entire economy, as shown in Table 4.1. Clothing exports grew at a resounding average rate of 32 per cent per annum in the 1994–2001 period; while imports increased annually by an average of 16 per cent over the same period of time. Moreover, this sector was consolidated as the main source of employment in the entire Mexican industry.

By the year 2000, clothing exports accounted for five per cent of total Mexican exports, more than the double the total for agricultural exports (see Table 4.1). Furthermore, the clothing industry is one of the few branches to have maintained a constant and growing trade surplus since trade integration. International trade in the clothing industry for the 1980–2001 period is shown in Table 4.3. Despite the existence of short-term incentives to exports such as the devaluation of the currency in periods of crises (1986–87 and 1995), the clothing industry seems to have developed its own dynamics to compete internationally as shown in the statistics. This shows the *great miracle* of the garment industry. In a relative short period of time, the sector was able to compete effectively in external markets.

Table 4.3 Exports and Imports of Garments in Mexico, 1980–2001

Years	Exports ^b	Imports ^b	Trade result
	(thousands of US\$)		
1980	36,650	129,639	-92,989
1981	35,250	147,773	-112,523
1982	18,393	143,587	-125,194
1983	27,097	18,477	8,620
1984	44,610	34,628	9,982
1985	43,149	54,135	-10,986
1986	71,004	48,890	22,114
1987	86,785	43,696	43,089
1988	55,735	41,111	14,624
1989	75,174	269,190	-194,016
1990	71,458	357,124	-285,666
1991	92,739	441,636	-348,897
1992a	822,533	1,017,591	-195,058
1993	998,474	1,187,635	-189,161
1994	1,499,969	1,696,595	-196,626
1995	2,069,213	1,488,716	580,497
1996	3,558,282	2,311,983	1,246,299
1997	5,411,513	3,198,370	2,213,143
1998	6,405,555	3,598,285	2,807,270
1999	7,548,558	3,516,681	4,031,878
2000	8,426,602	3,467,736	4,958,865
2001	7,848,793	3,328,715	4,520,078

a) From 1992 onwards, the data include maquila-related activities. The INEGI changed methodology and the maquila industry is now included in the statistics of foreign trade. Thus, data are not comparable with previous years.

b) Data refer to chapters 61 (Items of clothing knitted or crocheted) and 62 (Items of clothing not knitted or crocheted) of the Harmonised Tariff Schedule.

Source: INEGI, Anuario Estadístico del Comercio Exterior, many years.

4.4.3 Mexico at the forefront of world clothing producers

The remarkable performance of the clothing industry led Mexico to become one of the top exporters of garments in the world. The pace of export growth in clothing was the highest in the world during the 1990s. In the year 2000, Mexico was the fourth largest exporter of garments in the world, behind Hong Kong, China and Italy, as shown in Table 4.4. In just ten years Mexico increased its share in world exports of clothing from 0.5 per cent in 1990 to 4.4 per cent in 2000. This increase is significant given the fact that Mexico was not a renowned international producer of

garments during the 1980s. Reaching this level suggests competitive and international standards in the Mexican clothing industry, at a time when more advanced economies were losing ground in the international clothing context.

Table 4.4 Leading World Exporters of Clothing

Exporters	Value	Share of world exports		
		1980	1990	2000
Hong Kong	24.22	-	14.3	12.2
China ^a	36.07	4.0	9.0	18.1
Italy	13.22	11.3	11.0	6.6
Mexico ^a	8.70	0.0	0.5	4.4
United States	8.65	3.1	2.4	4.3
Germany	6.84	7.1	7.3	3.4
Turkey	6.53	0.3	3.1	3.3
India	5.15	1.5	2.3	2.8
France	5.43	5.7	4.3	2.7
Rep. of Korea	5.03	7.3	7.3	2.5
Indonesia	4.73	0.2	1.5	2.4
United Kingdom	4.11	4.6	2.8	2.1
Thailand	3.95	0.7	2.6	2.0

^a Includes significant shipments through processing zones.

Source: WTO, International Trade Statistics, 2001

4.5 Transformations in Mexican clothing organisation

4.5.1 The divide in firm-size

Staying competitive in a new open market has not been easy for an industry used to a high degree of protectionism. Adjustments in the clothing industry were necessary after trade liberalisation and trade integration. The industry underwent three

important transformations in its organisation: firm size rearrangements, market orientation and regional transformations.

The organisation of the clothing industry in terms of firm size has changed in recent years.⁷² The numerous micro and small firms that played an important role during the closed economy are now losing dynamism. The Mexican clothing industry is still populated by micro-enterprises, which since 1980 have made up around 90 per cent of the total clothing firms, as shown in Table 4.5. In fact, very small firms (with up to five employees) account for 75 per cent of the total number of firms in the industry as a whole. The most striking feature of the micro- and small enterprises is, however, the significant reduction of their contribution to employment and production.

Table 4.5 Firms, Employment and Production by Firm Size in the Clothing Industry (percentage of the total in 1980, 1993 and 1998)

	Number of firms (%)			Employment (%)			Production (%)		
	1980	1993	1998	1980	1993	1998	1980	1993	1998
Micro	91.7	91.2	87.0	28.6	22.5	13.4	21.9	18.6	12.6
0-5 Employees	78.1	82.3	75.4	12.8	13.9	7.5	6.0	7.7	5.9
6-15 employees	13.6	8.9	11.6	15.9	8.6	5.9	15.9	10.9	6.7
Small									
16-100 employees	6.6	6.9	9.2	31.0	29.0	20.4	31.3	35.8	22.0
Medium									
101-250 employees	1.2	1.3	2.2	16.5	21.0	19.6	16.1	20.7	16.4
Large									
251+ employees	0.5	0.6	1.5	23.9	27.5	46.6	30.6	24.9	49.0
<i>Total</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>
	<i>10,844</i>	<i>22,560</i>	<i>25,437</i>	<i>114,500</i>	<i>209,623</i>	<i>457,101</i>			

Source: Calculated based on INEGI, Censo Industrial, 1980, 1993 and 2000.

⁷² Firm size in Mexico is classified by the Ministry of Trade and Industrial Promotion by the number of employees as follows: Micro-enterprises are those with up to 15 employees, small firms between 16 and 100, medium firms are those employing between 101 and 250, while large firms are those with more than 250 employees.

Micro-enterprises generated almost 30 per cent of employment and 22 per cent of clothing production in 1980 during the final stages of ISI. According to the latest industrial census published in year 2001 and referring to 1998, the employment and production contribution of micro-enterprises had fallen to 13 percent, as shown in Table 4.5. The contribution of small firms to the clothing industry also decreased to around ten per cent in terms of both employment and production. Thus, the contribution of micro- and small firms combined to clothing employment and production by 25 and 20 per cent points, respectively. On the other hand, a number of large firms have achieved growing importance in a clothing industry that traditionally has been dominated by micro- and small enterprises.

An important feature of the restructuring of the clothing industry in Mexico was the major role played by large firms since NAFTA. The losses of micro and small-scale firms have been counterbalanced by gains of large firms. In the 1980–1998 period, large firms increased their contribution to clothing employment and production by 23 and 18 percentage points, respectively. Although they represented only 1.5 per cent of total clothing establishments, in 1998 large firms accounted for almost 50 per cent of both the total employment and production in the Mexican garment industry. Meanwhile, medium-size firms have maintained their relative contribution to the clothing industry since the signing of NAFTA, as shown in Table 4.5.

It seems that small firms have struggled to find the right strategies to allow them to maintain momentum in the market, while large firms appear to have adapted better to the new context. The transformation in contribution to employment and production by firm size also suggests that the clothing industry is polarised between large firms

and micro- and small enterprises, in which the size of the industry seems to matter in order to compete in an economy open to trade. In this way, the analysis of firm composition in the Mexican clothing industry shows a transformation in the industry, with the importance of micro- and small firms declining, in contrast to the dynamism of large-scale firms. The transformation of firm size is also related to the market orientation of firms, as will be presented in the next subsection.

4.5.2 Expansion of international production-sharing

Trade liberalisation, NAFTA and the restructuring of the US clothing industry opened up the possibility of export markets and of the integration of Mexican firms into global production systems. Although the international sharing of production had been encouraged since the introduction of the maquila system in 1963, this process developed rapidly once trade restrictions decreased or were removed after trade liberalisation and integration. Soon after the liberalisation of trade in Mexico, the Mexican and US governments promoted the development of the production-sharing in the clothing production. The Special Regime set up in the late 1980s established that the assembly of garments with US-manufactured fabric received further special treatment with regard to import quotas once the garments re-entered the USA (CEPAL, 1996). To take advantage of this concession, the Mexican government enacted a Decree to promote the establishment and operation of the maquila industry in 1989 (SECOFI, 1989).⁷³

⁷³ The incentives covered tariff exemptions and reductions on imports of inputs and production equipment, as well as non-direct production equipment such as telecommunications and computing, trailer boxes and containers.

Trade liberalisation and particularly trade integration created the framework for the development and integration of Mexican producers in international production-sharing. NAFTA opened up the possibility of upgrading along the global production chain in activities that were previously limited by trade barriers. Trade restrictions on international production processes were gradually eliminated by NAFTA. Before trade liberalisation, Item 807 (9802.00.80 in the Harmonised Tariff Schedule of the USA) allowed concessions only in the assembly of garments. No further production process for adding greater value was allowed, otherwise the garment would lose its concession when entering the USA. Once the NAFTA came into effect in 1994, quotas on garments manufactured in Mexico with fabric made and cut in the USA were eliminated and the 20 per cent duty calculated on the value added was gradually lifted (CEPAL, 1996). The restrictions on production processes of higher value added (i.e. cutting, laundering, finishing, labelling) set as part of the Multi Fibre Agreement were lifted once NAFTA came into force.

As of January 2000, duties and quotas were eliminated on yarn-dyed fabric formed, made or cut in Mexico for any garment exported to the USA (Kessler, 1999). Thus, of the 111 categories of existing USA quotas before NAFTA, 94 per cent were eliminated in the year 2000 and the remaining four categories were removed in 2003; while trade restrictions in Canada were all lifted in 2001 (BANCOMEXT, 1999: 15, 16). In this way, the maquila and non-maquila exports that met the rules of origin could take advantage of NAFTA benefits from the year 2000. This situation, in turn, affected the reporting of production-sharing under Item 807 and the maquila system. As the schedule of tariff reduction was met, a larger number of products ceased to benefit from concessions under Item 807 and began to take full advantage of the

Agreement (CEPAL, 1996). Thus, US imports of Item 807 from Mexico decreased once NAFTA came into effect: they accounted for 92 per cent of imports in 1994, 81 per cent in 1997, 59 per cent in 2000 and 50 per cent in 2001 (USITC, 2002).⁷⁴. On the other hand, it is now more difficult to trace international production networks.

Under this framework, the development of the maquila industry in Mexico has been impressive since the opening to trade and more significantly since economic integration. The maquila industry in clothing accounted for 108 firms, generating 21,473 jobs in 1985, as shown in Table 4.6. By 1993, their numbers had swelled to 398 firms, which generated 75,296 jobs. International production-sharing boomed after trade integration. The number of employees increased 3.5 times in the 1993–2000 period reaching 281,866 employees in 2000. The number of employees working in maquila activities in the clothing sector rose from 36 per cent in 1993 to 59 per cent in 2000, as shown in Table 4.6.

The size of maquila firms also increased after the opening to trade. Considering the average employment level per firm, it was found that the average size of maquila firms grew from 157 employees in 1980 to 189 in 1993, rising to 259 employees by the year 2000. Moreover, clothing is one of the most important sectors in the maquila industry. In 1999, the clothing maquila plants concentrated mainly in the northern states and represented 30 per cent of total maquila plants and 22 per cent of total employees in the maquila industry (SECOFI, 2000b: 4).

⁷⁴ Some academics (Bair, 2001; Bair & Gereffi, 2002) mention that the remaining per cent is through a more integrated production system. That is to say that maquila firms have been able to upgrade production along the value chain and are adding other activities such as cutting, laundering or even using Mexican fabrics. However, this has been misunderstood because the remaining firms using Item 807 are those firms that are still using import components or materials. Meanwhile, those firms that have left Item 807 are those producing with materials and equipment produced in the North American

Table 4.6 Evolution of the Clothing Maquila Industry

	Total maquila firms	Employment	% of total manufacturing employment	% of total exports	Geographical location of maquila employment (% in traditional maquila sites*)
1980	112	17,570	15.3	90.0	-
1985	108	21,473	20.2	90.0	-
1988	201	34,707	26.2	92.0	89.8**
1993	398	75,296	35.9	89.1	74.9
1998	837	205,343	44.9	71.1	60.4
2000	1,088	281,866	59.0	69.4	54.5

* This comprises the border states (Baja California, Coahuila, Chihuahua, Sonora, Tamaulipas) and, the northern state of Durango.

** Refers to 1990.

Source: calculated based on INEGI, Estadísticas de la Industrial Maquiladora de Exportación; INEGI, Anuario Estadístico del Comercio Exterior and; INEGI, Sistema de Cuentas Nacionales de México, many years.

4.5.3 Greater trade integration with the USA after NAFTA

Trade integration accelerated Mexico's international trade with its NAFTA partners. The US market became the main export market for garments originating in Mexico. The USA is, in fact, the most important market in the world, accounting for nearly one third of world imports in the year 2000 (WTO, 2002). In 1990, Hong Kong, China and Taiwan were the main suppliers of garments to the USA, accounting for 16.8, 13.9 and 9.8 per cent, respectively. Meanwhile, Mexico accounted for around 2.5 per cent of US imports during the 1975–1993 period (CEPAL, 1987; Bailey & Eicher, 1992) but its share increased considerably after NAFTA came into effect.

Countries. In this way, the difference is greater regional productive integration among the countries rather than a measurement of Mexican upgrading along the production value chain.

Mexico exported 65 per cent of its total exports to the USA in 1990, a figure which rose to around 95 per cent per annum from 1992 onwards, as shown in Table 4.7. According to data from the US International Trade Commission (USITC, 2002), Mexico's clothing exports to the US market expanded from 2.8 per cent of total US imports in 1990, to 7.7 per cent in 1995 and to 14.6 per cent in the year 2000. China was the second provider of clothing to the USA in the year 2000, with 10.5 per cent of US imports, and Hong Kong followed in third with 7.6 per cent of US imports. Thus, Mexico became the main clothing supplier to the US market from 1996, crowding out Asian and European suppliers in one of the most competitive markets in the world. The main export products are synthetic fibre and cotton trousers, cotton T-shirts, brassieres, cotton shirts and sweaters (BANCOMEXT, 2000; Werner International, 2002).

Table 4.7 Main Trading Partners for Mexico: Clothing Exports-Imports by Country (%)

Exports											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<i>Canada</i>	6.0	5.4	1.2	0.7	0.3	0.3	0.5	0.3	0.4	0.5	0.5
<i>USA</i>	64.7	60.6	94.5	96.0	98.1	97.8	97.4	96.5	95.6	94.8	95.0
<i>Others</i>	29.3	34.0	4.3	3.3	1.6	1.9	2.1	3.2	4.0	4.7	4.5
Imports											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<i>Italy</i>	4.5	5.4	2.8	4.0	2.9	1.3	0.8	0.2	0.9	0.9	1.0
<i>Korea</i>	3.5	2.3	2.1	5.6	2.3	1.5	0.4	0.1	0.6	0.6	1.4
<i>Hong Kong</i>	21.5	21.1	17.4	9.1	5.2	2.2	0.9	1.0	1.1	1.7	4.1
<i>Spain</i>	1.7	1.5	1.3	1.4	2.0	1.3	1.0	1.0	1.5	1.7	1.9
<i>USA</i>	52.3	51.2	64.9	69.2	74.4	88.5	93.4	93.0	91.5	90.2	84.6
<i>Others</i>	16.5	18.5	11.5	10.7	13.2	5.2	3.5	4.6	4.5	5.0	7.0

Source: Calculated based on INEGI, Anuario Estadístico del Comercio Exterior, many years.

On the other hand, the number of garments originating in the USA has increased in the Mexican market. Clothing imports from the former country accounted for 52 per cent of the Mexican imports of clothing in 1990, while Hong Kong represented 21 per cent. However, the elimination of trade barriers with USA in the aftermath of NAFTA encouraged more regional trade. By 1994, the USA accounted for 74 per cent of Mexican imports, to then reach nearly 90 per cent in the late 1990s, as shown in Table 4.7. There is also a quantity of garments imported to Mexico, which were previously treated in maquila plants. Since this type of triangulation is not accounted for in Mexican statistics, it can also be argued that garments produced under the maquila programme are competing with products of firms not linked to global production systems. Thus, the figures of exports and imports from and to the USA demonstrate the strong integration of the clothing industry of these two countries.

4.5.3 The divide in market orientation: export and nationally-oriented firms

Market orientation has also changed after ISI. Trade liberalisation and trade integration opened up the possibilities for export markets and for the integration of Mexican enterprises in international production-sharing. In addition to domestic markets, Mexican firms were also given greater opportunities to access international markets. Competitive firms could access US and Canadian markets directly, while others could integrate in international production-sharing.

Given the different possibilities of Mexican producers, firms can be now divided according to two main market orientations: the local/national market and the export market through international production-sharing. Micro- and small firms now cater

broadly to the domestic market, while other, mainly large, firms are largely engaged in exporting through maquila activities.

It is interesting to analyse which kind of firms are involved in international transactions.⁷⁵ At that level, it was found that exports in the clothing industry are largely carried out by large-scale firms involved in international production-sharing. Even before trade liberalisation, the Mexican exports under 807 provisions represented almost 90 per cent of the total Mexican clothing exports (Bailey & Eicher, 1992). In 1994, 92 per cent of the total clothing exports were carried out through this Item (USITC, 2001). That trend continued during the GATT period. By 1994, maquila firms accounted for 88 per cent of total clothing exports (INEGI, *Anuario Estadístico del Comercio Exterior*, 1995). The reporting of maquila exports decreased with NAFTA, since the reduction of trade barriers discouraged firms from registering such transactions. Nonetheless, by the year 2000, 69 per cent of Mexican clothing exports were registered as maquila exports (see Table 4.6). In 2001, 54 per cent of Mexican exports were classified as maquila exports (INEGI, *Anuario Estadístico del Comercio Exterior*, 2002), that is to say, those firms registered in the maquila programme that did not meet the requirement of North American rules of origin. The remaining exports came from firms that in many cases were subsidiaries of trans-nationals (Hanson, 1994b).⁷⁶ Thus, the bulk of Mexican exports were to a large extent carried out through international production-sharing.

⁷⁵ Due to the fact that statistics on exports are not broken down by enterprise size in Mexico, only the differentiation between maquiladora and non-maquiladora firms is considered.

⁷⁶ The figure for maquila firms may even be higher. The National Bank for External Trade (BANCOMEXT) reported that 760 firms exported 94 per cent of the total clothing exports in the year 2000; while the National Statistics Institute (INEGI) reported 1,088 registered maquila firms in the same year (INEGI, Banco de Información Económica, 2002).

The second type of enterprise in the sector was smaller than the export-oriented enterprises, constituting micro-, small and medium-size enterprises, which were competing in the domestic market.

The maquila firms registered a better performance than the nationally oriented firms. Between 1993 and 1997, the maquila clothing firms increased production by an average of 23 per cent and employment by 104 per cent, while non-maquila firms increased production by 4.8 per cent and employment by 1.5 per cent over the same period of time (Espinosa, 2000:158).

At this point I identify two kinds of producers: small firms catering to the domestic market and larger firms exporting through production-sharing.⁷⁷ There are, however, important questions left unanswered: are maquila and non-maquila firms mixed within the same region, or did firms follow similar market trends at the regional level? This in turn, will support the idea of clusters and external economies in regions with similar market orientation.

4.6 Regional specialisation in the Mexican clothing industry

4.6.1 Spatial concentration of industry and homogenous markets during ISI

The geographical concentration of production has been a distinguishing feature of the garment industry in Mexico, which has evolved with the industrialisation process (Hanson, 1994b). During ISI, producers concentrated spatially and catered to the domestic market. The clothing industry displayed the same pattern of concentration

⁷⁷ For the purpose of this thesis, they will be viewed as the main types of market orientation followed by Mexican firms.

as the manufacturing industry, locating in a few sites, which were mainly large urban centres. The distinguishing feature of the garment industry was its important concentration in the centre of the country. Mexico City and Mexico State accounted for 62 per cent of production and 54 per cent of employment in 1980, as shown in Table 4.8. The aforementioned centre region together with the other most populated states, namely Jalisco and Nuevo León, altogether concentrated 72 per cent of Mexican clothing production, 65 per cent of the total clothing employment and 51 per cent of total establishments in the sector, as shown in Table 4.8.

In addition to the large urban areas, the state of Aguascalientes was another important site for garments in the last years of ISI. This state increased its share contribution to clothing production by three percentage points and to clothing employment by four percentage points in the 1980–1985 period, as shown in Table 4.8. Thus, by 1985, the last year of ISI, the four traditional states and Aguascalientes State contributed 72 per cent of production, 63 per cent of employment in clothing and 43 per cent of national clothing firms.

Table 4.8 Performance of Traditional Sites in Clothing, 1980–1998.

Sorted according to 1980 % production

States	% of total production					% of total employment					% of total firms				
	1980	1985	1988	1993	1998	1980	1985	1988	1993	1998	1980	1985	1988	1993	1998
Jalisco	6.8	7.2	4.3	5.1	4.4	4.8	5.9	4.2	3.9	4.3	5.6	5.3	5.2	4.3	5.9
Mexico City	47.9	40.9	42.1	37.1	18.6	45.2	34.1	27.7	19.7	10.8	33.3	26.9	25.7	12.8	8.9
Mexico State	13.9	15.7	9.4	9.7	9.7	8.5	9.2	8.1	8.3	7.5	9.3	5.2	5.8	5.1	9.5
Nuevo León	3.9	5.6	5.5	5.9	3.6	6.4	6.4	6.7	6.3	3.7	2.8	3.7	4.1	3.2	2.8
Aguascalientes	0.6	3.8	3.3	3.2	4.5	3.3	7.0	5.0	4.2	4.5	0.9	1.5	1.3	1.4	1.6
Total traditional sites	73.1	73.2	64.6	61.1	40.9	68.2	62.6	51.7	42.4	30.8	51.9	42.6	42.2	26.8	28.7
Other states	26.9	26.8	35.4	38.9	59.1	31.8	37.4	48.3	57.9	69.2	48.1	57.4	57.8	73.2	71.3

Source: Calculated based on INEGI, *Censo Industrial*, many years.

4.6.2 The decline of traditional ISI sites and the new map of clothing specialisation

After economic opening, the concentration of industry declined in traditional sites. According to the latest economic census with data referring to 1998, the percentage share of traditional clothing states decreased markedly in the national clothing industry. The share participation of those states fell by 32 percentage points in production, 37 percentage points in employment and, by 14 percentage points in terms of the number of firms during the 1985–1998 period. Mexico City experienced the most dramatic decline after economic integration, as shown in Table 4.8. The contribution of Mexico City to national clothing production decreased from 40.9 per cent in 1985 to 18.6 per cent in 1998, while the employment contribution of that

same state dropped from 34.1 per cent of the total to 10.8 per cent within the same period of time.

Liberalisation and integration coincided with the significant advance of non-traditional sites, leading to a major concentration of industry in other regions. In line with the manufacturing industry in general, the clothing industry experienced significant spatial changes after economic opening. Since large garment agglomerations were concentrated around the urban-traditional sites, large clothing employment also accrued in those regions. However, percentage contributions do not show the degree of specialisation of smaller urban sites. Location quotients were used to gauge the relative specialisation of Mexican states in the clothing industry for the 1980–1998 period, i.e. before and after the opening to trade. Data come from the Industrial Census generated by INEGI, which is carried out, on average, every five years. Thus, Isard (1956; 1998) was followed to construct location quotients for the 31 states and the Federal District of Mexico City:

$$L_{Qc} = \frac{Ec_{ri} / Ec_{ni}}{Er_i / En} \quad \text{or the equivalent} \quad L_{Qc} = \frac{Ec_{ri} / Er_i}{Ec_{ni} / En}$$

Where:⁷⁸

L_{Qc} = Location quotients in the clothing industry

Ec_{ri} = employment in clothing in a given region ri

Ec_{ni} = employment in clothing in the nation

Er_i = total manufacturing employment in region i

En = total manufacturing employment in the nation

Results are presented in Table 4.9 and sorted according to quotients from 1980. Location quotients also confirm that the clothing industry has seen a change both in terms of the loss of dynamism in the traditional sites located around large markets and in the spread of industry in the northern part of the country. Mexico City, the core of clothing production in Mexico, was specialised in clothing during ISI, as shown by location quotients of 1.62 and 1.64 in 1980 and 1985, respectively. However, that specialisation gradually declined following the opening to trade and was lost after NAFTA came into effect, as shown by its location quotient in 1998 (see Table 4.9). Thus, Mexico City has not only declined in terms of the concentration of garment production but also has declined in terms of specialisation in garments.

Such changes can be seen on a map of the clothing industry. The former location quotients were plotted on a map to show the regional specialisation in the clothing industry. The dark shading on the maps in Figure 4.1 indicates those regions with clothing specialisation. The top map represents the clothing specialisation map for 1985, and the bottom one corresponds to 1998. Of the 13 states specialised in clothing, only three sites withdrew from the clothing specialisation map: Mexico City, in the centre of the country, and Quintana Roo and Baja California states, in the extremes of the country. On the other hand, Baja California Sur, Sonora and Coahuila gained specialisation in clothing, as shown in Figure 4.1.

⁷⁸ In this case total manufacturing employment is used instead of total employment to differentiate at the branch level (see Malmberg & Maskell; 1997).

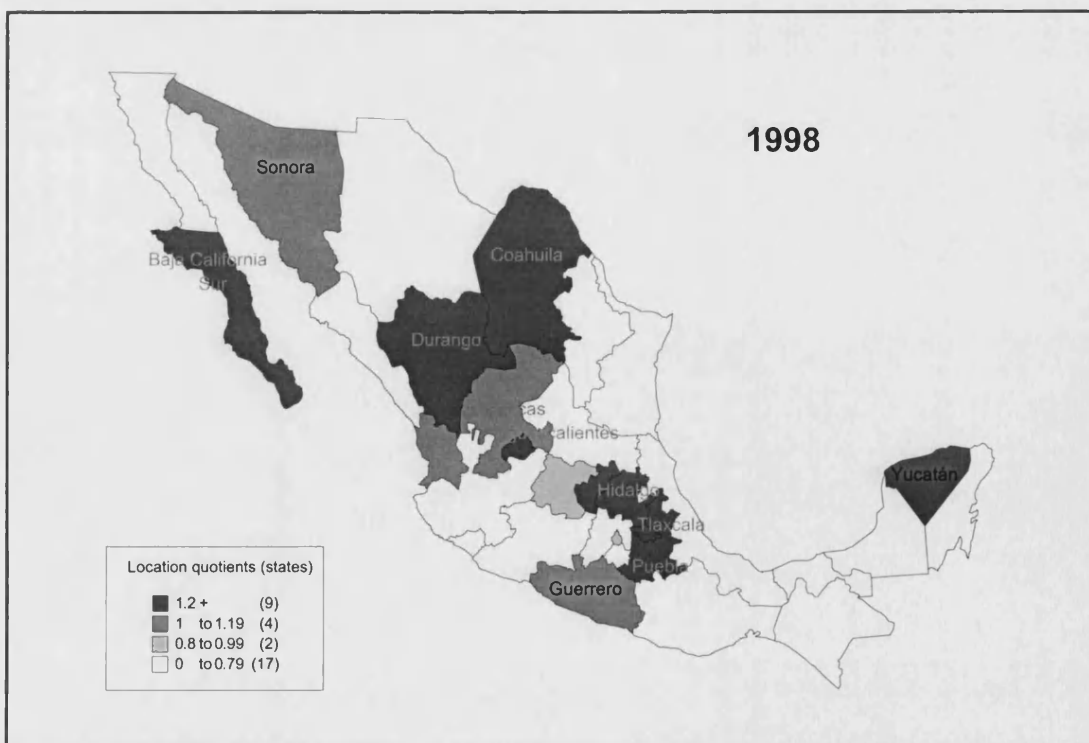
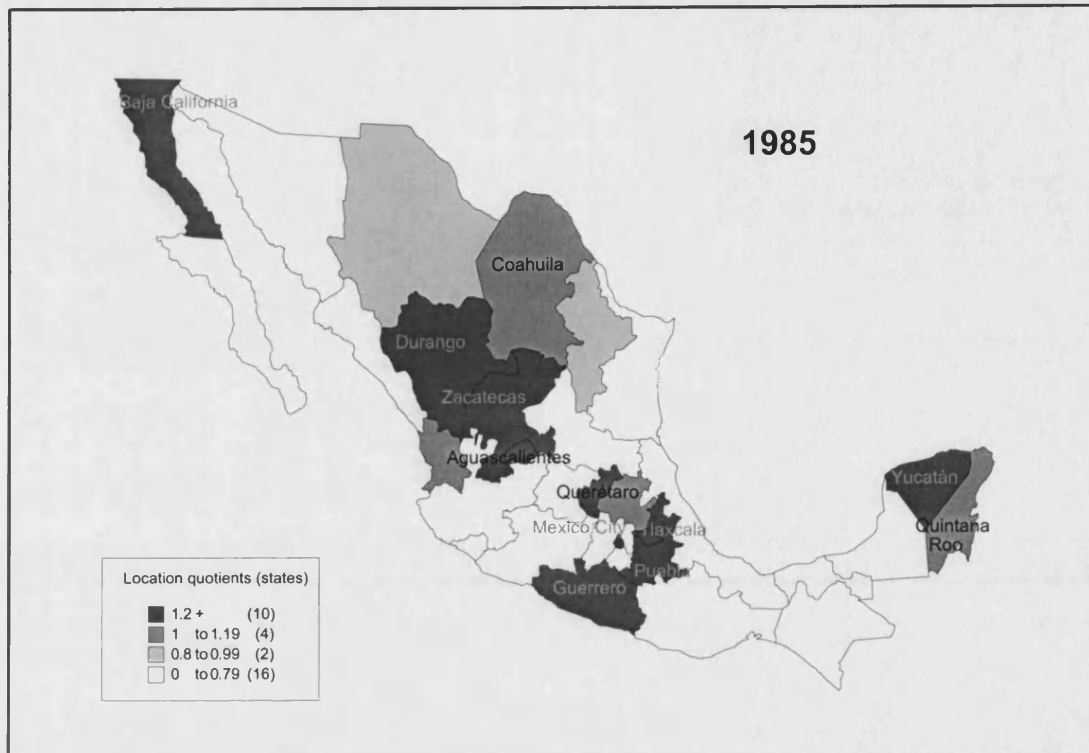
Table 4.9 Location Quotients for the Clothing Industry in Mexico

Listed in accordance with location quotients from 1980

	1980	1985	1988	1993	1998	Change 1998-80
Aguascalientes	4.15	6.08	3.86	2.93	2.75	-1.40
Zacatecas	2.54	1.57	1.41	0.82	1.08	-1.46
Tlaxcala	2.45	1.87	1.49	2.11	2.14	-0.31
Guerrero	1.64	2.93	2.07	1.36	1.08	-0.56
Mexico City	1.62	1.64	1.47	1.24	0.92	-0.70
Chihuahua	1.43	0.86	0.95	0.35	0.45	-0.98
Yucatán	1.39	1.73	1.73	2.73	2.74	1.35
Durango	1.30	1.49	3.51	4.22	3.77	2.47
Baja California	1.24	1.24	1.18	0.48	0.59	-0.65
Quintana Roo	1.09	1.06	0.58	0.96	0.68	-0.41
Nation	1.00	1.00	1.00	1.00	1.00	0.00
Puebla	0.96	1.33	1.62	2.22	2.54	1.58
Queretaro	0.93	1.31	1.22	1.23	1.20	0.27
Coahuila	0.86	1.10	1.06	1.29	1.64	0.78
Hidalgo	0.82	1.02	1.70	2.48	2.45	1.63
Guanajuato	0.78	0.64	0.62	0.77	0.91	0.13
Nuevo Leon	0.69	0.84	0.87	0.81	0.48	-0.21
Jalisco	0.69	0.58	0.63	0.56	0.56	-0.13
Sonora	0.63	0.58	1.20	0.68	1.15	0.52
Mexico State	0.51	0.60	0.56	0.62	0.65	0.14
Michoacan	0.50	0.40	0.24	0.37	0.36	-0.14
Tabasco	0.49	0.43	0.33	0.43	0.28	-0.21
Campeche	0.43	0.38	0.50	1.81	0.68	0.25
Tamaulipas	0.43	0.40	0.39	0.50	0.74	0.31
Chiapas	0.42	0.54	0.62	1.01	0.49	0.07
San Luis Potosi	0.40	0.39	0.38	0.74	0.54	0.14
Oaxaca	0.36	0.35	0.31	0.58	0.71	0.35
Nayarit	0.28	0.26	0.28	0.37	0.49	0.21
Veracruz	0.26	0.22	0.23	0.52	0.75	0.49
Colima	0.25	0.22	0.20	0.55	0.24	-0.01
Morelos	0.19	0.29	0.24	0.71	0.68	0.49
Baja California Sur	0.18	0.62	1.27	1.03	1.26	1.08
Sinaloa	0.17	0.12	0.11	0.38	0.13	-0.04

Source: Calculated based on INEGI, *Censo Industrial*, various years.

Figure 4.1 Mexican Regions Specialised in Clothing, 1985 and 1998



Source: Elaborated based on INEGI, *Censos Económicos*, 1986, 2001 and; INEGI, *Banco de Información Económica*, 2001.

4.6.3 Maquila and non-maquila LPSs

The advance of clothing specialisation may be seen as a consequence of the expansion of the maquila clothing industry in non-traditional sites. As in the rest of the manufacturing industry, most of the clothing maquila concentrates in the northern part of the country, although this industry has advanced towards the interior of the country after trade integration. The concentration of maquila clothing employment by state is presented in Table 4.10. Prior to 1990 most maquila production was concentrated in the border states and Durango. However, after NAFTA maquila production advanced towards the centre of the country and new spatial arrangements have thrived as result. The most rapid advance has been registered in the interior states of Aguascalientes, Puebla and Yucatán. These states together accounted for 21 per cent of total clothing maquila employment in 1998, compared to a contribution of around five per cent in 1990.

Table 4.10 Regional Concentration of Clothing Maquila Firms and Average Firm Size in Mexican States. Sorted according to % employment in 1990

	% of total maquila employment			Average firm size in states ¹		
	1990	1993	1998	1985	1993	1998
Chihuahua	37.1	27.5	16.9	30	15	47
Coahuila	13.5	13.9	15.2	26	28	85
Durango	10.9	9.4	9.1	25	61	98
Sonora	10.7	9.6	6.9	14	11	59
Baja California	9.2	7.7	5.9	17	16	47
Tamaulipas	8.5	6.8	6.5	6	8	33
Guanajuato	3.7	3.2	2.9	8	9	12
Yucatán	2.9	3.6	5.1	3	3	15
Aguascalientes	1.4	2.8	8.1	60	28	53
Baja California Sur	1.3	0.7	1.0	11	10	41
México State	0.7	1.8	2.6	23	15	14
Nuevo León	0.2	1.4	1.6	22	18	24
Puebla	n.a.	4.5	7.6	10	11	24
Tlaxcala	n.a.	0.8	2.3	21	18	20
Jalisco	n.a.	1.0	2.0	14	8	13
San Luis Potosí	n.a.	2.2	1.7	5	9	14
Guerrero	n.a.	n.a.	0.9	7	5	4
Mexico City	n.a.	0.4	0.5	16	14	22
<i>Nation</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>13</i>	<i>12</i>	<i>25</i>

1: State total includes maquila and non-maquila firms.

Source: Calculated based on INEGI, *Sistema de Cuentas Nacionales de México*, various years; INEGI, *La Industria Maquiladora de Exportación 1990–1998: por Region Geográfica y Entidad Federativa*, 2001; and INEGI, *Censo Industrial*, many years.

The maquila has also become the main type of LPS in some states in the interior of the country. The specialisation in clothing maquila of a region was gauged in relation to the rest of the country. Location quotients were calculated in the same fashion as in subsection 3.4.5.3 of this thesis but applied exclusively to the garment industry. The results are presented in Table 4.11. The table presents data for 19 states of the total 32, given that INEGI does not report data for the remaining 13 since their participation in the maquila clothing programme is negligible (INEGI, 2001b). Those regions are also not important producers of clothing.

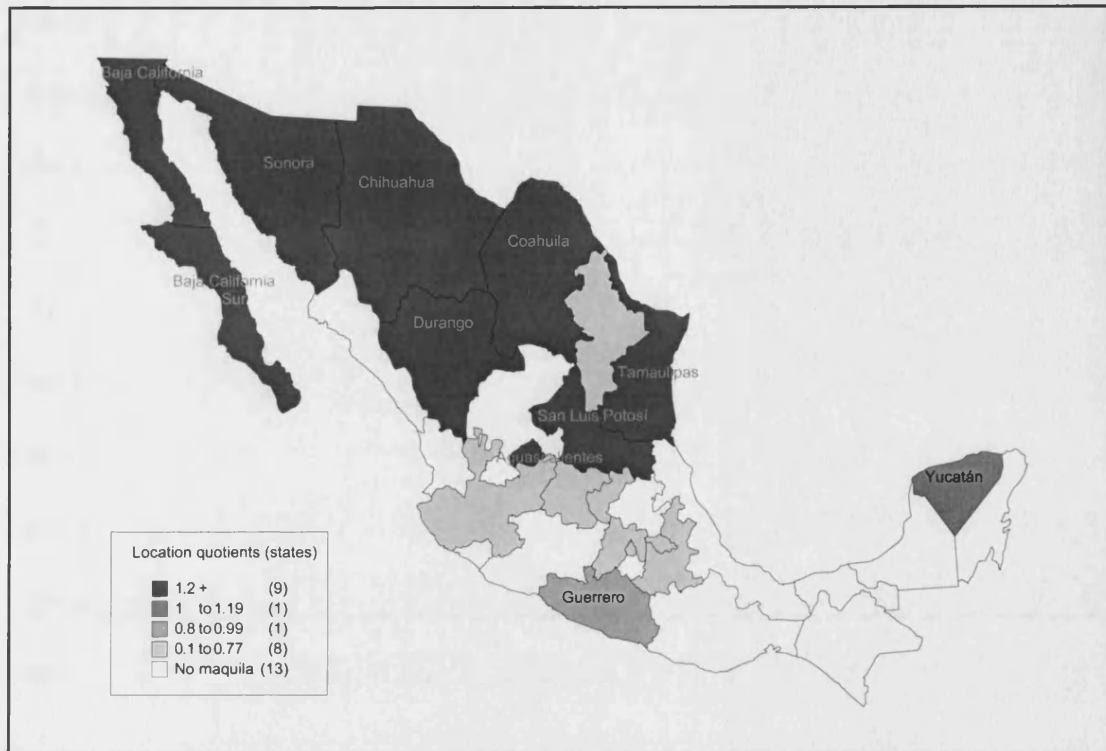
Table 4.11 Location Quotients for the Maquila Industry
Sorted according to 1998 index

States	1993 Index	1998 Index	1998-1993 Change
Chihuahua	11.52	4.09	-7.44
Baja California Sur	2.48	2.70	0.22
Coahuila	2.79	1.88	-0.91
Tamaulipas	3.43	1.76	-1.67
Sonora	5.45	1.68	-3.77
San Luis Potosí	1.47	1.62	0.15
Aguascalientes	0.67	1.60	0.93
Baja California	3.75	1.57	-2.18
Durango	1.49	1.34	-0.15
Yucatán	0.79	1.03	0.23
Total	1.00	1.00	0.00
Guerrero	<i>n.a.</i>	0.92	-
Tlaxcala	0.37	0.75	0.38
Guanajuato	0.85	0.53	-0.33
Puebla	0.43	0.51	0.09
Querétaro	0.53	0.45	-0.08
Jalisco	0.26	0.42	0.15
Nuevo León	0.23	0.40	0.17
México	0.22	0.31	0.10
Mexico City	0.02	0.04	0.02

Source: Own elaboration based on INEGI, Banco de Información Económica (BIE), many years.

Results show the advance of maquila in non-borders states such as Aguascalientes, Baja California Sur, San Luis Potosí, Durango and Yucatán, now specialised in maquila. Meanwhile, traditional sites of industry derived from ISI (Jalisco, Nuevo León, Mexico City and Mexico State) have continued to be specialised in non-maquila production systems. A map of maquila-specialised states is presented in Figure 4.2. Location quotients in Table 4.11 were plotted on the map.

Figure 4.2 Location of Clothing Maquila LPSs in 1998



Source: Elaborated based on INEGI, *Censos Económicos*, 2001 and INEGI, *Banco de Información Económica*, 2002.

The advance of the maquila industry towards the centre of the country may also be the result of changes in the maquila programme. This programme, as we have already seen in Chapter 3, has experienced significant changes, the most important being the permission to cater to the domestic market. This could also be seen as

firms represent in terms of Mexico's clothing exports and production (INEGI, 2002). In this way, the maquila industry also has an impact on the market orientation of regions. Thus, agglomerations of firms linked to the maquila system have become the group of firms gearing towards export markets.

Another feature that distinguishes regions is the size of firms across the different production strategies. Regions specialised in maquila activities account for firms of a larger scale than those catering to the domestic market, as shown in Table 4.10. The average size of firms has, in general, increased in maquila regions after trade integration. On the other hand, non-maquila regions are populated by activities of a smaller scale and firms are in general terms smaller than the national average.

Thus, at first glance, we can identify two main types of local production systems: those involved in a global production system through international production-sharing and conformed by medium- and large-scale firms and the non-maquila organisation regions, often remnants of the previous ISI system. The latter caters to the domestic market and is greatly dominated by micro- and small enterprises. In line with changes in Mexican industry, which were analysed in the previous chapter, there is also a divide in local production systems in the clothing industry.

4.7 Conclusion: The divide in local production systems

In a context of globalisation, the Mexican clothing industry has managed to increase its competitive situation in the open economy. This industry went from enjoying one of the highest levels of trade protectionism to adjustment and booming production since NAFTA came into effect. We have also seen in this chapter that the clothing

industry has undergone significant transformations at the firm and regional levels. Average firm size increased and important spatial changes occurred. However, it is unclear to what extent trade liberalisation and trade integration have had an impact on the organisation of production in terms of space and in scope (organisation of firms and LPSs).

This chapter has analysed the development of regions specialised in maquila activities or in catering to the domestic market, but the outcomes in the local production system are unclear. Assessment of different LPSs in a post-integrated economy becomes imperative to analyse the factors affecting their performance. The strengthening of the LPS is an important part of the competitiveness of regions and industries to succeed globally. Thus, if individual industries are growing less rapidly in a certain region than in other regions, it can be argued that the region must be suffering from either location disadvantages or inefficient production methods (Armstrong & Taylor, 1985: 130). Hence the study of LPSs becomes important in order to understand local adjustments to global changes. Insertion into the globalisation process represents a challenge but also a possibility for LDCs to improve their productive systems and to take advantage of trade liberalisation and integration. In order to address this point, three different LPSs will be analysed in the following chapters. That will be of assistance in identifying the LPSs of a higher order capable of competing and succeeding in a context of globalisation and serving as a means for economic development.

CHAPTER 5

LPSs in the Mexican Garment Industry

5.1 Introduction

Previous chapters have analysed the transformations in both the manufacturing and the garment industries. Spatial transformations and the divide in the LPS were identified as important industry changes in the aftermath of the opening to trade. Some LPSs continued to cater to the domestic market, while others opened up and adapted to the process of globalisation. Trade liberalisation and economic integration represent a challenge for LPSs, but also offer the possibility to upgrade and become competitive in global markets. Thus, case studies were selected in order to assess the impact of trade liberalisation and economic integration on LPSs.

The three case study areas that were selected for analysis showed similarities during ISI but then followed different strategies during the open economy. The criteria used for choosing clusters included original similarities in market orientation, firm structure, size, specialisation in clothing, innovation, backward and forward linkages, government linkages, external economies and prior description in the literature as paradigmatic cases. This chapter provides the reader with the methodology for choosing case studies, while presenting information on the background and performance of selected clusters.

5.2 Selection of case studies

During ISI, LPSs in Mexico were homogeneous and shared common features in their industrial organisation. Clusters were typically made up of small-scale firms, were family owned and managed, and catered to the local and/or national markets (Arias, 1985; Suárez-Aguilar & Rivera-Ríos, 1994; Medina-Ortega, 1997; Rabellotti, 1997). Trade liberalisation and economic integration precipitated a divergence in the industrial organisation of clusters, which have restructured in different ways. LPSs catering to international markets and specialising in maquila activities have developed as an alternative to compete in the open economy with the traditional clusters inherited from ISI.

This thesis analyses clusters that were relatively alike during ISI but that then followed different trajectories in the aftermath of trade liberalisation and integration. Case studies were chosen to analyse the extent of the transformations in LPSs. The degree of specialisation, linkages and the role of institutions are best analysed through case studies. Some aspects such as the sources of innovation and cooperation in backward and forward linkages require quantitative and qualitative data at the cluster level that are not available in national statistics. For that reason the literature on clusters has traditionally made use of case studies to assess the internal organisation of clusters (see Chapter 2). Furthermore, given the limited scope of a PhD research project, the analysis was restricted to three clusters in the Mexican garment industry, from which primary data were gathered.

The first step in the data collection process was to choose case studies. One criterion applied in the search was that the clusters had to be of a relatively similar size and

organisation during ISI and had subsequently followed different market strategies and trajectories in the aftermath of the opening to trade. 1985, the year prior to trade liberalisation was taken as the reference year for choosing cases. This is because Mexican LPSs were relatively homogeneous at that time but went on to follow different trajectories. In this way, the difference in production specialisation of regions was taken into account as a key criterion to select case studies:

1. A cluster that opened up in response to trade liberalisation. This cluster has adapted to the globalisation process, is immersed in international production-sharing and production is geared to the international market.
2. A cluster that has remained closed after the opening to trade. This is a traditional site developed during ISI, not incorporated in the globalisation of industry and still caters to the domestic market, and
3. An intermediate case. A traditional cluster that was slow to react, but that would by now have adapted to the challenge of globalisation and is now also immersed in international production-sharing.

Other factors taken into account in selecting case studies include:

- Specialisation in clothing –measured by location quotients
- Previous description in the literature as paradigmatic cases

In order to control for prior factors, selected clusters were required to meet the following criteria of homogeneity:

- Market orientation
- Firm structure
- Main activities along the value chain
- Location of hub subcontractors
- Origin of innovation
- Subcontracting within cluster
- Cooperation with subcontracted firms
- Cooperation and knowledge-sharing with suppliers
- Role of local government
- External economies

All these criteria taken together should ensure the spatial concentration of sector specialised firms, comparability and homogeneity in examined regions prior to the opening to trade.

Three garment agglomerations met the above selection criteria: a cluster in the state of Jalisco (Guadalajara), another in Aguascalientes state and one on the border between Durango and Coahuila states (La Laguna). Aguascalientes and Guadalajara were among the most important garment producers during ISI, while La Laguna represents the new type of local production system that has developed in Mexico since its re-insertion into the world economy. These clusters have also been identified in the literature as paradigmatic and representative cases of the Mexican garment industry (Mercado, 1980; Hanson 1994a; Suárez-Aguilar & Rivera-Ríos, 1994; Arias & Wilson, 1997; Cortázar, 1998; Gereffi & Martínez, 2000). Thus, the

selected cases represent a substantial component in the regional dynamics of Mexico's garment industry (Wilson, 1991; Martínez-Omaña, 1994; Salado-Hernández, 1996; SECOFI 1997). For the geographical location of selected case studies see Figure 5.1.

Statistics on the subject and data from the literature on the Mexican garment industry were first used in the process to identify market specialisation, size and importance of selected agglomerations. This exercise included identifying regions, which represent the three production specialisations of clusters after trade liberalisation. This will be presented in the next subsection, 5.2.1. Further literature on the subject was used in subsection 5.2.2 to ensure that the criteria for homogeneity within LPSs before the opening to trade were met. In this way case studies were selected because of their different market orientation, comparable dimension, high concentration of firms and employment specialised in clothing (suggesting external economies in agglomerations), similarities in their LPSs, representing a large share of the clothing industry in their respective states, as well as their having been considered in the literature as paradigmatic cases in the development of the clothing industry in Mexico.

Figure 5.1 Map of Selected Case Studies



5.2.1 Production specialisation, size and importance of selected clusters

Given the lack of precise and compatible historical data on Mexico at both the municipal and branch level, and the fact that clusters account for the bulk of the garment industry in their respective states, data at state level was used as a proxy to compare and gauge the importance of clusters in Mexico (see Table 5.1).

The clusters of Guadalajara in the states of Jalisco and Aguascalientes, the capital of the same state, have been considered as two of the most important garment manufacturers and paradigmatic cases for the clothing industry in Mexico (Arias, 1988; Suárez-Aguilar & Rivera-Ríos, 1994; Castillo-Aja, 1995; García-Batiz & Rodríguez-Bautista, 1995; Medina-Ortega, 1997; Duch-Gary, 1998; Dussel-Peters, 2001). According to various authors (Arias, 1988; Wilson, 1991; Arias & Wilson, 1997; Dussel-Peters, 2001), since the origins of the garment industry in Mexico, the Guadalajara region has been viewed as the most important cluster specialising in the production of women's clothing, and the main clothing producer in the western part of Mexico. Meanwhile, Aguascalientes has been highlighted as the main cluster producing children's-wear and knitwear in Mexico and as the main site outside the mega-urban agglomerations (Duch-Gary, 1998; Dussel-Peters, 2001).

The case of Guadalajara, which largely caters to the domestic market, is typical of the sites developed during ISI, enjoying the benefits of urban concentration. Guadalajara has traditionally been one of the most important urban agglomerations and remains the second largest city in Mexico in terms of population (INEGI, 2001e). As with other industries in Jalisco state, the clothing industry is located in its capital Guadalajara and the metropolitan area,⁷⁹ which has a territorial extension of 2,114 km² (Castillo-Aja, 1995; García-Batiz & Rodríguez-Bautista, 1995).

The clothing industry in Aguascalientes state is concentrated in the capital of the state (also named Aguascalientes), expanding recently towards the neighbouring municipality of Jesús María (Martínez-Omaña, 1994; Arias & Wilson 1997:154;

SECOFI, 1999),⁸⁰ These two municipalities cover a surface area of 1,767 km² (Centro de Estudios Municipales, 1988). During ISI, Aguascalientes was the main clothing producer outside the urban agglomeration centres (i.e. Mexico City-Mexico State, Guadalajara, Monterrey and Puebla). By 1985, the year before trade liberalisation, Aguascalientes concentrated around four per cent of the total national clothing production and 7,454 employees, representing 6.5 per cent of national clothing employment. This positioned the site as a major creator of employment, just behind the urban agglomeration of Mexico City and Mexico State, as shown in Tables 5.1 and 5.2.

⁷⁹ The metropolitan area comprises the municipalities of Tlaquepaque, Tonalá, Zapopán and Zapotlanejo (SECOFI, 1998). From this point onwards Guadalajara and its metropolitan area will be referred to as the Guadalajara region.

⁸⁰ According to the latest industrial census with data from 1998, the Aguascalientes area accounted for 80 per cent of the total state clothing production and for 75 per cent of state garment employment (INEGI, Censos Económicos, 2001).

Table 5.1 Basic Data of the Clothing Industry at the State Level. Listed in Accordance with 1985 Production

States	Main production orientation ¹	% Production		% Employment		Location quotients		Productivity growth 1985-1998	% Firms		Average firm size	
		1985	1998	1985	1998	1985	1998		1985	1998	1985	1998
Mexico City	National	40.9	18.6	34.1	10.8	1.6	0.9	4.7	26.9	8.9	16.1	22.0
Mexico State	National	15.7	9.7	9.2	7.5	0.6	0.7	7.2	5.2	9.5	22.8	14.4
Jalisco	National	7.2	4.4	5.9	4.3	0.6	0.6	7.3	5.3	5.9	14.0	13.3
Nuevo León	National	5.6	3.6	6.4	3.7	0.8	0.5	7.7	3.7	2.8	22.0	24.0
Puebla	National	4.7	10.8	5.6	13.5	1.3	2.5	18.6	7.3	10.1	9.7	24.3
Aguascalientes	Maquila (SINCE 1998)	3.8	4.5	7.0	4.5	6.1	2.7	12.7	1.5	1.6	59.6	52.6
Querétaro	National	2.4	2.5	2.5	2.6	1.3	1.2	11.8	0.5	0.7	58.0	67.7
Guanajuato	National	1.7	3.9	2.7	5.0	0.6	0.9	18.3	4.5	7.2	7.6	12.5
Chihuahua	Maquila	1.7	3.8	4.1	3.8	0.9	0.5	18.4	1.9	1.5	26.9	46.6
Coahuila	Maquila	1.6	7.8	3.8	7.4	1.1	1.6	25.4	1.9	1.6	26.1	85.4
Hidalgo	National	1.5	3.9	1.8	4.3	1.0	2.5	20.0	1.2	2.4	19.9	32.7
Baja California	Maquila	1.4	3.5	2.7	3.4	1.2	0.6	19.1	2.0	1.3	17.3	46.6
Durango	Maquila	1.2	6.6	2.2	6.2	1.5	3.8	26.6	1.1	1.1	25.5	98.4
Tlaxcala	National	1.1	1.9	2.0	2.8	1.9	2.1	15.8	1.2	2.6	21.4	20.0
Tabasco	National	1.0	0.0	0.2	0.1	0.4	0.3	-12.8	1.1	1.8	2.2	1.4
Morelos	National	0.9	1.0	0.3	0.7	0.3	0.7	11.9	1.1	1.3	3.9	9.4
Guerrero	National	0.9	0.7	1.3	0.9	2.9	1.1	9.1	2.2	4.0	7.6	4.3
Sonora	Maquila	0.9	3.1	1.2	3.8	0.6	1.2	22.3	1.0	1.2	14.3	59.1
Michoacán	National	0.8	0.4	0.7	0.7	0.4	0.4	5.7	3.2	2.7	2.9	4.8
Veracruz	National	0.8	1.0	1.0	2.4	0.2	0.7	13.4	7.4	6.5	1.8	6.6
Tamaulipas	Maquila	0.8	2.9	1.1	3.4	0.4	0.7	23.3	2.1	1.8	6.4	33.4
Sinaloa	National	0.8	0.1	0.2	0.1	0.1	0.1	-7.6	0.9	0.9	2.2	2.4
Yucatán	Maquila (SINCE 1998)	0.8	3.1	1.9	4.5	1.7	2.7	23.9	6.9	5.5	3.5	15.0
San Luis Potosí	Maquila	0.5	0.7	0.7	1.0	0.4	0.5	14.3	1.5	1.2	5.8	14.1
Zacatecas	National	0.3	0.6	0.4	0.6	1.6	1.1	17.7	0.7	0.6	7.2	18.8
Colima	National	0.3	0.0	0.0	0.1	0.2	0.2	-8.5	0.3	0.5	1.6	2.2
Oaxaca	National	0.2	0.2	0.3	0.9	0.4	0.7	9.5	2.3	7.1	1.7	2.2
Chiapas	National	0.2	0.1	0.3	0.4	0.5	0.5	5.1	2.8	4.5	1.4	1.4
Nayarit	National	0.1	0.0	0.1	0.1	0.3	0.5	4.4	0.5	0.4	2.3	6.0
Baja California Sur	Maquila	0.1	0.4	0.1	0.3	0.6	1.3	25.6	0.1	0.2	10.7	40.8
Campeche	National	0.1	0.0	0.1	0.1	0.4	0.7	2.4	0.8	1.6	1.6	1.6
Quintana Roo	National	0.0	0.1	0.2	0.2	1.1	0.7	20.2	1.0	1.1	2.6	2.5
Nation	-	100.0	100.0	100.0	100.0	1.0	1.0	11.3	100.0	100.0	12.7	18.2

Source: Own calculations based on INEGI, Censo Económico and Censo Industrial, many years.

In the immediate aftermath of trade liberalisation, Aguascalientes and Guadalajara continued to cater to the domestic market, as did other large traditional producers from the ISI period. Since trade liberalisation, Guadalajara region has continued to produce for the regional and national markets, mostly for the western part of the country (Arias & Wilson, 1997; Medina-Ortega, 1997; CNIV-Guadalajara, 1999; Dussel-Peters, 2001). However, Aguascalientes adapted to the challenge of globalisation after economic integration and is now immersed in international production-sharing.

What distinguishes the case of Aguascalientes from other important producers from ISI is its change in productive specialisation towards maquila after NAFTA came into effect. This cluster was chosen because it was the only large traditional producer from ISI that evolved towards international production-sharing (see Table 5.1). Soon after the openness, Aguascalientes continued to cater to the local and national markets (Arias & Wilson, 1997, SECOFI, 1999). With the advent of economic integration, a group of producers shifted their production to maquila activities, which led to a duality in the market orientation of the Aguascalientes cluster (Martínez-Reyes & Moreno-Ruiz, 1997; Duch-Gary, 1998; SECOFI, 1999).

According to a study carried out by Duch-Gary (1998:66) referring to 1992, 95 per cent of clothing firms in Aguascalientes produced for the national market (regional market 34 per cent and national market 61 per cent). However, the advance of maquila activities in the region since NAFTA has been spectacular. In 1992 there were only four maquila firms in Aguascalientes, their number increased to eight in

1994 and, by 1998 their number had reached 83 firms (SECOFI, 1999). In employment terms, the number of jobs generated by the industry increased from 828 in 1992, to 5,388 in 1994 and 19,339 in 1998 (INEGI, Banco de Información Económica, 2002). In 1999, maquila firms accounted for 69.3 per cent of total clothing employment in the region (COCITEVA, 2000: 5). Maquila plants, i.e. large-scale firms, are also responsible for the bulk of exports from the LPS (Martínez-Reyes & Moreno-Ruiz, 1997; SECOFI 1999). Thus, there is a duality between nationally-oriented firms of small scale and the larger scale export-oriented maquila plants in Aguascalientes.

The enquiry made use of location quotients to identify clothing specialisation in the different regions, as well as to measure their specialisation and importance in the local industry. As was discussed in Chapter 2, the spatial agglomeration of production is important to promote the competitiveness of the agglomerated firms and industry. The Aguascalientes cluster was also selected because it was the main region specialising in clothing during ISI and it still remains the second most specialised clothing region in the open economy, as shown by its high location quotients (see Table 5.1).⁸¹ This confirms the idea that following trade liberalisation and integration this region has maintained clothing as an important local manufacturing industry.

The Guadalajara region was also selected in order to make the case studies more comparable with other regions of a similar size but following different trajectories. The clothing industries of Aguascalientes and the Guadalajara region were relatively

⁸¹ As previously indicated in this thesis, a coefficient higher than 1 indicates that clothing specialisation in the region is higher than the country average.

similar in 1985, as shown in Table 5.2. These two sites have then registered different levels of production performance and followed different market strategies, after NAFTA entered into force in 1994. Hence, both of these regions were included in the research as it sets out to analyse LPSs with relatively homogeneous characteristics during ISI, but which where production orientation and performance indicators have diverged since the opening to trade. Moreover, the case of the Guadalajara region is an interesting one, since it was one of the main garment producers during ISI and follows the ISI pattern of localising production around large populations. It also illustrates the relative decline of regions located around large population agglomerations.⁸² Furthermore, the clusters of the Guadalajara region are those typically analysed by theory focusing on the LDC and represent a paradigm for the study of industrial clusters in Mexico (see, for instance, Rabellotti, 1995, 1997; Storper et al, 2004).

The mass production agglomeration of the central part of Mexico (i.e., Mexico City and Mexico State) was excluded as a case study given its large size during ISI, which makes it incomparable to other clusters. In addition, given the high levels of informality among clothing producers in the capital of the country (Suárez-Aguilar & Rivera-Ríos, 1994), it was expected that the willingness of actors to cooperate with the research project would be low.

⁸² Guadalajara remains the second largest city of Mexico in population terms (INEGI, Banco de Información Económica, 2001).

Table 5.2 Clothing Production and Employment in Selected LPSs, 1985–1998

States	% National production			% National employment		
	1985	1993	1998	1985	1993	1998
Aguascalientes	3.7	2.8	3.6	6.5	3.7	3.4
Guadalajara region	5.2	3.4	2.6	4.7	2.7	2.4
La Laguna region	2.4	4.1	9.1	2.7	7.3	8.4
<i>Nation</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Source: All figures calculated based on: INEGI, *Censo Industrial: Aguascalientes state*, many years; INEGI, *Censo Industrial: Coahuila state*, many years; INEGI, *Censo Industrial, Durango state*, many years; INEGI, *Censo Industrial: Jalisco state*, many years.

La Laguna region, the cluster that has opened up to the globalisation process. This non-traditional site was chosen because it represents the new type of agglomeration developed after trade liberalisation. The restructuring of the clothing industry in La Laguna followed a different path to that pursued in traditional production sites. In contrast to national producers, the region incorporated its garment industry into the global production system (Gereffi & Martínez, 2000; Blair 2001). The cluster restructured its market production from one focused on the local/regional market to one geared to international markets through international production-sharing, widely known as *maquila*. The garment industry was moderately developed during the last years of Mexican trade protectionism but has experienced a remarkable upturn in performance since trade liberalisation.

The expansion of the clothing industry in La Laguna following trade liberalisation confirms its adaptation to the globalisation process. During ISI, the garment industry in La Laguna was not well developed and had a modest weight in the national

garment industry, as shown in Tables 5.1. and 5.2. Most garment items were brought in from the centre of Mexico. However, this area developed rapidly following trade liberalisation and it has also experienced a boom since NAFTA came into effect, which transformed the region into one of the most important garment-producing zones and the main export cluster in Mexico (CEPAL, 1996; CNIV, 2000a, 2000b; Gereffi & Martínez, 2000).

The maquila industry in La Laguna began its impressive development soon after liberalisation. Although the maquila programmes existed before trade liberalisation, the number of firms engaged in its 807 activities increased dramatically in the region; from there being only three firms accounting for 203 jobs in 1980, to 64 firms generating 8,037 jobs by 1990. By 1990 the region had become the focal point for garment maquila activities in the country, generating a fifth of all maquila employment in Mexico's garment industry (CEPAL, 1996: 52).

Furthermore, La Laguna has undergone a significant product, process and sectoral upgrading along the international value chain (Vera-García, 2001), suggesting that it has successfully integrated into the global system of production, particularly with the USA.

In order to identify the export-oriented case, location quotients for the maquila industry were calculated (see Table 4.11) and these were compared against quotients for the garment industry as a whole (see Table 5.1). The state of Durango was originally selected as the area for case study. Of the states specialising in maquila clothing production (see Table 4.11), Durango noted the highest specialisation in

clothing in the country, followed by the state of Coahuila. In fact, Durango was not only the most specialised in maquila production but also the state most specialised in clothing in the entire nation after the opening to trade, as denoted by its high location quotient (see Table 5.1). Moreover, studies conducted by CEPAL (1996: 52) and Mendiola (1997: 204) on the maquila industry confirmed that this region concentrated more maquila firms in the garment industry than any other part of the country.

In the state of Durango, the garment industry is agglomerated in La Laguna, a metropolitan region situated on the border of two northern states, which are highly interconnected as one production system.⁸³ The adjoining municipalities of Gómez Palacio and Lerdo in the state of Durango and Torreón in the state of Coahuila make up La Laguna region, covering a territorial extension of 2,938 km². According to the latest regional data from the economic census, referring to 1998, the La Laguna municipalities of Gómez Palacio and Lerdo concentrated 95 per cent of the total clothing employment and production in the state of Durango. Meanwhile, production in the Torreón area represented about 50 per cent of that of Coahuila state's clothing sector (INEGI, 2001a, 2001b). Hence, the enquiry was carried out in the region as a whole. In fact, the clothing industry in the aforementioned municipalities of La Laguna region concentrate the production and the main textile and garment firms in their respective states (SECOFI, 1998c; CNIV-La Laguna, 2000a, 2000b).

⁸³ This zone constitutes a nucleus of interdependent municipalities connected to one another via an important means of communication between the central-northern and the central-eastern regions of Mexico. In fact, the interdependency of these municipalities has been favoured since their creation with the launch of the regional train system in 1901.

The high location coefficients in both Durango and Coahuila states also demonstrate the expansion of La Laguna in the national clothing industry, as well as a great expansion of this industry in local manufacturing, as shown in Table 5.1. Furthermore, clothing production in La Laguna region has increased in proportion to national production from 2.4 per cent in 1985 to 9.1 per cent in 1998; while its employment contribution rose from 2.7 per cent to 8.4 per cent, as shown in Table 5.2. Moreover, the concentration of local employment in La Laguna increased, suggesting that important external economies have taken place in the cluster (see Table 5.3). These performance levels show the increasing importance of the La Laguna clothing industry in a competitive environment. Hence the interest in studying this remarkable case.

Table 5.3 Clothing Employment in Selected LPSs, 1985–1998

Clusters	1985 (ISI period)	1993 (GATT period)	1998 (NAFTA period)
Guadalajara region:			
Employment in the clothing industry	4,978	5,658	11,105
Garment employment / Total manufacturing employment in the region	3.6 %	3.6 %	4.9 %
Aguascalientes:			
Employment in the clothing industry	6,959	7,771	15,381
Garment employment / Total manufacturing employment in the region	24.7 %	17.7 %	25.8 %
La Laguna region:			
Employment in the clothing industry	2,272	15,255	38,337
Garment employment / Total manufacturing employment in the region	8.9 %	28.1 %	44.6 %

Source: All figures calculated based on: INEGI, *Censo Industrial: Aguascalientes state*, many years; INEGI, *Censo Industrial: Coahuila state*, many years; INEGI, *Censo Industrial, Durango state*, many years; INEGI, *Censo Industrial: Jalisco state*, many years.

5.2.2 The criteria for homogeneity within clusters

Selected clusters also met the criteria of homogeneity and shared similarities that then diverged after the opening to trade. The criteria of homogeneity provide an insight into the nature and strength of linkages, knowledge spillovers, industrial organisation and institutional support structures in clusters. The Guadalajara region and Aguascalientes, as other traditional clusters, benefited from the expansion of markets where production and population was concentrated during ISI (Arias, 1988). Meanwhile, smaller producers such as La Laguna and the new maquila clusters located in the northern part of Mexico, were underdeveloped and catered to the local/regional market. Nevertheless, LPSs in Mexico shared common features in their industrial organisation during ISI⁸⁴. Across the clusters, firms were typically small scale, family owned and managed and catered to the regional and/or national markets (Arias, 1985; Suárez-Aguilar & Rivera-Ríos, 1994; Medina-Ortega, 1997; Rabellotti, 1997; Vangstrup, 2002). Similarities in selected LPSs are presented in Table 5.4

⁸⁴ See Rabellotti for clusters in the Mexican footwear industry (1997, 1999).

Table 5.4 Criteria Selection of Selected Agglomerations during ISI

	Nationally-oriented: Guadalajara	Export-oriented: Laguna Region	Intermediate LPS: Aguascalientes
Market orientation	National/Regional	Regional	National/Regional
Firm structure	Micro & small firms	Micro & small firms	Small & medium size firms
Cooperation and knowledge-sharing with suppliers	No	No	No
Subcontracting within agglomeration	Wide	Not wide	Wide
Location of hub subcontractors	Local larger firms	Locally	Local larger producers
Cooperation with subcontracted firms	No	No	No
Subcontracted firms in the LPS	Informal sector	Informal sector	Informal sector
Main activities along the value chain	All activities along the value chain.	All activities along the value chain, with low levels of production.	All activities along the value chain.
Origin of innovation	Machinery and garment samples generated abroad and introduced with lag in the national market.	Machinery and garment samples generated abroad and introduced with lag in the market.	Machinery and garment samples generated abroad and introduced with lag in the national market.
Active role of local government	No	No	No
Cooperation and knowledge and innovation transfer in the cluster (dynamic external economies)	Low. Almost inexistent	Low. Almost inexistent	Low. Almost inexistent
Availability of local suppliers and labour force (static external economies)	High	Low	Moderate
Surface km ²	2,109	2,294	1,667

Source: INEGI, *Censo Industrial*, many years; INEGI, *Censo Industrial: Aguascalientes state*, many years; INEGI, *Censo Industrial: Coahuila state*, many years; INEGI, *Censo Industrial, Durango state*, many years; INEGI, *Censo Industrial: Jalisco state*, many years; OECD, 2002a; and direct research by the author.

Forward linkages. During the ISI period a large part of the production in Guadalajara, Aguascalientes and La Laguna was sold either within the region itself or in neighbouring states. The low quality, high prices, low volumes and delayed

delivery times also led to an anti-export bias. A typical firm produced and sold in regional markets without a market strategy or brand image (Altenburg et al., 1998). If producers did not sell their own garments directly, they had shop owners or individuals acting as brokers, who on many occasions were also relatives or neighbours of the producers (Arias, 1988). Brokers gathered small quantities from different producers that were then distributed to street markets (*tianguis*), boutiques, offices and shops in other regions (Arias, 1988; Suárez-Aguilar & Rivera-Ríos, 1994).⁸⁵

With a captive market and a lack of incentives to incorporate new designs and products, forward linkages were weak and not developed. The closed economy also limited competition and the demand for products of a higher quality, which in consequence constrained the formation of cooperative linkages. The relationship between producers and buyers was merely pecuniary, without any kind of cooperation or support (Altenburg et al., 1998). Agreements between the former and the latter centred on negotiating prices rather than on fostering cooperation capable of transmitting information and knowledge to increase product quality and regional competitiveness.

The weak forward linkages were a constant fact across clusters during ISI. Although not located close to any large urban concentrations, Aguascalientes followed the same dynamics in forward linkages as large urban concentrations. Its relative proximity to Guadalajara and the centre of Mexico and its reputation for production in children's-wear attracted clients to the region (Arias, 1985; Suárez & Rivera,

⁸⁵ It is important to note that those were the main channels of garment distribution in Mexico during the ISI period. Large retailers and branded marketers (e.g. Walmart, K-mart, Sears, JC Penny, The

1994; Arias & Wilson, 1997). Meanwhile, La Laguna region had few producers, and these sold directly to rural markets.

Suppliers. Prior to trade liberalisation, the bulk of suppliers to the garment industry were located in Mexico City and the states of Mexico, Nuevo León, Jalisco and Aguascalientes (Arias & Wilson, 1997). In this way, Aguascalientes and Guadalajara were privileged clusters, given that suppliers were located within the boundaries of their regions.

In the case of La Laguna cluster, regional suppliers were not developed given the low levels of regional production during the protective period. Therefore, inputs were mostly brought in from mega-producer sites. The lack of local suppliers suggests that La Laguna producers not only lacked cooperation with suppliers but also had higher transport costs, having to bring in inputs from other regions.

The ISI strategy discouraged the growth of competitive suppliers and, consequently, inputs for the garment industry were of low quality and diversity, high prices and without commitment to service and delivery (Suárez-Aguilar & Rivera-Ríos, 1994; Martínez-Aznárez, 1997; Altenbug et al., 1998). Linkages with suppliers were based purely on pecuniary interchange and with little cooperation: the design and characteristics of textiles were left entirely up to the suppliers (González-Rodríguez, 2001).

Quota thresholds were another impediment to the development of a competitive industry during the protectionist period. Textile quotas were allocated

Gap, Levi Strauss & Co.) set up business in Mexico only after liberalisation took place.

discriminatorily and monopolised by the major department stores (Liverpool and Palacio de Hierro) in Mexico City, which then passed them onto their assemblers or distributed inputs elsewhere at high prices (Suárez-Aguilar & Rivera-Ríos, 1994).

Sources of Innovation. The small-scale production of clothing firms in the selected clusters, as elsewhere in the country, did not foster the use of new technologies, given the low level of competition meaning that products could be sold irrespective of their quality, diversity and price. In such an environment, firms lacked the incentives to develop new production techniques, design and or a sense of fashion (Katz, 2001). In the absence of an environment capable of encouraging innovation and development, firms used patterns and designs from abroad. The technological learning process of local firms was often based on copied versions of foreign products that were already in use in the economy and which were many years behind the international technological vanguard (Katz, 1987).

Patterns were adapted mainly from magazine images and to a lesser extent from garments that producers brought in from visits to the USA, which were then incorporated into the firm's production (Martínez-Aznárez, 1997). Given the business environment, there was little incentive to introduce fashion into the equation. During the ISI period design and fashion were introduced into the Mexican market with a considerable time lag, at least one year behind the USA and Europe (Altenburg et al., 1998). Thus, without taking into account international fashion and techniques, national producers worked to their own 'designs', cost structure and quality parameters.

The semi-closed model indirectly established other horizontal settings for LPSs in Mexico, such as the use of old and less sophisticated machinery (González-Rodríguez, 2001). Efficient techniques and organisation of the labour force were also implemented with relative empiricism.

Subcontracting and the shape of the regional industry. During ISI selected LPSs tended to follow similar subcontracting practices to those of the country as a whole. Subcontracting was widespread within the clusters of Guadalajara and Aguascalientes⁸⁶. During the ISI period subcontracting practices were stimulated to decrease labour costs and improve flexibility in market cycles (Altenburg et al., 1998). Flexibility was important due to the nature of the clothing industry, in which the demand for garments varies according to the seasons. Due to local weather patterns, there have traditionally been two fashion cycles per year in Mexico, with an increase in demand around Christmas time (Altenburg et al., 1998). For that reason, productive capacities were not fully used at other times, and hence subcontracting became an important cushion for demand variations in the semi-closed economy (Suárez-Aguilar & Rivera-Ríos, 1994; Altenburg et al., 1998).

Contractors in the different LPSs were firms within the formal economy. Within clusters, the leading firms were in charge of adapting and developing patterns, grading, cutting, finishing and marketing garments (Arias, 1988; Suárez-Aguilar & Rivera-Ríos, 1994; Arias & Wilson, 1997). On the other hand, subcontractors were small workshops, to a large extent domicile workers, in charge of assembling and sometimes carrying out labour-intensive finishing activities such as ironing (Arias &

⁸⁶ Firms not involved in subcontracting practices produced low quantities of complicated garment pieces (i.e. wedding dresses, baptism clothing or garments that need more detail – see Arias, 1986).

Wilson, 1997; Altenburg, 1998). According to Arias (1988), the relationships between contractors and subcontracted firms were normally established through family links or employees, who, after working in a firm, had decided to work from their homes or closer to them.⁸⁷ Arias and Wilson (1997) noted that in a typical transaction, contractors distributed garments in pieces that then were assembled by many subcontractors in the same neighbourhood or municipality.

One important characteristic of the latter kind of firms was their belonging to the informal-sector⁸⁸ and their resulting poor working conditions (Arias 1985; Arias 1988; Suárez-Aguilar & Rivera-Ríos, 1994; Arias & Wilson, 1997). Informal workshops were located at the back of houses, making it difficult to trace their existence. Subcontracted firms received irregular orders from many clients and were paid on the return of the garments. Employees were paid by the piece and the total payment was below the minimum wage (Arias, 1988). It was also difficult to improve upon the poor working conditions given the lack of unionisation. Subcontracted workshops did not have any kind of union that supported them, since the firms operated in the informal sector of the economy (Arias, 1988). In fact, the development of the garment industry in Aguascalientes and the Guadalajara region has been linked to the illegality of this industry and a certain tolerance of such activities has been shown by local government (Arias & Wilson, 1997). Thus, the duality between the formal and informal sector was an important characteristic of the production systems that originated in the ISI period.

⁸⁷ Working from home or in the workshop of a neighbour allowed female workers the flexibility to fit work around household activities.

⁸⁸ Suárez-Aguilar & Rivera-Ríos (1994: 134) distinguished between two types of informal firms: 1) firms with less than five workers, for which there is no legal obligation to register as a formal firm; and 2) workshops evading the payment of taxes and legal working conditions and payments.

The relationship between contractors and subcontractors in the traditional agglomerations of Aguascalientes and Guadalajara was limited to a trade relationship oriented to decreasing costs, without cooperation or technological transfer between firms (Arias, 1985, 1988; González-Rodríguez, 2001). Rent-seeking firms increased profits in the protective market by reducing costs through subcontracting in the informal sector and indirectly by decreasing their expenditure on innovation. Since quality, delivery times and standards of production were not imperative, monitoring in subcontracting was not widespread and garments varied in quality in the LPSs (González-Rodríguez, 2001). Thus, various firms produced the same garment to different standards depending on individual experience, expertise and machinery.

Institutional linkages. During the ISI period, the level of local institutional involvement in supporting firms was minimal throughout the entire country. According to Mújica (1997) the corporative state promoted associations of social groups to articulate an electoral base and representation. Local branches of the National Chamber of the Clothing Industry developed in the traditional garment sites with the fundamental objective of gaining entrepreneurial representation in the different levels of government (CNIV-Aguascalientes, 2000). Local chambers of the garment industry surged in Guadalajara and Aguascalientes in the late 1960s to represent one of the most important regional industries during the ISI period (CNIV-Guadalajara, 1994; CNIV-Aguascalientes, 2000). Underdeveloped sites such as the La Laguna region lacked their own local chamber.⁸⁹ From their conception, local chambers grouped together firms from the formal sector of the economy, which were led by prominent local entrepreneurs (Martínez-Omaña, 1994). Local garment chambers were the only institutions in which agglomerated firms were organised,

given the legal obligation on firms to become members of a local chamber. Chambers also followed the trends of the ISI environment: they seldom offered competitive services to their captive group of entrepreneurs that might serve to strengthen the regional industry (Martínez-Omaña, 1994; Mújica, 1997).

The ISI strategy also discouraged firms and knowledge institutions from establishing cooperative linkages. With most of the support provided through trade protection, firms in selected clusters lacked direct regional entrepreneurial policies. Federal government delivered horizontally-oriented policies and Mexican states lacked regional policies until the late 1980s (OECD, 1997; Ruiz-Durán, 1999; González-Rodríguez, 2001). Thus, local institutions were underdeveloped and as a consequence unable to promote business support.

In summary, the examination of the criteria of homogeneity between clusters suggests that garment clusters during the ISI period were encouraged by the static effects of agglomeration. Traditional agglomerations developed through a pooling of labour force, suppliers and particularly due to their proximity to large markets. However, the main characteristics of the LPSs were the weak linkages and almost non-existent cooperation in productive and institutional linkages. On the other hand, non-traditional clusters, such as La Laguna region, were underdeveloped, with LPSs less capable of promoting static external economies.

⁸⁹ The La Laguna Chamber of the Clothing Industry was created in 1994.

5.3 Historical background of the selected case studies

The Guadalajara region, the cluster that has remained closed after the opening to trade. The industrial sector in the state of Jalisco started to develop during the 1930s, being heavily concentrated in the Guadalajara region, one of the largest manufacturing centres in Mexico. It was in the 1940s, during World War II, that the local industry developed rapidly at a time when the region also experienced a significant growth in population. The trajectory of the industrial sector in Jalisco has led to the establishment of micro and small firms in traditional sectors that cater to the national/regional market, features that still remain in such industries (Mercado, 1980; Medina-Ortega, 1997). Since the onset of local industrialisation, sectors such as the food processing, textiles, clothing, footwear and wood industries have predominated in the Guadalajara region (García-Batiz & Rodríguez-Bautista, 1995)⁹⁰

Within the spectrum of manufacturing branches, the clothing industry has played an important role in the industrial development of Guadalajara. The clothing industry has been one of the pillars of industrialisation in the state while contributing significantly to the creation of wealth and manufacturing employment (Wilson, 1991:13).⁹¹

Since its origins, the clothing industry in Jalisco state has been concentrated around Guadalajara, the capital of the state, and it then spread to its metropolitan area in the late 1970s (Castillo-Aja, 1995). Family-managed small firms and workshops were

created in the late 1940s and 1950s to meet increasing local demand for garments (Mercado, 1980). Immigrants of Jewish origin established some of the pioneer firms in the region. They bought textiles that were sent to domicile workers for the manufacture of garments (Hanson, 1994b; Altenburg et al., 1998).

Guadalajara was one of the two main population agglomerations in the country and the demand for clothing grew in parallel to the increasing population and purchasing power of the region (CNIV-Guadalajara, 1994; Arias & Wilson, 1997: 16). As a response, the garment industry modified its practices to face the increasing demand in the early 1960s, when the region shifted from made-to-order garment production towards mass production practices (Mercado, 1980; CNIV-Guadalajara, 1994). That was when the garment industry became one of the leading manufacturing industries in the region (García-Batiz & Rodríguez Bautista, 1995).

Thus, benefiting from a large population, a protectionist framework and an expanding market, the Guadalajara cluster developed as one of the most dynamic sites within the Mexican clothing industry during the ISI period (Wilson, 1991). In 1985, Jalisco's production was just behind that of the agglomeration of Mexico City and Mexico state, as shown in Table 5.1.

The intermediate case of Aguascalientes. Industrial development in Aguascalientes has also been linked to the clothing industry. One difference in the development of

⁹⁰ In addition to traditional sectors, the electronics industry developed in the second half of the 1980s. That industry is characterised by assembly production in large-scale firms. Firms are maquila firms or trans-national companies with weak local linkages (Dussel-Peters, 2000: 185).

⁹¹ In fact the clothing industry remains the fourth largest source of manufacturing employment in the state, accounting for five per cent of total manufacturing employment in the year 2000 (SEIJAL, 2000: 7).

the industry in Aguascalientes compared to that of the Guadalajara region was its late transition from a rural area into an industrial site, which occurred during the late 1970s, and relied heavily on the clothing industry (Arias, 1988). In fact the clothing industry was the first sign of industrial activity in this state, where the agricultural sector had played a predominant role in the local economy (Martínez-Omaña, 1994).

The clothing industry in Aguascalientes was developed in the 1960s, later than in the traditional large urban agglomerations. In the beginning, firms produced bed linen and openwork, with some firms specialising later in knitted garments and children's wear (Arias & Wilson, 1997: 17). The early producers started by manufacturing and directly selling their garments in San Juan de los Lagos, one of the busiest religious sanctuaries in Mexico.

Since its origins, the local clothing industry has been characterised by small-scale firms, based on family business and specialised in knitted garments and children's wear. It was not until the last years of ISI that the local garment industry took off and proper factories were established in the late 1970s and early 1980s in response to increasing demand from Mexico City, Guadalajara and Monterrey. Local producers then expanded their markets and began to cater to the national market at a time when the garment industry in Aguascalientes was advancing more than in any other region in Mexico (Arias & Wilson, 1997; Bair, 2001).

At the local level, the clothing industry has always represented an important source of employment and production (Martínez-Omaña, 1994; Arias & Wilson, 1997). The

garment industry and the automobile industry,⁹² are the region's most important industries (Martínez-Omaña, 1994; Salado-Hernández, 1996). According to Duch-Gary (1998:20) firms in the clothing and textile sector account for 14 per cent of the total manufacturing businesses, employing 43 per cent of the manufacturing workforce in the state. Meanwhile, the latest available statistics show that the clothing industry employed 26 per cent of all manufacturing employees in Aguascalientes in 1998, as shown in Table 5.3. Historically high location quotients further illustrate a regional industry with a significant specialisation in garments (Table 5.1).

However, the outlook for the Aguascalientes cluster changed with trade liberalisation. As in the Guadalajara cluster, Aguascalientes continued producing for the domestic market after the opening to trade. Aguascalientes' clothing sector lost dynamism in the national arena but underwent market changes with economic integration (Martínez-Reyes & Moreno-Ruiz, 1997).

The adjustment of the LPS stimulated the formation of consortia to overcome sectoral problems and the LPS of Aguascalientes bifurcated into two different business strategies (Arias & Wilson, 1997, SECOFI, 1999). To date the consortia have embraced the main producers of the cluster (i.e. Grupo Barba and Grupo Maty). On the one hand, the group of maquila plants grew out of a group of old factories that first introduced the Fordist production system into the LPS, led by the Grupo Barba, along with a number of new entrepreneurs that relocated production from Mexico City (Martínez-Omaña, 1994). On the other hand, firms led by Grupo Maty and the majority of micro and small firms, continued to cater to the domestic market

⁹² The automobile industry began to develop in the region just before liberalisation took place.

(Martínez-Omaña, 1994; SECOFI, 1999; Bair, 2001).⁹³ The group of firms producing for the domestic market continued by and large to specialise in children's wear and knitwear, while export producers now mainly produce trousers and denim garments (Arias & Wilson, 1997; Martínez-Reyes & Moreno-Ruiz, 1997). Only a very reduced number of small non-subcontracted firms are still in the market producing small quantities of elaborate products such as wedding and baptism dresses (Martínez-Omaña, 1994:33).

La Laguna Region, the cluster adapted to the globalisation process. The garment industry has been present in La Laguna for over 40 years, but its development was relatively modest until trade liberalisation took place. Despite the economic crises of the 1980s and strong foreign and national competition after liberalisation, which almost destroyed this industry, the garment industry in the La Laguna region managed to drastically improve its performance. In fact this region has experienced a boom since NAFTA came into effect, which consolidated the region as one of the most important producers of garments in Mexico and the main production site for the international market. Nowadays, many of the most important designer labels are based there or have connections to local firms. La Laguna has undergone significant transformations in order to successfully adapt to the new context of globalisation.

Agricultural production, predominantly the production of cotton, was the most important economic activity carried out in the region until the early 1950s when this

⁹³ This group of hub firms are in charge of establishing subcontracting practices in the LPS. Meanwhile, maquila firms in the region tend to concentrate production and employment and hence are not widely involved in subcontracting practices.

activity reached its peak.⁹⁴ However, the importance of cotton growing began to diminish during the second part of that decade. Federal subsidies for agricultural activities started to decrease when the central government changed its policies regarding the promotion of the industrial sector. This, in conjunction with a fall in international prices for agricultural products and significant technical developments had a profound effect on the local economy (Solís, 1973; Gobierno Municipal de Torreón, 1997). At a time when the agricultural sector was losing importance, the industrial sector started to develop in the region.

The clothing industry was developed in the 1950s by a few entrepreneurs who specialised in a niche market to avoid direct competition with centres of mass production. La Laguna specialised in the production of denim trousers⁹⁵ for the neighbouring rural areas. These products were manufactured in La Laguna and sold by the producer himself, by relatives or in shops in small neighbouring villages (from the Chihuahua mountain range to the state of Sinaloa).

During the import substitution period, the garment industry in La Laguna was not well developed, given that most garment products were brought in from the centre of Mexico (CNIV-La Laguna, 2000b). The levels of production and employment were almost half those of the traditional sites of Aguascalientes and Guadalajara, as shown in Table 5.2. Thus, the garment industry had no great impact on the industrial development of the region, accounting for nine per cent of local manufacturing

⁹⁴ The region accounted for more than 50 per cent of national cotton production (Vargas-Lobsinger, 1999: 11).

⁹⁵ These trousers were considered in the past as 'trousers for peasants and workers', since they were often used in the countryside for their durability.

employment in 1985. However, La Laguna has experienced a boom since the advent of trade liberalisation.

The restructuring of the garment industry in La Laguna followed a different trajectory to that taken in the other regions. In contrast to those cases, the region incorporated its garment industry into the global production system soon after trade liberalisation. The integration into global production occurred in two distinct phases: the first phase saw the shifting of producers into assembly plants after 1986; the second phase took place in the period after NAFTA, when the region began to upgrade along the international production chain.

Given the strong competition from imported garments, the prices of the products and relationships with clients and suppliers had to be reconsidered. Given the problems of high inflation, high interest rates and the loss of purchasing power in the domestic market, maquila production emerged as an option for the local producers. At first, firms attempted to restructure their production for the domestic market, however, a shortage of capital, along with the 1986–87 economic crises, further encouraged them to engage in assembly activities.

In the new open context, firms shifted from being in charge of the whole value chain into specialisation in just one phase of the production process. Maquila activities offered producers a more secure income and less uncertainties with regard to variations in the price of inputs.⁹⁶ The assembly process consisted of US firms sending packages with pieces of garments already cut, ready to be assembled and then sent back to the USA.

Firms left behind the national market, the marketing, sourcing and design of products. One by one the firms followed pioneer firms and converted their productive system into one production line, more labour-intensive and oriented to export assembly operations through maquila programmes or second tier subcontractors.⁹⁷ New agents appeared in the cluster. Producers in the region then became assemblers for US contractors.

The shift into maquila firms did not mean a change in the specialisation of the garments produced regionally. During ISI, local firms specialised in the production of trousers for the rural and regional markets. With economic integration, the specialisation of the cluster remained trousers and jeans. The difference is in the market orientation, the specialisation in a global production chain and the type of clients.

Under the 'new' form of production, firms started to accommodate to the global production system: between 1988 and 1993 firms accumulated capital, while their size and number grew at the same pace. Over those five years, the average size of maquila firms in the area grew from 68 to 125 employees per plant (CEPAL, Statistical Annex, 1996). In fact, in 1990 the region became the main site for garment maquila activities in the country, generating one fifth of total maquila employment in Mexico's garment industry (CEPAL, 1996: 52).

⁹⁶ The maquila programme was explained in detail in Chapters 3 and 4 of this thesis.

⁹⁷ The importance of maquila practices has changed the industrial organisation of firms within the region. As maquila activities have spread over the region, second tier subcontractors have developed in recent years.

The signing of NAFTA brought important challenges, opportunities and changes to the La Laguna region. Trade integration meant changes in the way production was carried out. With government promotion of the maquila industry and the change in duty regulations, NAFTA offered the region the possibility to integrate and upgrade its industrial sector to more value added activities; that is, the cutting, labelling, packaging and finishing of garments (also see Gereffi & Martínez, 2000; Vera-García, 2001). La Laguna region was able to upgrade its industry to activities with higher value added along the productive chain. One difference that can be highlighted when comparing La Laguna to the Aguascalientes cluster is that the latter incorporated international production-sharing at a later stage and is greatly specialised in assembly activities while the La Laguna region is involved in activities of higher value added along the productive chain, allowing the LPS to become more integrated into the global production system.

In the open economy, the clothing industry became the main source of employment within the region. By 1998, the clothing industry in La Laguna accounted for 45 per cent of total employment in the local industry, followed by the automobile industry accounting for 23 per cent of that total (see Table 5.3). This means that more than one third of La Laguna's employed population is involved in clothing-related activities.

To summarise, LPSs in Mexico began to undergo important transformations at the beginning of the 1980s. Following the economic crisis of 1982, businesses in the different regions had to respond to the weakening of the domestic market. The consequences of the economic crisis (high inflation rates, a fall in domestic

consumption and high interest rates) were just the beginning for national producers.⁹⁸

Mexican LPSs faced greater competition with trade liberalisation, which called for competitive firms in the market. The local industry was forced to make a series of adjustments in order to remain in the market. Some LPSs continued to cater to the regional/national market, other clusters adjusted, while still others chose to cater to the international market through international production-sharing. Proximity, therefore, became an important factor in order to spread adjustment strategies throughout the agglomerated firms that were shaping LPSs in the open economy.

5.4 The divide of LPSs: Evolution of selected clusters after the opening to trade

This section provides statistical data showing the divide in the selected LPSs after trade liberalisation. First, I will summarise the change in the production specialisation of clusters, before going on to analyse the performance of LPSs. The opening to trade altered LPSs; new actors, products, methods and markets have thrived as a result. *Having displayed homogeneous characteristics in terms of market orientation and industry organisation, LPSs have followed different trajectories in the aftermath of ISI.* With the entry of Mexico into the GATT, firms had to restructure the way they were doing business.

The opening to trade marked the divide in the LPSs of the Mexican garment industry and challenged the production systems at the regional level. Increasing competition overwhelmed local producers. Regional markets were flooded with imported and second-hand garments that were sold in street markets and shops catering to the

⁹⁸ Producers were faced with high inflation rates that affected the performance of their business. Thus, for instance, once producers sold their products, the payment received was not enough to pay for the

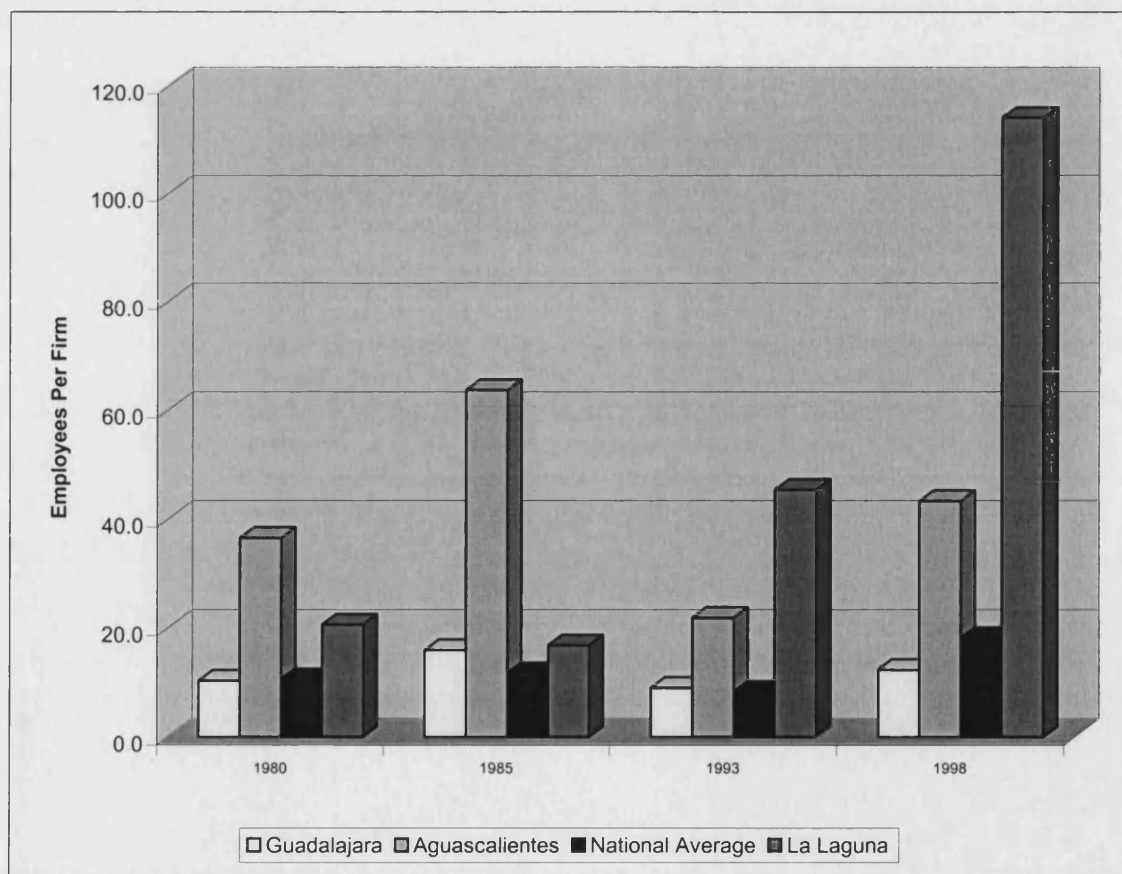
middle and lower classes of the population (Arias & Wilson, 1997). The GATT period was difficult for local producers, who for the first time were facing real international competition. Given the price levels and low quality and diversity of Mexican products, many garment producers went out of business in the late 1980s (Martínez-Aznárez, 1997; Gereffi & Martínez, 2000).

The LPSs, virtually homogeneous until 1986, split into two major production systems, as analysed in Chapters 3 and 4 of this thesis. Integration into international production-sharing became a real alternative for national producers. Non-traditional sites, as was the case of La Laguna, geared towards international markets, through international production-sharing. Meanwhile, the large traditional producers of ISI, such as Guadalajara and Aguascalientes, in the immediate aftermath of trade liberalisation continued to cater to the domestic market, seeking to retain power along the value chain. Aguascalientes displayed the same market orientation during the GATT period (1986–1993), producing for local and national markets (Arias & Wilson, 1997; SECOFI, 1999), but then adjusted during NAFTA, bifurcated its market orientation and integrated into the system of international production-sharing. Thus, the Aguascalientes and Guadalajara LPSs, both derived from ISI, followed different market trajectories after the conception of NAFTA.

In addition to the changes in the market orientation of LPSs, the size of firms also changed in the selected case studies, suggesting further industrial transformations. The size of firms is an important characteristic to differentiate the logic of functioning and the arrangements among the different LPSs. As pointed out previously, firms during ISI were typically micro and small scale. Data from the

industrial censuses show that the average size of firms in the nationally-oriented agglomeration of Guadalajara has remained relatively small. The average size of firms in the agglomerations catering to the domestic markets has remained stable, while the average size of firms has increased in the maquila, export-oriented LPSs such as La Laguna. Figure 5.2 shows the increase in scale of firms in La Laguna.⁹⁹ From a regional average of 17 employees per firm in 1985, the size of firms in the cluster has expanded to an average of 114 employees in 1998, as shown in Figure 5.2.

Figure 5.2 Average Clothing Firm Size in Selected Agglomerations



Source: Elaborated based on INEGI, Censo Industrial, many years.

⁹⁹ Given the lack of firm-size data at the municipal level, state data were used as a proxy for the

Aguascalientes, the now hybrid agglomeration, has followed the two trends of the previous agglomerations. In 1985 the scale of firms averaged 64 employees per firm, well above the national average of 12 employees per firm, as shown in Figure 5.2. An expansion of firm size was noted during the 1980–85 period, when the production in Aguascalientes was growing faster than in other sites in Mexico (Romo-Vazquez, 1995). During the first part of trade liberalisation, that is to say during the GATT period, when the region was producing for the national market and noting a poor performance, the average firm size decreased to 22 employees per firm. Figure 5.2 also shows that during the GATT period, Aguascalientes followed the same trend towards a declining firm size that was witnessed in the nationally-oriented cluster of Guadalajara. That trend was counteracted in the aftermath of NAFTA, when the Aguascalientes cluster commenced maquila production. Given the duality of firms in the cluster,¹⁰⁰ firms expanded to an average size of 43 employees in 1998. The average maquila size increased from 240 employees in 1996 to 261 in 1998 (INEGI, *Estadísticas de la Industria Maquiladora de Exportación*, 2001).

Furthermore, the industrial structure changed in Aguascalientes following trade liberalisation, with small firms declining in importance within the LPS. With increasing competition after GATT, a natural selection process among firms was a common situation. Small and medium-size firms were either dismantled and pushed out of business or became subcontractors to consolidated consortia (Martínez-Omaña, 1994)¹⁰¹. According to a study carried out by the Aguascalientes

respective LPSs.

¹⁰⁰ The duality of the Aguascalientes LPS lies on the one hand in a group of small-scale firms catering to the domestic market and, on the other, in a group of large firms largely oriented towards the export market (SECOFI, 1999).

¹⁰¹ Only a very reduced number of small non-subcontracted firms are still in the market, producing small quantities of elaborate products such as wedding and baptism dresses (Martínez-Omaña, 1994: 33).

government, subcontracting activities spread in the LPS during the GATT period and small subcontracted firms now represent the vast majority of businesses (Bair, 2001). On the other hand, leading firms (not subcontracted by local firms) are of two types: a group of contractor firms producing for the domestic market and the other hub maquila firms producing for international markets.

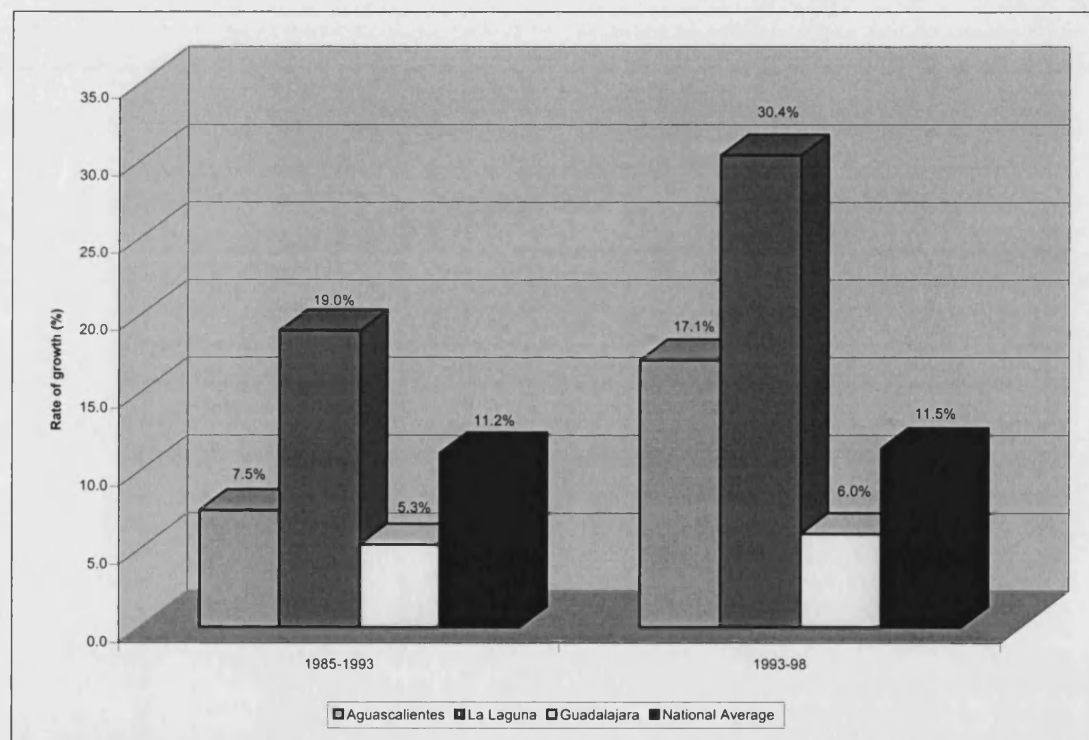
The change in industry organisation has also coincided with differences in performance across the LPSs. The evolution of LPSs is described in the following subsection with a series of indicators, which also show that selected clusters have notched up different performances since the opening to trade.

5.3.2 Comparative performance of the three clusters

Changing roles after liberalisation: Booming and declining performances. Aguascalientes, Guadalajara and La Laguna region have notched up different performances in the aftermath of trade liberalisation. Productivity in the previously lagging cluster of La Laguna has improved since trade liberalisation, while the nationally-oriented agglomeration is displaying the opposite trend. The Guadalajara cluster has been unable to match the national productivity average, as shown in Figure 5.3. While productivity in the clusters of Aguascalientes and La Laguna has increased well above the national average after economic integration, the Guadalajara cluster has struggled to catch up with other regions. This suggests that the organisation in the LPS is weak and unable to boost competitiveness in agglomerated firms.

The export-oriented region of La Laguna, on the other hand, has dramatically increased its rate of production per employee, defined here as an index of productivity. Annual growth there is significantly higher than the national average, and since NAFTA came into effect production has grown three-fold. In fact, the states where La Laguna is located (Durango and Coahuila) have registered the highest productivity growth in the entire country, as shown in Table 5.1.

Figure 5.3 Growth of Real Productivity in Selected Agglomerations

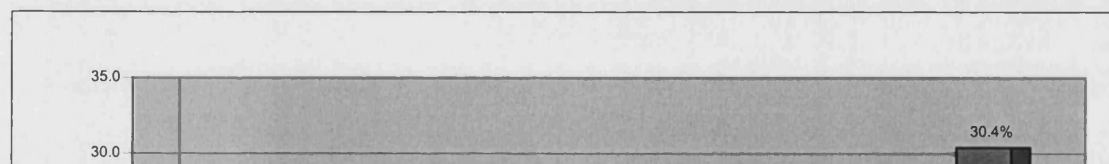


Source: Elaborated based on INEGI, *Censo Industrial*, many years.

As presented in the previous chapter, traditional garment sites have decreased in importance in Mexican industry since the opening to trade, while other agglomerations have taken the lead. Figure 5.4 shows the annual average change in garment production for the three cases, alongside the national average. The graph is

divided into three time periods: the first one from 1975 to 1985 shows the last part of the ISI period; 1985–1993, the second period, covers the time from when Mexico joined the GATT to the year before trade integration. The last period on the graph shows the performance of selected clusters from the time when NAFTA came into effect to the latest available data, referring to year 1998. Although an attempt was made to incorporate more recent statistics, the enquiry was limited by the data at the regional, municipal and branch level, only available in the Mexican Economic Census and published with a considerable time lag, the economic census of 2001, with data referring to 1998, being the most recent data used to compare Mexican regions.

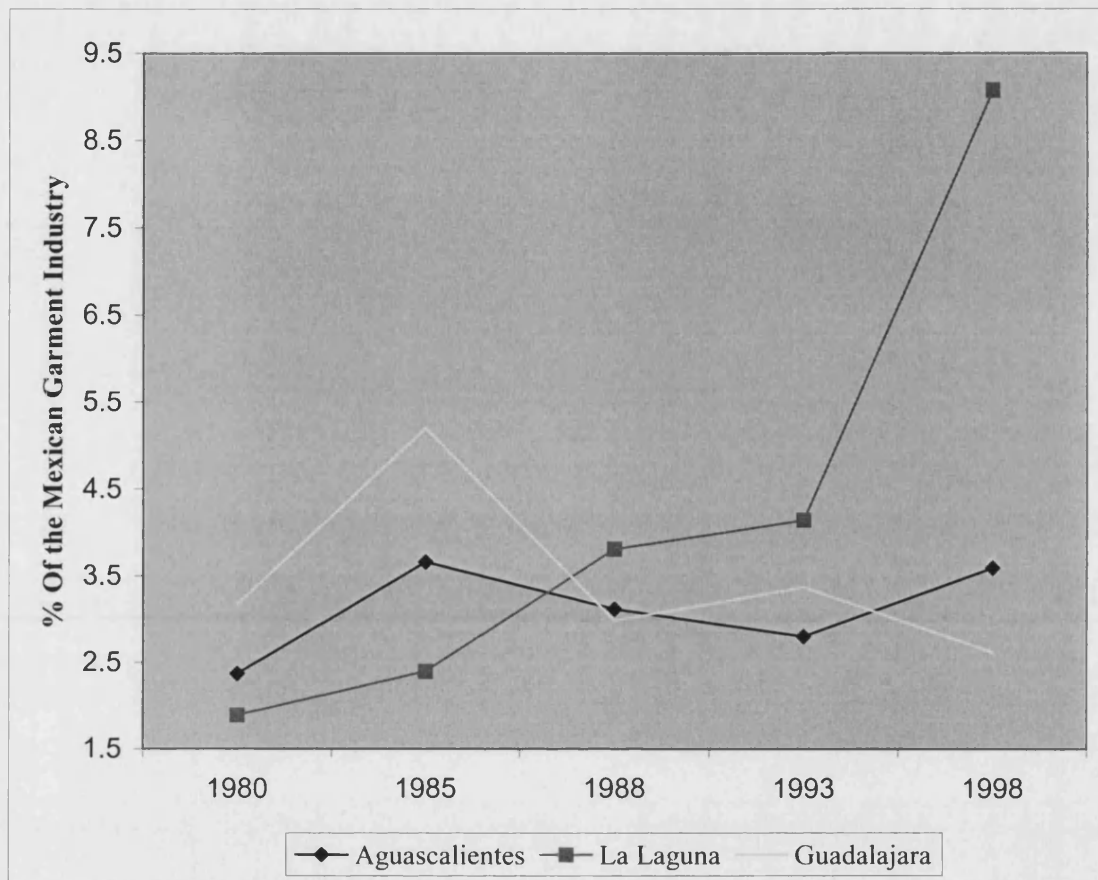
***Figure 5.4 Annual Average Change in Real Garment Production per Period.
Selected Sites***



The Guadalajara region, producing mostly for the domestic market, has followed a different trajectory to other selected clusters. Despite being one of the most important garment sites during the ISI period, this agglomeration has lost dynamism since trade liberalisation and, more importantly, since trade integration. This site, as other mass production sites, was unable to foster production growth in the open economy. Since the opening to trade, the Guadalajara cluster has been 5.5 percentage points behind the average national growth rate for clothing, as shown in Figure 5.4. At the same time, its share contribution to national production has decreased in the open economy: from 5.2 per cent of national clothing production in 1985, to 2.6 per cent in 1998, as shown in Figure 5.5.

The diverging growth rates in the production of selected sites have also translated into a divergence in share participation in the Mexican clothing industry. The contribution to national garment employment of the nationally-oriented LPS of the Guadalajara region (Jalisco) has also declined since the opening to trade. Its contribution to Mexican garment employment decreased from 4.7 per cent in 1985 to 2.4 per cent in 1998, half of its previous level, as shown in Table 5.2. The levels of employment there have not matched those in other sites, as shown in Figure 5.6.

Figure 5.5 Cluster's Contribution to National Clothing Production, 1980–1998



Source: Elaborated based on INEGI, Censos Industriales, many years.

The poor performance of Guadalajara contrasts greatly with those noted in the other case studies. The export-oriented cluster of La Laguna has registered a remarkable performance since the opening to trade. La Laguna has not only caught up with the production levels of traditional garment sites during the GATT period, but has surpassed them since economic integration and the cluster has experienced a boom in the open economy. The garment production in this export-oriented cluster grew by an annual average of 19 per cent during the GATT period and by 30 per cent in the 1994–98 period, as shown in Figure 5.4. The extraordinary growth rates in the La

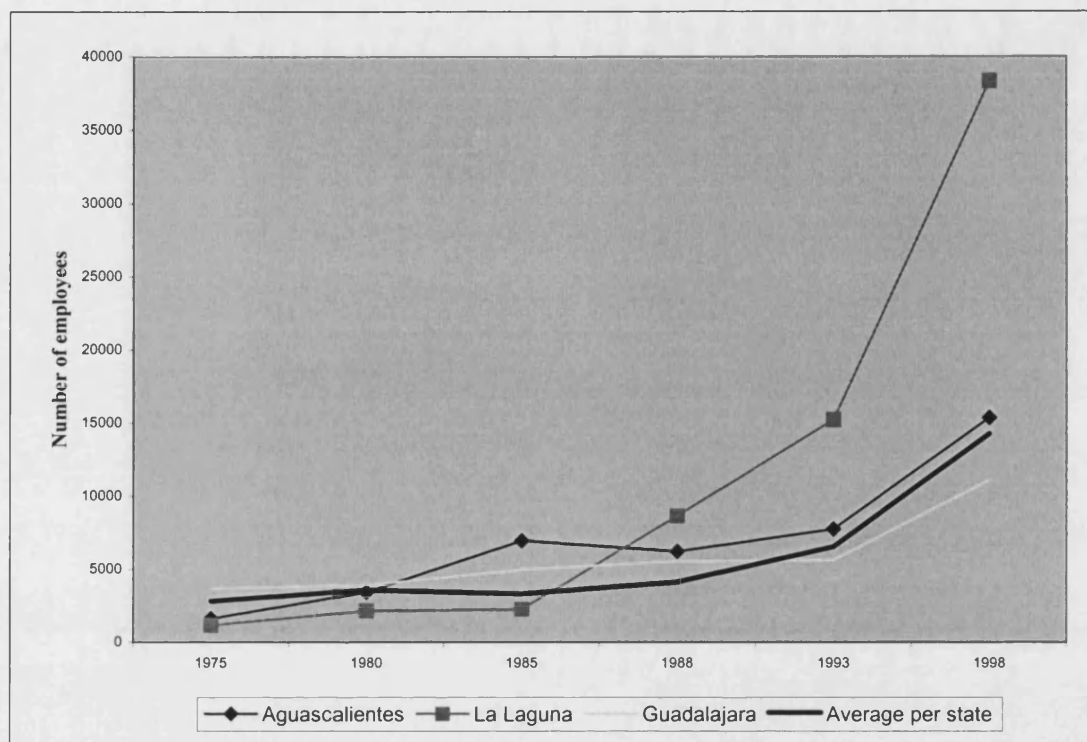
Laguna clothing industry are well above the national average annual growth rates of 11 per cent for the respective periods (see Figure 5.4).

La Laguna has also increased its share contribution to the Mexican garment industry. Figure 5.5 shows the percentage contribution of selected states to national garment production. This graph shows the escalating share participation of La Laguna in national production: from two per cent of Mexico's clothing production in 1985 to nine per cent in 1998, as also shown in Table 5.2. In addition, employment in the region rose from 2,272 employees in 1985, representing 2.1 per cent of national employment in the industry to 38,337 employees in 1998, some 8.4 per cent of Mexico's total clothing employment, as illustrated in Figure 5.6. These figures show the rapid advance of La Laguna's clothing industry in the new competitive environment.

Thus, La Laguna region has surpassed the production and employment levels of the traditional sites of Aguascalientes and Guadalajara, as is also shown in Figure 5.5 and Table 5.2. That has placed La Laguna as one of the main garment sites in Mexico after economic integration (see Table 5.1). Furthermore, garment exports have also expanded¹⁰² with some 21 of the 100 biggest clothing export firms in Mexico concentrated in La Laguna (SECOFI, 2000c).

¹⁰² Garment industry exports represented 57 per cent of total exports for the Durango state in 1998 (SECOFI, Cadenas Productivas, 1998).

Figure 5.6 Comparative Employment Levels in Selected Agglomerations



Source: Elaborated based on INEGI, *Censo Industrial*, many years.

Meanwhile, Aguascalientes, a traditional garment production site that has adapted to global production at a later stage, has registered a mixed performance since the opening. During the GATT period, while the region continued producing for the domestic market, production declined to levels below the national average, as shown in Figure 5.4. Firms faced financial problems and stiff competition, a situation that was aggravated when the market was flooded with imported garments and second-hand garments (Arias & Wilson, 1997: 154). The number of firms fell dramatically over this period: from 408 in 1985 to 184 at the end of the 1980s. This also had an impact on the number of employees, which fell from 40,000 to 24,000 during the GATT period (Arias & Wilson, 1997: 153). In this period the share participation of the cluster in national garment production, decreased as shown in Figure 5.5.

However, the cluster began to recover from this downward trend in 1994. This change coincided with the onset of NAFTA and with the fact that firms in the region started to produce for international markets. In the 1993–98 period, the production of Aguascalientes firms grew on average by 17 per cent per year, surpassing annual national average growth rates for the same period by six percentage points (see Figure 5.4).

Thus, the export oriented agglomeration of La Laguna benefited from the remarkable expansion of its clothing industry in the aftermath of trade liberalisation. On the other hand, the traditional cluster of Guadalajara, which catered to the domestic market lost out in the national arena and is experiencing a decline. Meanwhile, unlike in other traditional clothing agglomerations (massive urban agglomerations), productivity levels in Aguascalientes continued to increase after NAFTA. Thus, since trade integration Aguascalientes has followed the same trend as La Laguna, leaving behind the downward trend experienced by many traditional clothing sites that originated during ISI, as shown in Figure 5.3 and Table 5.1.

The selected case studies have thus followed different trajectories and performance since the opening to trade, which suggests different levels of external economies and varying strengths in the different LPSs. Table 5.5 summarises some basic characteristics of selected agglomerations and their comparative performance after the opening to trade.

Table 5.5 Basic Characteristics of Selected Agglomerations after Economic Integration

	La Laguna	Aguascalientes	Guadalajara
Market orientation	Export	National with increasing tendency towards exporting	National
Firm structure	Large firms	Combination of newly created large maquiladora firms and small firms	Micro and small firms
General situation since trade liberalisation ¹	+++	+	-
Value added in the region ²	+++	++ Changing to maquila firms	+ Decreasing. Changing to subcontracted firms
Location of hub subcontractors	USA	USA and larger local producers	Larger local firms
Cluster productivity ²	+++	++	-

Note 1: +++ very positive, ++ fairly positive, + satisfactory, – declining.

2: +++ High. ++ Moderate. + Low. – Very low.

Source: INEGI, *Censo Industrial: Aguascalientes state*, many years; INEGI, *Censo Industrial: Coahuila state*, many years; INEGI, *Censo Industrial, Durango state*, many years; INEGI, *Censo Industrial: Jalisco state*, many years; and direct research by the author.

The increasing or decreasing production, employment and productivity trends in the aftermath of the opening to trade suggest that internal arrangements in LPSs may lead to different performance. Different LPSs also suggest different organisation in the transmission, use and diffusion of new processes, products and techniques. As studied in Chapter 2, linkages within a network are of crucial importance to transmit information, knowledge and innovation to an LPS. Linkages are thus essential to promote the dynamic effects of agglomeration so that local structures might endure, compete and upgrade in the global world. Hence the importance of studying the

extent of network complexity among selected LPSs. Fieldwork was carried out to identify and analyse networks and linkages in selected LPSs. The results are presented in the following chapters.

5.5 Conclusions

Since the opening to trade different types of LPS have emerged in Mexico. Some clusters have chosen to produce for the international market through maquila activities while others have continued to cater to the domestic market. In order to assess the impact of trade liberalisation and economic integration on LPSs, case studies were chosen. Three cases were selected that were relatively homogeneous during ISI but that then followed different forms of organisation after the opening to trade: the traditional site of Guadalajara that continued to produce for the domestic market, La Laguna that geared its production to the international markets through maquila activities and the intermediate case of Aguascalientes, a traditional ISI site that then adapted to the globalisation process after economic integration.

The organisation of industry across selected clusters shared many common features during the period of closed economy. However, the opening to trade marked the divide in the organisation and performance of selected clusters. New markets, actors and arrangements within the LPSs appeared at the regional level. The transformation of LPSs also coincided with different performance across case studies. Thus, agglomerated firms that were similar in the past have now changed and have followed different trajectories since the opening to trade. As a result of all these changes we now have a new situation to the one prevailing during the protective

economy. Hence, fieldwork was carried out to assess the LPSs of selected cases. The results are presented in the following chapters.

CHAPTER 6

LPSs after the Opening to Trade

6.1 Introduction

In order to assess Local Production Systems in Mexico after trade liberalisation and integration, a survey was carried out in three clusters of firms specialised in clothing production. The aim of the enquiry is to analyse the strengths of selected LPSs through networks and linkages within and outside of the cluster, thereby identifying the agglomeration effects described in Chapter 2. In addition the enquiry analyses the location and strength of those linkages, as well as the value chain of case studies to identify their specialisation and competition in the international garment industry.

The analysis will show to what extent the opening to trade has affected the attitudes, organisation, learning and innovation of agglomerated firms, in order to shed some light on the strengths or weaknesses of different LPSs following liberalisation and trade integration. For this purpose I analyse and compare linkages and the condition of internationalisation of agglomerated firms — in terms of sales, clients, inputs, technology, cooperation, labour force and institutional support. Thus, the backward, forward and institutional linkages of firms are traced to identify to what extent the LPSs have improved or weakened in the open economy in comparison to the ISI times.

6.2 The sample

The fieldwork is based on a face-to-face questionnaire applied to a sample of 160 garment firms with different ownership, and is complemented with secondary data – publications and reports - as well as with 22 semi-structured interviews with entrepreneurs, academics and directors of local, regional and national institutions with direct relation to the clothing industry (see Appendix 1). Interviews were aimed at obtaining further firm behaviour and strategy in cluster restructuring (Schoenberger, 1991), as well as to check the validity and interpretation of findings (Healey & Rawlinson, 1993; Markusen, 1994). Given the comprehensive nature of the questionnaire, shown in Appendix 2, it was aimed and answered by owners or managers of the enterprises¹⁰³. Given the scale of this thesis, the enquiry takes into account only formal sector firms, which constitute the main producer and export sector of the Mexican clothing industry in the national statistics. The sample of firms was randomly selected from the directory of the local branch of the Cámara Nacional de la Industria del Vestido¹⁰⁴ (National Chamber of the Clothing Industry, hereinafter referred to as the CNIV). The sample covers around 25 percent of firms in the selected clusters:

- In the export-oriented region of La Laguna, the sample covered 23.6 per cent of clothing firms with independent ownership, comprising questionnaires applied to 33 firms out of 140 entrepreneurs registered with the regional Chamber.¹⁰⁵

¹⁰³ Respondents were made aware that this was an academic research and that no confidential information would be disclosure to any third parties.

¹⁰⁴ Firms in the formal sector of the economy were obliged by the 1947 Industrial and Business Chambers Law to become members of a Chamber. The Law of Chambers and their Confederations substituted the former law in 1997, which eliminated the legally binding obligation to belong to a Chamber and hence to pay fees. The new law, on the other hand, obliged firms to register in the Sistema de Informacion Empresarial Mexicano database (Mexican System of Entrepreneurial Information) through a sector Chamber (Mújica, 1997:341).

¹⁰⁵ Despite the fact that there were 230 firms registered with the Chamber, the number of members affiliated to the Chamber was 140, because some members own more than one firm (CNIV-La Laguna, 2000b).

- The enquiry in the nationally-oriented cluster was carried out in the Guadalajara region:¹⁰⁶ 90 firms were surveyed, accounting for 32.9 per cent of the local Chamber's total list of 273 firms.

- 37 questionnaires were applied in the area of Aguascalientes, which represented 17.9 per cent of the 207 registered garment firms in the state¹⁰⁷. The sample, however, may be larger than 25 per cent, given the fact that entrepreneurs own more than one facility.

The sample represents the population in the different agglomerations, which comprise firms of different sizes. The sample in regions is broken down according to the firm classification of the Mexican Ministry of Trade and Industrial Promotion (SECOFI). As shown in the previous chapter, small-scale firms prevailed in the sample of the Guadalajara region, made up as follows:

- 39.3% micro-enterprises, with up to 15 employees
- 51.7% small firms, with between 16 and 100 employees
- 7.9% medium-sized firms, ranging between 101 and 200 employees
- Large firms, 1.1% of the sample, employ more than 200 employees

¹⁰⁶ The Guadalajara region comprises the capital of the state (Guadalajara) and the surrounding municipalities of Tlaquepaque, Zapopán and Zapotlanejo. The municipality of Tonalá, also part of the inner-city, was not taken into account because of the inexistence of garment firms.

¹⁰⁷ The local chamber also conglomerates textile producers, suppliers (buttons, zippers, labels, yarns, thread, hangers, machinery), tailors, leasing and real estate firms and, even tailoring schools. Among the case studies selected, Aguascalientes' entrepreneurs were the most reluctant to answer the questionnaire.

The sample also shows the mix of small and large enterprises in the intermediate cluster of Aguascalientes, as presented in Chapter 5:

- 21.6% of firms employ 15 or less employees
- 48.7% employ between 16 and 100 employees
- 16.2% firms were in the range of 101 to 200 employees
- Large firms, 13.5% of the sample, employ more than 200 employees

Accordingly, the presence of larger-scale firms was captured in the firm sample of the export-oriented cluster of La Laguna region. In this case, it was rather complicated to distinguish between different firm sizes due to the great concentration of large firms, as analysed in the previous chapter. The sample divided up as follows:

- 30.3% of firms employ less than 100 employees
- 24.2% employ between 100 and 200 employees
- 18.2% of the sample firms were in the range of 201 to 500 employees
- Very large firms, 27.3% of the sample, employ more than 500 employees

Since the opening to trade, the evolution of firm size has followed different paths in the LPSs analysed. According to the official statistics from INEGI presented in the previous chapter, the average size of firms remained stable in the regions catering to the domestic market and increased in maquila clusters; at a time when large firms became a significant source of employment in the Mexican clothing industry. The sample is also comparable with the population. Table 6.1 shows employment levels in the sample, broken down by firm size. Small firms continue to dominate the local

outlook and remain the main creators of employment in the nationally-oriented LPSs of the Guadalajara region, accounting for 62 per cent of total sample employment.

Meanwhile, large-scale firms dominate the export-oriented LPSs of La Laguna. Micro- and small firms play a less important role and generated only three per cent of employment in the sample; firms employing between 101 and 200 employees generated six per cent of employment. The situation contrasts with the high levels of employment with large firms, which account for 91 per cent of local sample employment, as shown in Table 6.1. The concentration of employment is even higher for firms with more than 500 employees, which account for more than 79 per cent of the employment in sample firms.

This structure of firms in La Laguna region is consistent with official statistics and studies. The latest statistics of the *Industrial Census* (INEGI, 2001) and with data referring to 1998, revealed that large- and medium-size enterprises accounted for 81.1 per cent and 10.3 per cent of the total regional clothing employment, respectively. Meanwhile, a study carried out by the Mexican Ministry of Trade and Industrial Promotion shows that large-scale firms accounted for 75 per cent of total employment generated in the regional garment industry (SECOFI, 1998c).

Table 6.1 Employment Creation by Enterprise Size

	Nationally-oriented Guadalajara		Export-oriented La Laguna		Intermediate Aguascalientes	
<i>Firm-size</i>	<i>Total employees per firm size</i>	<i>%</i>	<i>Total employees per firm size</i>	<i>%</i>	<i>Total employees per firm size</i>	<i>%</i>
Micro (0–15 employees)	253	7.2	19	0.1	64	1.2
Small (16–100 employees)	1,914	54.8	536	2.7	928	16.9
Medium (101–200 employees)	853	24.4	1,170	5.9	960	17.5
Large (201–500 employees)	470	13.5	2,403	12.1	830	15.1
Very large (500+ employees)	-	-	15,719	79.2	2,700	49.2
<i>Total</i>	<i>3,490</i>	<i>100</i>	<i>19,847</i>	<i>100</i>	<i>5,482</i>	<i>100</i>

Source: author's fieldwork.

The intermediate case of Aguascalientes in turn shows a blend of the previous LPSs, with the significant advance of large firms. According to the latest industrial census of 2001, with data referring to 1998, the micro- and small firms generated 18.3 per cent of the regional employment, while large firms accounted for 62.3 per cent of that total (INEGI, 2001). In fact, 11 large players¹⁰⁸ with FDI accounted for 54 per cent of the formal employment in 1999 (SECOFI, 1999). The different employment levels by firm size is also captured in the sample: micro- and small firms accounted for 18 per cent of the total employment, medium firms for 17.5 per cent and large enterprises accounted for 64.3 per cent of the total employment. The role of very large firms (more than 500 employees), largely maquila firms, with 49 per cent of the total employment becomes important for this intermediate case, as in the case of the

export-oriented agglomeration of La Laguna. Thus, the duality of the intermediate LPS of Aguascalientes is the result of a group of large firms concentrating employment and gearing towards international markets through international production-sharing, in contrast to the small-scale firms catering to domestic markets.

Before presenting a detailed picture of the state of selected LPSs, the additional characteristics of sample firms follow below.

6.3 Characteristics of sample firms

6.3.1 Market orientation

The different market orientations of LPSs are revealed in the enquiry. The sampled firms in the export-oriented agglomeration of La Laguna export 91 per cent of their production. The internationalisation of firms is high in the case of La Laguna, with 94 per cent of sample firms involved in export activities, as shown in the Table 6.2.

Table 6.2 Market Orientation in Selected Local Production Systems

Indicator	Nationally-oriented Guadalajara	Export-oriented La Laguna	Intermediate Aguascalientes
% of production exported	8.1%	90.8%	39.9%
% of firms exporting	11.5%	93.9%	45.9%

Source: author's fieldwork.

¹⁰⁸ Lucky Star, Salomon, Ropa Cienega, Kappler de México, Francisca Tejidos, Burgundy International, Beatrice Products, Highlander de Aguascalientes, Intermext Exports, International Sewing and Metrowear de Mexico.

Export production was low in the national-oriented cluster of Guadalajara, with 92 per cent of total production going to the domestic market. Meanwhile, the intermediate case of Aguascalientes is located between the two aforementioned cases: 40 per cent of Aguascalientes' production was destined for foreign markets and almost half of the sample firms exported, as shown in Table 6.2. Hence, the sample shows the two main type of LPS in Mexico and the intermediate case of Aguascalientes, which strengthens the comparative results of the enquiry.

6.3.2 Product specialisation

The sample follows the pattern of specialisation in every region, with a trend towards product specialisation. In the export-oriented LPS of La Laguna, well known for being specialised in the production of trousers, 75 per cent of sample firms produced trousers (jeans, dockers and shorts). 15.1 per cent of the firms produced sports clothing, while the rest of firms manufactured other products such as jackets and t-shirts. The production is specialised in terms of product line, rather than gender or age groups.

In the intermediate case of Aguascalientes, known for children's wear and knitted garments, 18.9 per cent of sample firms produced children wear (vests, dresses and twin sets) and 21.6 per cent produced women's wear (skirts, dresses, twin sets). Nevertheless, the cluster displays a trend towards specialising in product lines: 24.3 per cent of firms specialised in trouser production and another 24 per cent produced sweaters and t-shirts.

The nationally-oriented cluster of Guadalajara, famous during ISI as the centre of production for women's wear in Mexico, shows signs of changing cluster specialisation. 36.4 per cent of the sample businesses specialised in producing many lines of women's clothing (skirts, dresses, twin sets, jackets). Meanwhile the remaining firms specialised in different product lines: 28.4 per cent specialised in trouser production, 15.9 per cent in men's shirts, 11.4 per cent in t-shirts and the remaining firms in children's wear.

6.3.3 Ownership

Despite the fact that most of the surveyed firms were created after 1986, clusters follow the ownership tendency of the global clothing industry. Mexican ownership is common in all the clusters analysed. Agglomerations catering to the domestic market show a higher tendency to be in the hands of Mexican nationals. According to Mexican law, firms with less than ten per cent of foreign direct investment are considered Mexican firms (Peres-Nuñez, 1990). Following this definition, sample firms in the nationally-oriented agglomeration of Guadalajara were 91.1 per cent under Mexican ownership. The intermediate case of Aguascalientes also maintained low levels of foreign investment in enterprises, with 89.2 per cent under Mexican ownership. The sample in the export-oriented agglomeration of La Laguna also showed a predominance of local ownership, with nearly 80 per cent of businesses in Mexican hands, as shown in Table 6.3.

Table 6.3 Ownership of Firms in Selected Regions

	Nationally-oriented Guadalajara		Export-oriented La Laguna		Intermediate Aguascalientes	
<i>FDI in the firm</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
0%	76	84.4	26	78.8	31	83.8
1–10%	6	6.7	0	0	2	5.4
11–50%	4	4.4	2	6.0	1	2.7
51–100%	4	4.4	5	15.2	3	8.1
<i>Total</i>	<i>90</i>	<i>100.0</i>	<i>33</i>	<i>100.0</i>	<i>37</i>	<i>100.0</i>

Source: Author's fieldwork

Local ownership in the export-oriented cluster suggests the idea of regional specialisation in labour intensive activities, as indicated in Chapter 4. Clusters originating from the ISI period and catering to the domestic market were, as expected, largely owned by nationals competing to retain the entire value chain in the Mexican market.

6.3.4 Setting up business operations

A striking feature of agglomerated firms in the sample is the rapid creation of firms in all kinds of clusters. Only around one in four enterprises have been legally registered since the mid 1980s. Most firms were established after trade liberalisation and, most importantly, after trade integration took place.

New firms have been established after NAFTA in the export-oriented agglomeration of La Laguna: 60 per cent of sample firms were established after 1994. In the case of

the nationally-oriented LPS, almost 50 per cent of sample firms were created in the NAFTA era, while only 35 per cent of firms in the intermediate case set up business during the same period, as shown in Table 6.4. The recent creation of firms is an unusual feature found in the nationally-oriented agglomeration because it was expected that the majority of firms would date back to the protective period. This suggests that the cluster has experienced important adjustments in the open economy. Many enterprises have gone out of business and new ones have appeared with a third or fourth generation of regional clothing entrepreneurs. The local director of the CNIV in Guadalajara commented that the region experienced instabilities in the number of firms after the opening to trade, some of them disappearing or going into the informal sector and some re-incorporating into the formal sector under a different trade name (Interview 2).

Table 6.4 Year of Firms' Establishment

<i>Establishing period</i>	Nationally-oriented Guadalajara		Export-oriented La Laguna		Intermediate Aguascalientes	
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
1985 or before	21	23.3	9	27.3	15	40.5
1986-1993	26	28.9	4	12.1	9	24.3
1994-2000	43	47.8	20	60.6	13	35.1
<i>Total</i>	<i>90</i>	<i>100.0</i>	<i>33</i>	<i>100.0</i>	<i>37</i>	<i>100.0</i>

Source: Author's fieldwork

The characteristics in selected LPSs show, at a first glance, that LPSs have experienced significant transformations in the aftermath of the opening to trade and integration, leading to different structures and arrangements in the open economy as a result. The following subsections present detailed evidence of the network of productive relations and the institutional base in LPSs, which stimulate or discourage the formation and propagation of the new practices, attitudes, techniques and, in general, knowledge needed to compete as world-class production sites. The results of the enquiry are presented in three main subsections (industry organisation, innovation and productive linkages, and institutional linkages) that define the structure and organisation of LPSs, which are preceded by a brief account of linkages during ISI.

6.4 Industry organisation

6.4.1 Introduction

This section addresses the industrial organisation of the different selected LPSs. For this, the organisation of firms (hub firms, vertical integration and decentralisation of production) and the local value chain are analysed to differentiate the logic of functioning and arrangements of industry in selected LPSs. This, in turn, will assist in identifying the types of LPS in a LDC that are now integrated with more advanced economies.

During the ISI period, the three selected LPSs catered to an expanding domestic market. Firms across clusters enjoyed the advantages created by a protectionist trade system that allowed them to produce for and sell to a captive market. However, the

LPSs started to suffer transformations after the weakening of the domestic market in 1982, which were accentuated with the opening to trade. The LPSs, which were virtually homogeneous until 1986, split into two major kinds. Some LPSs geared towards international markets, specialising and incorporating in international production systems. On the other hand, other clusters adjusted to continue catering to the domestic market and sought to maintain their presence along all activities in the clothing value chain. The opening to trade coincided with major transformations in the industrial organisation of selected LPSs, as identified by the fieldwork.

6.4.2 Organisation of firms and the hub firm

Prior to trade liberalisation, hub firms were often small firms in charge of all activities along the value chain and to a large extent subcontracting workshops or home workers specialised in the assembly of garments.¹⁰⁹ Hub firms played a predominant role in the production process and were involved in the design and marketing of garments in the different regions in Mexico (Suárez & Rivera, 1994). In the aftermath of the opening to trade, the size of the hub firms altered markedly in selected LPSs: firms in the agglomeration catering to national markets remained relatively small, whereas firms in the LPS catering to the international market expanded in size.

In the case of the LPS catering to the domestic market, small firms continue to dominate the local scene. Leader firms remained small-scale enterprises in charge of higher value activities and of decentralising activities of less value production. Meanwhile, export-oriented firms expanded in size to allow for production of large

quantities, carrying out most of the production activities along the value chain and decentralising activities of lower value to medium-sized firms. Large firms have a greater capacity for large amounts of production, as they benefit from bigger physical installations, machinery and workforce. In order for a firm to be directly incorporated into a global production chain it needs to have the capacity to meet large orders from American companies.

The decentralisation of production is common in the most intensive part of the production process, namely assembly. Firms in all types of LPSs decentralised production because of the flexibility of subcontracting. This practice serves as a cushion against market fluctuations, as well as to decrease costs, although the relative weight of such benefits varies across the different types of LPSs.

Subcontracting practices have been widely used in Mexico ever since the import substitution times, as discussed in previous chapters. Local agents coordinated the production of a region and subcontracting was widespread in the homogeneous protected LPS. With trade liberalisation and particularly with NAFTA, new arrangements have come to the fore.

The enquiry found that the number of subcontracted firms has decreased across traditional LPSs. One producer commented that in the past subcontracting was split among many workshops or home-workers. The quality of subcontractors was substandard, but this was not considered a great problem because the goods would be sold in any case (Interview 2). However, with greater competition new arrangements

¹⁰⁹ Micro-enterprises could also be found carrying out all activities along the value chain and producing small quantities in the cluster.

have been developed. A typical firm subcontracts now to a maximum of five firms, as shown in Table 6.5. According to entrepreneurs, the number of subcontracted firms has decreased to achieve homogeneous quality and larger volumes of production.

Table 6.5 Dimension and Location of Subcontracting

	Guadalajara	La Laguna	Aguascalientes
Main Location of firms awarding subcontracts:			
Locally	79.2%	27.0%	28.0%
Nationally	8.3%	4.2%	24.0%
Abroad	12.5%	68.7%	48.0%
Subcontracted firms working for up to 5 firms (%)			
	90.5%	92.0%	95.8%

Source: Author's fieldwork

The nationally-oriented LPS of Guadalajara maintained its previous horizontal organisation. Subcontracting practices in the nationally-oriented LPS of Guadalajara are to a large extent carried out within the cluster and nearly 80 per cent of contractors locate within the regional boundaries. Subcontracting practices in the Guadalajara LPS are intense, with 60 per cent of sample firms subcontracting to other firms and 26 per cent receiving subcontracts,¹¹⁰ as shown in Table 6.6.

¹¹⁰ Firms not involved in subcontracting are generally firms specialised in the production of intricate types of garment, such as wedding dresses, baptism clothes or garments requiring more time and detail.

From the survey, it became clear that sample firms in the Guadalajara region (formal sector) coordinate subcontracting practices with workshops in the informal economy. It was surprising that not many subcontracted firms were found in the fieldwork: 60 per cent of sample firms subcontracted to other firms, but only 26 percent of sample firms received subcontracts. Interviews indicated that subcontracting firms were mainly informal sector firms. Academics in Guadalajara and Aguascalientes (Interviews 6 & 12) pointed out that underground subcontracting has existed in Guadalajara, Aguascalientes and the centre of Mexico since the 1970s as a means of reducing costs by avoiding the official payment of both social security and legal wages.¹¹¹ In fact, the development of the clothing industry in Aguascalientes and Guadalajara has been linked to the illegal practices with a certain tolerance on the part of the local government (Arias & Wilson, 1997). Furthermore, the President of the National Chamber of the Clothing Industry pointed out in 1996 that around 83 per cent of the garment firms in the country were working in the informal economy, 'of 11,265 garment firms, 9,287 have neither fiscal registry nor pay the social security quotas of their workers' (quoted in Muñoz-Ríos, 1996).

Table 6.6 The Extent of Subcontracting

	Guadalajara		La Laguna		Aguascalientes	
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
Firms subcontracting	54	60.0	9	27.3	7	18.9
Subcontracted firms	23	25.6	24	72.7	21	56.8

Source: Author's fieldwork

¹¹¹ Often firms either subcontract non-formal sector workshops or have their assembly facilities outside the main factory, in private houses, which are hard to track down by the tax office or the IMSS (Mexican Institute of Social Security), and which operate under minimum working conditions.

On the other hand, *the export-oriented LPS of La Laguna region* began specialising in maquila activities soon after trade liberalisation. A top producer in the region exemplifies the transformation in the region:

We started as a maquila firm in 1988. We started to re-convert the firm, from a firm producing garments for the national market, we started by becoming subcontractors of an exporting firm, as many people start. There is always a pioneer that sets the path and, we (*producers*) follow him' (Interview 15). Another entrepreneur added 'We started to make maquila for a firm which, in turn, was a supplier for Mervyn's. The firm was located in El Paso in Texas, that place is one of the most important cities for brokers in the garment industry. We made contacts and started to make maquila for a firm in El Paso. (Interview 16)

Thus, subcontracting for foreigners expanded across the region.

As expected, the fieldwork revealed a certain degree of vertical organisation of the industry in La Laguna: 73 per cent of sample firms acknowledged receiving subcontracts, mainly from American companies. Given their specialisation in labour intensive activities and their profits due to quantity, export-oriented firms have a tendency to retain production and employment within the firm. As can also be implied from the size of firms and the specialisation in the value chain, firms in the export-oriented LPS have a tendency to concentrate employment within the firm. In the first instance, large firms carry out all productive phases on-site, from cutting, washing, and assembly to finishing. Firms then decentralise when production demand exceeds their productive capacity or in order to decrease costs in specific product lines.

Thus, second/tier subcontracting has also developed in the export-oriented region, 27 per cent of total sample firms subcontracted other enterprises, which vary according to the size of the firms. The survey shows that subcontracting levels are higher in larger scale firms and that second tier subcontracting was inexistent among firms

with less than 100 employees. These figures reinforce the idea of a group of large firms, expanding subcontracting and leading the export-oriented agglomeration.

The intermediate LPS of Aguascalientes, as has been already shown, has two types of hub firms: a group of firms involved in international production-sharing and the diminishing group of local contractors producing for the national market. Consequently, there are two types of value chains in the LPS. Firms catering to the domestic market followed the trend of the nationally-oriented case of Guadalajara: small firms and medium-size hub firms try to retain control in the value chain and are also subcontracting workshops in the informal sector. On the other hand, large firms connected to international production-sharing are highly specialised in assembly activities and to a lesser extent in finishing and laundering activities. A leading entrepreneur, the ex-president of the local clothing chamber and founder of an institution supporting nationally-oriented firms summarises the two types of firms in the LPS of Aguascalientes:

Here there are two types of industry, the traditional one belonging to the people from here, that are not successful, which were (successful) in the '70s and '80s, but they did not manage to understand the change. And there is a new industry that was born as maquiladora, started mainly by people from outside the state, who saw the regional potential and they are successful firms that set up business in 1993–1994. I would say that 30 maquila firms produce 30,000 jobs. They are firms that had 40 machines and now they have 3,000 machines. (Interview 11)

The fieldwork also shows the declining control over the value chain in the Aguascalientes LPS and a trend towards specialising in production, as in the case of the export-oriented LPS. Only 19 per cent of sample firms contracted other firms, as shown in Table 6.6. The reduced number of contractors in the region suggests a significant reduction of nationally-oriented hub firms and the advance of maquila activities in the region. Nearly 50 per cent of the subcontracting in the sample is

carried out for foreign firms; while 24 per cent of firms carried out subcontracting for other firms located within the country but outside the region. The existence of these national contractors might be explained by the relocation of assembly activities from firms in the centre of Mexico and their consequent links to that place (Romo-Vázquez, 1995: 44).

6.4.3 The value chain

The value chain is an important tool for understanding the specialisation of LPSs in integrated economies, which complements other features of the LPS. The survey indicated that the nationally-oriented LPS of Guadalajara still concentrates most activities in the cluster: around 90 per cent of sample firms are responsible for the design, cutting and finishing of garments,¹¹² as shown in Table 6.7. Thus, the Guadalajara region preserved the ISI features of containing activities within the region, as in the Marshallian and Italianate versions referred to in the literature on industrial districts.

Table 6.7 Firms Specialising in Different Activities of the Value Chain
(% of sample firms)

Activities	Guadalajara	La Laguna	Aguascalientes
Design	88.9%	27.3%	45.9%
Cutting	83.3%	57.6%	51.4%
Sewing	74.4%	90.9%	70.3%
Finishing	86.7%	75.8%	64.9%
Marketing	71.1%	24.2%	43.2%

Source: Author's fieldwork

¹¹² Finishing comprises labelling, ironing and packaging.

The fieldwork found declining control of the value chain in the intermediate cluster of Aguascalientes, which incorporated maquila activities in the NAFTA period. Unlike the case of the nationally-oriented LPS of Guadalajara, where most of the firms are specialised in higher value activities, only about half of the total sample firms in Aguascalientes were involved in the design and cutting of garments, as shown in Table 6.7. On the other hand, the assembly and finishing of garments (labour intensive segments of the chain) were the activities most often performed in the region, accounting for around 70 per cent of sample firms. The changing face of the value chain in the LPS also testifies to the significant advance of maquila activities in the region.

The export-oriented cluster of La Laguna has followed a different trajectory to the cases mentioned above. Soon after liberalisation, the LPS was inserted in international production-sharing. Assembly for American firms emerged as an option for local producers during the GATT period. Firms left the national market behind, as well as the sourcing, design and marketing of garments, when they became assemblers for US firms. This meant a shift in regional specialisation to assembly activities.

The survey found that the La Laguna region has taken advantage of changes in NAFTA regulations, which were examined in Chapters 3 and 4. One entrepreneur pointed out the advantage of NAFTA:

The first thing we did, around August 1994, was to inaugurate the laundry. At the same time we established a cutting plant in the USA because there was a period of duty relief, and then, when the duty was zero, we moved the plant to Mexico. Thus, from 1994 we could offer more services to the client. (Interview 16)

In this way, the fieldwork showed that the cluster has taken advantage of trade integration and now incorporates other activities of higher added value.

Although the export-oriented LPS specialises in labour intensive activities (with 91 per cent of firms specialising in sewing), the region has advanced in activities incorporating more value. Firms in this export-oriented agglomeration not only do the assembly but now also wash, cut and finish the garments, which are activities of higher added value that were previously not carried out in this cluster. The cluster now offers more services: 58 per cent of sampled firms were involved in the cutting of the material to be put together through assembly. The finishing of garments was also carried out by 76 per cent of sample firms, and another 25 per cent of firms, mainly very large firms, were involved in managerial activities related to the outsourcing of raw materials and in specific parts of the garment design. These figures, in turn, show the productive advance of La Laguna LPS along an international value chain.

6.4.4 Summary of industrial organisation changes in LPSs

The homogeneous LPS that characterised ISI times has been rearranged following trade integration. The features identified in selected LPSs confirm the existence of two types of perfectly differentiated LPSs in the open economy, as summarised in Table 6.8. The industrial structure of the nationally-oriented LPS of Guadalajara shares important characteristics with that of the ISI period and to some extent with the Italianate version of industrial districts. The cluster is largely populated by micro- and small firms organised within the regional boundaries. The LPS concentrates

more activities of the value chain within the cluster and decentralisation of production is significant, as in the industrial districts identified in Italy.

Meanwhile, the export-oriented LPS of La Laguna follows a different scheme to the so-called pattern of industrial districts literature. The cluster presents an industrial structure similar to one of the new industrial types identified by Markusen (1996), in which large hub firms lead the industrial structure with important outer linkages. The export-oriented LPS of La Laguna is populated by large enterprises, in charge of coordinating the regional industry and is heavily specialised in production activities along an international value chain. The fact that the LPS is involved in activities of higher added value other than assembly suggests an important upgrading of production along the value chain, since restrictions on international production-sharing were eliminated by NAFTA.

The third case study, the intermediate LPS of Aguascalientes presents a mix of industrial organisation and, in fact, two types of production arrangements within the agglomeration. The export-oriented firms are normally large subcontracted firms created in the NAFTA era, embedded in international production-sharing and displaying similar characteristics to those of the export-oriented LPS of La Laguna. Meanwhile, its nationally-oriented firms are small firms catering to the regional and national market, with wide local subcontracting and still concentrating higher value added activities, as in the case of the nationally-oriented LPS of Guadalajara. Relations among firms following different schemes are non-existent, although the export-oriented scheme is advancing rapidly and becoming the main type of production system in Aguascalientes.

Table 6.8 Basic Characteristics of Industry Organisation in LPSs

	Guadalajara	La Laguna	Aguascalientes
Firm size	Micro and Small firms	Mainly large firms	Combination of recently created large maquila firms and small firms
Market orientation	National/regional	Export	National/regional with increasing tendency to export
Main activities along the value chain	All activities	All production activities	Mixed. Nationally-oriented firms, all production activities. Maquila firms assembling, starting laundering and finishing
Location of hub contractors	Local small and medium firms	USA	USA, and local larger producers
Subcontracting in the region	Wide	Not wide. Firms semi-vertically integrated	Not wide. Firms semi-vertically integrated

Source: Author's fieldwork

6.5 Innovation and productive linkages in LPSs

6.5.1 Introduction

This section moves on to the analysis of sources of innovation and the use of linkages to advance the productive structures of an LPS. The enquiry went further than analysing industrial organisation and assessed the strength of productive linkages through their level of cooperation and flows of knowledge. Thus, the source of knowledge and innovation, its distribution and the dynamic external economies arising from productive linkages are analysed in this section. Results from the enquiry also shed light on the location — local, national or foreign — of such practices to map LPSs in a broader context than the regional one. In the first

subsection, the sources of innovation in clusters are presented in a general way; while the second subsection explores in detail every productive linkage of selected LPSs.

6.5.2 Sources of innovation in the LPSs

The fieldwork sheds light on the changes after trade integration and identifies the sources of innovation in selected LPSs. As has been pointed out in Chapters 4 and 5, Mexico has been unable to develop creative firms able to generate significant innovation in the garment industry. The design and technology in the garment industry is largely carried out in the USA and Western Europe and firms around the world have adapted greatly to constant innovation (Bonacich et al., 1994). The fieldwork corroborates that clusters in Mexico still rely heavily on innovation originating from outside the country. The president of the National Chamber of the Clothing Industry went even further and emphasised that Mexican firms not only lack innovation in products and processes but even lack strong labels in the Mexican market as a result (Interview 1).

Firms in the nationally-oriented cluster of Guadalajara and in the intermediate cluster of Aguascalientes have tried to retain control over the value chain. However they have depended on 'imported' designs and production techniques that are then adapted in the LPS. According to the sample, self development is one of the least important sources of innovation. Trade shows and magazines are the most important sources for garment innovation in around 60 per cent of sample firms in the nationally-oriented region of Guadalajara and for around 40 per cent in the intermediate case of Aguascalientes, as shown in Table 6.9.

Visits to national trade fairs are vital for producers to keep updated on markets and competitors, while the entrepreneurs with more financial resources attend the *Magic Show* in Las Vegas, USA to catch a glimpse of international trends. The director of the CNIV–Guadalajara points out that in those trade shows producers obtain samples and ideas that are then adapted internally to produce a variant or a similar garment for the domestic market (Interview 2). This is also the scenario in nationally-oriented firms in the intermediate case of Aguascalientes, as also confirm by a former president of the local chamber of the clothing industry and leading entrepreneur:

The ones that can, we go to San Antonio, New York, we go into Markus, Marshall, Sacks or Macy's and bring the garments and here we reproduce a similar product. Here, there is no design, no colouring patterns; we do not know the market. (Interview 11)

Sample designs are then made up in Mexican firms in an attempt to successfully adapt the imported innovation and then to grade for different sizes for new garment lines. The creation or adaptation of sample design was developed internally in 76 per cent of sample firms of the nationally-oriented LPS of the Guadalajara region. Meanwhile the percentage of firms in charge of those activities was down to 54 per cent in the intermediate LPS of Aguascalientes, given the importance of US contractors (clients) as providers of samples for maquila firms.

Table 6.9 Where do Innovations Come From?

	<i>Guadalajara</i>	<i>La Laguna</i>	<i>Aguascalientes</i>
Product innovation			
Trade Shows	61.0 %	32.1 %	45.5 %
Magazines	57.1 %	10.7 %	36.4 %
Clients	44.2 %	67.9 %	40.9 %
Developed internally	32.9 %	32.1 %	31.8 %
Internet	20.8 %	7.1 %	13.6 %
Process innovation			
Developed and adapted internally	55.8 %	46.4 %	45.5 %
Clients	32.5 %	50.0 %	26.0 %
Suppliers	23.4 %	35.7 %	13.6 %
Cooperation with other producers	7.8 %	7.1 %	4.5 %
Sample design			
Develop and/or adapted internally	76.3 %	28.1 %	54.5 %
Imitations	31.3 %	9.4 %	9.1 %
Clients	29.1 %	78.1 %	50.0 %
Outsider designer	27.5 %	18.8 %	18.2 %

Source: Author's fieldwork

In the case of the export-oriented cluster of La Laguna, US contractors contributed to most of the innovation in the LPS, given the production specialisation of La Laguna firms. Product innovation and sample designs rely on clients specialising in the research and development of garments. Those contractors are also the ones introducing new techniques and improvements in the production process: 50 per cent of innovations in this area come from clients of La Laguna firms, as shown in Table 6.9. It is in the production process that local firms also play an important role in adapting and internalising international systems in the firm, as shown by the 46 per cent of local firms involved in the development and adaptation of process innovation. Furthermore, suppliers play an important role in 36 per cent of firms in the export-oriented LPS, a much higher proportion than in the other types of agglomerations, as shown in the same Table 6.9.

Mexico is not situated at the forefront of the development of management techniques or the production of garment machinery, which mostly originates in the USA, Italy and Japan, as examined in Chapter 5. It is striking that developments in the production process mainly originate within the firm itself in the nationally-oriented LPSs of Guadalajara and to some extent in the intermediate case of Aguascalientes, as shown in Table 6.9. The data show that nationally-oriented firms depend on their own developments and lack important outer links to adapt new techniques and processes, given the fact that contractors/clients are located within the regional boundaries. That situation then limits the absorption of state-of-the-art processes and techniques that could improve the performance of the firms and the cluster as a whole. This implies a limitation of spillovers and innovation in nationally-oriented LPSs.

On the other hand, the export-oriented case of La Laguna is in a different situation since most of the techniques and processes originate among foreign contractors, which fuel the innovation capabilities of local producers.

6.5.3. Local knowledge and the importance of strengthening local linkages

It was found that entrepreneurs in the traditional production systems (i.e. those with high performance during ISI) have difficulties adapting to the new context of globalisation. Entrepreneurs in nationally-oriented firms lack important connections within and outside the LPS to out-compete rivals in the market. Their shortage of state-of-the-art knowledge is difficult to overcome by themselves, while cooperative production in the region is poor. The importance of linkages is evident when considering that all sorts of LPSs contain a similar entrepreneurial profile. In the

export-oriented agglomeration of La Laguna, 82 per cent of entrepreneurs have university studies and an average of ten years of experience in the clothing sector, which is not that different from the 60 per cent of entrepreneurs with university studies and 13 years of experience in the nationally-oriented cluster and the profile for the intermediate case, as shown in Table 6.10.

However, when comparing the levels of quality certification of firms and the average number of employees in innovation-related activities, there is a significant gap between the LPSs: 39 per cent of sample firms in the export-oriented agglomeration possessed quality certification, compared to seven per cent in the sample firms of the nationally-oriented LPS and, 22 per cent in the intermediate case of Aguascalientes. The same applies for the number of people working in innovation activities, where the number of employees engaged in R&D related activities is significantly higher in sample firms of the export-oriented LPS, as shown in the following Table.

Table 6.10 Entrepreneur's Profile and the Innovative Firm

	Guadalajara	La Laguna	Aguascalientes
Firms with quality certification	6.7%	39.4%	21.6%
Average number of people working in innovation-related activities per firm	2	7	3
Entrepreneurs with university studies (% of total)	60.0 %	81.8 %	55.6 %
Entrepreneur's average years in the clothing industry	13	10	16

Source: Author's fieldwork

Therefore, it seems that education level and experience are less relevant to obtain knowledge and innovation than the networks in which firms are embedded. In this way, linkages of innovation emerge as important sources to channel and diffuse knowledge to upgrade firms to international standards. Thus, for instance, a top producer in La Laguna region and one of the top exporters in Mexico pointed out that the knowledge provided by American producers with regard to the international production process and markets have been decisive for his success. He added that he has been ‘a good student, assimilating ideas and always doing the homework at the right time’ in order to grow from a small firm of 20 employees in 1988 to 3,200 employees in the year 2000; all this from an entrepreneur with only secondary education (Interview 15).

Up to this point the enquiry has identified a change in the sources of innovation depending of the level of production specialisation of the LPS along the value chain. The enquiry now goes further to trace the external economies arising in the productive linkages in which agglomerated firms are involved.

6.5.4 Subcontracting

6.5.4.1 Cooperation and knowledge spillovers in subcontracting practices

This section moves from the static features of subcontracting practices to identify the flows of knowledge and innovation among firms embedded in such relations, which in turn strengthen the LPS, as discussed in Chapter 2. As presented in the Chapter 5, linkages in subcontracting practices were weak and underdeveloped during ISI. The

closure of the economy limited competition and the demand for products of higher quality, which consequently constrained the establishment of cooperative linkages. The relationship between producers and buyers was merely pecuniary without any form of cooperation or support. Agreements between the former and latter were centred on negotiating prices and delivery times rather than on cooperative practices capable of increasing the competitiveness of products and firms. However, the opening to trade and integration affected local arrangements of production. LPSs are now engaged in different subcontracting arrangements in space and in knowledge flows according to their industrial structures.

Subcontracted entrepreneurs were first asked whether they have received benefits from contractors, and then to point out those benefits. Ideas, information and knowledge flows have increased and benefited those firms integrated in international production-sharing. The enquiry found that the export-oriented LPS of La Laguna benefits from cooperation and support from foreign contractors. It is notable that 67 per cent of subcontracted firms¹¹³ in the export agglomeration of La Laguna received some kind of benefit from contractors, as shown in Table 6.11. The level of benefits received from contractors decreased to 38 per cent for the intermediate case of Aguascalientes. In contrast with the previous cases, the nationally-oriented LPS of Guadalajara has poor subcontracting linkages: only 23 per cent of subcontracted firms received benefits from contractors. Low levels of cooperation in the latter agglomeration evidence weak linkages within the cluster, limiting the distribution and spread of knowledge and cooperative practices that could lead to an increase in the firms' competitiveness.

Table 6.11 Benefits Received from Contractor Firms in Different LPSs

	Guadalajara	La Laguna	Aguascalientes
Subcontracted firms (% of the total sample firms)	25.6%	72.7%	56.8%
Subcontracted firms receiving benefits from contractors (% of firms receiving benefits)	22.7%	66.7%	38.5%
Benefits received from contractors:			
Technical support & advice	20.0%	68.8%	31.5%
Supply of equipment	20.0%	43.8%	26.3%
Cooperation over delivery times	20.0%	37.5%	26.3%
Managerial assistance	0.0%	25.0%	0.0%
Financial assistance	40.0%	18.8%	10.5%

Source: Author's fieldwork

Where collaborative practices exist, the types of benefits from subcontracting vary among the different LPSs. Sample firms in the export-oriented agglomeration largely benefited from knowledge-base externalities (technical support and advice), as shown in Table 6.11. However, financial assistance is the most important benefit received in the case of the nationally-oriented LPS of Guadalajara; while the intermediate case displays the same trend as the export-oriented cluster.

The export-oriented LPS of La Laguna is embedded in knowledge linkages with US contractor firms and new practices and systems have been introduced in the cluster. The learning process undergone by firms in order to shift to assembly was not difficult to acquire with international contractors given the relatively low level of

¹¹³ I made use of this group to show subcontracting practices in formal-sector subcontracted firms.

skills needed to assemble garments. At the beginning, most of the firms had enough machinery and the regional industry was able to supply the labour force. Firms in the region received a series of specifications and procedures and had to apply the quality systems established by contractors. Those norms normally refer to procedures and standardisation of production. In the beginning, American firms sent small amounts of orders to subcontracted firms in La Laguna to check their quality and delivery time. Firms specialised in one style of garment in order to improve quality and production time. One entrepreneur pointed out:

If you work, say, eight to ten weeks on the same garment, you become efficient and, at the same time, the American starts to ask for more quality, and when you improve your quality and fulfil the client's quality demands, he gives you more and more work. (Interview 14)

Thus, after testing their capabilities, foreign contractors placed more contracts with them and cooperative relations developed further.

Entrepreneurs in La Laguna pointed out that US firms usually trained Mexican subcontractors when a new production line was introduced. The training of skilled workers can take two forms, the first one is carried out when an American firm sends an engineer to teach supervisors in the Mexican company; the other is to send the latter to the centres in the USA to learn the new processes to be introduced in the Mexican plant. Another programme that firms participate in involves working as the twin of an American company. In this sense, the learning process was internalised by subcontracted firms in La Laguna.

Online inventory has been another important technological advance introduced in the export-oriented LPS. Firms in the La Laguna region manage large stocks of garments. These inventories have to be monitored and updated frequently to meet

buyers' demands, which, in turn, are ruled by market demands. Libra, the top producer in La Laguna, accounts for a stock of one million garments, supplying 140,000 garments a week to Kmart. 'The stock is balanced in coordination with clients. The client specifies the amount of garments for week X, and production is previously established with the client because there is a purchasing commitment with clients' (Interview 17).

The use of online resources has become the norm in the export-oriented LPS: American contractors monitor the production process to observe the way that manufacture is carried out by Mexican firms. Camcorders and digital cameras are now used to visualise and confirm the correct specifications for the garment. Contracted entrepreneurs commented that in a typical transaction, they take pictures or videos to show the clients how the product was received, manufactured and sent (Interview 18). These activities have now become part of a normal relationship and are carried out on a weekly or even a daily basis. During the production process, this 'technique' is also used when local firms have a query with regard to details or to exhibit different patterns in sewing the garment. Thus, in terms of cooperation between American buyers and firms in La Laguna, flows of information tend to rely on technical support practices.

The supply of equipment is another important benefit received in the export-oriented LPS: 44 per cent of sample firms in this LPS received supplies of equipment from contractors, as shown in Table 6.11. The insertion of the cluster in international production-sharing, as analysed previously, has coincided with a de-specialisation of American firms in the production process.

As American companies are becoming more specialised in high value added activities in the garment industry, they tend to also support their subcontractors through the provision of equipment. These were provided in the first instance as a loan from American companies to upgrade existing equipment or to increase the production capacity of subcontractors. Once a subcontracted firm proved responsible in fulfilling contracts, the relationship with contractors reached maturity and the machinery was either sold or granted to subcontracted firms. Cooperation in subcontracting practices between American and La Laguna firms has developed to a trustful relationship based on the fulfilment of the requirements of quality, service, delivery time and production levels on the part of the latter. Thus, non-trade benefits have stemmed from cooperation among firms involved in subcontracting practices in the export-oriented LPS of La Laguna.

The situation has been rather different for the nationally-oriented LPS. After liberalisation the Guadalajara region restructured its subcontracting practices in order to decrease costs rather than to take advantage of cooperation and flows of knowledge. Contrary to the subcontracting experience in the export-oriented cluster, knowledge in the Guadalajara cluster is poorly spread: only 23 per cent of the total subcontracted firms received some form of benefit, compared to 67 per cent in the export-oriented LPS of La Laguna.

The fieldwork corroborated the weak linkages in subcontracting practices, which are consistent with a survey carried out in Jalisco in 1997 (See Vera-García, 1999: 139). Among the subcontracted firms receiving benefits in Guadalajara, financial support

was the most important type of support received by 40 per cent of those firms sampled, as shown in Table 6.11. Firms receiving subcontracts mentioned that the financial support is limited to an advanced payment to meet payroll requirements. The problem with small producers in Mexico is the constraint of the financial means to pay wages. Contractors pay once the product is finished or more frequently when garments are sold in the market. This situation obliges subcontracted firms to wait for long periods without any cash flow, while committed to pay a contracted labour force. Hence, an advance of payment is always considered a benefit for contracted firms.

Meanwhile, technical support and cooperation over delivery times — important in order to make quality standards more homogeneous and to upgrade the production techniques of subcontracting partners — was present among only 20 per cent of the total subcontracted firms in the nationally-oriented LPS. Unlike the case of the export-oriented agglomeration where the supply of equipment can be seen as an indication of trust and cooperation among firms, the nationally-oriented agglomeration shows further evidence of fragile ties: only 20 per cent of firms received equipment from contractors. In this way, interviewees pointed out that if a firm wants to get involved with local contractors, the former has to upgrade its quality by itself. Moreover, entrepreneurs mentioned that they were not ready to cooperate or invest with their subcontractors because of the distrust among entrepreneurs. The following quotation is an indication of the individualism in the LPS: ‘If a workshop is supported, they can either look for other subcontractors that pay more or, even worse, they may learn the business and establish their own firms and then become competitors’ (Interview 4).

Integration with foreign contractors is one option that may be taken by firms and LPSs to overcome shortages of knowledge and to improve competitiveness in the cluster. To this end, a group of firms in the intermediate LPS of Aguascalientes has gradually moved into international subcontracting practices since the onset of NAFTA. Data from the fieldwork identified that 48 per cent of contractors for the region are located abroad, as already shown in Table 6.5. In fact, since NAFTA went into effect more firms have been incorporated into this strategy and the sector is growing (SECOFI, 1999; COCITEVA, 2000).

The intermediate LPS of Aguascalientes. The enquiry in the intermediate case also suggests that learning and cooperation flows are not as developed as they are in the case of the export-oriented cluster. In the sample, 38 per cent of subcontracted firms received some form of benefit from contractors, compared to 67 per cent in La Laguna, although cooperation and support levels are higher than in the nationally-oriented agglomeration of Guadalajara, as shown in Table 6.11. According to the survey and interviews carried out with entrepreneurs and the director of the local clothing chamber, Aguascalientes has incorporated into maquila activities performing the assembling of garments and is not yet fully incorporated into higher value added activities as is the export-oriented LPS of La Laguna (Interview 11).

Technical support and advice is the most important benefit received by 31 per cent of subcontracted firms in the intermediate case. The supply of equipment and cooperation over delivery times are other important flows in this LPS, which benefited 26 per cent of subcontracted firms.

Flows of knowledge in the intermediate LPS are at a different stage than in their export-oriented counterpart of La Laguna. As was highlighted before, firms in La Laguna had to earn the trust of American companies in order to obtain better contracts and increase cooperation. Moreover, learning processes need time to be mastered and broadened in an LPS. The export-oriented agglomeration started subcontracting for US producers in the late 1980s, while Aguascalientes has initiated and disseminated such practices since the eve of NAFTA. Nevertheless, maquila plants have disseminated new ways of carrying out production in the Aguascalientes LPS, as pointed out by an entrepreneur and member of COCITEVA (Consejo de la Cadena Textil y del Vestido de Aguascalientes – Council of the Textile and Clothing Chain) “we were not used to working either with codes of conduct or with parameters of quality standards, we did not use them, we did not have that culture’ (Interview 11).

6.5.4.2 Spreading knowledge through second tier subcontracting

Despite the fact that subcontracted firms tend to specialise in the finishing and particularly the assembling of garments, further assembly is decentralised depending on the market variations or costs. This is also due to the fact that second-tier subcontractors carry out specific assembly activities, such as the introduction of lace or details to the garment. Subcontracted firms contracting other firms were used to identify the extent of second level subcontracting in LPSs, results are presented in Table 6.12.

Weak linkages were also found in second-tier subcontracting in the nationally-oriented cluster of Guadalajara; while the export-oriented agglomeration has strengthened inter-firm cooperation within the district. Despite the acknowledged decentralisation of production within the nationally-oriented LPS of Guadalajara, its levels of cooperation were lower than in the export-oriented cases of La Laguna and the intermediate cluster of Aguascalientes. In the nationally-oriented case, some form of cooperation was found in 60 per cent of those subcontracted firms having contracted other firms; compared to the export-oriented case where levels of cooperation were as high as 86 per cent and 80 per cent for the intermediate case.

Weak linkages also prevailed in second-tier subcontracting in the nationally-oriented LPS of Guadalajara. Technical support and advice was only given to 30 per cent of second-tier firms, illustrating the low flows of knowledge and innovation in this linkage. Contrary to that picture, subcontracted firms in the La Laguna export-oriented case provided technical support and financial support to 100 per cent of contracted firms. Meanwhile, the intermediate agglomeration of Aguascalientes also displays significant levels of technical support, as shown in Table 6.12.

Table 6.12 Cooperation and Benefits with Second Tier Subcontractors

	Guadalajara	La Laguna	Aguascalientes
Firms subcontracting (% of total subcontracted firms)	43.5%	29.2%	23.8%
Enterprises giving benefits to second-tier firms (%)	60.0%	85.7%	80.0%
Benefits given to second tier subcontractors:			
Technical support & advice	30.0%	100.0%	60.0%
Financial assistance	20.0%	100.0%	20.0%
Supply of equipment	20.0%	66.7%	60.0%
Cooperation over delivery times	20.0%	66.7%	40.0%
Managerial assistance	0.0%	33.3%	20.0%

Source: Author's fieldwork

The export-oriented LPS of La Laguna, on the other hand, is following a trajectory consistent with first level of subcontracting. The information and the absorption of knowledge from the USA into the region are passed on to a second level among subcontractors. Cooperation among subcontractors and regional contractors, when it occurs, is important in order to allow regional flows of information: 86 per cent of local contractor firms give some kind of support to their subcontractors (see Table 6.12). Technical support, supply of equipment and financial assistance are the most important practices occurring among subcontractor firms.

In this way, maquila firms establish a quality system to which second-level subcontractors have to adhere. At the beginning, large local subcontractors often send auditors to second-tier subcontractors to check that the system is adequately followed and that all the clients' requirements are met. Once the system is learned and completely internalised, local contractors have a monthly meeting with all their

subcontractors. In these meetings, entrepreneurs discuss all the problems they have with production, how they have solved them and the way forward in carrying out production. These meetings also serve to show the performance of every subcontractor as well as to encourage competition among them. A second-tier subcontractor pointed out:

Our contractor in La Laguna taught us a quality system which we continue using up to date. They instructed us that we have to form a quality team in the three main areas in which trouser production is divided and have an auditor who controls the bundles. In general we follow the JC Penny system. Pafer (*local contractor*) is absorbing that system because their client indicated to them that that is the way they want them to work. (Interview 18)

Labour force conditions are also monitored by local contractors. Interviewee No. 17 stated that ‘apart from controlling quality, we regularly send auditors to our subcontractors to make complaints, about under-age workers, services for workers, dining rooms, fire extinguishers, etc., which are the conditions laid down according to clients’ requirements” (Interview 17). Second tier subcontractors, in this sense, learn and internalise international quality standards in the LPS, making the regional industrial system more robust.

Conclusion. In competing international markets, cooperation and flows of knowledge in subcontracting practices emerge as important factors for innovation in the production process. This also strengthens the competitive situation of agglomerated firms. Results from the fieldwork reveal the importance of foreign contractors in the establishment of new practices in export-oriented firms. In the cases analysed, the LPS integrated into international production systems is reinforcing subcontracting linkages in the LPS. With the integration of La Laguna into international production-sharing, US companies have not only helped local firms to gain access to the market,

but have also supported them through the transfer of new techniques, processes and the transfer of technology.

Meanwhile, the situation is rather different in the nationally-oriented LPS of Guadalajara, where inefficient and non-cooperative entrepreneurial strategies prevail. To attain certain quality standards in the decentralisation of production, firms in the nationally-oriented LPS have decreased their number of subcontractors under conditions of weak linkages. The linkages may be of even poorer quality with subcontracted firms in the informal sector, which are not covered in this fieldwork, as commented earlier.

6.5.5. Cooperation in horizontal linkages

Knowledge spillovers are important to spread knowledge and competitiveness across agglomerated firms. Processes of innovation may not only be developed in the company but also within the LPS. Thus, in a country like Mexico where innovation is not highly developed, linkages can be used as a channel to increase knowledge and lead to the potential transformation of firms involved in such linkages.

In the survey it was found that in the nationally-oriented LPS of Guadalajara, firms are not involved in cooperative linkages with similar firms. The scepticism and lack of cooperation of local producers is clearly shown in the sample: 43 per cent of firms have never contacted other producers to exchange ideas; while only 34 per cent of them have taken advantage of proximity through frequent exchanges of ideas, as shown in Table 6.13. The individualism of local firms is also manifested, as only 13 per cent of sample firms were engaged in a formal cooperation with other local firms.

The lack of cooperation among local producers is also illustrated in the intermediate case of Aguascalientes: 54 per cent of the firms stated that they never exchanged ideas with other producers, while only 24 per cent professed to often exchange ideas with other producers. The cooperative agreements among firms are also weak: only eight per cent of the sample firms were engaged in such practices. Furthermore, cooperation to encourage innovation with firms outside the LPS is inexistent, a situation that limits the adaptation of new technologies in the LPS.

Table 6.13 Spreading of Knowledge and the Cooperative Firm

	Guadalajara	La Laguna	Aguascalientes
Exchange ideas, discuss problems or strategies with other local producers:			
Often	34.4 %	48.5 %	24.3 %
Occasionally	22.3 %	42.4 %	21.6 %
Never	43.3 %	9.1 %	54.0 %
Formal cooperation with other local producers:			
	13.3 %	18.2 %	8.3 %

Source: Author's fieldwork

In the La Laguna export-oriented cluster changes in situation and externalities are spread within the LPS. It is notable that 91 per cent of the total firms mentioned that they have exchanged ideas with other local producers, while the day-to-day exchange of information reaches 42 per cent of sample firms. In addition, it is important to highlight that 18 per cent of the total firms have formal cooperation agreements with other local firms, a figure much greater than for the intermediate and nationally-oriented cases. One entrepreneur illustrates this with an example of the horizontal

cooperation taking place in the LPS: 'There is cooperation among similar firms, the American wants everything cheaper and we (*entrepreneurs*) got organised to keep down the price per garment; get feedback on how to carry out the maquila and sometimes we buy the same raw material' (Interview 19).

This in turn, shows the extent of transmission of innovation in the export-oriented LPS, which strengthens the benefits from clustering. Given the structure of firms, subcontractors lead the propagation of knowledge in the export-oriented cluster; while the nationally-oriented case lacks strong agents in charge of spreading information and knowledge, given weak linkages between firms.

6.5.6. Labour force linkages

The availability of a pool of skilled labour is an important asset for an LPS. In the industrial district theory knowledge is personally-embodied and is transmitted from generation to generation, from parents to children, throughout a strong LPS. This availability of local knowledge is expected to create a stock of knowledge that is then passed from firm to firm, given a high mobility of workers within the cluster. External economies arise in this way, through the spreading of knowledge across the LPS and from the fact that training costs of the firm's labour force decrease. A different history occurs when the availability of a skilled labour force decreases.

During the ISI times, the skilled labour force was concentrated around the main garment producer sites, as pointed out in Chapters 4 and 5. Those centres offered industrial jobs, which were better paid than those in the agricultural sector. When Mexico moved from a rural to urban population, a greater labour force was attracted

to traditional sites. However, after the opening to trade the situation changed. Production and employment declined in the traditional production sites and increased in non-traditional areas, as studied in Chapters 3 and 4.

The organisation of production and new practices appear to have had an impact on the pooling of labour force. The labour markets are formal and informal in the nationally-oriented clusters of Guadalajara and Aguascalientes. Formal sector firms are those paying taxes and are largely involved in activities of higher value while they decentralise the most labour intensive activities to subcontracted firms in the informal sector of the economy. Moreover, without government control, working conditions are poor in the informal sector. During my fieldwork, I saw children helping out in firms and in many cases teenagers already working the machines. This is commonplace in such situations given that payments in informal workshops are below the minimum wage, and do not cover social security, holidays or other kinds of allowances. Furthermore, workers in the informal sector do not have any kind of union to support them.

Arrangements in the management of the production process also have a negative impact on the pooling of labour force in the nationally-oriented LPS. Entrepreneurs mentioned that they have problems retaining and attracting a skilled or semi-skilled labour force. The use of the labour force to decrease costs impacts on the willingness of workers to get involved in the clothing industry, which in turn impacts on the availability of the semi-skilled labour force in the cluster. According to the fieldwork, 61 per cent of sample firms in the nationally-oriented LPS of Guadalajara region mentioned that their main concern about the local labour force is the lack of

skilled labour, followed by employment turnover (42 per cent), as shown in Table 6.14. Entrepreneurs commented that there is keen competition for workers in the urban areas, who desire a higher wage and prefer to work for the expanding service sector. Hence, it is difficult to count on an important number of skilled workers, who in many cases are looking for better wages or social conditions in other firms. Furthermore, ten per cent of sample firms mentioned that employees tend to take jobs in other regions or abroad, a situation that further weakens the local availability of experienced workers. In this sense, the local garment industry is losing out in strengthening static external economies in the LPS.

Table 6.14 Labour Force in the Local Production Systems

	Guadalajara	La Laguna	Aguascalientes
<i>Problems with the local labour force:</i>			
Lack of skilled labour	61.1 %	45.5 %	58.3%
Employment turnover	42.2 %	75.8 %	72.2 %
Lack of unskilled labour	15.6 %	12.1 %	41.7%
Others	3.3 %	12.1 %	5.6 %
<i>Employees tend to move:</i>			
Locally	89.8 %	100 %	97.3 %
Nationally	3.4 %	0 %	2.7 %
Abroad	6.8 %	0 %	0 %

Source: Authors' fieldwork

In the case of the intermediate LPS of Aguascalientes, local entrepreneurs and representatives from local institutions agreed that the employment turnover is the main problem that firms encounter in the local employment market, as also captured in the survey. Entrepreneurs pointed out the lack of availability of the labour force in

the region, which has forced them to increase headhunting skilled workers within the cluster, while the shortage of unskilled labour is resolved through the use of workers from the nearby rural areas. Maquila plants and leader firms catering to the domestic market tried to compete among themselves in terms of the services offered to the employees. Transportation and the availability of staff canteens have been the main incentives offered by firms. Thus, competition favours the use of formal-sector workers in Aguascalientes. That situation has benefited the local labour force to the detriment of smaller informal-sector workshops.

The export-oriented LPS of La Laguna, in turn, has benefited by strengthening labour force linkages, expanding further external economies. Integration in international production-sharing has also been translated into social welfare for the labour force in the region. This has meant that firms have sought to follow international codes of conduct similar to those in more developed countries. Entrepreneurs mentioned that the system operates widely in the cluster, otherwise they would not be able to maintain their relationship with their contractor (Interviews 15–19). Among the codes of conduct to which firms are required to adhere are those related to ensuring that operations are safe and non-exploitative: child labour is not allowed and minimum international workplace conditions have to be met (ventilation, lighting, emergency exits, services for workers, and in case of specific garments, the use of ergonomic equipment). Moreover, all government regulations have to be met and the labour force has to be paid according to national regulations.¹¹⁴

¹¹⁴ For a comprehensive study of codes of conduct of the main clothing brands for whom La Laguna producers work, see the study carried out by the US Department of Labor in 1996.

The organisation and management of labour force has become another important development in the region. One entrepreneur pointed out:

We have learned from the Americans that we have to give better treatment to workers, make them feel that they are important. Before, I think, the entrepreneur did not have much contact with the workers and now we have that contact. Thus, they have more rooting to the company, and they can put on the T-shirt (*have commitment to the company*). (Interview 17)

In the La Laguna LPS there has been a transformation in the established policy whereby wages are determined by productivity rather than according to the traditional yardstick of the minimum wage. In line with the innovation of the production process, firms in the cluster set payment standards according to productivity and this is higher than the minimum wage. Firms are now engaged and connected with American firms in the 'just in time' (JIT) production systems. The internal organisation of firms has followed a productive transformation. Instead of carrying out production in different stages, production is often split into different *cells of production* (Interview 18). Every cell comprises a group of around five workers that are in charge of the entire assembly of the garment. This system creates competition within the firm given the fact that cells compete among themselves to reach a given target and, consequently, get the productivity bonus. In this way, workers are competing by finished product rather than by just one part of the productive process as used to occur in the past. In that way, Americans have also helped the cluster to strengthen labour force linkages.¹¹⁵

As a result of the expansion of the industry in the export-oriented cluster and given the consequent demand for workers, salaries in the region have tended to increase,

which in turn benefits workers' incomes. In this way, firms compete with each other for the labour force and employees move to those firms offering the best working conditions. In fact, the main problem concerning the labour force in the LPS is that of a high local employment turnover (76 per cent). What is also striking is the formation of a solid labour force pool: sample firms expressed that the labour tends to change employment within the LPS and not move to other regions or countries, as shown in Table 6.14.

Conclusion. The results from the fieldwork suggest that nationally-oriented LPSs are weakening the availability of a labour force pool, while the LPSs catering to international markets are strengthening this static external economy. International linkages have encouraged the export-oriented LPS to improve labour strategies (i.e. managerial practices and working and payment conditions), which, in turn, serve to retain labour in the LPS. Meanwhile, the nationally-oriented LPS of Guadalajara has not only witnessed a declining performance, but has also lost important static external economies in the labour force. Underpayments and poor working conditions constrained the pooling of a skilled and semi-skilled labour force.

6.5.7. Supplier relations

6.5.7.1. The extent and location of suppliers

In the literature on clusters, the availability of suppliers of raw materials and technology is considered another important static external economy accruing to agglomerate firms. However, it has not been clear to what extent they benefit

¹¹⁵ In the same way, La Laguna firms have also incorporated other tactics taught by their clients such as punctuality rewards that include the right to win a brand new TV or music system in monthly draws.

different types LPSs in a global context. To shed light on the Mexican case, the fieldwork assessed the location, extent and the benefits arising from supplier relations of the LPSs.

The main LPSs originating during ISI were privileged in having suppliers located within the regional boundaries, as presented in Chapter 4 and 5. However, markets opened up with trade liberalisation and Mexican firms had the opportunity to purchase inputs of higher quality and diversity and lower costs. The lack of competitive regional suppliers in the open economy also stimulated local garment producers to purchase outside the region, since suppliers did not meet local producers' new expectations regarding quality, prices and design (Wilson, 1991; Suárez & Rivera, 1994).

The fieldwork identified a downward trend in the use of local suppliers in nationally-oriented and intermediate LPSs. Despite the fact that one third of raw materials was bought locally in the three case studies, the three analysed LPSs bought a significant quantity of raw materials abroad, as shown in Table 6.15. In fact, firms now used a mix of suppliers from different locations: the number of firms buying 100 per cent of raw materials in the region was no higher than 19 per cent in a given LPS, as shown in the second part of Table 6.15. In addition, 42 per cent of surveyed firms in the nationally-oriented cluster of Guadalajara and 57 per cent in the intermediate case of Aguascalientes, did not buy any raw materials from local suppliers.

The intermediate case of Aguascalientes, which concentrated fewer suppliers than the Guadalajara region during ISI, now shows a tendency to use foreign suppliers,

which also illustrates its transition towards maquila activities. In fact, the intermediate cluster lacks suppliers of materials for the group of nationally-oriented producers (SECOFI, 1999). An entrepreneur and former president of the local chamber pointed out that after the opening to trade many textile firms in Mexico became importers of materials and the suppliers in the market are exporting most of the production, while the remainder are insufficient to compete, 'if there is no engagement between producers and suppliers the last thing one can talk is about marriage' (Interview 11). The fieldwork found that American contractors emerge as the main providers of raw materials for maquila firms. In any case, 57 per cent of firms did not buy inputs locally.

Table 6.15 The Extent and Location of Suppliers of Raw Materials

	Nationally-oriented Guadalajara	Export-oriented La Laguna	Intermediate Aguascalientes
<i>Raw material bought:</i>			
Locally	32.6	30.2	33.8
Nationally	45.2	9.8	24.0
Abroad	22.1	59.9	42.1
<i>% of inputs bought locally:</i>			
0 %	42.2	45.5	56.8
1-50 %	33.2	33.2	10.8
51-99 %	8.8	12.1	13.5
100 %	15.6	9.1	18.9

Note: Due to rounding up total may not be equal to 100%.

Source: Author's fieldwork.

On the other hand, the export-oriented industrial site of La Laguna is experiencing an expansion of local suppliers and, hence, further static external economies. As has

been pointed out throughout this thesis, local suppliers in La Laguna were underdeveloped during ISI and almost inexistent during the GATT period when firms in the region transformed into maquila firms solely specialised in assembling. After the changes in trade regulations brought by NAFTA, the establishment of suppliers increased in the region. New suppliers have come to play an active role in the LPS after the impressive performance of La Laguna and its region moved into the *full package* in 1994. In this way, an entrepreneur pointed out: ‘Suppliers are here and have grown at the rate that we have required from them’ (Interview 18).

The recent development of the suppliers for the garment industry is evident when taking into account the number of firms registered in the member list of the local Chamber of the Clothing Industry (CNIV-La Laguna, 2000c).¹¹⁶ Since 1993, from being almost inexistent, suppliers have increased their number in the region. All kinds of auxiliary industries have appeared in the region: international suppliers of thread (Coat Timon and Hilos American & Efir), suppliers of zips, buttons and studs (YKK, Cierres Ideal and Scovill Fasteners), label and tag firms, as well as local, national and international firms supplying accessories and spare parts for sewing machines, laundries and cutting rooms (CNIV-La Laguna, 2003).

In fact, there are now two textile plants serving the regional industry that figure among the most important cotton and calico plants in the world. Parras-Cone (a joint venture between Industrial de Parras, a leading Mexican denim and marketing company, and Cone Mills, the world’s largest producer of denim fabrics) is one of the four largest denim and twill producers in the world, established in Coahuila in

¹¹⁶ The National Chamber of the Garment Industry, as well as all their local representations, not only group related manufacturing firms but also subsidiary sectors.

1995. Together, this plant of Parras La Laguna¹¹⁷ and Santa Fé plant are the largest suppliers of textiles in the region. Data from the survey identified that there is a significant increase in inputs bought in the region and now 30 per cent of local purchases of raw materials and 42 per cent of new machinery are made within the region, as shown in Tables 6.15 and 6.16.

The development of suppliers of new machinery also provides information that identifies external economies in the export-oriented case. Producers in the export-oriented cluster make more use of local suppliers of machinery than their counterparts in other clusters, as shown in Table 6.16. In fact, 72 per cent of sample firms in the nationally-oriented LPS of Guadalajara did not buy their new machinery locally, a figure that is also high for the intermediate case of Aguascalientes (63 per cent of sample firms).

Table 6.16 The Extent and Location of Suppliers of Machinery

	Nationally-oriented Guadalajara	Export-oriented La Laguna	Intermediate Aguascalientes
<i>% of new machinery bought locally:</i>			
Locally	30.9	42.5	33.1
Nationally	28.8	4.7	19.6
Abroad	40.3	52.8	47.2
<i>% of new machinery bought locally:</i>			
0 %	72.2	45.5	63.3
1-50 %	8.8	12.0	14.7
51-99 %	2.2	18.2	8.1
100 %	16.7	24.2	13.8

Note: Due to rounding up total may not equal to 100%.

Source: Author's fieldwork.

¹¹⁷ This firm is an additional textile plant of Industrial Parras bought to Grupo Lajat in 1999.

6.5.7.2. Cooperation and knowledge spillovers in supplier relations

During the ISI period, the strategy of economic development stimulated a firm-supplier link based purely on pecuniary interchange, as presented in Chapter 5. The export-oriented LPS of La Laguna has strengthened this linkage in the open economy and has not only benefited from the local availability of competitive suppliers but also from the flows of knowledge and cooperation in linkages with suppliers. Cooperation is an important practice carried out among garment manufactures and suppliers in La Laguna. Data from the survey show that 85 per cent of sample firms received some benefits from suppliers. Meanwhile, cooperative linkages in the nationally-oriented and intermediate LPSs were not as developed as in the export-oriented case, as shown in Table 6.17.

Table 6.17 Cooperation and Benefits from Suppliers

	Guadalajara	La Laguna	Aguascalientes
Firms receiving benefits from suppliers (%)	62.2 %	84.8 %	59.5 %
Benefits received from suppliers:			
Technical support & advice	32.1 %	78.6 %	26.8 %
Information on new products	64.3 %	57.1 %	53.6 %
Financial assistance	28.6 %	39.3 %	13.4 %
Training	12.5 %	32.1 %	10.3 %
Managerial assistance	3.6 %	3.6 %	10.3 %

Source: Author's fieldwork

Technical support and advice was the main benefit received by 79 per cent of sample firms in La Laguna. This type of post-sale support is crucial, when firms introduce a

new technology and are not familiar with the new machinery. This in turn, optimised the investment and performance of local firms. Information on new products, financial assistance and training are other important knowledge transfers from suppliers. Thus, the important cooperation developed in the export-oriented LPS has allowed them to know more about inputs, international trends and prices. This has been important to then negotiate with American contractors on alternatives for garments on full package production.

The export-oriented LPS has taken advantage of trade liberalisation and integration to upgrade the competitive situation of the region. In moving towards the *full package*, La Laguna producers have relied on crucial support from their suppliers. Credit and financial agreements are also important forms of cooperation among firms, about 40 per cent of surveyed firms had some kind of financial deal, mainly to pay for the inputs at a later stage.

Geographical proximity is important in order to interact and to get to know more entrepreneurs working in the industry. Suppliers and local producers working in conjunction also develop new fabrics with specific weights, colours and textures. Firms wanting to go into the *full package* establish links with possible suppliers that they already know, and tell them about their plans. One entrepreneur illustrated these relations:

You talk to suppliers, you tell them, look I have got this project. They ask what enterprise in concrete terms you are going to produce for and they help you and look after you. It is also interesting for them. Thus, little by little the integration of the full package starts to work. If you fulfil your commitments, suppliers will help you further and so forth' (Interview 14)

In this way, cooperation and trust are important for functional upgrading in the La Laguna cluster.

The support and collaboration of suppliers is much lower in other LPSs. Information on new products developed by suppliers, rather than cooperation and post-sale cooperation with customers, is the most important benefit received by sample producers.

Since an important part of the formal sector in the intermediate LPS of Aguascalientes has turned to assembly activities, supply links are limited given the fact that clients provide them with raw materials. Nevertheless, firms that are not engaged in maquila activities do not have the same cooperation levels experienced in the nationally-oriented LPS of Guadalajara and the export-oriented LPS of La Laguna, as shown in Table 6.17. That situation suggests that firms not engaged in a global value chain are producing in an environment that has no strong linkages with suppliers to compete in the national market. Thus, the nationally-oriented LPS of Guadalajara and the intermediate cluster of Aguascalientes do not well-developed relationships of cooperation and flows of knowledge in the region, which evidence low generation and appropriation of external economies.

6.5.8. Connecting the local to the market: Forward linkages

It was found that LPSs are weak on the marketing side, and that they encounter many difficulties in a competitive market. During ISI, there was little incentive for competition. If the producers did not sell their products directly, individuals acted as resellers, who on many occasions were the entrepreneur's relatives or neighbours.

The latter bought small quantities of products that were then distributed among street markets, shops, offices, and shops in other regions.¹¹⁸ Without cooperation, producers manufactured according to their own designs and quality without taking into account international fashion. Thus, with a captive market and a lack of incentives to incorporate new designs and products, forward linkages were weak and not developed during ISI, as pointed out in Chapter 5.

The marketing strategies carried out with pragmatism and not well developed during the ISI period were modified when entrepreneurs feared serious international competition and the collapse of the internal market in the 1980s. Firms had to learn to respond to what clients demanded, to get used to competing with imported products and to move with transnational marketers and retailers. With the opening to trade, new and more sophisticated agents appeared in the national arena, crowding out the small-scale resellers. International retailers and brand-marketers such as Sears, Wal-Mart, Carrefour, JC Penny, Guess?, The Gap and Zara emerged in the Mexican market. Meanwhile national retailers (Comercial Mexicana, Suburbia, Liverpool/Fábricas de Francia, Gigante, Aurrera) incorporated FDI and expanded their businesses across the country. In fact, the latter group of firms alone accounted for 37 per cent of total garment sales in the Mexican market (Kurt Salmon Associates, 2002:36). In addition, Mexican firms face strong competition from illegal production and imports, including second-hand garments, which are estimated by Kurt Salmon Associates (2002: 22) to account for 58 per cent of garment consumption in the Mexican market.

¹¹⁸ It is important to note that those were the main channel of clothing distribution in Mexico. Large retailers and branded marketers (e.g. Walmart, Kmart, Sears, JC Penny, The Gap, Levi Strauss & Co.)

The emergence of new players also modified requirements from distribution channels. Clients and particularly retailers with access to massive markets choose suppliers that offer them the best deal and have established credit conditions. According to entrepreneurs, credit times to clients have increased from 15 days to 30 or even 40 days. One entrepreneur stated that retailers have even asked him to send a consignment and then wait for payment until after the product has been sold (Interview 4).

Furthermore, chain retailers are following international practices and are now involved in the clothing market by developing own labels (private label), as pointed out in Chapter 4. They specialised, as did brand marketers, in design and marketing; while subcontracting the production process. That situation is now increasing competition in the market, which challenges the marketing side of Mexican firms engaged in *all* activities along the value chain.

In this scenario, to take on the market, producers catering to the domestic market in the nationally-oriented region of Guadalajara and the intermediate LPS of Aguascalientes have tried to avoid the middleman by increasing their own direct sales within the cluster and by seeking larger distributors. The survey found that direct marketing of products through their own shops, boutiques and/or street market stalls remained the most important marketing channel among nationally-oriented firms. Entrepreneurs commented that due to their low-scale production and their limited financial resources to negotiate with retailers, they commercialise their own products in order to stay in the market. Meanwhile, indirect commercialisation

through maquila activities increased in the intermediate LPS, which shows the recent advance of international production in the cluster, as shown in Table 6.18.

Table 6.18 Commercialisation Channels
(% of sample firms)

Activities	Guadalajara	La Laguna	Aguascalientes
Firms involved in marketing activities:			
	71.1%	24.2%	43.2%
Commercialisation channels:			
Direct distribution	65.1 %	51.5 %	48.6 %
Wholesalers	47.8 %	0 %	18.9 %
Brokers	31.1 %	6.1 %	13.5 %
Indirect (subcontracting)	30.0 %	75.8 %	45.9 %
Retailers	15.6 %	0 %	8.1 %

Source: Author's fieldwork

The integration of the export-oriented cluster of La Laguna in a global production system shaped the productive specialisation of the region and, consequently, led to a lower involvement in marketing activities. I identified that La Laguna specialises in the manufacturing of the garments rather than putting effort into the marketing or design of products. Thus, specialisation in the actual production process meant local producers relied on their contractors as the main channel of commercialisation. Nonetheless, the LPS has undergone a functional upgrading by acquiring further functions in the value chain. There are some entrepreneurs that are a step ahead and have started to market their own products in the national market:

This is the case of some firms in the Chamber, which have their own label, we sell directly to the public. Myself I have a shop here, another in Saltillo, in Monterrey and another in Cancún. They are the first steps in supplying to the national market with our own label, without the middlemen. Thus, we can sell the garment at a reasonable price. (Interview 14)

Conclusion. This subsection shows that firms in the nationally-oriented LPS are trying to retain control over the marketing side of the value chain by selling directly through their own shops or wholesalers, which are generally located within the region.¹¹⁹ Those producers have benefited from proximity to the market that reduces transport costs. However, they lack the financial and entrepreneurial know-how to sell directly in other regions, without considering their limited production scale, which hinders them from competing with international retailers and brand marketers. In marketing, economies of scale are important and very few firms have the financial muscle to invest in advertising or market research. Despite the fact that firms in this LPS have remained as manufacturers in charge of the entire value chain, they face serious competition from national and trans-national large retailers and, are losing out in the wider national market. On the other hand, export-oriented firms make use of contractors to market their products. Thus, since nationally-oriented firms are losing out on innovation and marketing, in the future their cluster will not make more difference with the export-oriented LPS, in terms of specialisation in production activities.

The analysis of market and innovation linkages facilitates the analysis of LPSs. The results demonstrate the position and strength of a cluster along the value chain. Drawn from the aforementioned linkages, a summary of industrial structures is

presented in Figure 6.1. The darker shaded boxes represent the most important activities carried out in the cluster, the lighter shaded boxes mean activities of less importance, while the white boxes represent activities not extensively carried out in the LPS. In the case of the nationally-oriented agglomeration of Guadalajara most activities are carried out at a regional level, although firms are losing out in innovation and the marketing of products, as already examined. Small hub firms are in charge of higher value added activities and of the distribution of production, while informal sector workshops specialise in the assembly and finishing of garments, as shown in the first part of Figure 6.1.

There are two types of value chain in the intermediate case of Aguascalientes. Firms catering to the national market followed the trend of the Guadalajara cluster. Small & medium size hub firms try to retain control over the value chain and subcontract workshops in the informal sector of the economy. They face stiff competition and display low innovation capabilities. On the other hand, large firms connected to international production-sharing are highly specialised in assembly activities and to a lesser extent in finishing and laundry activities, as denoted by the clear colours of the boxes in Figure 6.1.

The export-oriented case of La Laguna is fully embedded in international production-sharing with American companies. Firm size has increased and the region is now specialising in the production activities of the value chain (cutting, assembling, laundering and finishing), leaving design and marketing to its American counterparts. Large firms, leading the regional industry, now carry out most of the

¹¹⁹ On average, about 50 per cent of the production in the LPS is sold locally and another 45 per cent is sold in other national markets.

different activities throughout garment production; while smaller firms are specialised in the assembly and finishing of garments. Large firms have more capacity for large outputs. The capacity to meet large orders from US companies is an important condition to fulfil if firms want to be directly incorporated in the global production chain. Thus, the spectrums of LPSs along the value chain are represented in Figure 6.1.

Figure 6.1. The LPSs along the Value Chain*

Guadalajara region

Small firms

Design	Cutting	Assembly	Finishing	Laundry	Marketing
--------	---------	----------	-----------	---------	-----------

Informal sector workshops

Design	Cutting	Assembly	Finishing	Laundry	Marketing
--------	---------	----------	-----------	---------	-----------

Aguascalientes 1. Firms catering to the domestic market

Small and medium size firms

Design	Cutting	Assembly	Finishing	Laundry	Marketing
--------	---------	----------	-----------	---------	-----------

Informal sector workshops

Design	Cutting	Assembly	Finishing	Laundry	Marketing
--------	---------	----------	-----------	---------	-----------

Aguascalientes 2. Firms catering to the international market

Medium and large size firms

Design	Cutting	Assembly	Finishing	Laundry	Marketing
--------	---------	----------	-----------	---------	-----------

La Laguna region

Large firms

Design	Cutting	Assembly	Finishing	Laundry	Marketing
--------	---------	----------	-----------	---------	-----------

Medium size firms

6.6 Institutional linkages: Enhancing local capacity-building for the clothing industry

6.6.1 The extent of institutional benefits

This section draws analysis from the survey carried out among entrepreneurs, official documents and direct interviews with directors and senior officials in the different institutions analysed. Thus, in order to assess the strength of institutional linkages and joint action, the enquiry on the one hand analyses the policies and aims of institutions and, on the other hand, the evaluation and opinions of the entrepreneurs. For the purpose of this thesis, institutions are defined as those public or private bodies created to directly or indirectly, develop, support, promote and provide (directly or indirectly) knowledge to clothing firms. The institutions analysed in the enquiry are Business Chambers, Universities, R&D Centres, colleges and different levels of government.

Entrepreneurs were asked whether they received benefits from institutions, and then to indicate which ones and the type of information, knowledge or benefits received from them. Before analysing institutions in detail, aggregate results of the survey follow next.

Unlike during the ISI period, institutions now play a more active role in promoting the local garment industry. As has been studied in Chapters 4 and 5, local institutional involvement in developing the private sector was minimal during ISI. However, greater local institutional support has taken place since the 1990s in selected regions, although the institutional base is uneven among the case studies.

The survey denotes an advance of institutional support: 85 per cent of sample firms in the export-oriented LPS of La Laguna acknowledge having benefited from links with institutions. The cooperative linkages have also improved in the nationally-oriented and intermediate LPSs, but were never as strong as in the export-oriented case, as shown in Table 6.19. In the nationally-oriented LPS of Guadalajara 72 per cent of firms received some type of information, knowledge and/or support, while the figure drops to 68 per cent in the intermediate case of Aguascalientes.

Table 6.19 Institutional Information, Knowledge and Support Received by Firms
(% of sample firms)

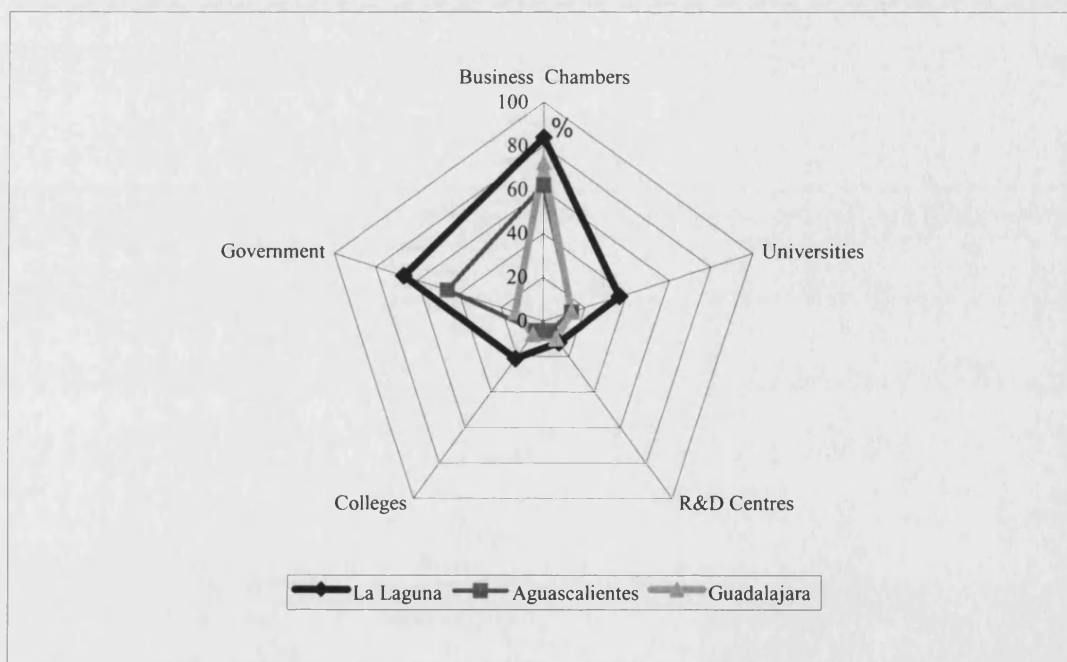
	Guadalajara	La Laguna	Aguascalientes
Firms benefiting from institutions:	72.2 %	84.8 %	67.6 %
Institutions:			
Business Chambers	72.2 %	83.9 %	62.2 %
Government	13.3 %	66.7 %	45.9 %
Universities	13.5 %	36.4 %	13.5 %
Colleges	7.8 %	21.2 %	5.4 %
R&D Centres	10.2 %	12.1 %	5.4 %

Source: Author's fieldwork

In tracing the different cooperative institutional linkages in which firms are embedded, it was interesting to find a different institutional base across selected LPSs. The local Chamber of the Clothing Industry and the government appear as the two most important institutions for the agglomerated firms in the intermediate clusters of Aguascalientes. Meanwhile, linkages with chambers are the only important institutional link that sample firms have in the nationally-oriented LPS of

Guadalajara. The linkages with universities and technical colleges are, to some extent not yet widely developed. The institutional base of the export-oriented LPS of La Laguna stands out because of its highly developed network of institutional linkages. The export-oriented region benefited from cooperation with the local Chamber of the Garment Industry, government and to some extent with universities and colleges. The role of the most significant institutions and their location are analysed next.

Figure 6.2 Institutional Support: Where do Benefits, Knowledge and Information Come From?



Source: calculated based on authors' fieldwork

6.6.2 The local Chamber of the Clothing Industry

6.6.2.1. Origins

Local clothing chambers were created in different periods, according to importance of the clothing industry in the region. As mentioned in Chapters 4 and 5, the nationally-oriented cluster of Guadalajara and the intermediate Aguascalientes LPS were among the main producers of garments in Mexico during ISI. Local chambers of the clothing industry surged in those regions in the late 1960s with the idea of gaining entrepreneurial representation in the different levels of government (CNIV-Guadalajara, 1994; CNIV-Aguascalientes, 2000). Since their origins, local chambers have grouped firms in the formal sector of the economy.

The Chamber of the Clothing Industry in the export-oriented cluster is a relatively new institution, dating from 1994, at the time of the remarkable advance of the clothing industry in La Laguna. The initiative to create this institution arose from idea group of local entrepreneurs interested in promoting their firms in the USA and in gaining representation with national institutions influencing the regional industry within the NAFTA framework. An ex-president of the local Chamber of the Clothing Industry pointed out:

At the beginning we were 23 entrepreneurs and then we incorporated more and more, now we are around 150 members. Then we had the idea of construct this building. With the collaboration of members, the municipal government donated the land; we sold the idea to them, which they liked. (Interview 14)

The local chamber has been an important instrument in the LPS for advancing the local garment industry and is now, according to the national president of the Clothing Chamber, one of the strongest delegations in the country.

6.6.2.2. Transformation in chamber support

For a long time, entrepreneurs were forced by law to become members of a chamber, which followed the trend of the ISI institutions: chambers did not encourage firms to cooperate among themselves to strengthen the regional industry nor did they offer competitive services for their captive group of entrepreneurs (Martínez-Omaña, 1994; Mújica, 1997). However, since the enactment of the new amendments to the law on entrepreneurial chambers in 1997, chambers have been forced to offer better services since membership is no longer compulsory, as pointed out previously in Chapter 5.

The enquiry found that local chambers of the clothing industry have been the most important institutions for agglomerated firms in all types of LPSs. Chambers provided support for 84 per cent of sample firms in the export-oriented LPS of La Laguna, 72.2 per cent in the nationally-oriented LPS of Guadalajara and only 62.2 per cent of those in the intermediate cluster of Aguascalientes, as shown in Table 6.20. However, the role of chambers varies in clusters, since the degree of benefits varies between LPSs.

In the maquila cluster of La Laguna, training of the labour force is the most important direct benefit received by 73 per cent of those firms acknowledging Chamber benefits. Information on exports, clients, suppliers and general information on the clothing industry was the second most important benefit in 54 per cent of benefited firms. Process and product innovation from the clothing chamber played a less important role, which confirms the importance of US contractors in this field. The local chamber has also acted as an important catalyst for informing on and

promoting government programmes (e.g. maquila and export support) among their members. Moreover, the local Chamber, in conjunction with local technical schools, offers training for operators and mechanical workers. Meanwhile, managerial training is carried out in collaboration with the Technology Institute of Monterrey through a diploma in competitiveness for the textile industry. Furthermore, in 2001 that institution inaugurated a design centre to help regional firms to move further along the value chain.

Firms in the nationally-oriented LPS of Guadalajara also benefited from training and from information and knowledge for process innovation (48 per cent of firms receiving benefits from chambers). It is important to highlight that training of the labour force comes under a national scheme partly financed by the national Ministry of Labour (70 per cent) and by the host firm (30 per cent), and promoted and administrated by chambers.

Meanwhile, information, product innovation and training were the most important benefits received in the intermediate cluster of Aguascalientes. The Aguascalientes Chamber of the Clothing Industry was in fact the only clothing chamber in the country offering services around product design. The director of the Aguascalientes chamber pointed out the services are largely oriented towards small firms and typically 'the client asks for the design of a garment line that the entrepreneur has in mind, then the girls here make a sample, patterns and grading' (Interview 8). The entrepreneurs, however, pointed out the limitations in development of designs, and the long time that it takes to develop a model of garment. Moreover, the centre lacks financial and human resources. The director pointed out the limits to the expansion

of the design centre given the high price of the equipment (Interview 8). Furthermore, 'They have two people for 300 firms, and it is impossible to give them a good service with two persons' (Interview 13).

Table 6.20 Information, Knowledge or Benefits Received from Chambers.

(% of sample firms)

	Guadalajara	La Laguna	Aguascalientes
Firms benefiting from chambers:	72.2 %	83.9 %	62.2 %
Information, knowledge or benefit received from chambers:			
Training	52.3 %	73.1 %	40.0 %
Information on exports, clients, suppliers, statistics, general info.	38.5 %	53.8 %	52.0%
Product innovation	30.3 %	38.5 %	44.0 %
Process innovation	48.5 %	34.6 %	36.0 %
Marketing	16.9 %	23.1 %	4.0 %
Managerial assistance	13.8 %	19.2 %	16.0%
Financial assistance	9.1 %	7.7 %	0 %
Location of business chamber giving support:			
Locally	98.5 %	96.2 %	100 %
Nationally	1.5 %	3.8 %	0 %

Source: Author's fieldwork

6.6.2.3. Joint action

Despite the fact that local Chambers of the Clothing Industry work and plan activities independently, directors of the local branch of the CNIV agreed that representation of members is the most important indirect function of chambers across the LPSs. In addition, the La Laguna Chamber of Clothing focuses on the promotion of the regional industry abroad. The promotion of the regional garment industry is a major

objective of the local chamber in order to attract more clients and to promote direct and indirect exports. In reaching this objective the local Chamber of the Clothing Industry has developed its main project, the Trade Show for Assembly Activities and the Full Package (Laguna 807 & Private Label Expo). Despite the fact that the fair was only in its fifth year, the Chamber had consolidated this event internationally as one of the most important trade shows on production activities in the world.

The origins of this trade show go back to 1995, when despite the fact that Mexico was in the midst of the economic crisis, the local chamber was present that year at the Bobbin Show (one of the most important shows in the world for the clothing industry). Their participation in this international forum opened up the possibility of linking international producers with their La Laguna counterparts, but most importantly it served as a first and important step in learning the way that trade shows work. This experience was put into practice a year later when the first trade show took place in La Laguna.

The success of the trade show soon attracted important clients to the region. In fact, in its fourth year the trade show increased the number of manufacturers and potential buyers by 25 per cent in comparison to the previous year.¹²⁰ Some medium-scale entrepreneurs commented that in the second year of the trade show, they won a client, and so in the third year they did not participate given that they were already working to capacity (Interview 18).

With the support of the local governments, the intense promotion of this event has continued not only through constant participation with stands in Bobbin Shows, but

also through the use of consultants that in the year 2000 managed to send 25,000 individual invitations to institutions and potential clients in the USA, Europe, Asia, and Latin America (CNIV-La Laguna, 2000a). The cooperation with the National Bank of Foreign Trade (BANCOMEXT) has been significant in promoting the show through all representations of BANCOMEXT around the world.¹²¹ In this way, the local Chamber has served as a link between foreign companies looking for information and sourcing with firms in La Laguna region.

The chambers have also been in charge of communicating producers' needs to local governments and have served as the potential meeting point to which buyers may come to do business with local firms. In fact, in recent years, the Chambers of the Clothing Industry acted as lobbyists to persuade the government to develop sectoral policies, as will be analysed in the next subsection.

6.6.2.4. Limits to the participation of members in local chambers

Chambers in traditional production sites have been slow to restructure and encourage the participation of members. It seems that the nationally-oriented business chambers have continued to be organised internally as in the times of the protected economy, with little democratic participation, as identified by Martínez-Omaña (1994). This, in turn, has had implications embodied in the low participation of members. Entrepreneurs in the nationally-oriented LPS of Guadalajara and in the intermediate cluster of Aguascalientes stated that their opinions are barely taken into account to

¹²⁰ In the fourth year 10,000 promotional brochures were mailed to Mexico and USA.

¹²¹ In fact, this trade show is one of the three shows that form part of the BANCOMEXT advertising campaigns in the USA (CNIV-La Laguna, 2000a).

shape the services that the chambers offer.¹²² On the other hand, they seem to be disappointed with the services established vertically by the board of directors and, most importantly, with the administration of the chamber. Some entrepreneurs commented that representatives have privileged contracts, information and deals for some firms.

There are two examples that illustrate this situation. The Chamber of the Clothing Industry in Guadalajara was for many years in charge of the most important national trade fair specialising in clothing design (Exhibitex), which was the main source of the chamber's income. However, due to the chamber's financial problems in the early 1990s, the event was 'sold', coincidentally to a group of former presidents of the chamber. Another example is the trade fair in five rural towns. The chamber in Guadalajara lobbied with the state government to fund the Ruta del Vestido in 1998, a series of trade fairs held outside Guadalajara. However, some rural producers were not happy, given the fact that trade fairs were distributed according to the interests of the board of directors in Guadalajara. Thus, the town of Zapotlanejo withdrew from the project in 2000 because they considered that decisions were taken to favour friends and the factories of representatives in those rural trade fairs (Interview 4). By 2001, the Ruta del Vestido trade fair was organised only in one town (Villa Hidalgo), due to low sales and disagreements among entrepreneurs from different regions (González-Rodríguez, 2001: 23).

The mix of producers in the intermediate LPS of Aguascalientes has also brought clashes regarding the way that the business chamber should be organised. One of the

¹²² That situation is in stark contrast to the case of the export-oriented LPS of La Laguna that was recently created in a more democratic environment, and with a structure that allows wide participation

entrepreneurial parties in the region sought alternative ways to promote its businesses. The non-maquila group lobbied government institutions to develop an entrepreneurial organisation capable of providing more technological development, design, developing new markets, and increasing the value added of local firms, given the fact that the current bodies were lagging behind in international competitiveness (COCITEVA, 2000; Interview 11). Thus, the Consejo de la Cadena Textil y del Vestido de Aguascalientes (COCITEVA) commenced operations in 2001. This is an institution created and administrated by entrepreneurial initiatives and funded by the state government. The aim is to bring together different services for producers, as well as coordinating different agents that may be involved with the local textile and clothing sectors, thus upgrading the value chain in Aguascalientes. It is, however, still early to assess the impacts of such initiatives in strengthening the LPS.

6.6.3 Government linkages

6.6.3.1 Firms benefiting from government support

Until the late 1980s the federal government delivered horizontally-oriented policies across the country, while local policies were almost inexistent and unable to promote business support (OECD, 1997). However, since the early 1990s, local governments have played a more active role in promoting local industry. This has also coincided with a more democratic environment in the country, which encouraged political parties to compete among themselves and to implement proactive local policies. The first steps of state governments in the early 1990s were the promotion and establishment of foreign direct investment and maquila in their regions. This was the

from different types of firms, as pointed out by the director and members of the Chamber.

time when electronics and automobile industries developed rapidly in the central and northern part of Mexico (Dussel-Peters, 2001).

According to the enquiry, it seems that state governments have now moved towards policies to bolster local industry, which has also coincided with a federal policy supporting cluster initiatives. In 1997, the federal government launched the Agrupamientos Empresariales programme aimed at fostering *full package* production, to decrease illegal imports of garments and to promote international trade agreements that favour the sector. Cluster initiatives are proposed and administrated at the local level. This programme looks for greater coordination among different levels of government, local actors and particularly the private sector through entrepreneurial chambers (Secretaría de Economía, 2003). The organisation varies, however, depending on the institutional base and development of the industry in the region, as analysed next.

The direct beneficiaries of policies (clothing entrepreneurs) assessed the extent of benefits, information and knowledge received from government institutions. The results are presented in Table 6.21.

Table 6.21 Information, Knowledge or Benefits Received from the Government.

(% of sample firms)

	Guadalajara	La Laguna	Aguascalientes
Firms benefiting from government support:	13.3 %	66.7 %	45.9 %
Information, knowledge or benefit received from the government (% of firms receiving government benefits)			
Training	58.3 %	54.5 %	58.9 %
Financial assistance	41.7 %	36.4 %	5.9 %
Process innovation	25.0 %	31.8 %	17.6 %
Information on exports, clients, suppliers, statistics, general info.	16.7 %	27.3 %	64.7 %
Managerial assistance	8.3 %	22.7 %	52.9 %
Product innovation	0 %	13.6 %	5.9 %
Marketing	8.3 %	4.5 %	5.9 %
Location of the government given benefits:			
Locally	100 %	100 %	100 %

Source: Author's fieldwork

The results from the survey show the strength of institutional linkages in selected clusters. Linkages with government institutions in the nationally-oriented LPS of Guadalajara are weak and do little to encourage the development of the clothing industry. Only 13 per cent of the total firms sampled acknowledged receiving benefits from governmental institutions, as shown in Table 6.21. This contrasts heavily with the 46 per cent of firms having benefited in the intermediate cluster of Aguascalientes and particularly with the 67 per cent of firms sampled in the export-oriented cluster of La Laguna. An entrepreneur and former president of the local chamber of La Laguna pointed out that ‘The government came in strongly when it saw that the sector had potential with NAFTA. The institutions were already in the region, but after that they got more involved with firms in the sector’ (Interview 14).

The training of the labour force was the main benefit that all LPSs received from government institutions, which as pointed out earlier is a national scheme and locally administrated by local chambers. The national programme for industrial training of the labour force (CIMO) is the main programme in which firms are involved. This programme supported by the Mexican Ministry of Labour, is aimed at increasing firm productivity as well as employment. It is promoted by the local Chamber of the Clothing Industry and financed by the government and the host firm. The collaboration with the local Chamber of the Clothing Industry is relevant not only to disseminate information about this programme but also the experiences of firms in other enterprises with similar characteristics, which allows the propagation of effects.

6.6.3.2 The strategy of local policies

Since the second half of the 1990s, state governments have followed different approaches to promote and root local industry. The Jalisco state government in the nationally-oriented cluster has followed a policy based on de-concentration of industry from the Guadalajara area, while promoting the electronics sector in that region (SEPROE, Jalisco Government, 2000; Interviews 5 & 6). Meanwhile, the Aguascalientes state government promoted the development of the maquila industry during the 1990s, and it was not until the year 1998 that the policy changed to clustering support. The governments in the export-oriented La Laguna region have, on the other hand, followed sector and cluster policies since 1993 with great involvement of Regional Development Agencies (RDAs) encouraged by important territorial competition among states and municipalities.

The nationally-oriented LPS. The government in Jalisco state has attempted to de-concentrate industry from the capital of the state and its metropolitan area (Guadalajara region). The Minister of Economic Promotion in Jalisco state pointed out that the policy sought to increase manufacturing in the state, while concentrating traditional sectors in rural areas and leaving electronics in the Guadalajara region (Interview 5). This also sought to avoid competition for the labour force, while increasing manufacturing jobs and benefits in rural areas. The clothing industry was to some extent promoted in the rural areas of Los Altos through a project called the Ruta del Vestido (Clothing Route).¹²³ The promotion fundamentally consisted of supporting three industrial parks with infrastructure and giving financial support for the promotion of trade fairs in the rural areas. In addition, the government continued its programme of micro-credits to small firms and the training of labour force (SEPROE, Jalisco Government, 2000).

The results of the policy appear to be disappointing though, as evaluated by entrepreneurs. The weak linkages with government were manifested among sample firms, as analysed in the previous subsection, only 11 per cent of them received government support. According to entrepreneurs trade fairs have not attracted more clients to those towns located outside of the Guadalajara region and, in fact, most of the main towns in the project have already withdrawn from the project, as pointed out in the previous subsection. Furthermore, data originating from the state government show that the main residents of promoted industrial parks were new maquila firms and not local small firms (SEPROE, Jalisco Government, 2000).

¹²³ The route is supposed to be the way to the USA (market).

On the other hand, the clothing industry in the Guadalajara region, which is the main source of clothing employment and production in the state, has not received targeted support from the state or municipal governments. The infrastructure and credits supplied have not been enough to encourage the sector (González-Rodríguez, 2001: 23). Micro-credits have mostly been given to projects located outside the Guadalajara region, which received 76 per cent of the total funds (Interview 6). Moreover, the state policy of de-concentration of industry did not take into account the idea that different industrial sectors can coexist in the same region, since different industries have different labour force requirements (i.e. levels and types of education).¹²⁴ Thus, it appears that instead of reinforcing clustering, state policies are weakening their linkages with local producers and further decreasing the competitive advantage of agglomerated firms in the nationally-oriented LPS of the Guadalajara region.

The intermediate LPS of Aguascalientes. Policies in Aguascalientes have been closely geared towards the support of the clothing industry. This industry was the most important branch that the state inherited from the ISI period. The region lacked local public policies during the 1980s, as did the rest of the country. There were policies in the 1990s targeted at attracting maquila firms to the region, but further industrial policies were non-existent and the manufacturing sector developed without the direct intervention of local government. The policy orientation changed in 1998

¹²⁴ It seems that even the supported manufacturing sectors still lag behind in comparison to other northern states. Multinational companies, mostly through maquila activities, carry out the bulk of production and exports in the electronics and automobile industries as analysed in Chapter 3. In 1994, Jalisco state accounted for 5.2 per cent of the national total for value added and 2.3 per cent of total maquila employment in the manufacturing division of metallic products, machinery and equipment manufacturing. The figure has remained fairly constant throughout, and in 1998 this state only accounted for 5.7 per cent of national value added and 3.5 per cent of national maquila employment in this manufacturing division (INEGI, *La Industria Maquiladora de Exportación 1990–1998*, 2001: 138–39).

when the new state government came into power. The new government promoted sectoral and clustering policies, as well as the development of endogenous firms (SEDEC, Aguascalientes government, 2000). The aim was to link and coordinate different institutions (private, education and government) able to support the garment industry. Thus, in a collaboration with entrepreneurs, colleges and the Universidad Autónoma de Aguascalientes, the University updated its BSc. programme on clothing and textile design by introducing new courses on garment business administration, garment supervision and, maintenance of garment machinery (Interviews 11 & 13). The government also financed the local entrepreneurial initiative for creating the Centro Tecnológico de la Confección (COCITEVA) and continued with the programme of training largely developed in cooperation with the Federal Ministry of Labour and local entrepreneurs. Evidence from the fieldwork suggests that collaborative linkages are developing in the intermediate LPS; 46 per cent of sample firms there acknowledge getting information, knowledge or other benefits from the local government, as shown in Table 6.21.

The export-oriented LPS. Unlike in traditional clothing sites, government links have contributed to the consolidation of the export-oriented LPS of La Laguna in the global industry. Given the fact that La Laguna is situated on the border of Coahuila and Durango states, there is important interaction and competition among state and district governments and clothing promotion policies tend to be similar on both sides of the region (Poder Ejecutivo-Durango Government, 1999).

With NAFTA as a point of reference, at the beginning of the 1990s local governments decided to implement a more aggressive strategy to promote regional

sectoral growth. The promotion of the clothing industry was straightforward in Durango state given its prime importance in the state and particularly on the side of La Laguna, where this industry is agglomerated. Meanwhile, policy-makers in Coahuila state had it more difficult given its manufacturing structure and engaged in identifying those sectors in which the state could have a competitive advantage (Poder Ejecutivo-Coahuila Government, 1994). According to Coahuila's minister for economic development, policy-makers identified three sectors that had clearly benefited from NAFTA: automobiles, clothing and electronics. The government opted to promote the automobile and clothing industries because of their prior development, infrastructure, education level and strategic location (Interview 21).¹²⁵ Moreover, the clothing industry was chosen for its potential to provide jobs for non-qualified labour, mostly for first-time industrial workers. Thus, the region could take advantage of its vast rural population and of the low-skilled labour force.

Thus, the economic development policy adopted in both sides of La Laguna was that of promoting economic clusters by strengthening the productive chain in selected manufacturing sectors. The governments initiated the promotion of the different links of the productive chain to be located in both sides of La Laguna. For this purpose, the governments gathered detailed information to inform investor decisions on the qualifications of the human capital and on the infrastructure, in order to attract firms into the region.¹²⁶

¹²⁵ The electronics sector was not promoted given the state's lack of competitiveness with respect to other northern states (i.e. Baja California and Chihuahua).

¹²⁶ Specific data on age, education levels, technical and professional education, and availability and quality of technical schools were gathered for the human capital inventory, while specifications on water, electricity, gas, railway networks, roads and airlines flying to the region, were collected with regard to the infrastructure. The information gathered in general fulfilled all the requirements of investors in order to help them to fill their matrix of requirements.

The creation of local development agencies (Fomento Económico: FOMEC) in 1994 was a significant part of the regional government plan to promote regional industry. One major objective of the development agencies was to promote investment and cooperation in areas in which the region is considered to have advantages. The agency acts as a host, refers investors to the local government and local services such as shelter services, temporary offices, relocation services, executive services and housing (Interview 20). This institution, in cooperation with different levels of government, has also organised missions abroad to promote the automobile and textile and clothing industries in La Laguna.

Municipal level competition is important in order to attract investment into the region. In the state of Coahuila, the government offered major incentives to companies willing to set up production in industrial parks. Meanwhile, in the case of the major trans-national companies, the government offered even greater support. It offered low-priced land,¹²⁷ electricity lines, gas and water pipelines, pavements and good location sites.¹²⁸

In all municipalities, the local government delivered a policy based on *industrial park* support. The idea was to encourage firms to locate in the industrial parks of the municipality. The parks foster important state and municipal competition to attract and root firms. The governments supported the establishment of suppliers to those firms in the same complex, with all infrastructures supplied or supported by the government or by shelter firms (Gobierno Municipal de Lerdo, 1998). The clothing industry was the main sector in terms of jobs created in those parks (Gobierno

Municipal de Lerdo, 1996). Latest figures show that of the 21 industrial parks dedicated to the clothing industry in Mexico, seven are located within the La Laguna region (INEGI, Parques, Ciudades y Corredores Industriales, 1999: 25,38).

The government strategy used *attract firms* was that to promote the region to US companies that could transfer technology to the region and firms that could instruct the rural population on how to increase the skills of workers. The minister of economic development in Coahuila state explained that the governments of the states of Coahuila and Durango have also encouraged joint ventures, associating local firms with American firms in order to strengthen regional productive chains (Interview 21). One example of this is Parras, a firm based outside La Laguna but within Coahuila state, which previously produced 20 million square metres of material a year. The government was an active participant in the negotiations between Parras and Cone Mills. The joint venture created a new plant in Torreón in 1999. The state of Coahuila now produces over 100 million square metres of material a year in these two state-of-the-art plants. This makes the state one of the largest producers of denim in the world (Interview 29).¹²⁹ In this way, the government has facilitated the supply of calico and denim in the region at competitive prices. This has favoured the production of trousers with 100 per cent of national integration and in some cases with 100 per cent of regional integration. In this sense, the local/regional governments have helped to consolidate the La Laguna region as an important cluster of the garment industry.

¹²⁷ Land was never given away but always sold at cost.

¹²⁸ In all cases the infrastructure provided was given to a federal entity, that is to say, roads were given to the Communications and Transport Ministry.

¹²⁹ 39 per cent of production remains for the domestic market (Expansión, 2000).

Local delegations of national institutions have also played a key role in supporting local businesses. Delegations are located within industrial parks close to firms. These institutions have been important in terms of financing local firms, providing training for workers and providing information on export procedures, as shown in Table 6.21. The local government in the region has given importance to the training of the unskilled labour force, through collaboration with national and local institutions. The state governments offer training grants in the Durango employment training programme; while in Coahuila state, non-qualified workers are paid for between one and three months of training (Poder Ejecutivo-Coahuila Government, 1999: 38; Poder Ejecutivo-Durango Government, 1999: 176).

Thus, in conclusion, joint action, competition and support among local/regional/national-based institutions have assisted the export-oriented LPS of La Laguna to develop an entrepreneurial environment, which becomes another source of external economies for agglomerated firms.

Individual linkages have been studied in this chapter. The next chapter therefore deals with the structure of the LPS as a system and the driving factors advancing/retreating LPSs in the open economy.

CHAPTER 7

New LPSs in the Open Economy

7.1. Introduction

This chapter synthesises information from the previous chapter and brings together all the characteristics, industrial structures and linkages that comprise the different types of LPSs studied. The enquiry analyses the different spirals of learning and cluster arrangements in Mexican LPSs after the opening to trade. The enquiry shows that LPSs have restructured, to different degrees, the way that they do business, their productive specialisation, market orientation, key drivers and the way that they use the cluster as a factor to increase competitiveness. The local response, however, varies among the different types of cluster, some have managed to strengthen the LPS, while others remain weak, isolated, lacking dynamic external economies and rely on diminishing static external economies. This chapter thus presents details of the performance of clusters in the open economy, while exploring the idea that more evolved LPSs display different forms of industrial organisation and sources of dynamic external economies to those studied in the industrial district literature. On the other hand, the LPSs that display greater similarities to the so-called Italianate industrial district model seem to be losing out.¹³⁰

¹³⁰ For an outline of the industrial district model see Chapter 2 of this thesis and also Rabellotti (1997).

7.2. Performance and the new LPSs after trade integration

During ISI LPSs were homogeneous and shared common features. The protective strategy established a common way to organise production and the industry across Mexican garment clusters.¹³¹ Weak productive linkages and development of innovation were characteristic features across LPSs. Firms were typically micro and small scale, family owned and managed and catered to the local/regional or national markets (Arias, 1985; Suárez-Aguilar & Rivera-Ríos, 1994; Medina-Ortega, 1997; Vangstrup, 2002). Successful clusters benefited from proximity to the market and the concentration of suppliers and labour force in the region.

As globalisation advanced during the 1990s, economic activity, industries and regions have adjusted, reshaped and created new economic environments around the world. In the Mexican case, the opening to trade and, most importantly, NAFTA have effected the organisation and location of industry, consequently changing the characteristics of successful clusters in Mexico (see Table 7.1).

¹³¹ See Rabellotti (1997, 1999) for clusters in the Mexican footwear industry during ISI.

Table 7.1 Basic Features of Selected Agglomerations after Trade Integration

	Nationally-oriented: Guadalajara	Export-oriented: Laguna Region	Intermediate LPS: Aguascalientes
Market orientation	National/regional	Export	National with increasing tendency to export
Firm structure	Micro & small firms led by medium and small firms	Mainly large firms	Combination of newly created large-scale maquila firms and small firms
General situation since trade liberalisation	Downward performance, accentuated since trade integration.	Booming	Bad during the GATT period, but improving since NAFTA.
Value added in the region	Low. Changing to contracted firms	Increasing	Low. Changing to maquila firms
Location of hub subcontractors	Local larger firms	USA. Some recently established in the region (i.e. Vanity Fair, Wrangler)	USA and larger local producers
Main activities along the value chain	All production activities. Losing out in marketing and innovation.	All production activities.	Mixed. Nationally-oriented firms: all production activities. Maquila firms: assembling, starting, laundering & finishing
Cooperation with subcontracted firms	No	Yes	No. Starting in maquila firms.
Subcontracting within agglomeration	Wide	Not wide	Not wide
Subcontracted firms in the LPS	Informal sector	Formal sector	Formal sector & informal sector
Cooperation and shared knowledge with suppliers	No	Yes	No
Origin of innovation	Abroad	Abroad	Abroad
Active role of local government	No	Yes, since early 1990s	Yes, starting in 1998
Cooperation and knowledge and innovation transfer in the cluster (dynamic external economies)	Low	High	Low. Improving in maquila firms
Availability of local suppliers and labour force (static external economies).	Low, decreasing	Good, remarkably improving since NAFTA	Low

Source: Elaborated based on INEGI, *Censo Industrial*, many years; INEGI, *Censo Industrial*: Aguascalientes state, many years; INEGI, *Censo Industrial*: Coahuila state, many years; INEGI, *Censo Industrial*, Durango state, many years; INEGI, *Censo Industrial*: Jalisco state, many years; Gereffi & Martínez (2000); FOMEC, 2001; and direct research by the author.

It appears that the opening to trade and NAFTA affected both the organisation of industry and the competitive environment, with important implications in the organisation of LPSs. Successful industrial agglomerations during ISI declined in performance and strength, while new internationally integrated LPSs boomed. The nationally-oriented LPS of Guadalajara, among the top garment producers during ISI, having preserved its industrial organisation and weak linkages after the opening to trade, now registers a poor performance, low external economies and is losing out in innovation and marketing activities. In fact, the contribution of the Guadalajara region to Mexico's clothing employment and production has decreased consistently and it has been unable to reverse this trend during the NAFTA period, as shown in Table 7.2.

Table 7.2 Basic Indicators in the Nationally-Oriented LPS of Guadalajara

Variables	1985 (ISI period)	1993 (GATT period)	2000 (NAFTA period)
<i>Market orientation</i>	Regional/national	Regional/national	Regional/national
<i>Types of companies in the LPS</i>	Micro & small firms	Micro & small firms	Micro & small firms
<i>Output per company (average) Thousands of 1993 pesos</i>	269	223	214
<i>Garments made of Mexican material</i>	99%	40%	20%
<i>Activities with Mexican ownership</i>	All activities with limited capacity and quality. No innovation	All activities with limited capacity and quality. No innovation.	All activities with limited capacity and quality. Losing out on marketing and innovation.
<i>Garment employment / total manufacturing employment in the region (%)</i>	3.6 %	3.6 %	4.9 % (1998)
<i>Guadalajara garment employment / national garment employment (%)</i>	4.8 %	2.7 %	2.4 % (1998)
<i>Value added in the Guadalajara region as % of the national garment value added</i>	5.2 %	4.4 %	2.6 % (1998)

Note: All figures calculated based on data from INEGI, *Censo Industrial*.

Source: Elaborated based on: INEGI, *Censo Industrial*, many years; INEGI, *Censo Industrial*: Jalisco state, many years; and direct research by the author.

The intermediate cluster of Aguascalientes is a peculiar case because it has set in motion different types of industrial organisation and performance following different trade regimes. During the GATT period, the LPS continued to be constituted of nationally-oriented firms, displaying the same characteristics and poor performance as those in the nationally-oriented LPS of Guadalajara, as shown in Table 7.3. However, the cluster improved in performance during the NAFTA period. Clothing employment increased in the regional manufacturing industry. Aguascalientes' contribution to the national value added total for the garment industry also increased after economic integration, as shown in Table 7.3. The improvement in performance of the intermediate case coincided with the advance of maquila activities during the NAFTA period, as also shown in Table 7.1.

The maquila employment in the clothing industry increased from 828 employees in 1992 to 19,339 in 1998, which represent approximately 70.8 per cent of state employment in the local textile and clothing sector (INEGI, Banco de Información Económica, 2001; INEGI, Censo Industrial, 2001).¹³² These firms accounted for 87.6 per cent of state production in 1998. In fact, the fieldwork identified that many traditional non-maquila firms have started lines of production for foreign contractors. Thus, export-oriented firms seem to be the growing sector, which will not make it that different in the future from the export-oriented case of La Laguna.

¹³² To obtain the proportion of maquila employment in the region, the number of maquila employees in the sector was divided by the total figure from the latest Industrial Census with data for 1998. The number of maquila firms had increased to 25,453 by the year 2000 (INEGI, Banco de Información Económica, 2003).

The main difference with La Laguna producers is their level of engagement in the international value chain. Given its late incorporation to maquila activities, firms in Aguascalientes are more specialised in assembly activities and thus transiting from the ISI type of cluster to a Satellite Platform type of industrial district, as studied by Markusen (1996, 1999). That is, an agglomeration of in-bound plants with low intra-district linkages (see Table 7.1).

Table 7.3 Basic Indicators in the Intermediate LPS of Aguascalientes

Variables	1985 (ISI period)	1993 (GATT period)	2000 (NAFTA period)
<i>Market orientation</i>	Regional/national	Regional/national. Starting to export	Export & regional/national
<i>Types of companies in the LPS</i>	Small & medium size firms	Small & medium size firms	Large assembly plants, medium-size consortia firms (non maquila) & micro and small firms.
<i>Output per company (average) Thousands of 1993 pesos</i>	724	417	743
<i>Garments made of Mexican material</i>	99 %	40%	15%
<i>Activities with Mexican ownership</i>	All activities with limited capacity and quality	All activities with limited capacity and quality. Limited innovation. Maquila starting on the eve of NAFTA.	Cluster losing marketing and innovation. Mixed. Nationally- oriented firms: all activities with limited capacity. Maquila firms: assembly, starting laundering & finishing.
<i>Garment employment / total manufacturing employment in the region (%)</i>	24.7 %	17.7 %	25.8 % (1998)
<i>Aguascalientes garment employment / National garment employment (%)</i>	6.7%	3.7 %	3.4% (1998)
<i>Value added in Aguascalientes as % of the national garment value added</i>	5.5 %	2.8 %	3.6 % (1998)

Note: All figures calculated based on data from INEGI, *Censo Industrial*.

Source: Elaborated based on: INEGI, *Censo Industrial*, many years; INEGI, *Censo Industrial*: Aguascalientes state, many years; and direct research by the author.

The LPS in La Laguna has benefited in the aftermath of trade liberalisation and, most importantly, of trade integration. During the GATT period, La Laguna firms expanded greatly, benefiting from economies of scale, firms expanded their production capabilities with low use of the LPS, characterised by limited decentralisation of production and the inexistence of local suppliers. The removal of trade restrictions with NAFTA further boosted the development of external economies in the LPS. Important economies of scale already developed during the GATT period were reinforced with the economies of agglomeration during NAFTA. With second-tier subcontractors and the establishment of suppliers in the region, static economies have arisen but the region has also experienced the significant development of dynamic economies, which have propelled the performance of the cluster. The three types of dynamic external economies identified by Steward & Ghani (1991) all took place in La Laguna in the aftermath of the liberalisation process: 1) *the attitudes and motivation of entrepreneurs* changed to face more competition and the reorganisation of global industry; 2) *skill formation* was modified as a response and; 3) *the knowledge of technologies and markets improved in clusters*. As found in the fieldwork, flows of knowledge in backward and forward linkages have strengthened and consolidated the LPS. It is during this period that the garment industry advanced spectacularly in the region, as shown in Table 7.4.

Table 7.4 Basic Indicators in the Export-Oriented LPS of La Laguna

Variables	1985 (ISI period)	1993 (GATT period)	2000 (NAFTA period)
<i>Market orientation</i>	Regional/national	Export	Export
<i>Types of companies in the LPS</i>	Small firms	Medium-size assembly firms	Large companies in assembly and higher value activities
<i>Output per company (average) Thousand of 1993 pesos</i>	724	776	1,985
<i>Garments made of Mexican material</i>	99%	1%	25%
<i>Activities with Mexican ownership</i>	All activities with limited capacity and quality	Assembly	Assembly, laundry, cutting, finishing, textiles, trims and labels, packaging, US sales offices.
<i>Garment employment / total manufacturing employment in the region (%)</i>	8.9 %	28.1 %	44.6 % (1998)
<i>La Laguna garment employment / National garment employment (%)</i>	2.7 %	7.3 %	8.4% (1998)
<i>Value added in La Laguna as % of the national garment value added</i>	2.4 %	4.1 %	9.1 % (1998)

Note: All figures calculated based on data from INEGI, *Censo Industrial*.

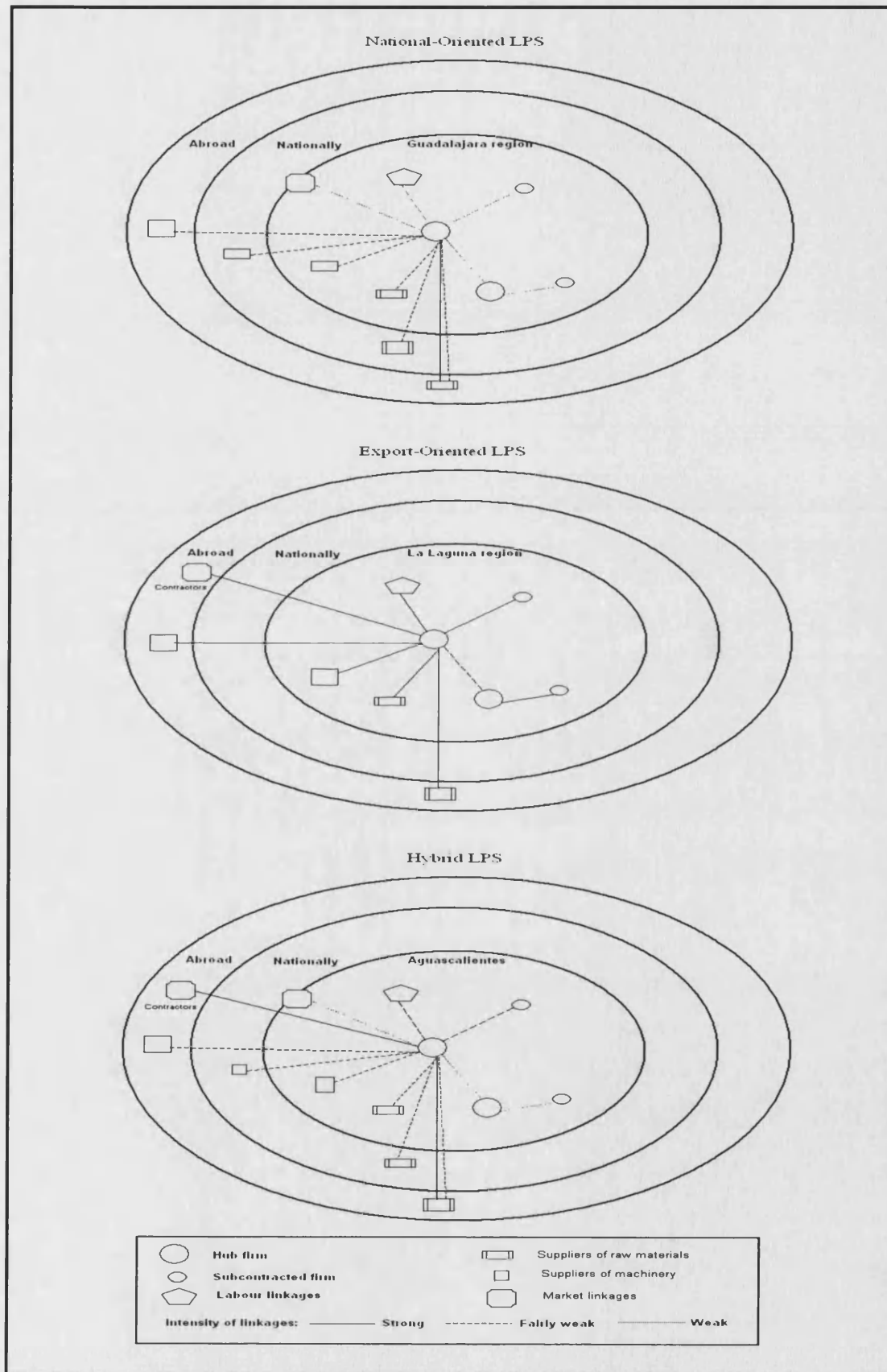
Source: Elaborated based on: INEGI, *Censo Industrial*, many years; INEGI, *Censo Industrial: Durango state*, many years; INEGI, *Censo Industrial: Coahuila state*, many years; Gereffi & Martínez, (2000); FOMEC (2001); and direct research by the author.

In cluster theory, the performance of regions has traditionally been associated with the strength of their productive organisation to increase firm competitiveness (Piore & Sabel, 1984; Becattini, 1990; Porter, 1990; Storper, 1997). In this way, dynamic clusters suggest the existence of a competitive LPS, taking advantage of clustering effects and industrial organisation. Data from the previous chapters support the idea that the clusters with best performance in the open economy are those with robust and advanced production systems, promoting external economies and competitiveness. The export-oriented LPS of La Laguna changed its industrial

structure, developed local and external networks and strengthened linkages based on knowledge and innovation. The cluster also increased its static external economies and improved its production and employment remarkably in the aftermath of the opening to trade. The results are interesting because they suggest an additional type of successful agglomeration in an LPS at the time of globalisation.

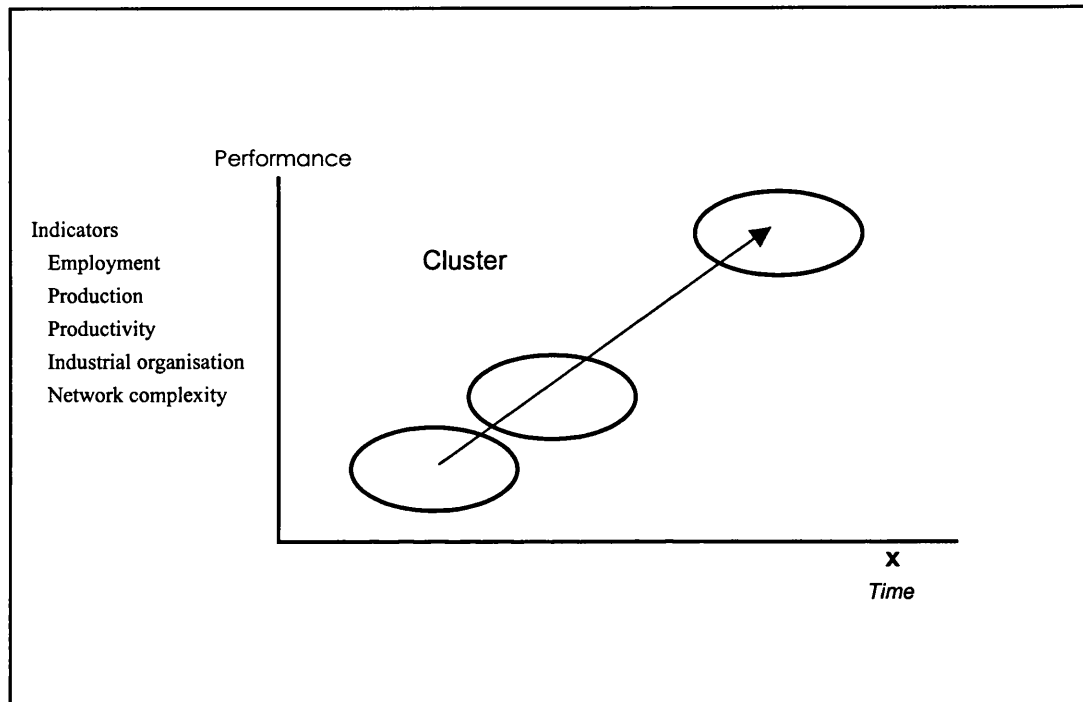
The La Laguna LPS became specialised in production activities along an international value chain after trade liberalisation. During the GATT period, the region only specialised in assembly activities and displayed weak linkages and low static external economies. It is in this period that the region started its process of upgrading. Foreign contractors have played an important role in the advancement of the region, as suggested by the value chain analysis. US contractors introduced new production techniques, organisation and knowledge to the region, as assessed in the previous chapter. The foreign player is an important factor that sets this example apart from industrial districts theory and the evolutionary approach in economic geography. For the latter, all actors, processes and linkages are localised within the same region, as opposed to the experience in La Laguna region (See Figure 7.1 and Table 7.1).

Figure 7.1 Location of and Strength of Productive Linkages in LPSs



It could also be argued that different trade regimes affect local industrial organisation and gains from international trade even further when an LDC integrates with more advanced economies. The international experience and the stock of knowledge in La Laguna LPS benefited further from changes in NAFTA regulations. The cluster experienced a functional and industrial upgrading in highly competitive markets. With the change in trade regulations, the cluster became specialised in activities of higher value while further strengthening productive linkages. A scheme of a developed or more advanced LPS is presented in Figure 7.2. Indicators of performance and years are measured on the axes. An agglomeration improving its performance and strengthening along the time is more advanced and capable of resisting competition. Achievement over time is shaped by trade regimes. Thus, a remarkable performance suggests the existence of a robust LPS. In contrast, a poor performance suggests a weak LPS that may be losing out in competitive environments.

Figure 7.2 Scheme for an Advanced LPS over Time



La Laguna LPS has upgraded its structure to another, new type of cluster, which I will call a *production specialised industrial district*. It is a new cluster specialised in all production activities along the value chain, linked to foreign clients, with strong intra-district linkages and taking advantage of industrial organisation and international labour specialisation, as shown in Table 7.1.

Markusen (1996, 1999) identified other types of successful agglomerations that do not necessarily display the same characteristics as those identified by the industrial district school (Marshallian and Italianate industrial districts). However, the *production specialised industrial district* is different and may be seen as a later step to Satellite Platform industrial districts. The cluster is specialised along an international value chain. It has important linkages with foreign contractors, which market products both nationally and internationally, as shown in Figure 7.1. What

makes this case different from Markusen's model is its strong local linkages and its specialisation along the value chain. Table 7.5 portrays a comparison between Markusen's satellite platforms and the production specialised industrial cluster.

The *production specialised industrial district* benefits from state-of-the-art knowledge and markets through foreign contractors. This substantially enhances its comparative advantage along an international value chain, boosts its economies of scale and scope; while strengthening local linkages and external economies. Thus, the *production specialised industrial district* is the ultimate LPS in an LDC benefiting from trade integration among different types of countries, namely advanced countries and LDCs.

In a global industry sharing production internationally, external and local linkages become essential for a region of an LDC to succeed in a globalised world. These characteristics are important to bear in mind when considering the flows of knowledge and innovation that can be initiated between local and foreign agents in a country lagging behind in innovation. This, in turn, offers a new array of possibilities for other regions to follow. In theoretical terms, this also becomes an additional case of success to those cases identified by the industrial district literature in developed countries.

Table 7.5 Features of Satellite Platforms and the Production Specialised Industrial Cluster

	Satellite platforms	Production specialised industrial cluster
<i>Firm structure</i>	Large, externally owned firms	Large firms
<i>Specialising along a global value chain</i>	Yes	Yes
<i>Economies of scale</i>	Moderate to high	High
<i>Static external economies</i>	Low	High
<i>Dynamic local external economies</i>	None	High
<i>Source of innovation</i>	External	External
<i>Cooperation and knowledge spillovers with firms outside of cluster</i>	Strong with parent company	Strong with foreign clients
<i>Intra-district trade</i>	Minimal	Moderate to high
<i>Backward local linkages -suppliers</i>	None	Moderate to strong
<i>Cooperation with local second- tier subcontracting firms</i>	Non-existent	High
<i>Key investments</i>	External decision	Local but dependant on clients and global market conditions
<i>Exchange of skilled and semi-skilled labour force in the cluster</i>	Non-existent	High
<i>Cooperation among competitors to share risk, stabilise the market, share innovation</i>	Low	Moderate
<i>Local trade associations</i>	Non-existent	Strong presence
<i>Government linkages</i>	Strong but weak in providing information and knowledge support	Strong
<i>Involvement of local universities, colleges or R&D centres</i>	Non-existent	Moderate

Source: Own elaboration based on Markusen (1996) and author's fieldwork.

Mexico is one of the most open economies to trade and one of the first LDC to accomplish economic integration with more advanced economies. The restructuring of global industry and trade integration is a new context, not widely explored. It appears that the theory of industrial districts has been built on a framework of an economy semi-closed to trade in which LDCs do not play an important role in the relocation of industry. The key features of globalisation have not been taken into account: major trade liberalisation, integration between advanced and less developed countries and the globalisation of industry. These new features of the world economy have important

implications for the local arrangements of production, industry organisation, specialisation and, hence, for the entire range of characteristics of a LPS. This, in turn, changes the perspective of regions as the animators of economic growth in a global world.

7.3. Driving/declining forces behind LPSs

The fieldwork traced the industrial organisation and linkages that have been affected by economic liberalisation and, most importantly, by trade integration. This subsection therefore analyses and summarises the key drivers that have contributed to advance or decline in selected LPSs. For this purpose, the subsection concentrates on industrial organisation, productive linkages, knowledge and innovation, the value chain, static external economies, market linkages and local capacity-building in the cases studied. Thus, the section will present the way that LPSs have restructured their linkages, innovation and industrial organisation after trade liberalisation.

7.3.1 La Laguna region

During the ISI period, the clothing industry in La Laguna was modest and underdeveloped in comparison to that of traditional production sites. Productive and institutional linkages were weak and cooperation almost non-existent. La Laguna firms had similar access to available technology and production techniques during ISI to other regions of the country. Firms in the region carried out all phases of production process in-house, with low levels of subcontracting and inefficient labour organisation. Local suppliers were underdeveloped and inputs were brought in from other parts of the country, mostly from the mega-producer sites. Low levels of

competition hindered the development of cooperation among firms to improve existing technology and quality systems. Producers also sold the garments, many times with the help of relatives who transported and sold garments directly in surrounding towns and in shops in small villages. However, the LPS changed after trade liberalisation and integration. Figure 7.3 summarises the productive changes in La Laguna. The light dotted lines represent a simple exchange relationship and the solid lines denote strong cooperative productive linkages.

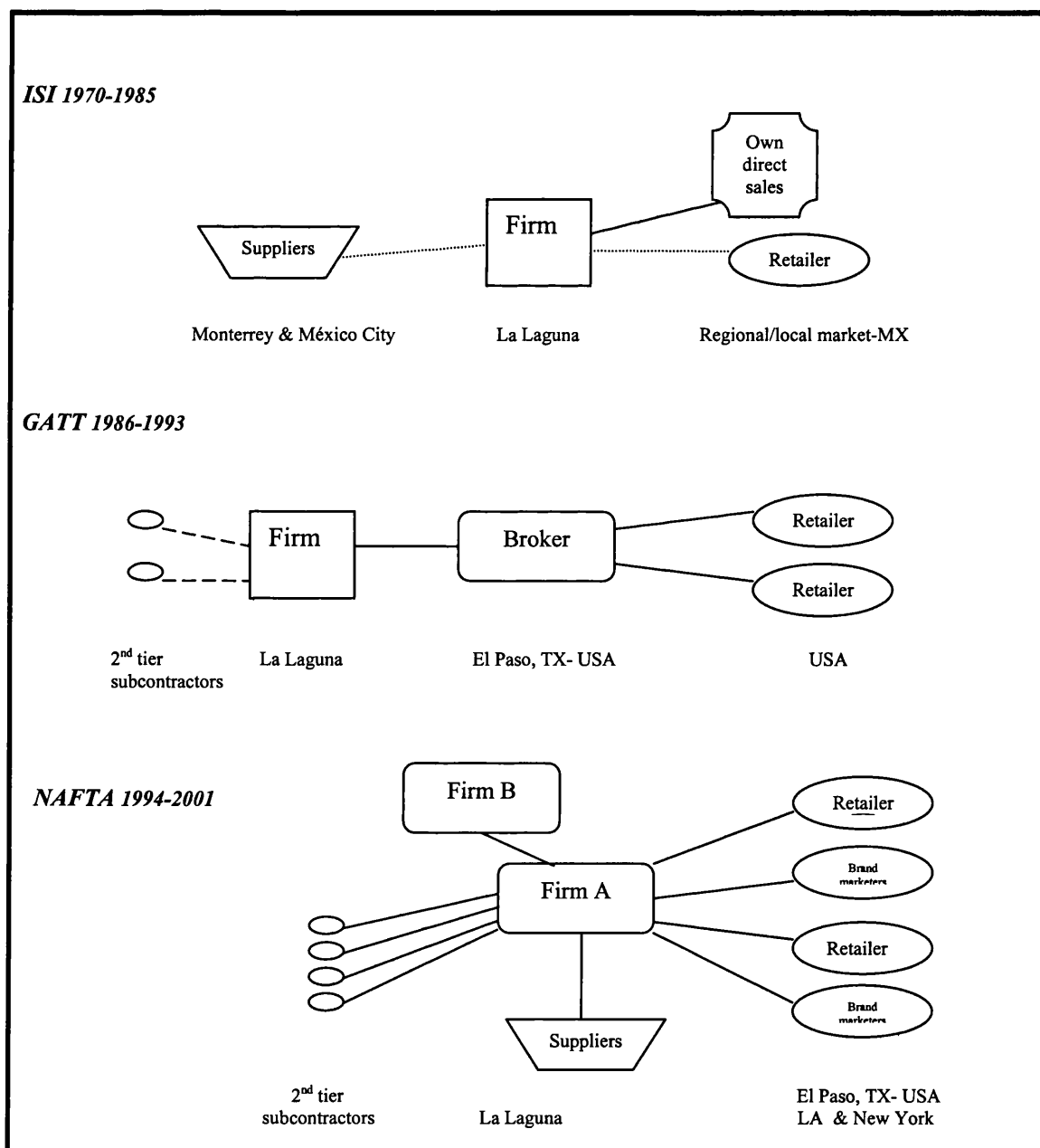
Industrial organisation and economies of scale. After the opening to trade, export-oriented LPSs transformed to take advantage of new trade regulations. From the cluster of small-scale firms that made up La Laguna during ISI, the region changed its firm structure to take advantage of and benefit from economies of scale. As indicated in official statistics and the fieldwork, firms increased in size, small firms became medium-size firms and the medium-size firms became large firms. The output per company increased in this export-oriented LPS after the opening to trade, as shown in Table 7.4.

Export-oriented firms tend to be semi-vertically organised, concentrating production and subcontracting production activities.¹³³ A typical feature of the export-oriented LPS is that economies of scale become essential to take advantage of trade integration. Firms in La Laguna benefit from new larger markets and productive specialisation along the value chain. An industrial structure dominated by large firms

¹³³ By increasing firm size, producers in the export-oriented LPS of La Laguna not only benefit from economies of scale, but also overcome the previous local shortages of quality in production and ensure homogeneous quality in production, a must for long runs, as explained in Chapter 6. When working on an international value chain trust and fulfilment of commitments become important factors that limit the spread of production to many subcontracted firms.

became necessary to take advantage of economies of scale. Unlike the experience during ISI, when profits were based on prices, returns are now set by the quantity that a firm produces. Large firms have more capacity for large amounts of production, as they benefit from large physical installations, machinery and a greater labour pool. This is particularly important for a region specialising in labour-intensive activities along a global value chain.

Figure 7.3 Productive Linkages in the Export-Oriented LPS



Local-outside linkages to overcome local shortages of knowledge and innovation. To identify the source of knowledge and cooperative practices, the enquiry traced the location and strength of productive linkages in the different LPSs. Before liberalisation took place in 1986, both local and outside linkages were weak and not well developed, as illustrated in the first part of Figure 7.3. With trade liberalisation, however, productive structure and linkages changed. Flows of knowledge and cooperation beyond trade relations benefited export-oriented firms in the aftermath of the opening to trade. US contractors became the main source of dynamic externalities for this type of agglomerated firms. Foreign clients not only opened up markets for local producers but, most importantly, played a vital role in upgrading the knowledge base of the export-oriented LPS of La Laguna.

When foreign buyers first arrived in La Laguna in the late 1980s, the relationship was limited to the latter merely carrying out assembly activities. Subcontracting relationships in the region were first established with American brokers and producers located in El Paso, Texas. Those brokers, in turn, sold the production to big buyers such as K-Mart and Walmart. Those brokers were the first partner-teachers in introducing new knowledge into the cluster.

As knowledge-based relations developed in this export-oriented LPS, the region was able to upgrade and internalise its quality production to international standards. La Laguna firms proved their responsiveness to demands for quality, time, service and price and they soon attracted more clients into the region. Thus, the assimilation of international knowledge and synergies from learning processes (learning by doing,

interactive learning and the spreading of knowledge within the LPS) augmented the capabilities and competitiveness of firms.

Knowledge spillovers from outsiders not only benefited the firms involved in such relationships but the entire production system. Despite the semi-vertical organisation of firms, the decentralisation of production expanded and flows of knowledge diffused across the cluster. The region thus became a catalyst multiplier for innovation. Interaction and cooperation with second-tier subcontractors is widely carried out in the LPS and new techniques and methods of organisation in production have spread across the cluster. It is the propagation of this innovation in conjunction with processes of learning and the interchange of knowledge that make the cluster vibrant and robust. As a result, the LPS triggered a process of strengthening productive linkages and upgrading, as illustrated in Figure 7.3.

Comparative advantage along the value chain. Unlike during ISI when clusters controlled the entire value chain locally, the cluster became specialised in activities in which firms possessed a comparative advantage with respect to trading partners. Through specialisation firms have been connected to networks of world-class knowledge, have access to bigger markets and have achieved competitiveness in production activities. Local entrepreneurs have upgraded their capabilities and accumulated a stock of regional knowledge to compete at international levels.

La Laguna firms have not only taken advantage of lower labour costs compared to their US counterparts, but have also benefited from international exposure and knowledge. Entrepreneurs acquired more knowledge and international experience,

derived from cooperation with brokers, trips to the USA and their involvement in the international clothing industry. By the early 1990s, leading firms in the region had already established cutting rooms and laundries in the USA in order to offer more services to clients.

Production restrictions on maquila activities were eliminated with NAFTA and new production stages of higher value added were allowed to develop in Mexico. With know-how assimilated from American contractors, and with a new trade framework, entrepreneurs in the export-oriented LPS experienced an important functional upgrading. Local firms are now developing entrepreneurial activities in the global industry. La Laguna entrepreneurs realised their capabilities and established arrangements directly with retailers and brand marketers. This without being in contact with brokers,¹³⁴ as shown in Figure 7.3. Thus, the companies increased their profits by offering additional services such as the cutting, laundering, ironing, labelling and packaging of garments.

As the LPS moved up along the value chain, the cluster consolidated as an important producer of garments with state-of-the-art technologies and with firms developing an important pool of knowledge from which agglomerated businesses benefit.

Furthermore, the fieldwork found a significant exchange of information and knowledge between firms (horizontal linkages). This further consolidates the LPS as a learning industrial district. Thus, the export-oriented cluster has benefited from the

¹³⁴ The following quote illustrates the change in the region: 'We made all the garments that ended up in Mervyn's, Kmart or Target. We realised that the contractor only sent the textiles to our warehouse and he sold it to marketers. Thus, the next step was to establish direct links with retailers in the USA.' (Interview 16).

opening to trade and, most importantly, from NAFTA. La Laguna has now consolidated as a strong LPS, capable of taking advantage of open markets.

In this way, the productive specialisation of the LPS has coincided with important internal and external flows of knowledge and a widening of the markets for the cluster. This, in turn, has anchored and reinforced the local industry. Thus, when comparative advantage specialisation along the value chain takes place, foreign agents can also contribute to promoting the knowledge and innovation of clusters to advance along the value chain.

Static external economies and the market. The availability of competitive local suppliers. The enquiry found that the concentration of local suppliers and the strengths of linkages have decreased in the nationally-oriented LPS, contrasting with the situation of the export-oriented LPS. Backward linkages were favoured by the opening to trade and the arrival of foreign buyers in La Laguna. The export-oriented LPS developed an important base of local suppliers, which was almost inexistent during ISI. The LPS then lacked an important network of suppliers. Raw materials and machinery were brought in from the main industrial centres of ISI (see upper diagram of Figure 7.3). Consequently, external economies were minimal and the LPS was underdeveloped in comparison with the massive producer sites during ISI. The deficiency in terms of suppliers developed even further during the GATT period. Firms became assemblers and American contractors provided them with all the materials needed. Garments were previously graded, washed and cut in the USA for assembly in Mexico.

External economies were consolidated in the aftermath of trade integration. Adjustments in the US garment industry and the wide-scale development of production and learning in La Laguna, in combination with the reduction of trade restrictions between Mexico, the USA and Canada, boosted the development of suppliers in the LPS. When trade restrictions were removed, firms in La Laguna began to incorporate other activities along the value chain and suppliers developed in the region. With wider markets, competitive firms and the large-scale production of garments, suppliers boomed in the export-oriented cluster. As has been pointed out earlier, the region boasts an important network of competitive suppliers of raw material and machinery at world level, which shows evidence of static external economies not existing before NAFTA.

Local firms have upgraded production and are now incorporating new materials developed in La Laguna region. According to the enquiry there are even garments that are produced with 100 per cent of local content. Cooperation and flows of knowledge between suppliers and customer are intense (see Figure 7.3). Local producers in cooperation with suppliers are now developing new textures, weights and properties for raw materials. La Laguna firms have also developed cooperation- and knowledge- sharing with suppliers, further boosting the competitive position of agglomerated firms. Geographical proximity has thus been important to complement and develop competitive garment lines, as well as to decrease transport costs.

The location of suppliers appears to be determined by the productive performance of the cluster. The world class knowledge capabilities, expanded markets and impressive performance of the region attracted the localisation of suppliers and thus contributed to

further external economies for agglomerated firms. This situation was true for the top garment producers such as Guadalajara and Aguascalientes during ISI. Access to a market and the good performance of firms encouraged suppliers to locate in those regions. Now, in the open and integrated Mexican economy, the same is true for the export-oriented LPS of La Laguna. Competitive suppliers locate where there are more benefits for them and not in under-performing regions. Thus, it appears that the extent of the market, the knowledge stock and the performance of a LPS go hand in hand with the ability to attract suppliers, which, in turn, triggers external economies for agglomerated firms.

Furthermore, external benefits increase when cooperation and flows of knowledge are taking place between producers and suppliers. This is the case of the export-oriented LPS of La Laguna, where relations are locked-in and the performance of suppliers is tied to the performance of local producers. World competition, in fact, appears to encourage cooperation and knowledge flows between producers and suppliers in order to compete together in global markets.

The pooling of labour. Market linkages and foreign agents have also contributed to the reinforcement of linkages with the labour market and to the promotion of further external economies. Foreign contractors have introduced new methods that enhance labour productivity and strengthen the pooling of the labour force. Local producers in La Laguna and in Aguascalientes are obliged to follow codes of conduct related to ensuring that operations are safe and non-exploitative. These practices, not previously used in the cluster, have contributed to attracting and retaining a labour pool, and to bringing firms out of the informal relationships that characterised assembly activities during ISI.

Local capacity-building to strengthen and root LPSs in the global industry. Rich institutional support has also contributed to rooting La Laguna in the international clothing industry. Intense cooperation, coordination and competition between different levels of government are features of the institutional base in La Laguna. Institutions have backed the development of services, suppliers, the promotion of the local industry, financial assistance and training of the non-skilled labour force in order to foster an entrepreneurial environment. What also makes the case of La Laguna interesting is the intense institutional competition in the region. Competition between institutions at state and municipal level has been important to root and attract businesses in the two states in which La Laguna is located. This has also encouraged intense cooperation with entrepreneurs to establish pro-entrepreneurial policies and more sophisticated bodies such as RDAs.

The favourable institutional environment is, however, of less importance than the role played by market linkages. Trade liberalisation and integration opened up markets, the possibility of taking advantage of productive specialisation and the flows of knowledge and innovation from foreign contractors, which have been complemented by local institutions seeking to root industry 'in a slippery space' in both La Laguna and the intermediate case of Aguascalientes. A top producer in La Laguna region indicated that the learning process and a firm's economic capacity have been important for the development of firms. A top entrepreneur acknowledged:

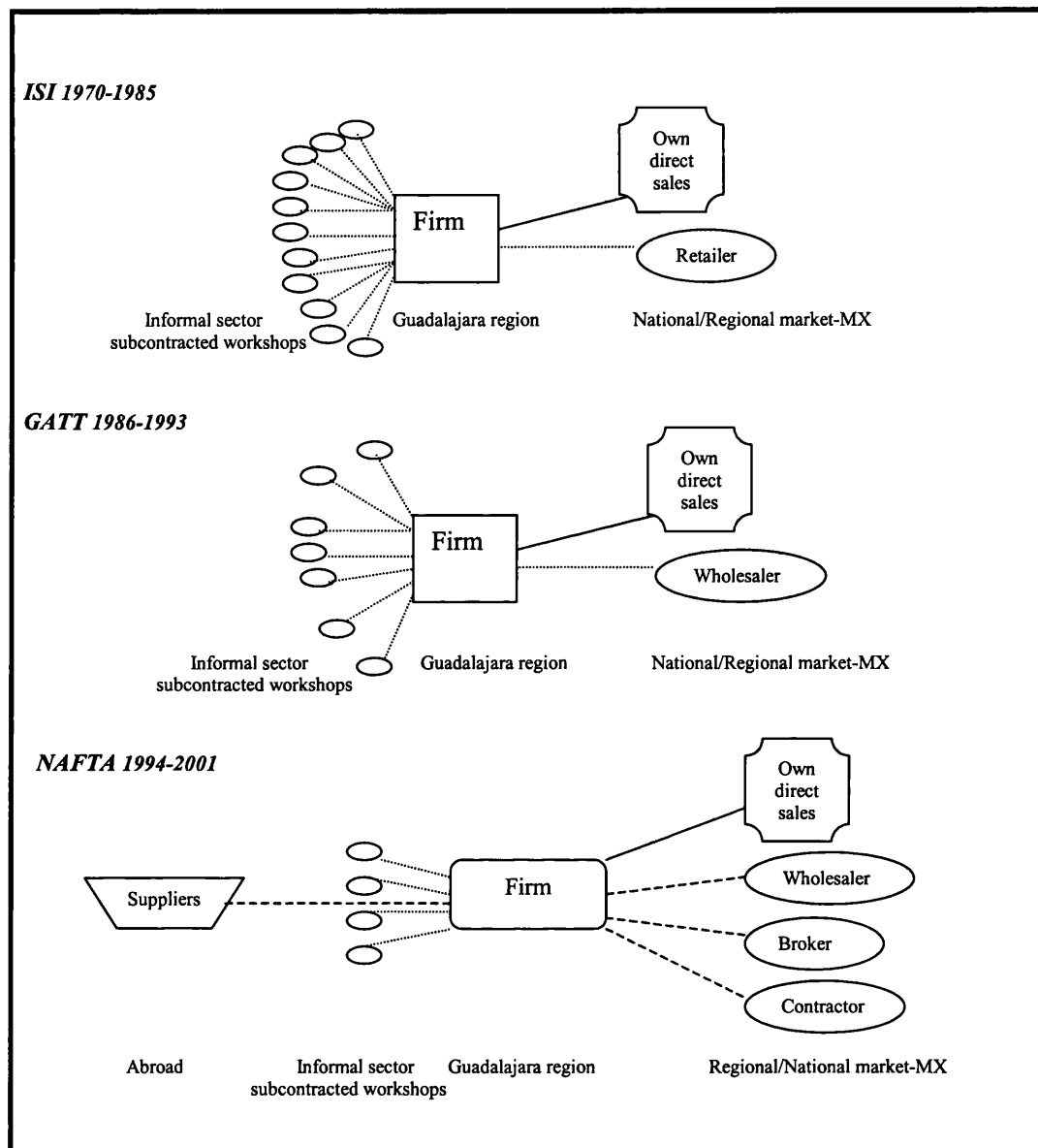
To reach the full package, it was an internal learning process, because external institutions such as BANCOMEX help you when you are reliable for credit. If you are an interesting case for the bank, it will advise you on export procedures and maybe offer you a small credit line. You need to know how to produce and to have the economic capacity, otherwise, simple export advice is not enough. Thus, although institutions offer advice on the export side, if there is no capacity to export, things become complicated. (Interview 15)

This point of view contrasts with that of producers in Guadalajara. A study carried out in garment firms in Jalisco state pointed out ‘many times small entrepreneurs times do not know how to use the credit given to them by the state government, and many times the money is used for other personal commitments, outside the firm’s needs’ (González-Rodríguez, 2001: 26).

7.3.2 Guadalajara

Unlike the export-oriented agglomeration, the LPS in Guadalajara has been unable to strengthen productive linkages. The LPS has to a large extent continued to rely on practices from the ISI times, while the use of clustering has been little exploited in the open economy. Weak linkages have remained since the protective period, although some industrial re-organisation has taken place after the opening to trade, as illustrated in Figure 7.4.

Figure 7.4 Productive Linkages in the Nationally-Oriented LPS



Local-outside linkages. The nationally-oriented LPS of Guadalajara is following a different trajectory and has been unable to strengthen linkages to compete in competitive markets. The cluster attempts to compete in all activities along the value chain with low innovative capabilities. Firms are not integrated into knowledge networks and incorporation of technological advances has been low. Hub contractors in the Guadalajara region represent an underdeveloped innovation base and

frequently adapt models that have been developed elsewhere. The LPS lacks innovation-led firms and subcontracting relationships are determined by trade linkages and less marked by cooperation and flows of knowledge.

With increasing competition after the opening to trade, nationally-oriented contractors adjusted and reduced their numbers of subcontracted firms in order to homogenise the quality of garments, as illustrated in Figure 7.4. However, the reduction of subcontracted firms has not coincided with an increase in flows of knowledge and innovation. The situation is difficult for subcontracted firms, given their small size and poor financial position, and so they have sought refuge in the informal sector of the economy. In fact, since the ISI period, the duality of production between contractors (formal sector) and subcontracted firms (informal sector) has remained in place. While local subcontracting is weak in innovation and knowledge transfer, subcontractors largely working in the informal sector do not have much knowledge on how to upgrade productive processes. Subcontracted firms have to learn by themselves if they want to be engaged by local subcontractors. The organisation of production is still rigid and hierarchical, with constant supervision (Arias & Wilson, 1997). Most producers have old machinery with a low degree of sophistication, as also pointed out by González-Rodríguez (2001: 16). Meanwhile, modular and cell production practices are unusual across the cluster.

Furthermore, informality in the cluster contributes to environmental degradation (from laundering activities), hinders tax collection and the application of labour standards, while detracting from the willingness of skilled workers to stay in the

sector.¹³⁵ Therefore, weak linkages in subcontracting practices hamper the production capabilities of firms, the pooling of the labour force and, consequently, diminish the strength of the entire LPS.

In addition, the low interaction and cooperation in horizontal linkages limit the propagation and development of strong productive linkages. Low spillovers among firms are also the result of the traditional entrepreneurial culture of individualism inherited from the ISI period. Egoistic and uncooperative behaviour remains in the cluster and entrepreneurs are sceptical about interacting with similar producers, since they are afraid that other manufacturers may copy or improve on their ideas (as they do elsewhere) and become competitors. This is difficult to overcome since the cluster lacks the external exposure necessary to incorporate new techniques, processes and procedures.

Industrial organisation and economies of scale. Industrial organisation in Guadalajara continues to be based on a structure dominated by small-scale firms, local decentralisation of production and low economies of scale. It has, however, been unable to expand markets and profits from trade integration. The relatively low levels of production in comparison to the national average suggest that markets for the nationally-oriented cluster continue to be relatively small and the cluster has not benefited from the larger market defined by NAFTA. Production per firm, measured in 1993 pesos, also declined in comparison to the year prior to the opening to trade in 1985, as shown in Table 7.3.

¹³⁵ The informality of small firms with the tacit consent from local government is common among clusters of LDCs. However, this hinders development and governance in the local economy (see Tendler, 2002).

Value chain. The presence of family members in the distribution of garments that characterised ISI has now been crowded out and replaced with traders and wholesalers on a larger scale (see Figure 7.4). Nationally-oriented producers, comprising mostly micro and small firms, lack the world-class base of knowledge and financial resources to establish global brand labels or to give long-run credit contracts to chain retailers, which now lay down rules and conditions to sell through their market channels. Furthermore, buyers now set prices for local products based on simple exchange relationships without cooperation or support.

As a response, producers in Guadalajara have used direct sale as the main channel to market their products. Small channels of distribution such as the ownership of boutiques, sales at the production facility and ‘tianguis’ (street markets) prevailed in the region, where most of the production is sold. Direct sales of products in the region reduce transport costs and the time compared to competing foreign garments in reaching the market. It seems unlikely that the nationally-oriented LPS can sustain a high profile in higher value activities in the long run as competitive international retailers and brand marketers advance in local markets, which in turn are crowding out firms and pushing them even further from the marketing of garments.

Thus, not only export-oriented but also nationally-oriented LPSs are becoming production sites, detached from marketing and innovation activities (see Table 7.1). Unlike the export-oriented LPS of La Laguna, nationally-oriented firms have not taken full benefit of the comparative advantages nor the upgraded productive capabilities that might be achieved through specialisation.

Furthermore, nationally-oriented LPSs are lagging behind in product development and face serious competition from American marketers who develop new labels, products and make samples that are then produced in places such as in the export-oriented cluster of La Laguna. Consequently, export-oriented firms, producing for international marketers, are now competing indirectly with nationally-oriented LPSs in Mexican markets. Thus, Guadalajara is under-performing and losing out in terms of marketing and innovation, which further confirms the inability of the whole LPS to advance along the value chain in the framework of the open economy.

Static external economies. The static economies of agglomeration, such as the pooling of the labour force and suppliers, are crumbling in the LPS. The fieldwork found that the Guadalajara region lacks competitive suppliers at the local level and that less than one third of raw material and machinery is now bought locally. Meanwhile, relationships of cooperation and flows of knowledge with suppliers are not well developed and lack important technical support and advice. In comparison to the ISI period, firms have reduced the purchasing of inputs from local suppliers and most of the inputs and machinery are now bought in from elsewhere (see Table 7.2 and Figure 7.4). Mexican textiles are also more expensive and national producers prefer to consume imported raw materials (Valdés, 2002). In fact, Mexico has become the third largest textile importer after China and Hong Kong (Emerging Textiles, 2002). Thus, the unavailability of competitive suppliers in Guadalajara and the low level of local content of raw materials provide evidence for low static external economies engendered within the LPS.

The pooling of labour. Informal-sector workshops still play an important role in the survival of the LPS to the detriment of the pooling of the labour force. Nationally-oriented firms in the LPSs of Guadalajara and Aguascalientes have sought to decrease costs through subcontracting in the informal economy with no cooperation. Meanwhile, workshops in the informal sector do not pay taxes, pay low wages and do not offer the minimum working conditions established by Mexican law. Weak linkages among firms, in turn, have affected the linkages with the labour force. The use of decentralisation of production to informal sector firms reduces the costs of firms, although this situation is difficult to sustain in the long run. Thus, local employees are seeking better opportunities in other sectors, regions or even abroad, where better wages and working conditions are offered.

Nationally-oriented firms have, in fact, relied on static external economies since the times of ISI. However, those economies are diminishing over time. Weak linkages with suppliers and the labour force hinder the development of external economies. The region is now facing a downturn in the pooling of the labour force and the availability of local suppliers. This, in turn, may have major repercussions for the future performance of the region.

Local capacity-building. The nationally-oriented cluster of Guadalajara lacks the necessary institutional arrangements to create an adequate business environment, as shown in Table 7.6. Despite the fact that institutions have become more involved with the garment industry in Guadalajara, they have failed to promote rich institutional support. Institutions are less involved in promoting innovation and knowledge among agglomerated firms to strengthen local capacity-building.

Enterprises received less benefits from institutions and cooperative linkages with different levels of government are low. Enterprises are less involved with knowledge institutions and only 13 per cent of sample firms received support from different levels of government as shown in Table 7.6.

Table 7.6 Institutions in the LPSs

	Nationally-oriented Guadalajara	Export-oriented La Laguna	Intermediate Aguascalientes
<i>Main institutions in the LPS</i>	Clothing Chamber	Clothing Chamber, government and universities	Clothing Chamber and government
<i>Location of supporting institutions</i>	Locally	Locally	Locally
<i>Firms with links with institutions (% of the sample)</i>	72.2 %	84.8 %	64.9 %
<i>Clothing Chamber year of establishment</i>	1969	1994	1968
<i>Chamber's main activities</i>	Representation, training and information	Representation, regional promotion, trade fair, training and information	Representation, product design, training and information
<i>Firms receiving benefits from chambers (%)</i>	72.2. %	83.9 %	62.2 %
<i>State policies starting</i>	1990s	1990s	1990s
<i>Clustering policies</i>	No	Yes	No, but recently shifting to cluster support
<i>Regional development agencies</i>	No	Yes	No
<i>Firms linked with government (% of sample firms)</i>	13.3 %	66.7 %	45.9 %
<i>Territorial competition</i>	No	Yes	No
<i>Presence of strong unions</i>	No	No	No

Source: Author's fieldwork.

In this way, the condition of weak linkages unable to incorporate and spread knowledge through the LPS becomes a limiting factor in increasing competitiveness and weak linkages leave a complex scenario for the nationally-oriented LPS. This is particularly crucial when a region is seeking to integrate and assimilate new techniques, standardise and increase production to compete successfully in global markets.

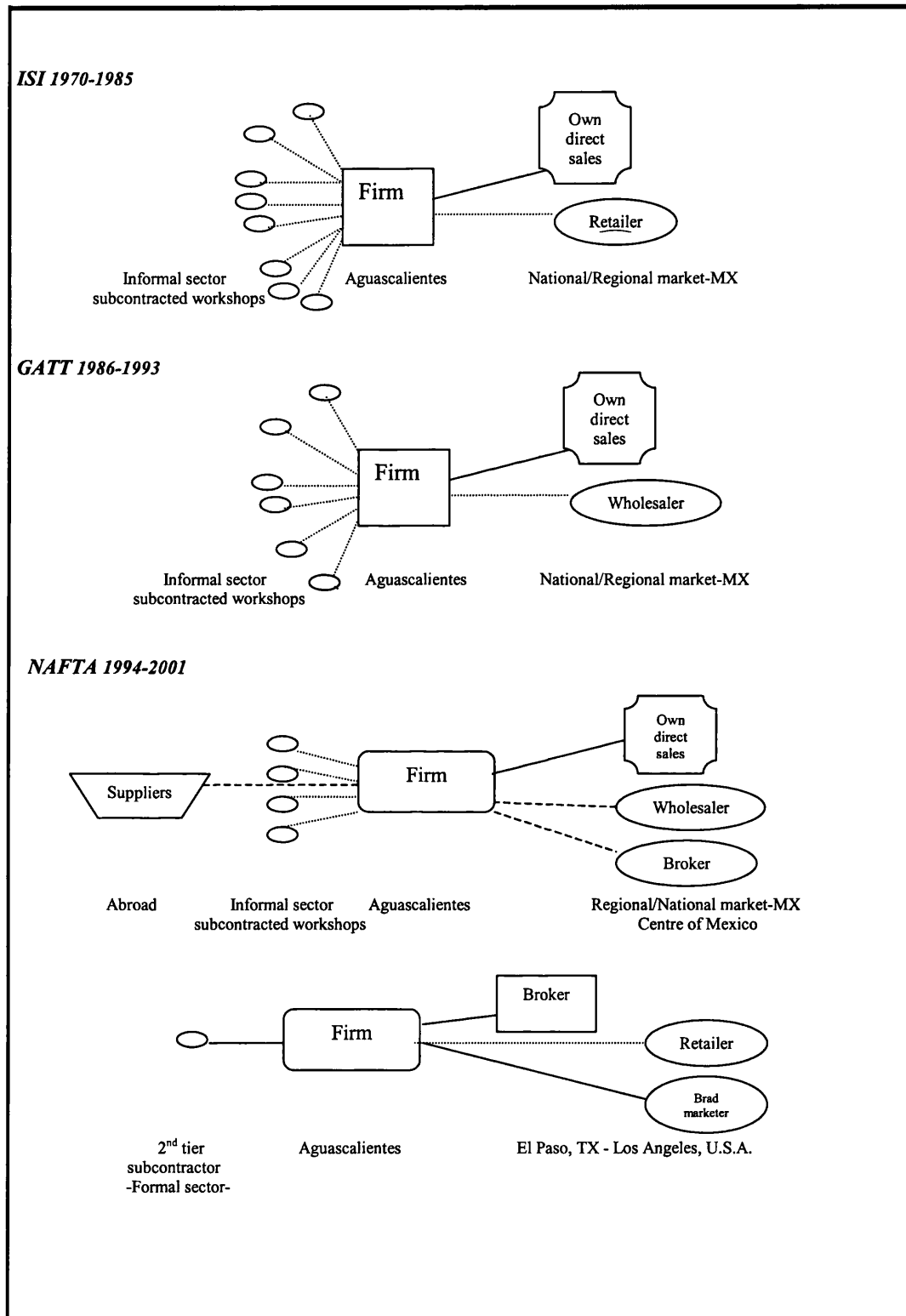
7.3.2 Aguascalientes

The intermediate cluster of Aguascalientes is an important case to weigh against the two main types of clusters in Mexico. This cluster has followed the performance trends and industrial organisation of previous cases during different trade regime periods. Firms in Aguascalientes to a great extent displayed the pattern of organisation of the nationally-oriented LPS of Guadalajara during the ISI and GATT periods, as represented in the upper diagrams of Figure 7.5. The wide-scale use of subcontracted workshops, direct sales and weak productive linkages followed the pattern of the Guadalajara region during those periods. The output per firm decreased dramatically during the GATT period (see Table 7.3). Meanwhile, the improvement in the performance of the cluster in the NAFTA era coincided with a change in its industrial structure and the significant expansion of maquila activities.

The group of firms in higher value activities and decentralising production continued to cater to the domestic market and subcontract in the informal sector of the economy. They also market directly and follow the standard practices of those in the nationally-oriented LPS of Guadalajara. In line with the LPS catering to the domestic market, weak linkages with low cooperation, transmission of knowledge and innovation are still a feature of this group of firms, as represented in Figure 7.5.

Meanwhile, the group of subcontracted firms, specialising in maquila activities, have stronger cooperative and knowledge linkages with American contractors. The export-oriented firms enjoy large economies of scale and perform better than small non-maquila firms. This suggests important market gains for those LPSs integrated in international production and specialised along the value chain.

Figure 7.5 Productive Linkages in the Intermediate LPS



Local-outside linkages to overcome local shortages of knowledge and innovation. The situation experienced in the nationally-oriented LPS of Guadalajara is also common to the nationally-oriented producers in the intermediate cluster of Aguascalientes. The group of small hub firms also have low capacities in higher value segments along the value chain (i.e. innovation and marketing) and almost inexistent linkages with innovative agents. The lack of an innovative agent deters this sector from developing knowledge spillovers. They also follow the same pattern of subcontracting practices as producers in the nationally-oriented LPS of Guadalajara, one that is defined by low flows of knowledge and cooperation, as represented in the lower diagram of Figure 7.5.

Integration with foreign contractors was an option for firms and LPSs to overcome shortages of knowledge and to improve competitiveness in the cluster. To this end, a group of firms in the intermediate LPS of Aguascalientes has gradually moved into international subcontracting practices since the eve of NAFTA. The fieldwork indicated that firms in Aguascalientes engaged in international production-sharing have benefited from new techniques and procedures introduced by American contractors. They have restructured their production processes, and improved the organisation and working conditions of the labour force. Export-oriented firms are developing productive linkages, as represented in the lower part of Figure 7.5.

Flows of knowledge in Aguascalientes are a step behind their export-oriented counterpart of La Laguna. Learning processes need time to be mastered and broadened in a cluster. The export-oriented agglomeration started subcontracting for American producers in the late 1980s, while Aguascalientes initiated and spread such

practices in the NAFTA era. In comparison to their La Laguna counterparts, firms in Aguascalientes are highly specialised in assembly activities and just developing second-tier subcontractors. Despite the dual nature of Aguascalientes, maquila activities are gaining ground within the LPS and have become the main source of exports, employment and production.

In this way foreign agents have also played an important role in the transfer of knowledge and information required to upgrade production practices and productive linkages in export-oriented firms of Aguascalientes. Meanwhile, nationally-oriented firms lack innovation, marketing capabilities and are losing important synergies from the dynamic external economies. Thus, and contrary to what would have been expected (see for instance Anderson, 1990, Sklair, 1993, Graziani, 1998) trade liberalisation and integration benefited the productive linkages of firms involved in international production-sharing. American firms have helped Mexicans to upgrade firm practices, which have changed the perception of entrepreneurs and agents in the cluster, strengthening the productive linkages and upgrading the LPS.

Availability of competitive local suppliers. As in the case of the nationally-oriented LPSs of Guadalajara, regional suppliers are decreasing in comparison to the ISI times. Nationally-oriented producers have sought more competitive suppliers elsewhere and demand for local inputs has diminished. Weak linkages with suppliers have also remained and just one third of inputs are bought regionally. Meanwhile, export-oriented producers are engaged in assembly activities and rely heavily on inputs originating from foreign suppliers, while productive linkages are not yet as developed as in the LPS of La Laguna.

The pooling of labour. Market linkages and foreign contractors also encouraged the improvement of wages and working conditions in the intermediate cluster of Aguascalientes. Local firms are now competing to attract and retain the skilled labour force. The labour force moves to other firms and sectors offering higher earnings. Working conditions have improved as a result, as in the case of La Laguna. Meanwhile, informal sector firms find it increasingly difficult to compete for the labour force given their poor managerial and financial capacities.

Comparative advantage along the value chain. In line with nationally-oriented producers in the Guadalajara region, firms in Aguascalientes catering to the domestic market have also gradually been crowded out in marketing activities and have also appeared unable to develop cutting-edge innovation. Meanwhile, export-oriented firms have benefited from specialisation along the value chain, as have La Laguna producers. They have received world-class knowledge and have benefited from larger economies of scale and new markets opened up by American contractors.

In summary, the strength of an LPS to withstand international shocks and competition is in fact determined by its appropriate collective response. However, responses vary according to different trade regimes. In an economy closed to trade, as in the ISI period in Mexico, linkages and the capacity to create external economies were not important for agglomerated firms given the protectionism and the low levels of competition. However, the business environment changed when Mexico embarked on trade liberalisation and changed further when it integrated with more advanced economies.

The different linkages in which firms are embedded have been important to strengthen and advance the La Laguna LPS not only as the most important garment cluster in Mexico but also as one of the most important clothing production sites in the world. Every linkage has played an important role in the success of the export-oriented firms in La Laguna and of the late starters of Aguascalientes. These strengths are missing in the nationally-oriented firms of both Guadalajara and Aguascalientes. In those cases, weak linkages leave a complex scenario for the nationally-oriented LPS. Table 7.7 summarises the basic features of different agents in selected LPSs.

Table 7.7 Role of Different Agents in the LPSs

	Nationally-oriented Guadalajara	Export-oriented La Laguna	Intermediate Aguascalientes
<i>Contractors</i>	Users of cluster but limited role in creating and spreading state-of-the-art knowledge.	Leading agents. Knowledge and innovation transfer. Training of skilled labour force. Opening of markets.	Mixed. Depending on strategy followed: nationally-oriented or maquila.
<i>Subcontracted firms</i>	Decreased costs in the LPS by wide use of informal economy.	Spreading of knowledge and innovation to the cluster. Development of second-tier subcontractors. Creators of production and employment.	Mixed. Depending on strategy followed: nationally-oriented or maquila.
<i>Local suppliers</i>	Minimum. The LPS lacks competitive local suppliers. No cooperation with local producers. Hence, static external economies decreasing.	Increasing static external economies of agglomerated firms. Cooperation with local producers to develop competitive products.	Minimum. A small base of local suppliers in the region for both maquila and non-maquila producers.
<i>Labour force</i>	Use of inefficient practices and informality have weakened the strength of the skilled labour force that the region had during ISI.	Codes of conduct and competition have helped the formation of an important pool of skilled workers.	Mixed. Depending on strategy followed: nationally-oriented or maquila.
<i>Other firms (horizontal linkages)</i>	Minimum. High distrust and low cooperation among entrepreneurs.	Cooperation and propagation of knowledge.	Cooperation and propagation of knowledge. Just starting through COCITEVA.
<i>Business chambers</i>	Entrepreneurial representation. Training of unskilled labour force.	Promotion of the industry abroad. Organisation of one of the most important trade shows in the world for full package and assembly. Entrepreneurial representation. Information. Training of unskilled labour force.	Entrepreneurial representation. Limited design centre. Training of unskilled labour force.
<i>Government</i>	Minimum involvement in the cluster	Training of unskilled labour force. Financing and information.	Training of unskilled labour force and support to develop the new technological centre of the garment industry (COCITEVA)
<i>Universities, colleges</i>	Minimum involvement in the LPS. Just starting	Managerial training	Minimum involvement in the LPS. Just starting

Source: Author's fieldwork.

CHAPTER 8

Conclusions

This thesis has corroborated the existence of different and more advanced LPSs in a LDC, which are not comparable to those studied by traditional industrial district schools. Industrial district theories have drawn heavily on research conducted in successful regions of developed countries (Piore & Sabel, 1984; Storper 1989; Becattini, 1990; Cooke & Morgan, 1994; Saxenian, 1994; Schmitz, 1995b) but has neglected the role of LDCs in global transformations of industry. Features identified in such districts in developed countries were an initial point towards explaining the competitiveness and success of agglomerations during the 1980s, when international trade liberalisation was less important. However, different trade regimes appear to affect the structure and performance of industry and LPSs.

In recent years the world has gone through significant changes in terms of trade liberalisation, the globalisation of industry and economic integration between different types of countries, which appear to influence the location of economic activity, the competitiveness of regions and the local gains from international trade. Accordingly, industrial arrangements are altered under different trade regimes. Industrial structures vary among different types of country according to differences in human and physical endowments, which in turn lead to different types of innovation and productive specialisation in an integrated economy. The world is now a different place to do business and the global context calls for new arrangements of industry and the regions.

Mexico has experienced major industry transformations since the early 1980s when the country transited from one semi-closed to trade to an open economy and then integration with more developed nations. This opening to trade has meant important challenges, adjustments and opportunities in the organisation of production and consequently for the LPSs. Trade liberalisation and economic integration between developed countries and LDCs has often been regarded as threatening and challenging for the latter type of country. The thesis has thus sought to examine to what extent LPSs in Mexico have been affected after the opening to trade.

The thesis first explored the changes in trade regime and the industrial transformations in Mexico, as well as the globalisation of the clothing industry in which Mexican garment clusters operate. The enquiry found a second wave of industrialisation in Mexico after the opening to trade. The industrial sector made remarkable advances in the economy, while expanding to non-traditional regions. Transformations at sectoral, regional and LPS level coincided with the opening to trade and, most importantly, with NAFTA. The oil-related sectors declined in the open economy, giving way to global industries (i.e. automobiles, clothing and electronics). International production-sharing flourished and became the most important source of industrial exports and employment. The spatial distribution of industry widened, mainly towards the northern part of the country, where production specialisation has developed through maquila activities.

Since competitive industries are agglomerated in some sites, the LPSs have also undergone significant transformations after the economic change. The LPS, with a

relatively homogeneous system during the ISI period, changed and split into two main types following different trajectories: those catering to the national markets and those producing for export markets through international production-sharing. On the one hand, most of the northern states — with a high degree of expansion towards the centre of the country — have specialised in international production-sharing with remarkable performance. On the other hand, producers developed during ISI and the southern regions have to a large extent continued to cater to the national market and their performance is declining. Therefore, the research identified that trade liberalisation and integration have not only coincided with the sectoral spatial reorganisation of employment (Hanson, 1994a: 14), but most importantly with a change in the productive specialisation of regions and have therefore led to important differences between LPSs in Mexico.¹³⁶

The context requires new arrangements of industry, leading to an adjustment of the regions where production actually takes place. Integration in the global economy represents a challenge but also a possibility to take advantage of the new scenario. In this context, this thesis sought to examine to what extent and in what way LPSs in Mexico have been affected by trade liberalisation and economic integration.

The research explored the wider context of Mexican LPSs in the global clothing industry, as well as the transformations that this industry went through in Mexico after the opening to trade. The approach adopted in this thesis is that in a global economy regional processes cannot be analysed in isolation from the wider context

¹³⁶ As argued by Armstrong & Taylor (1985: 130) and Thurow (1989), the productive specialisation, inefficient production methods and competitiveness of regions become important factors in explaining the booming or declining performance of different regions operating within the same industrial branch of a country.

in which local industries operate. The adjustment of the clothing industry to the new world order was marked by its increasing tendency towards international production-sharing between more advanced economies and LDCs. It was found that following the opening to trade the Mexican clothing industry has become one of the country's most dynamic industries, one of its most important sources of employment and exports and one of the largest exporters of clothing in the world. Thus, in a short period of time the clothing industry has become a successful industry time after having been one of the most protected branches of Mexican industry during ISI. This industrial branch has also undergone important transformations. These have included a significant division in firm size and market orientation, as well as a major expansion of international production-sharing. Thus, productive specialisation along a global value chain developed as an option for Mexican producers in the open economy. At the regional level of the clothing industry it was found, as in the analysis of the entire manufacturing sector, that the traditional production sites of the ISI period declined in the open economy while regional industries based on international production-sharing registered a better performance.

Using empirical evidence, the research then went on to assess the effect of the economic changes on the Mexican LPSs. Industrial district and value chains approaches were used to explain differences and performances in selected clusters. Three different garment clusters were analysed that originally shared many features during ISI but that adopted different forms of organisation after the opening to trade. These were the traditional cluster of Guadalajara, one of the most important production sites during ISI, catering to the domestic market and not open to globalisation; La Laguna region that has integrated globally through international

production-sharing; and the third case study was carried out for the intermediate case of Aguascalientes, also a traditional clothing site inherited from the ISI period. The industrial organisation and strength of LPSs were assessed using industrial district theories, the evolutionary approach to clusters, the value chain perspective and then compared against Markusen's theoretical typology of industrial districts (1996).

The case studies reflect the different types of agglomeration of industry present in Mexico after the opening to trade (as shown in the analysis of the manufacturing industry), and not only isolated cases or cases similar to those identified by industrial district theory in developed countries. It appears that different types of LPS lead to different levels of performance and to different agglomeration effects. From the assessments of these case studies in the garment industry the enquiry found that clusters that have restructured their production towards international production systems have strengthened their LPSs, leading to greater spillovers than those experienced in regions which still cater to the domestic market and which are not globally integrated. This is consistent with the results presented in Chapter 4, showing better industrial performance levels in regions specialising in maquila activities.

The regions presented in case studies have followed different path and noted different levels of performance after the opening to trade. The typical case of a cluster analysed for an LDC, the nationally-oriented LPS of the Guadalajara region, once a mega-producer site during ISI and a paradigm for the study of industrial

clusters in Mexico¹³⁷ (Rabellotti 1995, 1997, 1999; Storper et al., 2004) has maintained its industrial structure and has continued to cater to the domestic market. It has weak linkages within and outside the cluster and is displaying a downward trend in industrial performance, as are other mega-producer sites of ISI. In contrast, the export-oriented case of La Laguna region, which since trade liberalisation has produced for the export market through international production-sharing, has strengthened its LPS and transformed its industrial structure in the open economy. La Laguna region, having been underdeveloped during ISI, has become one of the most important production sites of traditional industries in Mexico and one of the largest garment producers in the world. The third case studied was the intermediate cluster of Aguascalientes, a traditional clothing site that was greatly developed during ISI and is now adjusting to globalisation. The intermediate case of Aguascalientes also suggests that firms involved in international production-sharing have benefited in the aftermath of trade integration. In fact, a growing number of firms that have traditionally produced for the domestic market are shifting to maquila production. The industrial structure in Aguascalientes is in a process of transformation and converging towards the pattern exhibited in the export-oriented LPS of La Laguna.

Along the value chain it was found that LPSs in Mexico are losing ground in terms of specialisation in higher value added activities. With trade integration, it emerges that the comparative advantage is not to be found at the product level, as suggested by Krugman and Venables (1993), but at the level of activity along the value chain. With economic integration the productive specialisation in clusters has changed.

¹³⁷ The comparison in traditional studies has been carried out in the mega-producer Mexican clusters that developed greatly during ISI. In addition, those analyses do not take into account the whole spectrum of successful regions and LPSs in the context of a globalised industry.

Selected LPSs have specialised in production activities (assembly, cutting, washing, finishing and packaging) and are not significantly involved in higher value added activities, such as innovation and marketing, as analysed in Chapters 6 and 7. This also means that export-oriented producers are competing with nationally-oriented ones. The nationally-oriented producers in the clusters of Guadalajara and Aguascalientes lack the development of new products and production strategies, a situation that has remained constant since ISI. The design of the product is basically adapted from fashion magazines and samples from trade fairs outside Mexico, to a large extent from the USA. Moreover, the adaptation of innovations is difficult for national producers, since not all those adaptations work in the local markets. Nationally-oriented firms typically only engage a few employees in R&D activities and lack strong labels. That situation contrasts with the much larger number of employees working on R&D in the export-oriented LPS, which is in fact specialised in productive activities along the value chain. Innovation is the engine to increase and maintain the competitiveness of a region, as discussed in Chapter 2 of this thesis. The transformations in the specialisation and organisation of agglomerations are also related to the way that LPSs learn and engender innovation processes to make a region dynamic in a global industry. In a global industry, the interchange and flow of information are crucial in order to keep up to date on innovation and marketing strategies.

It was also found that nationally-oriented LPSs have lost power in the marketing of garments. Larger players have appeared, raising levels of competition in national markets. Trans-national retail chains and brand marketers control important channels used to commercialise large quantities of merchandise, concentrate production and

fix prices both for the consumers and for garment producers and subcontractors. In this way, there has been a shift in the governance structure of the Mexican garment industry from a producer-driven one during ISI to a buyer-driven one in the open economy.

Nationally-oriented firms have only been able to sell their garments via small distribution channels, mostly located in the same region. The direct selling of garments in street markets and/or the manufacturer's own shops has been an important strategy followed by those producers. Thus, nationally-oriented producers cut out the middleman, decrease transport costs and take advantage of the time lapse needed for competing imports to arrive in the local market. However, nationally-oriented producers face more competition and the possibility of being crowded out as international retail chains and brand marketers advance in local markets. Market circumstances are also more difficult for producers catering to the national market, since they also have to compete with illegal imports of both new and second-hand garments. The situation has become more difficult given the fact that since trade liberalisation Mexican consumers have opted for imported products, even in the case of garments of the same quality as national ones.

Whilst nationally-oriented LPSs have been struggling in the market, the export-oriented LPS of La Laguna integrated into a global production chain while experiencing a remarkable performance in the open economy. Trade integration and liberalisation removed significant trade barriers and allowed producers the possibility to specialise, gain international exposure, acquire new knowledge and innovation and upgrade along the value chain. The cluster has been able to upgrade from assembler

to a manufacturing site in the open economy, increasing the value produced in the region with a knowledge-based LPS leading to greater spillovers and booming production. Involvement with international firms helped firms to overcome local shortages of innovation and knowledge in the La Laguna region. Since Mexican entrepreneurs are not engaged in innovation activities, international cooperation and integration have become important in order for technological spillovers to spread across the LPS.

The export-oriented cluster of La Laguna has boomed since trade liberalisation and most significantly since NAFTA came into effect. The region has dramatically increased its production, employment, exports, external economies and value added in the open economy to become one of the most important clothing production sites in the world. The research found that La Laguna strengthened its LPS in the aftermath of the opening to trade.

The arguments commonly made against maquila activities and specialisation along the value chain seem to be every time less relevant in Mexico. Academics have argued that by specialisation in low value activities a region ceases to develop its creativity, entrepreneurial capabilities and opportunities for functional upgrading (see, for instance, Anderson, 1990; Sklair, 1993; Graziani, 1998; Altenburg & Meyer-Stamer, 1999). However, this is not the case in the export-oriented cluster of La Laguna that has become the main producer and export cluster of garments in Mexico.

According to the socio-economic theoretical approaches, the driving forces in agglomerations, cooperation and flows of knowledge in local productive linkages are vital to adopt, propagate and reinforce innovation in an LPS. It is considered that tacit knowledge, learning by doing, learning by imitating, learning by interacting and knowledge processes in general are rapidly transmitted at the local level. Agglomerations produce, engender and preserve knowledge within the cluster.

However, the results from the fieldwork show that linkages with other agents outside the cluster are vital in order to introduce new practices and bring up to date a cluster that is lagging behind in world-class innovation and knowledge. This is particularly important when considering a cluster of an LDC that for a long time was in an economy semi-closed to trade with an obsolete industry and that then became successful in a different trade regime.

The transmission of knowledge, information and innovation from US contractors has been crucial in updating and upgrading La Laguna cluster. Foreign contractors have played an important role in the transmission of knowledge and the introduction of technological changes into La Laguna to strengthen the LPS, while at the same time opening up the market and the possibilities for increasing production. Cluster effects have therefore taken place. Local hub firms (first-tier subcontracted firms) have propagated new knowledge and practices with second-tier subcontractors, suppliers, the labour force and similar firms. Knowledge and innovations have thus been spread and assimilated in productive linkages, boosting spillovers across the LPS. Furthermore, the reliability and cooperation demonstrated by La Laguna producers

served to increase the orders placed in the region, which in turn increased the demand for local employees and production.

With trade integration, trade regulations were gradually eliminated, allowing local firms to offer more services along the global value chain. The local producers took a further step with NAFTA and experienced a functional upgrading. With the knowledge and capabilities gained during the GATT period, La Laguna firms developed new activities, performing all production activities needed for full package production (grading, cutting, assembling, labelling, washing, ironing and packaging). Furthermore, that situation empowered firms, which advanced and eluded brokers to deal directly with international chain retailers and brand marketers.

With the removal of trade restrictions and development of the full package in La Laguna, competitive local suppliers have also set up in the region. Local producers and suppliers have developed relationships of cooperation and the LPS displays strong linkages with suppliers. They interact and have produced garments with important levels of local integration, and there are even garments produced with 100 per cent of local content. This situation places La Laguna a step ahead and challenges the pessimistic vision of scholars on the development of satellite platforms given their local content of inputs (see for instance, González-Arechiga & Barajas-Escamilla, 1989; Wilson, 1992; Mendiola 1997).

It was also found that the industrial structure in the export-oriented LPS of La Laguna changed to take advantage of insertion into globalisation. The cluster transited to another trade regime by economic integration. The size of firms

increased to exploit the possibilities of labour-intense specialisation and economies of scale. The remarkable performance of the cluster and further changes in trade regulations brought on by NAFTA favoured static external economies (the location of competitive suppliers and the pooling of labour force) and the functional upgrading of the cluster along the value chain. This situation contrasts the findings of development scholars (Humphrey & Schmitz, 2000; Pietrobelli & Rabellotti, 2004; Giuliani et al., 2005) who suggest that participation in a global value chain hinders functional upgrading in a LDC. La Laguna is thus following a different path and demonstrates different characteristics to the cases referred to in the theory on flexible industrial agglomerations, as analysed in Chapters 6 and 7.

La Laguna is, in fact, a new type of LPS, which I call a *production specialised* industrial district. It is a new cluster specialised in production activities along the value chain, linked to foreign clients, with strong intra-district linkages and taking advantage of industrial organisation and labour specialisation, boosting economies of scale and scope. For its location in an LDC this cluster may be seen as an LPS of a superior order to the Satellite Platform industrial district type identified by Markusen (1996). This type of cluster thus displays strong local forward and backward linkages, not found in other export processing zones in developing countries (see the literature reviews in George, 1990; Altenburg & Meyer-Stamer, 1999; Campolina & Borges, 1999), which are less advanced in terms of trade liberalisation and economic integration with more advanced economies.

International exposure and cooperation have introduced technological changes and knowledge into La Laguna cluster. Meanwhile, cooperation with suppliers,

subcontractors, other firms and local institutions has brought production up to international standards. It would seem that new kinds of agglomerations appear under different trade regimes. Successful LPSs evolve to remain competitive. In a global industry, interchange and the flow of information and knowledge are crucial in order for firms to keep updated in terms of knowledge and competitive strategies. If La Laguna had not taken the opportunity to integrate into global production systems, the situation for this cluster today may have been similar to that of the nationally-oriented LPSs.

A different scenario is found in the nationally-oriented LPS. Low external economies and weak linkages characterise the agglomeration. The cluster is self-centred and lacks external linkages and international exposure to agents operating at the forefront of the clothing industry. Backward, forward and institutional linkages remain weak and not well developed. Institutional support has not been built up, and adequate branch support and municipal competition has not developed within the region. Without international exposure, hub firms are not developing or implementing state-of-the-art strategies and innovation. Cooperation with subcontracted firms is minimal, which constrains the propagation of knowledge spillovers within the LPS. Moreover, linkages with local suppliers are weak and most of the inputs come from abroad, affecting cluster performance and further deteriorating its static external economies.

The internal organisation of clusters has followed different trajectories since the opening to trade. The integration of La Laguna has brought new forms of organisation, methods and codes of conduct, which include increased payments,

better working conditions for employees, contributing to strengthen labour linkages. Meanwhile, the nationally-oriented cluster of Guadalajara has remained isolated and has sought strategies that decrease costs (subcontracting and direct selling) within the region. Subcontracting practices in the Guadalajara cluster are largely carried out between formal sector contractors and informal sector subcontracted workshops. Cooperation is minimal. Meanwhile, subcontracted firms have continued to seek refuge in the informal sector of the economy and have been unable to access the formal sector of the economy. Informal sector firms evade tax payments, and regulations regarding the payment of legal wages and minimum working conditions, further hindering the development of the LPS, as discussed in Chapters 6 and 7. Labour force linkages have also suffered from the illegality of subcontracted firms with low wages and poor working conditions. In this way, nationally-oriented LPSs are reproducing an exploitative rather than cooperative system. Workers are ever less enthusiastic to work in the sector and are seeking better prospects in other activities or regions, weakening the pooling of the labour force. This affects the availability of external economies, the performance of agglomerated firms and the entire cluster. That situation contrasts with the one prevailing among the export-oriented firms of La Laguna and Aguascalientes, where assimilation of knowledge has also translated into a greater concentration of semi-skilled workers and greater social benefits for the workers.

Strong capacity-building has developed in the export-oriented cluster of La Laguna. With the impressive productive performance of the cluster, local institutions appeared and further enhance the outlook in La Laguna. Local and state governments have joined forces to promote agglomerated sectors in the state. Local cooperation

among different levels of government and competition between the municipalities both within the same and neighbouring states have also favoured the business environment in the cluster. National and international promotion and the implementation of policies promoting employment creation and the retaining of value added activities in the region have boosted cooperation among local-regional government and entrepreneurs. Linkages with institutions are strong in the LPS and joint actions are now important in the cluster. Institutions now provide other types of cluster support and externalities for agglomerated firms.

In the Guadalajara cluster, the state government has endeavoured to promote a policy of decentralisation within the state rather than promoting the development of a garment agglomeration that was competitive during the ISI period. Moreover, municipal competition has not developed in the region. Local municipalities are not greatly involved in promoting the local businesses and therefore competition among them is inexistent, given that the policy is conceived and planned by the state government. The state government has contacted the local business chamber of the clothing industry in an effort to promote the decentralisation of the industry to other regions of the state, while favouring the development of the electronics industry in the Guadalajara region. In so doing, the government is pushing for a different local economic structure. Instead employees with low levels of training in the garment industry have been indirectly pushed to work in other low economic value activities such as the street retailing or as employers in the service sectors. Employment in those sectors are normally in the informal sector of the economy, which in turn may also affect government revenues and the economic performance of the region.

The intermediate case of Aguascalientes, with its duality in terms of producers catering to different markets, suggests that integration into international production is a positive option for local producers. Nationally-oriented firms are in the same situation as those located in the Guadalajara LPS. However, export-oriented producers have gained access to international markets via specialisation along the international value chain. The latter producers have also benefited from cooperation with foreign contractors. The industrial structure is changing and firms benefit from economies of scale and specialisation along the value chain. The case of Aguascalientes shows that international specialisation and cooperation underscores international development in the sector. There, incorporation into international production is still in its early stage, and the cluster can be characterised as a Satellite Type of industrial district using Markusen's typology (1996). Aguascalientes specialises in assembly, it is still gaining trust, knowledge and cooperation from foreign partners, while local productive linkages are yet to be developed to strengthen the LPS and to trigger further external economies. Institutional linkages need to be further developed if the cluster is to evolve towards the *production specialised* type of industrial district, as in the case of La Laguna.

Thus, the research found that LPSs placed along an international value chain appear to have benefited from trade liberalisation and economic integration. Nationally-oriented LPSs, lacking internationalisation and dynamic external economies are losing out in the context of an economy open to trade. The industrial structure in nationally-oriented clusters has not adapted accordingly and is not benefiting from the change in trade regimes. Thus, the nationally-oriented type of LPS is losing out and might disappear in a competitive environment. In an LPS lacking the

international exposure and cooperation that facilitates the transfer of knowledge to agglomerated firms, the LPS tends to copy and spread limitations, techniques and mistakes over the region. Thus, the LPS remains on the same traditional platform unable to upgrade and take advantage of international trade integration. Meanwhile, the export-oriented LPS has broadened its horizons and has managed to avoid reproducing the system and the same mistakes of ISI through its incorporation into international and competitive productive systems.

The research has shed light on the guiding forces and the different paths that LPSs have followed under different trade regimes. It was found that successful cases display different characteristics and follow a different pattern to the cases referred to in the theory on flexible industrial agglomerations. The clusters examined in my research have transformed to take advantage of international trade: firms specialised along the value chain, increased in size and benefited from international linkages. International exposure and cooperation upgraded the knowledge base of La Laguna, leading to product, process and functional upgrading.

The theory on clusters has to a large extent drawn conclusions from cases in developed countries and does not take into account the present context of globalisation of industry, trade liberalisation and economic integration between advanced and less developed countries. Theory on flexible industrial districts has thus neglected the role of LDCs in the global world. Therefore, it seems that this theory explains the advantages of clustering for one type of cluster in the context of a semi-closed economy and not in an open and global context, in which LDCs are now becoming embedded. Graziani (1998) has also highlighted the increasing relocation

of production activities from the land of industrial districts (Italy) toward Central and Eastern European countries. This thesis has tried to further the analysis of LPSs in an LDC that has shifted from an economy semi-closed trade to then liberalise its trade regime and then integrate with more advanced economies.

From the LPSs analysed in the Mexican case it would appear that integration in a global production system is beneficial for a LDC that has engaged in trade liberalisation and economic integration with more advanced economies. However, the risks should also be taken into account. Assembly is the most labour intense activity along the value chain and labour is the most important cost. With the more frequent incorporation of other LDCs in the global process (via trade liberalisation and integration), more and more labour intensive activities along the value chain are moved to those countries. As has been presented, firms may enjoy benefits from trade reforms but there is still competition among LDCs. To foster a globally competitive LPS, it is vital to take advantage of the newly acquired knowledge to upgrade production to higher value added activities, as in the case of La Laguna.

Thus, the identification of global industry transformations, world-class partners and local capacity-building appear to be key for a region of an LDC to compete successfully in international markets. Training, infrastructure, the creation and propagation of information, standard setting, attracting suppliers, the development of RDAs, trade fairs, the promotion of local industry nationally and internationally and the mobilisation of business institutions all become relevant to improve the business environment and to root clusters in a 'slippery space'. Territorial competition is also important for the development of more efficient policies, because ultimately, the

levels of local employment and welfare rate governments. Thus, regional and local policies are crucial in order to improve the business environment and the competitiveness of a country. This is because significant spillovers take place at the regional level, as studied in Chapter 2 of this thesis. In this way, as pointed out by Porter & Ketels (2003: 28) ‘The challenge for an economy is to move first from isolated firms to an array of clusters, and then *to upgrade the sophistication of clusters to more advanced activities*’. Otherwise, assembly activities can be easily moved from one region to another and LPSs will be weak when it comes to dealing with external shocks.

Along this line, the phasing out of the MFA and the integration of clothing into the WTO rules in 2005 has resulted in further trade liberalisation, raising questions about the future of existing garment clusters in Mexico. Producers with low labour costs, especially in China and India, have emerged as important clothing players in the global industry. Increasing competition for Mexican producers is expected not only in local/national and international markets, but also in attracting/rooting low value added activities in global industry. Based on the research carried out, it would be expected that the assessed clusters would be affected to different extents.

The national-oriented cluster of Guadalajara seems to be less equipped to face the competitive pressures from foreign producers. The penetration of more international products at lower costs will undoubtedly challenge further the ability of firms in the cluster to remain viable. Given their lack of innovative capacity, often unstable financial position, and weak productive and institutional linkages, it can be expected that many firms will go out of business and that a non-negligible percentage of

formal sector firms may be pushed underground. The labour force linkages would also become weakened as a result. The consumption and dependency on cheaper foreign raw materials is also likely to increase, weakening further the availability of static external economies. Since the collective ability of the clusters to create new products and processes is limited, only a few producers can be expected to survive, in all likelihood those specialising in specific products oriented towards the local/regional market. National-oriented producers in Aguascalientes are also likely to share the same fate. But export-oriented producers in Aguascalientes may suffer even more from the phasing out of the MFA. This group of firms is greatly specialised in assembly, the segment most mobile along the value chain.

The cluster of La Laguna will have to face greater competition to attract orders from global retailers and brand marketers. The likelihood of a re-location of assembly activities to other countries is small, as most of firms are semi-vertically organised and characterised by local ownership. Assemblers are expected to undergo a decrease in production from local hub firms as demand diminishes. Nevertheless, La Laguna's competitive advantages, such as the experience of participating in competitive markets since 1986, the strength of its local production system and its specialisation in higher valued added activities along the value chain are likely to prove powerful tools in order to face the new challenges. The cluster is also equipped with competitive suppliers (e.g. Parras-Cone one of the most important producers of denim and calico in the world). Strong cooperation in backward linkages are expected as producer/suppliers' performance relies on each other. Furthermore, with increasing competition, the cluster may be able to move onto design and marketing of own labels. The cluster would also need to be more flexible to face new

challenges and further cooperation is needed. In this sense, the government of Coahuila state and the local Chamber of the Clothing Industry are working towards assisting local producers to enhance their capacity in innovation, design and marketing. This type of competition may be seen as a way to reorganise the cluster in order to exploit its comparative advantages in industry organisation and geographical proximity. In this sense, strengthening LPSs is vital to retain and boost competitive agglomerated firms. This, in turn, contributes towards the strengthening of the competitive situation of the local economy, the industry and the entire international production system.

Implications for further research

The globalisation of economic activity is leading to significant transformations in production in both developed and less developed countries. LPSs and the industries in which they are embedded are restructuring to face and to take advantage of the new context. New industrial paradigms have to be developed accordingly. In this way, the theory has been challenged in terms of its capacity to explain the success of new industrial spaces that display a different form of industrial organisation in the open economy. The evidence given in this thesis suggests that new types of successful LPS have appeared in Mexico after the opening to trade, while the old structures inherited from ISI are weakening and losing out in the open economy. The new type of LPS not only benefits from strong local and international linkages, and from external economies, but also from an industrial structure that takes advantage of economies of scale and specialisation along the international value chain. This can also help to highlight best practices for other regions and for developing theoretical

typologies and stylised factors of LPSs in the open and integrated economies of LDCs. The results of this thesis suggest that trade liberalisation and integration can be beneficial in its contribution to upgrading the industrial base of a LDC. The evidence presented in this thesis could feed into such research, providing a starting point for the identification of further examples in other industries and nations that have integrated with more advanced economies, for example in countries such as the new member states of the European Union or a less developed region of any country. Such analysis would complement existing theories of regional development and contribute towards an understanding of the role of LDCs in the global economy, as well as the development of new policies and paradigms in LDCs.

In this way, the study of LPSs in countries that have undergone trade integration would help to strengthen the theory that has to a great extent been based on just a few cases (mostly comparative analysis with the Italianate industrial district model composed of micro and small firms), and ones that have been isolated from trade liberalisation and industrial transformations. As also pointed out by Maskel and Kebir (2005: 14) more analysis confronting cluster theory with real world data is needed, which contain comparative analysis of different types of clusters and processes (Martin & Sunley, 2003: 13). Thus, the analysis of different types of clusters will help us to understand LPSs under different trade regimes. It would seem that when one is considering the effects of integration, the benefits and adjustments at the regional level are different for advanced economies and LDCs. Furthermore, the analysis of interconnected LPSs in both developed countries and LDCs, in the same regional trade bloc, will help us gain a better understanding of international

logics of industry and the agglomeration of economic activity between different types of countries.

Further research is also needed on the importance of product level specialisation on upgrading and cluster competitiveness. With increasing international competition, product specialisation can also improve the situation of firms and clusters. La Laguna specialises to a large extent in the production of trousers, which is the main Mexican garment export. Mexico is, in fact, the main supplier of this product in the USA. Therefore, specialisation in a product line might well appear as an important factor for upgrading and competing in global markets. Special attention should be paid to the capacity of firms to adopt and develop clothing design, learning process and patterns of upgrading, leading to increase firm and cluster competitiveness. This research may also take into account the role of institutions and local suppliers in improving logistics, quick customer/designer interactions, and the fostering of innovation and learning processes.

Finally, since the transformation process in the world is highly dynamic, only future reviews of the cases examined can show to what extent LPSs have been affected by international shocks, as well as their capacity to react to international changes. This could also produce a dynamic account of business and institutional adaptation under different trade regimes and thus yield greater insight into micro and regional adjustments of LDCs to global challenges.

Appendix A1

List of Interviewees

Interviews in Mexico City:

- 1) Alejandro Faes Noriega, Entrepreneur and National President
National Chamber of the Clothing Industry (CNIV)

Interviews in Guadalajara:

- 2) Alfonso Zepeda Grimaldo, Director
National Chamber of the Clothing Industry (CNIV) – Guadalajara, Jalisco
- 3) Jaime Dávalos, Entrepreneur (Moda Jazmin) and Director
Asociación de Empresarios del Vestido de Zapotlanejo, Jalisco
& Francisco Javier Flores, Entrepreneurs (Wings Clothesline) and secretary,
Asociación de Empresarios del Vestido de Zapotlanejo, Jalisco
- 4) Claudia Ortega, Entrepreneur
Clausel Mode
- 5) Sergio García de Alba, Minister of Economic Promotion
Jalisco State
- 6) Guillermo Woo, Director General of Regionalism and De-concentration.
Jalisco State
- 7) Sergio Manuel González Rodríguez, Professor and Specialist
Department of Regional Studies, Universidad de Guadalajara

Interviews in Aguascalientes:

- 8) Juan Antonio Huerta Marín, Director
National Chamber of the Clothing Industry (CNIV) – Aguascalientes
- 9) Carlos García Villanueva, Pioneer and Leader entrepreneur
Bordados Maty
- 10) Francisco Hernández, Entrepreneur
Confecciones Pequi

- 11) Jesús Álvarez Díaz, ex-President of the Chamber, Entrepreneur and Director of COCITEVA
- 12) Rubén Camarillo Ortega, Minister of Economic Development Aguascalientes State
- 13) Gonzálo Maldonado, Professor and Specialist
Department of Business Studies, Universidad Autónoma de Aguascalientes

Interviews in La Laguna:

- 14) Berenice Orduña Muñiz, Director
National Chamber of the Clothing Industry (CNIV) – La Laguna, Durango
& Oswaldo Juárez, ex-President of the Chamber and Entrepreneur
Pantalonera La Laguna
- 15) Jorge Castro, Pioneer and Leader Entrepreneur
Fábrica de Ropa Siete Leguas
- 16) Diego Arguelles, Leader Entrepreneur
Industrias Casolco
- 17) Carlos Alberto Ortiz, Manager of Operations
Grupo Libra
- 18) David Lack, Entrepreneur and current President of the Local Chamber
Procesos Industriales Lacksa
- 19) Patricia Garza, Entrepreneur
Confecciones Brenly
- 20) Regional Development Agency Fomento Económico de La Laguna (FOMECE)
Ignacio Aguirre, General Director
Sergio Reyes, Manager of Promotion
- 21) José Antonio Murra, Minister of Economic Development of Coahuila's State.
Former Municipal president in Torreón, and former national Vicepresident of
the Cámara Nacional de la Industria de la Transformación (CANACINTRA)
- 22) José Francisco Castro, Professor and Specialist
Department of Business and Economics, University of La Laguna

Appendix A.2

Questionnaire

Serial Number

Time start interview:

24 hr clock

Respondent Name: _____

Phone Number to Contact Respondent: _____

Position in Company: _____

Company Name: _____

Company Address: _____

City / Municipality: _____

3 Main products produced by the company
and the % of each in the total produced

1. _____ %

2. _____ %

3. _____ %

DECLARATION ON CONFIDENTIALITY

ALL THE INFORMATION COLLECTED IN THIS QUESTIONNAIRE WILL REMAIN COMPLETELY
CONFIDENTIAL AND WILL NOT BE DISCLOSED TO ANY THIRD PARTY

Date:

____/____/____

1. Firstly, what year was the company established? (1)
Write in an answer _____ 1

How many people does the company currently employ?
... how many in 1999... and how many in 1998

2000	1999	1998
(2)	(3)	(4)
1-5 write in answer	1-5 write in answer	1-5 write in answer

SHOW CARD A

5. What would you say your sales turnover trend was over the last 4 years? *Please choose a number from the card*

- (5)
- A lot better 1
 - A little better 2
 - No change 3
 - A little worse 4
 - A lot worse 5

6. Approximately how much would you say your sales turnover is a month? (6)

\$ Pesos Thousands

- Don't know 1
- 0 – 50 2
- 51 – 100 3
- 101 – 200 4
- 201 – 500 5
- 501 – 1,000 6
- 1,001 – 3,000 7
- 3001 – 6,000 8
- 6,001 – 12,000 9
- 12,000 – 30,000 10
- 30,000 + 11

SHOW CARD A

7. What would you say your production trend was over the last 4 years? *Please choose a number from the card*

- (7)
- A lot better 1
 - A little better 2
 - No change 3
 - A little worse 4
 - A lot worse 5

On average, how many items do you produce a month? ... and how many a month in 1999... and how many in 1998

2000	1999	1998
(8)	(9)	(10)
1-5 write in answer	1-5 write in answer	1-5 write in answer

And, what is the percentage of production exported? ...in 1999...
and what percentage in 1998

2000	1999	1998
(11)	(12)	(13)
1-5 write in answer	1-5 write in answer	1 - 5 write in answer

SHOW CARD B

14. What would you say your trend of net profit was over
the last 4 years? *Please choose a number from the card*

- (14)
- | | |
|--------------|---|
| Very good | 1 |
| Good | 2 |
| Satisfactory | 3 |
| Nil | 4 |
| Loss | 5 |

On average how much net profit do you make per item? And
in 1999 how much per item... and in 1998

2000	1999	1998
(15)	(16)	(17)
1-5 write in answer	1-5 write in answer	1-6 write in answer

SHOW CARD C

18. Thinking about something different now, to which level
did the entrepreneur study

- (18)
- | | |
|-------------------|---|
| Don't know | 1 |
| No formal studies | 2 |
| Primary school | 3 |
| Secondary school | 4 |
| High school | 5 |
| Tech College | 6 |
| University | 7 |
| Postgraduate | 8 |

19. How many years has the entrepreneur been working in the
garment industry?

- (19)
- | | |
|-----------------------|-----|
| Don't know | 1 |
| Write in answer _____ | 2-6 |

20. Does the company have any local/national/international
quality certification?

- (20)
- | | |
|-----|----------------------|
| Yes | 1 |
| No | 2 <i>Skip to Q22</i> |

21. And what kind of certification does your company have?

- (21)
- | | |
|-----------------------|-----|
| ISO-9000 | 1 |
| ISO-14000 | 2 |
| NOM | 3 |
| Other (specify) _____ | 4-6 |

Thinking about investment now, approximately how much is your total investment per year? ... and in 1999 ... and in 1998 ?

2000	1999	1998
(22)	(23)	(24)
1-5 write in answer	1-5 write in answer	1-7 write in answer

25. And what percentage of this investment is foreign?

Don't know 1
None 2
Write in answer _____ 3-5 (25)

SHOW CARD D

26. What would you say your trend of investment was over the last 4 years? *Please choose a number from the card*

Very high 1
High 2
Low 3
Very low 4 (26)

Lets move onto your relationships with suppliers. Thinking about your main suppliers, please tell me what percentage of the following inputs you buy locally, nationally or abroad.

WRITE IN % AND IF POSSIBLE THE NAME OF THE MAIN STATES IN THE APPROPRIATE BOX

	Local	National	Foreign	
	(27)	(28)	(29)	
New machinery	1 %	1 %	1 %	100 %
2 nd hand machinery	2 %	2 %	2 %	100 %
Raw materials	3 %	3 %	3 %	100 %

on average how long have you been working with your main suppliers?

Don't know 1 (30)

30. And

SHOW CARD E

32. And what kind of support do you receive from your suppliers?

You can choose more than 1 option

	(32)
Technical support and advice	1
Advice on new products, designs, colours, patterns	2
Financial assistance	3
Training	4
Marketing	5
Managerial assistance	6
Supply of equipment	7
Other (specify) _____	8-9

SHOW CARD F

33. And which phases of the process do you carry out on-site?

You can choose more than 1 option

	(33)
Marketing	1
Design	2
Finishing	3
Cutting	4
Sewing	5
All of them	6
Other (specify) _____	7-9

34. Lets move onto subcontracting now, firstly do you subcontract?

	(34)
Yes	1
No	2 <i>Skip to Q42</i>

SHOW CARD G

35. How many years have you been subcontracting?

	(35)
Before 1986	1
1986 - 1993	2
1994 or later	3

36. And how many firms do you subcontract to?

	(36)
Don't know	1
Write in answer _____	2-6

Please tell me where the main firms you subcontract to, are geographically located

PLEASE WRITE IN THE NAME OF THE MAIN STATES IN THE APROPRIATE BOX

Local	Other National States	Foreign
(37)	(38)	(39)
1	1	1
2	2	2
3	3	3

40. And, do you give any kind of extra-support to firms you subcontract to?

	(40)
Yes	1
No	2 <i>Skip to Q42</i>

SHOW CARD E

41. From the following list can you please tell me what kind of support do you give to them

You can choose more than 1 option

	(41)
Technical support and advice	1
Supply of equipment	2
Financial assistance	3
Training	4
Marketing	5
Managerial assistance	6
Supply of equipment	7
Other (specify) _____	8-9

42. Do you receive subcontracts?

	(42)
Yes	1
No	2 <i>Skip to Q52</i>

SHOW CARD G

43. How long have you been working as a subcontracted firm?

	(43)
Before 1986	1
1986 - 1993	2
1994 or later	3

44. And in the past, did you use to carry out all of the phases of the productive process?

	(44)
Yes	1
No	2

Please, tell me where the main firms giving you subcontracts are geographically located (locally, nationally or abroad)

PLEASE WRITE IN THE NAME OF THE MAIN STATES IN THE APPROPRIATE BOX

Local	National	Foreign
(45)	(46)	(47)
1	1	1
2	2	2
3	3	3

48. And from how many firms do you receive subcontracts?

	(48)
Don't know	1
Write in answer _____	2-6

49. Please tell me when you started working with your main subcontractors?

	(49)
Don't know	1
Write in answer _____	3-5

50. And, do you receive any kind of extra-support from the firms you receive subcontracts from?

	(50)
Yes	1
No	2 <i>Skip to Q52</i>

SHOW CARD E

51. From the following list, please tell me what kind of support you receive from them?

You can choose more than 1 option

	(51)
Technical support and advice	1
Supply of equipment	2
Financial assistance	3
Training	4
Marketing	5
Managerial assistance	6
Supply of equipment	7
Other (specify) _____	8-9

SHOW CARD H

52. Lets move onto your employees, please tell me which are the most important problems you have to face with regard to local employment

You can choose more than 1 option

	(52)
Employment turnover	1
Lack of skilled employment	2
Lack of unskilled employment	3
Absenteeism	4
Other (specify) _____	5-7

SHOW CARD C

53. From the following card, please tell me to what level would the majority of your employees be educated to?

	(53)
Don't know	1
No formal studies	2
Primary school	3
Secondary school	4
High school	5
Tech College	6
University	7
Postgraduate	8

54. And, on average how many years would you say have they been working in the garment industry?

	(54)
Don't know	1
Write in answer _____	2-6

SHOW CARD J

55. Would you say that employees tend to change companies mainly:

	(55)
Locally	1
Other States	2
Abroad	3

Let's move onto your market, what percentage of your production is sold locally, nationally or exported

PLEASE WRITE IN THE % IN THE APPROPRIATE BOX

Locally	Other National States	Exported
(56)	(57)	(58)
1-5 write in answer	1-5 write in answer	1-5 write in answer

And moving onto your clients, please tell me where your main clients are geographically located?

PLEASE WRITE IN THE NAME OF THE MAIN STATES IN THE APPROPRIATE BOX

Local	Other National States	Foreign
(59)	(60)	(61)
1	1	1
2	2	2
3	3	3

62. And when did you start working with your main clients? (62)

Write in answer _____ Don't know 1
3-5

SHOW CARD K

63. Looking at the following card, do you receive any extra-benefit from your clients?

(63)
Yes 1
No 2 *Skip to Q65*

SHOW CARD K Definition of innovation

64. Thinking about the extra-benefits you receive from your clients, please tell what kind of benefits you receive from your clients

You can choose more than 1 option (64)

Process Innovation

Technical support and advice 1
Improvements in the productive process 2

Product Innovation

Advice and support on new products, designs, colours, patterns 3
Product development 4
Financial assistance 5
Training 6
Marketing 7
Managerial assistance 8
Supply of equipment 9

Information on

Exports 10
Clients, suppliers 11
Sector's statistics and General information 12

Other (specify) _____ 13-14

65. Thinking about the sales of your products, what percentage of your products are sold on-site? (65)

Write in answer _____ % 1-5

66. And what percentage of your products are delivered to your clients? (66)

Write in answer _____ % 1-5

SHOW CARD L Definition of innovation

67. Lets move on into innovation, do you think that you innovate?

(67)
Yes 1
No 2 *Skip to Q72*

SHOW CARD M

68. Thinking about technical innovations, please tell me where they come from.

You can choose more than one answer

(68)

- | | |
|---|---|
| Suppliers | 1 |
| Clients | 2 |
| Developed internally | 3 |
| Adapted internally | 4 |
| In co-operation with other local producers | 5 |
| Bought ready-made in the national market | 6 |
| Bought ready-made in the international market | 7 |
| Other (specify) _____ | 8 |

SHOW CARD N

69. From the following card, please tell me which are your main sources of information for technical or process innovation?

You can choose more than one answer

(69)

- | | |
|-----------------------|---|
| Suppliers | 1 |
| Clients | 2 |
| Trade shows | 3 |
| Magazines | 4 |
| Internet | 5 |
| Visit to other firms | 6 |
| Institutions | 7 |
| Other (specify) _____ | 8 |

SHOW CARD P

70. Are your sample sets based on:

(70)

- | | |
|--|-----|
| Design developed internally | 1 |
| Design developed by an outsider designer | 2 |
| Imitation | 3 |
| Other (specify) _____ | 4-6 |

SHOW CARD Q

71. Thinking about the links your company has with institutions passing you information with regard to the garment industry, do you have any kind of contact or receive benefits from any of the following institutions:

(71)

- | | |
|-----|---|
| Yes | 1 |
| No | 2 |

72. And have you receive any kind of information from Business Chambers?

(72)

- | | |
|-----|----------------------|
| Yes | 1 |
| No | 2 <i>Skip to Q78</i> |

SHOW CARD R (explain to the interview process of innovation and product innovation)

73. If yes, please tell me what kind of information, knowledge and benefits do you receive principally from them?

You can choose more than 1 option

(73)

Process Innovation

- | | |
|--|---|
| Technical support and advice | 1 |
| Improvements in the productive process | 2 |

Product Innovation

- | | |
|--|---|
| Advice and support on new products, designs, colours, patterns | 3 |
| Product development | 4 |
| Financial assistance | 5 |
| Training | 6 |
| Marketing | 7 |
| Managerial assistance | 8 |
| Supply of equipment | 9 |

Information on

- | | |
|---|-------|
| Exports | 10 |
| Clients, suppliers | 11 |
| Sector's statistics and General information | 12 |
| Other (specify) _____ | 13-14 |

Where are the Business Chambers geographically located?

PLEASE WRITE IN THE NAME OF THE INSTITUTION IN THE APPROPRIATE BOX

Local	National	Foreign
(74)	(75)	(76)
1	1	1
2	2	2
3	3	3

77. And when did you start the relationship with these Chambers? (77)

Don't know 1
Write in answer _____ 3-5

78. And have you received any kind of information from Universities and Polytechnics?

(78)
Yes 1
No 2 *Skip to Q84*

SHOW CARD R

79. If yes, please tell me what kind of information, knowledge and benefits do you receive from them?

You can choose more than 1 option (79)

- Process Innovation*
- Technical support and advice 1
 - Improvements in the productive process 2
- Product Innovation*
- Advice and support on new products, designs, colours, patterns 3
 - Product development 4
- Financial assistance 5
 - Training 6
 - Marketing 7
 - Managerial assistance 8
 - Supply of equipment 9
- Information on*
- Exports 10
 - Clients, suppliers 11
 - Sector's statistics and General information 12
 - Other (specify) _____ 13-14

Where are these institutions of higher education geographically located?

PLEASE WRITE IN THE NAME OF THE INSTITUTION IN THE APPROPRIATE BOX

Local	National	Foreign
(80)	(81)	(82)
1	1	1
2	2	2
3	3	3

83. And when did you start working with your these Universities? (83)

Don't know 1
Write in answer _____ 2-5

84. And have you received any kind of information and knowledge from R&D Centres?

(84)

Yes 1

No 2 *Skip to Q90*

SHOW CARD R

85. If yes, tell me what kind of information and knowledge and benefits do you receive from them?

You can choose more than 1 option

(85)

Process Innovation

Technical support and advice

1

Improvements in the productive process

2

Product Innovation

Advice and support on new products, designs, colours, patterns

3

Product development

4

Financial assistance

5

Training

6

Marketing

7

Managerial assistance

8

Supply of equipment

9

Information on

Exports

10

Clients, suppliers

11

Sector's statistics and General information

12

Other (specify) _____

13-14

Where are these institutions geographically located?

PLEASE WRITE IN THE NAME OF THE INSTITUTION IN THE APPROPRIATE BOX

Local	National	Foreign
(86)	(87)	(88)
1	1	1
2	2	2
3	3	3

89. And when did you start working with these R&D centres?

(89)

Don't know

1

Write in answer _____

3-5

90. And have you receive any kind of information, knowledge or benefits from Technical Colleges?

(90)

Yes 1

No 2 *Skip to Q96*

SHOW CARD R

91. If yes, please tell me what kind of information, knowledge and benefits do you receive from them?

You can choose more than 1 option

(91)

Process Innovation

Technical support and advice

1

Improvements in the productive process

2

<i>Product Innovation</i>	
Advice and support on new products, designs, colours, patterns	3
Product development	4
Financial assistance	5
Training	6
Marketing	7
Managerial assistance	8
Supply of equipment	9
<i>Information on</i>	
Exports	10
Clients, suppliers	11
Sector's statistics and General information	12
Other (specify) _____	13-14

Where are these technical colleges geographically located?

PLEASE WRITE IN THE NAME OF THE INSTITUTION IN THE APPROPRIATE BOX

Local (92)	National (93)	Foreign (94)
1	1	1
2	2	2
3	3	3

95. And when did you start working with these technical colleges? (95)

Don't know 1

Write in answer _____ 3-5

96. And have you received any kind of information, knowledge, benefits from Government Institutions? (96)

Yes 1

No 2 **Skip to 102**

SHOW CARD R

97. If yes, please tell me what kind of information, knowledge and benefits have you received from them? (97)

You can choose more than 1 option

<i>Process Innovation</i>	
Technical support and advice	1
Improvements in the productive process	2
<i>Product Innovation</i>	
Advice and support on new products, designs, colours, patterns	3
Product development	4
Financial assistance	5
Training	6
Marketing	7
Managerial assistance	8
Supply of equipment	9
<i>Information on</i>	
Exports	10
Clients, suppliers	11
Sector's statistics and General information	12
Other (specify) _____	13-14

Where are these governmental institutions geographically located?

PLEASE WRITE IN THE NAME OF THE INSTITUTION IN THE APPROPRIATE BOX

Local	National	Foreign
(98)	(99)	(100)
1	1	1
2	2	2
3	3	3

101. And when did you start working with the government?

(101)

Don't know 1

Write in answer _____ 3-5

SHOW CARD S

102. And do you believe that the local government has been helpful for your business?

(102)

Don't know 1

Yes, a lot 2

Yes, a little 3

Not very much 4

No 5

SHOW CARD T

103. Please tell me if your main competitors are:

(103)

Large 1

Medium 2

Small 3

Micro 4

SHOW CARD U

104. In order to out-compete your rivals, what are the main factors you use?

You can choose more than 1 option

(104)

Price 1

Quality 2

Design 3

Delivery time 4

Other (specify) _____ 5-7

SHOW CARD V

105. Do you exchange ideas, discuss problems or strategies with other local garment producers?

(105)

Often 1

Occasionally 2

Never 3

106. Let's move onto your relationship with other producers, please tell me if you have formal agreements to co-operate with other producers

(106)

Yes 1

No 2 *Skip to 112*

And, where are these producers geographically located?

PLEASE WRITE IN THE NAME OF THE STATE IN THE APPROPRIATE BOX

Local	National	Foreign
(107)	(108)	(109)
1	1	1
2	2	2
3	3	3

SHOW CARD W

110. And what are the benefits, information and knowledge you receive principally from them?
You can choose more than 1 option (110)

<i>Process Innovation</i>	
Technical support and advice	1
Improvements in the productive process	2
<i>Product Innovation</i>	
Advice and support on new products, designs, colours, patterns	3
Product development	4
Financial assistance	5
Training	6
Marketing	7
Managerial assistance	8
Supply of equipment	9
<i>Information on</i>	
Exports	10
Clients, suppliers	11
Sector's statistics and general information	12
Joint buying of raw material	13
Other (specify) _____	14-15

111. And when did you start working with other producers? (111)

Don't know	1
Write in answer _____	3-5

112. Do you use the internet to contact clients, obtain new products, designs, etc? (112)

Yes	1
No	2

SHOWCARD X

113. How do your informal relationships usually come about? (113)

Family ties	1
Neighbours or spatial proximity	2
Social occasions	3
Meetings organised by the local entrepreneurial association	4
Other (specify) _____	5-7

SHOW CARD Y

114. Thinking about economic liberalisation, please tell me how it has affected you (114)

Extremely positively	1
Positively	2
No change	3
Negatively	4
Extremely negatively	5

SHOW CARD Z

115. And with regard to competition how do you perceive the increasing localisation of maquiladora plants in the region? (115)

Extremely positive	1
Positive	2
Indifferent	3
Bad	4
Very bad	5

SHOW CARD AA

And, looking at this card please tell me, in percentage, which of these are your main sources of financing, locally, nationally and from abroad

PERCENTAGES MUST NOT EXCEED 100%

	Local	National	Foreign	
	(116)	(117)	(118)	
Banks	1	1	1	
Government credit	2	2	2	
Clients	3	3	3	
Suppliers	4	4	4	
Informal credit	5	5	5	
Family	6	6	6	
Own	7	7	7	
Other (specify)	8	8	8	
Total	%	%	%	100%

119. Please tell me what the advantages are of being located in this area (119)

120. And finally, what are the disadvantages of being located in this area? (120)

Thank you very much

Time ending interview:

24 hr clock

REFERENCES

- Acs, Z., Audretsch, D., & Feldman, M. (1994). R&D spillovers and recipient firm size. *Review of Economics and Statistics*, 100(2), 336-340.
- Aguilar, A., & Graizbord, B. (1995). La restructuración regional en México: Cambios de la actividad económica urbana, 1980-1988. *Comercio Exterior*, 45(2), 140-151.
- Alonso, W. (1989). Deindustrialization and regional policy. In L. Rodwin & H. Sazanami (Eds.), *Deindustrialization and Regional Economic Transformation: The Experience of the United States*. Boston: Unwin Hyman.
- Altenburg, T., Bosse, D., Brunzema, T., Eckhardt, J., Unger, B., & Zeeb, S. (1998). *Desarrollo y Fomento de Subcontratación Industrial en México*. Mexico City: Friedrich Ebert Stiftung.
- Altenburg, T., & Meyer-Stamer, J. (1999). How to promote clusters: Policy experiences from Latin America. *World Development*, 27(9), 1693-1713.
- Amin, A. (1993). The globalisation of the economy: An erosion of regional networks? In G. Grabher (Ed.), *The Embedded Firm: On the Socioeconomics of Industrial Networks*. London: Routledge.
- Amin, A., & Robins, K. (1990). The re-emergence of regional economies? The mythical geography of flexible accumulation. *Environment and Planning D: Society and Space*, 8, 7-34.
- Amin, A., & Thrift, N. (1995). Institutional issues for the European regions: From markets and plans to socioeconomics and powers of association. *Economy and Society*, 24(1), 41-66.
- Amin, A., & Thrift, N. (2002). Neo-Marshallian nodes in global networks. *International Journal of Urban and Regional Research*, 16(4), 571-587.
- Ampudia-Rueda, L. (2000). Localización industrial y reconfiguración económica-espacial de Chihuahua, 1980-1999. *El Mercado de Valores*, LX(10), 57-66.
- Anderson, J. (1990). Maquiladoras in the apparel industry. In K. Fatemi (Ed.), *The Maquiladora Industry: Economic Solution or Problem?* New York: Praeger.
- Aoki, M. (1990). Towards an economic theory of the Japanese firm. *Journal of Economic Literature*, XXVII, 1-27.
- Appelbaum, R., Smith, D., & Christerson, B. (1994). Commodity chains and industrial restructuring in the pacific rim: Garment trade and manufacturing. In G. Gereffi & M. Korzeniewicz (Eds.), *Commodity Chains and Global Capitalism*. Westport, USA: Praeger.
- Arias, P. (1985). Maquila, pequeña industria y trabajo a domicilio en Los Altos de Jalisco. *Relaciones. El Colegio de Michoacán*, VIII(28), 33-60.
- Arias, P. (1988). El empleo a domicilio en el medio rural: La nueva manufactura. *Estudios Sociológicos. El Colegio de México*, VI(17), 405-436.
- Arias, P., & Wilson, F. (1997). *La Aguja y el Surco: Cambio Regional, Consumo y Relaciones de Género en la Industria de la Ropa en México*. Guadalajara: Universidad de Guadalajara-Centre for Development Research.

- Armstrong, H., & Taylor, J. (1985). *Regional Economics and Policy*. Oxford, U.K.: Philip Allan Publishers.
- Arrow, K. J. (1962). The economic implication of learning by doing. *Review of Economic Studies*, 29, 155-173.
- Asheim, B. T. (1992). Flexible specialisation, industrial districts and small firms: A critical appraisal. In H. Ernste & V. Meier (Eds.), *Regional Development and Contemporary Industrial Response: Extending flexible specialisation*. London; New York: Belhaven Press.
- Asheim, B. T. (1996). Industrial districts as learning regions: A condition for prosperity. *European Planning Studies*, 4(4), 379-400.
- Asheim, B. T., & Isaksen, A. (1997). Location, agglomeration and innovation: Towards regional innovation systems in Norway? *European Planning Studies*, 5(3), 299-330.
- Aspe, P. (1993). *El Camino Mexicano de la Transformación Económica*. Mexico City: Fondo de Cultura Económica.
- Audrestsch, D. (1995). *Innovation and Industry Evolution*. Cambridge, Mass: MIT Press.
- Audrestsch, D., & Vivarelli, M. (1996). Firms size and R&D spillovers: Evidence from Italy. *Small Business Economics*, 8, 249-258.
- Audrestsch, D., & Feldman, M. (1996). Innovative clusters and the industry life cycle. *Review of Industrial Organization*, 11, 253-273.
- Baccetta, M., & Bora, B. (2003). *Industrial Tariff Liberalization and the Doha Development Agenda*. Geneva: WTO.
- Bagnasco, A. (1977). *Tre Italie: La Problematica Territoriale dello Sviluppo Italiano*. Bologna: Il Mulino.
- Bailey, T., & Eicher, T. (1992). *The North American Free Trade Agreement and the Apparel Industry in the US*. Working Paper: Spencer Foundation and the US Congress - Office of technology assessment.
- Bair, J. (2001). Casos exitosos de pequeñas y medianas empresas en México: La Industria del vestido en aguascalientes. In E. Dussel-Peters (Ed.), *Cloroscuros: Integración Exitosa de las Pequeñas y Medianas Empresas en México*. Mexico City: CEPAL-CANACINTRA-JUS.
- Bair, J., & Gereffi, G. (2001). Local clusters in global chains: The Causes and consequences of export dynamism in Toreon's Blue Jeans Industry. *World Development*, 29(11), 1885-1903.
- Bair, J., & Gereffi, G. (2002). NAFTA and the apparel commodity chain: Corporate strategies, interfirm networks, and industrial upgrading. In G. Gereffi, D. Spener & J. Bair (Eds.), *Free Trade and Uneven Development: The North American Apparel Industry after NAFTA*. Philadelphia: Temple University Press.
- Balassa, B. (1973). La política comercial de México: Análisis y proposiciones. In L. Solís (Ed.), *La Economía Mexicana: I. Análisis por Sectores y Distribución*. Mexico City: Fondo de Cultura Económica.
- Balassa, B. (1981). *The Newly Industrializing Countries in the World Economy*. New York: Pergamon Press.
- Balassa, B. (1988). Interest of developing countries in the Uruguay Round. *The World Economy*, 11, 39-54.

- Baldwin, R. (1994). *Towards an Integrated Europe*. London: Centre for Economic Policy Research.
- BANCOMEXT. (1998). *Oportunidades de Negocios para la Industria Textil y de la Confección*. Mexico City: Banco Nacional de Comercio Exterior.
- BANCOMEXT. (1999). *Textil y Prendas de Vestir: Guía de Exportación Sectorial*. Mexico City: Banco Nacional de Comercio Exterior.
- BANCOMEXT. (2000). *México Exporta: Textil y Confección*. Mexico City: Banco Nacional de Comercio Exterior.
- BANCOMEXT. (2001). *Sector Textil y Confección: Aspectos Relevantes y Oportunidades de Negocios*. Mexico City: Dirección General Ajunta de Desarrollo Exportador- Banco Nacional de Comercio Exterior.
- Barro, R. (1997). *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cambridge, Mass: The MIT Press.
- Bazan, L., & Navas-Alemán, L. (2004). The underground revolution in the Sinos Valley: A comparison of upgrading in global and national value chains. In H. Schmitz (Ed.), *Local Enterprises in the Global Economy: Issues of Governance and Upgrading*. Cheltenham: Edward Elgar.
- Becattini, G. (1978). The development of light industry in Tuscany: An Interpretation. *Economic Notes*, 7(2-3), 107-123.
- Becattini, G. (1990). The Marshallian industrial district as a socio-economic notion. In F. Pyke, G. Becattini & W. Sengenberger (Eds.), *Industrial Districts and Inter-firm Co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Begg, B., Pickles, J., & Smith, A. (2003). Cutting it: European integration, trade regimes, and the reconfiguration of East-Central European apparel production. *Environment and Planning A*, 35, 2191-2207.
- Bell, M., & Pavitt, K. (1993). Technological accumulation and industrial growth: Contrast between developed and developing countries. *Industrial and Corporate Change*, 2(2).
- Bellandi, M. (1989). The industrial district in Marshall. In E. Goodman & J. Bamford (Eds.), *Small Firms and Industrial Districts in Italy*. London: Routledge.
- Belussi, F., & Gottardi, G. (2000). Models of localised technological change. In B. Fiorenza & G. Giorgio (Eds.), *Evolutionary Patterns of Local Industrial Systems: Towards a Cognitive Approach to the Industrial District*. Wiltshire, Great Britain: Ashgate.
- Bennet, R. (1998). Business associations and their potential to contribute to economic development: Reexploring an interface between the state and the market. *Environment and Planning A*, 30, 1367-1387.
- Bennet, R., & Payne, D. (2000). *Local and Regional Economic Development: Renegotiating Power Under Labour*. Hants: Aldershot.
- Berg, J., & Taylor, L. (2001). External liberalization, economic performance, and social policy. In L. Taylor (Ed.), *External Liberalization, Economic Performance, and Social Policy*. New York: Oxford University Press.
- Berger, S., & Locke, R. (2000). Il caso Italiano and globalization. *Industrial Performance Center Special Working Paper Series*, 00-008.

- Besnainou, D., & Davezies, L. (1998). Regional policy in Mexico. *The OECD Observer* (No. 210), 17-19.
- Best, M. (1990). *The New Competition: Institutions of Industrial Restructuring*. Cambridge, MA.: Harvard University Press.
- Bhagwati, J. (1968). *The Theory and Practice of Commercial Policy: Departures from Unified Exchange Rates*. Princeton, NJ.: Princeton University Press.
- Bhagwati, J., Pravin, K., & Panagariya, A. (1999). *Trading Blocs: Alternative Approaches to Analyzing Preferential Trade Agreements*. Cambridge, MA: MIT Press.
- Bonacich, E., Cheng, L., Chinchilla, N., Hamilton, N., & Ong, P. (1994). The garment industry in the restructuring global economy. In E. Bonacich, L. Cheng, N. Chinchilla, N. Hamilton & P. Ong (Eds.), *Global Production: The Apparel Industry in the Pacific Rim*. Philadelphia: Temple University Press.
- Bora, B., Lloyd, J., & Pangestu, M. (2000). Industrial policy in the WTO. *The World Economy*, 23, 543-559.
- Borjas, S. (2000, 24/July/2000). Aumentan las exportaciones pero no los exportadores: Solo 14% de las empresas realizan 75% de las ventas externas. *El Financiero*, p. 30.
- Brusco, S. (1982). The Emilian Model: Productive decentralisation and social integration. *Cambridge Journal of Economics*, 6, 167-184.
- Brusco, S. (1986). Small firms and industrial districts: The experience of Italy. In D. Keeble & E. Wever (Eds.), *New Firms and Regional Development*. London: Croom Helm.
- Brusco, S. (1990). The idea of the industrial district: Its genesis. In F. Pyke, G. Becattini & W. Sengenberger (Eds.), *Industrial Districts and Inter-Firm Co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Brusco, S. (1992). Small firms and the provision of real services. In F. Pyke & W. Sengenberger (Eds.), *Industrial Districts and Local Economic Regeneration: Research and Policy Issues*. Geneva: International Institute for Labour Studies.
- Brusco, S. (1996). Global systems and local systems. In F. Cossentino, F. Pyke & W. Sengenberger (Eds.), *Local and regional response to global pressure: The Case of Italy and its Industrial Districts*. Geneva: International Institute for Labour Studies.
- Brutti, P., & Calistri, F. (1990). Industrial districts and the unions. In F. Pyke, G. Becattini & W. Sengenberger (Eds.), *Industrial Districts and Inter-firm Co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Bueno, G. (1973). Las perspectivas de la política de desarrollo industrial en México. In L. Solís (Ed.), *La Economía Mexicana: I. Análisis por Sectores y Distribución*. Mexico City: Fondo de Cultura Económica.
- Bulmer-Thomas, V. (1994). *The Economic History of Latin America since Independence*. Cambridge: Cambridge University Press.
- Cabrero, E. (1997). *El Impacto Regional de las Políticas Decentralizadoras: Análisis de Desequilibrios Regionales, Gasto e Ingreso Público y Relaciones Gubernamentales 1983-1993*. Mexico City: Centro de Investigación y Docencia Económica (CIDE).
- Cainelli, G., & De Liso, N. (2005). Innovation in industrial districts: Evidence from Italy. *Industry and Innovation*, 12(3), 383-398.

- Camagni, R. (1991). Local milieu, uncertainty and innovation networks: Towards a new dynamic theory of economic space. In R. Camagni (Ed.), *Innovation Networks: Spatial Perspectives*. London: Belhaven Press.
- Campolina, C., & Borges, F. (1999). Manaus: Vulnerability in a satellite platform. In A. Markusen, Y.-S. Lee & S. DiGiovanna (Eds.), *Second Tier Cities: Rapid Growth Beyond the Metropolis*. Minneapolis: University of Minnesota Press.
- Capecchi, V. (1990). A history of flexible specialisation and industrial districts in Emilia-Romagna. In F. Pyke, G. Becattini & W. Sengenberger (Eds.), *Industrial Districts and Inter-firm Co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Carillo, J. (1994). The apparel maquiladora industry at the Mexican border. In E. Bonacich, L. Cheng, N. Chinchilla, H. N. & O. P. (Eds.), *In Global Production: The Apparel Industry in the Pacific Rim*. Philadelphia: Temple University Press.
- Carrillo, J. (2001). Maquiladoras de exportación y la formación de empresas mexicanas. In E. Dussel-Peters (Ed.), *Cloroscuros: Integración Exitosa de las Pequeñas y Medianas Empresas en México*. Mexico City: CEPAL-CANACINTRA-JUS.
- Carrillo, J., & Hualde, A. (2000). Desarrollo regional y maquila fronteriza: Peculiaridades de un cluster electrónico en Tijuana. *El Mercado de Valores, LX*(10), 45-56.
- Casar-Pérez, J. I. (1989). *Transformación en el patrón de especialización y comercio exterior del sector manufacturero mexicano 1978-1987*. Mexico City: Nacional Financiera.
- Castells, M. (1985). Technological change, economic restructuring and the spatial division of labor. In W. Stohr (Ed.), *International Economic Restructuring and the Territorial Community*. New York: United Nations Industrial Development Organization.
- Castells, M. (1999). *The Rise of the Network Society* (Vol. 1). Oxford: Blackwell.
- Castillo-Aja, M. (1995). Reestructuración espacial en la zona metropolitana de Guadalajara: El caso de la industria. In J. L. Calva & A. G. Aguilar (Eds.), *Desarrollo Regional y Urbana: Tendencias y Alternativas*. Mexico City: University of Guadalajara-UNAM-Juan Pablos Editor.
- Cawthorne, P. (1995). Of networks and markets: The rise and rise of a South Indian Tiruppur's cotton knitwear industry. *World Development, 23*(1), 43-56.
- Centro de Estudios Municipales. (1988). *Enciclopedia de los Municipios de México*. Mexico City: Secretaría de Gobernación.
- CEPAL. (1996). *México: La Industria Maquiladora*. Santiago de Chile: Naciones Unidas Comisión Económica para América Latina y el Caribe.
- Chamboux-Leroux, J. (2001). Efectos de la apertura comercial en las regiones y la localización industrial en México. *Comercio Exterior, 51*, 600-609.
- Chrispin, B. (1990). Employment and manpower development in the maquiladora industry: Reaching maturity. In K. Fatemi (Ed.), *The Maquiladora Industry: Economic Solution or Problem?* New York: Praeger.

Clark, G. (1989). US regional transformation in the context of international economic competition. In L. Rodwin & Sazanami, H. (Eds.), *Deindustrialization and Regional Economic Transformation: The Experience of the United States*. Boston: Unwin Hyman.

Clement, N. & Jenner, S. (1989). La industria maquiladora de México y la economía de California. In B. González-Aréchiga, & R. Barajas-Escamilla (Eds.), *Las Maquiladoras: Ajuste Estructural y Desarrollo Regional*. Tijuana, B.C., México: El Colegio de la Frontera Norte: Fundación Friedrich Ebert.

Clavijo, F., & Valdivieso, S. (1994). La política industrial de México 1988-1994. In F. Clavijo, & Casar, J. (Ed.), *La Industria Mexicana en el Mercado Mundial: Elementos para una Política Industrial*. Mexico City: Fondo de Cultura Económica.

CNIV-Aguascalientes. (2000). *Directorio 2000*. Aguascalientes: Cámara Nacional de la Industria del Vestido- Aguascalientes.

CNIV-Guadalajara. (1994). *25 Años de Historia en Jalisco*. Guadalajara: Cámara Nacional de la Industria del Vestido- Jalisco.

CNIV-Guadalajara. (1999, March, 1999). Nuestra industria del vestido. *Hecho en Jalisco*, 1, 11-13.

CNIV-Guadalajara. (2000). *Directorio 2000*. Guadalajara: Cámara Nacional de la Industria del Vestido- Jalisco.

CNIV-La Laguna. (2000a). *The Apparel Industry in La Laguna: CD Rom and Press Releases*. La Laguna, Durango: CNIV La Laguna.

CNIV-La Laguna. (2000b). *La Laguna*. Retrieved December 13, 2000, from www.cniv-lalaguna.org.mx

CNIV-La Laguna. (2000c). *Directorio 2000*. Torreón: Cámara Nacional de la Industria del Vestido- La Laguna.

CNIV-La Laguna. (2003). *La Laguna*. Retrieved September 16, 2003, 2003, from www.cniv-lalaguna.org.mx

COCITEVA. (2000). *Consejo de la Cadena Textil y del Vestido de Aguascalientes: Estrategia*. Aguascalientes: COCITEVA.

Collins, J. (2003). *Threads: Gender, Labor, and Power in the Global Apparel Industry*. Chicago, U.S.A.: The University of Chicago Press.

Commission of the European Communities. (1989). *Evaluation of Policy Measures for the Creation and Development of Small and Medium-Sized Enterprises. Enterprises policy document*. Luxembourg: CEC.

Conconi, P., & Perroni, C. (2004). Self-enforcing international agreements and domestic policy credibility. *Journal of Political Economy*, 85, 473-491.

Cooke, P. (1996). The new wave of regional innovation networks: analysis, characteristics and strategy. *Small Business Economics*, 8, 159-171.

Cooke, P., & Morgan, K. (1994). Growth regions under duress: Renewal strategies in Baden Wurttemberg and Emilia Romagna. In A. Amin & N. Thrift (Eds.), *Globalisation, Institutions, and Regional Development in Europe*. Oxford: Oxford University Press.

Cooke, P., Uranga, M., & Etxebarria, G. (1998). Regional systems of innovation: An evolutionary perspective. *Environment and Planning A*, 30, 1563-1584.

- Cortázar, M. (1998). Denim City: Growing Every Day. *Apparel Industry Magazine*, Sep., 108-112.
- Cossentino, F. (1996). The need for a new regulatory and institutional order. In F. Cossentino, F. Pyke & W. Sengenberger (Eds.), *Local and Regional Response to Global Pressure: The Case of Italy and its Industrial Districts*. Geneva: International Institute for Labour Studies.
- Crestanello, P. (1996). The industrial districts in Veneto: Changes and tendencies. In F. Cossentino, F. Pyke & W. Sengenberger (Eds.), *Local and Regional Response to Global Pressure: The Case of Italy and its Industrial Districts*. Geneva: International Institute for Labour Studies.
- de la Torre, A., & Kelly, M. (1992). Regional trade agreements. *IMF Occasional Paper*, 93(March).
- De León-Arias, A. (2000). Patrones de crecimiento regional y su impacto en la productividad mexicana. *El Mercado de Valores*, LX(10), 35-43.
- Dei Ottati, G. (1996). The remarkable resilience of the industrial districts of Tuscany. In F. Cossentino, F. Pyke & W. Sengenberger (Eds.), *Local and Regional Response to Global Pressure: The Case of Italy and its Industrial Districts*. Geneva: International Institute for Labour Studies.
- Díaz-Cayeros, A. (1995). *Desarrollo Económico e Inequidad Regional: Hacia un Nuevo Pacto Federal en México*. Mexico City: Miguel Ángel Porrúa. Fundación Friedrich Naumann. Centro de Investigación para el Desarrollo A.C.
- DiGiovanna, S. (1996). Industrial districts and regional economic development: a regulation approach. *Regional Studies*, 30(4), 373-386.
- Dornbusch, R. (1991). Strategies and priorities for reform. In P. Marer & S. Zecchini (Eds.), *The Transition to a Market Economy*. Paris: OECD.
- Dornbusch, R., & Edwards, S. (1991). *The Macroeconomic of Populism in Latin America*. Chicago: University of Chicago Press.
- Dosi, G. (1988a). Sources, procedures, and microeconomic effects on innovation. *Journal of Economic Literature*, XXVI, 1120-1171.
- Dosi, G. (1988b). The nature of the innovative process. In G. Dosi, F. C., R. Nelson, G. Silverberg & L. Soete (Eds.), *Technical Change and Economic Theory*. London: Pinter.
- Dosi, G., Freeman, C., Nelson, R., Silverberg, G., & Soete, L. (1988). Introduction. In G. Dosi, C. Freeman, R. Nelson, G. Silverberg & L. Soete (Eds.), *Technical Change and Economic Theory*. London: Pinter.
- Duch-Gary, N. (1998). *Competitividad y Mercados Laborales en Aguascalientes: Cuatro Ensayos sobre los Dilemas de la Modernización Económica*. Aguascalientes: Centro de Investigaciones y Estudios Multidisciplinarios de Aguascalientes (CIEMA).
- Dussel-Peters, E. (2000). *Polarizing Mexico: The Impact of Liberalization Strategy*. London: Lynne Rienner.
- Dussel-Peters, E. (2001). Condiciones y retos de las pequeñas y medianas empresas en México: Estudios de casos de vinculación de empresas exitosas y propuestas de política. In E. Dussel-Peters (Ed.), *Claroscuros: Integración Exitosa de las Pequeñas y Medianas Empresas en México*. Mexico City: CEPAL-CANACINTRA-JUS.

Dussel-Peters, E., Piore, M., & Ruiz-Durán, C. (1997). El proceso de ajuste y el potencial de autoaprendizaje en la industria de la confección mexicana. In E. Dussel-Peters, M. Piore & C. Ruiz-Durán (Eds.), *Pensar Globalmente y Actuar Regionalmente: Hacia un Nuevo Paradigma Industrial para el Siglo XXI*. Mexico City: UNAM-Fundación Friedrich Ebert-JUS.

Economist Intelligence Unit. (2004). *Country Outlook: Brazil*. EIU.

Emerging Textiles.COM. (2002). *Mexico's Textile Imports Continue Rising*. Retrived 12/09/2003, 2003, from <http://www.emergingtextiles.com/print/?q=art&s=020814-mark&r=free>

Ergas, H. (1984). *Why Do Some Countries Innovate More than Others?* CEPS Paper no. 5 Brussels: Centre for European Policy Studies.

Espinosa, E. (2000). Quinto aniversario del tlcan: sus efectos sobre la cadena textil mexicana. In B. Leycegui & R. Fernández (Eds.), *TLCAN ¿Socios Naturales?: Cinco Años del Tratado de Libre Comercio de America del Norte*. Mexico City: ITAM-Porrúa.

European Commission. (2001). The textile and clothing industry in the EU: A survey. *Enterprise Papers*, 2, 59.

Eurostat. (1996). *Enterprises in Europe. Fourth Report*. Luxembourg: European Commission.

Expansión. (2000). *Las 500 Empresas más Importantes de México: Edición Especial*. Mexico City: Expansión.

Feenstra, R. C. (1998). Integration of trade and desintegration of production in the global economy. *Journal of Economic Perspectives*, 12(4), 31-50.

Feenstra, R. C., Dorsati Madani, T., Yang, T.-H., & Liang, C.-Y. (1997). Testing endogenous growth in South Korea and Taiwan. *NBER Working Paper No. 6028*.

Florida, R. (1995). Towards the learning region. *Futures*, 27(5), 527-536.

Florida, R., & Kenney, M. (1990). Silicon Valley and Route 128 won't save us. *California Management Review*, 33, 68-88.

FOMEC. (2001). *Fomento Económico de La Laguna*. Retrieved 28/03/2001, 2001, from <http://www.fomec.org.mx>

Freeman, C. (1989). R&D, technical change and investment in the UK. In F. Green (Ed.), *The Restructuring of the UK Economy*. London: Harvester Wheatsheaf.

García-Batiz, M., & Rodríguez-Bautista, J. (1995). Dinámica metropolitana de Guadalajara y localización industrial. In J. L. Calva & A. G. Aguilar (Eds.), *Desarrollo Regional y Urbano: Tendencias y Alternativas*. Mexico City: University of Guadalajara-UNAM-Juan Pablos Editor.

Garofoli, G. (1984). Uneven regional development and industrial restructuring: The Italian pattern in the 1970s. *City and Region*, 9, 47-80.

Garofoli, G. (1991). Local networks, innovation and policy in Italian industrial districts. In E. Bergman, G. Maier & F. Tdtling (Eds.), *Regions Reconsidered: Economic Networks, Innovation, and Local Development in Industrialized Countries*. London: Mansell.

Garofoli, G. (1992a). Diffuse industrialisation and small firms: The Italian pattern in the 1970s. In G. Garofoli (Ed.), *Endogenous Development and Southern Europe*. London: Avebury.

- Garofoli, G. (1992b). Industrial districts: Structure and transformation. In G. Garofoli (Ed.), *Endogenous Development and Southern Europe*. London: Avebury.
- Garza, G. (1985). *El proceso de Industrialización en la Ciudad de México*. Mexico City: El Colegio de México.
- Garza, G. (1992). *Desconcentración, Tecnología y Localización Industrial en México: Los Parques y Ciudades Industriales, 1953-1988*. Mexico City: El Colegio de México.
- George, E. Y. (1990). What does the future hold for the maquiladora industry? In K. Fatemi (Ed.), *The Maquiladora Industry: Economic Solution or Problem?* New York: Praeger.
- Gereffi, G. (1994). The organization of buyer-driven global commodity chains: How U.S. retailers shape overseas production networks. In G. Gereffi & M. Korzeniewicz (Eds.), *Commodity Chains and Global Capitalism*. Westport, USA: Praeger.
- Gereffi, G. (1995). Global production systems and third world development. In B. Stallings (Ed.), *Global Change, Regional Response: The New International Context of Development*. New York: Cambridge University Press.
- Gereffi, G. (1999a). International trade and industrial upgrading in the apparel commodity chain. *Journal of International Economics*, 48, 37-70.
- Gereffi, G. (1999b). *A commodity Chains Framework for Analyzing Global Industries*. Paper presented at the Belagion Meeting, Brighton.
- Gereffi, G. (2000). *The Transformation of the North American Apparel Industry: Is NAFTA a Curse or a Blessing?* Santiago, Chile: Naciones Unidas, CEPAL/ECLAC.
- Gereffi, G. (2001). Global Sourcing in the US Apparel Industry. *Journal of Textile and Apparel, Technology and Management*, 2(1), 1-5.
- Gereffi, G., Korzeniewicz, M., & Korzeniewicz, R. P. (1994). Introduction: Global commodity chains. In G. Gereffi & M. Korzeniewicz (Eds.), *Commodity Chains and Global Capitalism*. Westport, USA: Praeger.
- Gereffi, G., & Martínez, M. (2000). *Torreón Blue Jeans Boom: Exploring La Laguna's Full Package Solution*. Retrieved 24/11/2000, 2000.
<http://www.bobbin.com/BOBBINGROUP/BOBBINMAG/apr00/denim.html>
- Gereffi, G., Martínez, M., & Bair, J. (2002). Torreón: The new blue jeans capital of the world. In G. Gereffi, S. David & J. Bair (Eds.), *Free Trade and Uneven Development*. Philadelphia: Temple University Press.
- Ghani, J. (1996). Sialkot's entrepreneurial spirit. *CMER Working Paper Series*, 96-10 (September), 1-19.
- Giuliani, E. (2005). Cluster absorptive capacity. *European Urban and Regional Studies*, 12(3), 269-288.
- Giuliani, E., Pietrobelli, C., & Rabellotti, R. (2005). Upgrading in global value chains: Lessons from Latin American clusters. *World Development*, 33(4), 549-573.
- Glaeser, E., Kallal, H., Scheinkman, J., & Shleifer, A. (1992). Growth in cities. *Journal of Political Economy*, 100(6), 1126-1152.

Gobierno Municipal de Gómez Palacio. (1998). *Plan Municipal de Desarrollo 1998-2001*. Gómez Palacio, Durango: Presidencia Municipal de Gómez Palacio.

Gobierno Municipal de Lerdo. (1996). *Conceptos Básicos para el Desarrollo en el Municipio de Cd. Lerdo*. Lerdo, Durango: Presidencia Municipal de Lerdo.

Gobierno Municipal de Lerdo. (1998). *Incentivos, Construcciones y Espacios Disponibles en la Zona Rural*. Lerdo, Durango: Presidencia Municipal de Lerdo.

Gobierno Municipal de Torreón. (1997). *Plan Municipal de Desarrollo 1997-1999*. Torreón, Coahuila: Ayuntamiento de Torreón.

González-Rodríguez, S. (1997). Ventajas Competitivas y política regional de las ciudades medias del occidente del país ante la apertura. In J. Arroyo-Alejandre & A. De León-Arias (Eds) *La Internacionalización de la Economía Jalisciense*. Mexico City: Universidad de Guadalajara-Juan Pablos Editor.

González-Rodríguez, S. (2001). *Mano de Obra como Recurso Sustentable y Factor de Competitividad: El Caso de la Industria del Vestido en Cuatro localidades de Jalisco*. Guadajara: Fundación William and Flora Hewlett.

Gobierno de Coahuila - Poder Ejecutivo. (1999). *El Desarrollo de Coahuila y sus Expectativas 1994-1998*. Working Paper January 21.

González-Aréchiga, B., & Barajas-Escamilla, R. (1989). *Las Maquiladoras: Ajuste Estructural y Desarrollo Regional*. Tijuana, B.C., México: El Colegio de la Frontera Norte: Fundación Friedrich Ebert.

Granoveter, M. (1985). Economic action and social structure: the problem of embeddedness. *American Journal of Sociology*, 91(3), 481-510.

Gray, M., Golob, E., & Markusen, A. (1999). Seattle: A classic hub-and-spoke region. In A. Markusen, Y.-S. Lee & S. DiGiovanna (Eds.), *Second Tier Cities: Rapid Growth Beyond the Metropolis*. Minneapolis: University of Minnesota Press.

Gray, T., & Matt, G. (1994). *Building an Institutional and Policy Framework to Support Small and Medium Enterprises: Learning form other Cultures*. Washington: United States Agency for International Development.

Graziani, G. (1998). Globalization of production in the textile and clothing industries: The case of Italian foreign direct investment and outward processin in Eastern Europe. *The Berkeley Round Table on the International Economy. Working Paper 128*, [http://brie.berkeley.edu/publications/WP128.pdf\(128\)](http://brie.berkeley.edu/publications/WP128.pdf(128)).

Gregersen, B., & Johnson, B. (1997). Learning economies, innovation systems and European integration. *Regional Studies*, 31(5), 479-490.

Griliches, Z. (1990). Patent statistics as economic indicators. *Journal of Economic Literature.*, 28, 1661-1707.

Grossman, G., & Helpman, E. (1991). *Innovation and Growth in the Global Economy*. Cambridge, MA: MIT Press.

Gurría, J. 1992. La política de deuda externa de México, 1982-1990. In C. Bazdresch, N. Bucay, S. Loaeza & N. Lustig (Eds.), *México: Auge, Crisis y Ajuste* (Vol. Lecturas de El Trimestre Económico, N° 73**). Mexico City: Fondo de Cultura Económica.

- Halder, G. (2004). Local upgrading strategies in response to global challenges: the surgical instrument cluster of Tuttlingen. In H. Schmitz (Ed.), *Local Enterprises in the Global Economy: Issues of Governance and Upgrading*. Cheltenham: Edward Elgar.
- Hanson, G. H. (1994a). *Regional Adjustment to Trade Liberalization*. NBER Working Paper no 4713. Cambridge, MA: National Bureau of Economic Research.
- Hanson, G. H. (1994b). *Localization Economies, Vertical Organization, and Trade*. NBER Working Paper no 4744. Cambridge, MA.: National Bureau of Economic Research.
- Harrison, B. (1992). Industrial districts: Old wine in new bottles? *Regional Studies*, 26(5), 469-483.
- Healey, M., & Rawlinson, M. (1993). Interviewing Business Owners and Managers: A Review of Methods and Techniques. *Geoforum*, 24(3), 339-355.
- Hernández-Laos, E. (1985). *La Productividad y el Desarrollo Industrial en México*. Mexico City: Fondo de Cultura Económica.
- Hill, C. (2004). *Global Business Today* (3rd Edition ed.). New York: McGraw-Hill.
- Hoffman, K., & Rush, H. (1988). *Micro-electronics and Clothing: The Impact of Technical Change on a Global Industry*. London: Praeger.
- Humphrey, J. (1995). Introduction. Industrial organization and manufacturing competitiveness in developing countries. *Special issue of World Development*, 23(1).
- Humphrey, J. (1995). Industrial reorganization in developing countries: From models to trajectories. *World Development*, 23(1), 149-162.
- Humphrey, J., & Schmitz, H. (1995). *Principle for Promoting Clusters & Networks of SMEs*. Vienna: UNIDO Small and Medium Enterprises Programme.
- Humphrey, J., & Schmitz, H. (1996). The triple C approach to local industrial policy. *World Development*, 24(12), 1859-1877.
- Humphrey, J., & Schmitz, H. (2000). Governance and upgrading: Linking industrial cluster and global value chain research. *IDS Working Paper No 120*.
- Humphrey, J., & Schmitz, H. (2002). *Developing Country Firms in the World Economy: Governance and Upgrading in Global Value Chains*. INEF Report (No. 61). Duisburg: University of Duisburg.
- Humphrey, J., & Schmitz, H. (2004). Chain governance and upgrading: Taking stock. In H. Schmitz (Ed.), *Local Enterprises in the Global Economy: Issues of Governance and Upgrading*. Cheltenham: Edward Elgar.
- ILO. (1992). *Industry on the Move: Causes and Consequences of International Relocation in the Manufacturing Industry*. Geneva: International Labour Office.
- INEGI. (1999). *Parques, Ciudades y Corredores Industriales*. Aguascalientes: Instituto Nacional de Estadísticas Geografía e Informática.
- INEGI. (2001). *Banco de Información Económica*. Aguascalientes: Instituto Nacional de Estadísticas Geografía e Informática.

INEGI. (2001). *Coahuila de Zaragoza. Censos Económicos 1999*. Aguascalientes: Instituto Nacional de Estadísticas Geografía e Informática.

INEGI. (2001a). *El ABC de las Estadísticas de la Industria Maquiladora de Exportación*. Aguascalientes, Mexico.: Instituto Nacional de Estadísticas, Geografía e Informática.

INEGI. (2001b). *Durango. Censos Económicos 1999*. Aguascalientes: Instituto Nacional de Estadísticas Geografía e Inform Informática.

INEGI. (2001b). *La Industria Maquiladora de Exportación 1990-1998: por Region Geográfica y Entidad Federativa*. Aguascalientes: INEGI.

INEGI. (2001c). *Aguascalientes. Censos Económicos 1999*. Aguascalientes: Instituto Nacional de Estadísticas Geografía e Informática.

INEGI. (2001d). *Jalisco. Censos Económicos 1999*. Aguascalientes: Instituto Nacional de Estadísticas Geografía e Informática.

INEGI. (2001e). *Censo General de Población*. Aguascalientes: Instituto Nacional de Estadística, Geografía e Informática (INEGI).

INEGI. (Many years). *Anuario Estadístico del Comercio Exterior*. Aguascalientes: Instituto Nacional de Estadística, Geografía e Informática.

INEGI. (Many years). *Censo Económico*: Instituto Nacional de Estadísticas Geografía e Informática.

INEGI. (Many years). *Censo Industrial*: Instituto Nacional de Estadísticas Geografía e Informática.

INEGI. (Many years). *Sistema de Cuentas Nacionales de México*. Aguascalientes: Instituto Nacional de Estadística, Geografía e Informática.

INEGI. (various years). *Estadísticas de la Industria Maquiladora de Exportación*. Aguascalientes, Mexico.: Instituto Nacional de Estadísticas, Geografía e Informática.

INEGI. (various years). *Sistema de Cuentas Nacionales de México: La Producción, Salarios, Empleo y Productividad de la Industria Maquiladora de Exportacion por Región Geográfica y Entidad Federativa*. Aguascalientes: Instituto Nacional de Estadística, Geografía e Informática.

Isard, W. (1956). *Location and Space Economy*. New York: John Wiley.

Isard, W. (1998). Location analysis for industry and service trades: comparative approaches. In W. Isard, I. Azis, M. Drennan, R. Miller, S. Saltzman & R. Thorbecke (Eds.), *Methods of Interregional and Regional Analysis*. Aldershot, Great Britain: Ashgate.

Izquierdo, R. (1973). El proteccionismo en México. In L. Solís (Ed.), *La Economía Mexicana: I. Análisis por Sectores y Distribución*. Mexico City: Fondo de Cultura Económica.

Jin, D. J., & Stough, R. (1988). Learning and learning capability in the Fordist and post-Fordist age: An integrative framework. *Environment and Planning A*, 30, 1255-1278.

Julien, P.-A. (1992). The role of local institutions in the development of industrial districts: The Canadian experience. In F. Pyke & W. Sengenberger (Eds.), *Industrial Districts and Local Economic Regeneration: Research and Policy Issues*. Geneva: International Institute for Labour Studies.

- Kaplinsky, R. (2000). Spreading the gains from globalization: What can be learned from value chain analysis? *IDS Working Paper No 110*.
- Katz, J. (1987). *Technology Generation in Latin American Manufacturing Industries: Theory and Case-Studies Concerning its Nature, Magnitude and Consequences*. Basingstoke: Macmillan.
- Katz, J. M. (2001). Structural reforms and technological behaviour: the sources and nature of technological change in Latin America in the 1990s. *Research Policy*, 30, 1-19.
- Kay, N. (1988). The R&D function: Corporate strategy and structure. In G. Dosi, C. Freeman, R. Nelson, G. Silverberg & L. Soete (Eds.), *Technical Change and Economic Theory*. London: Pinter.
- Kessler, J. (1999). The North American Free Trade Agreement, emerging apparel production networks and industrial upgrading: The southern California/Mexico connection. *Review of International Political Economy*, 6(4), 565-608.
- Kirkpatrick, C. (1987). Trade policy and industrialization in LDCs. In N. Gemmel (Ed.), *Surveys in Development Economics*. Oxford: Blackwell.
- Knorrnga, P. (1999). Agra: An old cluster facing the new competition. *World Development*, 27(9), 1587-1604.
- Krueger, A. (1997). Trade Policy and Economic Development: How we Learn. *American Economic Review*, 87, 1-22.
- Krugman, P. (1991). *Geography and Trade*. Cambridge: Massachusetts Institute of Technology Press.
- Krugman, P. (1995). *Development, Geography, and Economic Theory*. London: The MIT Press.
- Krugman, P., & Venables, A. (1993). Integration, specialization and adjustment. *CEPR Discussion Papers* no 886. London: Centre for Economic Policy Research.
- Kurt Salmon Associates. (2002). *Análisis Estratégico de la Cadena de Suministro Fibras-Textil-Vestido: Documento Final*. Mexico City: Cámara Nacional de la Industria Textil; Cámara Nacional de la Industria del Vestido; Asociación Nacional de la Industria Química.
- Laird, S., Lucian, C., & Turrini, A. (2002). *Back to Basics: Market Access Issues in the Doha Agenda*. New York: UNCTAD.
- Lazerson, M. (1990). Subcontracting in the Modena knitwear industry. In F. Pyke, G. Becattini & W. Sengenberger (Eds.), *Industrial Districts and Inter-Firm Co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Little, I., Mazumdar, D., & Page, J. (1987). *Small Manufacturing Enterprises: A Comparative Analysis of India and Other Economies*. Washington: World Bank-Oxford University Press.
- Livas, R., & Krugman, P. (1992). *Trade Policy and the Third World Metropolis*. NBER Working Papers Series no. 4238. Cambridge, MA.: National Bureau of Economic Research.
- Lundvall, B.-A. (1988). Innovation as an interactive process: From user-producer interaction to the national system of innovation. In G. Dosi, C. Freeman, R. Nelson, G. Silverberg & L. Soete (Eds.), *Technical Change and Economic Theory*. London: Pinter.
- Lundvall, B.-A. (1993). Explaining interfirm cooperation and innovation. In G. Grabher (Ed.), *The Embedded Firm: On the Socioeconomics of Industrial Networks*. London; New York: Routledge.

- Lundvall, B.-A., & Johnson, B. (1994). The learning economy. *Journal of Industry Studies*, 1(2), 23-42.
- Lustig, N., & Ros, J. (1987). *Stabilization and Adjustment Policies and Programmes: Mexico*. Helsinki: World Institute for Development Economics Research-United Nations University.
- Malmberg, A. (1996). Industrial geography: agglomeration and local milieu. *Progress in Human Geography*, 20(3), 392-403.
- Malmberg, A., & Maskell, P. (1997). Towards an explanation of regional specialisation and industry agglomeration. *European Planning Studies*, 5, 25-41.
- Mansfield, E. (1984). Comment on using linked patent and R&D data to measure interindustry technology flows. In Z. Griliches (Ed.), *R&D, Patents and Productivity*. Chicago: University of Chicago Press.
- Mansfield, E., Schwartz, M., & Wagner, S. (1981). Imitation costs and patents: An empirical study. *The Economic Journal*, 91(364), 907-918.
- Markusen, A. (1994). Studying regions by studying firms. *The Professional Geographer*, 46(4), 477-490.
- Markusen, A. (1996). Sticky places in slippery space: A typology of industrial districts. *Economic Geography*, 72(3), 293-313.
- Markusen, A. (1999a). Four structures for second tier cities. In A. Markusen, Y.-S. Lee & S. DiGiovanna (Eds.), *Second Tier Cities: Rapid Growth beyond the Metropolis*. Minneapolis: University of Minnesota Press.
- Markusen, A. (1999b). Fuzzy concepts, scanty evidence, policy distance: The case for rigour and policy relevance in critical regional studies. *Regional Studies*, 33(9), 869-884.
- Markusen, A., & DiGiovanna, S. (1999). Comprehending fast-growing regions. In A. Markusen, Y.-S. Lee & S. DiGiovanna (Eds.), *Second Tier Cities: Rapid Growth beyond the Metropolis*. Minneapolis: University of Minnesota Press.
- Markusen, J. (1998). Multinational firms, location and trade. *The World Economy*, 21, 733-756.
- Marshall, A. (1920). *Principles of Economics* (Eighth ed.). London: Macmillan.
- Martin, R., & Sunley, P. (2001). Rethinking the "economic" in economic geography: Broadening our vision or losing our focus? *Antipode*, 149-161.
- Martin, R., & Sunley, P. (2003). Deconstructing clusters: Chaotic concept or policy panacea? *Journal of Economic Geography*, 3, 5-35.
- Martínez-Aznárez, C. (1997, Abril 9). Cadena deshilvanada. *Expansión*, April, 59-69.
- Martínez-Omaña, M. C. (1994). *Aguascalientes, un Ensayo de Descentralización, 1982-1988*. Aguascalientes: Instituto Cultural de Aguascalientes Departamento Editorial; Instituto Mora.
- Martínez-Reyes, O., & Moreno-Ruiz, J. (1997). La Industria maquiladora de exportación en Aguascalientes 1991-1997. *Cuadernos de Trabajo. Coordinación de Asesores del Gobierno de Aguascalientes*, Mayo-Jun.
- Maskell, P., & Leila, K. (2005). What qualifies as a cluster theory?. *DRUID Working Paper* 05-09.

- McCann, P. (1995). Rethinking the economics of location and agglomeration. *Urban Studies*, 32(563-577).
- McCormick, D. (1998). *Enterprise clusters in Africa: On the way to industrialisation?* Brighton: Institute of Development Studies, University of Sussex.
- McCulloch, N., Winters, A., & Cirera, X. (2002). *Trade Liberalization and Poverty: A Handbook*. London: Centre for Economic Policy Research (CEPR) & Department for International Development (DFID).
- Medina-Ortega, M. (1997). Internacionalización de las manufacturas jaliscienses y su impacto territorial. In J. Arroyo-Alejandro & A. De León-Arias (Eds.), *La Internacionalización de la Economía Jalisciense*. Mexico City: Universidad de Guadalajara-Jaun pablos Editor.
- Mendiola, G. (1997). Las empresas maquiladoras de exportación 1980-1995. In E. Dussel-Peters, M. Piore & C. Ruiz-Durán (Eds.), *Pensar Globalmente y Actuar Regionalmente: Hacia un Nuevo Paradigma Industrial para el Siglo XXI*. Mexico City: UNAM-Fundación Friedrich Ebert-JUS.
- Mercado, A. (1980). *Technological Linkages in the Mexican Garment Industry*. Geneva: International Labour Organisation (ILO).
- Ministry of the Economy. (1998, 01/06/1998). Decreto para el fomento y operación de la industria maquiladora de exportación. *El Diario Oficial de la Federación*.
- Morgan, K. (1997). The learning region: Institutions, innovation and regional renewal. *Regional Studies*, 31(5), 491-503.
- Moulaert, F., & Sekia, F. (2003). Territorial innovation models: A critical survey. *Regional Studies*, 37(3), 289-302.
- Mújica, A. (1997). Las cámaras empresariales como sustento de la política industrial activa. In E. Dussel-Peters, M. Piore & C. Ruiz-Durán (Eds.), *Pensar Globalmente y Actuar Regionalmente: Hacia un Nuevo Paradigma Industrial para el Siglo XXI*. Mexico City: UNAM-Fundación Friedrich Ebert-JUS.
- Muñoz-Ríos, P. (1996, 10/06/1996). En la economía informal, 83% de las empresas de la confección. *La Jornada*.
- Nacional Financiera. (1973). La política industrial. In L. Solís (Ed.), *La Economía Mexicana: I. Análisis por Sectores y Distribución*. Mexico City: Fondo de Cultura Económica.
- Nacional Financiera. (1981). *La Economía Mexicana en Cifras 1981*. Mexico City: NAFINSA.
- Nadvi, K. (1999). Shifting ties: social networks in the surgical instrument cluster of Sialkot, Pakistan. *Development and Change*, 30(1), 141-175.
- Nadvi, K. (1999). Collective efficiency and collective failure: The response of the Sialkot surgical instrument cluster to global quality pressures. *World Development*, 27 (9), 1605-1626.
- Nadvi, K., & Schmitz, H. (1994). Industrial clusters in less developed countries: Review of experiences and research agenda. *IDS Discussion Paper* (339).
- Nadvi, K., & Schmitz, H. (1999). Industrial clusters in developing countries. *World Development*, 27(9).
- Najundan, S. (1987). *Small and Medium Enterprises: Some Basic Development Issues*. Vienna: UNIDO.
- OECD. (1994). *Globalisation of Industrial Activities: A Case Study of the Clothing Industry*. Paris: Organisation for Economic Co-operation and Development.

- OECD. (1996a). *Globalisation of Industry: Overview and Sector Reports*. Paris: Organisation for Economic Co-operation and Development.
- OECD. (1996b). *Trade Liberalisation Policies in Mexico*. Paris: Organisation for Economic Co-operation and Development.
- OECD. (1997). *Regional Development and Structural Policy in Mexico*. Paris: Organisation for Economic Co-operation and Development.
- OECD. (1998). *Decentralisation and Local Infrastructure in Mexico: A new policy for development*. Paris: Organisation for Economic Co-operation and Development.
- OECD. (2001). *OECD Economic Surveys: Brazil*. Paris: Organisation for Economic Co-operation and Development.
- OECD. (2002a). *Territorial Review of Mexico (Report)*. Paris: Organisation for Economic Co-operation and Development.
- OECD. (2002b). *Territorial Review of Mexico (Complement) (Report)*. Paris: Organisation for Economic Co-operation and Development.
- Olivera-Lozano, G. (1997). Transformación metropolitana en México: Efectos económico-territoriales del comercio exterior. *Comercio Exterior*, 47(4), 259-269.
- Orozco, J. C. (2002, 17/06/2002). Dominan extranjeros exportaciones. *Reforma. com*. www.reforma.com. Consulted on 17/06/2002.
- Palacios-Lara, J. (1989). *La política Regional en México 1970-1982*. Guadalajara, Mexico: Universidad de Guadalajara.
- Palacios-Lara, J. (1997). *Industrialización y Desarrollo Regional en Jalisco*. Guadalajara: Universidad de Guadalajara.
- Palacios-Lara, J. J. (1988). La inconsistencia de la política regional en México, 1970-1982: el caso de la asignación de la inversión pública federal. *Estudios Demográficos y Urbanos*, 3(1), 7-37.
- Park, S. O., & Markusen, A. (1995). Generalizing new industrial districts: A theoretical agenda and an application from a non-Western economy. *Environment and Planning A*, 27 (1), 81-104.
- Parker, R., Riopelle, R., & Steel, W. (1995). Small enterprises adjusting to liberalization in five African countries. *World Bank Discussion Paper* no. 271.
- Pavitt, K. (1984). Sectoral patterns of technical change: Towards a taxonomy and a theory. *Research Policy*, 13(6), 343-373.
- Pavitt, K. (1986). Technology, innovation, and strategic management. In J. McGee & H. Thomas (Eds.), *Strategic Management Research: A European Perspective*. New York: John Wiley & Sons.
- Peres-Nuñez, W. (1990). *Foreign Direct Investment and Industrial Development in Mexico*. Paris: OECD.
- Pérez-Gabriel, A. (1990). Mexican legislation affecting the maquiladora industry. In K. Fatemi (Ed.), *The Maquiladora Industry: Economic Solution or Problem?* New York: Praeger.

- Pietrobelli, C. (1998). The socio-economic foundations of competitiveness: An econometric analysis of Italian industrial districts. *Industry and Innovation*, 5(2), 150-153.
- Pietrobelli, C., & Olarte Barrera, T. (2002). Enterprise clusters and industrial districts in Colombia's fashion sector. *European Planning Studies*, 10(5), 541-562.
- Pietrobelli, C., & Rabellotti, R. (2004). *Upgrading in Clusters and Value Chains in Latin America: The Role of Policies*. Washington, D.C.: Inter-American Development Bank.
- Piore, M. (1990). Work, labour and action: Work experience in a system of flexible specialisation. In F. Pyke, G. Becattini & W. Sengenberger (Eds.), *Industrial Districts and Inter-Firm Co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Piore, M., & Ruiz-Durán, C. (1998). Industrial development as a learning process: Mexican manufacturing and the opening to trade. In M. Kagami, J. Humphrey & M. Piore (Eds.), *Learning, Liberalization and Economic Adjustment*. Tokyo: Institute of Developing Economies of Japan.
- Piore, M., & Sabel, C. (1984). *The Second Industrial Divide: Possibilities for Prosperity*. New York: Basic Books.
- Poder Ejecutivo Federal. (1983). *Plan Nacional de Desarrollo 1983-1988*. Mexico City: PEF, Mexican Government.
- Poder Ejecutivo Federal. (1989). *Plan Nacional de Desarrollo 1989-1994*. Mexico City: PEF, Mexican Government.
- Poder Ejecutivo-Estado de Aguascalientes. (1999). *Plan Estatal de Desarrollo de Aguascalientes 1999-2004*. Aguascalientes, Mexico: Gobierno de Aguascalientes.
- Poder Ejecutivo-Estado de Coahuila. (1994). *Plan Estatal de Desarrollo de Coahuila 1994-1999*. Coahuila, Mexico: Gobierno de Coahuila.
- Poder Ejecutivo-Estado de Durango. (1999). *Plan Estatal de Desarrollo de Durango 1999-2004*. Durango, Mexico: Gobierno de Durango.
- Poder Ejecutivo-Estado de Jalisco. (1995). *Plan Estatal de Desarrollo de Jalisco 1995-2001*. Guadalajara, Mexico: Gobierno de Jalisco.
- Porter, M. (1990). *The competitive advantage of nations*. New York: Free Press.
- Porter, M., & Ketels, C. (2003). *UK Competitiveness: Moving to the Next Stage*. London: Department of Trade and Industry.
- Pyke, F., & Sengenberger, W. (1990). Introduction. In F. Pyke, G. Becattini & W. Sengenberger (Eds.), *Industrial Districts and Inter-Firm Co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Pyke, F., & Sengenberger, W. (1992). Introduction. In F. Pyke & W. Sengenberger (Eds.), *Industrial Districts and Local Economic Regeneration: Research and Policy Issues*. Geneva: International Institute for Labour Studies.
- Pyke, F., & Sengenberger, W. (1996). Introduction. In F. Cossentino, F. Pyke & W. Sengenberger (Eds.), *Local and Regional Response to Global Pressure: The Case of Italy and its Industrial Districts*. Geneva: International Institute for Labour Studies.

- Rabellotti, R. (1995). Is there an "industrial district model"? Footwear districts in Italy and Mexico compared. *World Development*, 23(1), 29-41.
- Rabellotti, R. (1997). *External Economies and Cooperation in Industrial Districts: A comparison of Italy and Mexico*. Basingstoke: Macmillan Press.
- Rabellotti, R. (1998). Collective effects in Italian and Mexican footwear industrial clusters. *Small Business Economics*, 10, 243-262.
- Rabellotti, R. (1999). Recovery of a Mexican cluster: devaluation bonanza or collective efficiency? *World Development*, 27(9), 1571-1585.
- Rabellotti, R., & Schmitz, H. (1998). The internal heterogeneity of industrial districts in Italy, Brazil and Mexico. *Regional Studies*, 33(2), 97-108.
- Rodríguez-Pose, A. (1999). Innovation prone and innovation averse societies: Economic performance in Europe. *Growth and Change*, 30(1), 76-106.
- Rodríguez-Pose, A. (2000). Economic convergence and regional development strategies in Spain: the case of Galicia and Navarre. *European Investment Bank Papers*, 5(1), 89-115.
- Rodríguez-Pose, A. (2001). Local production systems and economic performance in Britain, France, Germany, and Italy. In C. Crouch, P. Le Galès, C. Trigilia & H. Voelzkow (Eds.), *Local Production Systems in Europe. Rise or Demise?* Oxford: Oxford University Press.
- Rodríguez-Pose, A., & Refolo, M. C. (2003). The link between local production systems and public and university research in Italy. *Environment and Planning A*, 35(8), 1477-1492.
- Rodrik, D. (1995). Trade and industrial policy reform. In J. Behrman & T. N. Srinivasan (Eds.), *Handbook of Development Economics*. Amsterdam: Elsevier.
- Rodwin, L. (1989). Deindustrialization and regional economic transformation. In L. Rodwin & H. Sazanami (Eds.), *Deindustrialization and Regional Economic Transformation: The Experience of the United States*.
- Romer, P. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5), S71-S102.
- Romo-Vázquez, A. (1995). Crecimiento industrial textil y del vestido en Aguascalientes. *Cuadernos de Trabajo. Coordinación de Asesores del Gobierno de Aguascalientes*, Nov-Dic.
- Ruiz-Durán, C. (1995). *Economía de la Pequeña Empresa*. Mexico City: Ariel.
- Ruiz-Durán, C. (1997). Lo territorial como estrategia de cambio. In E. Dussel-Peters, Piore, M. and Ruiz-Durán, C. (Ed.), *Pensar Globalmente y Actuar Regionalmente: Hacia un Nuevo Paradigma Industrial para el Siglo XXI*. Mexico City: UNAM-Friedrich Ebert-Editorial JUS.
- Ruiz-Durán, C. (1999). Territorialidad, industrialización y competitividad local en el mundo global. In C. Ruiz-Durán & E. Dussel-Peters (Eds.), *Dinámica Regional y Competitividad Industrial*. Mexico City: UNAM-Friedrich Ebert-JUS.
- Ruiz-Durán, C. (2000). Mejores prácticas para el desarrollo industrial local. *El Mercado de Valores*, LX(10), 26-34.

- Ruiz-Durán, C., Dussel-Peters, E., & Taniura, T. (1997). *Changes in Industrial Organization of the Mexican Automobile Industry by Economic Liberalization*. Tokyo: Institute of Developing Economies of Japan.
- Sabel, C. (1982). *Work and Politics: The Division of Labour in Industry*. Cambridge: Cambridge University Press.
- Sabel, C. (1988). Flexible specialisation and the re-emergence of regional economies. In P. Hirst & J. Zeitlin (Eds.), *Reversing Industrial Decline: Industrial Structure and Policy in Britain and her Competitors*. Oxford: Berg.
- Salado-Hernández, J. (1996). El aprendizaje tecnológico en la industria textil y de la confección hidroclática. *Cuadernos de Trabajo. Coordinación de Asesores del Gobierno de Aguascalientes*, Marzo-Abril.
- Sánchez-Ugarte, F., Fernández-Pérez, M., & Pérez-Mota, E. (1994). *La Política Industrial ante la Apertura*. Mexico City: Fondo de Cultura Económica-NAFIN-SECOFI.
- Saxenian, A. (1994). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, Mass: Harvard University Press.
- Scherer, F. (1983). The propensity to patent. *International Journal of Industrial Organisation*, 1, 107-128.
- Scherer, F. (1991). Changing perspectives on the firm size problem. In Z. a. A. D. Acs (Ed.), *Innovation and Technological Change: An International Comparison*. Ann Arbor: University of Michigan Press.
- Schiff, M., & Winters, A. (2003). *Regional Integration and Development*. Washington, DC: World Bank and Oxford University Press.
- Schmitz, H. (1995a). Collective efficiency: Growth path for small-scale industry. *Journal of Development Studies*, 31(4), 529-566.
- Schmitz, H. (1995b). Small shoemakers and fordist giants: Tale of a supercluster. *World Development*, 23(1), 9-28.
- Schmitz, H. (1997). *Collective efficiency and increasing returns*. Brighton: University of Sussex.
- Schmitz, H. (1999). Global competition and local cooperation: Success and failure in the Sinos Valley, Brazil. *World Development*, 27(9), 1627-1650.
- Schmitz, H. (2000). Does local co-operation matter? Evidence from industrial clusters in South Asia and Latin America. *Oxford Development Studies*, 28(3), 323-336.
- Schmitz, H. (2004). Globalised localities: Introduction. In H. Schmitz (Ed.), *Local Enterprises in the Global Economy : Issues of Governance and Upgrading*. Cheltenham: Edward Elgar.
- Schoenberger, E. (1991). The corporate interview as a research method in economic geography. *The Professional Geographer*, 43(2), 180-189.
- Schumpeter, J. (1943). *Capitalism, Socialism, and Democracy*. London: G. Allen & Unwin Ltd.
- Schumpeter, J. (1954). *History of Economic Analysis*. New York: Oxford University Press.
- Scitovsky, T. (1954). Two concepts of external economies. *Journal of Political Economy*, 62, 143-151.

Scott, A. J. (1986). High technology industry and territorial development: The rise of the Orange County complex, 1955-1984. *Urban Geography*, 7, 3-45.

Scott, A. J. (1988). *New industrial spaces: Flexible production organization and regional development in North America and Western Europe*. London: Pion.

Scott, A. J., & Storper, M. (1992). Regional development reconsidered. In H. Ernste & M. V. (Eds.), *Regional Development and Contemporary Industrial Response: Extending Flexible Specialisation*. London; New York: Belhaven Press.

SECOFI. (1989, 22/12/1989). Decreto para el fomento y operación de la industria maquiladora de exportación. *El Diario Oficial de la Federación*.

SECOFI. (1990). *Programa Nacional de Modernización Industrial y del Comercio Exterior*. Mexico City: Secretaría de Comercio y Fomento Industrial.

SECOFI. (1992). *Monografía del Tratado de Libre Comercio de Norteamérica*. Mexico City: Secretaría de Comercio y Fomento Industrial.

SECOFI. (1993, 24/12/1993). Decreto que modifica al diverso para el fomento y operación de la industria maquiladora de exportación. *El Diario Oficial de la Federación*.

SECOFI. (1997). *Agrupamiento Industrial Textil-Confección en México*. Retrieved 15/12, 1999, from www.secofi.gob.mx

SECOFI. (1998a, 13/11/1998). Decreto para el fomento y operación de la industria maquiladora de exportación. *El Diario Oficial de la Federación*.

SECOFI (Ed.). (1998b). *Plan Estratégico y de Acción para la Promoción del Agrupamiento Industrial Textil-Confección: Estado de Jalisco*. Mexico City: Secretaría de Comercio y Fomento Industrial.

SECOFI. (1998c). *Plan Estratégico y de Acción para la Promoción del Agrupamiento Industrial Textil-Confección: Estado de Durango*. Mexico City: Secretaría de Comercio y Fomento Industrial.

SECOFI. (1999). *Plan Estratégico y de Acción para la Promoción del Agrupamiento Industrial Textil-Confección: Estado de Aguascalientes*. Mexico City: Secretaría de Comercio y Fomento Industrial.

SECOFI. (2000a). *Sistema de Información Empresarial Mexicano. Data Base*. Mexico City.

SECOFI. (2000b). *Desempeño de la Industria del Vestido 1995-1999*. Mexico City: Subsecretaría de Promoción de la Industria y el Comercio Exterior-Dirección General de Promoción Industrial. SECOFI.

SECOFI. (2000c). *Principales Exportadores de la Confección en México* (Unpublished data). Mexico City: Secretaría de Comercio y Fomento Industrial (Dirección General de Exportaciones).

Secretaría de Economía. (2003). *Programa para la Competitividad de la Cadena Fibras Textil-Vestido*. Retrieved 06/06/2003, 2003, from <http://www.economia.gob.mx/?P=1326>

Secretaría de Programación y Presupuesto. (1985). Plan nacional de desarrollo industrial 1979-1982. In SPP (Ed.), *Antología de la Planeación en México 1917-1985: Programas de Desarrollo Sectorial* (Vol. 7). Mexico City: SPP-Fondo de Cultura Económica.

SEDEC -Secretaría de Desarrollo Económico. (2000). *Política Industrial: Aguascalientes Visión 2020*. Aguascalientes: Aguascalientes Government.

- SEIJAL. (2000). SEIJAL crea prontuario estadístico de Jalisco. *SEIJAL INFORMA- Sistema Estatal de Infomación Jalisco*, 5, 6-15.
- Sen, A. (2003). The local and the global. Paper presented at the *Turin Workshop: Globalization and Local Development*, Turin, Italy.
- SEPROE, Secretaría de Promoción Económica. (2000). *Jalisco: Logros y Retos de la Política Económica*. Guadalajara: Jalisco State Government.
- Sforzi, F. (1990). The quantitative importance of Marshallian industrial districts in the Italian economy. In F. Pyke, G. Becattini & W. Sengenberger (Eds.), *Industrial Districts and Inter-Firm Co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Singa-Boyenge, J.-P. (2003). *ILO Database on Export Processing Zones*. Geneva: International Labour Organization.
- Singh, A., Belaisch, A., Collyns, C., De Masi, P., Krieger, R., Meredith, G., et al. (2005). Stabilization and reform in Latin America: A macroeconomic perspective on the experience since the Early 1990s. *IMF Occasional Paper*, 238, 1-114.
- Sklair, L. (1993). *Assembling for Development: The Maquila Industry in Mexico and the United States*. San Diego: Center for U.S.-Mexican Studies, UCSD.
- Smith, A. (2003). Power relations, industrial clusters, and regional transformations: Pan-European integration and outward processing in the Slovak clothing industry. *Economic Geography*, 79(1), 17-40.
- Smith, A. (2004). Regions, spaces of economic practice and diverse economies in the 'new Europe'. *European Urban and Regional Studies*, 11(1), 9-25.
- Smith, A., Pickles, J., Begg, R., Roukova, P., & Bucek, M. (2005). Outward processing, EU enlargement and regional relocation in the European textiles and clothing industry: Reflections on the European Commission's communication on 'The Future of the Textiles and Clothing Sector in the Enlarged European Union'. *European Urban and Regional Studies*, 12(1), 83-91.
- Smith, A., Rainnie, A., & Dunford, M. (2001). Regional trajectories and uneven development in the 'new Europe': Rethinking territorial success and inequality. In H. Wallace (Ed.), *Interlocking Dimensions of European Integration (One Europe or Several?)*. Basingston, U.K.: Palgrave.
- Solís, L. (1973). *La Economía Mexicana: I. Análisis por Sectores y Distribución* (Vol. 4*). Mexico City: Fondo de Cultura Económica.
- Spener, D., Gereffi, G., & Bair, J. (2002). Introduction: The apparel industry and North American Economic Integration. In G. Gereffi, Spener, David and, Bair, Jennifer. (Ed.), *Free Trade and Uneven Development: The North American Apparel Industry after NAFTA*. Philadelphia: Temple University Press.
- Stead, R., Curwen, P., & Lawler, K. (1996). *Industrial Economics: Theory, Applications and Policy*. Berkshire: McGraw-Hill.
- Steward, F., & Ghani, E. (1991). How significant are externalities for development? *World Development*, 19, 569-594.
- Stiglitz, J. E. (1987). Learning to learn: Localized learning and technological progress. In P. Dasgupta & P. Stoneman (Eds.), *Economic Policy and Technological Performance*. Cambridge: Cambridge University Press.

- Storper, M. (1989). The transition to flexible specialization in the US film industry: External economies, the division of labor, and the crossing of industrial divides. *Cambridge Journal of Economics*, 13, 273-305.
- Storper, M. (1995). The resurgence of regional economies, ten years later. *European Urban and Regional Planning Studies*, 2(3), 191-221.
- Storper, M. (1997). *The Regional World: Territorial Development in a Global World*. New York: Guilford Press.
- Storper, M., & Harrison, B. (1991). Flexibility, hierarchy and regional development: The changing structures of production systems and their forms of governance in the 1990s. *Research Policy*, 21, 407-422.
- Storper, M., Lavinas, L., & Mercado-Célis, A. (2004). Society, community and development. Working Paper. Retrieved 15/03/2004, 2004, from <http://www.spsr.ucla.edu/up/webfiles/storperpaper4.pdf>. To be published (in 2006) In K. Polenske (Ed.), *Geographies of Innovation*. Cambridge: Cambridge University Press.
- Storper, M., & Scott, A. J. (1989). The geographical foundations and social regulations of flexible production complexes. In J. Wolch & M. Dear (Eds.), *The Power of Geography: How Territory Shapes Social Life*. Boston: Unwin Hyman.
- Storper, M., & Scott, A. J. (1995). The wealth of regions: Market forces and policy imperatives in local and global context. *Futures*, 2(5), 505-526.
- Suárez-Aguilar, E., & Rivera-Ríos, M. A. (1994). *Pequeña Empresa y Modernización: Análisis de Dos Dimensiones*. Cuernavaca: Centro de Regional de Investigaciones Multidisciplinarias (CRIM)-UNAM.
- Tamayo-Flores, R. (1997). The determinants of industrial growth across Mexican regions: A review of the empirical evidence of public policies. *Centro de Investigación y Docencia Económicas (CIDE). Documento de Trabajo*, 1-39.
- Taylor, L. (2001). Outcomes of external liberalization and policy implications. In L. Taylor (Ed.), *External Liberalization, Economic Performance, and Social Policy*. New York: Oxford University Press.
- TCSG. (2000). *A National Strategy for the UK Textile & Clothing Industry*. London: Textile and Clothing Strategy Group (TCSG) - U.K. Department of Trade and Industry.
- Teece, D. (1988). Technological change and the nature of the firm. In G. Dosi, C. Freeman, R. Nelson, G. Silverberg & L. Soete (Eds.), *Technical Change and Economic Theory*. London: Pinter.
- Tendler, J. (2002). Small firms, the informal sector, and the devil's deal. *Institute of Development Studies (IDS) Bulletin* (), 33(3), 1-14.
- Tewari, M. (1999). Successful adjustment in Indian industry: The case of the Ludhiana's knitwear cluster. *World Development*, 27(9), 1551-1671.
- The Economist. (2003, August 9th). Clothing: Rag-trade deals. *The Economist*, 52-53.
- Thurrow, L. (1989). Regional transformation and the service activities. In L. Rodwin & H. Sazanami (Eds.), *Deindustrialization and Regional Economic Transformation: The experience of the United States*. London: Unwin Hyman.
- Todaro, M. (1997). *Economic Development* (6th edition ed.). New York: Longman.

- Trajtenberg, M. (1990). *Economic Analysis of Product Innovation*. Cambridge MA: Harvard University Press.
- Trejo-Reyes, S. (1988). *Empleo Para Todos: El Reto y los Caminos*. Mexico City: Fondo de Cultura Económica.
- Trigilia, C. (1989). Small-firm development and political subcultures in Italy. In E. Goodman & J. Bamford (Eds.), *Small Firms and Industrial Districts in Italy*. London: Routledge.
- U.S. Department of Labor. (1996). *The Garment Industry and Codes of Conduct: A Solution to the International Child Labor Problem?* Washington: U.S. Bureau of International Affairs.
- UNCTAD. (1998). *Promoting and Sustaining SME Clusters and Networks for Development*. Geneva: United Nations Conference on Trade and Development.
- UNCTAD. (2001). *World Investment Report 2001: Promoting Linkages*. Geneva: United Nations Conference on Trade and Development.
- UNIDO. (1996). *The Globalization of Industry: Implications for Developing Countries Beyond 2000*. Vienna: United Nations Industrial Development Organization.
- UNIDO. (2001). *Development of Clusters and Networks of SMEs*. Vienna: United Nations Industrial Development Organization.
- UNIDO. (2002). *Industrial development report 2002/2003: Competing through innovation and learning*. Vienna: United Nations Industrial Development Organization.
- USITC. (2001). *USITC Trade Database*. Retrieved 03/07, 2001, from <http://dataweb/usitc.gov> .
- USITC. (2002). *USITC Trade Database*. Retrieved 15/01, 2002, from <http://dataweb/usitc.gov> .
- Valdés, V. (2002, 24/06/2002). Alertan sobre la ruptura de cadena textil-vestido. *El Universal*, p. 2.
- van Dijk, M. P. (1993). Industrial districts and urban economic development. *Third World Planning Review*, 15, 175-186.
- Vangstrup, U. (2002). Knitting the Networks between Mexican Producers and the U.S. Market. In G. Gereffi, D. Spener & J. Bair (Eds.), *Free Trade and Uneven Development*. Philadelphia: Temple University Press.
- Vargas-Lobsinger, M. (1999). *La Comarca Lagunera: De la Revolución a la Expropiación de Haciendas*. Mexico City: UNAM.
- Vera-García, J. (1999). La industria de la confección en México, auge y controversias: Hacia una agenda basada en el crecimiento a nivel regional. In C. Ruiz-Durán & E. Dussel-Peters (Eds.), *Dinámica Regional y Competitividad Industrial*. Mexico City: UNAM-Friedrich Ebert-JUS.
- Vera-García, J. (2001). From globalisation to upgrading value in the productive chain in specialised agglomerations: Evidence from Mexico. Paper presented at the *41st Congress of the European Regional Science Association (ERSA)*, Zagreb, Croatia.
- Vera-García, J. (2002). Local response in the global industry: From trade liberalisation to booming production in Mexican export-oriented agglomerations. In J. van Dijk, P. Elhorst, J. Oosterhaven & E. Wever (Eds.), *Urban Regions: Governing Interacting Economic, Housing, and Transport systems*. Utrecht: KNGA/Faculteit Ruimtelijke Wetenschappen Universiteit Utrecht.

Visser, E. (1997). The significance of spatial clustering: External economies in the Peruvian small-scale clothing Industry. In v. Dijk & R. Rabellotti (Eds.), *Enterprise Clusters and Networks in Developing Countries* (EADI Book Series 20). London: Frank Cass.

Visser, E.-J. (1999). A comparison of clustered and dispersed firms in the small-scale clothing industry of Lima. *World Development*, 27(9), 1553-1570.

Weiss, J. (1995). *Economic Policy in Developing Countries: The Reform Agenda*. London: Prentice Hall.

Weiss, J. (2002). *Industrialisation and Globalisation: Theory and Evidence from Developing Countries*. London: Routledge.

Wellisz, S. (1995). Poland: Transition and Interaction in the World Economy. *Columbia University - Department of Economics Discussion Paper Series* Vol. 742.

Werner International. (2002). *Competitividad de la Industria Textil en México y Análisis Comparativo (benchmark) Contra las Mejores Prácticas del Mundo*. Reston, U.S.A.: Cámara Nacional de la Industria Textil (CANAINTEXT).

West, O. (2000). Entrevista Especial: Nueva percepción de una tendencia importante. *La Bobina* (Enero-Febrero), Retrieved 24/11, 2000, from <http://bobbin.com/bobbingroup/labobina/jan00/entrevista.html>.

Wilkinson, F., & You, J.-i. (1992). Competition and cooperation: Towards an understanding of industrial districts. *Working Paper. University of Cambridge Small Business Research Centre*, 18.

Wilson, F. (1991). *Sweaters: Gender, Class and Workshop-Based Industry in Mexico*. London: Macmillan.

Wilson, P. A. (1992). *Exports and Local Development: Mexico's New Maquiladoras*. Austin: University of Texas Press.

Wong-Gonzalez, P. (1992). International integration and locational change in Mexico's car industry: regional concentration and deconcentration. In A. Morris & S. Lowder (Eds.), *Decentralization in Latin America*. New York: Praeger.

World Bank. (2004). *Trade Policies in South Asia: An Overview* (Report No. 29949), Vol. II. Washington: World Bank.

WTO. (1998). *Trade Policy Review Republic of South Africa: Report by the Secretariat*. Geneva: World Trade Organization.

WTO. (2001). *Trade Policy Review Pakistan: Report by the Secretariat*. Geneva: World Trade Organization.

WTO. (2002). *Textiles Back in the Mainstream*. Retrieved 03/09, 2002, from http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm5_e.htm.

WTO. (2002). *Trade Policy Review India: Report by the Secretariat*. Geneva: World Trade Organization.

WTO. (2004). *The 128 countries that had signed GATT by 1994*. Retrieved 07/07, 2004, from http://www.wto.org/english/thewto_e/gattmem_e.htm.

WTO. (2004). *Trade Policy Review Brazil: Report by the Secretariat*. Geneva: World Trade Organization.

WTO. (Many years). *International Trade Statistics Database*. Retrieved 08/09, 2001, from http://www.wto.org/english/tratop_e/textil_e/texintro.htm .

Yin, R. (1994). *Case Study Research: Design and Methods*. London: Sage.

Zedillo-Ponce de León, E. (1992), La experiencia entre 1973 y 1983 de la balanza de pagos y las perspectivas de crecimiento de México. In C. Bazdresch, N. Bucay, S. Loaeza & N. Lustig (Eds.), *México: Auge, Crisis y Ajuste* (Vol. Lecturas de El Trimestre Económico, N° 73**). Mexico City: Fondo de Cultura Económica.