The West German Capital Market and the Financing Behaviour of Public Limited Companies, 1948-1965: A Reassessment

Submitted by

Tatjana Barbara Greil

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ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

Abstract

The objective of this thesis is to identify economic and regulatory issues which affected the development of the West German capital market and the financing behaviour of public limited companies during the early post war period. Following the introductory chapter, the thesis summarises literature on the relevance of capital structure in imperfect markets and discusses findings on the relationship between financial development and economic growth in consideration the historical circumstances of the early post war period. Chapter three provides a detailed account of the West German currency reform which looks beyond the conversion of monetary assets as it incorporates the accompanying conversion of company balance sheets. An analysis of the conversion of balance sheets shows that companies emerged from the reform with significantly reduced leverage. This finding provides an unconventional interpretation of the observed financing behaviour of West German companies during the early post war period. Chapter four discusses how public policy measures affected the development of the West German capital market during the immediate post currency reform period. It is argued that the policy of partial price controls coincided with a restriction of the capital market in providing funds to private and uncontrolled sectors as public authorities introduced measures which favoured funding in public and price controlled sectors. After having outlined the economic environment of the immediate post war period, the thesis analyses the financing behaviour of a sample of 79 non financial public limited companies between 1952 and 1965. The thesis argues that exceptional circumstances created by the war and the following policy decisions affected companies' financing behaviour. It shows that companies entered the post war period with severely altered capital structures and suggests that internally generated funds and bank loans featured no more prominently during the early post war years than during the following decades.

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1. Introduction

The West German economy of the two decades following the end of World War II significantly differs from more recent decades in at least two respects. First, West Germany experienced exceptionally high growth rates during the 1950s and early 1960s, with average annual growth rates in real GDP of around 8.2% compared to average annual growth rates of around 2.2% between 1973 and 1990. Second, the early post war period marked the beginning of a new era still suffering from distortions created by the war and its aftermath, and unsettled by an extensive redistribution of wealth, whilst the more recent decades are characterised by a comparatively stable economic environment. Despite these obvious differences between the early post war period and the more recent decades, it is commonly assumed that the two periods are similar with respect to companies' financing behaviour. This assumption implies that West German public limited companies relied predominantly on internally generated funds, and to the extent they did rely on external funds, they were provided in the form of bank loans. Furthermore, the German banking system is generally seen to hold a crucial strategic position in the German economy and to have played an important part in the remarkable economic success Germany achieved in the post war period. In contrast, the German capital market is perceived to have played an unimportant role during the post war period.

One of several authors who assign a major role to German banks is Shonfield who argues that the German banking system is better described as political economic agency rather than a credit organisation. As such he attributes a central importance to the role of the German banking system throughout his book where he writes, 'The postwar reassertion of power by the German commercial banks is important, because, ... they occupy a special position in the organization of German industry. ... In this articulated industrial system, the banks played from the beginning a major tutelary role. They were perhaps the most powerful force making for the centralization of economic decisions. It is broadly true to say that what the great public and semi-public institutions are to the French economy, the big banks

are to Germany.'[1] Shonfield also argues that the importance attributed to the German banking system stems from its long standing tradition of encompassing the whole range of investment financing. Citing Alfred Marshall's book on *Industry and Trade*, published in 1919, he writes that commercial banks 'are inclined ... to venture beyond their strength; especially by carrying to excess the locking up of their capital in loans, which cannot be called in under grave emergency. This [according to Marshall], was the result of their intimate relationship with German business firms, to whom banks were over-generous in their grants of long-term credits, and whom they supported to the limit of their strength in the issue of shares and bonds.'[2] Similar to Shonfield, Hallett also believes that the institutional characteristics of German banks in interplay with three other distinctive features of the 'German model' (a decentralised constitution, an independent central bank, and a legally enforced system of industrial democracy and industrial training) 'must be given most of the praise, or blame, for West German economic performance.'[3] Mentioning the role of German banks as monitors, next to their role of providing funds, Hallett remarks on the great importance of bank loans, saying 'The banks helped to rebuild German industry ... after 1948. Firms rely extensively on loans, as against equity finance, and the banks exercise an important monitoring role through their representatives on the Supervisory Board. ... the role of the banks tends to counter 'short termism', and provides a mechanism for reorganizing management in good time, when a company starts running into trouble.'[4] Whilst Carrington and Edwards write, 'The relative integration of banking and business in West Germany has helped create a confidence-creating financial-industrial system, through the greater commitment of financial institutions to providing funds for industrial growth.'[5]

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1 A. Shonfield, *Modern Capitalism: The Changing Balance of Public and Private Power*, (London, 1965), pp. 241 and 247.

2 Ibid., p. 247.

3 G. Hallett, 'West Germany', in: A. Graham and A. Seldon (eds.), *Government and Economies in the Postwar World*, (London, 1990), pp. 80-81.

4 Ibid., p. 83.

5 J. C. Carrington and G. T. Edwards, *Financing Industrial Investment*, (London, 1979), p. 151.

As much as the central role of banks in Germany and the importance of bank loans for investment finance is attributed a crucial role in German economic success, the Anglo-Saxon 'market based' system has often been criticised of having failed to encourage a high rate of long term industrial investment, particularly in Great Britain. Carrington and Edwards claim that 'It can hardly be doubted that the sources of industrial investment capital ... are more adequate in [bank based systems] than they are in the USA or the UK. It is also difficult to deny the observation that those nations with high debt ratios in the capital structure of their companies have been most successful in the economic growth league tables.'[6]

Comparing the role of German banks to the role banks played in Great Britain, Shonfield writes, 'The big banks have always seen it as their business to take an overall view of the long-term trend in any industry in which they were concerned, and then to press individual firms to conform to certain broad lines of development. They saw themselves essentially as the grand strategist of the nation's industry, whereas the British banks, by contrast, were content to act as its quartermaster general. There is no doubt that the British banks were, and are, extremely responsive to changing business needs, once these needs have been recognized by the businessmen themselves and clearly stated. The Germans are probably less responsive; but they anticipate, and sometimes no doubt cause the business needs to appear.'[7] Carrington and Edwards point out that the lower gearing ratios found in Anglo-Saxon companies are due to high rates of internal funding and a relative absence of debt, rather than a greater reliance on the stock market. According to them, '... there are two types of capital structure. The Anglo-Saxon capital structure seems to rest upon low debt and high equity-ratios, where most new company investment is financed from the internal sources of depreciation and retained profits, with the stock market acting as a relatively small source of new investment funds. The alternative western capitalist tradition, as operated in Japan and West Germany, has a high debt and low equity capital structure, where a major source of the new long-term company investment is bank loans ... where depreciation of assets

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6 Ibid., p. 191.

7 Shonfield, *Modern Capitalism*, p. 261.

previously acquired through debt is a large source of internal investment funds, and where the stock market also provides a relatively small source of new investment funds.'[8] Thus, according to Carrington and Edwards the capital structure of companies in bank based systems differ from the capital structure prevalent in market based systems in that they use more bank debt, but they do not differ significantly in their reliance on external equity.

Dyson points out that German companies 'exhibited a clear preference for reliance on internal funds and for a high liquidity position' since the recession in 1974. In contrast, he finds external finance had been crucial during periods of expansion, reaching 40.4 per cent in 1968. Quoting figures for the late 1960s/early 1970s, he finds that 'Most striking is the composition of external funding. German industry is traditionally highly 'geared', that is equity of German corporations forms only a low proportion of their total assets. Shares and bonds are of relatively minor importance as means of raising funds, accounting respectively for 6 and 4 per cent during the period 1968-73 and 4.4 and 0.4 per cent in 1976. More important have been banks loans (60 per cent in 1968-73, and 32.7 per cent in 1976), and in particular long-term bank loans (39 per cent in 1968-76) and 21.5 per cent in 1976. .... Tax concession have played an important role in encouraging this process [of attracting household savings into medium and long-term saving deposits and bonds].'[9]

By contrast, Edwards and Fischer voice a more cautious view about the perceived merits of the German banking system. They question the conventional wisdom that, 'The 'bank-based' German system of finance for investment ... made an important contribution to the successful performance of the German economy during the 'economic miracle' following the Second World War.'[10] They point out 'the empirical basis for claims made about the significant contribution of the German system of investment finance to German economic success in the post-1945

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[8] Carrington and Edwards, *Financing Industrial Investment*, p. 191.

[9] K. Dyson, 'The State, Banks and Industry: The West German Case', in A. Cox (ed.), *State, Finance and Industry*, (Brighton, 1986), pp. 128-129.

period takes the form of simple correlations - German economic performance has been superior to that of the UK, German investment as a proportion of GDP has been higher than in the UK, and the German system of finance and investment is different from that in the UK ... it is impossible to conclude anything about the contribution of the German financial system to German economic performance on the basis of simple correlations which do not take account of other possible influences.'[11] They argue that empirical evidence on the merits of the bank-based German system of finance for investment suggests that the common view has largely overrated the contribution of the German system of business finance to economic success.

This thesis looks beyond the role banks might have played in companies' financing decision and in promoting economic growth as it incorporates effects of the 1948 currency reform and public policy measures on companies' funding behaviour. The thesis argues that the characteristics of the early post war period suggest that West German companies were in greater need of external funds during the period of the *Wirtschaftswunder* than during the comparatively stable and modest growth period experienced since the early 1970s. Results of a sample of 79 non financial West German public limited companies suggest that bank loans constituted a smaller proportion of external funds between 1952 and 1965 than commonly perceived, whilst capital market funds played a more important role during the early post war period than during its succeeding decades. Furthermore, the thesis supports findings of studies covering the 1970s and 1980s which suggest that internal funds have shown a tendency to increase in importance over the post war period, for results suggest that internal funding was relatively less important during the immediate post war period than in more recent decades. Thus, the thesis argues that retained earnings and bank loans insufficiently portray West German public limited companies' financing behaviour during the early post war period. This argument suggests that a wider perspective is required in order to obtain a

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[10] J. Edwards and K. Fischer, *Banks, Finance and Investment in Germany*, (Cambridge, 1994), p. 1.

[11] Ibid., p. 6.

more accurate picture of the financing behaviour of West German public limited companies, and the role of financial institutions in providing external funds.

The role of financial institutions in promoting growth has become a major focus of interest during recent years. However, the common perception that West Germany is a 'bank based' system in which capital markets only play a minor part has narrowed the research interest in the German case on potential benefits of the institutional features of a universal banking system. For instance, there exists a wide array of literature on the role of bankers' holding seats on the supervisory board of companies and their potential effects on overcoming information asymmetries.[12] Furthermore, it is often stressed that German banks have significant control of the equity voting rights in German companies, largely through the proxy votes they exercise on behalf of individual shareholders who deposit their shares with banks. It is argued that such voting rights give banks the ability to influence the composition of other shareholder representatives on supervisory boards. This institutional arrangement is seen as having the potential to reduce the agency costs involved in the owner-manager relationship for large firms.[13] The system of German universal banking has also been argued to deter hostile take-overs which have often been perceived as inferior mechanisms of monitoring and replacing management compared to the German mechanism which operates via the banks through their control of equity voting rights and positions on supervisory boards.[14]

By focusing research attention on the role of banks in Germany, little is known about the development of the West German capital market and about the capital structure of West German companies. Furthermore, the majority of studies on the German financial system omits the crucial early post World War II years as they

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[12] See for instance, J. P. Charkham, *Keeping Good Company*, (Oxford, 1994), pp. 22-25; Dyson, 'The State, Banks and Industry: The West German Case', pp. 121 and 130-131; Shonfield, *Modern Capitalism*, pp. 247-253; J. Kocka, 'The Rise of the Modern Industrial Enterprise in Germany', in: A. D. Chandler Jr. and H. Daems, *Managerial Hierarchies*, (Cambridge, Mass., 1980), p. 91.

[13] See for instance J. Cable, 'Capital Market Information and Industrial Performance: The Role of West German Banks', *The Economic Journal*, Vol. 95 (March, 1985), p. 121; as well as literature cited in previous footnote.

focus either on the period of industrialisation or on the more recent decades starting with the 1970s. This approach has opened a gap in literature in the sense that it has narrowed our knowledge of the German financial system to the role of banks in the late nineteenth/early twentieth and the late twentieth centuries. The study attempts to fill this gap by addressing a number of factors which have affected the development of West German financial institutions during the early post World War II period and by analysing the financing behaviour of West German public limited companies. In particular, the thesis seeks to illuminate the interplay between state, banks, and the capital market in financing investments during the 1950s and 1960s. After outlining the basic function and role of the financial system in a capitalist economy, the thesis investigates two major events which greatly affected the financial circumstances of the German state, consumers and companies during the early post war period: the 1948 currency reform, and the policy of partial price controls in combination with public investment programmes.

Most existing literature which touches upon the financing of capital formation in West Germany during the early post war period has confined its analysis to the role of the government and the importance of public investment programmes in providing external funding and in promoting growth.[15] However, by restricting the analysis to these issues a significant proportion of external financial sources for investment remain unexplained. Moreover, these studies have failed to incorporate the potential importance of financial institutions in promoting growth. Chapter four builds upon the knowledge acquired by the literature on the role of public policies and employs its findings in order to obtain an understanding of how governmental policies and investment programmes affected the development of financial institutions during the early post war period.

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[14] See references in Edwards and Fischer, *Banks, Finance and Investment*, pp. 4-5 and p. 11.

[15] See for instance F. G. Reuss, *Fiscal Policy for Growth without Inflation: The German Experiment*, (Baltimore, 1963); K. W. Roskamp, *Capital Formation in West Germany*, (Detroit, 1965); M. Pohl, *Wiederaufbau: Kunst und Technik der Finanzierung 1947-1953*, (Frankfurt a. M., 1973); H. R. Adamsen., *Investitionshilfe für die Ruhr: Wiederaufbau,*

The thesis identifies two major events which affected the development of the West German financial system and influenced companies' financing behaviour: the 1948 currency reform and the policy of partial price controls which was accompanied by a number of public interventions and investment programmes. A comprehensive analysis of the 1948 West German currency reform reveals essentially three issues. First, it shows that the different conversion of monetary assets severely altered the relative wealth composition of the West German economy. The conversion procedure turned public authorities from the biggest debtor into the biggest creditor and endowed banks with immediate liquidity which allowed them to take up their role as financial intermediaries right from the start of the post reform period. Second, the currency reform altered companies' capital sheet structure as monetary assets were significantly more devalued than real assets. This finding offers an alternative interpretation of the observation that West German public limited companies significantly increased their gearing ratios during the early post war period, as it shows that companies entered the post war period with gearing ratios lowered by external events. And third, the lengthy procedure of converting balance sheets from Reichsmark into Deutsch Mark and of identifying the rightful owners of capital market securities limited the role of the West German capital markets as securities could only be issued and traded when and to the extent balance sheets had been converted and owners of securities had been identified. Thus, the different speed of converting monetary and real assets provided banks with an advantage over the capital market. Since previous studies on the 1948 currency reform narrowed their analysis to the conversion of monetary assets, they have failed to recognise the wider scope of the currency reform both with respect to its effect on the financing behaviour of West German companies and with respect to its effect on the development of the West German financial system.

Although the currency reform was accompanied with a lifting of price controls for most goods, public authorities decided to keep price controls in place for products provided by the basic goods industry, and other industries considered

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Verbände und Soziale Marktwirtschaft 1948-1952, (Wuppertal, 1981); and A. S. Milward, *The Reconstruction of Western Europe, 1945-1951*, (Cambridge, 1984).

crucial to the development of the economy. The decision of keeping part of the economy under price control was taken in response to demands by the occupation authorities who controlled most of the price controlled sectors. The occupation authorities demanded partial price control out of fear of inflationary pressures and as part of their retaliation policy, and the German authorities agreed to them in exchange and anticipation of foreign aid. However, it soon materialised that foreign aid funds were not sufficient in providing price controlled sectors with their funding requirements. Therefore, public authorities introduced a number of discriminatory measures which effectively divided the capital market into two sectors, as these measures favoured investment in price controlled sectors at the expense of 'free market price' sectors. Furthermore, it is argued that the political decision of compelling free market price industries to divert some of their profits into public investment programmes contributed to the assertion that West German free market price industries had internal funds in abundance. Within the context of public policies particular emphasis is placed on public investment programmes and regulatory issues which affected the development of the West German capital market and the financing behaviour of companies. As the thesis concentrates on investment programmes promoted by the public sector, it does not attempt to provide an overall picture of public efforts to further capital formation.

Findings by the thesis that West German public limited companies appear to have relied to a greater extent on external funding, and in particular on capital market funding, in the immediate post currency reform period than during succeeding years seem particularly startling when considering that the capital market was only gradually freed from restrictions which had been introduced from the early 1930s onwards. However, incorporating issues such as the currency reform and considering that West German companies faced extraordinary investment requirements in order to overcome distortions created by the war and the following turbulences highlights the fact that funding requirements during the early post war period differed considerably from companies' funding situation during the following years. With respect to financial requirements of companies, the immediate post war period may have more in common with the period of industrialisation. For instance, Kocka observes about the period of German

industrialisation, '... the German corporate banks acted as mechanism for the mobilization of scattered savings and channeled them into German industrial enterprises, which depended more heavily on the capital market than their counterparts in Britain and the United States. Gradually, as expansion and merger became more frequent and more significant than the establishment of new enterprises, long-term credit became the main basis of the banks' relationship with industry. ... In the early twentieth century, the rate of self-financing - that is, of the use of retained earnings, rather than outside capital, to pay for expansion - in the large manufacturing firms increased. As a result, enterprises became more and more independent of the capital market and thus of banks.'[16] However, the suggestion of a relative importance of capital market funding during the early post war years should not disguise the institutional importance of West German banks. West German banks played an important role as provider of bank loans immediately after the currency reform and were important institutional investors in capital market securities at a time when low liquidity deterred other investors from investing in capital market securities.

West Germany's economic growth process during the early post war period was an event for which no simple explanation can be given. As mentioned, most previous literature on this period has emphasised the contribution of public authorities in this process. This has had the unfortunate effect of camouflaging the contribution of the financial system to this rapid economic expansion. A study on the role of financial institutions in the economic growth process of the early post war period may therefore help fill this gap. It is not claimed that financial institutions were the main cause of economic growth experienced in West Germany during the period of the *Wirtschaftswunder* but that it was a cause among many which seems to be too important to be overlooked.

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[16] Kocka, 'The Rise of the Modern Industrial Enterprise in Germany', pp. 90 and 92.

2. The influence of financial development on growth and factors affecting capital structure

2.1. Introduction

The following chapter sets out to establish why it is important to understand the financing behaviour of companies. The chapter discusses a number of seminal papers on the relationship between financial development and economic growth and on the relevance of capital structure in imperfect markets in order to investigate why the issue of the financing behaviour of companies is an important one. There are macroeconomic as well as microeconomic reasons why an understanding the financing behaviour of companies is important. At a microeconomic level, modern capital structure theory has advanced into various areas since the work by Modigliani and Miller who found that capital structure is irrelevant in perfect and undistorted markets.[1] Since then, studies on capital structure have focused on identifying the importance of factors that cause market imperfections, and therefore make capital structure relevant. While it has been established that capital structure matters in the absence of perfect capital markets, the jury is still out whether there exists an optimal capital structure. One of the reasons that make the question on optimal capital structure so difficult to answer is the fact that equity consists of two components, with the internal component of equity being at the top of companies' funding choice as it represents the cheapest source of funding, whilst the external equity component in the form of share issues generally represents the most expensive source of funding and is therefore at the bottom of companies' financing choice.

At the macroeconomic level, literature argues that the efficiency of financial markets, as reflected in the financing behaviour of companies, might be a significant

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[1] Modigliani, F. and M. H. Miller, 'The Cost of Capital, Corporation Finance and the Theory of Investment' *American Economic Review*, Vol. XLVIII (1958), No. 3, pp. 261-297; Modigliani, F. and M. H. Miller, 'Corporate Income Taxes and the Cost of Capital: A Correction', *American Economic Review*, Vol. LIII (1963), No. 3, pp. 435-443.

determinant of economic growth.[2] In addition, macroeconomic literature concentrates around the question whether or when one form of financial institution is superior to other forms, rather than restricting its focus on the types of securities issued. That is, whether and when banks or stock markets are more efficient in providing finance.

2.2. The role of financial institutions in the economic historical setting of the immediate post war period - an international comparison

Considering that during the early post war period West Germany achieved relatively high growth rates both compared to other post war economies, as well as compared to later periods, the question arises whether the structure of the German financial system played some role in enhancing growth. The thesis argues that the German system of financial intermediation fared better in an economic situation which prevailed during the early post war period than for later periods as it incorporated mechanisms which made it fail to adjust in time to the changing needs of companies. The argument follows to some extent the theme of literature for the period of industrialisation until World War I, which commonly argues that the German institutional arrangement with its system of powerful universal banks was

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[2] A relationship between financial development and economic growth has long been expected, see for instance R. W. Goldsmith, *Financial structure and development*, (New Haven, Ct., 1969), p. 48, who observes a correlation between economic and financial development. One of the greatest challenges this set of literature has had to deal with is to establish the direction of causality between financial development and growth. While recent work has made some advances on this issue by providing empirical evidence that financial development causally affects economic growth, the causality does not run unambiguously from financial structure to economic growth. Economic growth and innovations also affect the structure and development of financial systems. For empirical analyses of the linkage between financial development and economic growth, see for instance R. G. Rajan and L. Zingales, 'Financial Dependence and Growth' *American Economic Review*, Vol. 88 (1998), No. 3, pp. 559-586; R. Levine and S. Zervos, 'Stock Markets, Banks, and Economic Growth', *American Economic Review*, Vol. 88 (1998), No. 3, pp. 537-558; R. G. King and R. Levine, 'Finance, Entrepreneurship, and Growth', *Journal of Monetary Economics*, Vol. 32 (1993b), pp. 513-542; and R. G. King and R. Levine, 'Finance and Growth: Schumpeter Might be Right', *The Quarterly Journal of Economics* Vol. CVIII (1993a), No. 3, pp. 717-737.

more effective in financing industrial investments than, for instance, the rather unregulated British financial system.[3]

The thesis argues that the immediate post World War II period was similar to the period of German industrialisation as both periods are characterised by large upfront funding needs which had to be raised from widely dispersed investors in order to finance extraordinary investment requirements. During the period of German industrialisation large upfront funding needs arose in order to overcome the relative backwardness of the German economy, whereas during the immediate post war period large upfront funding was required in order to overcome distortions created by war related disturbances such as territorial losses and the currency reform which got delayed by three years due to disagreements among the occupation authorities. Another similarity between the period of industrialisation and the immediate post war period lies in the fact that investment funds were widely dispersed. A large portion of savings had been wiped out by the currency reform, whilst years of war and rationing had left the German public with a huge backlog in demand for goods. Therefore, the German public entered the post war years with a great propensity to consume and a strong preference to keep their savings in highly liquid form. The German banking system, supported by tax incentives for savings, was able to pool these savings in the form of liquid deposits, mobilising these funds for large scale investments. In addition to these private funds, banks were able to provide loans out of their own portfolio which mainly consisted of compensation claims which banks had been generously endowed with in the course of the currency reform in order to compensate them for losses incurred by the cancellation of public debt.[4]

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[3] See for instance A. Gerschenkron, 'Economic Backwardness in Historical Perspective', in *idem, Economic Backwardness in Historical Perspective: a Book of Essays*, (Cambridge, Mass., 1962); W. P. Kennedy, 'Banks and Industry in Anglo-German Perspective', in R. Tilly and P. J. J. Welfens (eds.), *European Economic Integration as a Challenge to Industry and Government*, (Berlin, 1995).

[4] The treatment of bank balance sheets in the course of the currency reform is discussed in detail in the following chapter.

In addition, the public sector, which was the biggest saver at the time, concentrated a great deal of effort on capital formation, both directly through public investment programmes as well as indirectly through measures such as tax incentives and special depreciation allowances.[5] Although the German authorities initially handicapped the capital market in order to ensure investments in publicly favoured sectors, it involved the capital market to some extent in its investment efforts even during the early post currency reform years. The German banking system played a central intermediary function between public investment efforts and the role the capital market was delegated to perform in these efforts. For instance, commercial banks played an important role in identifying projects suitable for public funding. The joint effort between the public and the private sector to raise funds for capital formation, and the special role banks played in this effort reiterates the importance of banks during the immediate post war period beyond their function of pure financial intermediary. This crucial role of banks during the early post war period, before personal savings and a change in public policy allowed a revival of the capital market, has been pointed out by literature before. Cox, for instance, writes, 'Since the collapse of the financial system in the aftermath of the Second World War, a more consensual approach to state, finance and industry relationships has developed. ... [T]here is little doubt that, in the aftermath of the war, the state has had to work more closely with the major banks than it had before. ... The banks ... played a crucial role. Given that there was no significant domestic saving in this period, the banks consciously accepted with the government the need to rebuild the industrial base of the economy. The banks therefore took commercial risks and provided extensive funds for German industry. The recognition of the need to ensure West Germany's industrial future did not abate in the 1950s and 1960s as personal savings revived the capital markets.'[6]

This central role of (privately owned) German banks working closely with the state, is one of the peculiarities of the German institutional system. In France, for instance, the unwillingness of the commercial banks to countenance long-term

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[5] These issues will be discussed in chapter four.

lending, made it essential for the state to play a more active role in financing investments. The unwillingness of long-term lending by French banks dated back to a series of bank failures in the nineteenth century which was largely attributable to over-investment in high risk industrial enterprises and which prompted French banks to adopt a cautious set of guidelines which laid out that 'credit should only be extended when risks were low and a return was guaranteed.'[7] In 1946, the three largest French commercial banks were nationalised which provided the state with more leverage to persuade the banks to place more emphasis on serving the wider national interest. However, the nationalised banks remained reluctant to operate as industrial bankers and maintained their penchant for short-term lending.[8] Until the late 1960s, French commercial banks also differed from their German counterparts in that they were handicapped by a rigid separation of banking functions which divided the sector into three subcategories: (1) deposit banks which were discouraged from taking shares in companies and from offering any more than short term loans; (2) banques de'affaires (investment or merchant banks) which were discouraged from taking deposits; and (3) the medium to long term credit banks which were not allowed to take deposits and were to concentrate on providing medium term credit in the form of loan capital.[9]

Although Japanese banks had a long history of industrial banking, they did not enjoy the same degree of independence as the German banks after the Second World War. Japan's post war financial system of Japan formed a chain of dependency between the state, the commercial banks and individual companies. This dependency allowed the state to influence the flow of credit and to implement industrial policies which conformed with the state's main economic objective of industrial expansion.[10] The American occupation authorities demanded the dismantling of this *zaibatsu*, i. e. the Japanese history of industrial banking with its

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6 A. Cox, 'State, Finance and Industry in Comparative Perspective', in A. Cox (ed.), *State, Finance and Industry*, (Brighton, 1986), pp. 28-29.

7 D. Green, 'The State, Finance and Industry in France', in A. Cox (ed.), *State, Finance and Industry*, (Brighton, 1986), p. 95.

8 Cox, 'State, Finance and Industry', p. 21.

9 Green, 'The State, Finance and Industry in France', pp. 91-92.

combination of commercial, financial and industrial capital through interlocking directorships and holding companies. The dismantling of the *zaibatsu* and the discrediting of the military in the aftermath of the war left a gap in the relationship between finance and industry. The state bureaucrats stepped into this gap introducing detailed controls over the provision and price of credit. The independence of Japanese commercial banks was further hampered by a liquidity crisis after the war which forced them to rely increasingly on the Bank of Japan. The newly established Ministry of International Trade and Industry (MITI) which played an important part in the state's effort of rebuilding the Japanese economy and in keeping the commercial banks subservient to the state's investment objectives ensured that commercial banks continued to face liquidity problems as it restricted their ability to retain deposits while at the same time encouraged banks to provide long-term loans to those large firms and industrial sectors - initially in capital intensive production - which it had earmarked as the future driving force of the Japanese economy. By moulding a financial system which kept savers and investors separated state agencies and in particular the MITI reserved themselves a key intermediary role. In other words, Japan did not nationalise its financial institutions but created a situation in which the MITI could act as financial intermediary between savers, banks and industry.[11] Japan behaved similar to Germany in the early 1950s in that it adopted an industrial strategy which emphasised the growth potential of large firms in capital intensive manufacturing processes. However, in contrast to Germany, Japan whose financial system had been altered by the dismantling of the *zaibatsu* imposed numerous indirect control mechanisms on its banking system to ensure investments in earmarked projects. Japanese banks were encouraged to over-lend to maintain the rate of expansion of industry and in the process they became dependent on the Bank of Japan. Meanwhile, German authorities trusted in a close cooperation with the banking sector, with its long established relationships to industry, and in its efforts to rebuild the economy. As such, German banks faced comparatively little *dirigisme* by the

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[10] B. Eccleston, 'The State, Finance and Industry in Japan', in A. Cox. (ed.), *State, Finance and Industry*, (Brighton, 1986), pp. 60-61.

[11] Cox, 'State, Finance and Industry', p. 17-18 and Eccleston, 'The State, Finance and Industry in Japan', pp. 62-65.

state during the immediate post war period other than limits imposed on interest rates, loans and deposits.

2.3. Financial development and economic growth

The following section discusses theories on the relationship between financial development and economic growth. It identifies the prime functions of financial institutions and shows how financial services can expand the scope and improve the efficiency of innovative activity.[12] Financial institutions affect growth by providing funds which alters the rate of physical capital accumulation and by evaluating projects which leads to productivity growth. Financial institutions enhance capital accumulation because they are able to pool funds from many small individual savers, mobilising sufficient funds for large scale projects, and because they reduce the fraction of savings held in the form of unproductive liquid assets. By accepting a large number of deposits, the demand for withdrawals becomes more predicable, which allows financial intermediaries to economise on liquid reserve holdings that do not contribute to capital accumulation.[13] In other words, the fraction of saving which does not reach investment is reduced.[14]

However, raising funds, though necessary, is not sufficient to enhance growth. When financing investments it is also important to identify those projects which appear to be promising. Financial institutions can provide these research and evaluative services more effectively and less expensively than individual investors.

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[12] The following discussion of the role of financial institutions has benefited most from studies by R. Levine, 'Financial Development and Economic Growth: Views and Agenda', *Journal of Economic Literature* Vol. 35 (1997), No. 2, pp. 688-726; M. Pagano, 'Financial Markets and Growth: An Overview', *European Economic Review*, Vol. 37 (1993), pp. 613-622; and V. R. Bencivenga and B. D. Smith, 'Financial Intermediation and Endogenous Growth', *Review of Economic Studies* Vol. 58 (1991), pp. 195-209.

[13] In addition, by providing external funding, the self financing requirement is reduced, which prevents liquidation of investments by entrepreneurs who find that they need liquidity.

[14] The presence of intermediaries may also alter the saving rate. The sign, however, is ambiguous. For instance, while greater risk sharing might reduce saving rates, a narrowing spread in interest rates in the presence of a competitive financial system is likely to

It follows that financial intermediaries increase the productivity of capital as they collect information on alternative investment projects, identifying the most promising ones. Furthermore, financial institutions do not only provide *ex ante* checks of projects they also carry out *ex post* monitoring.[15]

In addition to raising funds and identifying promising projects, financial institutions offer a third service in that they dilute liquidity risks for investors by augmenting the liquidity of long term investments.[16] This service ensures that high return projects are not only identified but that they are also provided with funding. High return investments often require long term commitment of capital, but savers do not like to relinquish control of their savings for a long period. Therefore, less investment is likely to occur in high return projects if the liquidity of long term investments fails to be augmented.[17] Financial institutions are able to divert the liquidity risk of investors as they enable investors to hold assets in the form of liquid financial instruments - such as shares, bonds or bank deposits - which they can quickly and easily sell if they seek access to their savings. These liquid financial instruments are then transformed into long term capital investments in illiquid production processes. The liquidity transformation endows investors with liquid assets, while firms have permanent access to the capital invested. Furthermore, financial instruments allow investors to diversify risks, thus mitigating the idiosyncratic risks associated with individual investments. As high return projects tend to be riskier than low return projects and investors are generally risk averse, financial institutions that ease risk diversification induce a portfolio shift toward projects with higher expected returns. Therefore, financial intermediaries allocate savings more efficiently, as they induce individuals to invest in riskier but more

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increase saving rates. A comprehensive analysis of various factors affecting saving rates can be found in Pagano, 'Financial Markets', pp. 616-619.

[15] The role of financial markets in monitoring firms is discussed in greater detail below.

[16] Liquidity risk arises due to the uncertainties associated with converting assets into a medium of exchange. With liquid financial markets, it is relatively inexpensive to trade financial instruments and there is little uncertainty about the timing and settlement of those trades.

[17] High return projects often have a long gestation period which requires that ownership is transferred throughout the life of the production process in secondary securities markets. If exchanging ownership claims is costly, then longer run production technologies will be less attractive. Therefore liquidity affects production decisions.

productive technologies by providing risk sharing through the creation of small denomination financial instruments which provide investors with the opportunity to hold diversified portfolios, invest in efficient scale projects, and to increase asset liquidity.

In summary, financial systems improve the efficiency of allocating resources, by providing the following services: they mobilise savings, identify promising projects, and allocate resources to high return but illiquid projects by transforming them into liquid, easily tradable financial instruments, which reduce liquidity risk and facilitate risk diversification. In addition, financial institutions monitor and exert corporate control. By identifying and providing funds to innovative and high return projects, financial institutions improve the efficiency of capital allocation and encourage innovative activity which enhances productivity and therefore economic growth.

2.4. Empirical findings on potential links between financial systems and economic development

Over recent years several studies have tried to measure empirically the links between financial systems and the pace of economic development. King and Levine have found that economies with better developed financial systems stimulate faster productivity growth and growth in per capita output and that the level of financial development predicts future growth and future productivity advances.[18] They also argue that in an environment in which returns to innovation are lowered due to public interventions such as high corporate profit taxes or shifts in the enforcement of property rights companies demand fewer financial services. In other words, developments in innovative and productive sectors affect financial development.[19] However, the measurements they use in order to identify links between financial development and growth only allow inferences about the role of banks in promoting growth.

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[18] King and Levine, 'Finance, Entrepreneurship, and Growth', p. 528.
[19] Ibid., p. 527.

Demirgüc-Kunt and Maksimovic focus on stock markets function of aggregating information.[20] They find that with an increased development of the stock market, companies tend to substitute equity for debt financing as the better information available induces lenders to extend credit to companies whose stock is traded. This finding reconciles the puzzling results of studies which suggest that companies in more capital market oriented countries tend to have higher leverage than companies in bank oriented countries.

Levine and Zervos measure the potential effects of stock market and bank development on growth. They find that both stock market liquidity and bank development are positively correlated with current and future growth rates, capital accumulation, and productivity growth. Furthermore, the major channel through which growth is linked to stock markets and banks is through productivity growth, not capital stock growth.[21] They also point out that it is stock market liquidity and not the size of the stock market nor stock return volatility that significantly affects growth which reinforces the information effect argument suggested by Demirgüc-Kunt and Maksimovic.[22] Moreover, they stress that bank lending to the private sector has a strong independent effect on growth. Their finding that both stock market liquidity as well as bank development positively affects growth rates indicates that banks provide different financial services from those provided by stock markets. This suggests that the impediment of one part of the financial sector may carry potentially large economic costs.[23]

Rajan and Zingales report that countries with better developed financial systems have a comparative advantage in industries which are more dependent on external finance, and since new entrants are likely to be in greater need for external funds, there are more new entrants in countries with well developed financial

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[20] A. Demirgüc-Kunt and V. Maksimovic, 'Stock Market Development and Firm Financing Choices', *World Bank Policy Research Working Paper*, (1995), No. 1461, pp. 23-24.

[21] Levine and Zervos, 'Stock Markets, Banks, and Economic Growth', p. 547.

[22] Ibid., p. 549.

[23] Ibid., p. 547 and p. 554.

systems. This finding suggests financial development could influence growth by disproportionately improving the prospects of young companies.[24] This leads them to the conclusion that the level of financial development may be a factor in determining the size composition of an industry as well as its concentration. Furthermore, they find evidence for the theoretical argument that financial intermediaries reduce financial market imperfections as they reduce the costs of external finance, narrowing the gap between internal and external funds.[25]

Carlin and Mayer estimate whether country structures such as bank-company relations, the development of capital markets, the concentration of ownership, and legal systems affect the characteristics of a country's industry as measured by growth, fixed capital formation and R&D expenditure.[26] They find a strong interaction between the structure of the financial sector in a country and the structure of its corporate sector. Similar to Levine and Zervos, they find that the structure of the financial sector has little effect on the growth of capital stock, whereas they find significant relations between the structure of the financial sector and growth as well as R&D expenditure. Furthermore, they confirm results suggested by Levine and Zervos, as they find a difference between banking and stock market systems in their nature of interaction with industrial activity. In particular, they find that bank finance is unaffected by accounting standards, while R&D expenditures appear to depend more on the development of the capital market than on a country's bank characteristics. Carlin and Mayer also suggest bank oriented systems and ownership concentration are particularly relevant to the financing of companies in the early stage of economic development. With regards to the question whether bank oriented systems or capital market oriented systems are more efficient in providing financial services, they conclude that it depends on the stage of the development of an economy.

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[24] Rajan and Zingales, 'Financial Dependence and Growth', p. 560 and pp. 578-580.
[25] Ibid., p. 583.
[26] W. Carlin and C. Mayer, 'Finance, Investment and Growth', mimeo, (University College, London and Said Business School, University of Oxford, 1998).

Nickell et al. estimate the impact of high debt levels (which they call financial market pressure), product market competition, and shareholder control on productivity growth. Analysing a sample of UK manufacturing companies, they find that if the dominant shareholder is an external financial institution, this has a positive impact on productivity growth, while if the dominant shareholder is also managing the firm, it has no effect, and if the main shareholder is external, but a non financial company, it has a negative effect on productivity growth. Thus, their findings suggest that financial institutions are able to impose some managerial discipline and thereby generate higher productivity growth.[27] They also find that financial market pressure and competition are positively related to productivity growth. Furthermore, their findings suggest that financial market pressure and dominant external shareholding may substitute for competition, as the impact of competition on productivity growth is lower when companies are under financial pressure or when they have a dominant external shareholder.[28]

2.5. Stock markets versus banks

It has long been argued that whether banks or stock markets are more efficient in providing financial services depends on the level of development of the economy. Gerschenkron was probably the first influential exponent who emphasised that different economic circumstances facilitate the development of different financial systems.[29] Since then, a number of authors have tried to reconcile the finding that different financial institutional patterns persist across countries and to generalise their effects on economic development.[30] For the period of industrialisation until World War I, it is commonly argued that the German institutional arrangement with

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[27] S. Nickell et al., 'What Makes Firms Perform Well?', *European Economic Review*, Vol. 41 (1997), pp. 790-791.

[28] Ibid., pp. 793-794.

[29] Gerschenkron, 'Economic Backwardness', pp. 5-31.

[30] For a list of references on this subject see for instance R. H. Tilly, 'Banking Institutions in Historical and Comparative Perspective: Germany, Great Britain and the United States in the Nineteenth and Early Twentieth Century', *Journal of Institutional and Theoretical Economics (Zeitschrift für die gesamte Staatswissenschaft)*, Vol. 145 (1989), pp. 189-209; and Edwards and Ogilvie, 'Universal Banks and German Industrialization', pp. 427-446.

its system of powerful universal banks was more effective in financing risky industrial investments than the rather unregulated British financial system. Gerschenkron claims that the emergence of the German financial system was due to the country's relative backwardness. He argues that the relative backwardness required the raising of large up-front funding from a great number of dispersed investors. This need of raising large amounts of funds shaped the institutional structure of German banks creating a new type of bank - the 'universal bank'- which combined investment and commercial banking activities.[31] Gerschenkron provides the following explanation for the development of different financial systems.[32]

> The industrialization of England had proceeded without any substantial utilization of banking for long-term investment purposes. The more gradual character of the industrialization process and the more considerable accumulation of capital, first from earnings in trade and modernized agriculture and later from industry itself, obviated the pressure for developing any special institutional devices for provision of long-term capital to industry. By contrast, in a relatively backward country capital is scarce and diffused, the distrust of industrial activities is considerable, and, finally, there is greater pressure for bigness because of the scope of the industrialization movement, the larger average size of plant, and the concentration of industrialization processes on branches of relatively high ratios of capital to output. ... It is the pressure of these circumstances which essentially gave rise to the divergent development in banking over large portions of the Continent as against England. The continental practices in the field of industrial investment banking must be conceived as specific instruments of industrialization in a backward country.

Other authors go further in their analysis when assessing the role of financial institutions in providing finance to growth promoting industries. For instance, Kennedy points out that the efficiency of the German universal banking system was not limited to its ability to provide large scale funding, but that is was better able to overcome informational asymmetries by providing objective external indication of worth.[33] In contrast, 'the British industry depended upon a direct appeal to investors through public financial markets, with minimal institutional intervention and regulation. If the public were in a perceptive mood, much money could be raised quickly in this manner. However, in the absence of reliable intermediation and with little regulation it was difficult to sustain and develop this enthusiasm when problems arose. ... Accordingly it was often difficult to raise external finance when

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31 Gerschenkron, 'Economic Backwardness', p. 13.
32 Ibid., p.14.
33 Kennedy, 'Banks and Industry', p. 441.

it was most needed.'[34] And Hannah writes, 'Historians have also criticised the performance of the British capital market [during the period of industrialisation], especially in allocating resources to new industries. Despite the existence of a securities market in Britain that was more highly developed than similar markets in the United States and Germany, some maintain that market institutions performed their primary functions of bearing risks and encouraging innovations less efficiently than large corporations or industrial banks elsewhere.'[35] Yet other authors claim that during industrialisation German banks distorted resource allocation by virtue of their concentration on heavy industry, resulting in a lower growth rate than would otherwise have been achieved.[36] Capie and Collins question the claim that there existed a strong relationship between German banks and industry during the period of industrialisation, and whether economic performance was better than would have been the case in the absence of the relationship.[37]

In contrast to the above mentioned claims on the weak performance of the British financial system in providing funds to industry during the industrial revolution, a report by the Bank of England on the role of the British capital market in providing funds after the Second World War puts the British financial system in a more positive light, at least during the early post war period. The report claims, 'For much of the 1950s and early 1960s, the financing needs of private industry and trade were readily met within [the] financial system ... companies' requirements for outside finance were met without the appearance of undue pressure, notably through the provision of equity finance and fixed-interest loans for the larger firms by the capital markets, and of overdraft finance for firms of all sizes by the banks. During the late 1960s and 1970s, however, the financial climate became increasingly harsh.

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[34] Ibid., pp. 440-441.

[35] L. Hannah, 'Visible and Invisible Hands in Great Britain', in: A. D. Chandler Jr. and H. Daems, *Managerial Hierarchies*, (Cambridge, Mass., 1980), p. 65.

[36] H. Neuburger and H. H. Stokes, 'German Banks and German Growth, 1883-1913: an Empirical View', *Journal of Economic History*, Vol. 34 (1974), No. 3, pp. 730-731.

[37] F. Capie and M. Collins, *Have the Banks Failed British Industry?*, (London, 1992), pp. 24-27.

... The long-term capital and equity markets to which companies had previously turned for funds fell into disuse. ...'[38]

The debate over whether there exists a superior financial system arose again in response to the take-over frenzy experienced in the Anglo-Saxon countries during the 1980s.[39] In the 1980s, many observers of this development voiced the view that the absence of these activities in bank dominated countries might suggest that banks are better in monitoring companies and in exerting corporate control than stock markets, in that they intervene in the management of a company before the value of a firm is destroyed to the extent which makes take-overs profitable. However, lately the perception of the efficiency of take-overs has changed, with sentiments shifting in favour of take-overs. This shift in sentiments coincides with the growing recognition of the need for the most appropriate financial strategy, where take-overs are considered to change the financial strategy of the business in a way which enhances shareholder value. According to this view, Anglo-Saxon style take-overs may be more effective in generating efficiency enhancing corporate structures than German style banking systems (especially if banks themselves face only weak incentives to secure high returns from their own investment activities). Whereas the close relationship between German banks and companies are considered to facilitate corporate control, this kind of relationship is also likely to reduce the probability of aggressive actions in case a company is undervalued, in particular if banks are stakeholders and the ownership of a company has to change in order for a required change in business or financial strategy to be implemented. In other words, although banks play a role in monitoring management, they appear to be less important in determining which management team should be in power. This form of disciplining

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[38] M. Lisle-Williams, 'The State, Finance and Industry in Britain', in A. Cox (ed.), *State, Finance and Industry*, (Brighton, 1986), p. 241.

[39] At this point it seems appropriate to mention that studies which have deatl with the question of which financial system is more efficient in promoting growth almost exclusively concentrate on eras of rapid technological changes such as the industrial revolution and the more recent information technology revolution. There is a disconcerting absence of studies which have focused on the role of banks versus stock markets in the period between these two revolutions. See Kennedy, 'Banks and Industry', p. 451 on the absence of literature on the linkage between financial systems and the real economy for the German post war period.

appears to be better performed via the market for corporate control in which management is contested through take-overs.[40]

According to Allen, the choice of what kind of financial institution is most appropriate to enhance economic growth depends on the stage of the economy. Allen argues that repetition of the decision making process is valuable if no consensus consists on how firms should be run.[41] Divergence of opinions is most likely to occur in oligopolistic or monopolistic industries when there is a long period between the adoption of policies and the time that their success or failure is realised and where technological changes are important and rapid.[42] In these cases, Allen suggests that stock markets are better able to allocate resources efficiently as they carry out repetitive checks. In contrast, repetition of monitoring by stock market participants may be a waste of resources for competitive and mature industries, where a wide disagreement on optimal policies is less likely to occur and management is disciplined by a competitive environment.[43] When duplication does not result in improved monitoring, that is when monitoring needs to be done by only one party, banks may be more efficient providers of financial funds.[44] The advantage of choosing a bank as the single monitor lies in the fact that it mitigates the problem of who monitors the monitor, as a bank can guarantee that it is undertaking the cost of monitoring by promising a certain return to its depositors. If it did not monitor, it would be unable to make the promised payment to the depositor.[45]

Considering the role of banks and stock markets under this premise, the question arises whether the West German early post war period is better characterised as an era of rapid technological changes and by oligopolistic

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[40] Gorton and Schmid, 'Universal Banking', p. 1.

[41] F. Allen, 'Stock Markets and Resource Allocation', in C. Mayer and X. Vives (eds.), *Capital Markets and Financial Intermediation*, (Cambridge, 1993), pp. 88-89.

[42] Ibid., p. 92.

[43] The number of companies and their maturity ensures a large pool of data which facilitates determining optimal action.

[44] Allen, 'Stock Markets', pp. 86-89.

[45] Ibid., p. 86 and p. 101 quoting D. Diamond, 'Financial Intermediation and Delegated Monitoring', *Review of Economic Studies*, Vol. 51 (1984), pp. 393-394.

industries, or as a period when most important achievements were mainly in existing and competitive industries rather than in entirely new ones. It is probably safe to argue that the West German early post war period is better described by the latter characterisation. In as far as one subscribes to the argument that bank based systems are more efficient in providing finance to competitive industries with well understood technologies, one could argue - on the basis of Allen's argument outlined above - that the West German economy was well served by its bank based financial system, both during the period of industrialisation as well as during the early post war period.

Indeed, the early post war period and the period of industrialisation have in common that companies were in need of large scale external funding for investments in relatively well understood technologies. Whereas during the German industrial revolution, large external funds were required in order to catch up with more advanced countries, the early post war period was in need of large scale external funding because the war, the loss of territory, and the delayed currency reform, diluted companies' internal funds and generated a need for extraordinary investments.

However, as the 'old' economy matured and the relation between internal resources and future opportunities balanced for existing industries, it appears that the German financial system was slow in adapting to the changing circumstances. In particular, it is asserted that the powerful and economically entrenched German banking system prevented the development of a more potent capital market, and therefore contributed to the comparative lack of innovative activities, as capital markets are perceived to be more adequate in financing new technologies.[46]

In addition to the above cited studies on challenges banks face in an environment of rapid technological change, Dyson points out, 'Faced by new, rapidly changing markets it may prove difficult for the most sophisticated economic

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[46] Kennedy, 'Banks and Industry', pp. 451-456 on the absence of an adequate financial system to foster innovative activities in post war Germany.

and industrial analysis to reduce the element of risk sufficiently to overcome the native caution of the banker. Thus during the early 1980s criticism mounted of the failure of the big banks to give adequate backing to the information technology industry.'[47] A similar interpretation can be found in Cox who writes, 'In an era of rapid technological change and unstable and volatile markets however, the role of the banker becomes much more difficult, and the certainty that the financial system is always optimising the allocation of loans for maximum economic utility is more doubtful. The chance that bankers ... will play safe and fail to optimise their function of facilitating national economic growth is certainly higher in such an environment.'[48]

The argument that capital markets are superior to banks in fostering innovative behaviour has only emerged in more recent decades, particularly driven by the observation that the US with the most advanced and most efficient capital market in the world produces more patents and innovative technologies than any other economy. In the early twentieth century, Alfred Marshall praised the German bank based system, writing 'the German banks have surpassed even those of America in the promptitude and energy with which they faced the risks of turning a large flow of capital into an enterprise ... to which the future belongs'.[49] If nothing else, Marshall's observation of the behaviour of German banks in the early twentieth century should remind us of the complex forces that influence the development of an economic system. Even if one concedes a link between a prevailing financial system and economic development, it is the interplay of a variety of variables including political, governmental, cultural and historical which determines economic development.

Nevertheless, if one is inclined to give credit to the financial system to having partly contributed to the strong economic performance experienced in Germany during the early post war period, it must also accept part of the responsibility for the

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47 Dyson, 'The State, Banks and Industry: The West German Case', p. 133.
48 Cox, 'State, Finance and Industry', p. 3.
49 Shonefield, *Modern Capitalism*, p. 262 citing Alfred Marshall's *Industry and Trade*, p. 518 published in 1919.

comparatively modest growth rates experienced in more recent decades. To the extent that a financial system affects the economic performance of a country, it may be argued that, whilst the West German bank based system might have been beneficial to economic growth during the early post war period, it may have inhibited economic development over more recent decades due to its inability to adjust to changing funding needs. This suggests that it is important for economic development that the financial system develops with or even in anticipation of changing stages of economic development.

The claim that the West German financial system served the needs of the early post war period well, whereas it was less affective in providing an adequate financial environment for the more recent post war period, is indirectly supported by the finding that, in aggregate, German companies appear to have relied to a greater extent on external funding during the 'recovery period' than during the later period of increased technological changes. For a decreasing proportion of external funding suggests that the German financial system failed to move from existing sectors, which were increasingly able to finance their investments with internally generated funds, to identify and provide resources to new sectors which are in greater need of external funding. According to this argument, the presence of industries which rely to a high degree on external finance can be understood as indirect evidence for the suitability of a financial system.

2.6. Theories on the relevance of capital structure

Under the assumption of perfect capital markets, the value of a firm and its cost of capital are independent of its capital structure. According to this proposition by Modigliani and Miller, firm specific investment decisions are independent of the capital structure of a firm, since external funds are perfect substitutes for internal funds.[50] The first to challenge Modigliani and Miller's paper on the irrelevance of capital structure were the authors themselves with a correction of their previous

paper in 1963.[51] In this later version they established that the favourable tax treatment of debt provides an advantage to debt financing over equity financing. Since then an extensive literature on capital structure has developed which has tried to identify the relevance of various determinants that cause market imperfection and as such have a potential influence on the choice of capital structure. No attempt is made by the following subsection to cover all articles written on this subject, or indeed to cover all possible aspects of the subject. The purpose of this section is to introduce the basic theoretical considerations of why capital structure appears to matter. Therefore, the following restricts itself to presenting main ideas of seminal theoretical papers which have contributed most to our present understanding of the relevance of capital structure and which have been developed since the discussion was started by Modigliani and Miller's groundbreaking work in the 1950s. In short, the overview of theoretical advances on capital structure determinants emphasises three approaches which have been identified to influence capital structure choices: the tax effect approach, the agency cost approach, and the asymmetric information approach.[52] The tax effect approach is sketched out because it represents the first theoretical advance in modern capital structure theory. The agency cost approach and the asymmetric information approach have been chosen in order to contrast two theoretical approaches which fundamentally differ in their explanations on how capital structure is chosen. Moreover, these three theoretical approaches have a long standing tradition in financial literature, as they are persistently claimed to be important determinants of the choice of financial instruments. Furthermore,

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[50] F. Modigliani and M. H. Miller, 'The Cost of Capital, Corporate Finance and the Theory of Investment', *American Economic Review*, Vol. XLVIII (1958), No. 3, pp. 261-297.

[51] F. Modigliani and M. H. Miller, 'Corporate Income Taxes and the Cost of Capital: A Correction', *American Economic Review*, Vol. LIII (1963), No. 3, pp. 435-443.

[52] Concentrating on those three approaches means sidestepping issues such as transaction costs and variations on the above mentioned approaches such as the role of non debt tax shields, the effects of differential personal tax rates between income from stocks and bonds, the interaction of capital structure with behaviour in the product or input market, and signalling theories. Literature covering these topics include H. DeAngelo and R. W. Masulis, 'Optimal Capital Structure Under Corporate and Personal Taxation', *Journal of Financial Economics*, Vol. 8 (1980), pp. 3-29; M. H. Miller, 'Debt and Taxes', *Journal of Finance*, Vol. 32 (May, 1977), pp. 261-297; S. Ross, 'The Determination of Financial Structure: The Incentive-Signalling Approach', *Bell Journal of Economics*, Vol. 8 (Spring, 1977), pp. 23-40.

empirical work often refers to the presence of these factors when interpreting findings.

Despite best efforts, the question whether there exists an optimal capital structure or not is still unsolved. By contrasting two fundamentally differing concepts of explaining capital formation, Myers provides some indication of why the existence of optimal capital structure is so difficult to verify.[53] He calls these two concepts the 'static trade off' framework and the 'pecking order' framework. In the static trade off framework firms have a well defined target debt to equity ratio and gradually move towards it, whilst in the pecking order framework firms simply prefer internal over external financing, and debt to equity without having a well defined target debt to equity ratio. The static trade off framework assumes that there is an optimal capital structure and deviations from it are only temporary, whereas the pecking order framework is based on the belief that firms always choose internal over external funds and if they have to rely on external funds, companies always choose debt over equity, with equity as the last resort of financing. This concept of financing assumes that companies always try to rely on the least risky source for investment and only move to a higher risk source if the lower risk source is exhausted. The reason for choosing debt before equity lies in the fact that from the point of view of the investor debt funding is considered to bear lower risks than equity funding. Thus, since its investor based risk profile is lower, debt should always be cheaper than equity for any particular company.[54] In the pecking order framework, there is no well defined optimal debt/equity mix, because there are two kinds of equity, internal and external, one at the top of the pecking order and one at the bottom. By featuring these two fundamentally different concepts of thinking about capital structure, Myers demonstrates that the financial literature still lacks a comprehensive understanding of companies' choice of capital structure. Whether the static trade off framework or the pecking order framework is better able to explain the financing choices of companies depends on which distorting factors are considered the most important driving forces.

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[53] S. C. Myers, 'The Capital Structure Puzzle', *The Journal of Finance*, Vol. XXXIX (1984), No. 3, pp. 575-592.

Until the paper by Myers and Majluf on the effects of asymmetric information on capital structure choice, models which had incorporated market imperfections and distortions generally supported the assertion that there is a well defined debt to equity ratio which maximises a company's value.[55] The first of the theories on capital structure which has suggested the existence of an optimal debt equity ratio was a model based on tax considerations developed by Modigliani and Miller.[56] According to this approach, optimal capital structure is determined by the trade off between the costs and the benefits of borrowing. The benefit of borrowing is due to the tax deductibility of interest payments on debt which can reduce a company's tax obligations, thus transferring value from the government to shareholders. The cost of debt is understood to arise from the increased probability of financial distress as leverage increases. According to the tax approach, the tax shield is increasing the value of a company, but at a decreasing rate, while the potential costs of financial distress are reducing the value of a company but at an increasing rate. Therefore, the optimal capital structure involves balancing the tax advantage of debt against the present value of bankruptcy costs.

The agency cost approach presents another major line of research which indicates that there is an optimal debt to equity ratio. In models based on the agency theory, capital structure is determined by costs due to conflicts of interest.[57] Jensen and Meckling have identified two types of conflicts: conflicts between shareholders and managers, and conflicts between shareholders and debtholders.[58] Conflicts between managers and shareholders may arise because of managerial moral hazard in controlling costs and maximising value. If managers only hold part of the equity in their company, they have an incentive to overindulge in activities which benefit

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54 Ward, *Corporate Financial Strategy*, p. 173.

55 S. C. Myers and N. S. Majluf, 'Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have', *Journal of Financial Economics*, Vol. 13 (1984), pp. 187-221.

56 Modigliani and Miller, 'Corporate Income Taxes', pp. 435-443.

57 For a comparison of different agency models and their prediction on the role of capital structure see M. Harris and A. Raviv, 'The Theory of Capital Structure', *Journal of Finance*, Vol. XLVI (1991), No. 1, pp. 300-306.

58 M. C. Jensen and W. Meckling, 'Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure', *Journal of Financial Economics*, Vol. 3 (1976), pp. 305-360.

themselves but which do not enhance the value of the company, since they only bear a fraction of the costs of the benefits they take out in maximising their own utility.[59] The tendency of pursuing self benefiting activities may be exacerbated when the company has a large free cash flow, as managers are tempted to divert some to the free cash flow to pursue their self enhancing activities or to invest them in (by definition) unprofitable projects within the firm.[60] Additional moral hazard arises because, if managers only hold a part in their companies, they do not capture the entire gain from their profit enhancement activities, but they bear the entire costs, which reduces their incentives to devote significant effort to creative activities. The smaller the managers' holdings in their companies' stock, the smaller the fractional claim of the outcomes, and this will encourage them to appropriate larger amounts of corporate resources in the form of perks. According to the agency cost approach, debt can be used to mitigate these conflicts of interests between managers and shareholders in a variety of ways. First, holding the manager's absolute investment in the firm constant, managerial ownership increases when the fraction of investments financed by debt is increased. In other words, debt financing reduces potential inefficiencies due to moral hazard, as it increases the fraction of equity owned by the manager.[61] Second, assuming that bankruptcy is costly for managers (for instance because managers have to relinquish control over the company in the case of bankruptcy proceedings), debt provides an incentive to managers to pursue behaviour that reduces the probability of bankruptcy.[62] Third,

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[59] In contrast, if managers decided to refrain from consuming part of the profit as perks, they would bear all the costs of this behaviour.

[60] Free cash flow is the cash flow in excess of the amount that can profitably be reinvested in the company. For efficiency, these funds should be returned to shareholders who can put the money to whatever use they think best in consumption or other investments. Managers are interested in reinvesting in their companies as growing companies provide more opportunities for promotion and larger companies tend to earn higher salaries, see P. Milgrom and J. Roberts, *Economics, Organization and Management*, (Englewood Cliffs, 1992), p. 494.

[61] Jensen and Meckling, 'Theory of the Firm', pp. 310-314.

[62] S. J. Grossman and O. D. Hart, 'Corporate Financial Structure and Managerial Incentives', in J. McCall (ed.), *The Economics of Information and Uncertainty*, (Chicago, 1982), p. 108.

debt financing commits the firm to pay out cash which reduces the amount of free cash flow available to managers for potential consumption of perks.[63]

However, these benefits of debt in the presence of conflicts between managers and shareholders are limited by the agency costs associated with the existence of debt in the form of conflicts between shareholders and debtholders. A potential conflict between shareholders and debtholders may arise when companies have a high fraction of debt compared to equity, because shareholders have an incentive of undertaking risky (and even value decreasing investments), as the owners of shares capture most of the gains if returns on risky investments turn out to be high, while debtholders suffer most of the losses if the investment fails. Since debtholders perceive that shareholders will choose the riskier investment in order to maximise share value, they react to this perceived behaviour by taking it into account in deciding the price they will pay for any given debt claim. By correctly anticipating shareholders' behaviour, shareholders receive less for the debt than they otherwise would, therefore bearing the cost of the incentive to invest in risky investments.[64] This effect, called the asset substitution effect, is an agency cost of debt. While the conflict of interest between managers and shareholders is generally seen to be mitigated by increasing the debt level, the conflict between shareholders and debtholders is seen to be exacerbated by high debt levels. Balancing the benefits and cost of debt arising from these differing conflicts of interest points to the existence of an optimal debt to equity ratio.

Models based on asymmetric information point to the costs of external finance due the fact that managers have better information on their investment opportunities than investors. According to Myers and Majluf equity may be mispriced by the market if investors are less well informed about investment opportunities than managers, which might force managers to reject projects with positive net present

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[63] M. C. Jensen, 'Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers', *American Economic Review*, Vol. 76 (1986), No. 2, pp. 323-329.

[64] Jensen and Meckling, 'Theory of the Firm', pp. 317-320.

values.[65] Myers and Majluf argue that in the presence of asymmetric information, internal funds are to be favoured over external funds and if external funds are needed, it is better to issue debt than equity, because the future value of debt changes less than the future value of equity when the manager's inside information is revealed to the market. The reason for preferring internal over external funds in the presence of asymmetric information is obvious as the cost of informational asymmetries can be avoided if the company can retain enough internally generated funds to cover its positive investment opportunities. The reason for preferring debt over equity if managers have favourable information lies in the fact that the less risky debt security is likely to be less undervalued, because its value is less dependent on private information than the more risky equity security, which implies that fewer valuable investment opportunities are passed up if they are financed by debt. Indeed, if the company can issue default risk free debt it does not incur any undervaluation which sets default risk free debt equal to internal funds. Furthermore, if investors know that some profitable investment opportunities which seek finance through share issues might be passed up, while companies would always seek to raise shares if their information is unfavourable as it means that the security issue is overpriced, than investors would force the company to follow the pecking order, refusing to buy equity unless it has exhausted its debt capacity. Therefore, Myers and Majluf have demonstrated that in the presence of asymmetric information, pre-committing to equity is always inferior to pre-committing to debt.[66]

Highlighting different theoretical approaches to capital structure has made apparent that modern capital structure theory is still unsettled. Whereas models based on the importance of taxes and agency costs tend to support the view that there is an optimal capital structure, the pecking order framework is better able to incorporate the asymmetric information approach. The lack of one commonly agreed general model explains why different approaches to capital structure theory reach sometimes conflicting conclusions on how various factors which have been firmly established to determine capital structure affect its formation. Although the

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[65] See Myers and Majluf, 'Corporate Financing', pp. 187-221 for a detailed description of the model and its underlying assumptions.

theoretical literature on capital structure provides some guidance for empirical studies as of how capital structure might be determined, their results can be contradicting as they are highly sensitive to the underlying assumptions.

2.7. Concluding remarks

The objective of this chapter has been to provide an overview of the financial literature on the relationship between financial market development and growth. Furthermore, it has been argued that the economic circumstances of the early post war period were well served by the prevailing structure of financial institutions, and that as such the German financial system may have contributed to some extent to the relatively high growth rates experienced in West Germany during this period. The discussion has also addressed the fact that West Germany after 1965 has been somewhat lagging behind other industrialised countries in terms of innovative activities as it has been argued that capital markets are better in nurturing innovations than banks and that the powerful German banking system has inhibited changes in the financial system which would have strengthened the role of the capital market. However, to what extent the West German financial system contributed to an average growth rate in real GDP of 8.2% between 1950 and 1960, and to what extent it can be blamed for the rather modest growth in real GDP at an annual average of 2.2% between 1973 and 1990, is subject to future research.[67] Non financial policy reforms and the lack of wider structural adjustments, reaching beyond structural changes in the financial sector, may have affected both the return of innovative activities and the development of the financial system. However, West Germany's lesson of turning from an 'economic miracle' to a slowly adjusting economy with a lack of innovative and high growth sectors suggests that policy makers, which are advised to establish an efficient banking sector at the early stages of economic development, need to be aware of the importance of implementing mechanisms which prevent banks from inhibiting a timely development of the capital market.

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[66] Ibid., pp. 198-209.

[67] For figures on growth rates in GDP see Giersch et al., *The Fading Miracle*, pp. 2-3.

3. The West German currency reform of 1948 and its effects on capital market development

3.1. Introduction

The West German currency reform implemented on 21 June 1948 had two main effects on the West German economy: it eliminated the over supply of money, thereby establishing an effective monetary system, and it caused an exogenous shock to the capital structure of West German companies by revaluing monetary and real assets differently. Most of the literature on the German currency reform of 1948 was written shortly after the reform was carried out.[1] The fact that by the time this literature was published only the monetary part of the conversion had been completed might explain why this set of literature restricted its analysis to the effects of the conversion of monetary assets. However, articles published in a special edition of the *Zeitschrift für die gesamte Staatswissenschaft* in 1979 which focused on various aspects of the currency reform also failed to mention anything besides the conversion of monetary assets, although the sources employed in this study had already been available at the time these articles were written.[2] Due to this inattention to the fact of the differential treatment of various assets by the currency reform, no study exists which has dealt with the impact of the currency reform on

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[1] See for instance, W. W. Heller, 'Tax and Monetary Reform in Occupied Germany', *National Tax Journal*, Vol. II (1949), No. 3; G. Colm et al., 'A Plan for the Liquidation of War Finance and the Financial Rehabilitation of Germany', *Zeitschrift für die gesamte Staatswissenschaft*, Vol. 111 (1955), No. 2; F. H. Klopstock, 'Monetary Reform in Western Germany', *The Journal of Political Economy*, Vol. LVII (1949), No. 4; F. H. Klopstock, 'Monetary Reform in Western Germany', *The Journal of Political Economy*, Vol. LVII (1949), No. 4; F. A. Lutz, 'The German Currency Reform and the Revival of the German Economy', *Economica*, Vol. XVI (1949), No. 2; H. Mendershausen, 'Prices, Money and Distribution of Goods in Postwar Germany', *American Economic Review*, Vol. XXXIX (1949), No. 4; H. Sauermann, 'Der amerikanische Plan für die deutsche Währungsreform' *Zeitschrift für die gesamte Staatswissenschaft*, Vol. 111 (1955), No. 2.

[2] Those articles comprise L. A. Metzler, 'The Colm-Dodge-Goldsmith Plan, Appendix O: Recent Experience with Monetary and Financial Reform', *Zeischrift für die gesamte Staatswissenschaft*, Vol. 135 (1979), No. 3; H. Sauermann, 'On the Economic and Financial Rehabilitation of Western Germany (1945-1949)', *Zeitschrift für die gesamte Staatswissenschaft* Vol. 135 (1979), No. 3; E. Wandel, 'Historical Developments Prior to the German Currency Reform of 1948', *Zeitschrift für die gesamte Staatswissenschaft*, Vol. 135 (1979), No. 3.

the capital structure of companies. The following provides a detailed analysis of the implementation of the 1948 currency reform focusing on its redistributory effect within the West German society and on its impact on companies' balance sheets. The analysis of the conversion of monetary assets expands the existing literature by including an evaluation of data which were published by the *Deutsche Bundesbank* in 1976.[3] By providing a detailed account of the implementation of the 1948 currency reform, a number of consequences and side effects become apparent which have been unnoticed by previous studies. With regards to the conversion of real assets, the analysis is based on reports and figures published by the *Statistische Bundesamt* (Federal Statistical Office).[4] As far as known, this data source has never been employed before which suggests that previous work may not have taken into account the full scope and consequences of the currency reform.

3.2. Monetary overhang and preparations for the currency reform

The German *Reich*-government financed war preparation and the war to a large extent through money creation in the form of short term treasury papers (*Schatzanweisungen*) and treasury bills (*Schatzwechsel*) which were held within the German banking system.[5] These securities were usually not marketable but in the case of treasury bills, they were eligible for discount, and in the case of treasury papers they were eligible as collateral for borrowings from the central bank. This form of financing came to be known as '*geräuschlose Finanzierung*' ('silent financing'), as about 90% of public debt remained in the portfolio of banks.[6] Between 1935 and 1945 the *Reich*-debt had expanded from *Reichsmark* (RM) 15 billion to RM 400 billion, excluding war damage and other war connected claims

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[3] Deutsche Bundesbank (ed.), *Deutsches Geld- und Bankwesen in Zahlen 1876-1975*, (Frankfurt a. M., 1976), pp. 24-25.

[4] Statistisches Bundesamt (ed.), 'Die Kapital- und Bilanzumstellungen der Aktiengesellschaften', in *Statistik der Bundesrepublik Deutschland*, Vol. 60 (1952), pp. 1-27, and Statistisches Bundesamt (ed.), *Statistisches Jahrbuch für die Bundesrepublik Deutschland*, (Stuttgart-Köln, 1952), pp. 334-337.

[5] Banks were generally unable to oppose this practice as the government had gained influence over a large part of the banking sector by rescuing financially distressed banks from bankruptcy during the banking crisis in 1931.

estimated at a further RM 300 to RM 400 billion. Over the same period, currency in circulation, including allied military marks issued to finance occupation expenditures, had increased from RM 5 billion to RM 50 billion, and bank deposits had increased from about RM 30 billion to over RM 150 billion.[7] By contrast, national income in 1946 was estimated at RM 25 to 30 billion (at 1936 prices) compared to an estimated national income in excess of RM 60 billion in 1935.[8] The discrepancy between the financial and the economic situation in post war Germany was addressed in the Colm-Dodge-Goldsmith report of 1946 in the following statement:[9]

> The discrepancy between Germany's financial superstructure and her ability to produce has created a monetary illusion. In terms of the liquid assets which they hold, the German people appear to be as wealthy as if they had won the war and had passed into a period of booming prosperity; in terms of production and capacity to produce, however, they are suffering the inevitable consequences of war on their own soil and defeat. The absurdities of the present financial situation in Germany are due to this basic discrepancy between financial superstructure and economic realities.

Already by the time Germany had lost the war, it had become obvious that the Reichsmark had ceased to be an effective monetary instrument as more and more transactions were shifted to various money substitutes. Inflation could only be suppressed by a price and wage freeze, and a stringent rationing of commodities and foreign exchange.[10] Although the price control policy prevented hyper inflation as experienced in Germany during the early 1920s, it led to a growing accumulation of monetary assets which could be less and less utilised for the purchase of goods.[11] With respect to the effectiveness of suppressed inflation, the Colm-Dodge-Goldsmith report observed:[12]

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6 Only about 10% of *Reich* debt were in the hands of individuals, see Heller, 'Tax and Monetary Reform in Occupied Germany', p. 228.

7 Colm et al., 'A Plan for the Liquidation', p. 207.

8 Ibid., p. 214.

9 Ibid., p. 215.

10 These measures were implemented by the four occupation authorities (the U.S.A., Great Britain, France, and the Soviet Union) which governed the occupation zones which later became West and East Germany.

11 Pfleiderer, 'Two Types of Inflation', p. 358.

12 Colm et al., 'A Plan for the Liquidation', p. 215.

German inflation controls are safe as long as workers are willing to work for 'mark' wages and farmers and other producers to sell for 'mark' receipts. Inflation controls become illusory when services are no longer rendered and goods no longer sold for official mark wages and prices. The very imminent danger in Germany is not that inflation controls will break but that they will become meaningless.

The preparations for the invalidation of a large part of money supply did not remain secret to the German public. While no one knew exactly when the currency reform would occur, the German economy began to adjust itself to the prospect by increasingly rejecting the Reichsmark as a medium of exchange and store of value.[13] Although about 90% of transactions were legal and subject to price control, up to 50% of these transactions took the form of inefficient barter tender. Black market transactions covered a relatively small volume of around 10% of transactions but absorbed a considerable part of excess money, as black market prices were on average between 50 and 75 times higher than legal prices.[14] According to estimates the black market absorbed about five times more money volume than transactions at legal prices.[15] Furthermore, an abundance of almost worthless money and the need for barter tender greatly reduced the incentive to work. The reluctance of workers to spend their time on the job and the reluctance of businesses to provide goods in exchange for Reichmark negatively affected economic activity. Companies hoarded goods in order to either use them for transaction purposes or as a store of value until after the currency reform.[16] Alternatively, if the character of production precluded its use for such purposes, companies preferred to keep their plants idle in order to prevent the premature use of raw materials and the depreciation of capital equipment.[17] As early as 1946, studies on the economic situation of Germany reported that the rationing was close to collapse due to extensive localised barter economies.[18] This suggests that already by 1946 the currency reform had become a pressing matter, but political disagreements between the occupation authorities postponed its execution until 1948 when the Western occupation authorities, the

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13 Klopstock, 'Monetary Reform', pp. 278-279.
14 Roskamp, *Capital Formation*, p. 40.
15 Mendershausen, 'Prices, Money and Distribution of Goods in Postwar Germany', p. 654.
16 W. Carlin, 'West German Growth and Institutions, 1945-1990', in N. Crafts and G. Toniolo (eds.), *Economic growth in Europe since 1945*, (Cambridge, 1996), p. 464.
17 Klopstock, 'Monetary Reform', p. 280.

U.S.A., Britain and France, decided to carry out a currency reform only in their zones, excluding the Soviet occupation zone.

The belated implementation of the currency reform was mainly due to disagreements between the Western occupation authorities and the Soviet Union. The Soviet Union had little interest in abolishing a centralised administrative economic order based on a system of rationing and price controls as it facilitated its plans of establishing further socialisation measures and of destroying the privately owned business sector by enforcing prices which made it impossible to cover costs.[19] Therefore, the Soviet Union prolonged discussions on the currency reform by making its approval of the Colm-Dodge-Goldsmith Plan, which had been prepared by U.S. officials in 1946 and contained all necessary details on the implementation of the currency reform, dependent on the agreement over reparation payments and on control over industries.[20] The reluctance of the Soviet Union to accept the proposed plan culminated in a dispute over printing rights of the new currency. The Soviet Union demanded to print part of the new banknotes in its own territory under its sole control. This would have meant that a set of engraving plates would have been in possession of the Soviet Union. The United States considered this demand as unacceptable out of fears that the plates would be misused for excessive money creation. The dispute over printing rights led to the official break-off of the 'four power'[21] negotiations in the first half of 1947.[22] Although the Western authorities were aware that a currency reform limited to the Western occupation zones would have political consequences, they decided in September 1947 to go ahead with the currency reform regardless of whether the Soviet zone would participate. Based on this decision the new currency went into print in the

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18 Sauermann, 'On the Economic and Financial Rehabilitation', p. 309.
19 Wandel, 'Historical Developments', p. 327.
20 Sauermann, 'Der amerikanische Plan', p. 196.
21 The 'four powers' refer to the four occupation authorities administrating Germany at that time, which were the United States, Great Britain, France, which occupied the Western zones, and the Soviet Union, which occupied the Eastern zone.
22 Wandel, 'Historical Developments', p. 326.

United States in September 1947, anticipating that the printing and distribution of the currency would take about nine months.[23]

Already before the end of the war, several German experts had composed a number of proposals to resolve monetary and financial problems post war Germany was expected to encounter. When representatives of the four occupation authorities met in Berlin to discuss the currency reform for the first time in mid-1945, they were able to consult about 30 plans and proposals developed by the Germans. In early 1946, the American government put together a group of experts who tried to establish Germany's financial and economic situation and who - on the basis of this analysis - worked out a detailed plan for a currency reform.[24] In drawing up the details of the currency reform laws, they made use of the assistance of a group of German experts which worked for some weeks in strict seclusion in the so-called „Conclave of Rothwesten". But the basic decisions were made by the military authorities, most notably by the American military authorities.[25] By May 1946, a concise plan for the implementation of a currency reform in Germany had been worked out, which contained all essential parts of the currency reform. This plan was called 'A Plan for the Liquidation of War Finance and the Financial Rehabilitation of Germany' better known as the 'Colm-Dodge-Goldsmith Plan', after the most prominent members of the team of American experts preparing the plan.[26] The name of the plan shows that the American authorities were the main players behind the currency reform, while Great Britain and France were rather passive actors allowing the U.S. authorities to implement their plan also in the French and the British occupation zones. Originally, the plan was in accordance with the Potsdamer Agreement of June 1945 which required of the occupation authorities 'common policies ... for Germany ... as a single economic unit ... in regard to currency and banking, central taxation, and customs'.[27] However, as

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[23] Ibid., pp. 327-328.

[24] The experience of other European countries which had already carried out a currency reform provided useful guidance to certain aspects of the German program, see Metzler, 'The Colm-Dodge-Goldsmith Plan', p. 366.

[25] Pfleiderer, 'Two Types of Inflation', p. 361.

[26] Wandel, 'Historical Developments', pp. 321-323.

[27] Colm et al., 'A Plan for the Liquidation', p. 205.

mentioned, the Colm-Dodge-Goldsmith Plan was eventually implemented in the three Western occupation zones only. As such the currency reform was implemented on 21 June 1948 in the three Western occupation zones, excluding the Western sectors of Berlin. Four days later, when the Soviet Union announced a currency reform in its territory, the (Western) Deutsch Mark was also declared official currency in the three Western sectors of Berlin.[28] The creation of two separate currency areas not only violated the Postdamer Agreement but it also manifested and sealed the partition of Germany. The swift implementation of a currency reform in the Soviet zone, only four days after a currency reform had been carried out in the Western zones, supports the view that the Soviet Union had long planned to realise a separate currency reform in the Eastern zone as we know from the experience in the Western zones that it took months to prepare for the reform. Although political differences became apparent in the course of the currency reform, the reform was an important prerequisite for the following economic reforms carried out in the Western occupation zones, as it reinstated an effective monetary system.

3.3. Technical aspects on the conversion of monetary assets

Adequate statistical material on economic output was scarce for the immediate post war period. The amount of money in circulation as well as national output could only be roughly estimated.[29] Therefore, it was difficult to estimate the amount of money required to keep prices at approximately the level at which they were fixed at that time. The conversion rate from Reichsmark to Deutsch Mark was calculated by taking the ratio of money supply over GDP. According to estimates for the three Western occupation zones, money supply amounted to RM 240 billion and GDP to RM 35 billion in 1946, which represented a ratio of 686%. In comparison, money supply amounted on average to 68% of GDP for the years between 1913 and 1933. The objective of the occupation authorities was to re-establish a similar ratio of money supply over GDP which could be achieved by

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[28] Wandel, 'Historical Developments', p. 330.
[29] Roskamp, *Capital Formation*, p. 42.

reducing money supply to a tenth of its original volume. Despite a considerable increase in GDP by 1948 compared to its level in 1946 on which the money supply to GDP ratio was based, the objective of cancelling 90% of money supply was maintained.[30]

Three possible ways of eliminating the oversupply of money were considered.[31] First, adjusting price levels to the supply of money by abolishing price controls which would have cleared the way to open inflation. However, given the experience of the 'Great Inflation' in Germany during the early 1920s, this plan was never seriously pursued, as a stable monetary system was an important political goal. Secondly, it was considered to block part of the money supply by converting it into loans either of a non negotiable kind or negotiable under severe restrictions. Theoretically, the advantage of this approach would have been that the blocked funds could have been utilised for payments of a capital levy in order to equalise financial burdens caused by the war. Practically, it was likely that the disposition of these blocked accounts would have been subject to uncertainty as continuous pressure to release further instalments of the blocked funds would have been exerted.[32] The third way was the reduction of the money supply to a small fraction of its previous level. Essentially, the third approach was adopted by the Western occupation authorities. A reduction in money supply promised to provide the most rapid and most effective results. However, the cancellation of part of the money supply was complemented with a partial and temporary block of some accounts. This measure provided the occupation authorities with some kind of flexibility in terms of the implementation of the actual conversion rates.

The American occupation authorities insisted that all forms of debts and deposits were to be treated equally.[33] German experts tried to achieve an exemption for the conversion of long term capital market debt such as bank and corporate

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30 Sauermann, 'Der amerikanische Plan', p. 200.
31 Pfleiderer, 'Two Types of Inflation', pp. 360-361.
32 Metzler, 'The Colm-Dodge-Goldsmith Plan', p. 368 on the experience of various European countries with blocked funds and capital levies.
33 Sauermann, 'The Economic and Financial Rehabilitation', pp. 301-319 and Pfleiderer, 'Two Types of Inflation', pp. 352-364.

bonds and mortgages and demanded a conversion rate of one to one for these securities. They based their demand on three arguments. First, it was seen as wrong to take physical assets from their owners. Secondly, it was not good for the development of the capital market to treat less liquid investments in capital market securities in the same way as highly liquid savings and demand deposits. Third, the writing down of these assets would not contribute anything to the necessary elimination of excess money supply.[34] But the occupation authorities insisted on a conversion rate of ten to one for long term capital market debt. They argued that all monetary claims should be treated equally. However, it will be shown that during the actual conversion monetary claims were treated anything but equally. Only wages, pensions, social security benefits and rents, which had been subject to price controls for many years, were converted at a rate of one to one.[35]

On the first day of the reform all natural and legal persons had to register their Reichsmark notes and bank assets in order to take advantage of their conversion rights. For these registered Reichsmark assets, they were promised Deutsch Mark amounting to 10% of the Reichsmark balance. Of the newly created Deutsch Mark balance 50% was of free disposal as soon as it had been approved by the tax authorities, the other 50% were temporarily blocked. Bank deposits which contained more than DM 5,000 were subject to particular scrutiny by the tax authorities. The clearing procedure carried out by the tax authorities was directed at balances that were acquired illegitimately through the black market which had evolved in response to the severe rationing of goods and the lack of value of the Reichsmark. It is estimated that approximately RM 2.5 billion were not registered out of fear for tax investigations.[36] The clearing procedure also served to prevent the rapid

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[34] Pfleiderer, 'Two Types of Inflation', p. 361 and H. Irmler, 'Währungsreform und reglementierter Kapitalmarkt', in G. Bruns and K. Häuser (eds.), *30 Jahre Kapitalmarkt in der Bundesrepublik Deutschland,* (Frankfurt a. M., 1981), p. 10.

[35] Wage controls had existed since 1938 and were lifted in November 1948, see Adamsen, *Investitionshilfe*, p. 44. Price controls had been implemented as early as 1936, see Irmler 'Währungsreform', p. 9.

[36] E. Wandel, 'Die Entstehung der Bank deutscher Länder', *Schriftenreihe des Instituts für bankhistorische Forschung*, Vol. 3, (Frankfurt a. M., 1980), p. 123.

spending of freely available funds as a great number of accounts were subject to approval by the tax authorities.[37]

In addition to the general conversion of the currency, every German citizen was entitled to receive a per capita quota (*'Kopfgeld'*) of DM 60, of which DM 40 were paid out immediately and DM 20 over the following two months. At first it was envisioned that the per capita quota was paid out in exchange for the same amount of Reichsmark notes, or in other words at a ratio of 1:1. However, one week later it was announced that the initial per capita quota would be counted against the bank balance at a rate of 10:1, provided the bank statement showed the necessary credit. This meant that if an individual had a Reichsmark balance of at least RM 600 then the conversion rate for the per capita quota was 10:1, whereas those individuals who held no more than RM 60 obtained the per capita quota at a ratio of 1:1. The conversion rate for the per capita quota of anyone with a Reichsmark balance between RM 60 and RM 600 lay in between those two rates. The same was true for the initial endowment of firms, with firms being entitled to DM 60 per employee, which was often not sufficient to meet the initial week's wage payments.[38] The total initial endowment to households and companies amounted to DM 3,300 million, as shown in Table 3.1. Deposits of the *Länder* (the West German Federal Government only came into existence in 1949), local authorities, the federal rail, the federal mail, and military authorities were not converted but declared void. As a replacement of the cancelled deposits, public authorities received a standardised initial endowment calculated on the basis of their average monthly income between 1 October 1947 and 31 March 1948.[39] These endowments were given in the form of deposits with either one of the *Landeszentralbanken* (central banks of the states) or with the *Bank*

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[37] Klopstock, 'Monetary Reform', p. 282, Wandel, 'Die Entstehung der Bank deutscher Länder', p. 123, and Deutsche Bundesbank , *Deutsches Geld- und Bankwesen*, p. 22 and Table 1.05, p. 25.

[38] Klopstock, 'Monetary Reform', p. 282, Lutz, 'The German Currency Reform', p. 123, Heller, 'Tax and Monetary Reform', pp. 216-217, and Roskamp, *Capital Formation*, p. 43.

[39] Pfleiderer, 'Two Types of Inflation', p. 362.

deutscher Länder.[40] The initial endowment of public authorities amounted to DM 3,550 million, see Table 3.1.

Table 3.1 shows that the allocation of initial endowments to public authorities as well as to individuals and companies was completed by September 1948. By contrast, the conversion of deposits lasted one and a half years and was finally completed by the end of 1949. The different speed in allocating initial endowments and in converting deposits meant that whereas public authorities were in control of all their funds by September 1948, households and companies had to wait for part of their funds until the end of 1949. In addition, only household and company deposits were targeted when the occupation authorities decided to contract money supply further in order to fight inflationary pressures in October 1948.

Table 3.1 Timing of Money Creation for West Germany without West Berlin (in DM million)

End of Month		Initial Endowments		Conversion of RM Deposits		Sum of Legal Money Creation
		to Public Authorities incl. Military Authorities	Per Capita Quota to Individuals and Companies	Free Accounts	Blocked Accounts	
		According to Respective Book Entries of Banks				
1948	June	2,500	1,900	-	-	4,400
	Sept.	3,450	3,250	3,500	2,850	13,050
	Dec.	3,450	3,250	5,350	[1]750	12,800
1949	March	3,450	3,250	5,700	550	12,950
	June	3,450	3,250	5,950	450	13,100
	Sept.	3,450	3,250	6,100	400	13,200
	Dec.	3,450	3,250	6,200	350	13,250
		According to Results of the Final Conversion as Stated by the Banking System				
		3,550	3,300	6,400		13,250

Note: [1] Effect of Cancellation of 70% of Blocked Accounts in October 1948
Source: Deutsche Bundesbank, *Deutsches Geld- und Bankwesen*, Table 1.05, p. 25.

Despite a drastic cut in money supply and a sudden increase in goods offered for sale, the German economy experienced inflationary tendencies during the first six months of the currency reform. Out of fear of inflationary pressures, the occupation authorities announced at the beginning of October 1948, that 70% of the blocked accounts were to be cancelled, 20% were to be released, and 10% were to

[40] The *Bank deutscher Länder* was established a few months before the currency reform. As first German independent central bank, it replaced the former central bank, the *Reichsbank*. In 1956, the *Bank deutscher Länder* was succeeded by the *Deutsche Bundesbank*. *Landeszentralbanken* were established by the occupation authorities as initial replacement of the *Reichsbank*, and are central banks operating at state level.

be transferred to an open account. The open accounts were eventually released by the central bank in 1949.[41] All public and governmental agencies including federal rail, federal mail and military governments which, after cancellation of all their deposits, were provided with a generous initial endowment of the new currency, were exempt from the October revision. The change in the ratio did also not apply to private claims, so that the holders of money were penalised as compared to holders of private claims.[42]

The cancellation of 70% of blocked accounts had an averse psychological effect on the trust of the German public in the new currency as it openly revealed the authorities' concern over inflationary pressures. The liquidation of blocked accounts, whose release the public had every reason to believe on the basis of the reform legislation of June 1948, seriously undermined the public's confidence in the new currency. Therefore, what transpired was opposite to what was intended by a further cut in money supply and inflationary pressures picked up as the German public reacted with an even stronger preference for consumption which was already at high levels after years of privation. As a consequence, the unexpected cut of part of the blocked accounts led to a higher than expected increase in money velocity, which partly offset the additional reduction of money supply.

Tables 3.2(a) and 3.2(b) compare the closing Reichsmark balance sheet of banks with their opening Deutsch Mark balance sheet. The balance sheets in Tables 3.2(a) and 3.2(b) are aggregates of balance sheets of all West German commercial banks, except West Berlin, and all West German central banks, the central banks of the states (*Landeszentralbanken*) and the federal central bank (*Bank deutscher Länder*). With the actual conversion of the currency carried out through the West German banking system, West German banks were required to keep exact books on the last Reichsmark balance and the first Deutsch Mark balance. Therefore the figures provided by the aggregate of bank balance sheets can be considered to

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[41] W. W. Heller, 'The Role of Fiscal-Monetary Policy in German Economic Recovery', *The American Economic Review Papers and Proceedings*, Vol. XL (1950), No. 2, p. 540.

[42] Lutz, 'The German Currency Reform', p. 123.

reflect closely the actual amount of Reichsmark and Deutsch Mark in circulation at the time of the currency reform in June 1948.

Table 3.2(a) Aggregation of West German Bank Balance Sheets (Assets), (in RM/DM million)*

assets	Balance at 20/21.06.1948		RM assets in % of sum of assets	DM assets in % of sum of assets	DM/RM conversion rate (2) / (1)	weighted conversion rate (3) x (5)
	RM	DM	%	%	10:x	10:x
columns	1	2	3	4	5	6
assets						
1. cash on hand	35,820	1	13.5	0.0	0.0	0.0
2. credit balance with West German central banks	36,726	1,870	13.8	9.6	0.5	6.9
RM credit balance	36,726	-	-	-		
DM credit balance for initial endowment		641	-	(3.3)	(0.2)	-
DM credit balance for per capita quota of households and companies		1,229	-	(6.3)	(0.3)	-
3. National Giro check credit	2,662	-	1.0	-	not converted	-
4. Treasury bills, Treasury papers, government bonds	83,997	24	31.5	0.1	0.0	0.0
5. other securities and holdings[1]	2,916	283	1.1	1.5	1.0	1.1
6. balances with other banks	68,072	50	25.6	0.3	0.0	0.0
7. claims against public authorities	9,089	3	3.4	0.0	0.0	0.0
8. claims against companies and households	17,481	1,380	6.6	7.1	0.8	5.3
9. claims on foreign currency and other foreign assets[2]	1,507	473	0.6	2.4	3.1	1.9
10. other assets[3]	8,063	489	3.0	2.5	0.6	1.8
11. compensation claims						
of 3% (§11 UG)[4]		14,191		73.2		
of 4,5% (§22 para 2 UG)		448		2.3		
of 3% other compensation claims		105		0.5		
non-interest -bearing		76		0.4		
12. Sum of assets	266,333	19,393			0.7	
Percentage sum			100.1	99.9		
average of weighted DM/RM conversion rate for assets						1.9

Note: *including *Bank deutscher Länder*, *Landeszenralbanken* and all commercial banks of West Germany but West Berlin, with the closing Reichsmark balance as of 20 June 1948 and the opening Deutsch Mark balance as of 21 June 1948; Column 1 and 2 as stated in 'Deutsches Geld- und Bankwesen in Zahlen'. Column 3 to 6 comprise own calculations. [1] Including participations in syndicates. [2] Including claims on foreign currencies held by nationals. [3] Including real estate, building, and equipment. [4] UG:*Umstellungsgesetz* (conversion law).
Source: Deutsche Bundesbank, *Deutsches Geld- und Bankwesen*, Table 1.02, p. 24

Table 3.2(b) Aggregation of West German Bank Balance Sheets (Liabilities), (in RM/DM million)

liabilities	Balance at 20.06.1948		RM liabilities in % of sum of liabilities	DM liabilities in % of sum of liabilities	DM/RM conversion rate (8)/(7)	weighted conversion rate (9) x (11)
	RM	DM	%	%	10:x	10:x
columns	7	8	9	10	11	12
liabilities						
1. money put in circulation[1]	-	2,118	-	10.9	-	-
2. deposits						
20. banks	94,490	1,845	35.5	9.5	0.2	7.1
conversion of RM deposits	94,490	25	-	(0.1)	(0.0)	-
initial DM liquidity endowment		648	-	(3.3)	(0.1)	-
credit entry for per capita quota of households and companies (with part of second instalment for households)	-	1,172	-	(6.0)	(0.1)	-
21. public authorities (including occupation authorities)	24,865	3,559	9.3	18.4	1.4	13.0
conversion of RM deposits	24,865	-	-	-	-	-
initial DM endowment	-	3,559	-	-	-	-
22. companies and households	119,643	7,615	44.9	39.3	0.6	26.9
conversion of RM deposits	119,643	6,387	-	(32.9)	(0.5)	-
initial DM endowment (per capita and company quota)		1,228	-	(6.3)	(0.1)	-
3. securities and loans	3,645	176	1.4	0.9	0.5	0.7
4. bonds outstanding	11,299	1,122	4.2	5.8	1.0	4.2
5. debts and securities of customers abroad	349	297	0.1	1.5	8.5	0.9
6. other liabilities abroad	565	270	0.2	1.4	4.8	1.0
7. equity capital or nominal capital of limited liability companies	3,099	}1,205	1.2	6.2	1.8	4.5
8. reserves	3,528		1.3			
9. provisions and value adjustments	2,039	1,028	0.8	5.3	5.0	4.0
10. other liabilities	2,811	158	1.1	0.8	0.6	0.6
11. sum of liabilities	266,333	19,393			0.7	
percentage sum			100.00	99.99		
average of weighted DM/RM conversion rate for liabilities						6.4

Note: Column 7 and 8 as stated in 'Deutsches Geld- und Bankwesen in Zahlen'. Column 9 to 12 comprise own calculations. [1] First instalment and part of second instalment of per capita quota.
Source: Deutsche Bundesbank, *Deutsches Geld- und Bankwesen*, Table 1.02, p. 24

As mentioned, deposits held by public agencies were declared void. As compensation for the complete cancellation of their deposits, public authorities received a generous initial endowment which created an effective conversion rate for public deposits of 10:1.4 (see row 2.1, column 11 of Table 3.2(b)). Comparing the effective conversion rate of public deposits with the conversion rate of 10:0.6 granted to household and company deposits shows that deposits of public authorities were treated more than twice as favourably by the reform as deposits of the private sector. The decision to provide public authorities with a relatively generous initial endowment was taken because it was expected that tax receipts were low during the first few months of the reform.[43] Public debt was also declared void, as with the collapse of the Nazi regime there was no longer any authority to pay interest or to redeem outstanding securities. Intra-bank claims and intra-bank deposits were practically entirely written off as was cash on hand. Assets held by foreigners were granted the most favourable conversion rate with rates ranging between 10:4.8 and 10:8.5 (see rows 5 and 6, column 11 of Table 3.2(b)). Claims on foreign assets with a rate of 10:3.1 were also relatively less devalued than domestic claims. The items of 'bonds outstanding' and other securities were the only items which were converted at the originally envisioned rate of 10:1 (see row 5, column 5 of Table 3.2(a) and row 4, column 11 of Table 3.2(b)).

As shown in row 22, column 11 of Table 3.2(b), the conversion rate of household and company deposits was 10:0.5. Taking into account the initial endowment of households and companies in addition to the general conversion of their bank deposits, gives an actual conversion rate of 10:0.6 for household and company deposits for June 1948. However, the allocation of the per capita quota for households and companies was not yet completed in June 1948 and increased from DM 1,228 million in June 1948 (see row 22, column 8 of Table 3.2(b)), to DM 3,250 million by September 1948, see Table 3.1. Considering the total initial allocation households and companies had received by September 1948 in addition to the conversion of their deposits, gives a final conversion rate for household and company deposits of 10:0.8. This equals the conversion rate for household and

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[43] See Monatsberichte der Bank deutscher Länder (March, 1949), p. 33.

company debts, also showing a conversion rate of 10:0.8 (see row 8, column 5 of Table 3.2(a)). Table 3.2 also shows that pre-currency reform debt of households and companies amounted to only about a tenth of their pre-currency reform deposits. The small absolute amount of household and company debt reflects the fact that they were Reichsmark rich and rarely needed to borrow.[44] It is noteworthy to point out that the literature unanimously quotes a conversion rate of 10:0.65 for household and company deposits however, this figure is only correct if one considers only the first instalment of initial endowments received in June 1948. However, it understates the actual conversion rate one obtains when considering the first as well as the second instalment of initial endowments received in scheduled tranches between June and September 1948.

Taking the sum of the opening Deutsch Mark balance over the sum of the closing Reichsmark balance as presented in Table 3.2 suggests a general conversion rate of 10:0.7. However, considering the weighted average of the DM/RM conversion rates reveals a considerable difference between the conversion of bank assets and the conversion of bank liabilities. Whereas the weighted average of the DM/RM conversion rate for bank assets was 10:1.9, bank liabilities had a weighted average conversion rate of 10:6.4 (see last rows, column 6 and 12 of Table 3.2). According to this measure, bank assets were more than three times more devalued than bank liabilities. Table 3.2(a) also shows that compensation claims became by far the single most important asset of banks, accounting for 73.2% of their total assets. Because these compensation claims were eligible as collateral against credits from the state central banks, banks were in the position to expand credits right from the start of the post currency reform period. On the liability side, banks' total equity in proportion of the sum of liabilities improved considerably in the course of the currency reform, with total equity accounting for 2.5% of the sum of liabilities before the reform, and for 6.2% after the reform (see rows 7 and 8, column 8 and 9 of Table 3.2(b)).

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[44] Lutz, 'The German Currency Reform', p. 125.

Furthermore, Table 3.2 reveals that cash on hand, treasury bills, treasury papers, public bonds and other claims on public authorities as well as claims on banks were practically cancelled. This reflects the fact that the biggest debtor - the government - emerged from the currency reform with its debts taken off the books. Table 3.2 also shows that no monetary assets but one was converted at the rate of 10:1. Not only was every asset converted at a different rate but the conversion rate also depended on who the holder of the asset was. This conversion policy led to a significant change in the distribution of financial assets. Public authorities gained most from the currency reform, being granted a generous initial allocation of funds while their enormous bulk of debt, which had contributed most to the over-supply of money, was declared void. Households and companies suffered from the unanticipated cancellation of a large part of their deposits. However, acknowledging a rate of 10:0.8 as the final conversion rate for household and company deposits meant that the ratio of households' and companies' bank debt to bank deposits remained unchanged in the course of the currency reform, as household and company debt was also converted at a rate of 10:0.8.

Table 3.3 Conversion of Non Bank Assets and Legal Money Creation

Treatment of non bank RM assets		Sources of legal money creation	
RM balance at 20.06.1948	Mill RM		Million
1. Sight and time deposits	72,821	1. Initial endowment of non banks	6,849DM
10. Not to be converted	29,056	10. Per capita quota (1. & 2. Instalment)	2,818DM
11. To be converted	43,765	11. Company quota	472DM
		12. Endowment to public authorities	3,559DM
2. Saving deposits	71,687	120. Länder and municipalities	2,438DM
20. Not to be converted	15,438	121. Rail and mail administration	318DM
21. To be converted	56,249	122. Military government	772DM
		123. Foreign governments	31DM
3. Total deposits	144,508	2. Conversion of RM assets of non-banks	
		20. RM assets of non-banks after	
30. Not to be converted	44,494	depositing their liquid assets	*144,508RM*
RM assets of public authorities		200. Public authorities (including	
	21,738	occupation authorities)	*24,865RM*
RM assets of occupation	3,127	201. Companies and households	*119,643RM*
authorities		Sight and time deposits	*50,680RM*
Statement of lapse by revenue-		Saving deposits	*68,963RM*
office	89		
Lapsed because of non-			
registration	961		
Lapsed petty cash	84	21. Converted RM assets according to	
Spent on per capita quota	14,084	position 20.	6,387DM
Spent on company quota	4,362	210. Sight and time deposits	2,780DM
Other amounts not to be		211. Saving deposits	3,607DM
converted	49		
		Included in 21: deposits on open account	(490DM)
31. To be converted	100,014	3. Total DM money creation (1.+21.)	13,236DM

Note: Reichsmark in italics
Source: Deutsche Bundesbank, 'Deutsches Geld- und Bankwesen', table 1.04, p. 25

Table 3.3 shows that non-bank Reichsmark deposits amounted to RM 145 billion before the currency reform, of which RM 45 were cancelled and RM 100 were converted into DM 13 billion by the end of 1948. With an estimated GDP of DM 50 billion in 1948 and money supply of DM 13 billion, the ratio of money supply over GDP amounted to about 22% in the summer of 1948 and to 26% by the end of 1948. Therefore, the currency reform transformed the ratio of money supply over GDP to about 42% below the ratio originally envisioned by the occupation authorities, as they had set out to establish a ratio of approximately 68%. Even if a general conversion rate of 10:1 had been applied, the ratio of money supply over GDP had only amounted to 53.3%, given that the actual GDP of 1948 was considerably higher than the estimated GPD for 1946, which was the basis of the original conversion rate.

3.4. Bank liquidity and company borrowing

As mentioned, banks had been the main holders of debt which the government had issued to finance war expenses. Public debt had represented the single most important asset of banks, accounting for 35% of their assets before the currency reform whereas after the currency reform public debt accounted for only 0.2% of banks' assets, see Table 3.2. The cancellation of public debt, cash on hand and intra-bank claims created a gap between bank assets and bank liabilities. This gap was widened by allowing banks to put a provisional figure for their proprietors' capital equal to 5% of their new obligations from demand and time deposits.[45] As compensation for their loss of claims, banks were credited with the *Landeszentralbanken* with DM 15 in reserve money for every DM 100 of their liabilities with respect to demand deposits, and with DM 7.5 for every DM 100 of their liabilities with respect to time and saving deposits.[46] This initial allocation of liquid funds in the form of balances with the state central banks constituted the

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[45] The provisional assessment of proprietors' capital became necessary because the principles according to which real assets were to be converted were not yet determined, see ibid., p. 126.

[46] L. Markert, 'German Banking in 1948', *Journal of the Institute of Bankers*, Part III, Vol. LXX (1949), pp. 70-71.

transition to a system of minimum reserves.[47]. The allocation of compensation claims caused the banks to emerge from the currency reform with their equity to liability ratios enhanced by a factor of nearly 2.5, even though their pre-existing assets were devalued about three times more sharply than their liabilities. The remaining gap was closed by granting banks claims against the *Länder*. These equalisation claims (*Ausgleichsforderungen*), which bore a general interest of 3%, were not marketable but represented a cash reserve as they were eligible as collateral against credits from the state central banks (*Landeszentralbanken*). In special cases the central banks were able to purchase these claims, but no specified arrangements were made for redemption.[48] The allocation of sizeable reserves and collaterals in the form of compensation and equalisation claims enabled commercial banks to expand their credits without having to rediscount with the central banks during the first crucial post reform months. The liquidity of commercial banks further improved as public authorities spent their initial endowments, as this process converted secondary liquidity into primary liquidity, which could be used to meet minimum reserve requirements.[49]

Companies demand for credit was high right from the start of the post currency reform period. Since accounts were only gradually released, many firms had to borrow money even though their bank balances might have been sufficient to finance their operations had those balances been immediately available. Thus, with the gradual release of accounts, an expansion of bank credits occurred.[50] By the end of June 1949, commercial banks had granted long and medium term loans to the non banking sector amounting to DM 280 million, while short term credits had reached a volume of DM 6.5 billion.[51] Already by July 1948, short term credits to non banks amounted to DM 1.3 billion, or 10% of money created by the currency reform, see Table 3.4. The sharpest increase of short term credits occurred in

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47 Pfleiderer, 'Two Types of Inflation', p. 362. Legal reserve requirements were introduced by the occupation authorities and provided the central bank with an additional mechanism of monetary control, see Lutz, 'The German Currency Reform', p. 127.

48 Markert, 'German Banking', p. 70, and Lutz, 'The German Currency Reform', p. 126.

49 Monatsberichte der Bank deutscher Länder (February, 1949), p. 18.

50 Lutz, 'The German Currency Reform', p. 129.

51 Monatsberichte der Bank deutscher Länder, (August, 1949), pp. 38-39.

August 1948 when the volume of credits increased by almost 80% on the month, from DM 1.3 billion in July to DM 2.4 billion in August. After August 1948, the volume of short term credits continued to grow however at a decreasing rate until June 1949 when the absolute increase in short term credits rose over two consecutive months, see Table 3.4.

Table 3.4 Short Term Credits of Commercial Banks to Non Banks (in DM million)

month	total of short term credits	monthly increase
1948		
July	1,339.2	-
August	2,378.3	1,039.1
September	3,196.4	818.1
October	3,818.6	622.2
November	4,333.1	514.5
December	4,684.3	351.2
1949		
January	4,900.6	216.3
February	5,264.7	364.1
March	5,551.2	286.5
April	5,886.9	335.7
May	6,123.6	236.7
June	6,535.7	412.1
July	6,997.4	461.7

Source: Monatsberichte der Bank deutscher Länder (August, 1949), p. 39.

This rapid increase in bank loans occurred despite an attempt of credit rationing during the first six weeks of the reform and further credit restrictions implemented by the central bank council between November 1948 and March 1949, when all banks were urged to reduce their volume of credit to the amount prevailing on 31 October 1948.[52]

3.5. Initial disturbances associated with the currency reform

The greater than planned contraction of money supply reflects the fact that the currency reform was only one of several measures to rehabilitate the West German economy. The American authorities understood the currency reform as a means to establish an economic environment in which controls on prices, allocation and rationing could be relaxed. By initially blocking part of the accounts, the occupation authorities retained some control over money supply as the blocked accounts could be used as a safety valve to counteract inflationary tendencies. However, the

[52] Klopstock, 'Monetary Reform', p. 289.

decision to replace all accounts held by public authorities with initial endowments greatly reduced the amount of controllable funds. Therefore, the scope for a flexible response to inflationary pressures by reducing money supply was limited to blocked household and company accounts. Not only were initial endowments out of reach of inflation control policies implemented by the occupation authorities, they also limited the scope of central bank policies to control inflation. The *Bank deutscher Länder* had no means of controlling the gradually expanding money supply as it did not possess marketable securities which it could have used for open market operations in order to absorb money supply which increased as accounts were released and as initial endowments were spent.[53] In addition, the high liquidity of commercial banks reduced the monetary policy tool of increasing the discount rate to a level where it was an effective device in controlling credit volumes, as banks hardly ever needed to rediscount with the central bank in order to expand credits. At the end of September 1948, only 11% of commercial bank credits were refinanced through the central bank.[54] The system of minimum reserves was new to the German banking system and therefore the central bank did not immediately use this policy tool. When the central bank finally chose to use this mechanism of monetary control in December 1948, it raised the minimum reserve requirements for banks from 10% to 15%. The reduced possibilities of controlling money supply during the transition period contributed to initial inflationary pressures during the second half of 1948 followed by deflationary tendencies during the first half of 1949.

The inflationary pressures experienced during the second half of 1948 were partly due to the limited ability of the occupation and monetary authorities to exert control over money supply and partly due to the stronger than anticipated domestic demand. With the currency reform and the lifting of price controls, supply finally met demand again as confidence in the new currency induced producers to offer their (hoarded) goods. Since the relative structure of controlled prices did not reflect the relative scarcity of goods, a market price structure expressing these relative scarcities had to be found without any guidance from pre-currency reform prices.

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[53] Lutz, 'The German Currency Reform', pp. 127 and 129-130. Claims which the central banks held against the *Länder* (states) and the Bizone were not marketable.

The sellers at first simply charged whatever prices they thought the market could bear, and with the money stream increasing continuously until the end of 1948 prices also rose continuously.[55] In order to prevent excessive prices without returning to price controls, the occupation authorities passed a law which made charging 'obviously excessive prices' a penal offence and published a list of 'normal prices' which was to be displayed in stores.[56]

In its eagerness to satisfy its backlog in demand, the German public spent most of its initial endowments and the gradually released accounts within the first few months of the currency reform, or in other words, as soon as it acquired its allocation of the new currency. Diary entries of a contemporary, Ludwig Vaubel - head of the legal department of the chemical company *Vereinigte Ganzstoff-Fabriken* and from 1953 member of the executive board - reflect the mood of the German public at the time of the currency reform.[57]

21 June 1948: The first instalment of DM 40 has been distributed at the municipalities on Sunday. ... During the last few days, everybody tried to pay as many liabilities as possible in old money, most of these transactions were carried out successfully. Now, over night a new time has begun. Shops are full of commodities of every kind, which were not seen for years or only available through barter tender ... Transactions which involve the new currency are only carried out with hesitation, as it is uncertain when regular income will be received again. [As mentioned above, the initial endowment of companies was often not sufficient to pay the full salary to employees in the first month of the currency reform.] *28 June 1948*: On Saturday in Frankfurt, the first shopping: scissors, saucepan, bowl, bucket, cherries are available at any number. Nobody understands where all the fruits and vegetables have been until now. ..., prices are reasonable. But the overall uncertainty remains high. Will the supply of goods last? Will prices rise or fall? ... The rationing has been lifted in most areas, even eggs have been freed. Incredibly low prices are reported from the black market; butter DM 4.- to DM 6.- per pound, 20 cigarettes for DM 2.50, so that the official rationing of American cigarettes for DM 0.30 a cigarette cannot be sold. *12 August 1948*: Life in the Bizone [consisting of the American and the British occupation zone] has changed since the day of the currency reform. The hopes for a better future were not only illusions. ... But this does not hold for everyone. Too many people are deprived of all their means of disposal after they have spent their 'per capita quota', and their savings have been dissolved. There are too many, who are not able to work any more, or who cannot find a job which would sufficiently provide them with the main fundamentals. - *19 October 1948*: - The tendency to exaggerate which can be noticed

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[54] Monatsberichte der Bank deutscher Länder, (February, 1949), p. 14.

[55] Lutz, 'The German Currency Reform', p. 135.

[56] Mendershausen, 'Prices, Money and Distribution', p. 669.

[57] L. Vaubel, *Zusammenbruch und Wiederaufbau: Ein Tagebuch aus der Wirtschaft 1945-1949*, (München, 2nd ed., 1985), pp 171-178. Quotes are translated by me.

everywhere in the Western zones after the currency reform, is also confirmed [by our behaviour]. Everyone would like to recover his former living standard as soon as possible, and catch up in material pleasures which had been missed so much over the last few years.

These diary entries portray the uncertainties still prevailing immediately after the currency reform. They also point out how hoarded inventories were rapidly reappearing on shelves right after the start of the currency reform and how severely the German population was deprived of the most essential goods as it had become more and more difficult to buy anything with Reichsmark in anticipation of the currency reform. As the German consumers had spent most of their initial balances within the first few months, they soon depended entirely on their current income, slowing down domestic demand. The changing behaviour in consumer demand was reflected in a reduction of the ratio of currency in circulation over money supply, decreasing from 37% in December 1948 to 33% in July 1949.[58] With slackening demand, the beginning of 1949 was characterised by a fear of deflation. Ludwig Vaubel's diary entries note.[59]

7 January 1949: At the moment, there are again two bankruptcies a week in Cologne, as in 1929. Post war business openings fold up. Price reductions also for shoes and textiles. Due to imports of Italian oranges - DM 0.35 per pound - we also expect pressure on the prices of apples. Wage increases of up to DM 0.75 per hour will become necessary in Nord Rhine Westfalia. ...

According to Carlin, the deflationary tendencies had a disciplinary effect on businesses, with deflation acting to increase the attention of companies to their costs. And the slack in domestic demand not only served to curb price increases and wage demands but also exerted pressure on businessmen to seek foreign markets for their goods.[60] However, these initial disturbances which accompanied the currency reform were soon overcome and by the spring of 1949 the West German economy operated in a relatively stable monetary environment.

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[58] Monatsberichte der Bank deutscher Länder (August, 1949), p. 45.

[59] Vaubel, *Zusammenbruch und Wiederaufbau*, pp. 182-183.

[60] W. Carlin, 'Economic Reconstruction in Western Germany, 1945-55: The Displacement of 'Vegetative Control'', in I. Turner (ed.), *Reconstruction in Post-War Germany*, (Oxford, 1989), p. 59.

3.6. The conversion of balance sheets of West German public limited companies

A law containing details on the conversion of company balance sheets was passed more than one year after the monetary reform in August 1949. It comprised all fundamental rules for converting the final Reichsmark balance sheet into the first Deutsch Mark balance sheet, in particular, it included the rules for the valuation of fixed assets and the *Grundkapital* (capital stock). All initial DM balance sheets were to be dated as of 21 June 1948, however the conversion procedure was not completed before 1952, with 88% of the 2,724 German public limited companies and *Kommanditgesellschaften auf Aktien* (commercial partnership limited by shares) having converted their balance sheets by December 1951.[61] The lengthy procedure of the conversion of balance sheets handicapped the development of the capital market, since companies had to complete their conversion of balance sheets before they could be registered at one of the West German stock exchanges. Companies were also not allowed to pay out dividends before their nominal capital stock had been established.[62] As the conversion of balance sheets progressed, more and more shares were quoted in Deutsch Mark.

The law of the conversion of balance sheets introduced a clearer and more detailed balance sheet structure. One of the major changes implemented was to capture the yearly changes of fixed assets by classifying them into initial capital stock, change in fixed assets, depreciation, and final capital stock.[63] Fixed assets were revalued within the boundaries set by the conversion law and the valuation rule on fixed assets. The upper limit for the valuation of fixed assets was specified in the conversion law which stated that fixed assets could be revalued up to their replacement costs, which increased considerably. The lower limit was specified by

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[61] Among the companies which had not yet converted their balance sheets by the end of 1951 were companies of the coal, iron, steel, and chemical industries whose imminent disentanglement by the occupation authorities hindered conversion; commercial banks and insurance companies, whose conversion was delayed by lengthy examination of their assets; and companies which had relocated from the east, see Statistisches Bundesamt, 'Die Kapital- und Bilanzumstellung der Aktiengesellschaften', p. 13.

[62] Ibid., p. 17.

[63] Ibid., pp. 7-8.

the valuation rule on fixed assets which stated that fixed assets could not be valued below their original costs. The valuation rule on fixed assets led to a major conversion of hidden reserves into open reserves in the initial DM balance sheets.[64] The fact that a large proportion of hidden reserves was disclosed in course of the reform will be taken up again in chapter five when it will be investigated to what extent companies relied on internally generated funds which, among other items, also contain (open) reserves.

Next to the treatment of fixed assets, the conversion rules for capital stock (*Grundkapital*) and total equity (*Eigenkapital*) should be mentioned. Capital stock represented the residual item in the conversion procedure. The conversion of capital stock depended on the rate at which total equity was converted, and on the way total equity was divided between capital stock and reserves. Since paragraph 35 of the conversion law allowed for a discretionary split between capital stock and reserves, nominal capital stock could have been either above or below the value which was to be expected from the ratio of liabilities to assets. The valuation of total equity in turn depended on the conversion of the remaining balance sheet items and was calculated by taking the sum of capital stock and reserves minus the sum of capital adjustment and loss accounts.[65] This revaluation procedure left total equity almost unchanged with an average conversion rate of 10:9.6, whereas capital stock experienced a devaluation of over 10% with an average conversion rate of 10:8.7, see Table 3.5. The reduction in nominal capital stock was offset by an increase in reserves which rose by an average of 34%, or 10:13.4, in the course of conversion. The increase in reported reserves was largely due to the disclosure of hidden reserves rather than the creation of new reserves.[66]

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[64] Ibid., p. 9. Hidden reserves had been accumulated by undervaluing assets. The valuation rule encouraged companies to dissolve hidden reserves as it reduced the scope of revaluing assets at a later stage.

[65] Ibid., p. 14.

[66] Ibid., p. 15.

Table 3.5 Conversion of Balance Sheets of Public Limited Companies (in RM million as of 20 June 1948 [in italics], in DM million as of 21 June 1948)

industry sectors	assets									sum of balance
	fixed assets		current assets			positions with uncertain valuation basis[1]	capital depreciation account	capital loss account	other assets	
	tangible assets	industrial holdings[2]	invent-ories	claims	liquid assets					
fishery, agriculture, forestry, hunting	*20*	*2*	*10*	*13*	*21*	*62*	-	-	*14*	*142*
	32	0	10	2	2	0	0	-	0	46
mining, stone and soil, energy industry	*5,855*	*641*	*277*	*546*	*792*	*1,292*	-	-	*153*	*9,557*
	6,720	470	304	185	65	2	12	-	35	7,792
iron and metal production and manufacturing	*1,185*	*433*	*1,595*	*1,014*	*1,325*	*2,957*	-	-	*860*	*9,369*
	1,942	459	2,026	340	141	0	22	-	8	4938
manufacturing industries (excluding iron and metal manufacturing)	*1,427*	*363*	*936*	*522*	*1,081*	*1,698*	-	-	*337*	*6,364*
	2,303	268	1,182	122	104	5	22	0	8	4,013
construction and building material industry	*33*	*7*	*23*	*133*	*148*	*254*	-	-	*17*	*615*
	71	4	19	16	11	0	0	-	0	122
commerce, finance and insurance industry	*211*	*149*	*153*	*1,272*	*1,078*	*530*	-	-	*136*	*3,529*
	285	121	213	96	40	0	37	81	105	978
service industry	*953*	*765*	*40*	*174*	*312*	*881*	-	-	*92*	*3,217*
	659	624	37	32	29	0	113	0	2	1,496
transportation industry	*802*	*34*	*42*	*264*	*527*	*589*	-	-	*60*	*2,319*
	925	18	41	28	39	1	85	-	2	1,139
services in public interests	*16*	*49*	*0*	*28*	*25*	*41*	-	-	*22*	*180*
	13	37	0	4	2	0	1	-	0	56
total	*10,502*	*2,443*	*3,076*	*3,968*	*5,310*	*8,303*	-	-	*1,690*	*35,293*
% of sum of balance [RM]	*29.8*	*6.9*	*8.7*	*11.2*	*15.0*	*23.5*	-		*4.8*	*99.9*
total	12,950	2,001	3,832	824	433	8	291	81	161	20,580
% of sum of balance [DM]	62.9	9.7	18.6	4.0	2.1	0.0	1.4	0.4	0.8	99.9
conversion rates 10:x	12.3	8.2	12.5	2.1	0.8	0.0	-	-	1.0	5.8

Notes: Reichsmark in italics; [1] Containing claims against the *Reich* for war damages, securities etc. the valuation basis for which was undetermined in June 1948. [2] Investments in subsidiaries and affiliated companies.
Source: Statistisches Bundesamt, *Statistisches Jahrbuch*, pp. 334-337.

Table 3.5 Conversion of Balance Sheets of Public Limited Companies (in RM million as of 20 June 1948 [in italics], in DM million as of 21 June 1948)

	liabilities and net worth								conversion ratio		registered balances	sum of balance
industry sectors	capital stock	reserves	value adjustments[3]		provisions	liabilities		value adjustment of positions with uncertain valuation basis	other liabilities	capital stock 10:X	total equity 10:X		
			fixed assets[4]	floating assets		long-term	short-term					number	
fishery, agriculture, forestry, hunting	*36*	*16*	-	*3*	*19*	*3*	*7*	*56*	*2*				*142*
	34	9	-	-	1	1	0	0	1	9.4	8.3	15	46
mining, stone and soil, energy industry	*2,715*	*699*	*2,933*	*30*	*604*	*1,410*	*701*	*402*	*63*				*9,557*
	2,662	1,699	2,336	3	327	495	218	0	52	9.8	12.7	203	7,792
iron and metal production and	*3,014*	*1,092*	*117*	*114*	*602*	*743*	*2,140*	*1,423*	*124*				*9,369*
manufacturing	2,450	1,274	0	2	265	117	551	0	279	8.1	9.0	418	4,938
manufacturing industries (excl. iron and	*2,893*	*839*	*150*	*81*	*404*	*284*	*802*	*813*	*98*				*6,364*
metal manufacturing)	2,627	996	0	2	118	38	200	0	33	9.1	9.7	796	4,013
construction and building material	*130*	*57*	*0*	*38*	*67*	*12*	*118*	*181*	*12*				*615*
industry	64	21	0	0	17	2	15	0	2	4.9	4.5	40	122
commerce, finance and insurance	*542*	*222*	*11*	*15*	*247*	*1,104*	*1,189*	*171*	*29*				*3,529*
industry	447	134	-	0	80	125	187	0	5	8.2	6.1	140	978
service industry	*1,167*	*125*	*32*	*28*	*144*	*1,179*	*218*	*305*	*18*				*3,217*
	920	230	10	0	149	142	41	0	4	7.9	8.0	156	1,496
transportation industry	*667*	*323*	*341*	*53*	*372*	*77*	*170*	*283*	*33*				*2,319*
	549	200	251	0	74	26	30	1	9	8.2	6.7	147	1,139
services in public interest	*84*	*23*	*0*	*0*	*9*	*24*	*28*	*10*	*2*				*160*
	43	4	-	0	1	3	5	-	0	5.1	4.3	37	56
total	*11,248*	*3,396*	*3,583*	*362*	*2,469*	*4,837*	*5,373*	*3,644*	*381*				*35,293*
% of sum of balance	*31.9*	*9.6*	*10.2*	*1.0*	*7.0*	*13.7*	*15.2*	*10.3*	*1.1*				*100.0*
total	9,796	4,567	2,597	8	1,031	949	1,245	1	386			1,952	20,580
% of sum of balance	47.6	22.2	12.6	0.0	5.0	4.6	6.0	0.0	1.9				99.9
conversion rate 10:x	8.7	13.4	7.2	0.2	4.2	2.0	2.3	0.0	10.1	8.7	9.6		5.8

Notes: Reichsmark in italics; [3] Value adjustments is an entry on the liabilities side of a balance sheet, made to offset overvaluation of assets, also referred to as 'passive depreciation' [4] Including indirect method of depreciation and other value adjustments: Source: Statistisches Bundesamt, *Statistisches Jahrbuch*, pp. 334-337.

Table 3.5 provides the conversion rates of various balance sheet items at industry level. Table 3.5 shows that tangible assets were on average appreciated at a rate of 10:12.3. The construction and building material sector experienced the strongest appreciation of tangible assets, whilst the two service sectors faced a depreciation of tangible assets. Based on Table 3.5, claims held by companies were on average converted at a rate of 10:2.1, with the financial industry facing the least favourable and the mining, energy, and iron and steel sectors experiencing the most favourable conversion rates. Excluding claims held by banks, the average conversion rate for claims held by companies improved from 10:2.1 to 10:2.6, see Table 3.6. The average conversion rate of long and short term company liabilities also amounted to 10:2.1, see Table 3.5, whereas, the average conversion rate for long and short term liabilities excluding banks amounted to 10:2.4, according to Table 3.6. This suggests that on average, claims held by non financial companies were slightly less devalued than their liabilities. Moreover, it shows that private claims were considerably less devalued than bank deposits. Furthermore, Table 3.6 shows that long term liabilities, including liabilities to banks, with a conversion ratio of 10:2.3 were more devalued than short term liabilities with an average ratio of 10:2.6. The lower conversion rate for long term liabilities plus bank loans indicates that company cross borrowings were less devalued than capital market liabilities. A comparison of Tables 3.2 and 3.6 suggests that corporate bonds by non-banks were considerably less devalued than bonds issued by banks as Table 3.2 shows a conversion rate of 10:1.0, whereas Table 3.6 reports a conversion rate of 10:3.0. On the asset side, all items but tangible assets and inventories were devalued, whilst on the liability side all items but reserves were devalued, which led to an average conversion rate of 10:5.8 for the sum of balance, see Table 3.5.

Table 3.6 Revaluation of Claims and Liabilities of Public Limited Companies (excluding banks), (in million)

nature of claims and liabilities	final RM balance sheet	initial DM balance sheet	conversion ratio 10:x
claims			
shares	39.9	37.0	9.2
mortgages	72.5	8.8	1.2
advance payments	169.9	76.5	4.5
claims on deliveries and services	1,045.4	157.1	1.5
intra group claims	817.2	343.0	4.2
other claims	836.4	154.9	1.9
sum of claims	2,981.4	777.3	2.6
cash resources			
cash	745.5	51.1	0.7
bank deposits	3,257.2	259.7	0.8
bills of exchange	12.2	0.0	0.0
securities	626.1	106.4	1.7
sum of cash resources	4,641.0	417.3	0.9
sum of claims and cash resources	7,622.4	1,194.6	1.6
liabilities			
bonds	1,663.3	498.1	3.0
mortgages	1,157.0	137.3	1.2
other long term loans	987.1	209.7	2.1
liabilities on advance payments	621.8	182.7	2.9
liabilities on deliveries and services	955.4	192.6	2.0
intra group liabilities	916.6	312.2	3.4
bills of exchange	22.7	2.3	1.0
bank liabilities	706.3	173.6	2.5
other liabilities	1,424.1	340.9	2.4
sum of liabilities	8,454.1	2,049.4	2.4
reserves	2,453.1	1,026.7	4.2
sum of liabilities and reserves	10,907.2	3,076.1	2.8
participating interests	2,411.7	1,992.3	8.3

Source: Statistisches Bundesamt 'Die Kapital- und Bilanzumstellungen der Aktiengesellschaften', in *Statistik der Bundesrepublik Deutschland*, Band 60 (Stuttgart), 1952, Table 9, p. 18.

Considering the effects the conversion of balance sheets had on capital structure, one finds that whereas capital stock comprised 31.9% of total assets before the conversion, its share increased to 47.6% after the conversion, see Table 3.5. (Open) reserves over the sum of assets increased from 9.6% before the conversion to 22.2% after the conversion. The share of provisions over the sum of assets decreased by 2.0%. The share of long term liabilities decreased from 13.7% to 4.6% over the sum of assets, and the share of short term liabilities decreased from 15.2% to 6.0% over the sum of assets. On the asset side, tangible assets and inventories increased proportionally the most, with an increase from 29.8% to 62.9% and 8.7% to 18.6%, respectively. The appreciation of tangible assets and inventories was due to revaluation procedures which allowed companies to revalue their assets according to replacement costs, which had risen considerably, and by

disclosing hidden reserves. A large appreciation of assets provided companies with a tax advantage as it enabled them to employ higher depreciation rates over the following years. However, the pending equalisation of burden law (see details below) limited the incentives of over-appreciating assets, as the rate of contribution to the equalisation of burden tax was based on the value of assets at the time of the conversion. The sectors experiencing the greatest absolute appreciation of assets included the energy sector, mining, textile, mechanical engineering and rail cars. Housing and the financial industry were excluded from the possibility of appreciating assets.[67]

The share of claims and liquid assets was reduced in the course of the balance sheet conversion, decreasing from 11.2% to 4.0% and from 15.0% to 2.1%, respectively. The ratio of total equity to total liabilities shifted in the course of the balance sheet conversion from 54:46 to 81:19. The ratio of fixed assets to current assets shifted from 51:49 before the reform to 75:25 after the reform, based on Table 3.5. The shift towards fixed assets and towards equity reflects the effects the devaluation of monetary assets had on the balance sheet structure of companies as monetary assets had been devalued by more than 90%. Since equity is calculated as the difference between total assets and liabilities, the cancellation of a large part of the debt led to a *Schuldnergewinn* ('profit for debtors'). At the same time, the cancellation of parts of company claims led to a *Gläubigerverlust* ('loss for creditors'). Among the net winners were sectors which had a great share of fixed assets and correspondingly a great share of long term debt. The sectors gaining most from the devaluation of liabilities included housing, electrical engineering, energy, mining, iron and steel, and shipbuilding. The sectors whose devaluation of claims and liquid assets exceeded those of their liabilities included breweries, rail cars and shipping.[68] Moreover, the ratio of fixed assets to long term capital improved in the course of the conversion. Before the conversion, fixed assets amounted to 53.9% of long term capital (equity plus long term credits). This ratio increased to 86.7% after the conversion, based on Table 3.5.

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[67] Ibid., pp. 20-25.
[68] Ibid., p. 19.

Table 3.7 shows that conversion rates for capital stock varied widely around the mean. For about half of the companies the nominal value of capital stock remained unchanged. For 15.8% of companies the nominal value of capital stock increased at a weighted average rate of 10 to 14.6. With the appreciation of their capital stock, those companies almost doubled their share in total capital stock from 7.3% in RM denomination to 13% in DM denomination. For 34.5% of companies the nominal value of capital stock was reduced at a weighted average conversion rate of 10 to 5.3. Among those with the greatest devaluation in capital stock were companies which had large parts of their fixed investments in the Eastern zone occupied by the Soviet Union. The construction industry was another sector which had to write down a large portion of its capital stock as it had to write down most of its claims against the former Reich. The sectors with the greatest appreciation in capital stock included the textile industry, mining, and the rubber and asbestos industry.[69] Unfortunately, the findings in Table 3.7 cannot be reproduced for the sample of companies introduced in chapter five as balance sheet data on these companies was compiled from 1952 onwards, or after the conversion had taken place.

Table 3.7 Conversion of Companies' Capital Stock broken down by the Rate of Conversion (at the end of December 1951)

conversion rate	companies		capital stock before conversion		capital stock after conversion	average of conversion
	number	%	number	%	Mill DM	10:X
10:10	1,187	49.7	6,077.6	47.8	6077.6	10
greater than 10:10 but lower than 10:20	316	13.2	907.8	7.1	1,275.7	14.1
greater than 10:20	63	2.6	28.2	0.2	90.7	32.2
greater than 10:5 but lower than 10:10	494	20.8	3,909.9	30.7	2,636.7	6.7
lower than 10:5	327	13.7	1,801.5	14.2	399.9	2.2
sum	2,387	100	12,724.9	100	10.480.6	8.2

Note: This table also contains companies which have changed from public limited to another form of legal entity, therefore it is not, strictly speaking, comparable with Table 3.5.
Source: Statistisches Bundesamt, 'Die Kapital- und Bilanzumstellungen der Aktiengesellschaften', in *Statistik der Bundesrepublik Deutschland*, Band 60 (Stuttgart), 1952, p. 13 covering almost 94% of all converted balance sheets.

At this point the reader may be reminded that the evaluation of capital stock derives as residual as it is dependant on (a) the conversion of equity capital

[69] Ibid., p. 15.

(*Eigenkapital*) and its distribution between capital stock and (open) reserves, and (b) on the evaluation of the remaining balance sheet items.

3.7. The Lastenausgleichsgesetz *(the law of equalisation of burden)*

The aim of the equalisation of burden law was to compensate for war damages, damages occurred during the immediate aftermath of the war, and the currency reform. Based on an assessment of all real assets (including houses, real estate, plants, and inventories) on the one hand and of losses due to bombing, expulsion from the east, reparation payments and the currency reform on the other hand, it was intended to impose a capital levy on owners of real assets with which to compensate those who had suffered losses.[70] At first, it was considered to link the equalisation of burden law with the currency reform. However, in the end the occupation authorities decided to enact only the currency reform and to leave the equalisation of burden issue to be solved at a later stage by the German authorities.[71]

Establishing the value of real assets proved to be a lengthy process partly resorting to figures provided by the conversion of balance sheets. Estimating the value of losses was practically impossible. With no data available concerning losses suffered by refugees from the east or concerning losses of personal belongings due to bombing in the west, the valuation of losses was rudimentary at best.[72] The difficulties in evaluating real assets and losses postponed the equalisation of burden law considerably, being finally passed in August 1952. The delayed settlement of the issue of equalisation of burden meant that it was uncertain on what basis the value of contribution to the *Lastenausgleich* would be assessed. This uncertainty contributed to the inflationary pressures experienced in the second half of 1948, as companies tried to blur their assets by shifting out of real assets into banknotes, since the latter could be hidden more easily.[73]

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70 Lutz, 'The German Currency Reform', p. 127.
71 Pfleiderer, 'Two Types of Inflation', p. 361.
72 Lutz, 'The German Currency Reform', p. 128

In order to settle the important issue of property evaluation, a provisional *Lastenausgleich*, the so-called Immediate Aid Levy, was passed in August 1949. Under the Immediate Aid Levy (*Soforthilfe*) it was announced that the assessment was to be based on the assets held at the day of the currency reform, at which date firms had already been obliged to submit a complete inventory of their assets. It was further announced that 50% of the assets assessed in that way were subject to a capital levy to be paid over the following 30 years, with the last instalment due in February 1979. The immediate aid law also specified that the capital levy should amount to 3% of the underlying assets plus a one off levy over 4% on 'necessary' business inventories, and over 15% on all other inventories.[74] The total amount to be generated by the capital levy was estimated at DM 80 billion.[75] By the end of 1959, a capital levy amounting to DM 27 billion had been raised and redistributed.[76] Receivers of these funds were 9 million refugees, 3.4 million bombing victims, a further 0.37 million received compensation for losses incurred during the currency reform.[77]

The settlement of the issues raised by the equalisation of burden helped normalise the German economy to the extent that it dissolved the distortions created by the pending law of equalisation of burden. According to the West German Ministry of Finance, industry contributed about 70%, agriculture contributed 10%, and owners of residential real estate provided 20% of assets to the capital levy.[78] In real terms, the capital levy decreased with proceeding inflation as the assets which served as the basis for valuing the contribution were not indexed. With an inflation rate of about 25% between 1952 and 1965, the capital levy was reduced by about

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[73] Ibid., p. 137.

[74] Lutz, 'The German Currency Reform', p. 138 and Sauermann, 'Der amerikanische Plan', pp. 201-202.

[75] Roskamp, *Capital Formation*, p. 219.

[76] E. Kirch, *Die Neuordnung des Geldwesens, des Kreditmarktes und des Verkehrsmarktes der westdeutschen Wirtschaft nach der Währungsreform*' (Dissertation, University of Marburg, 1964), p. 41.

[77] F.-W. Henning, *Das industrialisierte Deutschand 1914 bis 1972*, (Paderborn, 1974), p. 238.

[78] Roskamp, *Capital Formation*, p. 219.

20% in real terms over this period.[79] During the first four years of implementation, the equalisation of burden fund constituted about 7% of total tax revenues of the federal government and the *Länder*. From 1952, revenues generated by the equalisation of burden fund decreased relative to total tax revenues from around 6.7% in 1952 to 2.4% in 1963.[80]

The equalisation of burden levy constituted a special form of recurring property taxation paid mainly out of current profits over a long period of time. As such it intended a redistribution of wealth from those who had suffered less to those who had suffered major war damages and currency reform losses. Since residential dwellings were much more affected by bombing raids during the war than were industrial plants, which were protected by air defence and harder to hit in any event, this law meant effectively a redistribution of wealth from companies to individuals. By separating the equalisation of burden issue from the currency reform, the capital levy became a political issue and was generally perceived as a separate measure unconnected with the earlier implemented currency reform.[81] The German authorities were concerned that the capital levy might deprive the economy of investment capital as the funds allocated to individuals supported consumer spending at the expense of capital formation.[82] Therefore, it was politically accepted that the system of equalisation of losses should be no more than a meagre compromise falling far short of a complete equalisation of damages. As it turned out that the capital levy would not present a heavy burden on companies, which were generally able to pay their instalments out of profits, companies voiced little opposition against the imposed capital levy.[83] In particular as the *Lastenausgleichsgesetz* allowed contributors to avoid income tax whose rates were far higher than that of the capital levy. In order to generate greater income to the

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[79] F.-W. Henning, 'Die Unternehmensfinanzierung in der Bundesrepublik Deutschland von 1952 bis 1965, unter besonderer Berücksichtigung einiger Industrie-Aktiengesellschaften' in D. Petzina (ed.), *Zur Geschichte der Unternehmensfinanzierung*, Schriften des Vereins für Socialpolitik, Vol. 196, (Berlin, 1990), pp. 103-104. Between 1950 and 1973 the cost of living rose by 92%, see Henning, *Das industrialisierte Deutschland*, p. 233.

[80] Monthly Report of the Deutsche Bundesbank (June, 1963), pp. 112-113.

[81] Metzler, 'The Colm-Dodge-Goldsmith Plan', p. 368.

[82] Heller, 'Tax and Monetary Reform', pp. 228-229.

fund during the early years of its existence, when it faced the majority of claims, a law was passed in 1953, expiring in January 1955, which encouraged early payment to the fund by allowing contributors to deduct these payments from taxable income.[84]

3.8. The Wertbereinigungsgesetz (the securities validation law)

The objective of the securities validation law, which was passed in August 1949, was to establish the lawful ownership of financial securities. This became necessary because a bulk of securities was either lost or looted during the war. The remaining securities were predominantly deposited with the former central bank, the *Reichsbank*, or in the headquarters of the former big three commercial banks, all located in that part of Berlin which was occupied by the Soviet occupation authorities. The Soviet authorities had confiscated these securities and it was considered unlikely that they would release them. In order to newly identify the lawful owners of securities, every security holder had to submit a formal claim. The banks then tried to verify the claim on the basis of duplicates and issued an equivalent credit note in the form of a 'global' (*allumfassend*) security. Trading in securities with this form of affidavit started in 1947, and gradually these 'global' securities were replaced by singe documents.[85] The nominal value of shares could only be determined after the value of capital stock had been established in the course of the conversion of balance sheets taking place between 1948 and 1952. In order to facilitate a smooth listing of the newly validated securities, a law was passed in December 1951, which exempted companies from issuing a prospectus containing details on the conversion of monetary and real assets due to the currency reform. Without this exemption, official trading of securities would have been suspended until the company had issued a prospectus announcing the conversion

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[83] Heller, 'The Role of Fiscal-Monetary Policy', pp. 544-545.

[84] Reuss, *Fiscal Policy for Growth*, p. 122.

[85] B. Rudolph, 'Effekten- und Wertpapierbörsen, Finanztermin- und Devisenbörsen seit 1945' in H. Pohl (ed.), *Deutsche Börsengeschichte*, (Frankfurt a. M., 1992), p. 296. Securities without affidavit were declared void and replaced by new securities.

rate of their assets.[86] In the course of the securities validation law, shares worth DM 17 billion, and bonds worth DM 10 billion were registered.[87]

The establishment of the rightful owners of securities was an important step towards the revival of the West German capital market, since securities trading could only take place after and to the extent that the owners of securities had been identified.[88] However, the validation of securities was interconnected with the conversion of balance sheets which meant that the actual value of all individual securities was not established until 1952. In other words, securities trading was restricted by the slow process of balance sheet conversion and security validation hampering an early revival of the West German capital market. Table 3.8 shows that self financing and short term credits constituted the most important component of financial sources between 1948 and 1950. However, self financing and short term credits showed a negative growth rate of minus 4.6%, with its relative importance decreasing from 77.1% in the first year after the currency reform to 53.4% in 1950. Unfortunately, records of the Bank deutscher Länder do not mention whether the decrease of this financing component was due to a decrease in self-financing or a decrease in short-term debt, private credits or reinvested depreciation. At the same time, medium and long term bank credits showed the second biggest increase, both in relative and in absolute terms, achieving a growth rate of 588.6% between 1948/49 and 1950 (see Table 3.8). This kind of growth was only surpassed by the growth of European Recovery funds which grew by 819.7% over the period. The relative share of listed securities remained comparatively stable, growing at a rate of 41.2%.

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[86] Ibid., p. 297.

[87] Kirch, *Die Neuordnung des Geldwesens*, p. 48.

[88] By 1946 all West German stock exchanges traded in the over the counter market. Trading in official quotations commenced one year after the currency reform in July 1949. See Rudolph, 'Effekten- und Wertpapierbörsen', pp. 294-295.

Table 3.8 Contribution of Financial Sources for Investments between June 1948 and 1950 (in DM million)

	sources of finance	21.06.1948-30.06.1949		01.07.1949-31.12.1949		1950		growth rate from 48/49 to 1950
		total	%	total	%	total	%	%
1.	public sector appropriation	1,950	14.1%	1,620	18.2%	3,630	19.0%	86.2%
2.	capital market	1,030	7.4%	1,237	13.9%	2,927	15.3%	184.2%
a	medium and long term credits by commercial banks[1]	220	1.6%	429	4.8%	1,515	7.9%	588.6%
b	lendings and allotments of housing money by building societies	80	0.6%	88	1.0%	424	2.2%	430.0%
c	marketing of securities[2]	260	1.9%	190	2.1%	367	1.9%	41.2%
d	investment by life insurance and commodity insurance	310	2.2%	280	3.1%	421	2.2%	35.8%
e	investment of social insurance companies	160	1.2%	250	2.8%	200	1.0%	25.0%
3.	transmitted counterpart funds	193[3]	1.4%	215[3]	2.4%	1,775	9.3%	819.7%
	sum of 1 to 3: medium and long term external finance	3,173	22.9%	3,072	34.5%	8,332	43.6%	162.6%
4.	pre financing by central banks	-	-	71	0.8%	586	3.1%	-
5.	short term bank loans, private credits, reinvested depreciation and self financing	10,700[4]	77.1%	5,770[2]	64.8%	10,210[4]	53.4%	-4.6%
	sum of 1 to 5: sum of financial sources for investment	13,870	100%	8,910	100%	19,130	100%	

Note: [1] Excluding credits from counterpart funds, marketing of securities or credits pre-financed by the central banks. [2] To avoid double counting: excluding placements with large scale public subscribers and with insurance companies. [3] Excluding counterpart funds to finance certain imports by the federal railway. [4] Approximately.
Source: Geschäftsbericht der Bank deutscher Länder (December, 1950), p. 35

3.9. Price liberalisation

During the pre-currency reform period the four-power allied control authority continued the German laws and regulations on price controls and rationing which had gradually been introduced under the German national socialist regime since 1936. This meant that prices for most goods were subject to approval by German price formation offices whilst the allied control authority reserved itself the right to control prices of the most important basic commodities produced by industry and agriculture exercising this function in a most cumbersome and rigid manner. In the absence of price control, prices for agricultural and basic products were likely to have risen more than prices for other goods, as the disruption of the German economy due to territorial losses in the east most severely affected these sectors. The split of control over price controls, however, led to an inverse tendency. While consumer goods roughly doubled in price, prices of agricultural products and industrial raw material increased by 50% or less during the pre-currency reform

period. This unequal increase in prices during the pre-currency years reflected a preference by the occupation authorities (with the exception of Great Britain) to prevent price increases of most basic goods, partly out of fear for inflation and partly driven by reparation considerations.[89]

Both the occupation authorities and the leading German authorities devoted themselves to a sudden decontrol of most parts of the economy as a complementary measure to the currency reform. Three days after the currency reform a law was enacted which permitted a liberalisation of prices for the great majority of consumer and investment goods. The law contained directives for rationing and price policy.[90] The process of price liberalisation in connection with the currency reform provided a strong impulse to economic activity, as it induced producers to offer their goods in the market. Despite an extensive increase in the supply of goods, demand outpaced supply and consumer prices rose at an annualised rate of 33.1% during the first four months after the currency reform. During the same period, producer prices increased at an annualised rate of 45.0%. The difference between the consumer and the producer price index was largely due to the fact that the former included housing rents, transport and other services whose controlled prices remained constant, whilst most controlled prices of the latter were raised.[91] During the height of the post reform inflation, a majority of Germans favoured of a return to an administered economy. However, the authorities kept their nerves and, instead of reintroducing price controls, passed a law which prohibited the charging of exorbitant prices, and published a list which served as guidance to 'normal prices'. By the fourth quarter of 1948, price levels were approaching the limits set by the monetary frame and the

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[89] See Mendershausen, 'Prices, Money and Distribution of Goods', p. 647-651 and p. 664 for a list of commodities which remained under price control after the currency reform. The issue of public investment programmes favouring price controlled sectors is dealt with in detail in chapter 3.

[90] Sauermann, 'Economic and Financial Rehabilitation', p. 317. Rationing was not completely eliminated, with essential commodities such as textiles and shoes remaining subject to rationing. Agricultural products and raw materials continued to be subject to rationing and price control, as were rents and wages.

[91] H. Giersch et al., *The Fading Miracle: Four Decades of Market Economy in Germany*, (Cambridge, 1992), p. 42. Real purchasing power was not heavily affected by this kind of price increases, as wages had been raised by up to 15% just before the currency reform. Controls on wages were lifted in November 1948, see ibid., p. 43.

fiscal surplus, with the annualised increase in consumer prices reaching 8.8% and that of producer prices reaching 2.9%.[92]

Despite principally embracing market economic principles, it was decided to keep sectors which were considered most crucial to the development of the West German economy under price control. In light of low prevailing savings rates, which mirrored the high propensity to consume during the early post currency reform period, it was feared that too high an interest rate would develop, and that price controlled sectors in particular would not be able to bear market rates. The insufficient adjustment of prices in controlled sectors entailed a policy of subsidies and subsidised credits to agriculture, housing, infrastructure, mining, the energy sector and the steel industry. These public investment programmes conducted for price controlled industries in turn contributed to the delay in capital market development, as did various other interventions specifically introduced to curb capital market mechanisms in order to channel investments in price controlled sectors.[93]

3.10. Foreign trade and the establishment of a uniform exchange rate

During the early period of occupation, the allied authorities forbade individual Germans to engage in international trade and all trade went through allied channels.[94] Before the currency reform imported goods were bought by the Joint Export Import Agency (JEIA) at higher world market prices and sold to the Germans at lower controlled prices. To cover the difference generated by this practice, German exports were bought by the JEIA at lower controlled prices and sold at higher world market prices. In May 1948, a general exchange rate of US 30 cents for one Deutsch Mark was established, which was relevant for all exported and imported goods, with the exception of food imports. Food imports were sold at

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92 Ibid., p. 43.

93 See a discussion on the development of price controlled sectors in chapter 4.

94 Only in 1950 did control over foreign trade revert completely to Germany, see W. F. Stolper and K. W. Roskamp, 'Planning a Free Economy: Germany 1945-1960, *Zeitschrift für die gesamte Staatswissenschaft*, Vol. 135 (1979), No. 3, pp. 382 and 391.

legal domestic prices until May 1949, implying a conversion rate of more than 30 cents to the Deutsch Mark. From May 1949 food imports were sold at world market prices and faced an exchange rate of 30 cents for one Deutsch Mark like all other imports, which led to a sharp increase in prices for food imports.[95]

At the end of September 1949 along with other European currencies, the occupation authorities agreed to devalue the Deutsch Mark by 20.6% against the US dollar. This established an exchange rate of US 23.8 cents for one Deutsch Mark.[96] At that time all German exports had still to be paid for in US dollars and no bilateral exchanges were permitted. However, soon after the establishment of a new exchange rate parity, the occupation authorities gave up the dollar pricing practice and permitted bilateral exchange in Europe.[97] The new exchange rate parity and the following liberalisation of trade marked the beginning of a resurgence of the German export industry. And the West German economy, which had suffered from trade deficit and a balance of payment crisis during the first few post currency reform years, soon started to enjoy considerable trade surpluses. The growth in German exports was later boosted by increased world aggregate demand provided by the Korean War rearmament. And Germany's structure of industrial base, with its strength in the manufacture of capital goods and chemicals, matched the structure of export demand well.[98]

3.11. Concluding remarks

At least three major effects can be attributed to the currency reform. First, it created a stable monetary environment. With the introduction of the Deutsch Mark,

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[95] Mendershausen, 'Prices, Money and the Distribution of Goods', p. 669.

[96] Wandel, *Die Entstehung der Bank deutscher Länder*, pp. 154-155. The occupation authorities had exclusive jurisdiction on the matter of exchange rates. The French government only approved a devaluation of the German mark against the US dollar by 10-15%, the newly established German government demanded a devaluation of 23.8%. The Western allies finally agreed on a devaluation of 20.6%. This established a US$/DM exchange rate which was also effective after the great inflation in 1923. Choosing the same parity was thought to have a positive psychological effect enhancing trust in the exchange rate.

[97] Stolper and Roskamp, 'Planning a Free Economy', p. 392.

rationing and barter tender were replaced by monetary transactions, which considerably enhanced economic activity. Second, the currency reform discriminated against different forms of monetary assets partly depending on the owner of the assets. This discriminating conversion procedure led to a significant redistribution of wealth within the West German economy, affecting the economy's saving structure. Third, the currency reform altered the capital structure of companies since real assets were significantly less devalued than monetary assets.

a. monetary stability

The currency reform was successful in eliminating the excess supply of money which had impeded economic activities, and its technical design contributed to its immediate success in forcing producers to release their accumulated stocks of goods so as to remain liquid.[99] Although economic recovery had already started to pick up before the reform, it paved the way for the introduction of market mechanisms which aided the economic environment to achieve a more rapid recovery, as it enabled more complicated decision making with a longer time horizon, notably that of investment, to occur.[100] According to Domes and Wolffsohn whether economic recovery was already 'in full swing' by the time the currency reform was implemented, or whether the recovery was triggered by the currency reform is secondary. They state that investigations into decision making processes undertaken by political scientists have found that 'decision-makers act in accordance with their perception of reality, not in response of reality itself'. In the view of the West German public, the economic recovery was primarily due to the currency reform.[101] The favourable association of the currency reform with economic recovery shows that the German public valued the improvements in living standards experienced since the reform higher than the losses suffered in the course of the reform.

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98 Carlin, 'Economic Reconstruction in Western Germany', p. 61.
99 Carlin, 'West German growth and institutions', p. 464.
100 Carlin, 'Economic Reconstruction in Western Germany', pp. 53-54.

b. redistribution of wealth

The currency reform induced a significant redistribution of wealth as different devaluation methods were applied depending on the type of asset and on the status of the owner or borrower of the respective assets. As it has been shown, public authorities gained most from the currency conversion, turning them from the biggest debtors to the biggest creditors. With no debt to service and a generous initial endowment which accounted for roughly one quarter of legal money creation (see Table 3.3) public authorities were the single most important provider of external funds during the first post reform years (see Table 3.8).

The second biggest winner in the currency reform was the banking sector, which enjoyed generous liquidity as it was compensated for losses due to the cancellation of public debt. This put banks in a situation which allowed them to provide the private sector with credits without having to rediscount with the central banks. Furthermore, as long as the capital market was handicapped by the incomplete implementation of the currency reform, in particular the conversion of real assets and the establishment of the rightful owners of securities, commercial banks held an extremely powerful position in deciding whom to provide with external funds. In a situation where external capital was scarce while profitable investment opportunities were ample, numerous companies sought external capital in addition to their internally generated funds, and it was largely in the hands of banks and public authorities to decide which sectors and which companies to provide with credit.

Relative to the public sector, the monetary situation of the non-banking private sector deteriorated in the course of the currency reform as private bank deposits were converted at roughly the same rate as were private bank credits. However, as has been established in the chapter, the actual conversion of 10:0.8 for company and household deposits was considerably above the rate of 10:0.65 which the literature

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[101] J. Domes and M. Wolffsohn, 'Setting the Course of the Federal Republic of Germany: Major Policy Decisions in the Bi-Zonal Economic Council and Party Images, 1947-1949' *Zeitschrift für die gesamte Staatswissenschaft*, Vol. 135 (1979), No. 3, p. 342.

uniformly quotes. Nevertheless, private saving rates were rather low during the immediate post reform period. The German public used most of its initial endowment to satisfy its backlog in demand, and after the unexpected cancellation of a large part of blocked accounts was left with less savings than anticipated.[102] Due to the rather low savings rate and high demands for credits, the authorities feared that market interest rates would be too high for an economy in recovery still suffering from distortions, and decided to circumvent market mechanisms in order to ensure investments in certain sectors.

c. changes in companies' capital structure

Introducing the findings on balance sheet conversions to earlier findings on the wealth redistributing effects of monetary conversions, adds further insights into the complexities of the 1948 currency reform. As the analysis of the conversion of company balance sheets has shown, the currency reform had greatly improved the position of those who possessed non-monetary assets and punished those with assets such as money, demand and saving deposits. With an average conversion rate of 10:8.7 for capital stock compared to a conversion for bonds with a rate of between 10:1.0 and 10:3.0, and for bank deposits with a rate of 10:0.8, equity owners were highly favoured by the currency reform, while small private savers bore most of the burden.

The unequal treatment of monetary assets relative to real assets significantly affected companies' gearing ratios. Whilst companies' claims and liabilities were written off at an average rate of 10:2.1, capital stock was converted at an average rate of 10:8.7 and total equity at a rate of 10:9.6 (see Table 3.5). This shifted the ratio of total equity to total liabilities from 54:46 before the reform to 81:19 after the reform. Furthermore, a strong appreciation of fixed assets in the course of the currency reform, improved the ratio of fixed assets to long term liabilities from 53.9% before to 86.7% after the reform. Chapter five will address the question

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[102] The low voluntary saving rate was partly offset by so called forced savings through high prices and taxation.

whether companies tried to reverse the effects the currency reform caused to their balance sheet structures.

In summary, the chapter has shown that the currency reform induced a significant redistribution of wealth, endowing banks and public authorities with ample financial means to provide external funds to the non financial private sector. Whereas the monetary part of the currency reform was carried out within months, the conversion of balance sheets and the establishment of the rightful owners of securities proved to be a lengthy procedure. The lengthy process of completing the related securities and balance sheet reforms severely restricted trading of capital market securities, since securities trading could only take place after and to the extent that the owners of securities had been identified. In addition to its limited scope of providing a platform for securities trading, the West German capital market was also restricted in its role of providing funds as public authorities introduced measures which aimed at circumventing the capital market. The nature of these measures, and how they affected the development of the West German capital market is addressed in the following chapter.

Based on the absence of literature capturing the full extent of the implications of the currency reform and based on the absence of a discussion on the complexity of the currency reform in newspapers of the time, it can be argued that neither the U.S. nor the German authorities nor the German public were fully aware of all the implications the currency reform had on the distribution of wealth in the German society. In other words, literature does not suggest that the authorities deliberately induced these redistributional effects as it does not suggest that they were fully aware of all the aspects and the extent of redistribution. The thesis has identified at least three reasons why the distributional consequences of the currency reform could not be known in June 1948: (1) the conversion of balance sheets was not finalised until 1952 (and in some cases even later), so the full effects of different treatment of assets and liabilities could not possibly be known accurately in June 1948, especially relating to assets in the Soviet zone; (2) perhaps even more importantly, the full consequences of generous treatment of assets depended upon subsequent growth and inflation; as it turned out growth was explosive and inflation

non-trivial, both factors which enhanced the value of real corporate assets, but *ex ante* neither could be known in June 1948, in other words had growth been slower and inflation less, the balance sheet windfall would have been correspondingly reduced; (3) the value of balance sheet windfalls was contingent on the exact nature of subsequent tax legislation, which in turn was highly contingent on the political balance at the time of passage - in the event, deteriorating relations with the Soviets and the Korean War introduced political factors that could not have been foreseen in mid-1948. Also, in drafting policy, the authorities may have wished to err on the side of safety: had liabilities been treated less drastically, bankruptcies might have been substantially higher, something the authorities surely wished to avoid. But what seemed like a small margin of safety in mid-1948 had become much more generous later - for the reasons given above.

In as far as the authorities were aware of redistributional effects, they made a timid attempt to partly undo these effects by implementing the equalisation of burden law. The U.S. occupation authorities, who played a major role in implementing the currency reform, saw it as a responsibility of the German authorities to carry out the equalisation of burden law. As an equalisation of burden could only be established after assets had been converted, the process of equalisation was delayed, and in the end amounted to hardly more than a 'token adjustment of burden'.

4. The influence of public policy on capital market development in West Germany during the early post World War II period

4.1. Introduction

Although the majority of the German as well as the occupation authorities was keen on establishing a free market economy together with the implementation of the currency reform, public interventions were manifold during the immediate post currency reform period. In particular, a number of fiscal measures were designed to solve the problem of capital formation as capital formation was considered as one of the most important issues to be tackled.[1] However, the economic state of post reform Germany was considered too fragile to cope with an 'orthodox' method of overcoming its capital shortage, i.e. lifting interest ceilings. In particular, it was feared that the 'basic goods' industries, which included coal mining, iron and steel production, housing and the utility sector, would be unable to make sufficient investments in an interest rate environment of between 10% and 15%. Therefore, the occupation authorities together with the German authorities introduced a number of policies including investment aid programmes, tax concessions and depreciation allowances which were aimed at channelling low cost capital into certain sectors considered crucial to the overall recovery of the economy.

The following chapter provides an analysis of the influence of public policies on the financing behaviour of West German companies. The chapter focuses on foreign as well as on domestic investment aid programmes and establishes an overview of the regulatory and tax situation facing the capital market. It argues that the German authorities agreed to compromise on a partial lifting of price controls in anticipation of the arrival of foreign investment funds which were thought to be sufficient to finance the investment needs of price controlled sectors. Furthermore, it will be argued that the policy of partial price control negatively affected the development of the capital market as taxation of capital market products was

structured to favour investments in price controlled industries. However, by the early 1950s the need for capital market interventions became less compelling as economic distortions became less apparent and most remaining price controls were lifted between 1952 and 1954. Therefore, the early post war period can be divided into two eras. The first period covers the years from 1948 to 1954, which was characterised by public policies aimed at circumventing the capital market. During this period the capital market was paralysed by distorting taxation, which most heavily affected the equity market, and interest rate ceilings, which made investments in bonds unattractive. The second period covers the years after 1954. The year 1954 was an important turning point for the development of the German capital market as it was the year in which most public investment programmes came to an end and distorting taxation was abolished. The fast resurgence of the capital market after 1954 was particularly impressive considering the severe restrictions the German capital market had suffered since the early 1930s.

The chapter also analyses the development of prices and output in different sectors. It will be shown that prices in a number of controlled sectors were raised while free market sectors experienced a deflationary price environment. This finding qualifies the common assertion that companies operating in free market sectors were able to generate excessive profits by demanding high prices while enjoying low costs due to low input prices during the early post war period. Nevertheless, it can be assumed that prices in controlled sectors might have risen even more if they had been allowed to adjust freely. Furthermore, findings on temporary capacity constraints experienced by price controlled sectors in the late 1940s / early 1950s suggests that increased investment efforts in price controlled sectors were required in order to avert bottlenecks.

In summary, the chapter portrays the transition period from a governmentally directed allocation of scarce investment funds to allocations mainly guided by market forces. It will be shown that Germany did not rely on the capital market to overcome initial structural disequilibria, and thus the distinguishing feature of the

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[1] Stolper and Roskamp, 'Planning a Free Economy', p. 388.

first phase after the currency reform was a sustained high level of public capital formation, benefiting various key sectors of the economy whose common feature was that they remained under price controls. Public authorities feared that investment funds were too scarce to allow their allocation by the market. In particular, it was considered to be first priority to ensure that key sectors which created positive externalities to the overall economy were supplied with investment funds. In order to offset the fact that these sectors remained under price controls they were provided with capital at favourable terms. In other words, the demand by the occupation authorities to keep strategic sectors of the economy under price control led to constraints in self financing for the price controlled sectors which in turn led to the need for investment aid, regulations, tax distortions etc. In turn, these impeded the development of the capital market and affected the financing opportunities of firms in non controlled sectors. During the first post reform years, government savings were substantial and more than offset low savings rates by households. However, it was always hoped that rising household income would be accompanied by higher volumes of private savings which would make public interventions in the capital market unnecessary. This hope was largely fulfilled by 1956 by which time public policy measures distorting the capital market had been largely withdrawn.[2]

4.2. Distortions created by partial price control

Along with the 1948 currency reform, price controls for most consumer and investment goods were lifted. Ludwig Erhard, head of the German economic administration, was one of the main promoters of an immediate liberalisation of prices, which he understood as a necessary complementary measure to the currency reform in order to induce producers to supply goods. Given the deprivation of goods the German public had suffered during the war and the post war period until the currency reform, a high propensity to consume and low saving rates were anticipated. While Erhard was aware of the importance of the availability of goods for the social stability of the country, he was also wary of the effects increased

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[2] Ibid., pp. 398-399.

consumption might have on inflation and on the availability of household savings for corporate investment. Therefore, Erhard agreed to a partial liberalisation of prices, which was demanded by the occupation authorities who feared a rise in inflation and by parts of the German parliament who opposed a complete abolishment of public dirigisme. Given the observation that the demand by the Western occupation authorities to leave products like coal, steel, electricity and lumber under price control constituted a form of hidden reparation, it is arguable whether German authorities would have been able to bring about a complete abolishment of price controls.[3] However despite price controls, prices in the controlled sectors were raised a number of times, mostly reflecting the changing attitude by the occupation authorities towards Germany as a whole and individual sectors in particular. The last remaining price controls were gradually lifted between 1952 and 1954.

The economic argument in favour of partial price controls was that by keeping core sectors of the industry such as coal, steel, utilities, agriculture and housing below market prices, inflationary pressures could be reduced and companies which operated in the free market economy could acquire large enough profits as not to have to rely to a large extent on external funds. The financial requirements of those sectors kept under price control were expected to be provided by the soon-to-arrive foreign aid funds and through public spending in these sectors. Ludwig Erhard has been quoted to have said, 'After the currency reform we will not have in Germany any capital for investment purposes. If we tried to accumulate that capital from small savings at the expense of the already low standard of living that would be a

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[3] The policy of partial price control was initially enforced by the occupation authorities. W. Abelshauser, 'American Aid and West German Economic Recovery: A Macroeconomic Perspective', in C. S. Maier and G. Bischof (eds.), *The Marshall Plan and Germany*, (New York/ London, 1991), p. 380 sees in the decision of the Western allies to leave products like coal, steel, electricity and lumber under price control a form of hidden reparations. According to Abelshauser 'American Aid' p. 380, 'The French occupation element dictated the export of coal, lumber, electric current and scrap, even though far larger export earnings could have been made by finishing these products rather than shipping them out as raw materials. ... The suspicion that these 'exports' were little more than a form of hidden reparations is confirmed when the prices are considered. The Allies set $ 10.50 as the benchmark for a ton of coal, most of which they in fact bought for

difficult way. We hope to get foreign aid [Marshall Plan] for these purposes. Then the solution will be that investment will be financed by foreign aid, while German incomes at low, medium and high levels can be used essentially for consumption.'[4] On the same subject Abelshauser states, 'As late as February 1948, Ludwig Erhard still operated under the assumption that he could practically finance his entire investment programme for the Bizone out of the Marshall Plan, which would have allowed the German national income to go towards consumer products.'[5] High consumer demand was undoubtedly an important factor in promoting investments in the newly established market economy. In a prospering economy with the outcome of the currency reform still in mind, German households seemed to have trust in receiving steady income but had doubts about the stability of the newly introduced Deutsch Mark. Until the early 1950s, this was reflected in a high propensity to consume, and a low rate of saving, with assets held in liquid form to allow immediate withdrawal as soon as the Deutsch Mark showed any signs of inflationary pressure.

4.3. Price controlled industries

Price controlled sectors consisted of the basic goods industries such as the coal and steel industries, utilities, housing, infrastructure, agriculture, and the capital market.[6] Table 4.1 presents the producer price index between 1949 and 1954 comparing figures for price controlled sectors such as mining, and iron and steel production with price developments in the free market economy.

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themselves - at a time when coal price on the world market was $ 25 to $ 30.' Abelshauser reports similar procedures for lumber, scrap and electrical current.

[4] G. Hardach, 'The Marshall Plan in Germany, 1948-1952', *The Journal of European History*, Vol. 16 (1987), No. 3, pp. 447 quoting Ludwig Erhard.

[5] Abelshauser, 'American Aid', p. 390

[6] The housing industry was affected by price control through regulated rents. With regards to the infrastructure industry, railways most heavily suffered from the maintained price control. In the capital market, price controls were applied in a number of ways: bonds were kept at or close to par value while coupons where fixed below market rates. Due to these measures bond yields were unattractive to investors.

Table 4.1 Producer Price Index (1950=100, yearly average)

industries	1949	1950	1951	1952	1953	1954
total industry [1]	103	100	119	121	117	115
mining [2]	98	100	112	130	151	151
- coal mining *	99	100	112	131	154	154
- other mining *	91	100	112	123	129	129
electricity supply [3] *	-	100	106	126	140	140
basic & producer goods industry [4]	101	100	127	138	131	128
- iron & steel production *	96	100	122	170	175	168
- non-ferrous metals	83	100	154	136	113	113
- chemical industry	110	100	115	111	106	104
investment goods industry	105	100	117	127	125	122
- steel construction	103	100	120	148	156	150
- mechanical engineering	104	100	117	127	127	126
- vehicle manufacture	106	100	108	116	112	109
- electrical engineering	111	100	122	121	115	111
consumer goods industry [5]	101	100	122	105	97	96
- printing	100	100	118	121	114	113
- textiles	96	100	129	100	91	89
food industry	106	100	108	108	104	103
- foods stuff [6] *	101	100	114	113	109	110
- breweries	105	100	91	97	98	98

Note: * Industries with price controls in place. [1] Excluding construction and energy supply sectors. [2] Excluding crude oil production. [3] Source: H.R. Adamsen, *Investitionshilfe für die Ruhr; Wiederaufbau, Verbände und Soziale Marktwirtschaft 1948-1952* (Wuppertal, 1981), table 18. [4] Including crude oil production. [5] Without food sector. [6] Excluding fresh fruits and vegetables, coffee, tea, spices, wine, cider.
Source: F. Grünig and R. Krengel 'Die Expansion der westdeutschen Industrie 1948 bis 1954' *Deutsches Institut für Wirtschaftsforschung*, Sonderhefte, Neue Folge, No. 34 (1955), pp. 64-96.

Table 4.1 reports a mixed picture on the effects of price controls on the development of the overall producer price index. From 1949 to 1950, prices in controlled sectors appear to have been raised more than market prices rose. For instance, price levels in mining and iron and steel production were increasing between 1949 and 1950, whereas prices in the free market economy were generally decreasing over the same period, with the exception of non-ferrous metals where the price index rose by 20.5% from 1949 to 1950. In 1951, when the economic boom triggered by the Korean war led to a sharp increase in prices, price controlled sectors saw a smaller price increase than prices in free market sectors. Again the non-ferrous metal industry experienced the sharpest price increase with a 54% rise between 1950 and 1951. From 1951 to 1952, the producer price index of the consumer goods industry grew faster than the overall index which was due to a significant price increase in the textile industry. For all other years, the price index of the consumer goods industry grew slower than the overall index. In 1952, coal and steel and iron products experienced a sharp mark up in prices. In fact, from 1952 onwards the upwards pressure on the overall index was solely due to increases

in prices in price controlled sectors and increases in prices in steel construction and mechanical engineering.

It is also worth mentioning that the sector 'food industry' displayed a consistently lower growth rate in its prices which might provide some indication of the extent of price controls imposed on agricultural products. Interventions in the agricultural sector took place in a variety of forms ranging from price controls for final products, direct subsidies to farmers and other competitive measures including customs barriers, quota limitations and so called state trading (*Staatshandel*).

Furthermore, the development of the index for the overall industry shows that the fear of excessive inflation did not materialise. To the contrary, the overall producer price index shows a downward trend with the exception of one sharp increase during the Korean war. Table 4.1 also shows that by 1954 the price indices for price controlled sectors such as mining and iron and steel production had increased by about twice as much as price indices in free market price sectors. The deflationary development in free market sectors together with increasing price levels for input factors such as coal, steel and electricity questions the common assertion that companies operating in free market sectors were able to generate excessive profits by demanding high prices while enjoying low costs due to low input prices during the early post war period.[7] The general downward trend of prices in free market sectors coincided with a weakening in consumer demand and with an increase in export levels which reflects the increasing competitive environment those sectors were operating in, with nominal export sales increasing threefold between 1950 and 1954.[8] However, the findings suggested by Table 4.1 need to be qualified as they do not provide information on price developments in sectors which were shielded most from market forces such as housing, utilities or infrastructure.

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[7] The consumer price index behaved similarly to the producer price index showing deflationary signs during the first few years after the currency reform.

[8] F. Grünig and R. Krengel 'Die Expansion der westdeutschen Industrie 1948 bis 1954' *Deutsches Institut für Wirtschaftsforschung*, Sonderhefte, Neue Folge, No. 34 (1955), pp. 24-26. Nominal export sales of investment goods increased 3.7 times, of consumer goods 3.5 times, of basic and producer goods 2.3 times and of mining products 1.4 times. Export

Unfortunately, there is little quantifiable information available on the extent of price controls in these sectors. However, to the extent that there is information available, it suggests that prices in these sectors were significantly below market prices and the government placed great efforts in providing them with subsidised funding. The following looks at public policies in housing, utilities and infrastructure. Investments in these sectors were crucial to the performance of the overall economy. An account of public investment efforts in these sectors also sheds some light on the underlying idea of a social market economy (*soziale Marktwirtschaft*) which will be discussed in connection with the selection of industries financed by public investment programmes.

a. the housing sector

The extent of price controls on rents is probably best illustrated by comparing the price development of rents with the development of construction costs. While construction costs were 43% higher in 1950 than they were in 1928, rents only increased by 1% over the same period.[9] All rents in dwellings built before the currency reform remained under price control.[10] The treatment of new dwellings were categorised the following.[11] The first category comprised houses built with public funds known as 'social housing construction'. These dwellings were subject to rent control and special social criteria had to be fulfilled in order to be accepted as a tenant. The second category comprised tax-favoured housing. No tenancy control existed for those dwellings but to some degree rent controls prevailed. The

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sales in real term increased 2.3 times between 1950 and 1954. Export prices reached a peak by mid 1952 and decreased thereafter.

[9] E. R. Baumgart 'Investitionen und ERP-Finanzierung', *Deutsches Institut für Wirtschaftsforschung*, Sonderheft, Neue Folge, No. 56 (1961), p. 93.

[10] Despite some mark ups in rents undertaken in 1955 for dwellings built before the currency reform, rents in houses built before 1914 were only 20% above pre war rents and rents in houses built between 1918 and 1939 were 28% above pre war rents, whereas construction costs had increased by 168% since 1938, G. Schulz, 'Wohnungspolitik und Wirtschaftsordnung: Die Auseinandersetzung um die Integration der Wohnungspolitik in die Marktwirtschaft (1945-1960)', in D. Petzina (ed.), *Ordnungspolitische Weichenstellungen nach dem Zweiten Weltkrieg*, Schriften des Vereins für Socialpolitik, Neue Folge, Vol. 203 (1991), p. 136.

[11] Roskamp, *Capital Formation*, pp. 176-182.

third category consisted of houses built without any public assistance. This category was free of any rent or tenancy control. Between 1950 and 1956, the public sector provided 39.0% (DM 18.7 billion) of funds for investment in the housing sector, see Table 4.2. Financial institutions provided 35.4% (DM 17.0 billion) of funds among which savings banks (*Sparkassen*) and special mortgage banks (*Pfandbriefinstitute*) contributed most with 26.9% (DM 12.9 billion), followed by building societies with 5.4% (DM 2.6 billion) and life insurance companies with 3.1% (DM 1.5 billion). Around 4.6% (DM 2.2 billion) were provided in the form of company loans (mostly from employers to employees). A further 21.0% (DM 10.1 billion) were financed via self generated funds and shares.[12] The DM 18.7 billion of public funds contained DM 587 million of ECA (Economic Commission Act) funds which accounted for 10% of the total ECA fund portfolio, see Table 4.11.

Table 4.2 Distribution of Financial Sources for Gross Fixed Investment in Residential Housing between 1949 and 1956 (in DM billion)

	1949	1950	1951	1952	1953	1954	1955	1956	total[1]
gross fixed investment	2.5	3.6	4.7	5.5	7.0	8.2	9.1	9.9	48.0
financial sources:									
financial institutions	-	1.2	1.0	0.9	2.1	3.6	4.1	4.1	17.0
of which									
savings & special mortgage banks	-	0.7	0.6	0.6	1.7	2.9	3.3	3.1	12.9
building societies	-	0.3	0.2	0.1	0.2	0.5	0.6	0.7	2.6
life insurance companies	-	0.2	0.2	0.2	0.2	0.2	0.2	0.3	1.5
company loans	-	0.2	0.2	0.3	0.3	0.4	0.4	0.4	2.2
public funds	-	1.8	2.2	2.7	2.9	3.1	2.8	3.2	18.7
of which ECA credits (DM mill)	18	164	138	125	65	22	26	29	569
self-generated funds and shares[2]	-	0.4	1.3	1.6	1.7	1.1	1.8	2.2	10.1

Note: [1] 1950-1956. [2] Residual amount.
Source: Baumgart, 'Investitionen und ERP-Finanzierung', *Deutsches Institut für Wirtschafts-forschung,* Sonderheft, Neue Folge, No. 56 (1961), p. 94.

According to Roskamp total public aid to residential construction including loans, premiums, direct investments, interest subsidies and budget losses through tax exemptions amounted to DM 51.8 billion or 55.1% of gross investment in residential construction between 1949 and 1959.[13] In the second half of 1949, the *Kreditanstalt für Wiederaufbau* (Bank for Reconstruction) tried to raise money for the social housing programme by issuing a 'housing bond' (*Wohnbauanleihe*).

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[12] See F. Lütge 'Finanzierungsprobleme des Wohnungsbaues in Westdeutschland seit der Währungsreform', *Jahrbücher für Nationalökonomie und Statistik*, Vol. 164 (1952), p. 124 for a comparison of the composition of financial sources before and after the Second World War.

[13] See Roskamp, *Capital Formation*, Table 39.

Returns on capital gain and on coupon payments for this bond were tax exempt. However, with a coupon of 3.5% and an issue price at par, only DM 8 million could be raised.[14]

In order to understand the massive public intervention in the housing market, a few figures are reported which illustrate the extent of housing shortage during the early post war period. With a shortage of about 1.5 million dwellings even before the war and the destruction of another 2.3 million dwellings during the war, the shortage of housing had become a severe problem during the early post war period. With the influx of about 10 million refugees it was estimated that 5.5 million new dwellings were needed in order to ease the housing shortage. Between 1949 and 1959, 5.1 million dwelling units were built - more than half a million a year.[15] The intense social housing programme helped reduce unemployment, which peaked in the beginning of 1950 at a rate of 12.0% (or 1.9 million unemployed), both directly and indirectly. The direct effect was due to the absorption of large numbers of the potential workforce in the construction and construction related industries. The indirect effect of the social housing programme contributed to the enhancement of overall productivity as it enabled workers with their families to move from less damaged rural areas to industrial centres where the marginal return of human capital was highest.

b. infrastructure

Next to residential housing, infrastructure had been most severely damaged during the war. At the end of the war, of the 13,000 km of railway tracks in the British zone, only 1,000 km were still intact and of the total of 15,700 locomotives, only 38.6% were in working order. By the time of German capitulation, every bridge over the Rhine had been destroyed, except one at Remagen. The river itself

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[14] In comparison, corporate bonds issued in 1949 had an issue price of 98 and paid 6.5/ 5.5% coupon, where the 6.5% coupon faced a 30% tax rate and the 5.5% coupon was tax free.

[15] Giersch et al., *The Fading Miracle*, p. 84.

was impassable because of the destroyed bridges and sunken ships and barges.[16] With DM 23,968 million of public funds provided to the infrastructure sector between 1949 and 1956, infrastructure became the second largest receiver of public funds.[17] With most of these sectors either government controlled or government owned, it is not surprising to find that the public sector funded on average 87.2% of investments in these sectors between 1949 and 1956, with the proportion of public funding decreasing from 96.3% in 1949 to 89.8% in 1956.[18] The DM 23,968 million of public funds contained DM 1,314 million ECA (Economic Commission Act) funds which amounted to 5.5% of overall public funding efforts. Receiving 22.5% of the total ECA portfolio, infrastructure became the second largest receiver of ECA funds, only surpassed by the energy sector which received 23.1% of ECA funds (see Table 4.11). These large public funding efforts allowed gross investment in the transport and communication sector to more than double, growing roughly at the same rate as total gross investments in the economy, while gross investments in roads, harbours and waterways even quadrupled during the same period.[19] Unfortunately, there are no figures available which would allow to distinguish precisely to what extent the government relied in its investment efforts in infrastructure on tax income and to what extent it raised funds by issuing bonds. However, according to the Deutsche Bundesbank, the gross issue of public bonds amounted to DM 3.0 billion between 1949 and 1956, of which DM 879 million were issued by the federal rail and DM 185 million by the federal mail system.[20] According to these figures at least 4.4% of public funding provided to infrastructure was raised via bond issues. In remembrance of the severe transportation problems which largely contributed to the economic crisis experienced in winter 1947, the importance of improvements in infrastructure development for overall productivity enhancement cannot be over-rated, see Table 4.3 for figures displaying increases in transport capacity.

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16 A. Kramer, *The West German Economy, 1945-1955* (New York/ Oxford, 1991), p. 14.

17 Infrastructure includes transportation including federal railroad and other public transportation, communications including the postal system (which contains telephone and telegraph systems), roads, bridges, harbours, and waterways.

18 Roskamp, *Capital Formation*, Table 44.

19 Ibid., pp. 190-195.

20 Deutsche Bundesbank, *Deutsches Geld- und Bankwesen*, Table 1.05, p. 302.

Table 4.3 Transport Capacity in Freight Traffic between 1950 and 1956 (in bill tonnage kilometres)

	1950	1951	1952	1953	1954	1955	1956
railroad traffic	47.8	54.9	55.0	50.9	52.1	58.1	61.6
inland navigation	16.8	21.0	22.5	23.0	25.1	28.6	32.0
freight traffic on roads	7.8	10.0	11.8	13.0	14.6	16.7	17.7
total	72.4	85.9	89.3	86.9	91.8	103.4	111.3

Source: Baumgart, 'Investitionen und ERP-Finanzierung', *Deutsches Institut für Wirtschafts-forschung,* Sonderheft, Neue Folge, No. 56 (1961), p. 81.

c. the energy sector

Until 1952, electricity suppliers were the most important direct beneficiaries of price controls on coal products as they consumed nine tenths of soft coal production and two third of hard coal production. Naturally, they also suffered most from the severe increase in prices for coal when price controls for these products were relaxed in mid 1952, while electricity supply remained under strict price control, based on rate settings according to social criteria. Table 4.1 provides figures of the producer price index for electricity supply. The development of prices for electrical supply shows similar movements to the ones observed in other price controlled sectors such as mining and iron and steel production. The price index for electricity supply was 10.9% below the overall index in 1951. However, by 1952 the producer price index for electricity supply was already above the overall level and contributed to the upward pressure in prices from 1952 onward. Despite this considerable increase in its own prices, electrical supply lagged behind price developments in coal mining. As coal was still the most important input for electricity generation, the gap in price developments of these two indices negatively affected the self-financing ability of electricity suppliers. This negative effect was partly offset by the introduction of the Investment Aid Law (*Investitionshilfegesetz*) in 1952.[21] With 23.1% of all ECA funds provided to the energy sector between 1949 and 1956, the energy sector was the largest receiver of ECA funds. Similar to the infrastructure sector, most of the energy sector was either government owned or government controlled. Unfortunately, there are no figures available which would allow an estimate of the significance or the source of public funding for investments

in the energy sector to the extent that they went beyond the ECA programmes and the Investment Aid Programme. Whereas a contribution of 7.6% by the utility sector to total gross capital expenditure between 1949 and 1956 suggests a high level of investment for a sector whose net output amounted to only 1.9% of GDP, electricity suppliers continued to operate at capacity limits as demand for electricity increased on average by 12% annually.[22]

4.4. The development of price controlled sectors compared to free market price sectors

Before turning to the various public investment aid programmes which were directed to support investments in price controlled industries, the analysis continues by investigating whether output in priced controlled industries grew slower than in free market price sectors. Table 4.4 compares the development of price controlled sectors and free market sectors by addressing the question whether output grew slower in price controlled industries than in free market industries. The first observation Table 4.4 allows is that all industry sectors had reached or surpassed pre war production levels by 1950. In particular, Table 4.4 shows that industrial production in the basic and producer goods industry and the consumer goods industry grew at about the same rate, with an average growth rate of 20.4% and 18.6%, respectively between 1949 and 1954. Considering a narrower time span covering 1950 to 1954, the average growth rate achieved by these two sectors drops by almost one half to 11.7% for the basic and producer goods industry, and to 10.5% for the consumer goods industry, which translates into a compounded growth rate of 9.2% and 8.2%, respectively. Industrial production in the investment goods industry outperformed the overall index starting from the lowest level in 1948 and displaying the highest level from 1950 onwards, achieving a compounded growth rate of 12.7% between 1950 and 1954. Table 4.4 suggests that the mining industry and the food industry started trailing behind the overall development of industrial

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[21] Other beneficiaries of this law included coal mining, the iron and steel industry, gas production, water supply and the federal rail. See details on the implementation of the Investment Aid Law below.

[22] Baumgart, 'Investitionen', p. 74.

production from about 1950 onwards, while they were still about 20 points above the overall index in 1948. With the mining sector displaying consistently the lowest growth rate over the whole period. Between 1950 and 1955, the electricity generating sector achieved an average yearly growth in industrial production of 11.8%, and a compounded growth rate of 9.1% in the period of 1950 to 1954. This means that output in electricity generation grew at approximately the same rate as growth in demand for electricity which grew at a rate of approximately 12.0% annually. However, there seems to have been a period of two years covering 1952-53 when the growth in electricity supply fell short of demand.[23]

The year 1953 generally suggests a rather unfavourable period for growth in industrial production. The iron and steel producing sector seems to have been hit most heavily during this period suffering a contraction in industrial output of 10.1%. Between 1951 and 1954, industrial production in most price control sectors appear to have grown in line with free market price industries (with the exception of the mining sector which lagged behind considerably), only the investment goods industry, with an average growth rate of 16.6% over this period, accomplished a considerably greater increase in industrial output.

In summary, a comparison of growth rates in industrial production between price controlled sectors and free market sectors suggests that industrial production in price controlled sectors grew on average slower than industrial production in free market sectors, when looking at the period between 1948 and 1954. However, the discrepancy in growth rates diminishes considerably when considering the narrower time frame of 1950 to 1954, which coincides with the period when prices in price controlled sectors were at first raised and from 1952 onwards when price controls were gradually abolished all together. The increase in output in price controlled sectors might also be a reflection of the heightened public investment efforts aimed at raising the output in these sectors.

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[23] As noted the figures on industrial production for the electricity generating sector and for gas production are based on a different source than the figures for the other sectors quoted. However, both sources use 1936 as base year and the figures reported by

Table 4.4 Index of Industrial Production (1936=100)

industries **	1948	1949	1950	1951	1952	1953	1954	1955	48-54[6]	50-54[6]
total industry [1]	59.6	87.0	110.6	132.3	141.5	153.8	172.9			
growth rate in %		*46.0*	*27.1*	*19.6*	*6.9*	*8.7*	*12.4*		*20.1*	*11.9*
mining industry [2] *	79.5	93.7	101.8	112.2	118.1	119.2	122.9			
growth rate in %		*17.9*	*8.6*	*10.2*	*5.3*	*0.9*	*3.1*		*7.7*	*4.9*
electricity generation [3] *			207.0	243.0	264.0	281.0	320.0	360.0		
growth rate in %				*17.4*	*8.6*	*6.4*	*13.9*	*12.5*	*11.8*	*11.6*
gas production [3] *			123.0	142.0	156.0	156.0	169.0	191.0		
growth rate in %			-	*15.4*	*9.9*	*0.0*	*8.3*	*13.0*	*9.3*	*8.4*
basic & producer goods industry [4]	57.3	84.8	108.1	127.7	132.7	145.3	167.6			
growth rate in %		*48.0*	*27.5*	*18.1*	*3.9*	*9.5*	*15.3*		*20.4*	*11.7*
iron &steel prod. [3] *			88.0	113.0	119.0	107.0	123.0	149.0		
growth rate in %				*28.4*	*5.3*	*-10.1*	*15.0*	*21.1*	*11.9*	*9.7*
investment goods industry	51.4	82.8	113.6	151.0	170.0	175.6	206.6			
growth rate in %		*61.1*	*37.2*	*32.9*	*12.6*	*3.3*	*17.7*		*27.5*	*16.6*
of mech. which engineer.[3]		-	116.0	155.0	180.0	177.0	198.0	243.0		
growth rate in %				*33.6*	*16.1*	*-1.7*	*11.9*	*22.7*	*16.5*	*15.0*
of vehicle which manuf.[3]			143.0	183.0	215.0	231.0	301.0	396		
growth rate in %				*28.0*	*17.5*	*7.4*	*30.3*	*31.6*	*23.0*	*20.8*
consumer goods industry [5]	53.8	86.0	113.0	130.6	134.6	155.2	167.4			
growth rate in %		*38.4*	*31.3*	*15.6*	*3.1*	*15.3*	*7.9*		*18.6*	*10.5*
food industry [7] *	79.6	99.1	112.3	118.7	127.4	147.6	153.9			
growth rate in %		*24.5*	*13.3*	*5.7*	*7.3*	*15.9*	*4.3*		*11.8*	*8.3*

Notes: * Industries with price controls in place. ** The compounded growth rate over the period of 1950 to 1954 for the total industry amounted to 9.3%, for mining to 3.8%, for electricity generation to 9.1%, for gas production to 6.6%, for the basic and producer goods industry to 9.2%, for iron and steel production to 6.9%, for the investment goods industry to 12.7%, for mechanical engineering to 11.3%, for vehicle manufacturing to 16.1%, for the consumer goods industry to 8.2% and for the food industry to 6.5%. [1] Excluding construction and energy supply sectors. [2] Excluding crude oil production. [3] Source: Kramer, *The West German Economy*, quoting K. Pritzkoleit, *Gott erhält die Mächtigen. Rück- und Rundblick auf den deutschen Wohlstand* (Düsseldorf, 1963), pp.260-261. [4] including crude oil production. [5] Without food sector. [6] Average growth rate. [7] See Table 3.1 for a list of food stuff not facing price controls.
Source: Grünig and Krengel, 'Die Expansion der westdeutschen Industrie 1948-1954' *Deutsches Institut für Wirtschaftsforschung*, Sonderheft, Neue Folge, No. 34 (1995), pp. 64-96.

Table 4.5 and Table 4.6 give a more detailed picture of the development of industrial production by providing figures for selected industry sectors. Table 4.5 compares the ranking of selected sectors according to *percentage increases* in industrial production to the ranking according to the *level* of industrial production between 1948 and 1950. Table 4.6 undertakes the same kind of comparison for the years covering 1950 to 1954.

Pritzkoleit on the other sectors correspond to a large degree with the figures reported by Grünig and Krengel. Therefore a comparison of the two sources seems appropriate.

Table 4.5 Index of Industrial Production between 1948-1950 for Selected Industry Sectors (1936=100)

industry sectors ranked according to % increase	percentage increase from 1948 to 1950	industry sectors ranked according to ind. prod. level	index of ind. prod. 1948	1950
car manufacturing	313	crude oil production	143	251
mechanical engineering	122	food industry*	119	144
iron & steel production*	117	other mining*	89	131
overall industry	**86**	coal mining*	79	99
chemical industry	82	chemical industry	73	133
crude oil production	76	**overall industry**	**60**	**111**
steel construction	47	mechanical engineering	56	124
other mining*	47	steel construction	39	58
coal mining*	26	iron & steel production*	38	82
food industry*	21	car manufacturing	30	126

Note: * industries with price controls in place.
Source: Grünig and Krengel, 'Expansion der westdeutschen Industrie 1948-1954' *Deutsches Institut für Wirtschaftsforschung*, Sonderheft, Neue Folge, No. 34 (1995), pp. 14 and 15.

Table 4.5 illustrates that those sectors, which produced the lowest level of industrial output in 1948, experienced the strongest rates of growth between 1948 and 1950. In fact, comparing the two rankings one observes an almost complete inversion in the positioning of the sectors. Table 4.6 suggest an altogether different trend where those sectors displaying the highest level of industrial production in 1950 were also the ones with above average growth rates, with the exception of the food industry and other mining. This indicates that whereas price controlled sectors still held a relatively favourable position in terms of industrial production at the time of the currency reform, they were soon outpaced by industrial output improvements achieved in important free market sectors.

Table 4.6 Index of Industrial Production between 1950-1954 for Selected Industry Sectors (1936=100)

industry sectors ranked according to % increase	percentage increase from 1950 to 1954	industry sectors ranked according to ind. prod. level	index of ind. prod. 1950	1954
crude oil production	138	crude oil production	251	599
car manufacturing	113	food industry*	144	183
steel construction	98	chemical industry	133	217
mechanical engineering	68	other mining*	131	196
chemical industry	63	car manufacturing	126	268
overall industry	**56**	mechanical engineering	124	208
other mining*	50	**overall industry**	**111**	**173**
iron & steel production*	40	coal mining*	99	115
food industry*	27	iron & steel production*	82	115
coal mining*	17	steel construction	58	115

Note: * industries with price controls in place.
Source: Grünig and Krengel, 'Expansion der westdeutschen Industrie 1948-1954' *Deutsches Institut für Wirtschaftsforschung*, Sonderheft, Neue Folge, No. 34 (1955), pp. 18-19.

Figures provided in Table 4.7(a) and Table 4.8 allow a comparison of the relative importance of the different sectors both in terms of the formation of gross

fixed capital and in terms of their contribution to total turn-over.[24] Table 4.7(a) shows the yearly gross capital formation of companies between 1948/49 and 1955. The relative contribution of different industries to gross capital formation varied over the years with the investment goods industry being the most stable contributor to gross capital formation. The basic and producer goods industry experienced the strongest relative as well as absolute increase, with its percentage share in gross fixed capital formation increasing from 32.7% in 1948/49 to 47.4% in 1955. Due to strong yearly growth in gross capital formation, mining was almost able to double its relative share, increasing from 7.1% in 1948/49 to 15.0% in 1955. In contrast, the relative importance of gross capital formation in the investment goods industry displayed a decreasing trend varying between 33.1% and 25.8%. The same holds true for the consumer goods industry and the food industry, whose relative share decreased from 16.7% to 3.3%, and from 10.5% to 4.2%, respectively, see Table 4.7(a).

Table 4.7(a) Gross Fixed Capital Formation of Public Limited Companies in Different Industry Sectors (in DM million, at current prices)

industries	48/491	1950	1951	1953	1954	1955
total industry	5,233	3,923	5,641	6,937	8,803	11,030
mining*	369	404	520	1,132	1,588	1,658
- in % of total industry	7.1	10.3	9.2	16.3	18.0	15.0
basic & producer goods industry	1,711	1,150	2,217	3,358	4,094	5,226
- in % of total industry	32.7	29.3	39.3	48.4	46.5	47.4
investment goods industry	1,731	1,279	2,064	1,830	2,272	3,338
- in % of total industry	33.1	32.6	36.6	26.4	25.8	30.3
consumer goods industry	876	628	463	270	315	362
- in % of total industry	16.7	16.0	8.2	3.9	3.6	3.3
food industry*	549	468	378	324	478	460
- in % of total industry	10.5	11.9	6.7	4.7	5.4	4.2

Note: the year 1952 is missing. [1] prolonged fiscal year.* industries with price controls in place.
Source: E. Baumgart et al., 'Die Finanzierung der industriellen Expansion in der Bundesrepublik während der Jahre des Wiederaufbaus', *Deutsches Institut für Wirtschaftsforschung*, Sonderheft, Neue Folge, No. 49 (1960), pp. 84-89.

Table 4.7(b) provides figures which give some indication on how West German public limited companies financed their gross capital formation between 1948/49 and 1955. According to Table 4.7(b) the mining industry relied most heavily on internally generated funds in order to finance gross capital formation, and it appears that external financial sources were almost exclusively provided by the various

[24] Turn over comprises domestic sales and exports.

public investment programmes, see Table 4.11.[25] The basic and producer goods industry, and in particular the investment goods industry which required the greatest amount of funding in absolute terms consistently relied to a relatively large extent on external financial sources, whereas the proportion of external finance to total funds decreased sharply for the consumer goods industry and the food industry, dropping from 47.7% in 1948/49 to 3.0% in 1955, and from 72.9% to 22.0%, respectively. It is interesting to note that the relative importance of outside sources was greatest during the immediate post currency reform period which reflects the great demand for credits during this period as discussed in the previous chapter. Table 4.7(b) also shows that the relative importance of external funds picked up in 1955, coinciding with the lifting of restriction on capital market financing which induced companies to utilise the capital market for fund raising, see chapter five.

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[25] External funds comprise bank loans, bonds and share capital. Internal funds contain all funds generated by the company and as such comprise all forms of legal and other reserves, profit (loss) for the year, profits (losses) carried forward, and to some extent provisions in as far as they were identified as such. See Baumgart et al. 'Die Finanzierung der industriellen Expansion' pp. 78-79 for details. For the years 1948 to 1951, many companies had to be excluded from the data set, among them a number of large companies, as their converted balance sheets had not yet been confirmed, see Ibid., p. 17. Unfortunately, Baumgart et al. do not provide a detailed account of the number and characteristics of the companies comprising their study of company balance sheets. They state, however, that their study comprises the majority of all non financial public limited companies, see Ibid., p. 16.

Table 4.7(b) Financing of Gross Fixed Capital Formation of Public Limited Companies in Different Industry Sectors (in DM million, at current prices)

industries	48/49[1]	1950	1951	1953	1954	1955
total industry						
internal equity	2,052	2,066	3,081	4,229	5,874	6,839
funds from outside sources	3,180	1,857	2,560	2,708	2,929	4,191
relation of outside sources to total funds in %	60.8	47.3	45.4	39.0	33.3	38.0
mining*						
internal equity	236	266	316	733	1,212	1,440
funds from outside sources	133	138	205	398	376	218
relation of outside sources to total funds in %	36.0	34.2	39.4	35.2	23.7	13.1
basic & producer goods industry						
internal equity	540	627	1,329	2,059	2,558	3,235
funds from outside sources	1,171	523	888	1,299	1,536	1,991
relation of outside sources to total funds in %	68.4	45.5	40.1	38.7	37.5	38.1
investment goods industry						
internal equity	633	634	884	1,044	1,533	1,470
funds from outside sources	1,098	645	1,181	786	739	1,869
relation of outside sources to total funds in %	63.4	50.4	57.2	43.0	32.5	56.0
consumer goods industry						
internal equity	458	327	287	216	244	351
funds from outside sources	418	302	176	54	72	11
relation of outside sources to total funds in %	47.7	48.1	38.0	20.0	22.9	3.0
food industry*						
internal equity	189	218	267	200	272	359
funds from outside sources	400	250	111	124	207	101
relation of outside sources to total funds in %	72.9	53.4	29.4	38.3	43.3	22.0

Notes: The year 1952 is missing. [1] Prolonged fiscal year.* Industries with price controls in place.
Source: Baumgart et al. 'Die Finanzierung der industriellen Expansion in der Bundesrepublik während der Jahre des Wiederaufbaus', *Deutsches Institut für Wirtschaftsforschung*, Sonderheft, Neue Folge, No. 56 (1960), pp. 84-89.

According to Baumgart et al., between 1953 and 1956 most external funding by public limited companies was financed by issuing shares which accounted for DM 3.4 billion, or 62% of all external funding. Furthermore, they estimate that about 30% of all those share issues were bought by investors other than the public limited companies which made up their study (cross-shareholding). They also found that between 1953 and 1956 bond issuance was the second most important source of external funds amounting to DM 1.5 billion, 23% of all external funding with more than one third being bought by investors other than the public limited companies comprising their study.[26] Considering their definition of external funds (bank loans, bonds and share capital), this left 15% of external funding to be provided by bank loans.

With respect to growth in total turn-over, the investment goods industry displayed the greatest increase with a growth rate of 420% followed by the basic

[26] Ibid., p. 20.

and producer goods industry with a growth rate in total turn-over of 385% from 1949 to 1954, see Table 4.8. The mining and consumer goods industry displayed a similar growth in turn-over with an increase of 238% and 234%, respectively. And the foods industry showed the smallest increase with a growth rate of 203% over the same period. The relative contribution of the mining sector to total turn-over with around 5.5% remained significantly below its relative importance with respect to its contribution to gross fixed capital formation which reflects the great capital intensity of this sector. The relative contribution of the consumer goods and food industries to total turn-over was decreasing from 25.3% in 1949 to 20.8% in 1954 for the consumer goods industry, and from 21.2% to 15.8% for the food industry. At the same time the relative contribution of the basic and producer goods and investment goods industry was increasing from 25.3% in 1949 to 30.2% in 1954 for the basic, and producer goods industry and from 22.0% to 28.1% for the investment goods industry, see Table 4.8.

Table 4.8 Contribution to Total Turn Over (in DM million, at current prices)

industries	1949[5]	1950	1951	1952	1953	1954
total industry [1]	34,653	80,395	109,909	119,392	126,162	140,943
mining [2]	2,117	4,478	5,616	6,705	6,749	7,149
- in % of total industry	6.1	5.6	5.1	5.6	5.3	5.1
basic & producer goods industry [3]	8,773	22,485	33,377	36,755	37,277	42,546
- in % of total industry	25.3	28.0	30.4	30.8	29.5	30.2
investment goods industry	7,617	18,253	26,371	31,803	34,147	39,589
- in % of total industry	22.0	22.7	24.0	26.6	27.1	28.1
consumer goods industry[4]	8,783	20,336	26,867	25,259	27,356	29,361
- in % of total industry	25.3	25.3	24.4	21.2	21.7	20.8
food industry	7,363	14,843	17,678	18,870	20,633	22,298
- in % of total industry	21.2	18.5	16.1	15.8	16.4	15.8

Notes: [1] Excluding construction and energy supply sectors; [2] Excluding crude oil production; [3] Including crude oil production; [4] Without food sector; [5] Figures for 1949 correspond to the second half of 1949 (six months only).* Industries with price controls in place.
Source: Grünig and Krengel, 'Expansion der westdeutschen Industrie 1948-1954', *Deutsches Institut für Wirtschaftsforschung*, Sonderheft, Neue Folge, No. 34 (1955),', pp. 64-96.

In addition to analysing the importance of various sectors with respect to industrial production, gross capital formation and turn-over, Table 4.9 provides an overview of capacity utilisation of different sectors between 1949 and 1955. Table 4.9 shows that capacity was idle to a large extent until 1951, when the Korean war boosted the West German economy. The fact that coal mining and iron and steel production reached their capacity limits in 1952 suggests that the fear of bottlenecks arising in sectors central to the performance of the overall economy were not entirely unfounded. However, after 1952 capital utilisation was decreasing in those

sectors and by 1955 almost 15% of capacity in coal mining was unemployed, while most other sectors operated at or close to capacity limits. Therefore, Table 4.9 suggests that at least with respect to coal mining and iron and steel the problem of (potential) bottlenecks had been overcome by 1953. It is hard to imagine the counterfactual that these sectors would have been able to raise timely sufficient funding without the help of the public sector, even in the case of full liberalisation, including full price liberalisation, full liberalisation of the capital market, and privatisation of these controlled industries. Moreover, privatisation was politically not on the agenda and a number of companies in these sectors were still under the rule of the occupation authorities, facing the threat of dismantling or restructuring. Furthermore, it is questionable whether a full liberalisation would have been economically desirable given the strategic role of these sectors with their potential positive externalities on the overall economy.

Table 4.9 Indices of Capacity Utilisation 1949-1955 (in percentage of gross fixed assets)

industries	1949	1950	1951	1952	1953	1954	1955
mining (excl. coal processing)	84.0	89.6	97.4	99.2	94.9	90.7	88.0
coal mining*	86.4	91.1	98.9	100.0	95.0	89.4	86.1
iron-ore mining	64.1	75.0	87.8	100.0	92.7	81.8	91.9
mineral oil	71.1	82.1	86.3	92.7	96.7	98.4	100.0
basic & production goods industry	63.3	76.0	89.3	90.3	88.7	93.0	98.5
iron & steel production*	59.6	77.5	89.2	100.0	85.9	88.2	98.8
iron & steel foundry	65.8	81.6	99.0	98.0	82.8	90.0	100.0
non-ferrous metals	60.0	79.1	93.3	82.1	85.7	98.1	100.0
chemical industry	58.1	64.6	84.4	80.1	89.7	94.8	97.5
mineral oil refining	46.1	81.2	98.1	96.8	94.2	99.6	100.0
investment goods industry	54.1	66.6	81.2	84.5	82.4	89.8	99.7
steel construction (incl. wagon manuf.)	69.5	76.7	81.5	85.0	92.9	91.3	97.0
mechanical engineering	65.1	77.6	93.5	98.0	88.5	90.7	100.0
vehicle manufacture	44.5	61.5	73.1	79.8	76.3	88.0	100.0
shipbuilding	25.3	36.7	46.6	63.3	77.4	90.9	100.0
consumer goods industry	69.5	84.6	89.3	83.9	92.2	95.2	98.0
printing	68.6	90.9	89.5	90.5	99.0	100.0	97.4
textiles*	68.7	85.9	90.3	82.9	94.0	96.3	99.0
food industry*	73.3	78.2	82.1	83.1	90.7	91.6	96.1
milling	86.0	80.3	80.7	80.8	77.8	83.7	92.0
sugar	78.3	93.3	84.0	70.1	100.0	81.4	84.8
all industries	66.8	77.8	88.3	88.6	89.0	92.1	96.8

Note: * industries with price controls in place.
Source: Kramer, *West German Economy*, Table 5.7 quoting Pritzkoleit, *Gott erhält die Mächtigen. Rück- und Rundblick auf den deutschen Wohlstand,* (1963), pp. 290-291.

4.5. Public investment programmes

4.5.1. The role of foreign aid funds[27]

The U.S. occupation authorities started to distribute army supplies and stocks of the Combined Civil Affairs Office among the West German population as early as 1945. From 1946 imports such as foodstuff, medicine, fertilisers and fuel were distributed more systematically under a programme called the Government Aid and Relief in Occupied Areas (GARIOA) which was financed by the U.S. defence budget and which terminated in 1950.[28] The revenues (counterparts) generated from the sales of GARIOA imports were employed to finance the immediate aid programme (*Soforthilfeprogramm*), which constituted the first investment programme financed by counterpart funds and which came into effect in 1949. The immediate aid programme was followed by three further foreign investment programmes, which became known as Economic Cooperation Act (ECA). The Economic Cooperation Act was financed in the same fashion as the immediate aid programme by allocating revenues, which were generated from import sales. Only this time import revenues were generated under the so-called European Recovery Programme (ERP, often also referred to as the Marshall Plan), whereas the immediate aid programme received its funds from revenues generated under the GARIOA programme. The composition of imports under the European Recovery Programme somewhat differed from earlier GARIOA imports with a greater share of raw materials and industrial products, see Table 4.10. The imports from these programmes were paid for in Deutsch Marks, the proceedings of which were held in an intermediate clearing account by the West German central bank (then the Bank deutscher Länder).[29] The U.S. government charged this account on a monthly basis

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[27] There are numerous articles and books on the impact of foreign aid on the development of West Germany, a number of which are cited throughout this chapter. Despite covering a variety of sources, the cited literature is by no means exhaustive.

[28] See Hardach, 'The Marshall Plan in Germany', p. 436.

[29] Given the West German current account deficit and its poor U.S. dollar holdings, this form of foreign aid imports helped overcome the dollar shortage. According to an ECA estimate total imports of the Bizone in 1948 were US$ 1.4 billion of which 50% were GARIOA imports, 7% were ERP imports and 43% were financed by export earnings, see Hardach, 'Marshall Plan', p. 457. According to Kramer, *The West German Economy*, p. 106 the requirement enforced by the British and American governments of paying for West

for various costs it accrued in the course of providing aid. The remaining proceedings were then transferred to a so-called *Sonderkonto* (special account) of the central bank.[30] The special account was under joint U.S. and German control until West Germany had partly repaid the funds after which she became the sole owner of funds held in the special account.[31]

Table 4.10 ERP Imports (in US$ thousand)

year	foodstuff, fertiliser	industrial raw material	machinery, vehicles	transport
1948/49	213	135	8	32
1949/50	175	212	9	29
1950/51	196	240	13	31
1951/52	76	100	8	26
1952/53	24	38	2	4
sum	684	725	36	122

Source: J. Hölscher, *Entwicklungsmodell Westdeutschland*, Volkswirtschaftliche Schriften, Heft 437 (Berlin, 1994), p. 49.

All investment projects that were granted a counterpart credit received this credit on favourable terms and generally under the condition that part of the investment had to be financed by other means than counterpart funds. Only sometimes interest free loans or subsidies were granted, where the extent of subsidies was limited to the amount generated from interest earnings on the special account in compliance with the U.S. requirement of not reducing the stock of funds.[32] Interest rates for counterpart fund credits ranged from 7.5% (the lower end of market rates) to 0.5% (for the housing programme). In 1954, around 10% of counterpart credits bore an interest rate of 7.5% and a further 14% of credits bore an interest rate of 7.0%. Taking the weighted average of interest rates on all ECA credits, one arrives at an average interest rate charge for ECA credits of 4.3%,

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German exports in US$ impeded trading. As most of West Germany's trading partners themselves were short of dollars, they would have preferred to buy German goods on the basis of bilateral exchange.

[30] Baumgart, 'Investitionen', p. 25.

[31] Under the London Debt Agreement of 1953, West Germany was to redeem its debt with regard to foreign aid payments by paying US$ 1.0 billion to the US (about one third of its combined GARIOA and ERP debt), US$ 420 million to Great Britain, and US$ 12 million to France. The final instalment was paid in 1966. See Hardach, 'Marshall Plan', p. 483 and Kramer, *The West German Economy*, p. 152. West Germany was the only country which repaid all foreign aid funds to the agreed amount. The repayment was financed by the federal budget which preserved the special account to its full extent, see Pohl, *Wiederaufbau*, p. 140.

[32] Baumgart, 'Investitionen', p. 26.

exclusive of banking commission.[33] The allocation of counterpart funds was based on economic considerations following a social market principle and normally constituted a compromise between the U.S. administration authorities and the relevant German counter-parties.[34] The distribution of counterpart funds was based on an evaluation by the *Kreditanstalt für Wiederaufbau* (KfW) (Bank for Reconstruction) in cooperation with the Bizonal administration. The KfW was established in late 1948, with the purpose of allocating counterpart funds generated from U.S. imports effectively.[35] Many other countries receiving ERP funds used the generated counterpart funds for other than investment purposes most prominently for national debt retirement.[36] For example, the Great Britain and Norway used almost all their counterpart funds as an anti-inflationary devise by retiring national debt. These countries experienced strong inflationary pressures from excessive purchasing power and the use of counterpart funds was conceived as a means of cancelling part of the money supply. By contrast, France and Italy used counterpart funds in a similar way to West Germany.[37] France, for instance, used much of the Marshall Aid funds to outfit the enlarged steel industry with up-to-date equipment.

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[33] Ibid., pp. 32-33. Half of the banking commission of 2% went to the *Kreditanstalt für Wiederaufbau*, the other half was received by the intermediating commercial bank, see Pohl, *Wiederaufbau*, p.59.

[34] On the U.S. side, the European Recovery Programmes were administered by the European Cooperation Administration (ECA) from 1948 to 1951 and its successors, the Mutual Security Administration (MSA) from 1951 to 1953, the Foreign Operations Administration (FOA) from 1953 to 1955, and the International Cooperation Administration (ICA), see Baumgart, 'Investitionen', p. 24. The change in U.S. administrations co-ordinating the European Recovery Programmes reflected the change in strategic objectives envisioned by the U.S. government. The West German administration consisted of six Executive Directors (*Direktoren*) as government, the Economic Council (*Wirtschaftsrat*) as parliament and an Executive Committee (*Executiveausschuß*) as a second chamber representing the federal element. The actual planning and administrative tasks were performed by the Economic Council and the Bank for Reconstruction (*Kreditanstalt für Wiederaufbau*). A special committee (the ERP *Ausschuß*) co-ordinated the activities of the Bizonal administration and the state governments, see Hardach, 'Marshall Plan', p. 443 and pp. 451-452.

[35] The *Kreditanstalt für Wiederaufbau* was founded at the end of 1948 to manage and allocate counterpart funds, to help other special purpose banks (i.e. *Industriekreditbank*) in raising funds, and to underwrite guarantees. The KfW was initially supposed to provide finance for industries in the U.S. and British occupation zones (the so-called Bizone) only but many foreign investment schemes included the French zone. For a detailed description of the work of the KfW, see Pohl, *Wiederaufbau*.

[36] Pohl, *Wiederaufbau*, p. 18.

[37] I. Wexler, *The Marshall Plan Revisited*, (London, 1983), pp. 107-112.

The KfW was also used to provide interim finance which was often necessary due to delays in the sale of imports and because counterpart funds were allocated in half year intervals. The KfW ranked the industries it considered important to finance and submitted this list to the American occupation authorities, including the amount of finance each industry was supposed to receive. The final decision on the allocation of GARIOA counterpart funds was based on the approval by the Bipartite Control Office Joint Secretariat and Finance Group (BICO). The allocation of ECA counterpart funds were to be approved by the Economic Commission Administration.[38] As most of the loans provided from counterpart funds were interest bearing, the size of the fund increased steadily over the years. These additional funds which were generated due to interest payments and redemption of earlier loans could be utilised at the sole discretion of the West German government.

As mentioned, the availability of counterpart funds for investments was tied to the sale of U.S. imports. Unfortunately, the goods delivered by the U.S. did not always match the requirements of the West German economy, which contributed to a sometimes unsatisfactory sale of imports.[39] A further negative effect on the sale of ERP imports was attributed to a relatively high exchange rate of DM 4.20 for one US dollar which was established in September 1949 and which made American imports rather expensive.[40] Slow distribution of imports due to lengthy bureaucratic procedures further aggravated the problem of mismatches between the approved amount of foreign aid and available counterpart funds. Due to these mismatches, investment projects approved under one foreign aid programme often had to be deferred to a following foreign aid programme. The mismatch between granted and available funds was particularly severe during the first ECA programme in 1949/50. The first ECA programme was further handicapped by differing expectations of the various authorities involved regarding the conduct of the programme as well as the

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[38] Pohl, *Wiederaufbau*, pp. 53-65 and pp. 73-94.

[39] By the end of 1948, the gap between generated counterpart funds and approved investment projects amounted to 70%.

order of priorities. This meant that West Germany had to re-submit investment proposals several times before they were approved by the U.S. authorities. Therefore, it was not before 1950 that first investments were financed through the ECA I programme. The late start of the ECA I programme meant that there was a considerable balance left which was to be employed by later ECA programmes.

The implementation of ECA programmes improved with the start of ECA II in 1950/51, when bureaucratic procedures were simplified and individual screenings of national reconstruction plans were abandoned in favour of aid distribution according to quotas. Despite considerable improvements in the implementation of ECA programmes, some discrepancies between granted and available funds remained. The European Recovery Programme officially expired in 1952, but foreign aid continued to arrive under the Mutual Security Act, the Foreign Operations Act and the International Cooperation Act until 1956. When foreign aid imports terminated, investment programmes continued to be financed by accumulated interest and repayments on counterpart credits which transformed the special account into a revolving permanent investment fund.

The U.S. government always considered foreign investment aid as a temporary and complementary measure to domestic investment plans. Therefore, it made its release of counterpart funds for investment projects dependent on efforts undertaken by the West German administration to promote capital formation. In particular, the U.S. government requested that the West German government implemented investment policies which made use of the capital market. West Germany complied by implementing various bond programmes including the 'Investment Aid Programme' but the amount of funds raised via the capital market were small both in absolute terms as well as relative to investment programmes financed by foreign aid.[41]

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[40] Between May and September 1949, the DM/US$ exchange rate was DM 3.33 for one US$, see Wandel, *Die Entstehung der Bank deutscher Länder*, p. 171.

[41] Issues concerning these programmes are treated in detail below.

Table 4.11 shows the relative importance of various public investment programmes between 1948 and 1956. The circle of recipients for foreign aid funds was most restricted during the immediate aid programme, when the bulk of funds went into three sectors only. Infrastructure was the most prominent receiver with the gross of funds invested in federal rail, receiving a staggering DM 444 million under the immediate investment programme. The great amount allocated to the federal rail reveals the high priority the allied occupation authorities initially placed on the improvement of transport. Even before the start of the European Recovery Programme great efforts were undertaken to improve the transportation system.[42] Mining received DM 185 million and utilities including the electricity, gas and water industry received DM 125 million under the immediate aid programme. This extent of concentration in the list of receiving industry sectors was only experienced again during the Investment Aid Programme which benefited four sectors only, namely the utilities sector, coal mining, iron and steel production and residential housing. All other public investment programmes included a wider range of recipients. The utilities sector remained one of the main beneficiaries throughout all public investment programmes, with DM 1,835.7 million of investment aid funds invested in this sector, see Table 4.11. The mining sector benefited from foreign aid programmes at a decreasing rate, receiving DM 185 million during the immediate aid programme and DM 130 million during ECA III. The iron and steel industries received relatively little foreign aid funding during the first three years. However, towards the second half of public investment programmes, iron and steel production turned into one of the main beneficiaries of these programmes. This pattern of allotment of counterpart funds to the iron and steel industry reveals a reorientation of policy by the Western allies. As the iron and steel industry was subject to the 'Level of Industry Plan' of 1946 (which restricted production levels), it was initially not one of the sectors the occupation authorities intended to support. However, the allies changed their policy on iron and steel production when they placed greater

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[42] See Kramer, *West German Economy*, pp. 97-101 on achievements in the improvement of infrastructure during the first years after the war. The development of transportation systems was particularly important for the distribution of coal, with supplies to industry improving significantly from autumn 1947.

efforts on the development of the investment goods industry.[43] Foreign aid investments in the housing sector reached its peak during ECA III when it received DM 297.2 million or 25.8% of funds allocated during ECA III. Agriculture, forestry and fishing benefited from all three ECA programmes to a similar extent receiving around DM 98 million each year. The shipping and harbour sector was the second most important receiver of funding between 1953 and 1956 when it received DM 250.7 million out of the revolving investment fund generated through interest earnings and redemption of earlier credits. Considering all three ECA programmes, the shipping and harbour sector received on average DM 53.7 million each year. Other sectors reported individually in Table 4.11 received relatively small amounts of public investment funds, with the sector combining tourism and small companies owned by refugees receiving 2.2% under various investment aid programmes. The basic chemical sector received 2.0% of all funds allocated under these programmes and the federal mail received 1.0% of funds. Other industries not listed individually received a total of 12.2% of allocated funds.

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[43] Ibid., pp. 101-102.

Table 4.11 Relative Importance of Public Investment Programmes between 1948 and 1956 (in DM million)

industries	immediate aid programme 1948/49	ECA I 1949/50	ECA II 1950/51	ECA III 1951/52	other foreign aid programmes[1] 1953-56	funds from interest earnings & redemption 1953-1956	bonds[2]	investment aid programme 1952-1954	sum	distribution of funds in %
electricity, gas & water*	125.0	247.3	169.7	371.3	10.2	489.0		423.2	1,835.7	26.4%
mining*	185.0	162.3	123.4	130.0		113.6		228.2	942.5	13.5%
other industries	15.0	169.3	186.5	85.2	84.9	234.9	73.3		849.1	12.2%
iron and steel*		39.6	55.4	108.2	13.0	176.7	8.9	296.5	698.3	10.0%
federal rail*	444.0			1.0		154.5	40.0	50.0	689.5	9.9%
housing*		105.0	131.9	297.2	43.0	42.7	8.0		627.8	9.0%
agriculture, forestry & fishing*	5.0	97.9	94.6	101.7	1.0	144.8			445.0	6.4%
shipping & harbours	2.0	49.8	59.7	51.7		250.7	6.3		420.2	6.0%
tourism & small companies owned by refugees		1.6	25.8	2.1	8.3	116.9	1.7		156.4	2.2%
basic chemicals		39.8	36.8		5.3	57.0			138.9	2.0%
federal mail*			20.0			47.2	5.0		72.2	1.0%
transportation*		7.0	19.6	1.6	0.1	22.6	1.2		52.1	0.7%
non-ferrous metal		8.9	12.7		4.8				26.4	0.4%
science & social institutions			0.3	0.1		0.4	2.4		3.2	0.0%
sum[3]	776.0[4]	928.5	936.4	1,150.1	170.6	1,851.0	146.8	997.9	6,957.3	99.7%

Note: [1] Other foreign aid programmes contains counterparts generated under the MSA, FOA and ICA programmes implemented between 1953 and 1956. [2] Contains the KfW bond programme and MSA bonds. [3] Excludes financial aid in form of subsidies and participating interests. * Industries with price controls in place.
[4] Excludes US$ 1.9 billion of funds generated from imports before the currency reform, as those funds perished with the implementation of the currency reform.
Source: Baumgart, 'Investitionen und ERP-Finanzierung', *Deutsches Institut für Wirtschaftsforschung*, Sonderheft, Neue Folge, No. 56 (1961), pp. 28-29

Table 4.12 separates industries according to whether they faced price controls or not. As presented in Table 4.12, the main beneficiary of counterpart credits was the energy sector, which received 23.1% of foreign aid funds allocated between 1949 and 1956. Infrastructure received 22.5% of funds. Within the infrastructure sector, the federal rail received with 12.9%, by far the largest component and more than the mining sector, which received 12.3% of foreign aid funds. The fourth largest sector that received benefits constituted the housing programme with 10.0%. The iron and steel industry and agriculture, forestry and fishing sectors received roughly similar amounts, with a share in foreign aid of 7.1% and 7.6%, respectively. Table 4.12 shows that between 1949 and 1956, 82.6% of foreign aid funds were allocated among six industry sectors which accounted for 55.15% of gross capital expenditure. These sectors had in common that they suffered price controls.

The figures in Table 4.12 reveal that the selection of industries financed by the above public investment programmes was embedded in the idea of a social market economy (*soziale Marktwirtschaft*). Under the social market economy concept, free market principles were embraced but the government was seen to play an important function in organising the economy.[44] In other words, the principles of social market economy combine the concept of a free market economy with normative planning by the state, based on the belief that a certain amount of public intervention is required and welcome in order to stabilise the economy. Moreover, it does not matter whether the state intervenes much or little, but how it intervenes. According to the social market economic principle, the state has to set the conditions within which a viable (*funktionsfaehig*) and humane (*menschenwuerdig*) economic order develops. But it must not direct the economic process itself.[45] This means that public intervention had to be *marktkonform* ('in line with market conditions').[46] A further important aspect of the social market economy concept lies in the fact that it considers only temporary public interventions as appropriate. Any activity by the state should set out to achieve a particular, well formulated objective. Once the

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[44] Giersch et al., *The Fading Miracle*, p. 30.
[45] Stolper and Roskamp, 'Planning a Free Economy, p. 377.
[46] Baumgart, Investitionen', pp. 34-39 on the role of counterpart funds in the West German economic system.

objective is achieved it is again to be abolished.[47] Under these premises, public investment programmes financed by counterpart funds were considered *marktkonform* because they relied on temporary ERP imports, which made them unlikely to transform from transient subsidies (which were considered necessary for adjustments) into unwelcome permanent subsidies.[48] And the sectors to benefit from these programmes were chosen on the grounds that they were considered crucial for the recovery of the economy as a whole and in order to counter-balance other public interventions, namely partial price controls.

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47 Stolper and Roskamp, 'Planning a Free Economy, p. 378.
48 Baumgart, 'Investitionen', pp. 34-39.

Table 4.12 Investment Structure and Distribution of ECA-funds in West Germany between 1949 and 1956 (in DM million)

industry branches	gross capital expenditure	ECA-credits	ECA-credits over gross capital expenditure in %	gross capital expenditure in % of total gross capital expenditure	cumulative structure of gross capital expenditure in %	ECA-credits in % of total ECA-credits	cumulative structure of ECA-credits in %
price controlled industries							
energy supply	**17,160**	**1,347**	**7.8%**	**7.59%**	**7.59%**	**23.05%**	**23.05%**
electricity supply	12,360	1,021	8.3%	5.47%	5.47%	17.47%	17.47%
hydro-electric power plants	2,420	223	9.2%	1.07%	6.54%	3.82%	21.29%
gas supply	2,380	103	4.3%	1.05%	7.59%	1.76%	23.05%
infrastructure	**23,835**	**1,314**	**5.5%**	**10.55%**	**18.14%**	**22.49%**	**45.54%**
federal rail	9,460	756	8.0%	4.19%	4.19%	12.94%	12.94%
sea navigation	3,945	333	8.4%	1.75%	5.94%	5.70%	18.64%
federal mail	4,100	119	2.9%	1.81%	7.75%	2.03%	20.67%
inland navigation	370	41	11.0%	0.16%	7.91%	0.70%	21.37%
local public transport	1,490	23	1.5%	0.66%	8.57%	0.39%	21.76%
ports	705	22	3.1%	0.31%	8.88%	0.37%	22.13%
private rail	340	14	4.0%	0.15%	9.03%	0.23%	22.36%
other private transport	3,425	8	0.2%	1.52%	10.55%	0.13%	22.49%
mining	**11,110**	**717**	**6.5%**	**4.92%**	**29.00%**	**12.27%**	**65.40%**
coal mining	7,800	652	8.4%	3.45%	3.45%	11.16%	11.16%
petroleum, natural gas and mineral processing	2,305	64	2.8%	1.02%	4.47%	1.10%	12.26%
other mining	1,005	0.5	0.0%	0.44%	4.91%	0.01%	12.27%
housing programme	**50,500**	**587**	**1.2%**	**22.34%**	**51.34%**	**10.04%**	**75.44%**
agriculture, forestry & fishing	**13,420**	**443**	**3.2%**	**5.94%**	**24.08%**	**7.59%**	**53.13%**
iron and steel industry	**8,620**	**417**	**4.8%**	**3.81%**	**55.15%**	**7.14%**	**82.58%**
sum of price controlled industries	124,645	4,825	3.9%	55.15%	55.15%	82.58%%	82.58%
free market price industries							
fine mechanics and optics	525	23	4.3%	0.23%	55.38%	0.39%	82.97%
glass and ceramics	876	37	4.2%	0.39%	55.77%	0.63%	83.60%
non-ferreous metal industry	1,020	40	3.9%	0.45%	56.22%	0.68%	84.28%
chemical industry	6,895	171	2.5%	3.05%	59.27%	2.92%	87.20%
engineering industry	5,405	122	2.2%	2.39%	61.66%	2.08%	89.28%
electrotechnical industry	3,325	92	2.8%	1.47%	63.13%	1.58%	90.86%
textile and clothing	4,380	86	2.0%	1.94%	65.07%	1.46%	92.32%
food industry	5,855	106	1.8%	2.59%	67.66%	1.81%	94.13%
pulp and paper industry	3,015	54	1.8%	1.33%	68.99%	0.92%	95.05%
other industries	47,034	299	0.6%	20.81%	89.80%	5.10%	100.16%
sum of free market price industries	78,240	1,028	1.3%	89.80%	89.80%	100.2%	100.16%
public administration	23,050	-	-	10.19%	99.99%	-	-
sum	226,025	5,854	-	99.99%	99.99%		

Source: Baumgart, 'Investitionen und ERP-Finanzierung', *Deutsches Institut für Wirtschafts-forschung,* Sonderheft, Neue Folge, No. 56 (1961), pp. 45-46.

4.5.2. The Investment Aid Programme

Contrary to expectations by the West German administration and in particular contrary to Ludwig Erhard's expectation, famously expressed by his statement that 'investment will be financed by foreign aid', the occupation authorities always regarded counterpart funds as supplementary and not as the main source of investment funds. Therefore, the American authorities demanded that the foreign aid investment programmes were to be complemented by investment programmes, which utilised the West German capital market.

In compliance with this request, a programme was introduced to invest in carefully chosen projects, which were considered particularly important for widening the productive capacity of the economy as a whole.[49] The introduction of the investment aid programme was preceded by an intense discussion between industry and various economic and political factions within the parliament lasting for almost one year. In January 1952, the investment aid programme came finally into effect lasting until December 1954.[50] The investment aid programme was solely subject to the West German authorities, administered by the *Kreditanstalt für Wiederaufbau* (KfW) and a special agency established under the law, 'The Trusteeship for the Special Industrial Fund for Investment Aid' (*Kuratorium für das Industriekreditbank-Sondervermögen Investitionshilfe*). The KfW was prohibited by law from engaging in any competition for business with commercial banks. Furthermore, it was required to bring in other credit institutions as intermediaries when granting loans. Only in exceptional cases was the KfW allowed to grant loans directly to clients. The KfW was conceived as a banker's bank in as much as it provided additional funds (mostly out of foreign aid) to supplement the resources of commercial banks. While the commercial banks sifted through their clients' requests for loans deciding on which to present to the KfW, the KfW held the

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[49] Giersch et al., *The Fading Miracle*, p. 82.

[50] The investment aid law underlying the investment aid programme is reprinted in Pohl, *Wiederaufbau*, pp. 206-223.

ultimate power to decide which investment project was considered suitable for favourable funding.[51]

The investment aid programme was intended to provide price controlled and capital intensive sectors with financial funds at favourable terms, by channelling some of the profits generated in free market sectors to these price controlled and capital intensive sectors. The programme aimed at compensating price controlled sectors which were thought to suffer deficiencies in internally generated funds due to the imposed price controls which in turn were thought to negatively affect those sectors' investment opportunities in two ways. First, low profitability makes it more expensive to raise external funds. Second, the lack of profits reduces the possibility of taking advantage of depreciation allowances. The investment aid programme tried to alleviate the issue of raising external funding, whilst a law which granted special depreciation allowances to price controlled sectors was passed to compensate for otherwise foregone depreciation advantages.

Under the investment aid law, business in general had to supply DM 1 billion for investments in basic goods sectors, utilities and transportation. The funds were collected between 1952 and 1954 on the basis of profits and sales generated in 1950 and 1951, by a quasi-tax of 3.5% on profits and 4% on sales. DM 1.16 billion thus collected from 130,510 firms was distributed as follows:[52]

DM	296.5 million to	22	iron and steel companies
DM	241.8 million to	34	electric power companies
DM	228.2 million to	34	coal mining companies
DM	106.1 million to	48	gas companies
DM	77.4 million to	48	water supply companies
DM	50.0 million to	1	the federal rail
DM	160.0 million to	x	small & medium sized contributing companies

Between January and June 1952, investment aid credits worth DM 107 million were disbursed. A further DM 677 million was paid out between July 1952 and June 1953. By June 1954 credits worth DM 983 million were paid out of the DM 1

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[51] Shonfield, *Modern Capitalism*, pp. 277-278.

[52] Adamsen, *Investitionshilfe*, p. 228 and Table 10, and Roskamp, *Capital Formation*, p. 168.

billion investment aid fund. The importance of investment aid funds relative to total financing means differed considerably between the receiving sectors. Whereas investment aid funds accounted for 49% of investment funds employed by gas companies, and for 33% of investment funds employed by water supply companies, the investment aid programme contributed only 14% of financial funds to the investment expenses of coal mining companies, 17% to the investment expenses of electrical power companies, and 24% to investments by benefiting iron and steel companies.[53]

In exchange for money out of the fund, the receiving firms were obliged to issue bonds.[54] From the time companies had paid their contribution to the time they were allotted the securities, the companies received an interest of 4% on the amount of their contribution which was approximately equivalent to the interest paid a on one-month money deposit.[55] In mid 1953, the first bonds were issued amounting to a total of DM 178 million. Bonds worth a total of DM 750 million were issued in 1954.[56] Altogether 75 bonds were issued and distributed among the contributing companies. Of these 75 bonds, 20 bonds were tax exempt with a coupon of 5.5%, 54 bonds enjoyed tax favoured treatment as laid out in the *Kapitalmarktförderungsgesetz,* bearing a coupon of between 6.5% and 8%, and one bond was issued with a coupon of 6.5% facing full taxation.[57] The underwriting price of these bonds was between 96.5 and 98 and the final redemption prices were at or above par. By 1954, all the bonds traded above par and most of them traded at

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[53] Adamsen, *Investitionshilfe*, p. 229 and Table 16. The stated figures are as of March 1955.

[54] For companies which were unable to issue securities, the Industriekreditbank took on this obligation, see Kirch, *Die Neuordnung des Geldwesens*, pp. 58.

[55] Adamsen, *Investitionshilfe*, p. 213.

[56] Ibid., p. 212.

[57] Ibid., p. 213 and W. Dannemann, *Struktur und Funktionsweise des Kapital-marktes in der Bundesrepublik Deutschland*, (Tübingen, 1959), p. 55. Reuss, *Fiscal Policy for Growth*, p. 204 is mistaken when he writes that bonds issued under the investment aid programme bore an interest rate of 4%. He may have confused the coupon rate with the 4% interest paid to contributing companies on an interim basis.

a yield of at least 7%.[58] This represented an attractive return when compared to returns on other securities.[59]

Companies operating in either the mining sector, the iron and steel industries or the energy supply sector, and receiving investment aid credits enjoyed considerable special depreciation privileges laid out under paragraph 36 of the investment aid law.[60] Under paragraph 36 of the investment aid law the mentioned companies were permitted the following depreciation allowances in addition to normal depreciation rates granted under paragraph 7 of the income tax law. Real estate could be depreciated by up to 30% and other investment by up to 50% within the first two years if those assets were purchased or constructed between 1 January 1952 and 31 December 1955. These privileges were in effect until the end of 1956.[61] The allowance for accelerated depreciation coincided with price increases in these sectors, which further facilitated internal financing. According to estimates quoted in Adamsen, accelerated depreciation in these sectors amounted to DM 3.2 billion between 1952 and 1956.[62]

Because of the long delay between the concern over the development of bottlenecks during the height of the Korean boom in 1950/1951 and the passing of the investment aid law in the beginning of 1952, interim finance was granted which allowed a start of the programme in the second half of 1951. This interim aid was pre-financed through DM 13.9 million out of the ERP programme and DM 106.1 million provided by the *Kreditanstalt für Wiederaufbau*. The benefiting industries of these interim credits were the electricity industry which was granted DM 44.2 million, the mining industry with DM 39.3 million, the iron and steel industry with DM 29.5 million, the gas industry with DM 5.0 million, and the water industry with

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58 Adamsen, *Investitionshilfe*, Table 12.

59 However, whether companies in general had gained under the investment aid programme can only be answered positively if they did not have investment opportunities of their own which had generated higher rates of return.

60 Pohl, *Wiederaufbau*, p. 222.

61 Reuss, *Fiscal Policy for Growth*, p. 204 and pp. 108-109.

62 Adamsen, *Investitionshilfe*, p. 232.

DM 2.0 million. These credits were charged an interest rate of 7%.[63] The demand for these credits was rather sluggish. By the end of 1951, only 66.4% of interim funds had been claimed. Only the water industry had claimed all its allocated funds of DM 2 million and the electricity industry had claimed 98% of its allocated DM 44.2 million of funds by the end of 1951. The coal mining industry had claimed 55.7% of its allocated DM 39.3 million of funds, the iron and steel industry had claimed 42.4% of its allocated DM 29.5 million of funds, and the gas industry had not claimed any of its allocated DM 5 million of funds by the end of 1951. Adamsen points out that if one uses the speed (or rather lack of it) of distribution of interim finance as the criterion to determine their necessity, then neither coal mining nor iron and steel nor the gas industry seemed to be in need of investment aid.[64]

Also Giersch et al. provide a rather cautious assessment of the effects the investment aid programme had on the development of the industries it intended to promote. They conclude, 'The relatively short duration of the measures and their limited scope make it hard to imagine a counterfactual scenario, with market forces given a chance to do the required work. In any case, the bottlenecks emerging in the Korean boom were finally overcome, but the question whether this was to any significant extent due to the Investment Aid Law or simply the natural consequence of rapid growth throughout the economy remains unanswered.'[65] A similar critical assessment of the investment aid programme can be found in Adamsen. Adamsen questions the claim by the *Kuratorium für das Industriekreditbank-Sondervermögen Investitionshilfe* that 'the overall success of the investment aid programme had to be found in the timely provision for future requirements in order to avoid bottlenecks in the time to come ... the whole economy including the contributing companies were well served by the programme'. To the contrary Adamsen points out that the *Kuratorium*, when assessing its success, neglected the fact that the factors which had triggered bottleneck situations in 1950/51 were no longer prevailing at the time when the investment aid programme was in effect. Adamsen argues that a steadier and more proportionate development of the overall economy prevented new

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[63] Ibid., pp. 202-205.
[64] Ibid., p. 206 and Table 11.

bottlenecks from arising and that the investment aid programme contributed little to this general trend.[66]

4.5.3. The early bond programmes of the Kreditanstalt für Wiederaufbau

The American authorities encouraged the *Kreditanstalt für Wiederaufbau* to place bonds in the West German capital market, which were supposed to be issued by companies in exchange for counterpart funds. The first bond issuance was placed in connection with the immediate aid programme in 1949. Ten energy supply companies, which received DM 220 million GARIOA counterpart funds, were to issue bonds over the received amount with a coupon of 6.5%. This programme turned out to be of little success, as only DM 29.6 million could be placed in the market by the end of 1949. The remaining amount had to be held by the *Kreditanstalt für Wiederaufbau*, which granted the companies a book value for these bonds over 10 years.[67] Between the second half of 1949 and the first half of 1950, the *Kreditanstalt für Wiederaufbau* together with a consortium of 72 banks initiated a second bond programme. This programme coincided with the release of the *Festgeldkonten* ('blocked accounts') which comprised 10% of the accounts blocked since the currency reform. These accounts held about DM 490 million and it was hoped to attract some of this money for investment in these bonds. Under this programme two kinds of bonds were issued. A 'housing' bond with a coupon of 3.5% and a 'reconstruction' bond with a coupon of 5.5%. The bond for the housing programme was tax free, whereas the 5.5% bond was exempt from capital gains tax. Of the housing bond, DM 8 million could be placed in the market. Of the reconstruction bond, DM 35 million were placed among the public, and a further DM 23 million were held by the bank consortium.[68]

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65 Giersch et al., *The Fading Miracle*, p. 83.
66 Adamsen, *Investitionshilfe*, p. 230.
67 Pohl, *Wiederaufbau*, p. 54.
68 Ibid., pp. 67-73.

With an average contribution to gross investment of 3.5% during 1948-53, the total money involved in the programmes financed by the KfW was not large. The value in these funds rather lay in their strategic placement. In its initial phase, the KfW directed its attention especially to key sectors of the economy, trying to identify those projects which yielded an especially high *national* return because they helped to activate additional productive capacity in allied though separate industrial enterprises. Citing numbers from annual reports of the KfW published in 1953 and 1955, Shonfield writes, 'During the period when the normal German capital market was barely functioning, KfW supplied a significant proportion of the 'free funds' used for industrial investment. From 1948 to 1953, the KfW issued loans amounting to some DM 5.5 billion, while the issue of 'financial paper' (i.e. bonds and shares) through the capital market produced a total of some DM 7 billion. By the mid 1950s, when the capital market had revived, the KfW was still making a significant contribution: its loans in 1955 amounted to nearly DM 1 billion, against market issues of DM 5.25 billion of financial paper.'[69]

Unfortunately no figures are available which would indicate the nature of the buyers of bonds issued before 1951. However, Table 4.13 based on Bornemann and Linnhoff provides some indication of who bought corporate bonds issued between 1951 and 1958. Table 4.13 suggests that commercial banks and other business enterprises constituted the most important buyers of newly issued corporate bonds until 1955. This shows that banks were not only important providers of bank loans, as discussed in the previous chapter, but that they were also important as investors during the immediate post currency reform period, when most other economic subjects were still reluctant to invest in the capital market. However, between 1956 and 1958 households became the single most important buyers of newly issued corporate bonds (and their importance as buyers is likely to rise if one would include the indirect purchases of newly issued securities through banks). The strong rise of households as buyers of bonds in 1956 reflects the introduction of the 'Lex Preusker' which provided strong fiscal incentives (especially favouring smaller

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[69] Shonfield, *Modern Capitalism*, p. 277.

income households) to buy bonds, in particular bonds issued for residential construction. This incentive scheme was in effect between in 1956 and 1957.[70]

Table 4.13 The Nature of Corporate Bond Buyers, Initial Sales of Newly Issued Securities, in percentage

year	public authorities	commercial banks[1]	other business enterprises	households
1951 June-Dec.	13	78		9
1952	9	57		34
1953	16	69		15
1954	6	20	67	7
1955	9	21	70	-
1956	2	38	13	47
1957	3	32	16	49
1958	3	36	18	43

Note: [1] Including indirect initial sales of newly issued securities to households, other business enterprises, and public authorities.
Source: F. O. Bornemann and H.-O. Linnhoff, 'Die seit der Währungsreform begebenen Industrie-Anleihen', *Betriebswirtschaftliche Schriften*, Heft 3 (1958), p. 23.

4.5.4. Illiquidity in the early bond market

Taxation was probably one of the most important causes for illiquidity in the early German bond market.[71] Not only were tax rates high, the system was also very complicated and little transparent. A highly complicated system of taxation of income and securities made it very difficult for investors to calculate the potential return of an individual security. Furthermore, the different rates at which different bond issues were taxed made the nominal yield of a bond almost irrelevant to an investor as the tax structure was in general as such that bonds with higher nominal yields (more expensive to the issuer and generally issued by companies in private, uncontrolled sectors) offered a similar effective return as bonds with lower nominal yields and lower taxation. Bond issues with lower nominal yields were generally granted to companies in public and controlled sectors. In other words, taxation was used to tax different bond issues differently depending on how important the project seemed to the performance of the national economy. Furthermore, it is estimated that the interest ceilings of 5.5% for public bonds and of 6.5% for corporate bonds were about 1% to 1.5% below market rates, which were not allowed to develop under the *Kapitalverkehrsausschuß* (capital market committee). For instance, the

[70] Stolper and Roskamp, 'Planning a Free Economy, p. 399.

housing bond which effectively yielded 3.5% offered too low a return to compete with the prevailing interest rates offered on savings deposits with 12 month notice which yielded 4.0% in 1949 and 4.5% in 1951 (see Table 5.6). In short, moderate nominal yields (*man wollte den Wiederaufbau billig haben*) and a complex tax structure with little transparency have been identified as the main causes for the illiquidity of the German bond market during the immediate post currency reform years.

Pohl also attributes the sluggish placement of housing bonds among the public to illiquidity, but he does not view the return these bonds offered as too low to be considered an attractive investment opportunity. According to Pohl, the 3.5% housing bonds offered an attractive yield due to there tax exempt status.[72] However as mentioned above, while a 3.5% tax exempt bond yielded similar returns to bonds with higher coupons but facing higher taxation, it offered lower returns than, for instance, a 12 month time deposit. Borchardt and Buchheim interpret the weak demand for bonds issued by the *Kreditanstalt für Wiederaufbau* as evidence for an illiquid capital market. Similar to Pohl, they do not view low returns as a cause for sluggish public demand in early bond issues. They argue that 'offering inadequate interest rates was not the reason that the electricity companies failed to gain sufficient financing through the capital market. The return on their bonds was, at 6.5 per cent on a twenty-year maturity, in fact quite good in comparison to the older bonds, which were still in circulation. Yet there was no large-scale shift away from older bonds.'[73] Borchardt and Buchheim fail to mention that the quoted yield of

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[71] For a brief overview of the complex German tax system see below.

[72] Pohl, *Wiederaufbau*, p. 73.

[73] K. Borchardt and C. Buchheim 'The Marshall Plan and Key Economic Sectors: A Microeconomic Perspective', in C. S. Maier and G. Bischof (eds.), *The Marshall Plan and Germany*, (New York, 1991), p. 445. However, their observation that trading in the bond market was rather thin appears to be correct. The trading volume of bonds only amounted to roughly DM 200 million in 1953 as well as in 1954, reaching a volume of DM 2.6 billion by 1965. In contrast, the trading volume of shares was considerably higher, increasing from DM 320 million in 1953 to DM 1.4 billion in 1954, peaking at DM 11.2 billion in 1961, and amounting to DM 4.5 billion in 1965, see Deutsche Bundesbank, *Deutsches Geld- und Bankwesen*', Table 2.01, p. 307.

6.5% represented a nominal return before tax reductions.[74] As mentioned and further discussed below, the tax structure was such that differing nominal yields had similar effective yields, with bonds issued before the currency reform generally enjoying a more favourable tax treatment than bonds issued after the reform. Another reason Borchardt and Buchheim identify as possible cause for illiquidity of newly issued bonds was their sluggish public placement, with the consequence that most bonds were (inadvertently) tightly held. They write 'because of market imperfections, potential buyers of electricity company bonds faced very high price risks in any shift away from older bonds. For that reason, new offers, even with relatively goods terms, could be absorbed only slowly.'[75]

In order to be able to make an informed statement about the relative attractiveness of securities, a careful analysis of the terms under which securities were issued and traded is necessary. This requires an understanding of the regulatory framework of the West German capital market and its tax treatment. Therefore, the remaining chapter will analyse the regulatory and tax environment under which the West German capital market operated and its effects on the attractiveness of securities.

4.6. Regulatory and tax issues affecting the capital market during the early post war period

Whereas along with the currency reform a market economy was established for most sectors and goods, the capital market entered the post war period facing a number of restrictions and interventions. The following tries to summarise various regulations, laws, interventions and discriminations the West German capital market was constrained by. Some of the restrictions dated back to 1931, others were implemented during the national socialist dictatorship, and a few more were added

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[74] For a complete list of bonds issued since 1949 and their characteristics see F. O. Bornemann and H.-O. Linnhoff, 'Die seit der Währungsreform begebenen Industrie-Anleihen', *Betriebswirtschaftliche Schriften*, Heft 3 (1958), Table 1.

[75] See Borchardt and Buchheim, 'The Marshall Plan', p. 445.

either upon request of the occupation authorities or on behalf of the West German government.

The reasons for capital market interventions during the late 1940s and the early 1950s can be attributed to three main events. First, there was the lengthy process of converting all assets from Reichsmark into Deutsch Mark. The implications of the currency conversion on capital market development have been dealt with in chapter three. Second, there was the policy of partial price control, which triggered a number of public investment programmes aimed at cirumventing market forces. The third intervention was a necessary complement to make public investment programmes work. In order to prevent competition for funds between public investment programmes and free market investments, interest rate ceilings and tax discriminations were introduced among other measures. While the policy of partial price control and public investment programmes were discussed above, direct interventions obstructing the development of the capital market will be covered in the following section.

4.6.1. Legacies affecting the capital market

By the end of the 1920s, German banks' deposits were comprised of about 40% foreign capital, which had to be repaid in foreign currencies.[76] The large amount of foreign debt aggravated the liquidity crisis caused by the Great Depression and unleashed a banking crisis in July 1931. In response to this crisis, trading in futures was suspended and only reopened again in 1970. The suspension of futures trading had the effect of dampening the price levels of stocks and bonds as they depended on spot trading only. Also in reaction to the crisis, interest rates for newly issued bonds as well as for outstanding bonds were limited to 6% in December 1931. The policy of interest rate ceilings was later enforced under the *Kapitalverkehrsgesetz* (capital market transaction law) and remained in place until 1952. In the beginning

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[76] K. Häuser, 'Kreditinstitute und Wertpapiermärkte in Deutschland - Perioden ihrer Entwicklung' in M. Pohl (ed.), *Bankhistorisches Archiv, Zeitschrift zur Bankengeschichte*, Beiheft 14 (1988), p. 29.

of 1932, interest rates on borrowing and lending were fixed by the *Reichskommissar*. Lending rates were normally 4.5% above the prevailing discount rate. This tight, though not rigid, control of interest rates on bank lending and borrowing was in place until 1967. As soon as the national socialist labour party came to power in 1933, securities issues had to be approved by a public authority and private issues were restricted in order to ensure capital market funds for public borrowing requirements. Again, the same policy for similar purposes was enforced by the *Kapitalverkehrsausschuß* (capital market committee) until the early 1950s. In March 1934, dividend payments were generally limited to 6% of nominal capital, with a few exceptions facing a limitation of 8%.[77] Ceilings on dividend payments remained effective until the end of 1952.[78] In 1935, the number of German stock exchanges was reduced from 21 to 9, and from 1938 securities could only be traded on the *Heimatbörse* (the *Reich* was divided in economic councils, and companies' shares were to be traded at the stock exchange within this council).[79] From 1937 foreign securities were no longer quoted on German stock exchanges. Under the law of foreign exchange control passed in 1938, international securities trading came to a complete halt. The final death blow to the capital market was delivered in 1943 when the economic minister gained control over security prices.[80] Those so called *Stoppkurse* were abolished shortly after the currency reform in August 1948.[81] When the national socialist regime was finally defeated, the German capital market was deprived of all market mechanisms. By controlling interest rates, dividend pay-outs, security issues, and in the end even security prices the German capital market entered the post war period fully deprived of its function of allocating funds.

After the defeat of the national socialist regime, the West German authorities as well as the occupation authorities were slow in abolishing the above mentioned restrictions. To the contrary, with the introduction of the *Kapitalverkehrsgesetz* they

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77 Ibid., p. 31.
78 Rudolph, 'Effekten- und Wertpapierbörsen', p. 298.
79 F.-W. Henning, 'Börsenkrisen und Börsengesetzgebung von 1914 bis 1945 in Deutschland' in H. Pohl (ed.), *Deutsche Börsengeschichte*, (Frankfurt a. M., 1992), pp. 276-277.
80 Ibid., p. 282.

exploited the interventions introduced by the national socialists for their own purposes. With the introduction of the *Kapitalförderungsgesetz* (law for the encouragement of the capital market) in 1952, the German government made a first step towards capital market liberalisation by replacing interest rate restrictions on securities with discriminating taxation. With the assembly of the *Zentrale Kapitalmarktausschuß* (central capital market committee) in 1957, stringent public interventions were finally fully replaced by voluntary co-ordination. The changing attitude of public authorities towards the capital market is illustrated in greater detail by describing the three main laws and committees influencing the capital market development during the early post war period.

4.6.2. The Kapitalverkehrsausschuß *(the capital market committee)*

The law on capital market transaction (*Kapitalverkehrsgesetz*) was in effect between September 1949 and December 1953. Under this law, the issue of bearer bonds and shares was subject to approval by the German government, whereas government bonds, bonds issued by the federal mail and by the federal rail were not subject to approval.[82] For the appraisal of the individual proposals a special committee was established, the *Kapitalverkehrausschuß* (capital market committee).[83] The *Kapitalverkehrausschuß* prescribed an upper limit of coupon rates of 5% for *Pfandbriefe* (mortgage bonds), of 5.5% for bonds issued by the *Kreditanstalt für Wiederaufbau*, of 6% for government bonds, and of 6.5% for corporate bonds.[84] The *Kapitalverkehrsgesetz* (capital market law) was passed in accordance with demands by the Bizone occupation authorities who demanded that domestic capital market funds were to be invested in accordance with the objectives pursued in the ECA programmes.[85] Under the *Kapitalverkehrsgesetz* issues were

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[81] M. Bornemeyer, *Die Finanzierung der westdeutschen Industrie über den Kapitalmarkt von 1948 bis 1957*, (Dissertation, University of Bonn, 1962), p. 33.
[82] Kirch, *Neuordnung des Geldwesens*, p. 54.
[83] Until the introduction of the capital market committee in 1949, issue approvals were appraised by various governmental ministries and the central bank, see Bornemeyer, *Finanzierung der westdeutschen Industrie*, p. 38.
[84] Kirch, *Neuordnung des Geldwesens*, p. 53.
[85] Ibid., p. 53.

denied 'if either interest rates, initial offering prices or redemption prices differed substantially from conditions of similar securities, and if an approval would raise fears of long term disruptions of price and interest patterns'.[86] The *Kapitalverkehrsgesetz* impeded issues of corporate bonds and shares as it shielded the capital market from demands by the private sector so as to avoid squeezing credits for public investments and in particular the housing programme. In 1954, a new law on capital market transactions was passed and registered bonds were included in the list of securities being subject to approval.[87] Under this revised law private issues were only permitted 'if the economic conditions were viewed as satisfactory (*wenn es die Leistungsfähigkeit der Wirtschaft zuließ*), if they did not interfere with public issues, and if they were not repugnant to issue programs pursued by banks.[88]

4.6.3. The Kapitalmarktförderungsgesetz *(law for the encouragement of the capital market)*

With the *Kapitalmarktförderungsgesetz* of December 1952 interest rate ceilings on bonds were removed and interventions took the form of discriminating taxation. The *Kapitalmarktförderungsgesetz* divided the securities market into three tax groups. The first group consisted of public bonds, including mortgage and municipal bonds insofar as they were intended for investments in social housing, corporate bonds with a coupon of 5.5% which had been issued before January 1952, and other bonds which were judicated worthy by the *Kapitalverkehrausschuß* and had been issued after March 1952.[89] This group of bonds was exempt from any kind of earnings tax (income tax, corporate income tax, trade earnings tax and *Notopfer Berlin* [Levy for Aid to Berlin]). The second group included all mortgage and municipal bonds with a five year maturity, and a small number of corporate bonds and convertibles with a five year maturity if they had a coupon of 5.5% and if they had been issued before April 1952. This second group was subject to a lump sum

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86 Ibid., p. 54.
87 Rudolph, 'Effekten- und Wertpapierbörsen', pp. 297-298.
88 Kirch, *Neuordnung des Geldwesens*, p. 59.
89 Ibid., p. 64

capital gains tax of 30%.[90] All other securities including shares were subject to a lump sum capital gains tax of 60%.[91] Nominal interest rates could be set freely and evolved in a way, which permitted similar effective yields for all fixed income securities despite differing taxation. This of course still impeded the corporate bond market as companies had to be able to afford interest payments, which offset the less favourable tax treatment in addition to a risk premium over public bonds. Furthermore, first time purchases of securities judicated worthy[92] were eligible for premiums under the *Kapitalansammlungsverträgen* (capital accumulation contracts) which meant that income from these investments was not taxable.[93] With the abolition of the *Kapitalmarktförderungsgesetz* in December 1954, the West German capital market was finally liberated from interest rate restrictions as well as distorting taxation.[94] The role of the West German capital market in providing investment funds for a sample of public limited companies from 1954 onwards is analysed in the following chapter.

4.6.4. The Zentrale Kapitalmarktausschuß (central capital market committee)

The *Zentrale Kapitalmarktausschuß* assembled for the first time in February 1957. The committee consisted of twelve members of various consortium banks and major issuing houses, with the central bank being allowed as permanent guest to the assemblies. The committee understood itself as self-regulatory authority exercising voluntary self control.[95] The committee was established in order to co-ordinate the timing of security issues preventing temporary strains on the capital market. This form of timing of security issues contributed to the tendency of decreasing capital

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[90] Until May 1953, this second group was subject to trade earnings tax, church tax and *Notopfer Berlin* in addition to the lump sum tax of 30%, see Bornemeyer, *Finanzierung der westdeutschen Industrie*, p. 43.

[91] Kirch, *Neuordnung des Geldwesens*, p. 65. Note that the decision of replacing progressive income tax rates with lump sum taxation made investments in these securities particularly attractive to earners of high income.

[92] Which consisted of securities already enjoying favourable tax treatment.

[93] From 1957 the purchase of shares in admitted investment funds were included into this scheme, see Reuss, *Fiscal Policy for Growth*, p. 112.

[94] Rudolph, 'Effekten- und Wertpapierbörsen', p. 298.

[95] Ibid., p. 303.

market interest rates. The committee sometimes suggested slicing a large bond allowing a staggered issue.[96] The work of the committee was seen as a success as it helped creating a capital market environment in which securities could be placed successfully.

4.6.5. Taxation and depreciation

The German government actively used taxation to channel and direct funds in industries considered important. Although the German authorities generally lowered the unsustainable high tax rates introduced by the occupation authorities, tax rates remained high, with the top marginal income tax rate remaining at around 50%. Indeed, the striking thing about the German case was that rising prosperity, which produced windfalls for the ministry of finance in the form of extra revenues both from income taxes and from sales tax, was not seized upon as a reason for cutting down the share of income claimed by the state. Such a policy was, for instance, pursued in Great Britain. According to Shonfield 'the high level of German taxation was ... needed for a variety of subsidies to support one or another of the activities favoured by the state, and also to help in the finance of the nation's capital investments at large. ... Public savings financed nearly a third of [total investments]; in Britain it provided about one-tenth of a much smaller total national investment'.[97] No attempt was made to use tax policy to smooth the ups and downs of the business cycle, as for instance practised in Great Britain, embracing Keynesian ideas.

The number of tax changes and exemptions for capital formation are long and no attempt will be made to enumerate all changes and exemptions. Therefore, the following only covers most essential corporate and income tax changes, without getting into various tax concessions granted at different times for different securities to a different tax clientele. In any case, the enormous number of changes and exemptions in the West German tax system added to the unpredictability and intransparency of potential returns on capital market investments.

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[96] Bornemeyer, *Finanzierung der westdeutschen Industry*, pp. 39-40.
[97] Shonfield, *Modern Capitalism*, p. 266.

Before the *Kleine Steuerreform* ('little tax reform') in 1953, distributed profits were subject to the same tax rate as undistributed profits, with a corporate income tax of 50% between 1948 and 1951, and 60% thereafter. With the tax reform in 1953, corporate income tax on distributed profits was reduced from 60% to 30%, unless the distribution exceeded 8% of nominal capital. For undistributed profits the 60% corporate income tax remained.[98] The favourable treatment of distributed profits together with the lifting of dividend pay-out restrictions in 1952 were first steps towards the encouragement of profit distributions. The tax reform of 1953 also partly reversed a law passed by the occupation authorities right after the war, which had increased income taxes (except corporation tax) to a maximum of 95% for incomes above DM 60,000 (later changed to above DM 250,000). With the *Kleine Steuerreform* the average income tax as well as the maximum rate was reduced by 15%.[99]

In the *Große Steuerreform* ('great tax reform') of 1954, corporate income tax on undistributed profits was reduced from 60% to 45%, while corporate income tax on distributed profits remained at 30%.[100] Furthermore, special depreciation allowances which were granted to companies benefiting from the investment aid programme and to all other companies under paragraph 7 of the income tax law were abolished by the *Große Steuerreform.*[101] Moreover, the income tax rate for the highest personal income bracket was reduced from 70% to 55%. At the same time the underlying amount for the highest income bracket was raised from incomes above DM 423,000 to incomes above DM 614,000. In 1958, corporate income tax on undistributed profits was increased from 45% to 51%, whereas corporate income tax on distributed profits was further reduced from 30% to 15%. The quite considerable split between a 51% and a 15% tax on profits according to whether profits were distributed or not was one of the major methods of attacking self

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98 Ibid., p. 46 and Reuss, *Fiscal Policy for Growth*, p. 118.

99 By 1958 the maximum income tax rate was reduced to 53%, see Reuss, *Fiscal Policy for Growth*, p. 83-84.

100 Bornemeyer, *Finanzierung der westdeutschen Industry*, p. 46.

101 Ibid., p. 47.

financing and 'presaged the attempts of the administration to create investment by a capital market nourished by public savings.'[102]

Until the change in paragraph 7 of the income tax law in 1951, companies were allowed accelerated depreciation *(degressive Abschreibung)* of up to 50% of the purchase price within the first two years after the acquisition of capital goods with a life span of ten years or more.[103] 'With this method of depreciation greater amounts could be written off in the first years than with the linear method, while in most cases from the fourth year on only small amounts could be written off. Since smaller depreciation amounts meant that taxable profits were higher, there was an incentive for the larger number of businesses using this method to expand their investment still further in order to benefit from the highest possible level of depreciation.'[104] In 1952, the accelerated method allowed for a depreciation rate of 22.5% of the remaining book value, between 1953 and 1957 the depreciation rate was 28.3%, and later the rate was 25%.[105] Therefore, the accelerated depreciation method provided a powerful incentive to reinvest in new capital goods within five years. In addition to generous depreciation allowances granted between 1948 and 1954, West German businesses were allowed special tax relief for replacement of assets damaged during the war, for residential housing construction, for building rented housing, for shipbuilding, and for repairing and reconstructing industrial, commercial and agricultural buildings. However, most of these measures were restricted after 1951 and ended soon thereafter.[106] Note that most of the special tax allowances were restricted to investments in the housing sector.

4.7. Concluding remarks

The above analysis has shown that the decision of keeping part of the economy under price control created an environment, which made further public interventions

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[102] Reuss, *Fiscal Policy for Growth*, p. 118.
[103] Roskamp, *Capital Formation*, p. 124.
[104] Kramer, *The West German Economy*, p. 201.
[105] Ibid., p. 201 and Roskamp, *Capital Formation*, p. 125.

necessary. Although the bulk of ERP funds was used to finance investments in price controlled sectors, they were not sufficient (and according to the plans of the U.S. authorities were not intended to be sufficient) in providing those sectors with all their external funding requirements. In order to secure additional funding in the controlled sectors, German authorities applied several policies which influenced investment decisions and suppressed market mechanisms of allocating resources. These policies included interest rate ceilings, tax discrimination, special tax incentives, and special depreciation allowances. All these policies aimed at providing favourable access to funding for public investment programmes over private investment projects. However, the German authorities often tried to disguise interventions and to present them as private initiatives. For instance, the authorities required beneficiaries of the investment aid programme to issue bonds, instead of issuing ordinary government bonds to those companies which were forced to pay the investment aid levy.

Public interventions affected the demand as well as the supply of capital market instruments. It ensured that investments in controlled and public sectors were at least as profitable as in uncontrolled private sectors, whilst the cost of capital market funding was considerably lower for the controlled and governmentally favoured sectors than for the uncontrolled private sectors. Additionally, the self financing ability of controlled sectors was improved by granting them generous depreciation allowances.

With hindsight it is arguable whether partial price controls were necessary, as fears of excessive inflation did not materialise. However as mentioned, the demand by the occupation authorities to keep certain sectors of the economy under price control was not so much based on economic considerations but rather derived from political considerations. Figures on the economic development of price controlled sectors in comparison to free market sectors suggest that price controlled sectors grew somewhat slower than the investment goods industry and the basic and

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[106] Kramer, *The West German Economy*, p. 202, citing paragraph (a) to (e) of § 7 of the income and corporate tax law.

producer goods industry. Results on capacity utilisation suggest that sectors crucial to the performance of the overall economy such as coal mining, and iron and steel production reached capacity limits in the early 1950s. However, decreasing capacity utilisation thereafter indicates that bottlenecks failed to materialise. To what extent the absence of bottlenecks was due to increased efforts in providing funds for capital formation by the public sector or due to a steadier and more proportionate development of the economy remains unanswered. It is, however, hard to imagine a counterfactual scenario of how well the capital market would have avoided the development of bottlenecks, given that market forces had been given a chance to do the work of allocating investment funds.

Next to the government which was a major provider of funds in particular to sectors such as housing, infrastructure and utilities, banks played an important role in providing external funds, as they not only provided credit but were also important investors in capital market securities right from the start of the post currency reform period. Despite severe distortions of the capital market during the late 1940s and early 1950s, the capital market started to recover in the mid 1950s when most of the post war economic distortions were overcome and the public authorities allowed market forces to come into play. As subsidised investments in a few special sectors became less of a mandatory policy objective, the advantages of a free capital market, with the discipline of market interest rates became more and more dominant. Consequently, the self financing advantages were reduced, and soon limited to privileged persons.[107] The role the capital market played, once market forces were allowed to operate, will be dealt with in the following chapter.

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[107] See Reuss, *Fiscal Policy for Growth*, 123.

5. The financing behaviour of West German public limited companies between 1952 and 1965

5.1. Introduction

What do we know about the financing behaviour of West German public limited companies during the early post World War II period which is often referred to as the period of economic miracle or *Wirtschaftswunder*? The most likely answer one receives to this question is that West German companies financed their investments predominantly with internally generated funds and in as much as they did rely on external funds they were provided by bank loans. Extraordinary high rates of retention, generous depreciation allowances and close bank company relationships are generally stated as reasons for the relative insignificance of capital market funds.[1] The previous chapter has discussed public interventions and their role in allocating funds (in particular to politically favoured sectors) during the immediate post war period. This chapter will focus on the financing behaviour of West German public limited companies during the early post war period placing particular emphasis on the development of companies' gearing ratios and when and to what extent companies chose one source of funding over another.

As has already been noted in connection with the currency reform, the early West German post war period has received little research attention with respect to capital structure. In as far as there exist studies which deal with the capital structure of West German companies the period analysed usually covers the mid 1960s/1970s until German reunification.[2] The main revelation of these studies for the more recent decades is probably the finding that the financing behaviour of West German companies is rather similar to that in other industrialised countries, qualifying the

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[1] See for instance Baumgart et al., 'Die Finanzierung der industriellen Expansion', pp. 34-36; Bornemeyer, *Die Finanzierung der westdeutschen Industrie*, pp. 2-3; Dannemann, *Struktur und Funktionsweise des Kapitalmarktes*', p. 56; Giersch et al., *The Fading Miracle*, p. 83;

claim that German companies rely to a greater extent on internally generated funds and bank loans than companies in comparable countries.[3] Another line of research concentrates on the role of West German banks as provider of investment funds, their influence on companies as representatives on companies' supervisory boards, and on the effects of large voting rights exercised by banks.[4] The findings of this field of research tend to report mixed results on the importance of bank company relationships.[5] In the following it is attempted to extend the findings of empirical studies investigating the funding behaviour of West German companies for more recent decades by analysing companies financing behaviour between 1952 and 1965. Due to the failure of literature to produce consistent quantitative evidence of a predominant role of banks in West Germany, it was decided not to restrict the focus of the analysis on the role of banks in providing investment funds but to analyse the funding behaviour of companies without pre-imposing a view on the importance of one particular means or channel of financing.

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[2] With the exception of Henning, 'Die Unternehmensfinanzierung in der Bundesrepublik Deutschland', pp. 99-117; and J. Edwards and K. Fischer, *Banks, finance and Investment,* who cover the period of 1950 to 1989.

[3] See for instance R. G. Rajan and L. Zingales, 'What Do We Know about Capital Structure? Some Evidence from International Data', *The Journal of Finance*, Vol. L (1995), No. 5, pp. 1421-1460; J. Corbett and T. Jenkinson, 'The Financing of Industry, 1970-1989: An International Comparison', *Journal of the Japanese and International Economies*, Vol. 10 (1996), pp. 71-96; and Edwards and Fischer, *Banks, Finance and Investment*, p. 51. They all argue that the use of balance sheet data for international comparison of gearing ratios employed in earlier papers on West German capital structure overstated gearing ratios of German companies due to differing accounting valuation conventions.

[4] See for instance J. Cable, 'Capital Market Information and Industrial Performance: The Role of West German Banks' *The Economic Journal*, Vol. 95 (March, 1985), pp. 118-132; and G. Gorton and F. A. Schmid 'Universal Banking and the Performance of German Firms', *NBER Working Paper*, (1996), No. 5453.

[5] See for instance J. Edwards and S. Ogilvie, 'Universal Banks and German Industrialization: A Reappraisal', *Economic History Review*, Vol. XLIX (1996), No. 3, pp. 427-446; and C. Fohlin, 'The Rise of Interlocking Directorates in Imperial Germany', *Economic History Review*, Vol. LII (1999), No. 2, pp. 307-333, whose research cover the turn of the century, as well as Gorton and Schmid, 'Universal Banking' for the post war period, conclude that close company bank relationships do not affect companies financing behaviour or performance. To the contrary, Cable, 'Capital Market Information', and D. B. Audretsch and J. A. Elston, 'Does Firm Size Matter? Evidence on the Impacts of Liquidity Constraints on Firm Investment Behaviour in Germany' *Centre for Economic Policy Research*, Financial Economics Discussion Paper (1994), No. 1072, attribute an influence to the role of German banks.

An analysis of capital structure during the early post war period seems particularly interesting because it was a time of exceptionally high growth rates while the economy was still recovering from distortions created by the war and its aftermath. Excessive oversupply of money had deprived the Reichsmark of its function as legal tender and hyper inflation could only be prevented by enforcing price controls and rationing. The currency reform of 1948, which was analysed in chapter three, was the first major step towards creating a functioning economic environment. Undoubtedly, the successful establishment of a stable monetary environment in connection with the price liberalisation of goods in most sectors had an essential positive impact on economic activity. However, with respect to companies' balance sheets, the currency reform entailed substantial changes to the capital structure of companies. Triggered by the findings in chapter three, where it was established that the differing conversion of debt and equity constituted an external shock to companies' capital structure, the following analysis provides detailed accounts of the development of companies' gearing ratios. The situation created by the balance sheet conversion provides an excellent condition for testing whether companies can be observed to have moved to higher gearing ratios in order to offset the conversion effects. Arguing in support of capital structure theory, one would expect to observe this kind of behaviour if one agrees that the conversion left companies with a capital structure that did not resemble a company's choice of leverage if the company had managed leverage at its own device. It follows that the low gearing ratio companies found themselves with after the conversion provided them with the opportunity to finance more of their investments with debt as would have otherwise been possible without causing increased danger of financial distress. Findings presented in Graphs 5.7 (a-d) support the notion that companies responded to the conversion effects by increasing their gearing ratios. Moreover, the findings suggest that there is a certain gearing bracket companies appear to strive for.

Other distortions experienced during the immediate post war period were due to territorial losses and the division of Germany into an Eastern and a Western part, which left West Germany as the truncated part of a formerly closely integrated economic unit. The agricultural sector and the iron and steel industry were most affected from these losses because the bulk of agricultural output was produced in

the east as were raw materials crucial for iron and steel production. The situation was further aggravated by the severe destruction of infrastructure and residential housing which had difficulties coping with the great number of refugees entering West Germany. In order to overcome the distortions consequential to the lost war, the West German authorities together with the three western occupation authorities implemented a number of public investment programmes which channelled funds into those sectors which were considered most crucial to the economic recovery of West Germany. As discussed in the previous chapter, as long as public authorities considered parts of the economy in need of privileged funding, the capital market was hampered in providing funds to the private, uncontrolled sector. Whereas the previous chapter outlined the types of impediments that restricted the West German capital market, this chapter focuses on the role the capital market played in providing funds when most of these restrictions were lifted.

As it is commonly argued that German companies financed their investments predominantly via internally generated funds during the *Wirtschaftswunder* period it seems appropriate at this stage to raise a few historical arguments which question this assumption. As stated before, part of the attraction of the early West German post war period is that it is characterised by high economic growth and by an era of easing distortions. High growth demands for a large amount of investments and it seems difficult to believe that exceptionally high investment demands could be met sufficiently by internal funds. To the contrary, one would expect to observe a greater reliance on external funds during exceptional growth periods not at least because equity financing tends to be relatively cheap in as far as high growth rates are reflected in high share prices. Moreover, although the sample consists of established companies, most of these companies, as well as the West German economy as a whole, had experienced a setback which left individual companies and the economy as a whole in a less mature state than they would have been without the turmoil created by the war and its aftermath. Even though plants and machinery were generally maintained at rather high standards, lost territory in the east forced a number of companies to relocate their plants and seizure of other companies triggered a number of consolidations and break-ups all of which reduced the state of maturity of companies and required an extraordinary amount of financial

funds. In light of the above, one might be inclined to question the claim that financial requirements could be met by internally generated funds. Indeed, findings in this chapter suggest that internally generated funds did not comprise a greater proportion of gross financial funding means during the early post war years than in later periods.

In summary the chapter sets out to investigate two ideas. First, the early post war period is characterised by strong economic growth. A period of high growth would tend to lead to greater reliance on external equity because it would be relatively cheap (given expectation of strong growth). Second, West German companies found themselves with low gearing ratios as result of the currency reform. It is expected to observe companies moving to higher gearing ratios. Thus, it is argued that an increase in gearing ratios during the investigated period can be partly attributed to the initial disequilibrium created by the currency reform. In the following, the chapter analyses the capital structure of a sample of West German public limited companies between 1952 and 1965. The findings seem to fall in line with results of studies for later periods, which suggest that internal funds are the most important source of finance, followed by debt and external equity.

The remaining chapter is outlined as follows. The next section introduces the sample of companies chosen the analysis is based on and its data sources. This is followed by a description of various capital structure variables. Subsequently, descriptive statistics on the relative importance of financial funds are reported, as is the development of gearing ratios. The chapter concludes by relating the findings of the thesis to previous studies on West German capital structure.

5.2. The sample

5.2.1. Sample description

In 1952, there were 2,893 West German public limited companies, which only accounts for about 0.1% of all West German companies. However, about 20% of the country's turnover was produced by public limited companies in the early post

war years.[6] Moreover, the concentration of economic power among large companies in Germany steadily increased. By 1960, the hundred biggest companies (most of which were public limited companies) generated nearly 40% of total industrial turnover and they employed one out of every three workers in the industrial sector.[7] Most of the 2,893 public limited companies were tightly held and only 420 public limited companies were listed on one of the German stock exchanges over the entire period under consideration. By taking a sample of 79 listed non financial companies, the study includes almost one fifth of all publicly listed West German companies. The choice of companies was largely predetermined by the availability of data. The quantity as well as the quality of information is sensitive to the nature of stock quotation and quickly deteriorates with decreasing size. Therefore, the sample is composed of relatively large West German firms. Nevertheless, the sample still varies considerably in size, with total assets ranging between DM 32.6 million and DM 8.0 billion in 1965, and a sample mean of DM 916.8 million and median of DM 412.3 million.

The sample was chosen according to the following two selection criteria. In order to include a company in the sample, it had to report financial data sufficiently detailed to allow to make inferences to its capital structure and its shares had to be traded. Those two criteria tend to be fulfilled simultaneously, as non traded companies are likely to disclose less detailed financial statements where, for instance, the liability side consists of only two entries: shareholder's equity and liabilities, without differentiating between bonds, bank loans and other liabilities. As mentioned, this selection criteria led to a bias in the sample towards bigger companies. Furthermore, most of the companies belong to the manufacturing industry. For instance, of the 79 companies listed in Appendix 1, only five (number 17, 24, 36, 64 and 77) were related to infrastructure. As pointed out in the previous chapter, the German government was an active agent in planning and fostering the infrastructure sector, especially the transport and communications network, as well as housing and mining. These sectors, which were generally under state control,

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6 Henning, 'Die Unternehmensfinanzierung', p. 99.
7 Shonfield, *Modern Capitalism*, p. 241.

were largely financed by public funding rather than through bank loans or private security issues. Moreover, the sample criteria implies that the study consists entirely of public limited companies.

The reason for limiting the empirical analysis to public limited companies is twofold. First, only public limited companies are required to disclose information about themselves to a degree which makes an analysis of capital structure possible. Second, these disclosure requirements and their form of legal entity allow public limited companies to utilise the capital market to its full extent as they are able to choose between all kinds of external finance. Whereas public limited companies can finance investment requirements from internally generated funds, issuance of equity, or any form of debt, most other forms of legal entities are limited to internal finance and bank loans, as their legal form does not allow public equity issuance and the lack of appropriate disclosures on their performance and financial structure does not allow them to issue bonds. Whereas this approach allows to make inferences on the role of the capital market for public limited companies, no conclusions can be drawn concerning questions like what makes companies choose to go public or whether companies which decide to go public share a common criterion. Therefore, the study does not claim to draw conclusions about the financial structure of West German companies as a whole, as it analyses the role of the capital market for those companies utilising it, without making any inferences about the efficiency of the capital market in attracting companies.[8]

The analysis is based on a sample of public limited companies traded on at least one of the West German stock exchanges. Initially, financial reports on 96 financial and non financial companies were gathered for the years starting with 1952 and ending with 1965. The choice of the companies included in the sample was based on quoted companies listed in the German financial newspaper, the *Handelsblatt*. From the original sample of 96 companies, banks and insurance companies were

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[8] The poor performance of the German capital market in attracting companies is indicated by the fact that the percentage of turnover produced by public limited companies decreased over the post war period to 10% in the mid 1980s. See Henning, 'Die

excluded from the analysis, as their balance sheets are not comparable to non financial companies' balance sheets. For instance, their leverage is strongly influenced by investor insurance schemes such as deposit insurance, their debt like liabilities are not strictly comparable to the debt issued by non financial companies, and regulations such as minimum capital requirements affect their capital structure.[9] The exclusion of financial companies amounts to a loss of ten companies, five banks and five insurance companies. One company (DEGUSSA) had to be excluded because it is allowed to cast gold bars which makes it a hybrid between a financial and a non financial company, which in turn is reflected in a balance sheet following the structure of financial institutions. One company (IG-Farben) had to be excluded as it was in the process of unwinding and its production was taken on by companies which evolved from this former conglomerate. Another two companies were excluded because their share prices were quoted in foreign currencies. Further three companies had to be excluded due to inadequate data disclosure. This leaves a sample of 79 non financial public limited companies on which the following analysis is based.[10] For 12 of these 79 companies one or several years were missing either because the company became a listed company some time after 1952 or because the series of reports in Hoppenstedt were incomplete. Six companies came into existence in their current form some time after 1952. For five companies only consolidated data was available for a few years. The remaining gaps are due to short reports which led to lack of data in the case of one company for a few years. In the case that no more than one year was missing, the missing year was constructed by taking the average of the preceding and the succeeding year. If the gap was wider than one year no attempt was made to fill the data gap. All but one of the 79 companies are public limited companies over the whole period they are included in the analysis. The exception is Volkswagen which changed its status from a limited liability company to a public limited company in 1960.[11] Moreover, all the

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Unternehmensfinanzierung', p. 99 and Edwards and Fischer, *Banks, Finance and Investment*, p. 94.

[9] Rajan and Zingales, 'What Do We Know about Capital Structure?', p. 1424.

[10] The names of companies included in the sample are listed in Appendix 1.

[11] Initially, it was planned to include Bosch in the analysis as the only company which kept its status of a limited liability company over the entire period as its disclosure procedures allowed the company to make use of the capital market in every aspect other

companies in the sample were founded either in the second half of the nineteenth century or in the early twentieth century. However, due to the disentanglement of companies such as IG-Farben and Vereinigte Stahlwerke, a number of companies analysed only came into existence in their current form in the early 1950s.

The analysis covers a period of fourteen years, starting with 1952 and ending in 1965. The year 1952 was chosen as the starting year for the analysis as it was the first year in which all public limited companies had converted their balance sheets from Reichsmark into Deutsch Mark. The year 1965 was chosen as last year of the empirical analysis for two reasons. First, it represents the last year of the *Wirtschaftswunder* period as West Germany faced her first depression in 1966/67 since the introduction of the Deutsch Mark in 1948. Second, in 1966 the Corporation Act of 1965 was enforced, under which the accounting rules for the valuation of plant, equipment, inventories, and profits were tightened.[12] This makes a comparison of the years before this reform and since then only to a limited extent possible.

5.2.2. Sources of data

The main data source for the empirical analysis are various issues of the *Handbuch der deutschen Aktiengesellschaften, Verlag Hoppenstedt* (handbook of public limited companies published by Hoppenstedt).[13] The handbook is compiled from annual reports of West German public limited companies. As such it contains information on West German public limited companies including companies' balance sheets, their profit and loss statements, and dividend payments. It also contains a brief history of companies' development and a short management report on business decisions. Furthermore, it includes information on company holdings, contracts, and ownership structure. However, German public limited companies

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than the issue of shares. However, due to some difficulties in comparing Bosch's financial statements with that of public limited companies it was decided to drop the observations on Bosch from the data set.

[12] Audretsch and Elston, 'Does Firm Size Matter?', p. 12.

were not required to publish cash flow statements and as such Hoppenstedt does not report cash flow statements.[14] The analysis is based on unconsolidated financial statements as not all companies reported consolidated statements. Moreover, the compilation of consolidated statements shows little consistency. Some companies only include direct subsidiaries in their consolidation, others also include companies in which they hold 'considerable' stakes, where it appears that companies were rather free in choosing what they considered considerable holdings and therefore included in their consolidated statements. Companies are of course free to choose the period of their accounting year, and often the chosen year does not coincide with the calendar year. Therefore, companies' fiscal years do not overlap perfectly. The procedure of designating company reports to a specific year follows the conduct utilised by Hoppenstedt. This main data source provided by Hoppenstedt which provides all relevant accounting data is complemented with information on companies' share prices. Information on share prices has been gathered quarterly and taken from the German financial newspaper the *Handelsblatt*. The *Handelsblatt* reports continuous quotations for the stock exchange in Düsseldorf and daily quotations for the remaining West German stock exchanges.[15]

5.2.3. The use of West German accounting data

There are well known problems associated with the use of accounting data. It is often stated that the conservatism of German accounting in valuing assets and the possibility of accumulating hidden reserves increases these problems for the German case. However, the conversion of balance sheets initiated a revaluation of assets which in turn triggered a disclosure of hidden reserves. One might even argue that shareholder equity's tended to be overstated as the discrepancy created by the

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[13] This handbook has been published every year since 1896 and contains information on all public limited companies operating in West Germany.

[14] Even today, cash flow accounting and the statement of cash flows is somewhat unique to the external reporting requirements of the United States and those countries that closely follow U.S. accounting standards.

[15] After the Second World War, Berlin lost its role as main German stock exchange (*Leitbörse*). Until the 1980s, when Frankfurt became the most active West German stock

different conversion of assets and liabilities (in the form of debt) was offset by restating shareholder's equity. Therefore, it seems reasonable to assume that German companies entered the post currency reform period with a relatively small amount of hidden reserves.[16]

Another difficulty the analysis was faced with lies in the fact that the quality of profit and loss statements deteriorates when going back in time, with sales figures and annual net profit (*Jahresüberschuß*) only being reported from 1960 onwards. Perhaps the greatest restriction when dealing with early post war German accounting data is the lack of annual net profit figures. The lack of annual net profit figures means that there is no measure for companies' performance (in the form of earnings per share), no assessment of the investment potential of common stocks (in the form of price/earnings ratios), nor a comparison of profits earned by a company to the investments made by the company's stockholders (in the form of return on equity). Unfortunately, companies did not report annual net profit figures before 1960/1961 (depending on their fiscal years), when the reform of the German stock corporation law (*Aktienrechtsreform*) of 1959 came into effect, which compelled companies to publish annual net profit figures.[17] With the reform of the German stock corporation law of 1959, the information given on companies' profits improved as companies were obliged to not only state net profit after deduction of reserves but also to report gross profit figures before retention. Under German accounting annual net profit reflects the company's profit within the accounting period, whereas net income is generated by subtracting (adding) appropriations of earnings from (to) annual net earnings as proposed by the managing board.[18] As

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exchange, the exchanges in Düsseldorf and Frankfurt were the most liquid ones, see Rudolph, 'Effekten- und Wertpapierbörsen', p. 293.

[16] Shareholder's equity is defined as the difference between the total balance sheet value of the company's assets and the total balance sheet value of the company' liabilities. The components of shareholder's equity are discussed in greater detail below.

[17] The law also required public limited companies that their profit and loss statements contain sales figures, and gross interest expenses and interest income figures. Before the law companies only reported net interest payments (the aggregation of interest expenses and interest income).

[18] The proposed appropriation of earnings normally consists of allocations to (withdrawals from) earning reserves and provisions, where no more than half of annual net profit can be transferred to earning reserves, and where amounts which must be transferred

such net income reflects no more than the value which managers consider dispensable, and therefore offer to distribute among shareholders, who in turn can decide on the use of net income.[19] In practice, most of the reported net income is distributed as dividend payments to shareholders.[20] At first it was contemplated to construct annual net profit figures in order to overcome the lack of annual net profit figures for the years preceding 1960/61, by reversing the appropriation, adding annual changes in reserves to net income. However, retentions reported in the income statement and changes in reserves stated in the balance sheet can differ significantly as companies may use reserve accounts to shift earnings between periods. Therefore, the results of this exercise were considered too spurious to be treated as reliable proxies of annual net profit figures.

5.3. Definition of financial sources

Companies generate assets from three sources: (1) retained funds generated through profitable operations, (2) borrowings, and (3) issuing equity securities. The different components of these sources are described in some detail below.

5.3.1. Liabilities

Most companies in the sample provide a detailed account of the nature of their liabilities. Therefore, it is possible to disaggregate companies' liabilities with

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to legal reserves and any loss brought forward must first be deducted from the annual net profit, see Brooks and Mertin, *Neues deutsches Bilanzrecht = New German Accounting Legislation*, (Düsseldorf, 1986), E 87. The amounts that companies are either required or choose to transfer from retained earnings to a more permanent account are not available for dividends. It is often argued that managers have an incentive to understate net income to reduce the demand from shareholders for dividends.

[19] H. E. Büschgen, 'Aktienanalyse und Aktienbewertung nach der Ertragskraft', in H. Rittershausen (ed.), *Beiträge zur Betriebswirtschaftslehre*, Vol. 2, (Wiesbaden, 1962), pp. 168-169.

[20] Except to the extent that these are excluded from distribution to the shareholders based on statutory or company resolutions, see Brooks and Mertin, *Neues deutsches Bilanzrecht*, E 87.

respect to their nature and maturity.[21] Liabilities are grouped in two main categories: interest bearing debt and non interest bearing debt. For the purpose of the analysis, the former are further subdivided into 'capital market debt', 'long term private debt', and 'short to medium term private debt'. Capital market debt consists of bonds and convertibles. Long term private debt includes long term bank loans, mortgages, loans provided by public authorities or the bank for reconstruction, and other long term investment credits (*Darlehen und langfristige Investitionskredite*). Medium and short term private debt includes medium and short term bank loans, other medium and short term loans (*Darlehen und Investitionskredite*), and drafts. Non interest bearing debt generally constitutes current liabilities and is summarised into one component referred to as 'other liabilities' which contains advances from customers, accounts payable, liabilities due to affiliated companies and other liabilities including tax and social security liabilities. It is general practise that only interest bearing debt is considered when establishing a company's leverage. Non interest bearing liabilities are considered in relation to working capital, where working capital is defined as current assets less current liabilities.

5.3.2. Shareholder's equity

Shareholder's equity (*Eigenkapital*) comprises contributed capital and earned capital and represents the residual interests of the stockholders or the book value of the company. As such, the stockholder's equity section can be viewed as the difference between the total balance sheet value of the company's assets and the total balance sheet value of the company' liabilities. Contributed equity (or external equity) consists of common stock, preferred stock, and additional paid-in capital. The major component of earned capital (or internal equity) is retained earnings, a measure of assets that have been generated through a company's profitable operations and not paid to the owners in the form of dividends. Retained earnings consist of subscribed capital (*gezeichnetes Kapital*), capital reserves

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[21] Although West German companies were not yet obliged to report liabilities according to their maturity in the 1950s and 1960s, most companies listed their debt obligations according to maturity.

(*Kapitalrücklage*), revenue reserves (*Gewinnrücklage*), profit/loss brought forward, and profit/loss for the year. Revenue reserves, in turn, contain legal reserves (*gesetzliche Rücklagen*), reserves for own shares (*Rücklagen für eigene Anteile*), statutory reserves (*satzungsmäßige Rücklagen*), and other revenue reserves (*andere Gewinnrücklagen*). Capital reserves are generated by share premiums capturing the amount received in excess of the nominal value when issuing shares or debentures.[22] In short, shareholder's equity consists of external equity contributions and internally generated funds.

5.3.3. Provisions (accrued liabilities) and value adjustments

Provisions, also called accrued liabilities (*Rückstellungen*), are set up for uncertain liabilities and for anticipated losses from uncompleted transactions. Accrued liabilities are established for a wide array of uncertain liabilities. They include provisions for pensions, taxation, anticipated losses related to incomplete contracts, possible future losses on inventories, bad debts, and other contingencies. As suggested by the variety of possible provisions, they often amount to a large position on the liability side of companies' balance sheets. Provisions for pensions generally constitute the single most important provision as most German companies retain pension funds in the form of provisions for their employees. These funds which can run into millions of Deutsch Mark can be used as an important alternative source of financing.[23] Although provisions may be released when the reason for

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[22] Companies normally have legal or contractual requirements to sustain specified levels of reserves. The following rules apply to German public limited companies: 'As long as legal reserves and capital reserves together amount to less than one tenth of nominal capital, the twentieth part of annual net income has to be transferred thereto. Furthermore, if legal reserves and capital reserves are below the tenth part of nominal capital, they may only be used to absorb net or accumulated losses which can not be covered by retained earnings brought forward from the previous year or by the release of other revenue reserves.' See J. P. Brooks and D. Mertin, *Neues deutsches Bilanzrecht,* E 88.

[23] Audretsch and Elston, 'Does Firm Size Matter?', p. 6. Corbett and Jenkinson, 'The Financing of Industry', also mention the difficulties arising from pension provisions which they address on page 83 in the following way, 'A feature of the German system of pension provision is that an important part of pension arrangements is provided by employers, partly by insurance companies and pension funds and partly by direct claims of employees on firms. This latter feature means that employee contributions are a significant source of finance for firms. These contributions to company pension funds are included in the

establishing them has disappeared, companies often do not reduce their provisions in the event that previously uncertain liabilities dissolve.[24] To the extent that provisions are kept without any underlying uncertain liabilities they are a source of hidden profits, and therefore part of equity rather then liabilities. A further specificum of provisions is that they are generally established out of internally generated funds. Due to the frequent overfunding of provisions for future and uncertain liabilities and due to the fact that provisions tend to be generated from internal funds, the analysis treats provisions as part of internal equity rather than liabilities.[25] As such provisions are added to the internal funds component throughout the analysis.

Having discussed the different components which constitute the liability side of a balance sheet, leaves one component reported on the liability side called value adjustment (*Wertberichtigung*). Under German accounting value adjustments are made to offset overvaluations of assets, helping to keep reported values in line with existing facts. In other words, value adjustments capture a decrease in asset value on the liability side instead of writing down the value of the asset on the asset side. They neither fall in the category of accruals nor cost expirations. Companies may use value adjustments in situations when they revalue assets but do not desire the income effect of the revaluation to affect income of the current period. As such value adjustments can be viewed as a form of reserves. Therefore, internal funds consist of reserves, net income, provisions and value adjustments.

5.4. Development of financial sources in relation to total assets

The following sections are based on the analysis of the above described sample of 79 non financial West German public limited companies. Graph 5.1 provides an

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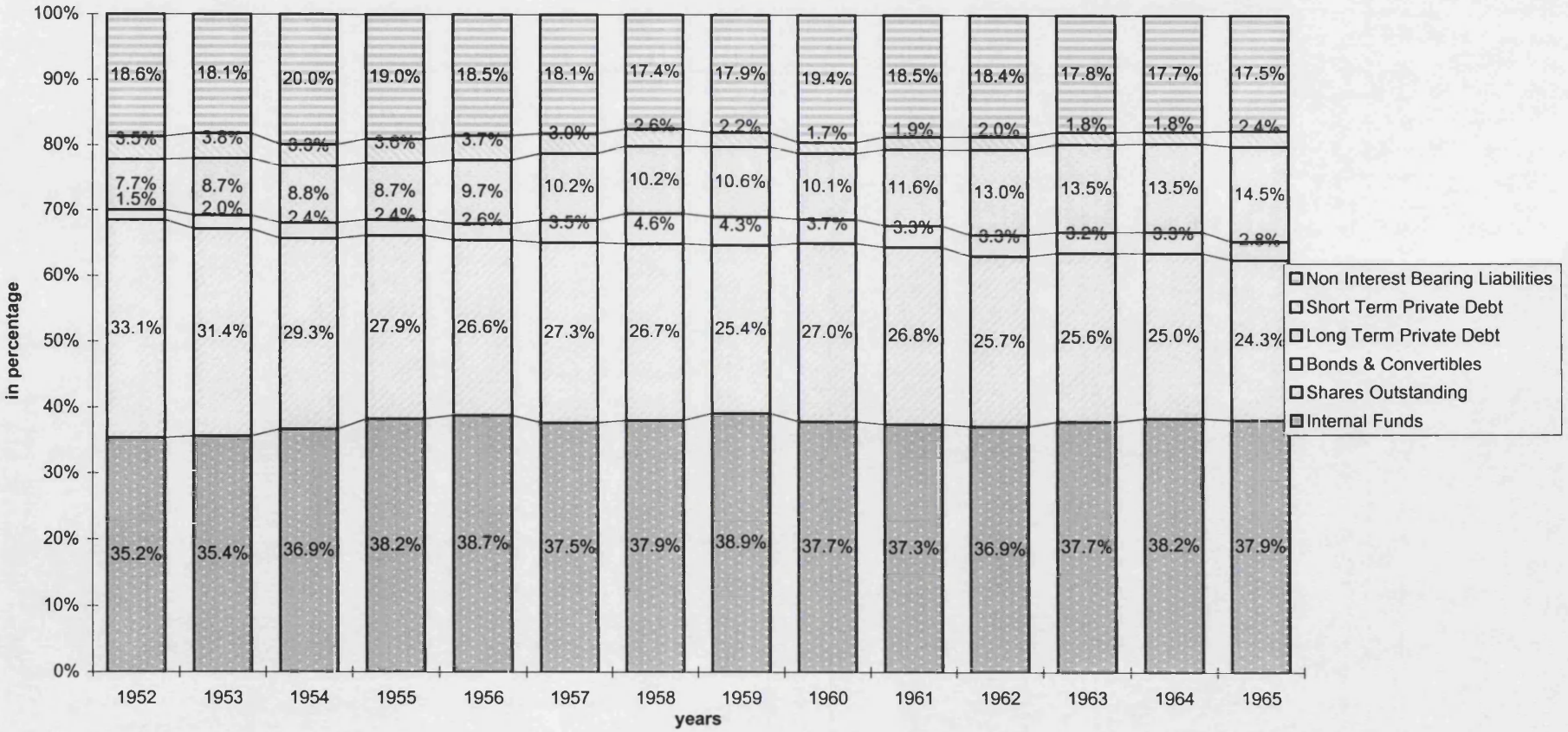
internally generated funds category because they are indeed generated within the firm, but as they carry with them a liability in the form of commitments to pay pensions to employees in the future they are clearly not equivalent to other forms of internal finance.'

[24] Brooks and Mertin, *Neues deutsches Bilanzrecht*, E 39.

[25] Edwards and Fischer, *Banks, Finance and Investment*, pp. 53-58 consider provisions as separate source of finance to overcome the difficulty of deciding whether to treat them as internally generated funds or debt.

overview of the relative importance of financial sources in percentage of total assets between 1952 and 1965. Graph 5.1 presents the mean ratio of internal funds, shares, bonds and convertibles, long term private debt, medium and short term private debt, and other liabilities to total assets for each year. Internal funds consist of reserves, net income, provisions and value adjustments. Shares represent the book value of shares outstanding. Bonds and convertibles represent the book value of capital market funds. Private debt defines all interest bearing debts other than capital market debt and is divided into long and short to medium term debt, following the above definitions. Other liabilities comprise all non interest bearing liabilities.

Graph 5.1 Funds as Percentage of Total Assets



Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Graph 5.1 displays a number of interesting results. Despite using the widest possible definition of internal funds including provisions and value adjustments, internal funds comprise little more than one third of total assets. More precisely, internal funds comprised 35.2% of total assets in 1952 and 37.9% of total assets in 1965, with the proportion of internal funds over total assets peaking at 38.9% in 1959. The proportion of shares outstanding (in book value) to total assets experienced the strongest contraction, decreasing by almost 10% from 33.1% in 1952 to 24.3% in 1965. Capital market debt grew in percentage of total assets until 1958 when it comprised as much as 4.6% of total assets and declined thereafter. Nevertheless, capital market debt ended the period accounting for almost twice as much of total assets than at the beginning of the period, or 2.8% of total assets in 1965 compared to 1.5% in 1952. Long term private debt grew rather consistently over the whole period increasing in percentage of total assets from 7.7% in 1952 to 14.5% in 1965. Short to medium term debt as well as non interest bearing liabilities decreased slightly as percentage of total assets from 3.5% to 2.4% and from 18.6% to 17.5%, respectively. Loans explicitly classified as bank loans in the financial reports which constitute part of the private debt component and are not displayed separately in Graph 5.1 comprised on average 4.2% of total assets between 1952 and 1965. If one considers a wider definition of bank loans including debt components which are not explicitly referred to as bank loans but are likely to contain loans granted by banks such as items referred to as investment credits and loans (*Darlehen*), then bank loans under this wider definition amounted on average to 8.7% of total assets, increasing form 6.8% in 1952 to 11.6% in 1965.[26]

Comparing the findings of Graph 5.1 with results reported by Huth suggests that capital market funds comprised a greater proportion of financial funds during the early post war period than during the later post war period.[27] Huth finds that

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[26] *Darlehen* contain *Schuldscheindarlehen* (borrower's notes) which are often granted by insurance companies. Borrower' notes can be sold, with the borrower's consent, to another party.

[27] A. H.-J. Huth, *Industriefinanzierung in Deutschland und Frankreich*, (Wiesbaden, 1996), pp. 59-62. The study by Huth is based on commercial balance sheets of a sample of German public limited companies compiled by the Statistische Bundesamt. As such his findings are reasonably comparable to the findings of the present study. However, some

shares outstanding relative to total assets amounted to around 16% between 1981 and 1991. In comparison, Graph 5.1 suggests that the proportion of shares outstanding to total assets amounted on average to 27.3% between 1952 and 1965, although decreasing from 33.1% in 1952 to 24.3% in 1965. With respect to bonds, Huth finds that bonds over total assets comprised an infinitely small proportion of 0.01% by 1991, whereas Graph 5.1 suggests that bonds and convertibles constituted on average 3.1% of total assets between 1952 and 1965. Indeed, the proportion of long term external funds over total assets was about twice as high during the early post war period when it moved around 40% than during the 1980s when long term external funds amounted to around 20% of total assets.[28]

Table 5.1 Sample Mean of Various Capital Structure Variables (in DM million)

sample mean	1952	1965	growth in %
internal funds	85.5	350.3	310%
Shares outstanding (book value)	67.4	189.8	182%
Bonds & convertibles	4.1	47.2	1,051%
long term private debt	16.9	122.2	623%
short term private debt	7.2	17.6	144%
non interest bearing liabilities	37.8	151.9	302%
total assets	223.8	916.8	310%

Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Table 5.1 reports the sample means of individual funding components in million Deutsch Mark as well as their growth rates over the period. For instance, it shows that companies had on average DM4.1 million worth of bonds and convertibles on their balance sheets in 1952 growing by 1,051% to DM47.2 million in 1965. This compares to an increase in total assets of 310% which grew on average from DM223.8 million in 1952 to DM916.9 million in 1965. Table 5.1 shows that whilst capital market debt represented the smallest proportion of total assets in 1952 it constituted on average a greater component than short term private debt in 1965, with capital market debt growing more than seven times more than short term private debt between 1952 and 1965. Long term private debt also grew considerably, increasing on average by 623% over the period. If one considers capital market and long term private debt jointly, the volume of long term debt outstanding grew on average by 707%, more than twice as much as total assets. The

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caution is appropriate as Huth's sample comprises a larger number of public limited companies than the present study, implying that it contains more smaller companies.

increase in the amount of long term debt outstanding may be viewed as evidence in support of the earlier stated argument that companies were in need of funds for long-dated assets to overcome distortions created by the war and its aftermath as long-dated assets are generally funded by long term funds. In addition, as pointed out in chapter three long term debt had experienced a relatively strong devaluation during the currency reform which allowed companies to take recourse to long term debt funding without over-stretching their balance sheets. The increase in the relative importance of long term debt seems to be offset by a decrease in the relative importance of shares outstanding and short to medium term debt which grew by 182% and 144%, respectively. In other words, the composition of long term external funds (shares, long term private debt and capital market debt) was shifting towards debt, whilst the relative importance of long term external funds remained relatively unchanged, comprising 39% of total assets in 1952 as well as in 1965, and fluctuating between 38% and 42% of total assets over the period. Internal funds and non interest bearing liabilities grew roughly in line with total assets increasing by just over 300%.

5.5. An analysis of the development of gearing ratios

As already stated in the course of deciding whether provisions are to be treated as debt or equity, the boundaries between debt and equity are not always clear. However, compared to today's financial markets with its range of hybrid instruments, the differences between debt and equity were still relatively distinct in early post war Germany. Debt and equity can be distinguished in a variety of ways including timescale, risk profile, form and source of funding. In this analysis, debt is defined as a source of finance where the creditor has the *right* to receive regular instalments in the form of interest payments charged on the amount of debt outstanding and in the form of repayment of outstanding debt. Therefore for funding to be considered debt, the principle of ultimate repayment has to apply. Furthermore, only interest bearing liabilities are considered when calculating the debt to equity ratio. This approach follows the standard procedure of calculating the

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[28] Ibid., p. 59.

gearing ratio. Equity, in turn, is defined as permanent investment in the company and the shareholder has *no guarantee* of any return. Financial returns may be achieved in two forms. Either through dividends paid by the company or through capital gains in the case of share price increase which is normally not paid by the company but by the new purchaser of the shares. According to this definition, preferences shares (which are in our case always unredeemable) are classified as equity funding because investment is permanent, whereas convertibles, which imply the right of repayment either in the form of cash or equity, are classified as debt, and as equity to the extent and when they are converted into equity.[29] This approach follows the balance sheet treatment of convertibles. As the process of conversion from bond to equity normally takes place over a period of time, ceteris paribus, the debt equity ratio decreases as this conversion occurs.

Table 5.2 provides summary statistics of the analysis of total debt to shareholder's equity, where total debt contains all interest bearing debt components and shareholder's equity consists of subscribed capital (book value) and internally generated funds. Table 5.2 suggests a steady increase in companies' gearing ratio, with both the mean and the median gearing ratio about doubling over the period. However, the typical deviation from the mean is also increasing as shown by the reported standard deviation which increased by around 0.15 over the period. The consistent minimum of zero leverage reported in Table 5.2 is somewhat misleading. As already mentioned a few smaller companies did not provide a detailed break up of their debt components in which case all their debts were summarised as liabilities and had to be classified as 'other liabilities' which does not enter into the defined total debt component.

Table 5.2 Summary Statistics of the Total Debt to Shareholder's Equity Ratio

year	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
mean	0.33	0.50	0.39	0.44	0.49	0.48	0.52	0.51	0.46	0.50	0.56	0.58	0.59	0.61
median	0.20	0.30	0.29	0.34	0.42	0.42	0.43	0.42	0.37	0.39	0.49	0.48	0.44	0.48
max	1.42	11.39	1.34	1.71	1.61	2.31	3.18	3.11	3.08	1.85	2.03	2.83	2.97	2.69
min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
standard deviation	0.35	1.30	0.34	0.42	0.43	0.41	0.50	0.50	0.47	0.41	0.44	0.52	0.54	0.51

Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

[29] K. Ward, *Corporate Financial Strategy* (Oxford, 1993), pp. 174-175.

In order to obtain a more detailed picture of the changing distribution of gearing ratios over time, Graphs 5.2 (a-d) show the frequency at which companies fall into various gearing brackets. As pointed out in chapter three, the total debt to total equity ratio changed in the course of the currency reform from 41:59 before the conversion to 13:87 after the conversion.[30] Graph 5.2 (a) confirms this observation as it shows that 49% of companies in the sample emerged from the balance sheet conversion with a gearing ratio of smaller or equal to 0.2 and 86% of companies reported a gearing ratio of smaller or equal to 0.6 in 1952. Graph 5.2 (a) also shows that companies were quick in increasing their leverage, with a sharp increase in the number of companies occupying gearing brackets in the 0.4 as well as the 0.8 range. The general trend of moving to higher gearing ratios is also indicated by Graphs 5.2 (b) and (c) which suggest a continuous migration of companies into higher brackets. Findings shown in Graph 5.2 (d) indicate a reverse in the trend of companies moving into higher gearing brackets. Graph 5.2 (d) shows an increasing number of companies clustering around a gearing ratio of between 0.4 and 0.6. It appears that the increase in the number of companies occupying this particular gearing bracket was driven both by companies with a lower gearing increasing their leverage as well as by companies which previously occupied higher brackets reducing their leverage.

Whereas 49% of sample companies had a gearing ratio of lower than 0.2 in 1952, only 37% of companies remained at this low ratio in 1955 and by 1965 only 19% of sample companies had a gearing ratio of smaller than 0.2. Furthermore, although Graphs 5.2 (a-c) show a continuous trend of companies moving into higher gearing brackets, the majority of companies observed a gearing ratio of no greater than 0.6 over the entire period. Findings suggested in Graph 5.2 (d) reinforce the

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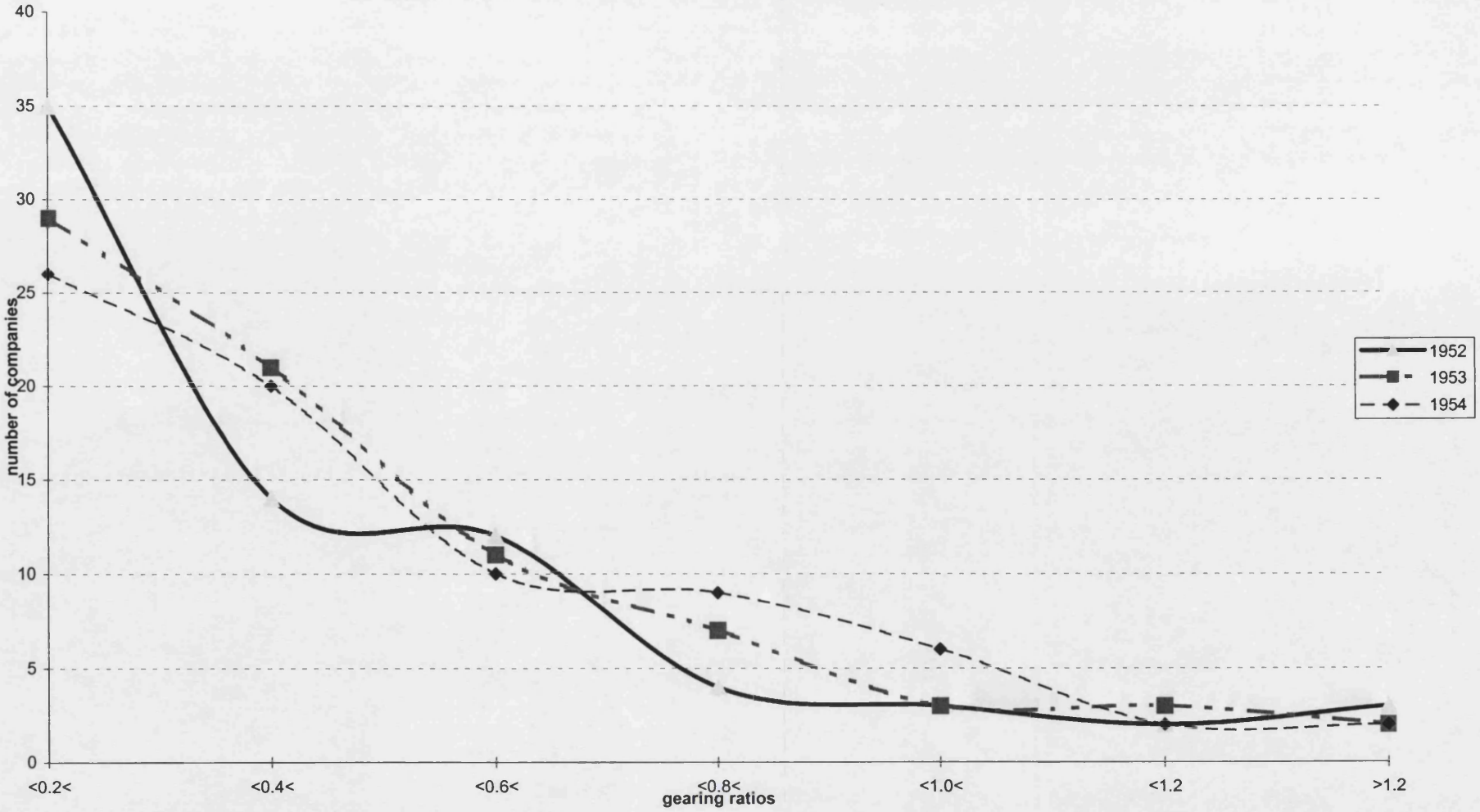
[30] H. Lipfert, 'Wandlungen von Kapitalstruktur und Finanzierungsformen deutscher Industrie-Aktiengesellschaften', in F. Neumark (ed.), *Strukturwandlungen einer wachsenden Wirtschaft*, Schriften des Vereins für Socialpolitik, Neue Folge, Vol. 30/II (1964), pp. 581 points out that the equity to total assets ratio is generally high after a currency reform. According to his calculations, equity comprised 62% of total assets after the currency reform in 1924, and 82% after the 1948 currency reform. With economic recovery, this ratio decreased to 48% in 1952 and to 36% in 1966. In contrast to the development of equity, the proportion of debt is increasing after a currency reform. This development is caused by the uneven devaluation of monetary and accounting assets during the currency reform, with a relatively high devaluation of debt compared to a relatively low assets and equity devaluation.

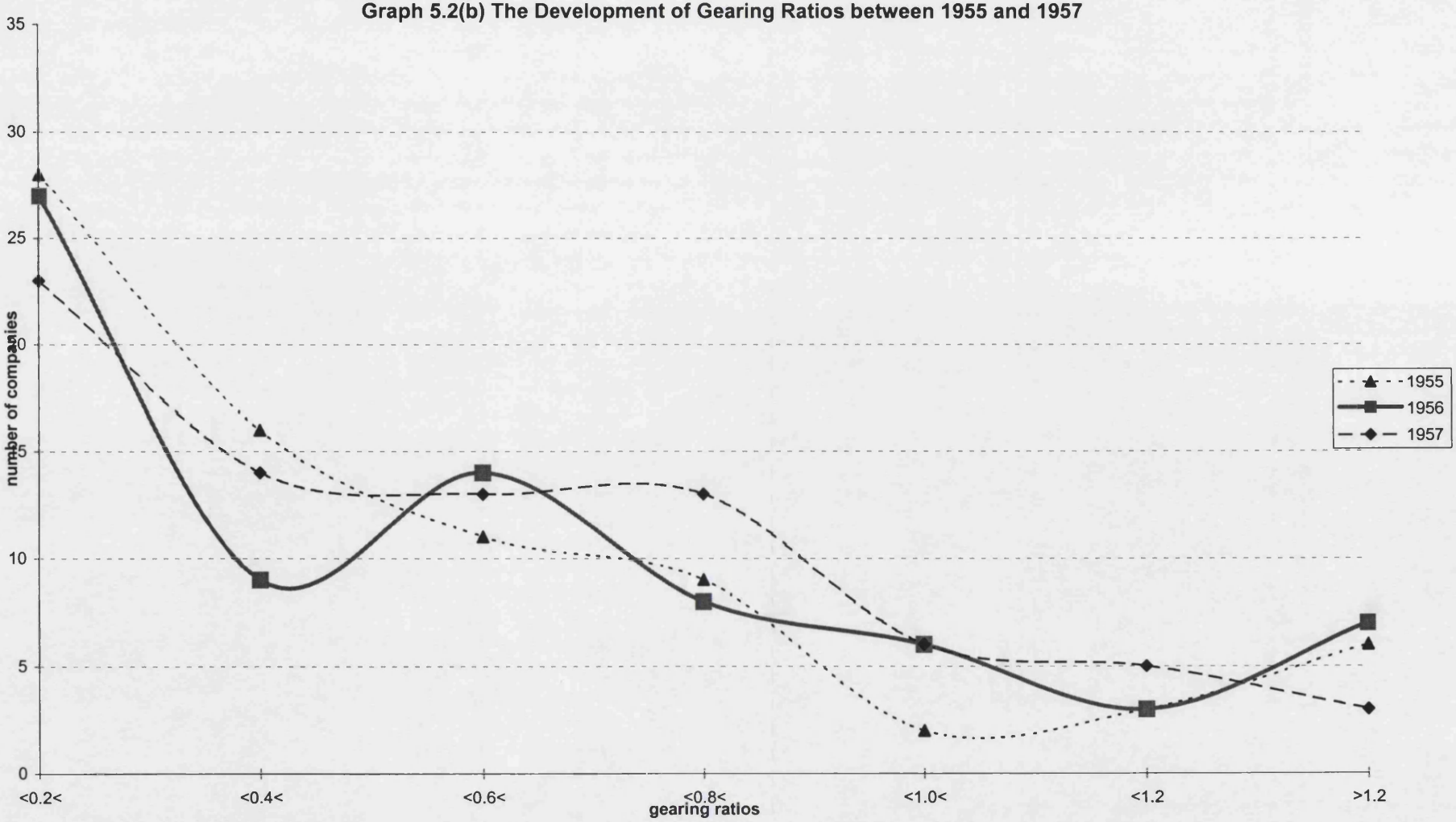
notion that there exists a certain gearing bracket a majority of companies centres around as it shows a clustering of companies occupying a gearing bracket of between 0.4 and 0.6. Unfortunately, the period covered by Graph 5.2 (d) is arguable too short as to draw any definitive conclusions on companies' long-term gearing behaviour. It would be interesting to analyse whether the findings on gearing ratios for the years 1962-1965 could be replicated by using a similar approach for subsequent periods.

Graph 5.2(a) The Development of Gearing Ratios between 1952 and 1954



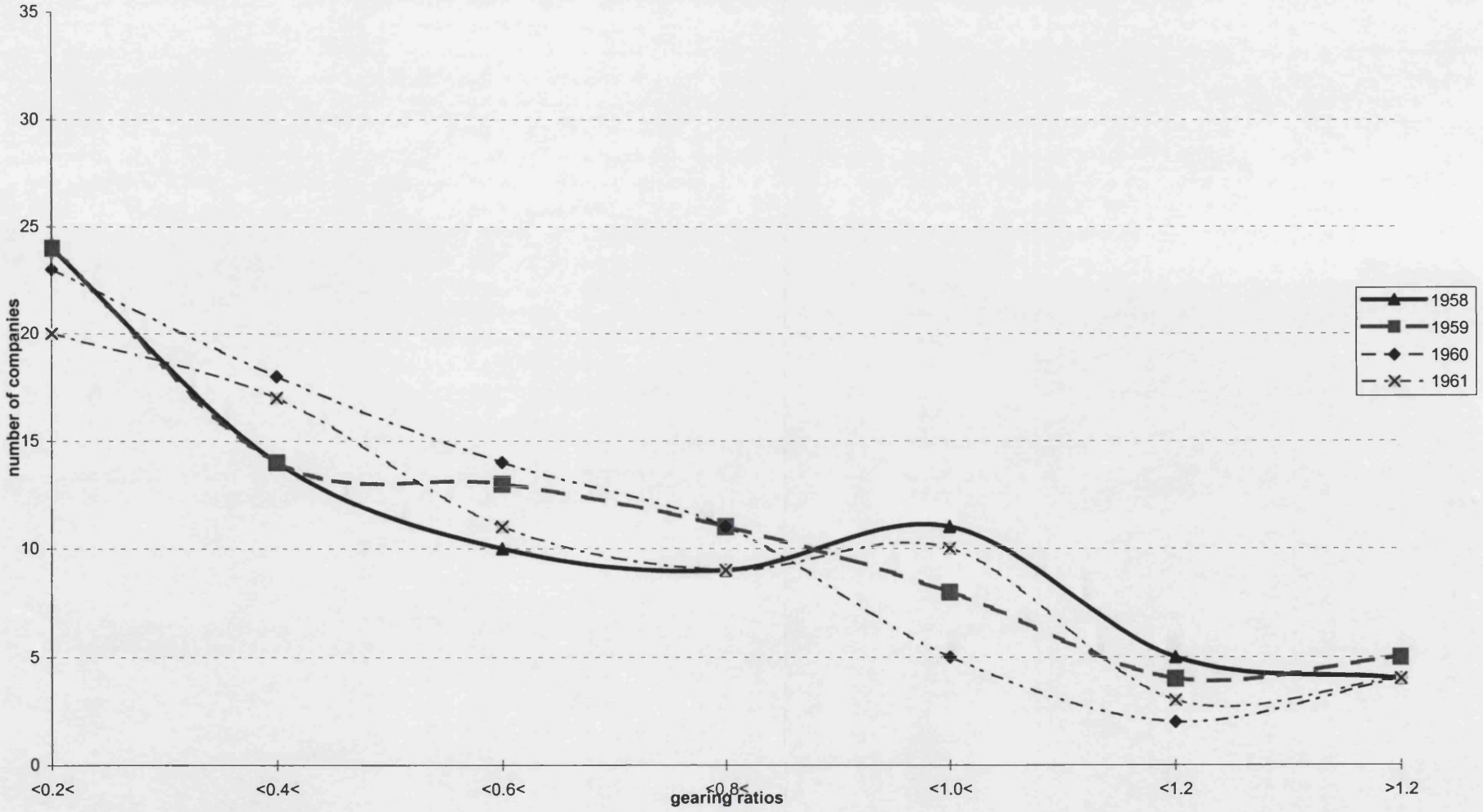
Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Graph 5.2(b) The Development of Gearing Ratios between 1955 and 1957



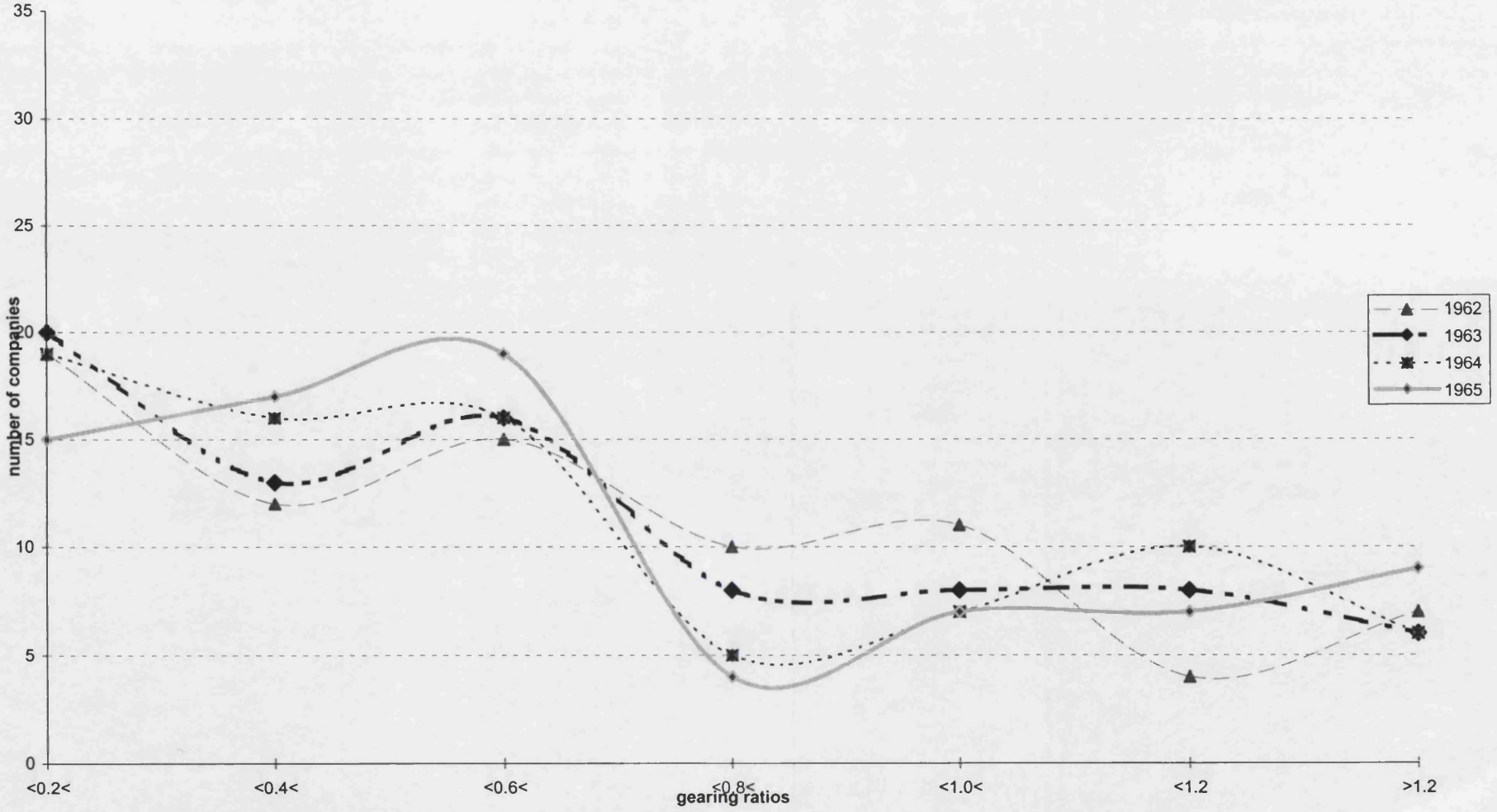
Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Graph 5.2(c) The Development of Gearing Ratios between 1958 and 1961



Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Graph 5.2(d) The Development of Gearing Ratios between 1962 and 1965



Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Table 5.3 reports findings on subsamples in order to establish whether gearing ratios vary with respect to size. The subsamples were created by dividing the sample into deciles by total assets. This leaves each subsample containing eight companies. Table 5.3 presents the median gearing ratio for the smallest, the largest, and the medium size percentile. It shows that companies in the smallest size percentile were significantly less leveraged than companies in the other two percentiles. Gearing ratios for companies in the largest percentile fluctuated between 0.35 and 0.54, with the exception of 1952 when the median gearing ratio of companies occupying the largest size percentile was 0.11. Interestingly, companies in the medium size percentile report a continuous increase in their leverage, whilst companies in the other two percentiles display a more stable gearing behaviour. This leaves the medium percentile with an average gearing ratio of 0.66 for the entire period compared to an average gearing ratio of 0.42 for companies in the largest percentile and of only 0.13 for companies in the smallest percentile.[31] Table 5.3 strongly suggests that gearing ratios differ with respect to size, with medium sized companies displaying the highest gearing ratios.

Table 5.3 Comparison of Gearing Ratios for Three Subsamples each Containing Eight Companies

median of	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	period mean
largest size percentile	0.11	0.39	0.47	0.48	0.54	0.47	0.50	0.54	0.41	0.35	0.37	0.38	0.45	0.51	0.42
smallest size percentile	0.15	0.15	0.14	0.10	0.15	0.14	0.14	0.08	0.08	0.10	0.02	0.20	0.18	0.19	0.13
medium size percentile	0.29	0.37	0.41	0.53	0.61	0.64	0.62	0.79	0.62	0.87	0.60	0.68	1.03	1.17	0.66

Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Dividing the sample into deciles, leaves rather small subsamples with only eight companies in each subsample. To test whether the results reported in Table 5.3 also hold for larger subsamples, the findings of an alternative subsample are reported in Table 5.4. Table 5.4 compares the median leverage ratios of companies in the smallest, the largest, and the medium size percentile where each subsample holds twenty companies.

[31] The gearing ratios reported for companies in the smallest percentile are likely to be understated as a number of smaller companies did not provide a break-down of their liabilities which led to classifying all their liabilities as 'other liabilities' which in turn are not included when calculating a company's leverage.

Table 5.4 Comparison of Gearing Ratios for Three Subsamples each Containing Twenty Companies

median of	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	period mean
largest size percentile	0.21	0.30	0.39	0.48	0.53	0.51	0.51	0.65	0.46	0.56	0.63	0.63	0.57	0.55	0.50
smallest size percentile	0.16	0.16	0.19	0.15	0.13	0.19	0.12	0.10	0.11	0.15	0.19	0.18	0.16	0.23	0.16
medium size percentile	0.33	0.37	0.35	0.36	0.43	0.52	0.48	0.74	0.58	0.60	0.81	0.75	0.78	1.00	0.58

Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

The general results suggested by Table 5.3 seem to be supported by Table 5.4 which reports findings on gearing ratios for enlarged subsamples. The gearing ratios of the lowest quartile are little affected by the increase in sample size and fall significantly behind the gearing ratios observed for companies in the other two percentiles. Companies in the medium size percentile report the highest leverage, although the difference in leverage for companies in the largest and companies in the medium size percentile is narrowing when analysing bigger subsamples. This suggests that the top end of companies in the largest percentile tended to be less levered than their somewhat smaller counterparts which are only included in the wider definition of the largest size percentile.

In summary, findings on the development of gearing ratios suggest that companies tended to increase their leverage during the early post war period, albeit from (artificially) low levels. Furthermore, whilst the majority of companies observed a gearing ratio of below 60% over the entire period, a subsample of mostly medium sized public limited companies displayed a more aggressive gearing behaviour. To attribute the finding of a general increase in leverage solely to the fact that Germany has a 'bank based' system where companies rely on bank loans when they are in need of external funding seems to be too simplistic. At the beginning of the chapter a few historical arguments were put forward which suggest that one would expect companies to increase their gearing ratios in order to counterbalance the situation created by the currency reform when liabilities were considerably more devalued than equity. Recognising the effect the currency reform had on the balance sheet structure of West German public limited companies, together with the finding that companies display a tendency to cluster around a certain gearing bracket suggests that companies actively manage their balance sheet and that they took advantage of their post currency reform balance sheet situation. According to capital

structure theory one would expect companies to increase their gearing ratios not at least because the balance sheet conversion lowered their leverage to levels which provided them with the opportunity of financing a greater proportion of investments with debt than would have otherwise been possible without risking financial distress.[32]

5.6. Sources of finance

Whilst the previous sections reported the relative development of different stocks of funds, this section tries to illuminate the importance of various financial sources to finance investments. In order to determine the contribution of different funding sources in any given year, the change in the stock of each individual source of funding is calculated, representing the numerator. The denominator is calculated as the change of the sum of all individual funding sources. As such the contribution of each individual source of funding is determined by calculating the yearly change of the individual funding source over the yearly change of the sum of all funds. In mathematical terms, the figure of a particular source of finance to fund gross investments in one year is computed as follows:[33]

$$\frac{\sum_{t=1953}^{t=1965} i_t^j}{\sum_{t=1953}^{t=1965} I_t}$$

where i^j_t denotes the average amount of finance of type *j* in year *t*, and I_t denotes the average total finance in period *t*, that is the average of the change in the sum of the different types of finance i^j_t in each year.

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[32] For a discussion of literature on the existence of optimal capital structure see chapter two.

[33] This approach follows Edwards and Fischer, *Banks, Finance and Investment*, pp. 59-60.

As before information on the stock of the individual financial sources was derived from financial statements of the above described sample of companies provided by Hoppenstedt for successive years. Figures reported in Table 5.5 on shares as source of finance include changes in share capital due to capital increases out of retained earnings (*Kapitalerhöhung aus Gesellschaftsmittel*), increases in share capital due to capital subscribed in kind (*Kapitalerhöhung gegen Sacheinlagen*), and share capital increases due to the conversion of convertibles. Capital increases out of retained earnings are reported when reserves are converted into 'share equity' (*Grundkapital*). Increases in shares outstanding due to capital increases subscribed in kind approximate for financial investments as they generally represent share issues to finance the purchase of stakes in other companies. Share increases due to the conversion of convertibles into shares do not generate new investment funds and as such have no direct bearing on new funding sources other than it would allow companies to raise additional debt on the back of an increased equity base without over-leveraging. In light of the inclusion of share capital increases out of retained earnings, figures reported in Table 5.5 tend to overstate the importance of shares and understate the importance of internally generated funds as source of investment funds.[34]

To what extent increases in the book value of shares outstanding were driven by share increases out of retained earnings, capital subscribed in kind and conversion of convertibles is indicated by Graph 5.3. Whilst Table 5.5 reports the average relative contribution of individual funding sources to gross investment, Graph 5.3 displays the sum of shares issued by the sample companies in any given year. In other words, Graph 5.3 reports the sum of the absolute changes in the volume of shares outstanding for the above described sample of public limited companies in any given year. Furthermore, Graph 5.3 differentiates between different kinds of share issues as the first column reports the total annual change in

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[34] Share issues out of retained earnings can be best understood as a form of distribution of profits. Existing shareholders are offered these shares in proportion of their existing holdings without having to pay for them. Companies choose this form of profit distribution in order to benefit from tax advantages. Creditors to the company welcome this form of profit distribution as retained earnings converted into shares cannot be distributed as dividends.

the volume of shares outstanding, the second column excludes share issues out of retained earnings and share increases due to the conversion of convertibles, and the third column excludes share increases out of retained earnings, conversion of convertibles and capital subscribed in kind. Therefore, the third column should closely approximate the total annual volume of rights issues to finance (physical) investments. In addition, Graph 5.4 reports the total volume of net debt issued by the sample companies in any given year by calculating the sum of the annual changes in the volume of debt outstanding.[35]

The sources of funds reported in Table 5.5 are based on the definitions established above, with the contribution of internally generated funds as source of finance being captured by the average annual change in reserves, net income, provisions and value adjustments over the average annual change in total funds. This means that when and to the extent that reserves are converted into share capital it is reflected in a decrease in internal funds as source of finance and an increase in shares as source of finance. Debt comprises all forms of interest bearing debt and is divided into capital market debt, long term private debt and short to medium term private debt, with a decrease in convertibles due to conversion into equity being reflected in a decrease in capital market debt as source of finance and an increase in shares as source of finance. Changes in non interest bearing debt is not considered in the total funds calculation as non interest bearing debt is considered part of working capital rather than a source of funds to finance investment capital. Furthermore, Table 5.5 reports gross sources of finance which represents the contribution of different funding sources to finance physical and financial investments. In contrast, net sources of finance capture solely funding in physical assets.

According to Table 5.5 the sample of 79 non financial public limited companies financed on average 50.3% of their gross investments with internally generated funds between 1953 and 1965. Investigating the different subperiods, it appears that internal funds became a more prominent means of financing in the 1960s than in the

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[35] Where net debt is defined as debt issued minus debt retired in any given year.

1950s as internal funds accounted on average for almost 80% of gross sources of funding between 1962 and 1965 compared to less than 40% between 1953 and 1961. Moreover, internally generated funds constituted a positive gross source of finance in all years other than in 1958 which shows a negative contribution of 71.3%. The negative contribution of internal funding as gross source of finance in 1958 could be related to the introduction of the new German stock corporation law (*Aktienrechtsrefrom*) which was passed in 1959 and came into effect in 1960/61.[36] The new stock corporation law required public limited companies to prepare a more detailed financial statement. In particular, it required public limited companies to publish profit figures reflecting a company's profit within its accounting period. In other words, companies were required to report annual net profit figures in addition to net income figures. Therefore, it appears that the significant negative contribution of internal funds as gross source of finance in 1958 reflects companies' attempt to manipulate their financial statements ahead of the introduction of this new law. A close read of the individual financial statements reveals that the frequency as well as the volume of reserves converted into share equity (share capital increases out of retained earnings) was significantly higher around the time of the introduction of the new stock corporation law than in any other years between 1953 and 1965.

With regards to the importance of share issues as gross source of finance, Table 5.5 shows that new share issues accounted on average for 6.2% of gross source of funding between 1953 and 1965. It seems interesting to note that the sample companies sample relied to a significantly greater extent on new share issues as sources of funding during the subperiod of 1953 to 1957 when share issuance accounted for 15.2% of gross financial sources than for the subperiod of 1958-61 when share increases accounted for 0.0% of gross new funding and for the subperiod of 1962-65 when they accounted for 1.0%. An analysis on an annual basis reveals that the two later subperiods contain three consecutive years of negative share equity contributions in 1961, 1962 and 1963 which significantly affects the average reported for these subperiods. Furthermore, Graph 5.3 suggests

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[36] Whether this law affected a company's financial statement for the first time in 1960 or in 1961 depended on the company's fiscal year.

that particularly during the early 1950s increases in shares outstanding resulted from acquisitions financed with share issues. This observation coincides with the decision by the occupation authorities to relinquish control over companies in strategic industries and to break up conglomerates into smaller entities. Most notably IG Farben and the Vereinigten Stahlwerke were broken up into a number of smaller entities. The break up of these companies coincided with an active acquisition and consolidation market.[37]

The busy rights issuing activity during the second half of the 1950s may have been a consequence of the abolition of discriminatory taxation of securities in 1954.[38] With 27 of the 79 sample companies issuing shares in 1955, it appears that the discriminatory taxation policy had created a backlog in share financing which companies were eager to overcome as soon as this kind of taxation was abolished. The greatest volume of rights issues occurred in 1960, when share prices were at their peak. This holds true even if one discounts for the share issuance by Volkswagen in 1960 which constituted a share capital increase out of retained earnings and is represented by the spike captured by the data series which reports the total increase of shares outstanding as shown in the first column of Graph 5.3.

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[37] The occupation authorities required the break up of a number of companies in exchange for giving up control over the companies. For instance, the chemical conglomerate I.G. Farben was broken up into Bayer, BASF and Höchst, and the Vereinigten Stahlwerke were broken up into a number of smaller iron and steel companies.

[38] By introducing discriminatory taxation, the West German authorities tried to ensure that investable funds were channelled in approved areas. Under this system of taxation, returns on share movements faced a considerable higher taxation than returns on most fixed income securities. See chapter four for details.

Table 5.5 Gross Sources of Finance of 79 West German Non Financial Public Limited Companies, 1953-1965 (in percentage)

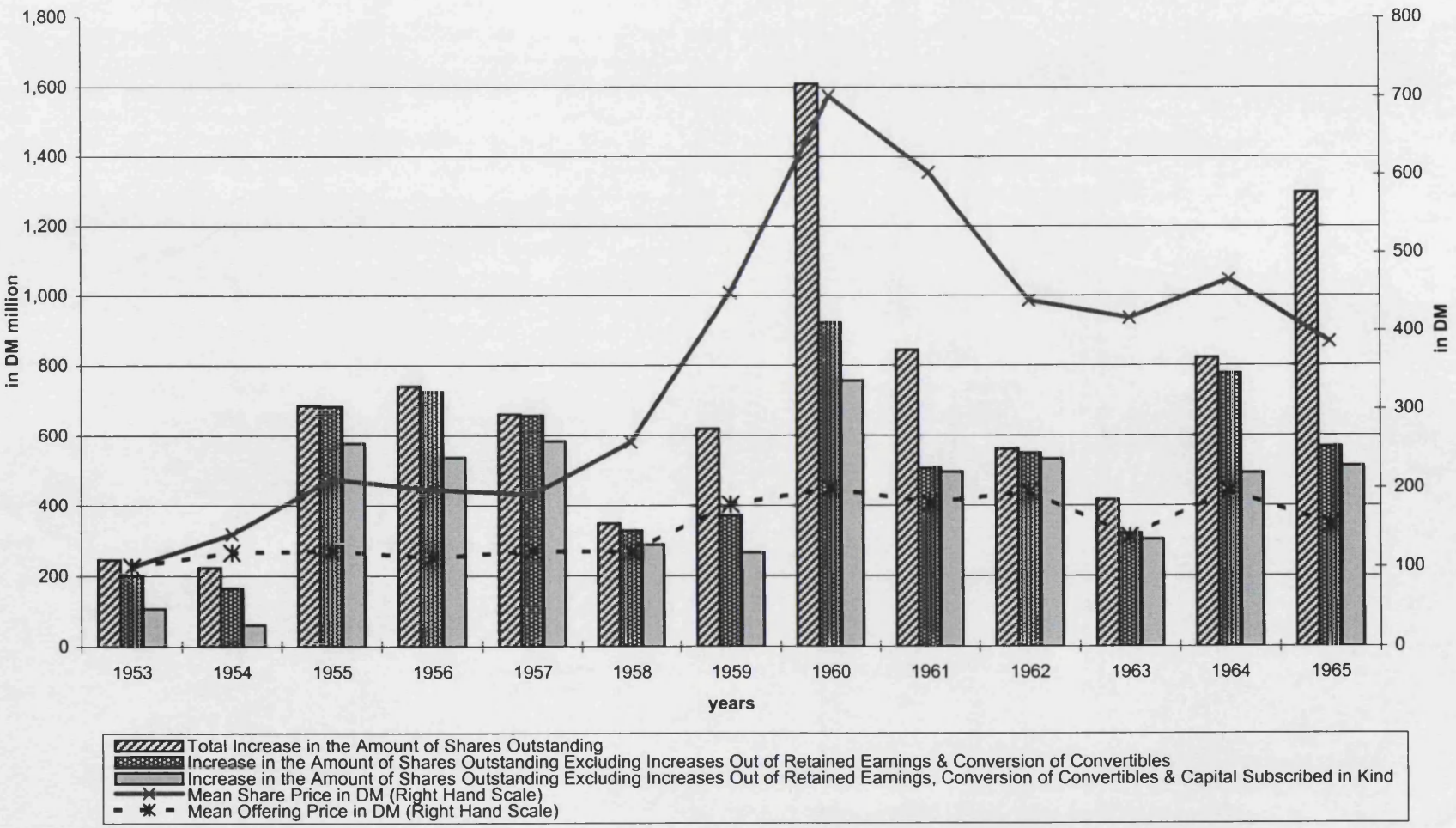
	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
internal funds	36.4	76.2	45.2	7.7	15.6	-71.3	58.0	65.7	100.4	49.8	40.5	58.8	170.5
bonds & convertibles	4.0	-0.1	1.5	3.1	31.9	-2.4	-42.1	-2.2	-2.2	-14.7	22.9	-2.4	-68.1
long term private debt	23.8	28.6	28.5	65.8	34.3	107.8	40.4	15.7	98.1	51.4	44.2	-0.6	34.8
short term private debt	32.5	-12.7	6.6	-4.8	-0.1	57.9	8.9	7.3	-40.2	19.3	1.0	34.2	-45.7
shares outstanding	3.2	8.0	18.2	28.2	18.3	8.0	34.7	13.5	-56.2	-5.9	-8.6	10.1	8.4

	1953-1957	1958-1961	1962-1965
internal funds	36.2	38.2	79.9
bonds & convertibles	8.1	-12.2	-15.6
long term private debt	36.2	65.5	32.4
short term private debt	4.3	8.5	2.2
shares outstanding	15.2	0.0	1.0

	1953-1965
internal funds	50.3
bonds & convertibles	-5.4
long term private debt	44.1
short term private debt	4.9
shares outstanding	6.2

Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Graph 5.3 Annual Change in the Volume of Shares Outstanding



Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Graph 5.3 also displays the mean development of market prices for shares and the mean of share offering prices. It shows that during the currency conversion most share prices were set at around DM100. The first considerable share price increase coincided with the abolishment of the *Kapitalmarktförderungsgesetz* and the consequent return to an uninhibited capital market in 1955.[39] The second surge in share prices occurred between 1958 and 1960. Possible reasons for the significant increase in share prices during this period which go beyond explanations based on strong economic growth might have been the full convertibility of the Deutsch Mark since 1958, the second reduction of taxes on distributed profits from 30% to 15% in 1958, the successful co-ordination of share issues by the central capital market committee since 1957, and the '*kleine Aktienrechtsreform*' ('little reform of German stock corporation law') at the end of 1959 which improved the transparency of companies' balance sheets and profit and loss statements. The consecutive decline in share prices after 1960 coincided with a number of political uncertainties overshadowing the period, namely the start of the construction of the Berlin Wall in 1961, the crisis over Cuba which peaked in 1962, the assassination of U.S. president Kennedy in 1963, and the increased involvement of the U.S.A. in the Vietnam conflict in 1964. In contrast to the sharp increase in market share prices, mean share offering prices remained rather low and stable centring around DM100 between 1953 and 1958 and around DM200 thereafter. The reason for this rather stable development of offering prices reflects the fact that the reported offering prices represent prices for rights issues. In a rights issue existing shareholders are offered (part of the) new shares at a favourable rate, often considerably below the initial share price at which shares are offered to new investors.

According to Table 5.5 capital market debt constituted a negative gross source of finance after 1957, whilst it accounted on average for 8.1% of gross sources of finance between 1953-57. When considering the period of 1953 to 1965, capital market debt constituted on average a negative contribution of 5.4%. Long term private debt accounted on average for 44.1% of gross sources of finance between 1953 and 1965 and constituted the single most important gross source of finance

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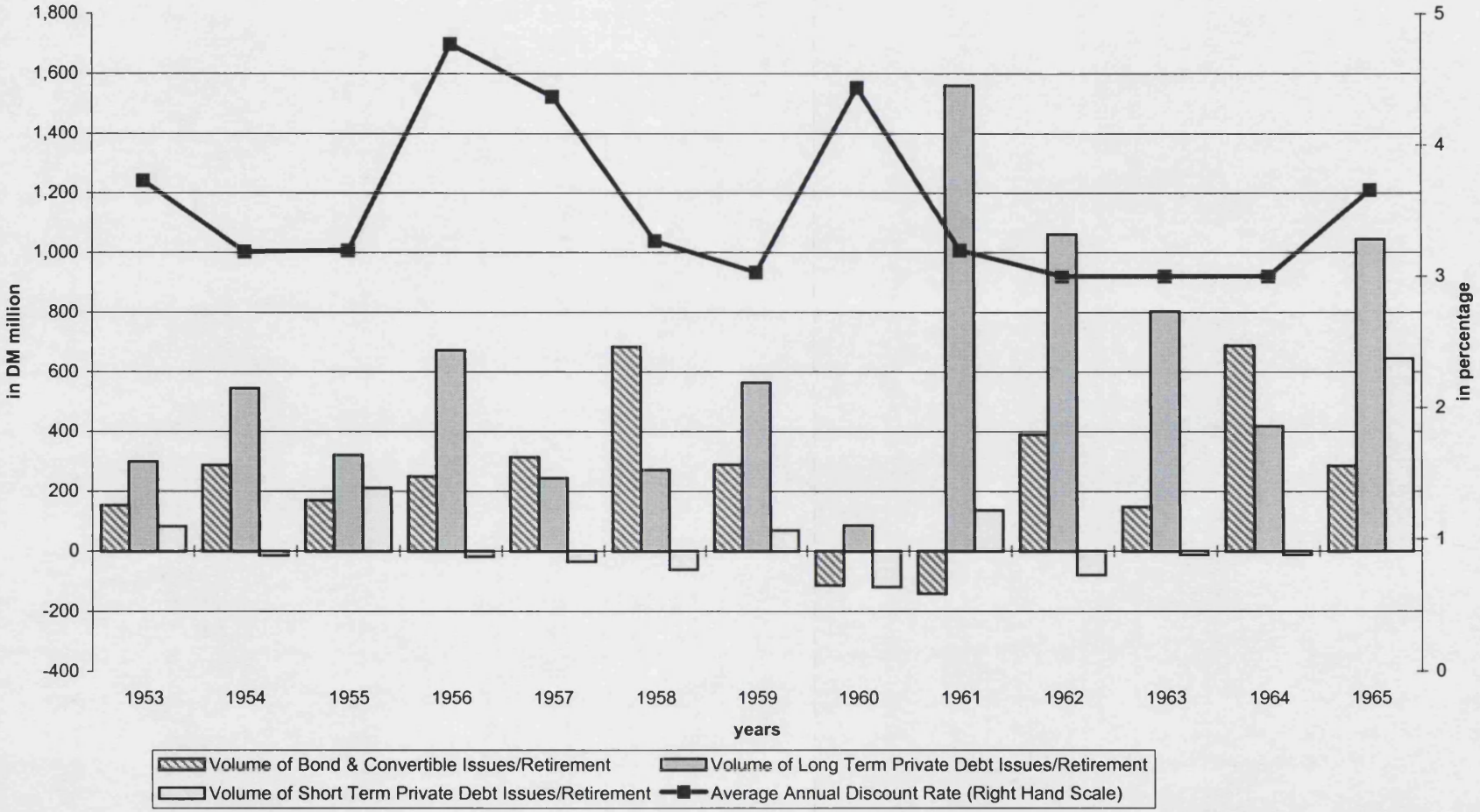
[39] See details on the *Kapitalmarktförderungsgesetz* in chapter four.

during the subperiod of 1958 to 1961. Relating the findings on long term private debt in Table 5.5 with the development of interest rates outlined in Table 5.6 and Graph 5.4, it appears that companies responded to the interest rate cuts in 1958 and in 1961 by relying more heavily on long term private debt as it constituted around 100% of gross sources of finance in those two years. The fluctuation of short term private debt on an annual basis reflects the fact that short term loans tend to be comparatively expensive and are generally used as bridge facilities. When analysing the subperiods, short term loans accounted on average for 4.9% of gross sources of finance during the entire period of observation, ranging from 2.2% during the subperiod of 1962 to 1965 to 8.5% during the preceding subperiod of 1958 to 1961.

In addition to the findings presented in Table 5.5 on the debt financing behaviour of the 79 public limited companies between 1953 and 1965, Graph 5.4 reports the sum of the annual changes in the total volume of capital market debt, long term private debt and short to medium term private debt outstanding. It reports the net issuance behaviour of all companies comprising the sample and suggests that the issuance of capital market debt exceeded retirements for all years other then 1960 and 1961. An analysis of the individual company reports reveals that the size of bond issues increased over time whilst the number of companies issuing bonds decreased. For instance, 13 companies in the sample issued bonds in 1953 which led to a DM153 million increase in the volume of bonds outstanding. A similar increase of DM187 million in 1965 was issued by only three companies. Convertibles were hardly ever chosen as financial instruments. With the exception of four rather big convertibles issues in 1964 and 1965, when three companies issued convertibles in 1964 and one company in 1965.

Graph 5.4 Annual Change in the Volume of Debt Outstanding



Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

Another interesting revelation suggested by Graph 5.4 represents the finding that the volume of long term private net debt financing increased significantly from 1961 onwards. Between 1961 and 1965, the sample of public limited companies raised on average DM978 million in long term private debt each year compared to an annual average of DM376 million in long term private net debt issuance between 1953 and 1960.[40] This finding coincides with the fact that the average discount rate between 1961 and 1965 was almost 600 basis points lower than the average discount rate between 1953 and 1960. Therefore, findings indicate that companies utilised a low cost interest rate environment to raise long term debt as Graph 5.4 suggests an inverse correlation between interest rates and debt issuance.[41] In particular, the consecutive hikes in interest rates, as suggested by Graph 5.4 and reported in the notes to Table 5.6, during the second half of 1959 and the first half of 1960 corresponds with a virtual absence of new long term private debt issues in 1960. In contrast, the sample companies reported the single biggest increase in their net volume of long term private debt outstanding in 1961, as they raised almost DM1.6 billion in that year which benefited from a rate cut policy with the discount rate being cut in three steps from five percentage in November 1960 to three percentage in May 1961.

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[40] These figures refer to net debt issuance, subtracting debt retirements from debt issuance.

[41] As pointed out in the notes to Table 5.6, most loans were subject to interest rate caps of 4.5% over the prevailing discount rate until 1965. Only loans with a life span of four years or more were exempted from interest rate caps.

Table 5.6 Development of Selected Interest Rates and Yields, 1949-1967 (in percentage, yearly average)

Year	central bank interest rates		capital market interest rates		debtor interest		creditor interest		
	discount rate *	lombard rate	effective yield on bonds[1]	equity return[2]	costs for contract loans in current account[3]	discount credit (between DM 5000 and DM 20,000)[4]	fixed term deposits with a 3 months maturity[6]	savings deposits	
								legal period of notice	12 months period of notice[8]
1949	4.47	5.47	.	.	8.97	6.97	2.67	2.50	4.00
1950	4.36	5.36	.	.	8.86	6.86	2.61	2.54	4.04
1951	6.00	7.00	.	1.1	10.50	8.50	3.88	3.00	4.50
1952	5.23	6.23	.	2.0	9.73	7.73	3.71	3.00	4.50
1953	3.73	4.73	.	2.9	8.23	6.23	2.79	3.00	4.27
1954	3.19	4.19	.	2.7	7.88	5.69	2.50	3.00	4.13
1955	3.20	4.20	6.1	3.1	7.85	5.70	2.53	3.00	4.00
1956	4.77	5.77	6.3	4.2	9.27	7.27	4.16	3.31	5.10
1957	4.37	5.37	7.1	4.6	8.87	6.87	4.19	3.50	5.45
1958	3.27	4.27	6.5	3.3	7.78	5.77	2.94	3.17	4.67
1959	3.03	4.03	5.8	2.2	7.53	5.53	2.13	3.00	4.00
1960	4.44	5.44	6.3	2.0	8.94	6.94	3.10	3.75	4.88
1961	3.20	4.20	5.9	2.5	7.70	5.70	2.50	3.50	4.31
1962	3.00	4.00	6.0	3.4	7.50	5.50	2.25	3.25	4.00
1963	3.00	4.00	6.1	3.2	7.50	5.50	2.25	3.25	4.00
1964	3.00	4.00	6.2	3.1	7.50	5.50	2.25	3.25	4.00
1965	3.66	4.66	6.8	3.9	8.16	6.73	2.58	3.52	4.65
1966	4.59	5.74	7.8	4.8	9.09	7.59	3.50	4.50	5.50
1967	3.40	4.21	7.0	3.5	7.71	[5]5.32	[7]2.82	[7] 3.57	[7]4.58

Notes: * Between the end of 1950 and 1965, there was a total of 21 changes in discount rates. Between 1950 and 1954, the discount rate was steadily lowered, mostly in 0.5% intervals, to reach a low of 3% in May 1954. After consecutive increases in the discount rate, with the first rate rise in August 1955, the discount rate peaked at 5.5% in May 1956, only to be lowered to 5.0% four months later in September 1956. Between 1957 and 1959, there was a total of five rate cuts which brought the discount rate down to 2.75% in the beginning of 1959. In September 1959, rates were raised to 3%, followed by a further rate increase a month later to 4%, and another increase in June 1960 to 5%. Between November 1960 and May 1961, rates were lowered three times, taking the discount rate down to 3% where it remained for three and a half years, or until January 1965, when the discount rate was raised to 3.5%. In August 1965, the discount rate was increased to 4%. **1** Yield on bonds outstanding (coupon payments as a percentage of the security's market price). **2** Calculated on grounds of last dividend payments at the end of each year. **3** These rates also applied for other loans but for instalment loans and loans for personal use. Loans with a life span of four years and more were no subject to fixed interest rates (*Zinsbindung*). The nominal rate of contract loans was generally 4.5% above the discount rate, overdraft loans were generally 6% above the discount rate. Until 1965, the loan commitment fee for contract loans is included in the above rates. **4** Until 28 February 1965, interest rate for bills above DM 20,000 were 0.5% lower, and interest rates for bills below DM 5,000 were 0.5-1.0% higher. From 1 March 1965 onwards interest rates did not depend on the amount of the bill but it was differentiated between bills rediscountable at the Bundesbank and bills which were not, for which it was possible to charge up to 1.5% higher interest. The figures above present the rates for bills rediscountable at the Bundesbank. **5** Bills rediscountable at the Bundesbank between DM 5,000 and DM 20,000. **6** Between 1949 and 1966 fixed-term deposits with a maturity of 90 to 179 days. Higher interest rates were paid for deposits greater than DM 50,000, and again higher rates for deposits greater than DM 1 Mill between 1 September 1949 and 19 November 1958. **7** From 1966 onwards, only deposits below DM 1 Mill. Deposits greater than DM 1 Mill and with a maturity of at least 3 months were no longer subject to fixed interest rates after 1 July 1966. **8** Between 1949 and 1964, deposits of notice of 12 months to 4 years (after 1964 12 months to 2 ½ years). After 1 March 1965, deposits with at least 2 ½ years notice were no longer subject to fixed interest rates. Since 20 November 1958, these deposits could only be withdrawn after an initial six month qualifying period had passed.

Source: Deutsche Bundesbank, *Deutsches Geld- und Bankwesen in Zahlen*, Table 2.02, p. 279

5.7. Reflection on literature discussing the financing behaviour of companies

Over the past years, the financing behaviour of companies has received considerable research attention. Most studies which analyse the financing behaviour of companies cover the period from the 1970s onwards.[42] Difficulties in obtaining data for earlier periods may be one of the reasons for a lack of empirical studies on the funding behaviour of German companies during the early post war period. The thesis has attempted to fill this research gap by presenting findings on the funding behaviour of a sample of 79 West German companies between 1953 and 1965. As described above the sample consists entirely of public limited companies and is biased towards larger companies in the iron and steel, chemical, mining, gas, electricity, car, construction and the wholesale and retail trades sectors, excluding companies in sectors such as agriculture, infrastructure, services, and finance. Consequently, the study does not claim that the reported findings are representative for the population of German companies.[43] However, one might be able to make some inferences about the relevance of the presented findings by comparing them to findings reported by previous studies on the financing behaviour of companies. The remaining section discusses the findings of a number of empirical studies which analyse the financing behaviour of companies during more recent decades in order to establish how their results compare to the findings reported above. Although differences in methodology and data sources do not allow a strict comparison of findings, it might provide some insights whether German companies display a consistent trend in their funding behaviour over the entire post war period. The following section starts with a summary of findings reported by Edwards and Fischer whose methodology was partly followed in the financial statement analysis presented above.[44]

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[42] See chapter one and two for a list of references.

[43] Until 1987 only public limited companies and a very small number of limited liability companies and partnerships were required to publish annual financial statements. Therefore, little information is available on the individual financing behaviour of German non public limited companies before 1987.

[44] Edwards and Fischer, *Bank, Finance and Investment*, chapter four and in particular Table 4.6 which is reproduced in Table 5.7 below.

Edwards and Fischer rely on a number of different data sources to analyse the financing behaviour of German companies during the post war period. The following comparison of results focuses on findings reported in Table 4.6 of their book *Bank, Finance and Investment in Germany* as these results are based on annual financial statements and the sectors included in the sample largely coincide with the sectors covered in the analysis above. Edwards and Fischer obtained their sample from the Bundesbank, which in turn collected the sample based on financial statements submitted by companies whose signatures appear on the bills of exchange offered to the Bundesbank by credit institutions. A great advantage of the sample is the fact that it contains different legal forms of companies, however it is biased towards larger companies, covering companies in manufacturing, mining, gas, electricity and water supply, construction, the wholesale and retail trades, and transport and communications. The data source provides information on balance sheets, profit and loss statements, and sources and uses of funds of various broad categories of companies.[45] The findings generated from this data set are reproduced in Table 5.7 below.

Table 5.7 shows the gross and net source of finance for investments by public limited companies, limited liability companies, partnerships and sole proprietorships for the period of 1965 to 1971. The sources of finance over the period are calculated as simple averages of their shares in the total finance of each legal form in each year. The results suggest a rather similar funding behaviour of the sample companies with the exception of public limited companies as Edwards and Fischer find that public limited companies relied more heavily on internally generated funds to finance investments than their counterparts with other legal entities. It seems interesting to note that results presented in Table 5.5 based on this thesis' sample of 79 public limited companies for the period of 1953 to 1965 fall in line with Edwards and Fischer's results on companies with a legal form of entity other than public limited. For instance, their sample of West German public limited companies financed on average 64.9% of gross investments with internally

[45] For further details on the data source see Edwards and Fischer, *Bank, Finance and Investment*, pp. 88-90.

generated funds between 1965 and 1971, whilst companies with other legal entities financed on average between 50.6% and 55.5% of gross investments via internally generated funds. In comparison, the sample companies of this study relied on average to 50.3% on internal funds to finance gross investments between 1953 and 1965. With regards to debt as gross source of finance, Edwards and Fischer find that their sample of public limited companies financed on average 27.7% of gross investments by raising new debt, significantly lower than the 43.6% reported in Table 5.5 for the period of 1953 to 1965. Again, findings presented by the thesis fall more closely in line with Edwards and Fischer's results on non public limited companies, as their findings suggest that limited liability companies financed on average 40.6% of gross investments with debt, partnerships 44.5%, and sole proprietors 48.7% between 1965 and 1971.

Table 5.7 Sources of Finance of Different Legal Forms of Enterprise, 1965-1971 (in percentage)

	public limited companies	limited liability companies	partnerships	sole proprietors
Gross sources				
internal funds	64.9	50.6	55.5	51.3
of which: capital increase by partnerships and sole proprietors	-	-	11.1	13.1
new equity	7.4	8.8	-	-
new debt	27.7	40.6	44.5	48.7
Total	100.0	100.0	100.0	100.0
Net sources				
internal funds	92.2	76.6	79.2	73.9
of which: capital increase by partnerships and sole proprietors	-	-	15.5	18.8
new equity	-1.8	8.2	-3.5	-2.4
new debt	9.6	15.2	24.3	28.5
total	100.0	100.0	100.0	100.0
average number of enterprises from which sources and uses of funds data obtained	879	3,851	11,138	6,712

Source: Edwards and Fischer, *Banks, Finance and Investment*, Table 4.6 on p. 90.

Table 5.7 also reports Edwards and Fischer's results on net sources of finance. Net sources of finance exclude funding used for financial investments and as such only consider investments in physical assets.[46] According to Table 5.7 new equity shows a negative contribution to net sources of finance for all legal entities other

[46] Table 5.5 does not report net sources of finance due to a lack of data on uses of funds which would allow a calculation of net sources. Therefore, the thesis could only make indirect inferences about the extent of financial investments as Graph 5.3 reports increases in share capital excluding increases due to capital subscribed in kind, which provides some indication on the importance of share issues to finance financial investments.

than limited liability companies. In comparison, new equity shows a positive contribution in the single digits when considering gross sources of finance. Results by Edwards and Fischer also suggest that debt as source of finance diminishes considerably when considering net instead of gross sources of finance and that public limited companies financed less of their investments with debt than other legal entities, see Table 5.7. According to Edwards and Fischer 'the smaller use of debt finance by AGs was not a result of AGs having access to the share market, but rather due to heavier use of internal funds by AGs.'[47] Table 5.7 shows that internal funding increases considerably in importance when considering investments in physical investments alone rather than investments in physical and financial investments. Edwards and Fischer find that internal funds comprised over 90% of public limited companies' net sources of finance, whilst German companies with other legal forms of entity relied to approximately 75-80% on internal funds as net source of finance between 1965 and 1971. In summary, Edwards and Fischer find that public limited companies relied to a greater extent on internally generated funds both considering net and gross sources of finance than other legal forms between 1965 and 1971. In contrast, findings reported in Table 5.5 suggest a more similar funding behaviour of the sample of public limited companies during 1953 and 1965 and Edwards and Fischer's sample of non public limited companies for the adjoining period of 1965 to 1971, see Table 5.7.

One possible reason for the difference of results on gross sources of finance reported in Table 5.5 and Table 5.7 for public limited companies may be the difference in sample size. Unfortunately, Edwards and Fischer do not explicitly state how many companies their sample comprises. However, it can be assumed that their study incorporates more than 79 companies. Furthermore, as the sample of 79 companies is bias towards larger companies, it can be assumed that their sample contains a greater proportion of smaller companies.[48] In order to determine whether differences in results for public limited companies suggested by Table 5.5 and Table

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[47] Edwards and Fischer, *Bank, Finance and Investment,*. p. 92.

[48] It must be mentioned that Edwards and Fischer point out that despite the relative large number of companies in their sample, the average size of companies in their sample is

5.7 are due to differences in the underlying sample, Tables 5.8 and 5.9 compare the ratio of internal funds to total assets for various subsamples of the 79 companies analysed above. Table 5.8 and 5.9 suggest that public limited companies in the smallest size percentile relied to a greater extent on internally generated funds than companies in the medium and the largest size percentile. This observation supports the assertion that Edwards and Fischer's finding on the greater reliance of public limited companies on internal funds might be driven by the financing behaviour of the smaller public limited companies in their sample. In other words, it appears that small public limited companies are more liquidity constraint than larger public limited companies or other legal forms of entity.[49] Unfortunately, no explanations which go beyond pure speculation can be provided which would underpin the argument that small public limited companies had greater difficulties in raising external debt or equity than their bigger counterparts or similar sized companies of another legal form of entity. However, the findings suggest that further research in this area might provide insights into why relatively few German companies decided to go public in the post war period.

Table 5.8 Median Ratios of Internal Funds to Total Assets for Three Subsamples Each Containing Eight Companies (in percentage)

median of	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	period mean
largest size percentile	29.8	29.5	34.2	31.8	29.3	27.6	29.0	38.3	34.5	38.7	39.1	36.0	38.8	34.0	34.1
smallest size percentile	33.7	38.0	42.3	41.9	39.2	50.8	43.8	41.3	33.7	35.7	36.4	38.0	39.2	39.0	39.1
medium size percentile	37.6	28.8	39.6	30.2	31.0	29.5	33.3	32.3	30.1	36.3	34.0	27.7	29.1	26.5	30.6

Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

larger than that of the overall population of German companies. See Edwards and Fischer, *Bank, Finance and Investment*, p. 88.

[49] Audretsch and Elston, 'Does Firm Size Matter' p. 14 find some evidence that smaller German public limited companies are more liquidity constraint than their bigger counterparts for the period between 1977 and 1985. J. A. Elston, 'Investment, Liquidity Constraints and Bank Relationships: Evidence form German Manufacturing Firms', *Centre for Economic Policy Research*, Financial Economics Discussion Paper (1996), No. 1329, p. 18 finds for the later period of her study that German public limited companies with close ties to large banks exhibit investment functions which are less sensitive to liquidity constraints than independent firms.

Table 5.9 Median Ratios of Internal Funds to Total Assets for Three Subsamples Each Containing Twenty Companies (in percentage)

median of	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	period mean
largest size percentile	35.4	34.8	36.6	33.7	34.3	31.1	34.3	37.6	34.5	35.3	35.1	33.4	37.9	36.2	34.9
smallest size percentile	33.7	38.0	40.8	36.7	38.4	36.8	39.0	41.6	35.9	34.0	34.3	33.7	35.5	37.7	36.8
medium size percentile	26.6	31.7	34.7	31.7	34.5	33.6	34.4	32.8	30.1	36.3	33.7	31.8	34.7	30.9	33.2

Source: Various issues of Hoppenstedt. Own calculations based on the above described sample.

The remaining section highlights findings of a few empirical studies which analyse the funding behaviour of companies for more recent decades. Before turning to the individual studies it should be pointed out that their underlying data sets differ considerably with respect to source, size and composition of the sample, and methodology. Although these differences restrict the comparability of results, it seems worthwhile to establish how the findings reported so far compare to results on the funding behaviour of companies in different countries for more recent decades. A particular attention will be drawn to what extent the above reported findings support the observation highlighted by recent literature that internal funds are the preferred source of finance across time and countries and the observation that internal financing has shown a tendency to increase over time.

The latter claim of a trend towards greater importance of internal funds is highlighted by Corbett and Jenkinson, who compare the financing behaviour of companies across four countries between 1970 and 1989.[50] Figures reported by Corbett and Jenkinson represent net sources of finance based on a wide sample of companies and are based on national income accounts. According to Corbett and Jenkinson, West German companies financed 68.6% of net investments with internal funds between 1970 and 1974. Between 1975 and 1979, the proportion of internal funds to net sources of finance rose to 82.8%, between 1980 and 1984 internal funds amounted to 79.8%, and between 1985 and 1989 the internal funds component rose again, amounting to 89.1% of net investments. In comparison, Table 5.5 suggests that internally generated funds accounted for 36.2% of gross sources of finance between 1953 and 1957, increasing to 38.2% for the period of

[50] Corbett and Jenkinson, 'The Financing of Industry', pp. 79-87.

1958 to 1961 and to 79.9% between 1962 and 1965. Although the different methodology employed by Corbett and Jenkinson and the thesis limits a direct comparability of results, the thesis supports Corbett and Jenkinson's observation that internal funding increased in importance over time. This assertion is further supported by results reported by Dannemann, who finds that German companies financed 69.8% of their net investments with internal funds between 1952 and 1956 compared to Corbett and Jenkinson's finding that German companies financed on average 80.6% of net investments with internal funds between 1970 and 1989.[51] Due to the fact that Dannemann's analysis is also based on data from national accounts his results seem to be reasonable comparable to results reported by Corbett and Jenkinson. Moreover, Corbett and Jenkinson find that the trend towards internal funding can also be observed in the U.S., the United Kingdom and Japan. They also find that contrary to common perception the internal funds component was more prevalent in the United Kingdom and the U.S. than in Germany and Japan between 1970 and 1989. They report that the United Kingdom financed on average 97.3% of net investments with internally generated funds and in the U.S. internal funds comprised 91.3% of net investments between 1970 and 1989 while in Germany 80.6% of net investments were provided with self financing, and Japan relied on average to only 69.3% on internal funds over the same period.[52]

Mayer compares the capital structure of companies in eight countries between 1970 and 1985 using flow of funds data. His results suggest that between 1970 and 1985, West German non financial companies financed on average 55.2% of gross investments (and 70.9% of net investments) via internally generated funds.[53] As a reminder, Table 5.5 reports for the sample analysed in this thesis that internal funding comprised on average 50.3% of gross financial sources between 1953 and 1965. Again, due to differences with respect to data source and methodology, one should be cautious about comparing Mayer's results with results reported by the

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[51] Dannemann, *Struktur und Funktionsweise des Kapitalmarktes*, Table 16.

[52] Corbett and Jenkinson, 'The Financing of Industry', Table 1.

[53] C. Mayer, 'Financial Systems, Corporate Finance, and Economic Development', in: R. G. Hubbard, *Asymmetric Information, Corporate Finance, and Investment*, (Chicago, 1990), Table 12.3 and Table 12.1. His results are based on flow of funds figures provided by the OECD.

thesis. Nonetheless, the similarity in findings is striking. It also seems interesting to compare Mayer's findings, whose sample comprises non financial companies of various legal entities, with results by Edwards and Fischer's on the importance of internal funding for different legal entities between 1965 and 1971. Their findings which are reproduced in Table 5.7 fall in line with Mayer's findings on the importance of internal funds for gross as well as net investments for all legal entities other than public limited. In particular, Table 5.7 shows that limited liability companies, partnerships and sole proprietors financed on average between 50.6% and 55.5% of gross investments and between 73.9% and 79.2% of net investments with internal funds between 1965 and 1971, compared to Mayer's results that internal funds accounted for 55.2% of gross investments and 70.9% of net investments between 1970 and 1985. Mayer also finds that the United Kingdom and the U.S. relied to a greater extent on internal funds than Germany and Japan.[54] Moreover, results by Mayer suggest that bank loans were the second most important source of finance after retained earnings in all countries investigated in his study. With West German companies relying to 21.1% on loans as gross source of finance, while companies in the United Kingdom relied to 21.4% on loans, companies in the U.S. to 23.1%, and companies in Japan to 40.7%.[55] In summary, Mayer observes that between 1970 and 1985 companies in all eight countries relied most heavily on internal funds to finance investments, and that private debt was the dominant form of external finance.

Recent empirical literature on the funding behaviour of companies has highlighted two central observations. First, internal funding is the preferred source of finance across time and countries. Being the cheapest form of finance, one would expect to observe this funding behaviour. Results presented in Table 5.5 support this observation for the early post war period as findings suggest that German public limited companies financed on average most of their gross investments with internal funds between 1953 and 1965. Second, it has been observed that internal financing

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[54] With internal funds as net (gross) source of financing amounting to 102.4% (72.0%) in the United Kingdom, 85.9% (66.9%) in the U.S., and 57.9% (33.7%) in Japan. See Mayer, 'Financial Systems', Table 12.1 and Table 12.3.

[55] Ibid., Table 12.3.

has shown a tendency to increase over the post war period. In as far as a comparison across studies is admissible, findings of the thesis support the assertion that there is a trend towards an increasing reliance on internal funding to finance investments. However, as highlighted in Table 5.5, the relative importance of different funding sources can fluctuate greatly on an annual basis.

6. Summary and concluding remarks

The objective of the thesis was to trace the development of the West German capital market and to analyse the financing behaviour of a sample of West German public limited companies during the early post war period. A comprehensive analysis of the 1948 currency reform showed that the currency reform discriminated against different forms and holders of monetary assets as different devaluation methods were applied depending on the type of asset and on the status of the owner or borrower of the respective asset. This discriminating conversion procedure led to a significant redistribution of wealth within the West German economy. In particular, it endowed banks and public authorities, which were the biggest borrowers before the currency reform, with ample financial means to provide funding. While banks were operational from the beginning of the post currency reform period, the lengthy process of converting balance sheets and establishing the rightful owners of securities handicapped the capital market. Securities could only be traded after their rightful owners had been identified, and a company could only issue a security after it had converted its balance sheet.

The incorporation of issues such as the conversion of balance sheets and the securities validation law not only shed light on the effects the currency reform had on the development of the West German capital market, it also provided an alternative interpretation of the financing behaviour of companies during the early post war period. Companies emerged from the balance sheet conversion with artificially low gearing ratios as monetary assets were significantly more devalued than real assets. Furthermore, the balance sheet conversion induced companies to disclose hidden reserves. Findings on the conversion of balance sheets allowed to reconcile the fact that companies increased their gearing ratios during the early post war period with arguments suggested by capital structure theory. One would expect companies to increase their gearing ratios for at least two reasons. First, it can be argued that the conversion left companies with a capital structure that did not reflect a company's choice of capital structure had it been able to manage it at its own device. Second, the low gearing ratio companies found themselves with after the conversion provided them with the opportunity to finance more of their investments

with debt as would have been possible otherwise without causing increased danger of financial distress. This interpretation of findings differs from the conventional interpretation discussed at the beginning of the thesis as it incorporates the fact that West German companies entered the post war period with historically low gearing ratios. In other words, the thesis argues that companies not just simply preferred debt over equity but that they were trying to 'optimise' their leverage. Indeed, an analysis of the development of gearing ratios in chapter five suggests that companies first increased their leverage to then cluster around a certain gearing bracket.

The analysis of the currency reform showed that the currency reform negatively affected the development of the capital market, whereas it endowed banks with generous compensation claims which enabled them to establish a powerful position as provider of external funds right from the start of the post reform period. While it is not obvious whether public authorities were fully aware of the consequences the different speed of conversion of monetary and real assets had on the development of financial institutions, a number of policy measures were identified which were clearly directed at distorting the role of the capital market in providing investment funds. By maintaining interest rate ceilings and by introducing discriminatory taxation, public authorities influenced investment decisions and eliminated market mechanisms of allocating resources in order to ensure favourable access to capital market funds for investment programmes favoured by the public authorities. This form of intervention effectively divided the capital market into two sectors as it ensured that investments in governmentally favoured sectors were at least as profitable as in uncontrolled private sectors, while the cost of capital market funding was considerably lower for the controlled and governmentally favoured sectors than for the uncontrolled private sectors. In other words, the West German capital market had to serve as an 'extended arm' for public investment efforts during the first post currency reform years. Public authorities defended the restrictions they imposed on the capital market on the grounds that price controlled sectors could not finance urgently required investments if they had to pay market interest rates. A comprehensive analysis of the development of price controlled sectors compared to uncontrolled sectors in chapter four questions the claim that price controlled sectors

were in need of subsidised funding. Nevertheless, it remains unanswered whether public investment efforts prevented price controlled sectors to turn from potential into real bottlenecks or whether perceived bottlenecks failed to cause severe problems due to a steady and proportionate growth of the overall economy.

The resurgence of the capital market in the 1950s right after public authorities allowed market forces to come into play, seems particularly impressive considering the severe restrictions the capital market had endured since the early 1930s. Findings on the financing behaviour of a sample of public limited companies suggest that capital market funds were relatively more important in the immediate post reform years than in later periods. Nonetheless, internal funds were the most important funding source during the early post war period. A comparison of results presented in the thesis with findings presented by other studies for later periods suggest that internal funds comprised the most important source of finance during the entire post war period. The thesis also supports the claim that internal funds showed a tendency to increase as proportion of total funding over the post war period. This finding might be best explained by historical circumstances. One would expect companies to rely to a lesser extent on internally generated funds at a time when high growth rates coincide with a period of repositioning than at later stages when companies had accumulated funds and the economy had regained more mature structures. In other words, the early post war period is characterised by relatively strong economic growth, while companies still suffered from distortions created by the war and the following economic turbulences, with both factors pointing to extraordinary investment requirements. Although strong growth (together with modest wage increases) may suggest that companies were able to generate healthy profits which allowed them to finance a large extent of their investments with internally generated funds, the thesis suggests that during the early 1950s companies were still recovering from turbulences caused by the war and the delayed currency reform. It appears that companies were in need of excess investment in order to reposition themselves in the changed circumstances which is reflected in a relatively high reliance on external funds during this period.

Next to the government which was a major provider of funds in particular to sectors such as housing, infrastructure and utilities, banks played an important role in providing external funds, both as providers of credit and as investors in capital market securities, particularly at the beginning of the post currency reform period. Banks fulfilled an important function as investors and monitors in an economic situation where private investment in capital market securities was sluggish (due to high taxation and the state pensions system), and technologies were relatively well understood. Additionally, as export demand was greatest for products of the manufacturing sector, which according to arguments presented in chapter two was well served by a bank oriented financial system, as it was a competitive and well established sector, the prevailing West German financial system reinforced the comparative advantage of the manufacturing sector by providing them with adequate financial services. The strong position banks accomplished as financial intermediaries was surely favoured by public policies which discriminated against the development of the capital market. However, to what extent public authorities were aware that their policies discriminated against the capital market, and therefore how actively they supported the development of a bank oriented system is difficult to answer. As much one is inclined to give credit to the bank oriented financial system for contributing to strong growth in West Germany during the *Wirtschaftswunder* period, the bank dominated system seems to have inhibited technological changes over the more recent decades as it appears an inferior system when it comes to foster innovative activities. However, over recent years Germany has recognised the need to adapt its financial system in order to satisfy the changing demand of companies as well as investors. The changes in the financial sector are likely to have broad consequences. It forces companies to be more responsive to outside shareholders, and more concerned with rates of return on capital. As the corporate governance role of banks declines and as the pension system is restructured, a shift in financial assets can be observed away from bank deposits to wider share ownership.

The West German experience was unique, as it was significantly different from what one might call the normal growth of other Western countries during the early post war period. However, the experience of West Germany during the early post

war period may provide new insights concerning the interaction of financial institutions and economic growth. It is hoped that the thesis has contributed to a better understanding of the faults and merits of fostering one financial system over another. As it is important to identify the strengths and weaknesses of competing financial systems, before deciding on policies which may favour the development of a more bank oriented or a more capital market oriented system. In as far as the reconstruction period of post war Germany can be applied to the situation experienced in former communist countries, the study may serve as reference for discussion on the development of financial systems in post communist Europe.

Appendix 1

Total Assets in DM

name	total assets 1952	total assets 1965
1 Adlerwerke AG	53 089 000	64 930 000
2 Allgemeine Elektricitäts-Gesellschaft AEG-Telefunken AG	598 521 000	2 174 355 000
3 Andreae-Noris Zahn AG	26 320 000	89 679 000
4 Aschaffenburger Zellstoffwerke AG	134 496 000	215 394 000
5 BASF Badische Anilin- & Soda-Fabrik AG	805 995 000	4 205 981 000
6 Beiersdorf AG	37 304 000	143 734 000
7 Bemberg, J. P. AG	34 910 000	130 521 000
8 Berger, Julius AG	13 452 000	54 324 000
9 BMW Bayerische Motoren Werke AG	82 190 000	342 923 000
10 Buderus'sche Eisenwerke AG	128 607 000	378 332 000
11 Cassella Farbwerke Mainkur AG	76 509 000	138 823 000
12 Chemie-Verwaltungs-AG (re-established in 1955)		250 464 000
13 Continental Gummi-Werke AG Hannover	219 683 000	671 413 000
14 Daimler-Benz AG	292 187 000	2 223 266 000
15 Demag AG	237 281 000	624 863 000
16 Deutsche Babcock& Wilcox AG	113 030 000	366 109 000
17 Deutsche Continental-Gas-Gesellschaft AG	56 855 000	193 985 000
18 Deutsche Edelstahlwerke AG	289 620 000	623 976 000
19 Deutsche Erdöl-AG	273 315 000	1 128 583 000
20 Deutsche Linoleum-Werke AG	55 467 000	171 324 000
21 Dierig, Christian AG	103 904 000	110 288 000
22 Dortmund-Hörder Hüttenunion AG	339 043 000	1 107 044 000
23 Dortmunder Actien-Brauerei AG	25 721 000	77 431 000
24 Elektrische Licht- und Kraftanlagen AG	34 810 000	32 598 000
25 Eschweiler Bergwerks-Verein AG	218 605 000	548 352 000
26 Farbenfabriken Bayer AG	915 189 000	4 422 266 000
27 Farbwerke Hoechst AG	590 091 000	4 232 666 000
28 Feldmühle AG	102 513 000	557 888 000
29 Felten & Guilleaume Carlswerk AG	178 755 000	375 718 000
30 Ford-Werke AG	88 829 000	2 563 993 000
31 Gelsenkirchner Bergwerks-AG (re-established in 1953)		1 963 425 000
32 Glanzstoff AG	187 603 000	623 522 000
33 Goldtschmidt, Thomas AG	53 607 000	133 729 000
34 Gutehoffnungshütte AG	104 265 000	306 415 000
35 Hamborner Bergbau AG (re-established in 1953)		258 777 000
36 Hamburgische Electricitäts-Werke AG	380 534 000	1 895 655 000
37 Handelsunion AG (re-established in 1954)		236 599 000
38 Harpener Bergbau AG	387 746 000	545 779 000
39 HochTief AG	39 195 000	393 000 000
40 Hoesch AG (re-established July in 1952)		1 847 706 000
41 Holzmann, Philipp AG	80 065 000	244 056 000
42 Hüttenwerk Oberhausen AG	375 882 000	1 205 860 000
43 Hüttenwerke Siegerland AG	161 563 000	205 029 000
44 Ilseder Hütte AG	199 774 000	808 711 000
45 John Deere-Lanz Verwaltungs-AG	86 837 000	309 465 000
46 Kali-Chemie AG	136 412 000	428 720 000
47 Karstadt AG	158 911 000	887 510 000
48 Kaufhof AG	127 906 000	819 762 000
49 Klöckner-Bergbau AG	145 426 000	117 971 000
50 Klöckner-Humboldt-Deutz AG	239 192 000	968 834 000
51 Klöckner-Werke AG	256 284 000	1 428 620 000

name	total assets 1952	total assets 1965
52 MAN Maschinenfabrik Augsburg-Nürnberg AG	355 602 000	1 136 713 000
53 Mannesmann AG	450 256 000	3 010 100 000
54 Metallgesellschaft AG	310 579 000	1 205 235 000
55 Niederrheinische Bergwerks-AG	40 676 000	172 463 000
56 Niederrheinische Hütte AG	138 203 000	253 586 000
57 NSU Motorenwerke AG	63 325 000	273 885 000
58 Orenstein-Koppel und Lübecker Maschinenbau AG	116 764 000	261 223 000
59 Paulaner-Salvator-Thomasbräu AG	23 775 000	40 550 000
60 Phoenix Rheinrohr AG	391 305 000	1 878 543 000
61 Preussag AG	214 063 000	735 828 000
62 Rheinpreussen AG für Bergbau und Chemie	222 712 000	427 645 000
63 Rütgerswerke und Teerverwertung AG	56 361 000	270 688 000
64 RWE Rheinisch-Westfälisches Elektrizitätswerk AG	2 219 589 000	8 042 565 000
65 Salamander AG	80 832 000	232 921 000
66 Salzdetfurth AG	122 805 000	276 114 000
67 Schering AG	81 790 000	462 071 000
68 Siemens AG	684 740 000	2 932 456 000
69 Stahlwerke Südwestfalen	134 173 000	412 364 000
70 Stolberger Zink AG für Bergbau und Hüttenbetrieb	69 693 000	120 035 000
71 Stollwerk, Gebrüder AG	22 997 000	40 688 000
72 Süddeutsche Zucker-AG	162 416 000	379 771 000
73 Thyssen, August Hütte (re-established in 1953)		3 006 538 000
74 Varta AG	151 020 000	455 558 000
75 Vereinigte Deutsche Metallwerke AG	154 853 000	412 393 000
76 Volkswagenwerk AG	302 018 000	2 996 080 000
77 Wasserwerk f. das nördliche westfälische Kohlenrevier AG	60 499 000	158 434 000
78 Wintershall AG	271 014 000	658 862 000
79 Zellstofffabrik Waldhof AG	188 941 000	335 713 000

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