Ph.D. Thesis

Welfare and Labour Markets in transition:

The case of the Kyrgyz Republic

by

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Abstract

This thesis examines welfare and labour markets during the transition away from a command economy of one of the less developed Republics of the FSU, the Kyrgyz Republic. In the FSU, the early 1990s were characterized by large falls in GDP and small changes to already low unemployment. Microeconomic theory is applied to explain these macroeconomic outcomes and the first Chapter of Part II, the labour market section, presents a model of firms' production decisions. Adjustment in labour intensity, rather than quantity, is shown to be part of a rational strategy given features of Soviet institutions. Delays in wage payments increased significantly over this period. Wage arrears have an impact on household welfare as well as reflecting a breakdown in formal employment. A probit regression model of the incidence of wage arrears is applied to examine if certain workers were more affected by this phenomena. The effects to the formal labour market resulted in increased informal sector activities. Despite significant delays in wage payments workers were observed to work full-time in formal employment. A model of workers' labour supply decisions is presented which incorporates features of informal activities within and outside formal employment. These extensions result in non-trivial changes to the reservation wage. The provision of social benefits through enterprises is also shown to affect decisions to work in the informal sector. Part I of the thesis examines the extent of changes to welfare using both monetary and non-monetary measures. The first Chapter uses an expenditure-based measure of household income to examine changes in inequality and poverty. The second Chapter uses self-reported happiness and illustrates how informative such measures can be, particularly when monetary measures are likely to be subject to measurement error. The analysis is based on recently available nationally representative household survey data for the years 1993 and 1996.

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Definitions and Abbreviations

Country Groupings

Baltic Republics Estonia, Latvia, Lithuania

Central Asia Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan

CIS Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan

Central and Eastern Europe Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, FYR Macedonia, Hungary, Poland, Romania, Slovak Republic, Slovenia.

FSU Russian Federation, Baltic Republics, Transcaucasia, Central Asia

Transcaucasia Armenia, Azerbaijan, Georgia

Abbreviations / Acronyms

CAR Central Asian Republics

CEE Central and Eastern Europe and the Baltic States

CIS Commonwealth of Independent States

CMEA Council for Mutual Economic Assistance

EBRD The European Bank for Reconstruction and Development

FBS Family Budget Survey

FSU Former Soviet Union

GDP Gross Domestic Product

GNP Gross National Product

ILO International Labour Organization

IMF International Monetary Fund

KMPS Kyrgyz Multipurpose Poverty Survey

LSMS Living Standards Measurement Study

MLSP Ministry of Labour and Social Protection

NSC National Statistical Committee of Kyrgyz Republic (formerly NatKomStat)

OECD Organization for Economic Cooperation and Development

PPP Purchasing Power Parity

RPI Retail Price Index

SOE State Owned Enterprises

UNDP United Nations Development Programme

USSR United Soviet Socialist Republics

Chapter 1

Introduction

Context For the Thesis

The break-up of the Soviet Union in the late 1980s unleashed political uncertainty and economic instability throughout the region. Recessions took hold across these countries, though with varying degrees of severity and duration[1]. Republics of the FSU experienced much greater falls in output and more prolonged periods of recession than the CEE over the same period. Falls in GDP in the FSU ranged from aprox. 10-20%, while the corresponding figures for CEE were 5-10% and for a much shorter duration. The Kyrgyz Republic experienced falls in GDP of 20% with positive rates of growth emerging only in late 1995. The Central Asian Republics suffered major de-industrialization in the early 1990s, with falls in industrial output as high as 70% over the first five years since independence as was the case in the Kyrgyz Republic (see Table 2.4, pg. 30 in Chapter 2 for a breakdown of figures). In contrast to what happened to output, unemployment rose to as much as 10-15% in CEE, while in the FSU unemployment remained low, often as low as 1% - 5%, for a much longer period. The unemployment figures for the Kyrgyz Republic[2] doubled from 3% in late 1994 to 6% in 1996, the first full year of positive growth in GDP. Unemployment is still below the level in Russia, despite the well-known problem of surplus labour in Central Asia. Thus it can be seen that the economic and social consequences in post-soviet economies has been uneven.

This thesis focuses on the particular experience of the Kyrgyz Republic in the shift

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[1]See Table 2.2 pg. 28 in Chapter 2 for disaggregated figures across CEE and CIS countries.

[2]Unemployment figures from official statistics are based on registered unemployment.

from the centrally planned system, with respect to inequality, welfare, employment and unemployment.

Unlike Russia little is known about the effects of reform in Central Asia. With recently available household survey data, this thesis aims to provide an understanding of the process of change in this highly rural economy.

Within the FSU, the CARs were relatively underdeveloped and had higher incidences of poverty. Kazakhstan was the most urbanized with over 50% of the population living in urban areas, while the remaining four CARs were largely rural. There was a relative mix of natural resources across all five Republics, Uzbekistan had cotton and gold reserves, Kazakhstan and Turkmenistan had significant oil and gas reserves respectively, the Kyrgyz Republic had mineral (including gold) and water resources, and Tajikistan had a diversified agricultural sector. The potential for these resources was never fully developed and the CARs experienced low income levels similar to some developing countries. However, the Soviet central planning legacy in Central Asia meant that low-income levels were partially compensated by social investments. This lead to substantial advancements in human development resulting in education and health outcomes comparable to those in industrial countries, see U.N.D.P. (1999)[3]. Low-income levels combined with high levels of human, social, and in urban areas, physical capital make the CARs distinctly different from many developing countries.

The Kyrgyz Republic with limited natural resources, and hence with little obvious economic potential for growth had separated from a union that permitted it an economic and political viability that would appear to be difficult for it to sustain on its own (see Slem (1997) for the economic implications of the break-up of the Soviet Union into 15 independent Sates). The break-up of the Soviet Union meant that these social investments from the centre stopped. It also resulted in the ending of substantial transfers from Moscow (amounting to as much as 10% of GDP till 1991, see The World Bank (1993b)) that had permitted the high levels of government spending that the Republic would otherwise not have afforded. One of the aims of this thesis is to examine what has happened to inequality and welfare after these payments stopped. The severe fiscal imbalances arising from the greater falls in government revenues compared to expenditures, as a result of the absence

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[3]See Table 2.1 pg. 26 in Chapter 2.

of an efficient tax system, is an indication of the challenges facing the changing role of the State in this process. The effects of the breakup of the Soviet Union on the Kyrgyz Republic also included the loss of an integrated trading market and the collapse of a highly specialized integrated production system that spanned Republics within the Union (see Rumer (1989) and Rutkowski (1996)). Despite this, the Kyrgyz Republic embarked on what was claimed to be a rapid programme of reform, see E.B.R.D. (1995).

The Kyrgyz Republic is one of the smallest and least developed of the newly created independent states of the FSU (see page 23 for map and a background to the Kyrgyz Republic in Chapter 2) and is even one of the poorest within the CARs. The country is physically divided into the North and South by the Tien Shah mountains, with the capital Bishkek in the North and the second major city of Osh in the South. Although over a third of GDP is from the agricultural sector, the highly mountainous nature of the country leaves only 7% of the land arable. Amongst the CARs, the Kyrgyz Republic stands out as a relatively politically stable economy without substantial natural resource endowments as is the case in Kazakhstan and Turkmenistan, and without the attraction for foreign investment that Uzbekistan offers. In contrast to Tajikistan at the other end of the spectrum, the Kyrgyz Republic has not endured a prolonged civil war nor several natural disasters. Thus the Kyrgyz Republic provides an interesting case study of how a small, largely rural, economy is experiencing a shift away from decades of central planning.

As the major political and economic power in the region, Russia's stabilization and reform programme initiated in January 1992 had consequences for all the countries in the region (for a detailed discussion see Nuti (1992) and Nuti and Pisani-Ferry (1992)). The Russian reform package was similar to the Polish prototype of January 1990, on which it was modelled. Policies introduced in the FSU and CEE countries in the early 1990s were based on a programme of reform implemented in conjunction with the IMF and other multilateral and bilateral donors (I.M.F. (1995), I.M.F. (1998) and Poser (1999)). The general programme consisted of five strands; liberalization of prices and quantity of goods on all markets, macroeconomic stabilization by constraining Central Bank lending to government and the banking system, privatization of the State owned enterprises (SOE), the general opening of the economy to foreign trade and the creation of a social safety net.

Specific structural features of the ex-Soviet, or Russian, initial conditions were un-

favourable. The collapse of both the communist party and its command structure parallel to state organs, and the central organs of the Union organs, implied the devolution of some state power to large cities and to republics. The result was a net loss of state power. The consequence of this was seen in the collapse of tax collection and the difficulties of enforcement of collection of export earnings in official hands. There was also a rise of organised interest groups appropriating state assets and privileges, encompassing more than just the Russian "Mafia".

Russian stabilization and reform had included the coordination of Republican monetary and fiscal policies, a smooth transition to Republican currencies and a coherent framework of operation for a Rouble zone that was expected to remain in operation for some time. However this did not happen. Inflation soared to triple digits, see Table 2.3 on page 29 and Republics introduced their own national currencies soon after, at varying times[4], causing chaos in cross-country repayments as the currencies gained legitimacy. There was also the problem of an out-migration of Russians[5], which represented a significant loss of human capital to the Kyrgyz Republic. The cause of the out-migration was not only the attraction of higher wages in Moscow but also due to discrimination against ethnic Russians in the Republic, with high ranking Russians being replaced by ethnic Kyrgyz. During the Soviet Union the Ministries had awaited instructions from Moscow. After independence the Kyrgyz did not have the expertise to build the institutional infrastructure necessary for the new economic system, see Nuti and Pisani-Ferry (1992). So despite intending to follow the Russian course, the command system initially remained in place.

It was anticipated that countries of Central and Eastern Europe and the Former Soviet Union would pursue policies to establish a market based economy. However after several years, it can be seen that the commitment to introducing market mechanisms have varied across countries with the result that functioning market economies have not been established, see Dabrowski (1996). What can be said is that there has been a shift from the inherited socialist system in operation prior to reforms, with several countries evolving towards more market economies such as Hungry and ex-Yugoslavia, with some countries operating a "mutant" Soviet-type system (Nuti (1999)), such as Belarus, Turkmenistan

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[4]The Kyrgyz Som was introduced in early 1993.

[5]Including the highly qualified Slavic population who made up 3% of the total.

or Tajikistan, and with other countries still in a process of transition, for example Russia, Romania and the Kyrgyz Republic.

The lack of social cohesion within the Republics, as well as across, is important in understanding the political instability within which the reforms were taking place. The politics of the region is still influenced by traditional sub-ethnic forms of legitimacy, see Glenn (1999) and Kulchik et al. (1996). The deep rooted nature of akimism (see Alexei (2001)), where relations are based on territorial kinship and tribal affliction, were incompatible with building the institutions that structural adjustment reforms necessitated. Despite Russian intervention in the 18th and 19th Century local customs and local institutions, that were built around multi-ethnic Islamic states, Khanates and territorial pastures of the nomads remained intact and local customs continued to impede market change. This was no less true in the Kyrgyz Republic. Not only was the country physically divided into two, it was also divided into two federations; the Otuz Uul in the more 'Russified', secular and industrial North, and the Ich Kilik in the predominately agricultural, more Islamic, based South and Eastern Pamirs. Within these two divisions, there were numerous tribes and Klans. There was also the presence of many ethnic groups, with 22% of the population being Russian, 18% Uzbeks, 3% from other Slavic groups, particularly Germans, and only just over half the 4.6 population being ethnically Kyrgyz in early 1990s. The situation was later compounded by the integration of some of the Uzbek and Kazakh tribes into these ethnic groups. Tension in the region lead to ethnic clashes in almost all Republics. In fact, the deteriorating economic situation and high rates of unemployment, particularly amongst the youth, formed the background to inter-ethnic tension in the city of Osh in the South, between Uzbeks and Kyrgyz, leading to over 300 deaths in the 1990s.

Tension was also evident between Republics over water. Allocation of water from the Aral Sea was a vital issue, as it supports around 75% of the population in Central Asia and contributes around 90% of its surface water, see Horsman (2001). Irrigated land produced 90% of the region's crops and there was an emphasis on expanding the irrigated area, in particular, to increase cotton production. The production of cotton was the leading source of income and employment in Uzbekistan and Turkmenistan, while the Kyrgyz and Tajik economies concentrated on hydro-electric power production. Previously the downstream countries of Kazakhstan, Uzbekistan and Turkmenistan received 73% of total withdraws

from the Aral Sea Basin, while the upstream countries of Kyrgyzstan and Tajikistan, although source of 90% of the water, received only 0.4% and 11% respectively. Prior to independence, water allocation was determined on a union wide basis to the benefit of the Union by a single arbitrator based in Moscow. The removal of the integrated Soviet system complicated the water-based economic structure and lead to national economic interests and mutually incompatible demands for water and made the situation harder to resolve. In 1995, after violating their agreement, the Kyrgyz Republic came to an understanding with Uzbekistan to maintain agreed water allocations in return for electricity provision. The continuation of outstanding debts and unresolved agreements lead to many disputes in the Region, with water supplies to Kazakhstan being terminated for 10 days in May 1998 by Kyrgyzstan.

Main Focus of the Thesis

Within the context of the situation described above, this analysis looks at the impact of the reforms and policy changes on welfare and the labour market. This thesis examines several questions relating to welfare and the labour market during this transitional period. Firstly the thesis examines the effect of the reform process on the well-being of the population over this period. We examine whether by the end of the mid-to late 1990s welfare had improved and who had been most affected by the reforms. Aspects of welfare are examined in terms of change in inequality and poverty measurement. The labour market is also particularly important since labour market activities are a significant component of individual and household welfare. A main focus in this thesis is to explain why the labour market adjusted so slowly to such significant and prolonged falls in output. The impact of reform on the labour market, as mentioned above, caused significant delays in wage payments and increased informal sector activity. We try to understand why reforms led to labour market adjustments in working schedules and delays to wage payments, rather than falls in employment levels. This also had consequences to the prevalence of informal activities, which is also examined in the thesis. A brief overview of recent events in the Kyrgyz Republic explains the context of this analysis.

Prior to reform, State ownership of the means of production and central planning were the main features of the economies of the FSU. Although the labour market was one of the most liberalized in comparison to the overall economy even prior to reform, rewarding

mechanisms were centrally determined. Private ownership in the FSU was forbidden, except for private plot production. The privatization programme, which began in 1991, failed to create a widespread transfer of ownership into private hands but rather resulted in a transfer of most of the enterprises (which tended to be large scale in much of Central Asia) into the hands of those already well-placed in positions of authority.

Enterprises were not just places of employment but were designed to be an integral part of life and many social sector facilities and other benefits (often housing too) were provided through the work place, even after privatization. As transfers from Moscow gradually dried up and subsidies from the State to the enterprise decreased, the extent of provision of many of these facilities decreased. For example the provision of creches and kindergarten places were reduced, greatly affecting the participation of female workers in the labour market, particularly given the large number of children in Central Asian families.

In many Central Asian economies, including the Kyrgyz Republic, a widely reported problem as a result of the reforms has been the prevalence of delays in wage payments (wage arrears), which were often over months if not years. This compounded the problem of falling real wages in the light of high inflation that prevailed during the early 1990s, having obvious implications for welfare (Evans-Klock and Samorodov (1998)). As a consequence of changes in the formal labour market, activity in the informal sector increased. This was roughly estimated for the Kyrgyz Republic as 300,000 people in the informal private sector in I.M.F. (1995), which represents roughly one-third of the economically active using NSC figures for 1995[6]. Although informal sector activity is often a sign of problems in the formal sector it forms an important component of a household's coping strategy.

Reduction in Government expenditure also meant that the relatively generous social assistance system that was a feature of many Soviet economies has been greatly reduced. The high inflation withered the value of benefits such as pensions and child benefits and were often paid in arrears if at all. Many other areas were affected by reductions in Government expenditure, in particular health and education. Medical services and schooling that was relatively free before reform became subjected to fees and unofficial charges.

What is little known is the transitional period from the shift away from a command

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[6]NSC figures provided via their website; http://nsc.bishkek.su/Eng/Home/Start.html.

economy in a highly agricultural economy, within a newly created state. This research is particularly interesting since it reflects the evolution in behaviour from the Soviet ideology within a highly rural and relatively less developed economy. The transition period reflects the changing roles of agents who have to adjust to the new competitive environment and hence this thesis appeals to microeconomic behaviour to explain these macroeconomic outcomes.

In the past limited research was carried out on the Kyrgyz Republic and the other Central Asian Republics due largely to the inaccessibility of data. When data were available there were problems with comparability and representativeness. Recently available data for the Kyrgyz Republic permit an in-depth analysis to shed light on the experience of this highly rural economy and this thesis benefits from nationally representative household survey data for the Fall of 1993 and Fall of 1996. 1993 was relatively early on in the transition process in Central Asia and hence can be seen as a relative starting point for the effects of reform, while 1996 was the first year of positive growth and by which time reform policies had been in effect for several years. Although this reflects a relatively short time span, this initial period in the reform process can shed light on changes in behaviour in the economy.

1.1 Questions addressed

One of the main questions of this thesis is to explain the small changes in unemployment in the early years of reform despite the large falls in output. Chapter 5, the first chapter of Part II, first examines the extent to which labour market trends changed over the duration 1993-1996. Analysis of the household survey data provides a clearer picture of participation, employment and unemployment rates which differ greatly from the official figures in terms of magnitude. By 1996 however there were substantial falls in the employment rates and unemployment had increased. Summary statistics from the household survey indicate that employment did not adjust to the same extent as output. A model of employers' production decisions illustrates how employment levels were maintained due to the nature of Soviet institutions that were in place at independence. Firms were in receipt of subsidies for the provision of social benefits through the enterprise and had access to additional finances allowing them to continue non-profit maximizing behaviour.

By varying worker intensity (reducing hours) and delaying costs (wage arrears) employers were initially able to maintain their present employment levels. As the transition to a market economy evolved, State subsidies to the enterprise fell and firms eventually had to cut employment levels. An empirical analysis is applied based on a tobit model of hours of work in the primary place to indicate changing behaviour in the work place.

An important consequence of the reform policies has been the significant increase in the non-payment of wages. In the model described above wage arrears were shown to be part of employers' labour adjustment strategy in reducing costs in the short run. Given the inherited Soviet system of payment, which rewarded workers according to a variety of attributes, it is not evident if certain workers were more likely than others to experience wage arrears. It is not evident if more costly, skilled, productive, workers were more likely to experience delays in payment compared to the less skilled, thus relatively cheaper, workers or whether sectorial or regional conditions were more important. Chapter 6 examines both the incidence of wage arrears across different demographic features and uses a probit regression model to determine if certain workers were more likely to experience delays in the payment of wages.

The effects of the transition process on the labour market included falling real wages, delays in wage payments, reduced working schedules and increased incidences in administrative leave and unpaid holidays. All these aspects affect workers' labour supply decisions. Although an increase in informal sector activity has been reported in other studies on the Kyrgyz Republic, there is empirical evidence from the household survey data that workers continued to work in the formal sector despite delays in payment and reduction in hours worked. Chapter 7 presents a model of workers' labour supply decisions between working in the formal and informal sector. The model differs from conventional moonlighting labour supply models, and also from other models of participation in the informal sector, in that it explicitly incorporates the nature of activities in the formal and informal sector. These features include the ability to earn unofficial payments and access to social sector facilities in the formal sector and (negative) aspects of stigma that workers may associate with working in the informal sector. All these considerations are included to form a complete model of workers' labour supply decisions in a transitional economy. An empirical examination of the survey data looks at whether there is support for the theory of labour

supply purported here.

The transition to a market economy is expected to lead to welfare improvements for the population but it is not clear how long it will take for improvements to be realized given the magnitude of the recession. In order to provide a context of the extent of the upheavals caused by the reform process a picture of the welfare of the Kyrgyz population is presented using both conventional and non-conventional approaches to welfare measurement. The first chapter in Part I of the thesis focuses on the more orthodox, monetary, approach to welfare measurement. The analysis assesses whether it can be concluded that there have been improvements in welfare over the period 1993-1996. This approach employs both parametric and non-parametric techniques of welfare measurement using a monetary proxy for welfare based on household consumption. Kernel densities of the distribution of consumption in 1993 and 1996 illustrate how skewed the distribution of resources is across the population. Dominance tests based on Lorenz curves of differing specifications, such as Lorenz curves and Generalized Lorenz curves (Cowell 1995), examine changes in inequality of the distribution of consumption across individuals and if unequivocal conclusions on welfare changes can be made using this approach. Summary measures of the income distribution are also applied capturing the extent of inequality and poverty in the distribution. Inequality is examined using the Generalized Entropy Measure and the Gini coefficient. The latter measure weights more observations at the median of the distribution whilst various specifications of the generalized entropy measure allows for differing weights of importance to observations at different parts of the distribution. The incidence of poverty is examined using the Foster, Greer and Thorbecke (FGT) measure, (Foster, Greer, and Thorbecke 1984), using both an absolute, and relative, poverty line. Again the advantage of the FGT measure is that various specifications of the index allow for differing weights of sensitivity to poverty along the distribution up to the poverty line.

Given the highly rural nature of the Kyrgyz economy, including low monetization and bartering that already existed before reform, periods of high inflation and wage arrears suggest that monetary based welfare measures may not capture a complete picture of well-being. Chapter 4 uses a subjective measure of welfare, based on reported satisfaction levels, to examine if such measures can be informative, and if indeed richer individuals are necessarily happier than those less well off. The non-monetary approach is shown to

provide consistent results with conventional monetary approaches to welfare measurement, as found in Chapter 3, as well as providing complementary information on aspects which cannot be captured using purely monetary based measures. An ordered probit regression is used to model individuals' satisfaction responses against a range of demographic and socio-economic characteristics, including other subjective questions. The analysis was carried out using 1993 data only since comparable questions were not asked in the Fall 1996 survey. However, in the 1993 survey, questions relating to retrospective and current experiences were asked and hence the analysis sheds some light on individuals' experience of the transition process up to Fall 1993. The advantage of non-monetary measures of well-being is that they provide information incorporating individuals' perceptions over both monetary and non-monetary resources. Subjective measures are often criticized for being dependent on individual preferences and differences in interpretation of the question and hence it is difficult to form comparisons across individuals. Although there is substance to this objection and such measures are best analyzed with panel data, data limitations mean that a more sophisticated analysis is not possible for the Kyrgyz Republic. However, an examination of summary statistics illustrates that responses are not erratic and are consistent with trends in other related aspects of welfare; hence it can be concluded that the approach used in chapter 4 is appropriate.

1.1.1 Structure of Thesis

The thesis is structured as follows; the next chapter provides a brief description of the Kyrgyz Republic, including an overview of the effects of the process of reform. Details of the KMPS survey and a discussion of conceptual and practical issues of monetary measures of welfare are also presented in Chapter 2. The main components of the thesis are contained in two parts; Part I focuses on welfare and Part II focuses on the labour market, the contents of each Part were explained above. Chapter 8 provides a general conclusion based on the overall results, summarizing the affects of the reform on the Kyrgyz Republic over the period under investigation.

Chapter 2

Background to the Kyrgyz Republic

2.1 Geographical and demographic overview

Kyrgyzstan is a land-locked Republic in Central Asia, bordering China in the east, Uzbekistan and Kazakhstan in the west and north and Tajikistan in the south, see map in Figure 2.1[1]. The Republic has a population of about 4.6 million people in 1996, roughly two-thirds of whom live in rural areas, see Table 2.4 on page 30 for a comparison of population figures across other CIS Republics. In terms of size, the Kyrgyz Republic covers an area of 198,500 sq. km and around 40% of the country is mountainous with only 7% of the land being arable. The country is physically divided in two by the Tien-Shan mountains with the largest city, Bishkek, the capital, located in the North of the country with about 600,000 inhabitants and the second major city, Osh, located in the South. Religious freedom since independence has led to the rebirth of the Islamic faith. The population according to official sources comprised of nearly 4.5m people in 1994, of which 52% are Kyrgyz, 22% Russian, 13% Uzbeks, 3% Ukrainians, 3% Germans and 2% Tartars. A disproportionate share of the rural population is Kyrgyz with the majority of the Russians and other Slavs living in the urban and industrialized zones.

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[1]http://www.middleeastnews.com/MapofKyrgyzstan.html

Figure 2.1: Map of the Kyrgyz Republic
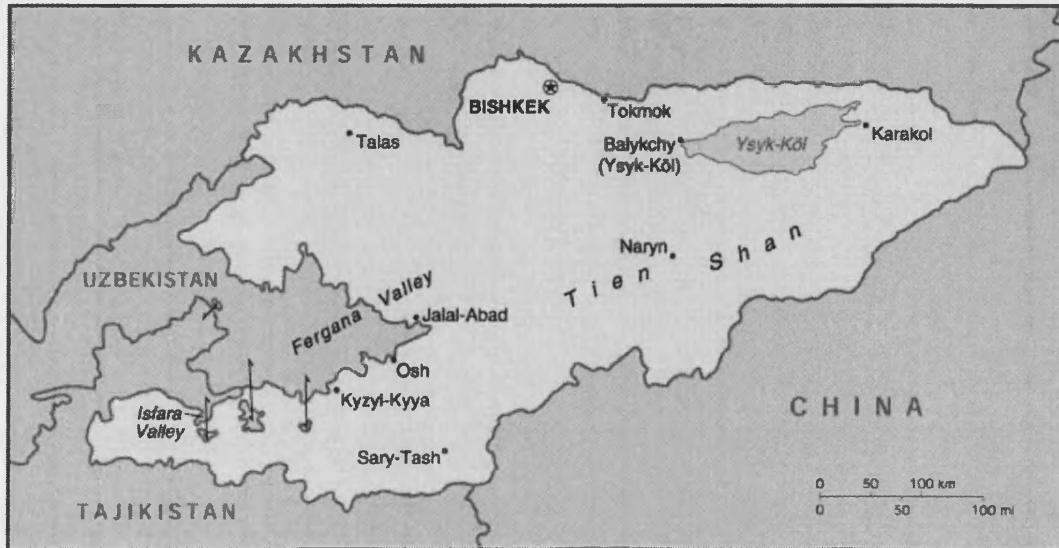
2.2   Historical evolution

The Kyrgyz have a rich history which can be traced back to 201 BC. For centuries the people of Kyrgyzstan and other Central Asian Republics were part of an area known as Turkestan, comprising of Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan and Turkmenistan, and was the fifth largest Islamic population in the world stretching from Turkey to China (see Kulchik, Fadin, and Sergeev (1996) and Europa (1997) for details of the historical evolution of the area). In the 19th Century Russia absorbed (in the case of the Kyrgyz Republic, forcibly) Central Asia into its sphere of influence and Turkestan was administered by the Czars as a single colony. In 1916 there was a bloody uprising against the Russians and in 1917 Kyrgyzstan became part of the Russian Soviet Federation Socialist Republic formed by the Bolsheviks. Shortly after, the people of Turkestan applied for autonomy from Russia and organized themselves into a Turkestan Independent Islamic Republic. Although officially Turkestan became an Autonomous Soviet Socialist Republic within the Soviet Union in 1921, it was not till after years of civil war that the area was finally brought under control by the Soviet Union in 1925. In 1924 the Kara-Kyrgyz Autonomous Oblast was created (alternative name for Kyrgyz) within the Russian Soviet Federal Socialist Republic and in 1925 Stalin divided Turkestan into five

republics; Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan and Tajikistan. In 1926, Kyrgyzstan became a Soviet Socialist Republic, and ten years later a constituent Soviet Socialist Republic of the USSR.

2.3   Socio-economic Characteristics

The Soviet Union embraced a large region and the five Republics of Central Asia tended to be less developed and less integrated than other countries of the FSU. Both the Soviet inheritance and Asian dimensions are important aspects in understanding the evolution of the region. Though predominately nomadic, decades of Soviet rule transformed the Kyrgyz people. Notably the Russians had managed to transform the script from arabic to cyrillic by 1928, as well as transforming the largely egalitarian clan based society into a new social strata, including workers and a national intelligentsia (Kulchik, Fadin, and Sergeev (1996) and Europa (1997)). Great advances were made in the area of social development due to Soviet influence. The installation of a network of a range of educational institutions resulted in an increase in literacy from near illiteracy to 90% literacy in one generation. Much progress was also made in medical availability and development in the areas of science, literature and art (Koichuev (1996)). Despite the nomadic traditions of the people, by the 1930s access to primary schooling facilities was universal; all children attained at least seven years of schooling. All schooling was provided free of charge to the individual and although basic schooling was available to all, the number of places for the different specialization at higher levels was predetermined. As a result of the policy emphasizing basic education, educational levels were relatively high in Central Asia compared to other countries with similar GDP levels. Health services were provided in a single, unified network of facilities and again almost all services were provided free of charge and widely accessible to everyone (UNDP (1997)). The World Bank (1993a) provides information on its social security protection programmes, covering employment, social services and income support measures. In 1990 approximately 60% of total government expenditure (23% of GDP) was spent on social security and services. Health services accounted for about 4.1% of GDP, education for about 8.2%, food subsidies (meat, bread flour and milk) for about 6.5%, non-food subsidies (housing, utilities, transportation and coal) about 0.4% and cash benefits about 3.5%.

The effect of these investments in social services can be seen in the comparably high levels of development as represented in the high scores for the UNDP's human development index (HDI). Table 2.1 illustrates that despite modest levels of real GDP the Kyrgyz Republic, and many other CIS countries, attained a medium HDI comparable to countries such as Iran and Turkey, far better than adjacent Afghanistan and Pakistan.

Table 2.1: Human Development Indicators in Central Asia and Selected Other Countries, 1991

%	Urban Population 1992 (%)	Population growth, p.a. 1960-92 (%)	Life expectancy at birth (yrs)	Adult literacy rate (%)	Real GDP/ per capita (PPP$)	UNDP HDI
Kazakhstan	58	1.8	69.0	97.5	4490	0.774
Turkmenistan	45	2.8	66.0	97.7	3540	0.697
Kyrgyz Rep.	**38**	**2.3**	**68.0**	**97.0**	**3683**	**0.685**
Uzbekistan	40	2.9	69.0	97.2	2790	0.664
Tajikistan	31	3.1	70.0	96.7	2180	0.629
Afghanistan	19	1.8	42.9	31.6	700	0.208
Iran	58	3.3	66.6	56.0	4670	0.672
Pakistan	33	2.9	58.3	36.4	1970	0.393
Russia	74	0.7	70.0	98.7	6930	0.858
Turkey	64	2.4	66.7	81.9	4840	0.739
Medium HDI	-	-	68.0	80.4	3420	0.649
Low HDI	-	-	55.8	47.4	1170	0.355

Source: Taken from Falkingham, Klugman, Marnie, and Micklewright (1996), Table 1.1. using U.N.D.P. (1994).

2.4   Economic Potential

Unlike its neighbours, the Kyrgyz Republic did not have the natural resources of petroleum and natural gas though it did have significant deposits of gold and rare metals, making mining the Republic's most important sector for foreign investment. The industrial sector was just under 30% of GDP before the reforms, with the economy having a large agricultural sector, see Table 2.4 on page 30. The industrial sector was quite diverse. It included

such activities as machine-building (the production of machine tools, vehicles, electrical machines and tools, hay balers, regulatory instruments and gauges, electric lamps etc.), mining (the extraction of mercury, antimony, rare-earth elements, gold, coal and oil. The gold mine is located in Karakul, on the edge of lake Issy-kul in Issy-kul oblast), generation of electric power (mainly hydro-eclectic power plants around lake Issy-kul) production of construction materials, manufacture of furniture and consumer goods (textiles, shoes, cotton textiles, garments, silks) and food-processing (meat and milk, bread, candy, alcoholic drinks and the like). Construction, transportation, communications and commerce all represented independent major branches of the economy. Much of the industry was dependent on supplies from outside the country with the country having a high ratio of trade to the country's GDP. The large agricultural sector was also diverse, including animal husbandry (the horse being the national symbol), as well as crop cultivation; the latter produced fodder and animal feed, commercial crops (such as tobacco, cotton and sugar beets), grains and fruits (Koichuev (1996)).

Although full employment was a phenomenon of many socialist countries Central Asia, with its above regional average birth rates, had surplus labour and open unemployment was in fact not uncommon in these regions. Even in the 1970s and 1980s, plans of out-migration from Central Asia to the regions of the Soviet Union with labour shortages were not successful due to social and cultural differences between Central Asia and other parts of the region (Oxenstierna 1990). While there were high participation rates in some Republics of the FSU, open unemployment was not uncommon in Central Asia. The problem was particularly acute amongst young first-time entrants. In general, there was relatively low geographical mobility and inadequate occupational training for the majority of the population, particularly in the more remote mountainous regions. Most unemployment in Central Asia, unlike Central and Eastern Europe and the Baltic countries, was structural even before the process of transition, with particularly the young and new entrants to the labour market unable to find work, see Kolosov (1991) and Samoradov (1991). However official, registered, unemployment tended to be low. The slow increase in registered unemployment, which represents just a fraction of the true unemployment rate, can be attributed to a number of reasons; namely the relatively low level of unemployment benefits with stringent conditions for eligibility for a set duration as well as the previous

Table 2.2: Growth in real GDP and Unemployment across the Former Soviet Union, 1992-1996

%	GDP					Unemployment				
	1992	1993	1994	1995	1996	1992	1993	1994	1995	1996
Central and eastern Europe and the Baltic States										
Bulgaria	-7.3	-1.5	1.8	2.1	-10.1	15.3	16.4	12.8	11.1	12.5
Czech Rep.	-3.3	0.6	3.2	5.9	4.8	2.6	3.5	3.2	2.9	3.5
Hungary	-3.1	-0.6	2.9	1.5	1.3	12.3	12.1	10.4	10.4	10.5
Latvia	-34.9	-14.9	0.6	-0.8	3.3	3.9	8.7	16.7	18.1	19.4
Poland	2.6	3.8	5.2	7.0	6.1	14.3	16.4	16.0	14.9	13.2
Slovak Rep.	-6.5	-3.7	4.9	6.9	6.6	8.3	14.4	14.8	13.1	12.8
Commonwealth of Independent States										
Armenia	-52.6	-14.8	5.4	6.9	5.9	3.5	6.3	5.8	8.4	10.1
Georgia	-44.8	-25.4	-11.4	2.4	10.5	5.4	9.1	3.6	3.1	2.8
Kazakhstan	-2.9	-9.2	-12.6	-8.2	0.5	0.4	0.6	7.5	11.0	13.0
Kyrgyz Rep.	**-19.0**	**-16.0**	**-20.1**	**-5.4**	**7.1**	**0.1***	**0.2***	**3.1**	**4.4**	**6.0**
Russia	-14.5	-8.7	-12.7	-4.1	-3.5	5.3	6.0	7.8	9.0	9.9
Tajikistan	-29.0	-11.0	-18.9	-12.5	-4.4	0.3	0.8	1.2	1.3	1.6
Ukraine	-13.7	-14.2	-23.0	-12.2	-10.0	0.2	0.3	0.3	0.5	1.3
Uzbekistan	-11.1	-2.3	-4.2	-0.9	1.6	0.1	0.3	0.3	0.3	0.3

Source: *Transition Report update 2000, EBRD based on National Statistical Data*

Transition Report 1998, EBRD based on National Statistical Data

stigma of being labelled unemployed. In addition, agricultural economies tend to disguise unemployment since farming activities absorb workers who might otherwise be searching for work. However farm workers have been affected particularly badly by the reforms and this has resulted in a large number of agricultural workers actually searching for work.

Most trade was inter-republican due to the considerable degree of sectorial specialization of output among the Republics of the FSU and the relative small size of the economy. By the end of the 1980s, the composition of the economy was roughly; Industry 38%, Agriculture 28%, Services 22%, Construction 7% and Transport 4%. This was the starting point for the introduction of the reforms in the Kyrgyz Republic.

Table 2.3: Consumer price inflation (annual averages), 1992-1996

	% changes				
	1992	1993	1994	1995	1996
Central and eastern Europe and the Baltic States					
Bulgaria	82.0	73.0	96.3	62.0	123.0
Czech Rep.	11.1	20.8	10.0	9.1	8.8
Hungary	23.0	22.5	18.8	28.2	23.6
Latvia	951.0	109.2	35.9	25.0	17.6
Poland	43.0	35.3	32.2	27.8	19.9
Slovak Rep.	10.1	23.2	13.4	9.9	5.8
Commonwealth of Independent States					
Armenia	1,346	3,732	5,273	176.7	18.8
Georgia	887.0	3,125	15,607	162.7	39.4
Kazakhstan	1,381	1,662	1,892	176.0	39.1
Kyrgyz Rep.	**855.0**	**722.4**	**228.7**	**40.7**	**31.3**
Russia	1,526	875.0	311.4	197.7	47.8
Tajikistan	1,157	2,195	350	609.0	418.0
Ukraine	1,210	4,735	891	377	80.0
Uzbekistan	645.0	534.0	1,568	304.6	54.0

Source: Transition Report update 2000, EBRD based on National Statistical Data

Table 2.4: Overview of CIS Economies, 1989-1997

	1989	1990	1991	1992	1993	1994	1995	1996	1997
Commonwealth of Independent States									
Armenia									
Population (m)			3.6	3.7	3.7	3.7	3.7	3.7	3.7
$GDP bn/hd PPP	5,062	4,804	4,469	2,143	1,853	2,051	2,124	2,275	
% Industry/GDP				43.4	30.7	25.6	24.5	23.4	23.0
% Agriculture/GDP				28.7	49.3	37.0	36.4	34.8	32.2
Georgia									
Population (m)			5.4	5.4	5.4	5.4	5.4	5.4	5.4
$GDP bn/hd PPP	4,420	3,919	3,275	2,005	1,405	1,032	1,005	1,139	
% Industry/GDP				12.8	6.7	25.4	14.0	11.4	12.5
% Agriculture/GDP				55.4	71.8	34.2	29.8	27.0	35.5
Kazakhstan									
Population (m)			16.7	16.9	16.9	16.7	16.5	16.3	15.7
$GDP bn/hd PPP	4,327	4,477	4,304	3,827	3,316	2,523	2,416	2,507	
% Industry/GDP				38.0	30.1	28.5	23.6	23.5	23.5	24.0
% Agriculture/GDP				29.0	16.2	16.6	15.0	12.3	11.7	11.3
Kyrgyz Republic									
Population (m)			4.4	4.5	4.5	4.5	4.5	4.6	4.6
$GDP bn/hd PPP	2,550	2,706	2,524	2,164	1,842	1,364	1,311	1,372	
% Industry/GDP				27.5	32.1	25.1	20.5	12.0	11.1	16.5
% Agriculture/GDP				35.3	37.6	39.2	38.4	40.7	46.3	41.2
Russia									
Population (m)			148.7	148.7	148.4	148.3	148.0	147.5	147.2
$GDP bn/hd PPP	5,815	5,918	5,124	4,805	4,301	4,227	4,227	4,066	
% Industry/GDP				33.7	34.2	32.6	29.0	29.5	28.4
% Agriculture/GDP				7.2	8.2	6.5	7.2	7.3	6.7
Tajikistan									
Population (m)			5.6	5.6	5.7	5.8	5.9	6.0	6.1
$GDP bn/hd PPP	1,915	1,920	1,770	1,248	916	781	693	577	
% Industry/GDP				31.6	36.4	32.8	22.1	34.0	25.7	19.7
% Agriculture/GDP				26.1	27.1	21.0	19.1	36.2	36.0	27.1
Uzbekistan									
Population (m)			20.9	21.3	21.9	22.3	22.7	23.1	23.6
$GDP bn/hd PPP	2,219	2,312	2,351	2,068	2,058	1,966	1,962	1,977	
% Industry/GDP				26.0	26.6	22.4	19.8	20.0	20.0	19.0
% Agriculture/GDP				37.0	35.4	27.9	38.0	32.0	26.0	29.0
Turkmenistan									
Population (m)			3.8	3.8	3.95	4.05	4.48	4.66	4.70
$GDP bn/hd PPP	2,798	2,903	2,815	2,675	2,413	1,930	1,627	1,522	
% Industry/GDP				20.0	59.0	55.1	38.1	52.8	54.4	32.9
% Agriculture/GDP				46.0	19.0	11.5	32.7	16.2	12.6	20.2

Note: Purchaing Power Parities are based on EIU estimates

Source: *E.I.U. (1997) and EBRD (2000)*

Table 2.5: Economic Indicators 1992-1997

	1992	1993	1994	1995	1996	1997
Output, percentage change						
GDP constant prices	−19.0	−16.0	−20.0	−5.4	7.1	9.9
Industrial gross output	−26.4	−25.3	−23.5	−36.9	3.9	39.7
Agricultural gross output	−5.0	−10.0	−15.0	4.0	0.9	3.0
Gross average monthly wages in Soms (annual average)						
Nominal wages*	11.5	83.8	233.4	368.2	490.9	680.2
Real wages*	10.4	83.4	71.0	73.5	75.1	82.9
Percentage Change (based on end year)						
Consumer Prices	1,259	1,363	95.7	32.3	34.9	14.7
Producer Prices	na	224.6	96.7	17.0	23.0	26.0
Soms per US dollar (annual average)						
Exchange rate	226.2	6.1	10.8	10.8	12.8	17.4

*Source: EBRD (2000), *E.B.R.D. (1998) and E.B.R.D. (1997)*

2.5 Overview of Reforms

Kyrgyzstan became an independent state in August 1991 and, in common with other ex-Soviet republics, embarked on a transition path to a market economy. The relative success of the implementation of these reforms is noted elsewhere, see E.B.R.D. (1997), E.B.R.D. (1998) and Jermakowicz and Pankow (1994), but in general the Kyrgyz Republic did not fare particularly badly in terms of effectiveness compared to other countries going through similar changes. In fact by the mid-1990s the Kyrgyz Republic had one of the more favourable investment climates in the region. The country had a stable currency, the Som, introduced in May 1993, and a stock exchange, the only privately-owned one in the region. Foreign investment was still relatively limited, though notable among these were joint ventures with firms from Canada, U.S.A. and the EBRD, which were established in the early 1990s to explore and develop newly found gold reserves at the Kumtor mine, around Lake Issy-Kul.

An important part of the reforms was the ending of price fixing across many goods. Price liberalization took place in two stages, in April 1991 and in January 1992, where

price controls were removed on all goods except a limited list of items. These affected items experienced increases of between 300 -1100% from previous prices. However initially housing, rent and heating prices were not changed. Energy prices were raised significantly in May and July 1992 and this led to sharp increases in transportation tariffs as well as higher prices for basic food items in particular. Inflation peaked at 1,363% in 1993, gradually stabilizing to around 35% in 1996 - see Table 2.5 or Table 2.3 for annual averages, on pages 31 and 29 respectively.

2.5.1 Privatization Programme

The privatization programme was introduced in two stages; the first stage was between December 1991-December 1993 and the second stage was designed to be implemented between 1994-1995. Details of the initial stage of the programme and intended impact of the second stage can be found in Jermakowicz and Pankow (1994). Jeffries (1996) also provides details of the privatization process and describes how every individual had a voucher to participate in the programme, the value of which was determined by salary and years of service. With the majority of the Kyrgyz living in rural areas, individuals were provided with interest-free loans to enable them to participate in the purchase of small and medium sized enterprises. The programme was relatively rapid and had a sectorial approach to the privatization of SOEs, with highest priority given to the privatization of the services and trade sector, followed by industry and agriculture. Certain sectors were excluded from the initial privatization programme altogether. These included utilities, airlines, railways, mining, enterprises with defense-orientated output and land. As in other transitional countries, the most rapid pace of privatization was in the consumer service industry and trade and catering. Due to the lack of appropriate property rights and the monopolization of sub-sectors within industry and agriculture, privatization was rather slow in the early years. However through the voucher scheme much of the housing sector was privatized, though a certain proportion remained under State control for the disadvantaged or privileged groups. Despite 23,000 people participating in the privatization of enterprises in 1994 only a few thousand were reported to become owners with the majority of the enterprises going to Ministers and heads of provinces, see Jeffries (1996). Although ownership changed hands management production practices changed relatively little resulting

in little overall effective improvements (Windell, Anker, and Sziraczki (1995)). By the end of 1994, 45% of enterprises had been reported to be privatized, an increase from 33% in mid-1994 (again see Jeffries (1996)). Most of the enterprises were large scale employers, with a total absence of small and medium sized firms in FSU. This lead to the Kyrgyz Government's efforts to support a new private sector, the non-state sector was already responsible for more than half of total industrial output. However, by 1996 the share of the private sector in GDP had increased to roughly 60%[2], (E.B.R.D. 1998). Despite these figures, a significant number of firms in the private sector included small scale businesses in the service and catering trade and reflected the limited success of the privatization process in transferring the majority of State enterprises into public hands. By Mid 1997, the mass privatization programme was almost complete, though still approximately 100 large enterprises and 3,600 small scale enterprises remained in the portfolio of the State Property Fund awaiting divestiture, see I.M.F. (1998).

Central planners in Moscow invested heavily in the development of extractive industries in the Central Asian region, with the location of processing and manufacturing industries being decided on a union-wide basis, see Rutkowski (1996) and Rumer (1989). In particular, industrial enterprises across the region were highly integrated, both horizontally and vertically, which meant that upon dis-integration the countries lost both output and input markets resulting in severe dislocation problems. In addition the service sector was particularly underdeveloped, contributing to only 40% of GDP compared to over 60% in advanced industrialized countries. Aspects of distribution and retailing were particularly wanting. Thus at independence the Central Asian Republics inherited economic systems described as overspecialized and with gross sectorial disproportions (Rutkowski 1996). In particular, the Kyrgyz's high dependence on external supplies of fuel led to a worsening of the terms of trade as the relative price of oil and gas increased. As a result of these problems, industrial and agricultural production were estimated to have fallen in 1992 by 26% and 5% respectively, compared to a year earlier. Additional falls in both sectors continued particularly in the industrials sector, see Table 2.5 on page 31. In fact the industrial base shrank over the 1990s increasing the relative size of the agricultural sector despite substantial decreases in that sector too, see Table 2.4 on page 30 for the changing

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[2]The corresponding figure for Russia was 70% of GDP.

shares of industry and agriculture between 1991-1997 and comparisons across other CIS countries. Although some of Kyrgyz's most important products - wool, meat and leather - came from livestock, herds were being reduced to adjust to the loss of export markets, especially the Russian market. By 1995 overall output was less than two-thirds of the 1990 level and income per head had also been reduced to barely two-thirds of its 1990 level. However in 1995 there were increases in the production of cotton, potatoes and vegetables, with the private sector accounting for 75% of total production.

2.5.2 Consequences to welfare

As a result of the deepening financial crisis, the fall in the level of production and price liberalization, public expenditure had to be curtailed. Inflation and relative price increases of previously subsidized goods made it difficult for even those working to avoid falls in living standards. In 1991 Government revenue and expenditure were reduced to 22% and 29% of GDP respectively, though the budget surplus reached 4.4% of GDP due to still exceptionally large transfers from the Union. Although total social expenditures by the government fell slightly to 20.1% of GDP, social expenditures rose as a proportion of the overall budget. This was primarily due to increases in the amounts and numbers eligible for child allowance. The value of spending on family allowances increased from 9.3% of total government spending in 1990 to as much as 24% in 1991.

In 1991, cash benefits represented between 13 - 36% of the annual incomes of families when grouped according to family size. The higher proportion of cash benefits occurred in families of all sizes but was especially high for one-person families, particularly pensioners. In addition private plot production increased considerably across all income levels but the increase was greatest for higher income groups. As prices increased sharply in 1991 and 1992, the distribution of income also started to change significantly as a result of market reforms. During the early years of reform arrears in both wages and benefit payment were high. Even when paid, wages and other kinds of income received by the majority of the population were not sufficient to satisfy minimum basic needs, see M.L.S.P. (1998). Real wages fell by over half in 1992 due to inflation levels and their average level is lower than that of the minimum consumer budget, see Table 2.6. A report revealed that 10% of expenditure for labour market policy was devoted to payment of the unemployment

Table 2.6: Falls in Real Incomes, 1992-1996

	1992	1993	1994	1995	1996
Fall in Income since 1991*	60%	8.2%	21.8%	11.3%	1.8%

* minus taxes and compulsory payments

Source: *Kyrgyz Republic Social Policy 1998, M.L.S.P. (1998)*

benefits and increased to 60% by 1996, see Kaiser et al. (1996).

The reduction in the Government budget meant a change from the array of universal benefits households could claim and means-testing was used to allocate the limited funds (Neubourg and Morris (1999)). Means-tested benefits were also low and paid to low income families up to the rate of the minimum wage per family member and were insufficient to prevent people falling into poverty. This was compounded with problems of delays in payment and poor targeting of eligible households. However by the mid 1990s, the Government was making attempts to target more effectively its limited budget.

In particular, the economic crisis had a severe impact on agricultural production and the economy of villages. The agrarian sector was deprived of State subsidies and preferential credits. Peasant farms faced sharp increases in the price for equipment, fertilizers, electric power carriers and the sale of their own products. In some parts of the country, farmers' wages had not been paid for some years, see Mudahar (1998).

There was further commercialization of education, public health, housing and communal services. The effect of higher costs of education led to a significant proportion of the population excluded from acquiring knowledge and hence from entering certain professions.

Several national strategies were implemented from the late 1996 onwards, in order to address the growing incidence of poverty. These were included in the National Strategy of Development, which was designed to run till 2005; Indicative Plan of the socio-economic development 1996-1998, National Strategy of sustainable Human Development till 2015 main aim intended to reduce poverty by 10% (Kaiser et al. (1996)). Against this background of reform the affects of the restructuring process are examined for the Kyrgyz Republic over the transitional period 1993-1996.

2.6 Survey Data and Aspects of Measuring Welfare

2.6.1 The Kyrgyz Multipurpose Poverty Survey

This thesis draws heavily on recently available nationally representative household survey data for the Kyrgyz Republic, called the Kyrgyzstan Multipurpose Poverty Surveys (KMPS). The surveys were sponsored by the World Bank, based on their well-established Living Standard Measurement Study (LSMS) surveys, see Grosh and Glewwe (2000) and Grosh and Glewwe (1995) for details of the LSMS design. The LSMS was established to explore ways of improving the quality and nature of household data collected by government statistical institutions in developing countries, and one of the main objectives of the survey is to assess household welfare. The Surveys have been carried out in over 20 developing countries to-date.

The KMPS was first carried out in the Kyrgyz Republic during October and November in 1993, in the Spring of 1996 and again in the Fall of 1996. The Kyrgyz surveys covered approximately 2,000 households and 10,000 individuals in each year, across the 6 oblasts, Chui, Djalalabad, Issy-kul, Naryn, Osh and Talass as well as the capital, Bishkek, which is a separate administrative district in the Chui oblast. A stratified multi-stage sampling procedure was followed so that, in principle, every household had a positive probability of inclusion into the sample. Approximately two-thirds of the population live in rural areas and the survey was designed to take this into consideration with the result that the survey is nationally representative at the level of urban and rural disaggregation.

The data are not panel but nationally representative cross-sections. The first KMPS was specifically designed for the purpose of identifying the poor and for the formulation of policies to protect the most vulnerable during the transition period. The 1993 survey was replicated in the spring of 1996 but was changed slightly in the Fall of 1996 to reflect better the new economic environment, whilst still retaining the majority of the information contained in the original 1993 survey. Both the Fall surveys were carried out during November-January of the respective year, just after the major harvest period. Since a large part of the economy is agricultural, information relating to income, expenditure and employment can vary greatly when analyzing different points in the planting and harvesting cycle and for this reason the empirical analysis here draws on the Fall 1993

Table 2.7: Survey Sample Sizes for KPMS Fall 1993 and Fall 1996

	1993			1996		
	Total	Urban	Rural	Total	Urban	Rural
Households	1936	828	1108	1948	746	1202
%		*42.77*	*57.23*		*38.30*	*61.70*
Individuals	9547	3217	6330	8989	2862	6127
%		*33.70*	*66.30*		*31.84*	*68.16*

Source: KMPS 1993, 1996

survey and the Fall 1996 survey. The seasonality of the survey implies that production figures for agricultural and animal husbandry will be higher than at other times during the year, as will heating costs to a certain extent as the main cold season runs from November to April.

As is customary in the country's own survey policy, respondents were paid a nominal amount for completing the survey. The response rate for the KMPS in 1993 and 1996 were relatively high at 97% for both years. Details of the sample dimensions for the two years are presented in Table 2.7.

Questionnaire

Both Surveys include components that include information on households as well as individual adults and children, though the 1993 questionnaire includes a food and fuel price and availability survey and a survey on community and social infrastructure. The Household Questionnaire covers, identification data, household composition, housing, agriculture and animal husbandry, expenditure and income. The Adult Questionnaire covers: identification data, migration, labour, morbidity and use of medical facilities, self-reported health evaluation, questions for women, time use, nutrition and anthropometric measurements. Similar questions were included in the Child Questionnaire. The Survey of Availability and Prices of Food Products and Fuels contains information relating to retail outlets selling food products in the local areas.

Household information was addressed to an authoritative member of the household, often referred to as the Household head, defined by a set criteria in the Survey. Individ-

ual information was collected for all adults and children under 18 months. Information was taken from adults present, while children under 13 years old had adults answer the questions on their behalf.

Answers are in the form of both quantitative, descriptive and "yes" or "no" type responses. The Survey also asked questions that were filter questions, i.e. based on the answer to a previous question, and these are clearly specified in the questionnaire.

Since one of the main objectives of the survey is to measure welfare, the measurement of consumption is strongly emphasized. The Questionnaire contains detailed questions on cash expenditures, on the value of food items grown at home or received as gifts and on the ownership of housing and durable goods. A list of 68 fruits and vegetables are provided with responses given for quantity grown, amount consumed and amount sold or gifted. Similarly for poultry, livestock and bee-keeping. A section on household expenditure related to household items included in categories such as; food items, fuel, medicines & drugs, durables, including cultural activities, educational services (tuition fees), transport and even alimony.

The Adult Questionnaire is based on individual information and includes such questions as; ethnicity; migration, reasons for migration, location moved from, location presently residing in, reasons for moving, education of the father and mother. There are also detailed questions on income. The section pertaining to Economic Activities includes information on, for example, employment status, nature of the organization of the primary employment, whether on paid or unpaid leave over previous 7 days and previous 30 days, security of occupation, if laid off in last week or last month, the search for employment, additional jobs or activities undertaken, income from primary job, income from other activities etc. There is information on whether the individual owns the business s/he is working at as well as the amount of stocks and shares owned. A section on time use, not only asks further questions relating to formal and informal activities undertaken, amount earned and time spent, (such as primary employment, informal employment, plot production, laundering, tailoring), but also provides a cross-check of responses given in other sections of the Questionnaire.

Overview of Survey differences

Although both surveys are based on the World Bank's Living Standard Measurement Study formats differ slightly between the two years. Both surveys have questions covering the main areas of the LSMS format which include, dwelling, health, education, employment and time use, income and expenditure and agriculture. In addition the 1993 survey contains extensive information on nutrition and several subjective questions pertaining to welfare and also a separate survey on prices. The 1996 survey includes in-depth information on income from businesses and production expenditures for crops, animals and home production. Despite the slight differences between the Fall 1993 and 1996 surveys the questions are sufficiently similar to allow for comparative analysis. Specific differences between the surveys, in terms of questions not asked in one survey year but asked in another, are specified in the relevant chapters when comparability is a problem.

2.6.2   Welfare Measurement

This section focuses on monetary measures of welfare and discusses why a measure of welfare based on expenditure is more appropriate in a rural economy, particular in economies of the FSU, compared to an income-based measure. While this section focuses on monetary measures, a discussion of non-monetary welfare measures is presented in Chapter 4.

Welfare represents a person's well-being, often referred to in economics as utility. There are many dimensions that can affect a person's utility based on his or her preferences and these can often be difficult to quantify and even subjective in nature. A person's command over resources is a generally used concept of welfare, which can be quantified using a money-metric based measure of welfare, see Ravallion (1994) and Glewwe and Van der Gaag (1988) for a discussion on money metric measures of welfare. Fuller discussions of theoretical aspects of money metric measures of welfare can be found in Deaton and Muelbauer (1980), Ravallion (1994), Sen (1985) and Ravallion (1996) and are not elaborated here but we can say in general the greater a person's command over resources, the greater their level of welfare. This can take the form, of an income based measure that represents a persons ability to obtain resources, or it can reflect the resources a person actually chooses to consume, i.e. a measure based on individual consumption expenditure. Here

we consider the advantages and disadvantages of income and expenditure based measures.

Knowledge of an individual's total income would allow for the assessment of their command over resources and a higher income would imply a greater command over resources and thus a higher level of welfare. However there are several practical problems when considering an income based measure. Information on sources of income is often subject to concerns of reliability for a variety of reasons, Deaton (1997). Incomes in economies with a large agricultural sector are often subject to large fluctuations since incomes are derived when harvested crops have been sold. Harvests depend on the weather or yield of the crop etc., which effect the price of the crop and thus overall household income. Another source of variability is through non-rural incomes based on seasonal employment, e.g. tourism, construction. The variability in both rural and non-rural sources of income in developing countries has important implications for data collection. Often a reference period in a survey is typically one month and income during particularly times of the year (e.g. harvest time or when demand for seasonal employment is high) is unlikely to be representative of a household income, again see Deaton (1997) for details.

Another area of concern occurs when a significant proportion of the labour force is self-employment, particularly in small scale businesses, or where informal activities are widespread. There is a tendency for respondents to under-report the income they receive for fear of being reported to the tax authorities (or the police authorities in the case of illicit activities). This is an important consideration since income in many countries from informal activities can often make up a substantial part of total household income. This issue is particularly relevant in transition countries, such as the Kyrgyz Republic, where certain activities before were seen as illegal and are now legal but often informal (i.e. the business is not registered). Problems of under-reporting of informal activities have been limited to some extent since specific questions referring to such activities were included in the Survey and respondents were asked to report income from a variety of activities (details of the questions asked regarding income from informal activities sector are detailed in Chapter 7 on page 181 which looks at informal activities). However this information may not reflect the unofficial payments that individuals may earn at work over and above their official salary (see the data section in Chapter 7 for a further discussion of the discrepancy between reported and actual pay).

Another problem with income data, other than concerns over reliability of answers, concerns the extent to which income data reflects individual or household purchasing power. Wage income and social benefits often make up a significant proportion of overall household income. Since the collapse of the Soviet Union wages, social benefits and pensions have been subject to severe delays in payment, with recipients sometimes receiving payment after months or even years in some cases. Although delays in payments, in particular wages payments, did occur in the FSU even before the collapse of the FSU, delays have become much longer and more widespread throughout the country. In many cases workers may be paid in-kind, in the produce of the enterprise. Although payment is not a monetary value, workers find their own outlet for selling the goods, or barter. In-kind payments reflect some sort of purchasing ability and need to be included. Payment in-kind is a common computational problem in highly agricultural economies. The LSMS questionnaires have been designed to address these issues, and questions pertaining to transactions request a monetary value for any incomes or expenditures that may be in-kind.

Problems of variability and un-reliability in income data often mean that information referring to household income may not reflect a useful measure of household welfare. Concerns with income variability is also reflected in the permanent-income hypothesis, Friedman (1957). The hypothesis maintains that permanent income proxied by the consumption of goods and services, is a better indicator of welfare than current income since individuals can smooth out fluctuations in their income by saving, dis-saving or borrowing. However, the absence of capital markets or the need for collateral in developing countries often means that poorer households may not be able to smooth fluctuations in income and hence it can be argued that income is a better measure of welfare.

Turning to consumption expenditure, an estimation of consumption is based on the sum of all expenditures on nondurables and durable services, and to calculate the latter needs detailed information often not collected in a household survey, see page 60 for KMPS survey information on home-ownership, durables and assets (see Deaton and Zaidi (1999) for a detailed discussion of the calculation of expenditure based measures using household survey data). For this analysis it is felt that the current consumption of non-durables is a less noisy indicator of welfare than including lumpy expenditure on durables, particularly

given that such information needs to be comparable when looking across years, see Anand and Harris (1994) which examines the implications when using different proxies for welfare.

Another well-known problem with deriving household expenditure is not from intentional under-reporting by the individual (or all household members, depending on the survey design) but problems of recall. Expenditure which is infrequent, e.g. buying of clothes or household items, is difficult to estimate when information is collected some time after purchase. Studies have shown that items bought two weeks from the survey can be hard to recall, see Deaton (1997) for a detailed analysis of problems encountered in household surveys.

Another problem which affects agricultural economies, is that households are both producers and consumers, since a significant component of overall household expenditure is household consumption of home produced goods. This represents foregone expenditure on goods that a household would otherwise purchase. The consumption of household produced goods can often be a significant component of total household expenditure in rural areas. Consuming home produced goods is not a complete substitute for buying food in the shops, since there is time and labour spent on producing these goods that could otherwise be spent elsewhere. However by excluding this component welfare is greatly underestimated. Any measure of household expenditure in an agricultural economy should include the consumption of home produced goods. LSMS survey information collects detailed information in order to estimate household home production, see Grosh and Glewwe (2000) for full details of the survey questions. This enables a value to be calculated for transactions even carried out through barter and hence makes a monetary based measure still feasible. Chapter 3 on page 60 discusses issues related to the actual construction of total household expenditure applied in this thesis[3].

Given all the advantages and disadvantages discussed above, an expenditure based measure is still seen as a better measure of consumption than income based measures and is applied in this thesis. Despite the highly rural nature of economy (the presence of a significant barter economy), a monetary based measure is still a valid measure of welfare due to the nature of the LSMS. However this thesis also includes a non-monetary subjective

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[3]The methodology is similar to that applied in (Ackland and Falkingham 1997), which used Kyrgyz 1993 LSMS data for analysing poverty.

measure of welfare which provides interesting results illustrating the complementary nature of subjective measures to conventional monetary based measures.

Individual consumption expenditure

Equivalence Scales Household level 'income' focuses on household welfare rather than individual welfare. Individuals living in the same household share the same resources (here issues of intra-household allocation are not addressed) and hence all households are attributed with total household 'income' (consumption expenditure). When calculating individual welfare using measures based on household aggregates it is important to incorporate differences across households. There are in general two areas where differences in household composition matter.

One area concerns the total number of household members. The number of members of a household can affect the per person expenditure on household items. These are expenditures that are incurred when running a home, e.g. expenditure on, food, heating or rent, and although these expenses do increase with the number of people in the household they increase at a diminishing rate. The greater the number of individuals in the household the greater the potential for economies of scale. The other extreme is if there are no economies of scale to be gained, and the same costs are incurred for one household with one member as it would be for one household with, say, 6 members. If economies of scale are not incorporated, welfare measures will underestimate the welfare attributed to each individual by over estimating individual expenditure.

Another important factor when deriving individual welfare from household aggregates is to incorporate differences in needs across the different members of the household. The age groups of individual members can alter expenditure needs within households, with children often needing less expenditure than adults or an older aged person needing less expenditure than a prime aged adult. Differences in need are particularly important in Central Asia where family sizes are relatively large due to high birth rates and extended families.

In order to incorporate different needs of the household we equivalize, (re-scale) income by household composition, defined below.

$$y_{ie} = \frac{y_i}{M_i} \qquad (2.1)$$

where equivalized income y_{ie} is calculated by adjusting household income y_i, for some recipient unit i, by an equivalence scale $M_i = f(a_i)$, where a_i represents a vector of characteristics. The form M_i takes can vary, for example, attributing a weight for differing needs of individuals in the household and for the presence of economies of scale, as discussed above. For example, a much used equivalence scale is the McClements scale, in which the first adult has a weight of 1, additional adults have a weight 0.8, children 0.5 (see Tsakloglou and Panopoulou (1997) and Coulter, Cowell, and Jenkins (1994) for the effects of various equivalence scales on poverty measurement and inequality measurement, the former using Greek data and the latter using UK data).

Lanjouw, Milanovic, and Paternostro (1998) examine the implications of differing equivalence scales and find that as the cost of public goods increase, economies of scale become more important. The authors claim that when household goods and utilities are relatively cheap and the cost of children, in terms of education and clothing for example, are relatively low, a medium level of equivalence scale should be used. As the cost of children increases the equivalence scale should increase, being closer to 1, the per capita level. In the Kyrgyz Republic over the period 1993 and 1996 the price of goods and services, such as education, health and food, had increased and although there were increases in the price of utilities, with more planned for the future, these goods were still relatively cheap at the time of the survey in 1996. Although a lower equivalence scale may also be appropriate for 1993, only a per capita poverty line for the 1996 data is available and hence for reasons of comparability a per capita equivalence scale was also used for both years.[4]

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[4]In Chapter 4 of this thesis only 1993 data was used and so an OECD equivalence scale was applied for the analysis since it is more in line with the findings in Lanjouw, Milanovic, and Paternostro (1998), that with increasing public goods there is some scope for economies of scale. This weights the first adult with a value of 1, all remaining adults with 0.7 and all children in the household with a value of 0.5.

Part I

Aspects of Welfare

Chapter 3

Measuring Welfare Changes

3.1 Introduction

The extent of the upheavals in the Kyrgyz economy during the reform from the previous complex and integrated command system to a market economy have been discussed in Chapter 2. In that chapter it was shown that since the beginning of the 1990s the economic and political reforms taking place have resulted in a relatively protracted recession that has had a severe impact on livelihoods. Households have had to cope with price liberalization of basic staple goods, contraction in the labour market and falling real wages and incomes, when wages and benefits were actually received, and inflation levels that peaked at triple digits by 1993. Despite these outcomes, the reforms are expected to lead eventually to a marked rise in national incomes and improvements in living standards though it is not known how long this will take given the extent of the recession. The aim of this chapter is to provide an indication of the extent of the recovery in living standards over the period 1993-1996, based on an expenditure based measure of welfare.

There is evidence from a range of studies, see U.N.D.P. (1999), Falkingham et al. (1996), Cox, Jimenez, and Jordan (1995), E.B.R.D. (1995), Ko Styukova (1994), Howell (1994) and Dabrowski et al. (1995), that the greatest shocks to the economy occurred in the earlier years of reform. Other studies have focussed on inequality and poverty comparisons across countries, see U.N.D.P. (1999), Flemming and Micklewright (1999), Milanovic (1998), Atkinson and Micklewright (1992) and World Bank (2000). Milanovic (1998) presents a comprehensive study comparing inequality and poverty rates across

countries of the FSU and CEE, often using income data from the FBS for the late 1980s and comparing with more recent data when available. In general Republics of the CEE have lower income inequality and lower poverty rates compared to the FSU. Other national reports, such as that by the Kyrgyz Ministry of Labour and Social Protection, M.L.S.P. (1998) and Mudahar (1998), detail the existing problems and how poverty has been exacerbated as a result of the reforms. Recent studies focusing on the Kyrgyz Republic have looked at the incidence of poverty at single points in time, such as Ackland and Falkingham (1996) and World Bank (1995) for the Fall of 1993, World Bank (1997) for Spring 1996 and NatKomStat (1997) for Fall 1996. Milanovic (1998) compares 1987/8 and 1993 figures. As well as the incidence of poverty there have been several studies looking at the correlates of poverty, such as Ackland and Falkingham (1996) who use probit analysis applied to Fall 1993 data, and Anderson and Pomfret (1999) who use a quantile regression approach comparing Fall 1993 and 1996. Ackland and Falkingham (1996) find some gender bias to poverty using the 1993 data, with female headed households in urban areas having a higher incidence of poverty. They found little evidence of the number of children making a difference to poverty incidences. The results in Anderson and Pomfret (1999) differ slightly and the authors find that the cost of children has increased, hence making families with children more likely to be in poverty compared to 1993. They also found that the south seems to be worse off than the north and household heads with post-secondary school training appear to be doing better. Anderson and Pomfret (1999) claim that poverty has stabilized over the period 1993 and 1996 while the determinants of poverty have changed. Here, on the contrary, it is argued that since there has been only a gradual improvement in the economy, with substantial changes to employment and unemployment occurring over this period (which are detailed in the second part of this thesis), the determinants of poverty are unlikely to have altered greatly. Hence the focus in this chapter is on the extent of the changes in welfare over this period. However to some extent an understanding of what determines individuals' welfare patterns is looked at in the next Chapter of this thesis which looks at welfare in terms of 'happiness' orderings.

Although inequality and poverty indices from the studies mentioned above do not differ markedly from those produced in this chapter, namely that inequality has fallen slightly while poverty has increased over the period 1993 to 1996, this analysis is a much more

detailed comparison of welfare over 1993 and 1996 and provides a better understanding of the magnitude of the impact of the reform process on the population over this period.

First a background to inequality and poverty since the Soviet period is provided to give a context for the findings in the Kyrgyz Republic. The methodological approach used for this analysis is then described followed by a description of the data used in the empirical analysis. The findings for welfare are then presented for 1993 and 1996, ending with a conclusion of these results.

3.2   Background to Soviet Inequality and Poverty

Although it was assumed by many that prior to reform Communist countries would enjoy more egalitarian distributions of income than market economies, there were in fact no ideological foundations for such objectives. According to Marx's principles of distribution there were two successive stages of development; socialism and then communism. Once problems of production were solved and incentive issues were no longer a hindrance, under communism individuals were to be rewarded according to need. However, until obstacles of production were resolved under socialism individuals' would be rewarded largely according to their contribution. Although known as Communist countries principles of socialism were followed with the true form of communism rarely ever being attained. The main feature of socialist countries was the ownership of the means of production by the State. Although there was a variety of forms of ownership, for example social ownership or collective ownership amongst others, the role of the State was of foremost importance. Not only was the State a major employer but through the places of work individuals received health and education facilities, pensions and other social benefits.

For those outside of the labour market, socialist economies did not provide social assistance programmes. The use of enterprises to provide social protection meant that those who were only weakly (or less than weakly) connected with the labour market often fell through the safety net. Some sort of substitute safety net was often provided by family, friends and neighbours. Shlapentokh (1989) claimed that around two-thirds of working parents in the Soviet Union and more than a quarter of Soviet households regularly borrowed money from each other. The regularity and extent of these transactions also reflect the absence of commercial credit institutions from whom loans could be obtained. Pri-

vate or 'inter-household' transfers can significantly change consumption possibilities, as has been shown in Townsend (1994), where effects of 'inter-household' transfers on household consumption in India were examined. Interestingly, there is little evidence in the literature of the presences of private commercial money lenders or pawnbrokers in Central Asia. McAuley and Coudouel (1996) note that both cultural (for example, the strong clan loyalties) and religious (Islam emphasizes the desirability of alms-giving and family solidarity) factors in society in the Kyrgyz Republic and Central Asia in general make the study of private transfers particularly interesting and given the inherited Soviet structure, strengthens the expectations about the importance of private transfers. It is anticipated that these informal coping strategies are likely to become more significant during the early stages of transition. McAuley and Coudouel (1996) have examined whether the introduction of public schemes 'crowd out' private provision in Central Asia. Households previously supplying private transfers to the less well-off may cut back on their supply leading to little net increase in the incomes of the poor. This is unlikely to have happened by the mid-1990s. There is evidence from preliminary analysis of the data that such transfers are prevalent, though evidence has suggested that at certain times, e.g. high inflation periods, such transfers were reduced. The assessment of such 'gifts' is also problematic when they are in the form of non-monetary 'gifts', e.g. agricultural produce or durables, since they need to be valued for comparison purposes. Earlier studies have however found that private transfers have been large and widespread during the transition over the period 1994-1996 in Russia. Contributions of private transfers to household income were found to be on average 8% of total income, see Cox, Eser, and Jimenez (1997). In fact, in cultures with the extended family structure, such as in Central Asian Republics, transfers are likely to be more intra-household rather than inter-household transfers, making it even more difficult to distinguish such transfers for accounting purposes. Such transfers as well as improving living standards may reduce inequality, particularly for households at the lower end of the distribution who are likely to be the recipients of transfers.

Despite equality of outcome not being the main objective, the consequence of the abolition of private ownership of production did in fact do much to reduce inequality. In addition interventions by Central Planners in setting wages and prices in order to limit large wage dispersions, particularly in the USSR, led to lower inequality in the earnings

distribution. As a result in general the income distribution was found to be relatively more egalitarian in socialist countries than non-socialist countries partly due to the non-monetary fringe benefits and the greater amount of social transfers, detailed below. With the movement away from socialism to a market economy the ex-socialist countries are expected to converge to the level of market economies.

Prior to the reform, household survey data in many of the socialist countries took the form of Family Budget Surveys (FBS), which began in the 1870s. The lack of availability of the data for former socialist countries had resulted in limited empirical studies being carried out. When data were available, there were often problems of reliability and even more so comparability with non-socialist countries. The FBS focussed on the working population and excluded vulnerable groups of the population in particular the unemployed or pensioners, see Atkinson and Micklewright (1992) and Milanovic (1998) for comments on comparability and problems with the survey data. Recently implemented measurement tools in the form of nationally representative household surveys, such as the Living Standard Measurement survey introduced by the World Bank in many of these countries, have facilitated much empirical analysis subsequent to reform including this thesis. However, even with LSMS data, the widespread use of non-monetary fringe benefits, subsidies and in-kind payments in ex-socialist countries can make comparisons with market economies problematic.

3.2.1 Inequality in the Former Soviet Union

Studies show that in the 1950's there were large regional disparities in the distribution of income within the Soviet Union and this persisted in the 1960's and 1970', see Lydall (1968), Pryor (1973) and Wiles (1974)[1]. During this period, Czechoslovakia and Hungary were found to have the most equally distributed earnings distribution. Poland's distribution was found to be as equal as that found in Western Countries with low inequality, such as Denmark, Sweden and the U.K. The USSR was found to be more unequal than Hungary, though less unequal than the USA and Western Europe in general. Other stud-

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[1]Labour income was found to represent a much larger proportion of total household income in the FSU than in CEE Republics - over 70% for the former and just over 50% for the latter - so trends in the earnings distribution for Republics of the FSU can be relatively informative of trends in overall household income for these countries, see Milanovic (1998).

Table 3.1: Ratio of top and bottom decile of earnings, 1986

	$\frac{P_{90}}{P_{10}}$
Czechoslovakia	2.5
Hungary	2.6
Poland	2.8
USSR	3.3

Source: Atkinson & Micklewright (1992): pg 80.

ies support the view that the distribution of earnings was significantly less unequal in the Communist countries of Eastern Europe than in comparable Western countries, see Lydall (1979), Chapman (1979) and Bergson (1984). By the 1980s, studies comparing Western and Soviet economies found little systematic difference on overall dispersion of earnings. Results from Atkinson and Micklewright (1992), based on a selection of countries given in Table 3.1, confirm that little had changed by the mid 1980s with the Soviet Union having distinctly greater dispersion in their earning distribution with the ratio of top and bottom decile for USSR reaching 3.3, higher than for the Czechoslovakia, Hungary or Poland.

Within Republics of the Former Soviet Union

Inequality within the USSR had increased over the 1980s, despite showing a marked reduction over the late 1990s. In the Soviet Union, the degree of dispersion of income fell sharply from 1956 to a low point in 1968 and varied over the 1970s with the protracted wage reform of that decade, see Redor (1986) (using a translation of the main findings) and McAuley (1991). There was, and is, a significant disparity in the size of the Republics of the FSU. In 1989 Russia represented 55% of employed in the USSR. Average earnings varied as a percentage of those in Russia, from 69% in Azerbaidzhan and 73% in Moldova to 104% Estonia. Over time there has been a distinct rise in average earnings relative to Russia in the 1960s.

There is now substantially more information on low incomes in the FSU than was previously available, see McAuley (1979) and Matthews (1986). Previous studies refer to the distribution of income as recorded in the family budget survey and since the sample

is unrepresentative this would have restricted the conclusions that were drawn at the national level. Central Asian Republics tended to have lower incomes and expenditures than the overall average for USSR. Although private plot production in agriculture was permitted, this source of private income tended to be larger for those at the bottom of the distribution. Flemming and Micklewright (1999) look at inequality across an extensive list of Central and Eastern European, Baltic and FSU Republics for 1989, (their reference pg. 29, is based on a table taken from Atkinson and Micklewright (1992) and other sources). The Gini coefficient for the Kyrgyz Republic, and in fact all Central Asian Republics, in 1989 for the distribution of per capita income was 27, higher than Eastern Europe and the Baltic States by about 4 to 5 percentage points. Milanovic (1998) estimates a similar figure for 1989 but using 1993 data, the Gini coefficient for per capita income increased to 55 (a quarterly figure) while for per capita expenditure he reports a figure of 43. These figures for the distribution of expenditure are comparable with those found in this study for the Kyrgyz Republic though here 1993 and 1996 expenditure figures are compared.

3.2.2   Poverty in the Former Soviet Union

The eradication of poverty was seen as a distinguishing feature between socialism and capitalism, with the former supposedly concentrating more on reducing poverty than the latter. Poverty was a sensitive subject and treated in a different light to inequality and in fact those in poverty were referred to as 'maloobespechennye' or the under-provisioned. Although discussion of the subject was not encouraged, there has been a long tradition of work on subsistence minima in the USSR, though it had its drawbacks in terms of under-representation of the population concentrating on those belonging to an enterprise in urban areas. Despite this, calculations were published by Sarkisyan and Kuznetsova (1967) and many subsequent studies by other authors, including Rimashevskaia (1990), are based on their original calculations. The former authors produced subsistence minima for an urban family of four (two working adults and two children) in 1957. However there were drawbacks to using the figures as a general benchmark since they failed to incorporate the higher prices paid by collective workers, did not include medical, health expenditure nor housing (provided by the State) costs, and allowed for only a low provision for alcohol and tobacco. Despite these caveats, a third of the population was found to fall below a

cut off of 51.4 Rubles per month per capita, see Matthews (1986). As noted by Matthews, the proportion would be larger for disadvantaged workers, such as low-grade workers and the rural peasant population working in collectives.

Atkinson and Micklewright (1992) look at more recent findings. In 1989, using a 1988 poverty line, Goskomstat estimated poverty in the USSR to be 14% of the population. A national minimum of 81-88 Rubles per month per capita calculated by Goskomstat in 1989 was found to fall within the 75-100 Ruble interval of the income distribution of the USSR. Based on the lower band, the authors calculate poverty rates across the USSR using a nation-wide poverty cut off of 75 Rubles per capita per month. Taking the union as a whole, 11% of the 31 million people were found to be in poverty in 1989. The authors found significant variation across the Republics. The Baltic Republics had the lowest incidence of poverty in 1989, ranging between 1.9% in Estonia to 2.4% in Lithuania. The Republics of Belarus, Russia, Ukraine and Moldova too had relatively low levels, 3.3% in Belarus to 6% in Ukraine. Moldova had a higher level, roughly 12%, similar to the Transcaucasia Republics of Georgia and Armenia. In Azerbaijan the incidence of poverty (a third of the population) was similar to those found in Central Asia, where poverty ranged from a third to over half the population. It was as much as 43.6% in Uzbekistan and over 50% in Tajikistan while the figure for the Kyrgyz Republic was 32.9%. Russia, with half the population of the Union, had slightly less than a quarter of the poor, see Table 8.4 pg. 241 in Atkinson and Micklewright (1992). The five Central Asian Republics contain just over half of the poor yet make up only 17% of the population. Though differences in prices and family sizes were not taken into consideration the figures still reflect the lower living standards, particularly in Central Asia. The authors also illustrate differences within Republics, by distinguishing collective farm households from worker/employee households with the former on a lower income.

So in general Central Asian Republics experienced greater disparity and poverty compared to other Republics in FSU, though the USSR was found to be less unequal then Western countries. Given this background we examine changes between 1993 and 1996.

3.3 Methodology for Welfare Measurement

Deprivation in 'income space' spans a wide range of measurement tools. Measures include statistical and diagrammatic tools used to analyze the distribution of income, such as Pen Parade diagrams and Lorenz and Generalized Lorenz Curves. These examine the distribution of income across the population. The Gini coefficient, entropy measures and relative mean deviations, among others, calculate summary statistics of the distribution and are used for measuring deviations away from equality. Cowell (1995) and Cowell (2000) provide an explanation of the theoretical and empirical application of techniques of income distribution and these standard techniques will be used to examine the distribution of income in the Kyrgyz Republic.

3.3.1 Welfare Rankings

The approach for this method of welfare analysis is that detailed in Cowell (2000). Comparisons of welfare between 1993 and 1996 are carried out using a carefully defined social welfare function. The function incorporates desirable properties[2] that allow distributions to be ordered with meaningful outcomes. There are several tests that can be applied to see if there has been an improvement in welfare between the years.

The first test, *first-order dominance test*, states that if the quantile functional (the proportion of total income received by a proportion of the population) of two income distributions, which in this analysis are the two years 1993 and 1996, can be unequivocally ranked it can be concluded that welfare in one year is greater than in the other year. This test often does not provide conclusive results and a second test is applied. It is important to note that the first-order dominance test does not incorporate the principle of transfers[3]. If it is believed that this is a desirable attribute of changes in social welfare (as it is here), the second-order dominance test would also be applied.

The *second-order dominance* test is based on the distribution of cumulative income across the population proportion. The standard Lorenz curve compares relative disparities

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[2]These properties include; anonymity, population principle, principle of transfers, monotonicity, scale independence and decomposability. For details see (Cowell 2000)

[3]The principle of transfers states that a transfer from a non-poor to a poor individual improves social welfare while a transfer from a poor individual to an even poorer individual does not.

between distributions. The generalized Lorenz curve incorporates differences in the levels of income, not just dispersion, and normalizing the generalized Lorenz curve by its mean gives the standard (relative) Lorenz curve. If the generalized Lorenz curves of the two income distributions do not intersect, than it can be concluded that welfare in one year was higher than in the other. Similarly with a comparison of the standard Lorenz curves, again implications to social welfare are conclusive only if the curves do not intersect.

In addition to these two tests, there are the *Absolute and Relative Dominance* tests. For these tests, if the social welfare functions are limited to those that have the additional property that *proportional* increases in all incomes yield welfare improvements, then it can be concluded that one distribution dominates another if and only if there is Lorenz-dominance and the mean of the dominating distribution has a higher mean than the other distribution. This would imply that the distributions did not cross for both Lorenz and generalized Lorenz dominance, with the more equal distribution having the higher mean. If in addition we have the property that uniform *absolute* increases in all incomes yield welfare improvements, then there is also Absolute Lorenz Dominance. This implies uniform absolute increases in all incomes result in welfare improvements.

An alternative to dominance-order tests are summary measures such as inequality indices which represent the degree of dispersion in a single number. This can be particularly useful when dominance tests are inconclusive.

3.3.2 Inequality indices

Summary measures of inequality are calculated based on the Generalized Entropy measure and the Gini coefficient. The Generalized Entropy measure is of the form;

$$I_\theta(x) = \frac{1}{\theta^2 - \theta} \left[\frac{1}{n(x)} \left\{ \sum_{i=1}^{n(x)} \frac{x_i}{\mu(x)} \right\}^\theta - 1 \right], \qquad (3.1)$$

where x_i is the income for individuals $i = 1,..n$, and θ is a parameter reflecting the aversion to inequality and can take any real value. The Generalized Entropy Measure satisfies desirable properties of the weak principle of transfers, decomposability, scale independence and the population principle. For higher positive values of θ the function is more sensitive to income differences at the top of the distribution, and for more negative values of θ the function is more sensitive to differences at the bottom of the distribution.

The Gini coefficient is a more useful measure since it is not only closely related to the Lorenz curve, (being the ratio of the area between the Lorenz Curve and the line of equality and the entire triangle defined by the line of equality) but also has a relatively easy interpretation of being the average difference in income between any two randomly chosen individuals. The Gini coefficient weights income differences about the mode of the distribution greater and hence is not so sensitive to outliers in the tails of the distribution. The Gini coefficient is defined as;

$$Gini(x) = \frac{1}{2n(x)^2\mu(x)} \sum_{i=1}^{n(x)} \sum_{j=1}^{n(x)} |x_i - x_j|, \tag{3.2}$$

for individual income x_i.

The inequality analysis was re-calculated based on a trimmed distribution, where the bottom 1% and top 1% of incomes at the top of the distribution were dropped. This was done to see how robust the results were to measurement error in the tails of the distribution, since there are strong reasons for suspecting under-reporting at the lower (particularly given the importance of bartering and the consumption of home produced goods) and top end of the distribution and even for excluding extremely large (and possibly valid) incomes distorting the overall picture. This distribution will be referred to as the *trimmed distribution*

3.3.3   Poverty lines and indices

Poverty can be interpreted in many different ways and in the economics literature it can be found amongst topics of development or income inequality. There is no unified definition of poverty though it is generally accepted that poverty represents deprivation in some 'space'. The level below which a person is considered in poverty is called the poverty line and those below this cut-off are the 'poor'. The measurement of poverty is to a large extent dependent on how poverty is perceived by the author and the purpose of measurement. Most studies are concerned with anti-poverty schemes, in order to identify the poor for targeting purposes or for comparisons, either over time, regions or sub-groups of the population.

Much of the literature analyses poverty in terms of deprivation in 'income space' often

called 'economic poverty'. From this perspective, poverty can be defined as a relative or absolute concept which, although primarily related to income space, can be used in a non-income context. The absolute poverty approach stipulates a minimal living standard in terms of nutrition levels, clothes, etc. and the income level to which support such a standard. Below this level a person is said to be poor. Relative poverty interprets poverty in relation to the prevailing living standards of society, recognizing explicitly the interdependence between the poverty line and the entire distribution of income. There are other measures that are used to distinguish the poor from the non-poor, such as nutritional measures based on food expenditure, anthropometric measures such as height to weight ratios, see Glewwe and Van der Gaag (1988) for a discussion, but we do not explore these themes here.

In the space of income, which includes variables such as wealth, current income, consumption, etc.. persons in relative poverty are defined as those in the bottom x% of the population in an income distribution. From the relativist view, poverty can never be eradicated completely since a bottom proportion of the population in a distribution will always be labelled poor. The relative approach to poverty is a useful measure to examine distributional issues across the population.

For this analysis, an absolute and relative approach to measuring poverty was adopted for both years. For measuring absolute poverty, a poverty line was constructed by costing a basket of goods and services that provide a minimum standard of living. Individual dietary intake, based on the survey findings, were used to find a minimum cost food basket which, in addition to achieving a required calorific level, contained a mixture of goods which adequately reflected the Kyrgyz diet. In 1993, two baskets, a low-cost and high-cost basket were developed. The former is a food basket which reflects a more austere diet and which deviates more from the current consumption pattern of low-income Kyrgyz than the high-cost (see Popkin (1994) for details). However both food baskets provide the same level of nutrients and allow for adequate growth and activity. For this analysis we use the high-cost basket because it reflects a more realistic consumption pattern. The 1993 poverty line was derived by the World Bank, see Popkin (1994), and the 1996 poverty line was calculated by the National Statistical Committee of the Kyrgyz Republic. Severe poverty was based on half the general poverty line. For 1996, only a per capita poverty

Table 3.2: Annual Real and Relative Poverty Lines, per capita, Soms

(deflated to Nov.'93)	Absolute Poverty Lines		Relative Poverty Lines		
	Poverty line	Severe Poverty line	50% of Median Exp.	60% of Median Exp.	40% of Median Exp.
1993	1278	639	648	778	519
1996	1136	568	532	639	426

Source: KMPS 1993, NSC 1996

line was calculated and so for purposes of comparison we use the same for 1993. Many studies, often for cross-country comparative purposes, set a U.S. dollar poverty line, for example at $4/day/capita, see (Milanovic 1998), or $1/day/capita. However the levels at which these poverty lines are set tend to be arbitrarily and do not necessarily reflect the cost of living in the specified country and hence for this reason we apply a relative poverty line for comparison with results using absolute poverty measures. For relative poverty, a poverty line at 50% of the median of the income distribution was used. Median rather than mean income is used since the latter can be heavily influenced by outlying observations if the distribution is highly skewed. To illustrate how sensitive poverty measures are to this cut off, we apply relative poverty lines 10% above and below this cut-off, and so include a poverty line at 60% of the median and 40% of the median, and the results for these poverty lines are presented in Appendix: Household level Welfare, on page 78. The poverty lines used are illustrated in Table 3.2. It can be seen from the table that all relative measures lie below the absolute poverty line (and not the severe poverty line). For 1993, 50% of the median of the distribution lies above, albeit just, the severe poverty cut-off, as does the 60% median cut-off, while 40% of the median lies below the severe poverty line. For 1996 the 60% median cut-off lies above the severe poverty line, while the 50% and 40% median cut-offs lie below the severe poverty cut-off.

We can thus expect trends in the poverty estimates, presented in section 3.6.3 below to reflect the relative positions of these poverty lines just described.

The focus of the analysis is individual welfare and so the data is at the individual level. For comparison, household level analysis of poverty incidences are computed and are found in Appendix: Household level Welfare, on page 78.

Poverty indices

To get a clear picture of the extent of poverty, it is not enough to just measure the number of people falling below the poverty line. The number of poor and the distribution of the poor below the poverty line is important. Sen (1976) gives a clear exposition of the head count measure, $H = \frac{n_p}{N}$, where n_p is the number of people with income, x_i below the stipulated poverty line z, i.e. $x_i \leq z$, and N is the total population size. Another measure which accounts for the distance income levels fall from the poverty line is called the poverty gap, and is usually normalized to the 'income - gap ratio'; $IG = \sum \frac{g_i}{n_p z}$, where $g_i = z - x_i$. Following these, initially ad hoc, measures other measures were derived using axiomatic properties, for example sub-group decomposable and population replication consistent, which may have desirable attributes depending on the nature and purpose of the analysis. Measures which are distribution-sensitive, taking into account the intensity of poverty below the poverty line, have been developed such as Blackorby and Donaldson (1980) and Chakravarty (1983) amongst many others. However, a more widely used measure is that developed by Foster, Greer, and Thorbecke (1984) and it is this measure that is applied in this analysis.

The Foster, Greer, and Thorbecke (1984) measure, (FGT), is defined as $P(x; z, \theta) = \frac{1}{x(n)} \sum \left(1 - \frac{x_i}{z}\right)^{\theta}$, where $\theta \geq 0$ is the aversion to inequality and the indices have meaningful interpretations as θ is varied. For $\theta = 0$ the measure becomes the head-count measure, the number of people falling below the poverty line; for $\theta = 1$, the measure becomes $P(x; z, \theta) = HIG(x; z)$, which takes into account the distance from the poverty line; and at higher values of θ the measure progressively weights heavier the income of those further from the poverty line. These measures are known as P_θ, and the head count and income-gap ratio are then P_0 and P_1, respectively. At $\theta = \infty$, the measure represents the Rawlsian maximum level of social justice and the well-being of the poorest person dictates the overall picture of poverty. The actual value of θ that is chosen is subjective and many empirical studies that use this measure examine how the profile of poverty changes with changing values of θ. Other than the H and HIG, the other measures are 'distribution sensitive' and may have more desirable policy implications for targeting in terms of horizontal and vertical equity. For this study we focus on P_0, P_1 and P_2.

3.4 Data Description

The data used for this analysis are from the Kyrgyz household surveys, KMPS, for the Fall of 1993 and Fall 1996. Details of the Survey can be found in Section 2.6 in Chapter 2. A discussion of aspects of measuring monetary based measures of welfare and the practical concerns of data collection were also provided in Chapter 2, Section 2.6 and hence is not repeated here. Here we summarize why household expenditure is applied to measure welfare in the Kyrgyz Republic. In brief, the Kyrgyz Republic is known to have problems of low monetization with a prevalent barter economy in operation even before the reforms. Household income is in general lower than expenditure in absolute terms, due to under-reporting and also because actual household income tends to consist of a significant component from informal activities or by non-money payments, see Falkingham (1996) and Rose and McAllister (1996). Of particular interest in Soviet Central Asia was, and still is, the large importance that 'non-wage' income and income from private sector activities play, see Lubin (1984). Although this does present problems when aggregating monetary variables this problem has been addressed in Survey questionnaires. Even if goods rather than money are exchanged the value of the goods exchanged (whether labour or actual goods) is known and hence survey questions often refer to expenditure (income) on a particular item or the equivalent value of in-kind payments. Hence there are justified concerns with calculating monetary based measures in an economy with prevalent bartering but although these may be subject to some measurement error, the bias could go in either direction. The problem of accounting for both monetary and in-kind transfers is also reduced since they are incorporated in terms of higher expenditure from the "giver", and a higher level of expenditure attended by the "recipient".

There are several problems of reliability and variability in income data pertaining to the nature of an agricultural-based economy as well as problems of arrears in wage, social benefits and pensions, and the widespread occurrence of income from informal activities or self-employment which are subject to under-reporting, which are discussed in Chapter 2, Section 2.6. A comparison of the correlation between household income and expenditure aggregate highlights the large discrepancies that can occur. In their calculations Ackland and Falkingham (1997) find the correlation between income and expenditure to be as low as 0.2 using 1993 data. For this thesis the correlation between income and expenditure

was re-calculated and found to be 0.225 using the 1993 data and the corresponding figure for 1996 data was found to be 0.228. The low correlation between income and expenditure based measures illustrates how sensitive the picture of welfare could be to the measure chosen. Given the concerns raised about the use of income based measures in highly rural economies, particularly in when there are wage and benefit arrears that are prevalent in the Kyrgyz Republic, provide further support for using an expenditure based measure.

3.5 Derivation of Household Expenditure

Total household aggregate expenditure is aggregated over the following categories; food expenditure, rent and other housing expenditure (such as utilities and repairs) but excluding an imputed value for rent of owner-occupied housing, education, health, transportation, private gifts, other expenditure (including clothing, alcohol, holidays etc.) and the consumption of household produced goods[4]. For the calculations, values have been calculated in terms of monthly figures, or monthly averages where the time unit differed. Given the construction of the household aggregate, these figures refer to the average monthly expenditures for November 1993 and caution should be shown in interpreting these figures as a proxy for permanent income.

The consumption of home produced goods is often a significant component of total household consumption in agricultural economies. Here the consumption of home production has been calculated by valuing the amount of crops, fruit and vegetables that have been consumed on average in a month. However it is often difficult to get appropriate prices to value home production. It can be argued that farm-gate prices (the price received when produce is sold) are the correct value for what the household has grown, and pricing at market prices (prices of goods in the market or shop) inflates household consumption. Market prices include labour costs and all other input costs and hence should be used since it reflect the cost of forgone expenditure the household would have needed to incur. Due to the unavailability of reliable price data, farm-gate prices have been used to calculate expenditure on consumption of home production. Farm gate prices have been estimated

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[4]Details of the 1993 data are documented in Ackland (1995) and a similar methodology as used by these authors for the calculation of aggregate household expenditure and income has been applied in this thesis.

by using the quantity of item sold and the revenue from the sale of items. This has been applied to livestock, crops and fruit and vegetables.

Given the lack of appropriate information to calculate the value of durables and assets, the expenditure measure does not include expenditure on durables nor assets such as livestock or land. Reasons for this are described below.

Regarding home ownership, although from the questionnaire it can be determined whether the household owns their own home, the housing market has only recently become operational. Previously housing was allocated by the State through the enterprise where a person worked. Families were put on a list and allocated an apartment. The type of apartment that a household was entitled to was based on different attributes such as seniority, years of service and family size. During the early years of the reform people were able to 'purchase' or gain ownership of their homes. Now, several years into reform, those with sufficient finances are able to build their own homes. However this is not an option for most people, even less so during the period under analysis. The value of the household's dwelling has not been included in the final household aggregate figure.

To calculate the value of durables the household owns requires information on the length of ownership in order to estimate depreciation of the good. Although households were asked to estimate how much they would get if they sold their durables, it is not clear that households would be fully aware of the true re-sale value of their item. For this reason the value of household durables was not included in the calculation of household expenditure thereby possibly underestimating the true household consumption level. The amount of livestock a household owns is important for assessing household wealth, particularly in agricultural based economies. However from the surveys there is no way of distinguishing the type of livestock a household owns, or the age of the livestock, which affect the value of the asset e.g. a buffalo may be more valuable than a horse, and a fully grown cow worth more than a calf. Hence the value of a household's livestock has not been included in the household aggregate figure.

Another concern is with utility payments. Expenditure on heating may be particularly important during the winter period which lasts from November-March in the Kyrgyz Republic. Energy usage varies across urban and rural areas. Urban apartments are supplied with electricity, gas and coal, while urban houses use these three fuels as well as liquefied

gas bought in cylinders, and wood. In rural areas there are no apartments only house-
holds which use electricity, liquid gas, wood, coal and peat/manure. Although most of the
country has access to electricity, up till January 1999 usage was not metered. However
centrally supplied gas in urban areas is metered. Households and apartments are charged
according to the size and number of people registered[5] as residing in the dwelling, but
since there is no accountability for usage many households are not billed for the energy
they use. Households in rural areas are often not billed at all. People living in urban
apartments are also billed for the use of utilities, rent, building fees, elevators and janitor
fees etc. again based on the number of people registered to be living in the apartment.
Hence many households may have lower than expected expenditure on utilities.

The exclusion of assets and durables is not felt to totally distort our measure of welfare,
although the absence of these items could present a downward biases in a measure reflecting
individual welfare. Since 1993 was a particularly bad period, with triple digit inflation and
reports of households running down their household assets, in terms of durables as well
as husbandry and livestock, it is unlikely figures for 1993 are underestimated. However
for 1996, the lack of information may suggest a negative bias in household expenditure
for those households that are better-off, since it will underestimate their expenditure on
durables. Despite this drawback, the aggregates presented here do offer valuable insight
it the extent of changes in welfare over the period.

Household expenditure represents household level welfare, but for this analysis we
are interested in measuring individual welfare. As discussed in Section 2.6 in Chapter
2, household expenditure needs to be adjusted by an appropriate equivalence scale to
account for differing needs and household compositions in order for the measure to reflect
individual level welfare. Due to the availability of only a per capita poverty line for the
1996 data, for comparability a per capita equivalence scale was applied for both years, see
page 43 for a discussion on equivalence scales[6].

The calculations are based on individual per capita monthly household expenditure
for 1993 and 1996, deflated to November 1993 prices.

For the calculation of welfare several observations in both 1993 and 1996 had to be

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[5]Have a valid propiskia.

[6]Although not provided in this Thesis, results for the 1993 data were nevertheless found to be robust
to changes in the equivalence scales.

Figure 3.1: Distribution of per capita expenditure, 1993 and 1996
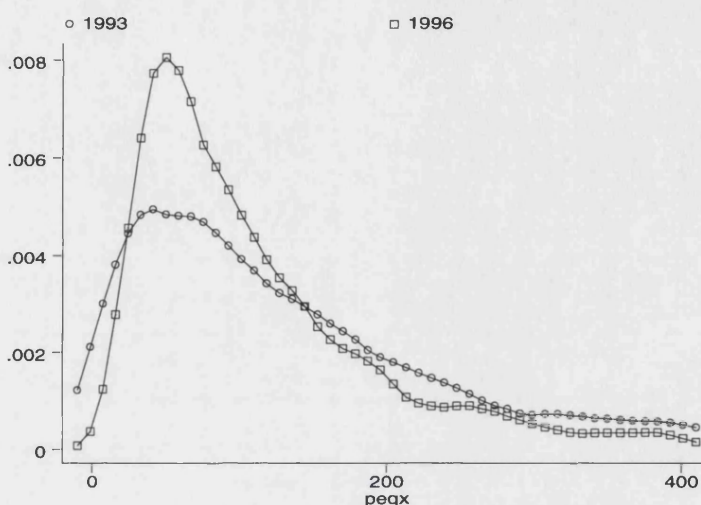
dropped due to reasons of un-reliability. From the 1993 data set, 68 observations were dropped; 58 individuals with zero household expenditure and 10 individuals reported a total household expenditure of less than 1 som a month. From the 1996 data set, one observation from the very top of the distribution was dropped. So for the calculations, the sample size for 1993 was 9,479 individuals and for 1996 was 8,988 individuals.

We now turn to the empirical results.

3.6 Empirical Results

Overview of the distribution of Income

Figure 3.1 illustrates the distribution of individual income in 1993 and 1996. Between the two years the income distribution has shifted to the left and there has been an increase in the population on a lower per capita income. However, the 1996 distribution cuts the 1993 from below implying a fall in the number of people on extremely low incomes. Figure 3.2 illustrates the distributions normalized by their respective means. It can be seen from Figure 3.2 that the majority of the population in both years have an income level less than the mean and a small percentage of the population on relatively high incomes.

Figure 3.2: Distribution of Fig.3.1 normalized by the mean
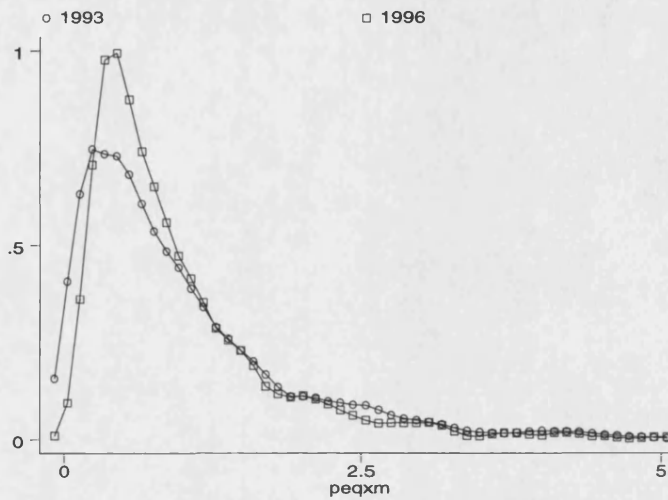
3.6.1 Welfare Rankings

Initially we first test for first-order dominance for the 1993 and 1996 distributions by looking at the proportion of the population against quantile rankings of income. From Figure 3.3, also known as the Pen's Parade, although the 1996 distribution initially dominates the 1993 the first-order dominance criteria is not satisfied as the distributions intersect at the 25th quantile. This provides no conclusive evidence concerning welfare changes and so the second-order dominance test is applied.

Second-Order dominance is based on the Lorenz and Generalized Lorenz curves. In the case of the Relative Lorenz Curve in Figure 3.4, the 1996 distribution is everywhere above the 1993 distribution, implying that the 1996 distribution is more equal than the 1993 distribution and hence welfare is higher in 1996. However looking at the Generalized Lorenz curves in Figure 3.5, the 1996 distribution lies above the 1993 distribution for approximately 70% of the population, after which the 1993 distribution dominates. The mean of the income distribution is higher in real terms in 1993 and so this distribution eventually lies above the 1996 distribution. Given these results for the Second-Order Dominance test, again it cannot be concluded that there has been an improvement in welfare (notice that since the 1993 distribution has a higher mean, we cannot apply the Absolute Lorenz dominance result). These results are robust even when the distribution

Figure 3.3: First-Order Dominance: Pen's Parade
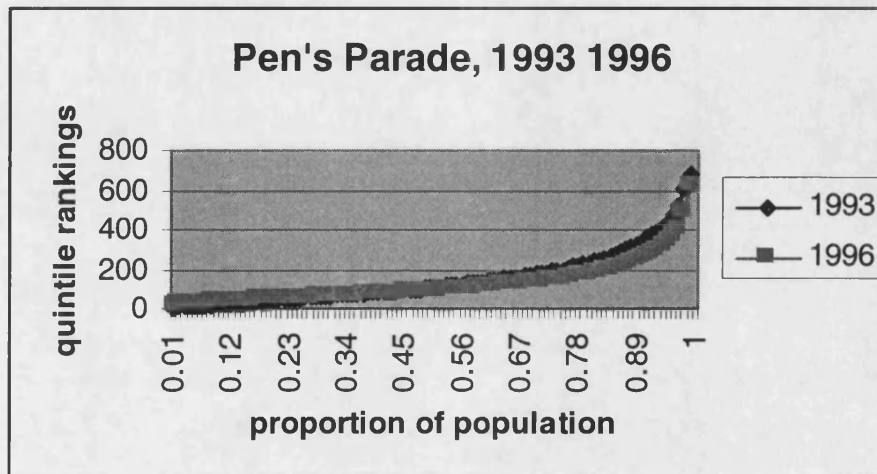
is trimmed, the only change being the Generalized Lorenz curves cross at the 48th quintile rather than the 47th quintile as in Figure 3.5. There is no change in the Lorenz curves when the distributions are trimmed and hence the figure is not provided here. Although no conclusive evidence that welfare has improved, there has been a fall in inequality and average income has fallen.

The distributions of income and dominance tests are useful tools in examining the dispersion of the whole distribution and allows for general conclusions on how the distribution has changed between 1993 and 1996. However these movements do not provide any conclusive evidence that welfare has improved or fallen over this short period, so we next turn to summary measures.

Percentile ratios provide summary information about the relative differences in the distribution. From the results in Table 3.3 it can be seen that the disparity in income between the top 10th and bottom 10th decile has lessened between the three years. This implies either a fall in income at the top decile or a significant increase of individuals with income in the bottom $10th$ decile in 1996. An increase in the percentile ratio between the 10th and the median, and 25th and the median, compared to 1993, indicates either a fall in mean income or an increase in the income levels of the 25th and 10th deciles. Evidence from the density distribution suggests that there has been an increase in the proportion

Figure 3.4: Second-Order Dominance: Relative Lorenz Curve
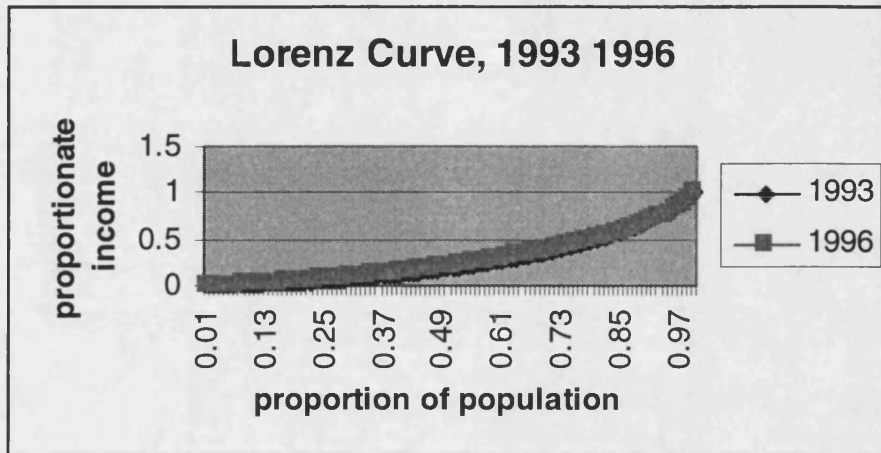
Figure 3.5: Second-Order Dominance: Generalized Lorenz Curve
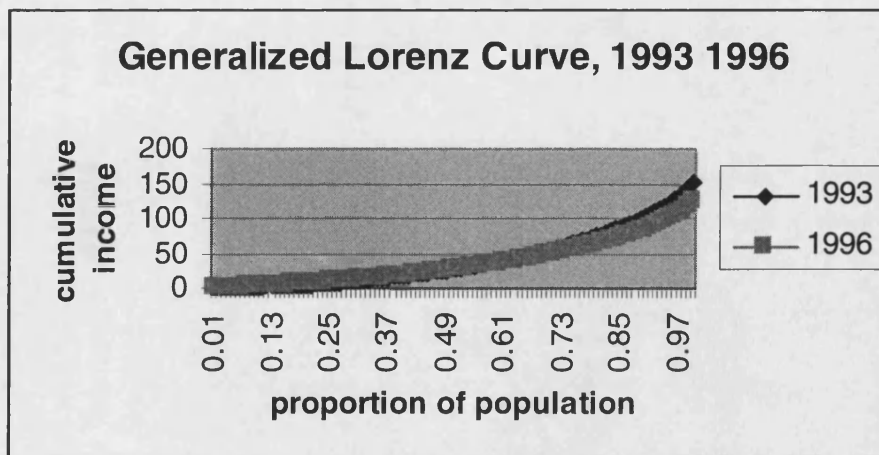
Table 3.3: Percentile Ratios, 1993 and 1996

	$p\frac{90}{10}$	$p\frac{10}{50}$	$p\frac{25}{50}$
1993	15.22	0.21	0.51
(s.e.)	(0.450)	(0.005)	(0.010)
1996	7.49	0.38	0.59
(s.e.)	(0.140)	(0.006)	(0.007)

Source: Authors own calculations based on KMPS 1993, 1996

Table 3.4: Percentile Ratios using trimmed distribution

	$p\frac{90}{10}$	$p\frac{10}{50}$	$p\frac{25}{50}$
1993	14.08	0.22	0.52
(s.e.)	(0.941)	(0.014)	(0.015)
1996	7.02	0.39	0.59
(s.e.)	(0.096)	(0.006)	(0.007)

Source: Authors calculations based on KMPS 1993, 1996

of the population on lower incomes, and thus also a fall in mean income, or $50th$ decile. The results are robust to the trimmed distribution, as illustrated in Table 3.4, with little significant change in the $p\frac{90}{10}$ ratios.

3.6.2 Inequality Measurement

Inequality measures for I_{-1}, Gini coefficient and I_2 were calculated as they are more sensitive to the bottom, middle (mode) and top, respectively, of the distribution. The distribution is broken down into urban and rural populations since living standards tend to be very different between the two areas, with two-thirds of the population living in the generally less developed rural areas.

It can be seen from Table 3.5 that there has been a fall in I_{-1} and in the Gini coefficient, reflecting a narrowing of income differences in the bottom and near the mode of the distribution. There has been a significant decline in disparity in rural areas at the lower end of the distribution, with I_{-1} falling to 0.42 from 2.08 in rural areas. Differences at the top of the distribution have increased, reflected in a higher I_2 in 1996, increasing from

Table 3.5: Inequality Indices, 1993 and 1996

	I_{-1}		Gini		I_2	
	1993	1996	1993	1996	1993	1996
Total population	1.83	0.44	0.47	0.44	0.46	0.55
(s.e)	(0.121)	(0.005)	(0.003)	(0.007)	(0.011)	(0.540)
Urban	0.72	0.40	0.43	0.40	0.38	0.49
(s.e)	(0.054)	(0.021)	(0.004)	(0.008)	(0.015)	(0.069)
Rural	2.08	0.42	0.48	0.44	0.46	0.53
(s.e)	(0.159)	(0.021)	(0.003)	(0.011)	(0.009)	(1.006)

Source: Author's calculations based on KMPS 1993, 1996

0.46 to 0.55 in 1996 for the whole population. This result is *not* robust to trimming in the top tail of the distribution (unlike the result for the percentile ratio $p\frac{90}{10}$ which is robust to trimming in the distribution and again shows an increase in disparity in the distribution between 1993 and 1996). The indices for the trimmed distribution are presented in Table 3.6. The I_2 measure in fact shows a decrease in 1996, when the top 1% of incomes are dropped. This suggests that there are a few particularly high incomes in the top tail. However, all other results are consistent with the 1996 indices being lower than in 1993. For all cases, in both the full and trimmed distributions, rural inequality remains higher than urban inequality.

The results of the inequality indices show that inequality has decreased over 1993 and 1996, with even a relatively significant fall in mean income. There appears to be a highly skewed distribution in 1996, with individuals at the very top 1% of the distribution having a much higher income than incomes up to the 98 percentile. With such disparity at the top of the distribution focusing on one index such as the I_2 could be misleading. It is noted that incomes at the very bottom of the distribution, particularly for those individuals near, or at, subsistence living, are subject to problems of measurement error. The un-reliability of the incomes at the lower tail can be seen by the relatively large standard errors for 1993 for I_{-1}, especially for rural areas. However dropping observations that seem unreliable at the lower tail can alter the result and hence the results are not robust to trimming at the bottom of the distribution.

Table 3.6: Inequality Indicies using trimmed distribution

	I_{-1}		Gini		I_2	
	1993	1996	1993	1996	1993	1996
Total population	0.86	0.35	0.46	0.41	0.40	0.27
(s.e)	(0.050)	(0.006)	(0.006)	(0.003)	(0.003)	(0.007)
Urban	0.66	0.29	0.41	0.36	0.29	0.25
(s.e)	(0.062)	(0.009)	(0.008)	(0.005)	(0.014)	(0.008)
Rural	0.93	0.34	0.47	0.41	0.43	0.39
(s.e)	(0.064)	(0.007)	(0.020)	(0.003)	(0.020)	(0.010)

Source: Author's calculations based on KMPS 1993, 1996

These results are consistent with the findings in World Bank (2000)[7], I.M.F. (1998) Report, where the Gini coefficient was found to decrease over the period 1994-1998 (although absolute numbers differed) for both an income (in the former study) and expenditure (in the latter report) measure of welfare. These findings also do not contradict those in Milanovic (1998)[8]. There the author found inequality to increase in the Kyrgyz Republic between 1988 and 1993 (and across most countries in CEE and the FSU during this period). However the figure for 1988 is based on the HBS survey which is not nationally representative data. The HBS in fact is heavily sampled amongst those individual attached to enterprises excluded the most vulnerable, such as the unemployed or pensioners. Hence estimates of household income or expenditure are likely to underestimate welfare and hide the extent of distributional disparities in the population as a whole, giving low measures of inequality than expected.

However it is important to note that one reason for falls in equality could be due to the nature of the consumption variable applied. The consumption variable does not include durable and asset expenditure. In 1993, the economic situation was particularly bad and it can be claimed that in general the whole population were affected by the economic downturn. By 1996 there were signs of some recovery which is likely to have benefited those at the top of the distribution even more than those at the bottom. It could be the

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[7]See pg. 140 World Bank (2000).
[8]See pg. 41 Milanovic (1998).

case that in 1996 certain groups of the population had to run down their asset holdings more so than other groups, in order to maintain consumption of goods and services. A variable that included asset holdings as well as expenditure on goods and services that are included here is likely to show more variability across the distribution than the narrow definition of consumption expenditure that is applied in this analysis.

3.6.3 Poverty Measurement

This section focuses on the depth of poverty. The population is decomposed into urban and rural areas as well as by oblast, as this level of poverty analysis is more informative when examining aspects of poverty.

Table 3.7: Poverty Measures (per capita), 1993 and 1996

	P_0			P_1			P_2		
	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median
				1993					
Total Pop.	0.49	0.24	0.28	0.24	0.12	0.20	0.16	0.08	0.08
(s.e)	(0.005)	(0.004)	(0.045)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Urban	0.33	0.13	0.13	0.14	0.05	0.05	0.08	0.03	0.03
(s.e)	(0.008)	(0.006)	(0.006)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
Rural	0.57	0.30	0.31	0.30	0.15	0.16	0.20	0.10	0.10
(s.e)	(0.006)	(0.006)	(0.006)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)
				1996					
Total Pop.	0.52	0.20	0.18	0.22	0.06	0.05	0.12	0.03	0.02
(s.e)	(0.005)	(0.004)	(0.004)	(0.003)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Urban	0.34	0.09	0.08	0.12	0.03	0.03	0.06	0.01	0.01
(s.e)	(0.009)	(0.005)	(0.005)	(0.004)	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)
Rural	0.61	0.25	0.22	0.27	0.07	0.07	0.15	0.03	0.03
(s.e)	(0.006)	(0.006)	(0.005)	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)

Source: Author's own calculations based on KMPS 1993, 1996

Table 3.8: Poverty Measures (per capita) by Oblast,1993

	P_0			P_1			P_2		
	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median
North									
Bishkek	0.22	0.06	0.06	0.08	0.02	0.02	0.04	0.01	0.01
(s.e.)	(0.014)	(0.007)	(0.007)	(0.006)	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)
Chu	0.38	0.15	0.16	0.17	0.06	0.07	0.10	0.04	0.05
(s.e.)	(0.012)	(0.008)	(0.008)	(0.007)	(0.005)	(0.004)	(0.005)	(0.004)	(0.003)
Issykul	0.54	0.31	0.31	0.29	0.16	0.16	0.20	0.11	0.11
(s.e.)	(0.016)	(0.015)	(0.014)	(0.011)	(0.009)	(0.010)	(0.010)	(0.008)	(0.008)
Naryn	0.64	0.39	0.39	0.37	0.19	0.19	0.25	0.11	0.11
(s.e.)	(0.026)	(0.023)	(0.023)	(0.016)	(0.013)	(0.013)	(0.013)	(0.009)	(0.009)
Talass	0.47	0.23	0.24	0.23	0.12	0.12	0.16	0.08	0.08
(s.e)	(0.023)	(0.020)	(0.021)	(0.015)	(0.012)	(0.012)	(0.012)	(0.009)	(0.009)
South									
Djalabad	0.59	0.34	0.34	0.33	0.16	0.16	0.22	0.10	0.10
(s.e.)	(0.013)	(0.013)	(0.014)	(0.009)	(0.007)	(0.007)	(0.008)	(0.005)	(0.005)
Osh	0.55	0.27	0.28	0.28	0.14	0.14	0.18	0.09	0.09
(s.e.)	(0.009)	(0.008)	(0.009)	(0.006)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)

Source: Author's own calculations based on KMPS 1993, 1996

Table 3.9: Poverty Measures (per capita) by Oblast, 1996

| | P_0 | | | P_1 | | | P_2 | | |
	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median
North									
Bishkek	0.22	0.04	0.04	0.07	0.02	0.01	0.03	0.01	0.01
(s.e.)	(0.011)	(0.006)	(0.005)	(0.005)	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)
Chu	0.31	0.10	0.08	0.12	0.02	0.02	0.06	0.01	0.01
(s.e.)	(0.012)	(0.008)	(0.007)	(0.005)	(0.002)	(0.002)	(0.003)	(0.001)	(0.001)
Issykul	0.56	0.18	0.16	0.22	0.05	0.04	0.11	0.02	0.01
(s.e.)	(0.016)	(0.013)	(0.013)	(0.009)	(0.004)	(0.004)	(0.006)	(0.002)	(0.002)
Naryn	0.71	0.29	0.24	0.31	0.09	0.08	0.18	0.04	0.04
(s.e.)	(0.019)	(0.019)	(0.018)	(0.011)	(0.008)	(0.007)	(0.008)	(0.005)	(0.004)
Talass	0.52	0.26	0.25	0.21	0.07	0.05	0.12	0.02	0.02
(s.e)	(0.025)	(0.021)	(0.020)	(0.013)	(0.006)	(0.005)	(0.009)	(0.003)	(0.002)
South									
Djalabad	0.66	0.28	0.26	0.29	0.09	0.07	0.16	0.04	0.04
(s.e.)	(0.013)	(0.012)	(0.011)	(0.007)	(0.005)	(0.005)	(0.005)	(0.003)	(0.003)
Osh	0.66	0.26	0.23	0.29	0.09	0.08	0.16	0.04	0.03
(s.e.)	(0.008)	(0.008)	(0.008)	(0.005)	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)

Source: *Author's own calculations based on KMPS 1996*

The results are some what interesting since, from Table 3.7 it can be seen that the incidence of absolute poverty has increased slightly between 1993 and 1996 with the head count rate, P_0, increasing from 49% to 52% of the population, while the relative poverty measure and severe poverty measures have fallen over the period. This illustrates how sensitive poverty results can be to the measurement applied, though is not unexpected given the shift in the income distribution between 1993 and 1996, which would result in less people below a relative cut off if average income has fallen. The head count figures for 1993, are on average four percentage points higher than those found in Ackland and Falkingham (1996), with the trend for urban and rural being the same. The relative poverty measure is below the absolute poverty measures for both years, with 28% of individuals below the 50% of the median poverty line, falling to less than a fifth of the population in 1996. Similar trends can be seen for the 60% and 40% of the median cut-offs, with the former being as high as 31% falling to 26% of the population, still lower than the absolute poverty-line, while the latter is 20% of the population in 1993 falling to 11% in 1996, see Table 3.10, in Appendix 3.8 on page 78. However, the values for P_2 fall substantially for both years across both the absolute and relative measures. This implies that the proportion of individuals nearer the poverty line are greater than those near the very bottom of the income distribution and hence the extent of the deprivation is less in 1996. There has been only a marginal increase in urban poverty, with a higher increase of 4 percentage points in rural areas. However, the incidence of severe poverty has fallen by around 4 percentage points for the population as a whole and in both urban and rural areas. Interestingly the fall in severe poverty has been greater in rural areas. This may be due to economic improvements in the economy by 1996 (wage arrears were significantly lower in 1996 compared to 1993, see Part II of thesis) as well as households being able to cope better with the new environment. Except for the head count measures, for higher values of θ (higher θ reflects increasing weight of incomes further away from the poverty line, hence those worse off) the poverty measures have fallen. The poverty indices have decreased relatively more in rural compared to urban areas, though the absolute values are higher for rural areas across all values of θ.

Differences across oblasts were quite varied, with some increases in poverty using the absolute measure of poverty, but falls using a relative approach. The relative measure in

both 1993 and 1996 are similar to the severe poverty measures, and is an indication of the significant proportion of the population who are at the lower end of the distribution. In 1993 there were only a few percentage point differences in poverty incidences across oblasts, except for Issy-kul and Djalabad where differences were as much as 4% and 7% lower, respectively. In 1996 the differences were much larger, ranging from 3% to 8% across all oblasts except Bishkek (which did not change), for P_1. Larger family sizes particularly for families at the bottom of the 'income' distribution imply a greater proportion of people than households in poverty. The figures for poverty incidence at the household level are a couple of percentage points lower than the per capita figures, 43% in 1993 and 45% in 1996. This is expected due to the relatively large household sizes which averaged 4.9 persons in 1993 and 4.6 persons in 1996, see Tables 3.13 - 3.18 for the breakdown of poverty incidences at the household level, in Appendix 3.8 on page 78. This shows how different the picture of poverty can be when not accounting for differences in household size. Comparing the results with the relative poverty measures, we see the relative poverty measures move in the same direction and are much lower than (often less than half) the absolute poverty measures.

Tables 3.8 and 3.9 present poverty rates across oblasts. Looking at figures for 1993, poverty rates are quite high in 1993 across all oblasts except Chui and Bishkek, although Chui had a rate much higher than Bishkek at 38% compared to 22% of the population. For the rest of the country the figures were quite high ranging from 47% for Talass, to 64% for Naryn. From Table 3.9, in 1996 poverty actually fell in Chu but increased across all other oblasts except Bishkek, which remained constant between the two years. Poverty increased from 64% to 71% in Naryn, in the North, while in the South both Djalabad and Osh experienced an increase in poverty from 59% and 55% respectively to 66% in each oblast. Osh is the second largest city in the Kyrgyz Republic and highly urban, illustrating that not only rural areas experienced increases in poverty. Interestingly in all oblasts except Talass, there was a fall in severe poverty compared to levels in 1993, the falls ranged from 6% of the population in Bishkek to as much as 34% in Djalabad and 37% in Naryn. For P_1 and P_2 the trends are the same, but the absolute values decrease with increasing θ. Also the fall in rates for those experiencing severe poverty suggest that although there has be a higher proportion of individuals falling into poverty, the numbers

falling to much lower levels of income has decreased.

3.7 Conclusion

This chapter presented aspects of welfare to see what impact the reform has had over this relatively short period 1993-1996 on the population of the Kyrgyz Republic. The main contribution of this chapter was a disaggregated examination of inequality and poverty in the Kyrgyz Republic in 1993 and 1996. The central findings are that there is no conclusive evidence that welfare has increased over this period, since although there has been a decrease in inequality in the income (consumption expenditure) distribution, average income has fallen. The fall in income has lead to an increase in the incidence of poverty, however severe poverty rates have fallen, suggesting that more people are being pushed into poverty and those at the bottom of the distribution have not experienced a fall in living standards.

Average income has fallen across the population but appears to have increased for those at the very bottom of the distribution. Inequality has fallen over the period, even in urban and rural areas, but using a measure that focuses on the top tail of the distribution, inequality has increased. This result is not robust to trimming of the top and bottom 1% of the income distribution, with inequality decreasing for all measures, urban and rural. The fall in inequality in rural areas is much smaller using a trimmed distribution and illustrates how data at the top and bottom of the distribution can alter the picture. Large expenditures at the top of the distribution can well be valid particularly since there were improvements in the economy in 1996. The narrowing of the inequality at the lower end of the distribution is a reflection of how difficult it can be to calculate expenditure particularly in a rural economy where a large source of consumption is based on home produced goods which are difficult to price.

Although absolute poverty has increased over this period, *albeit* only marginally, from 49% to 52%, severe poverty and relative measures of poverty have fallen over the period, again seen in the fall in mean income across the population. As anticipated, measures show that the rural population is poorer than the urban population in both years. Interestingly, a breakdown of poverty incidences by oblast show that the urban city of Osh has the highest incidence of poverty, followed by the other rural oblasts of Naryn, Talass and Djalabad.

All poverty measures sensitive to the distribution of the population below the poverty line show a fall in poverty.

The findings presented here need to be kept in mind when looking at the changes in the labour market, discussed in Part II of this thesis since labour market activity has such an impact on household and individual income. Much of the changes to inequality and poverty incidences are likely to be related to the falls in wage arrears, increases in unemployment and informal labour market activities.

This analysis illustrated how sensitive results can be to the construction of the underlying variable and the nature of the measurement tools applied. The analysis also illustrated the importance of looking at inequality and poverty measures that are distribution sensitive to get a clearer picture of how the distribution of income has changed. It also highlights how outliers in the tails of the distribution can alter results and the importance of examining how robust results are to potential measurement error. So although over the period the transition process may have lead to an increase in those poor, those already poor were not made worse of and this is comparable to results in other studies on the Kyrgyz Republic, that the worst effects of the transition process are over. However panel data would be needed to be able to conclude to what extent poverty has been chronic or transient for which groups of the population. When more data become available future research could be carried out to assess how robust these findings are to changes in the poverty line as well as seeing how trends in inequality and poverty change across the years.

The drawbacks to measures of welfare in rural economies in the light of hyperinflation, wage arrears and prevalence of bartering have been mentioned, and although we feel the expenditure based measure applied here is a good proxy for welfare, we now turn to a non-monetary measure of welfare to see if a subjective measure of welfare offer information complementary to conventional monetary based measures.

3.8 Appendix: Relative Poverty and Household level welfare

Table 3.10: Relative Poverty Measures (per capita), 1993 and 1996

	P_0		P_1		P_2	
	60%	40%	60%	40%	60%	40%
	of Median		of Median		of Median	
1993						
Total Pop.	0.31	0.20	0.15	0.09	0.09	0.06
(s.e)	(0.005)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)
Urban	0.17	0.09	0.07	0.04	0.04	0.02
(s.e)	(0.006)	(0.005)	(0.003)	(0.002)	(0.002)	(0.001)
Rural	0.38	0.25	0.19	0.13	0.12	0.08
(s.e)	(0.006)	(0.006)	(0.004)	(0.003)	(0.003)	(0.003)
1996						
Total Pop.	0.26	0.11	0.08	0.03	0.04	0.01
(s.e)	(0.005)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)
Urban	0.13	0.05	0.04	0.02	0.02	0.01
(s.e)	(0.006)	(0.004)	(0.002)	(0.001)	(0.001)	(0.001)
Rural	0.32	0.14	0.10	0.04	0.04	0.01
(s.e)	(0.006)	(0.005)	(0.002)	(0.001)	(0.001)	(0.001)

Source: Author's own calculations based on KMPS 1993, 1996

Table 3.11: Relative Poverty Measures (per capita) by Oblast, 1993

| | P_0 | | P_1 | | P_2 | |
	1993					
	60%	40%	60%	40%	60%	40%
	of Median		of Median		of Median	
North						
Bishkek	0.17	0.05	0.06	0.01	0.03	0.01
(s.e.)	(0.012)	(0.007)	(0.005)	(0.003)	(0.003)	(0.002)
Chu	0.36	0.12	0.15	0.05	0.09	0.04
(s.e.)	(0.011)	(0.008)	(0.006)	(0.004)	(0.004)	(0.003)
Issykul	0.48	0.24	0.25	0.13	0.18	0.10
(s.e.)	(0.016)	(0.014)	(0.01)	(0.009)	(0.009)	(0.008)
Naryn	0.59	0.33	0.33	0..15	0.22	0.08
(s.e.)	(0.022)	(0.021)	(0.015)	(0.011)	(0.012)	(0.007)
Talass	0.41	0.19	0.20	0.10	0.13	0.06
(s.e)	(0.023)	(0.018)	(0.014)	(0.011)	(0.012)	(0.008)
South						
Djalabad	0.54	0.29	0.29	0.12	0.19	0.07
(s.e.)	(0.014)	(0.012)	(0.009)	(0.006)	(0.007)	(0.004)
Osh	0.50	0.22	0.24	0.11	0.16	0.07
(s.e.)	(0.009)	(0.007)	(0.006)	(0.004)	(0.004)	(0.003)

Source: *Author's own calculations based on KMPS 1993*

Table 3.12: Relative Poverty Measures (per capita) by Oblast, 1996

	1996					
	P_0		P_1		P_2	
	60%	40%	60%	40%	60%	40%
	of Median		of Median		of Median	
North						
Bishkek	0.08	0.03	0.02	0.01	0.01	0.002
(s.e.)	(0.007)	(0.005)	(0.002)	(0.001)	(0.001)	(0.000)
Chu	0.13	0.04	0.03	0.01	0.01	0.001
(s.e.)	(0.009)	(0.005)	(0.003)	(0.001)	(0.001)	(0.000)
Issykul	0.24	0.09	0.06	0.02	0.03	0.01
(s.e.)	(0.014)	(0.009)	(0.005)	(0.003)	(0.003)	(0.001)
Naryn	0.39	0.16	0.12	0.05	0.06	0.02
(s.e.)	(0.020)	(0.015)	(0.001)	(0.006)	(0.005)	(0.003)
Talass	0.27	0.10	0.08	0.02	0.03	0.01
(s.e)	(0.022)	(0.014)	(0.008)	(0.004)	(0.004)	(0.001)
South						
Djalabad	0.37	0.15	0.11	0.04	0.05	0.02
(s.e.)	(0.013)	(0.001)	(0.005)	(0.004)	(0.003)	(0.002)
Osh	0.34	0.17	0.11	0.05	0.05	0.02
(s.e.)	(0.009)	(0.007)	(0.004)	(0.002)	(0.002)	(0.001)

Source: Author's own calculations based on KMPS 1996

Table 3.13: Poverty Measures (household level), 1993 and 1996

| | P_0 | | | P_1 | | | P_2 | | |
	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median
				1993					
Total Pop.	0.43	0.21	0.21	0.21	0.10	0.10	0.14	0.06	0.07
(s.e.)	(0.011)	(0.009)	(0.009)	(0.007)	(0.009)	(0.005)	(0.005)	(0.005)	(0.004)
Urban	0.31	0.12	0.12	0.13	0.05	0.05	0.07	0.03	0.03
(s.e.)	(0.016)	(0.012)	(0.011)	(0.008)	(0.006)	(0.006)	(0.006)	(0.004)	(0.004)
Rural	0.53	0.28	0.29	0.28	0.14	0.14	0.19	0.09	0.09
(s.e.)	(0.016)	(0.015)	(0.014)	(0.010)	(0.009)	(0.009)	(0.009)	(0.007)	(0.007)
				1996					
Total Pop.	0.45	0.16	0.14	0.18	0.05	0.04	0.09	0.02	0.02
(s.e.)	(0.012)	(0.008)	(0.008)	(0.006)	(0.003)	(0.003)	(0.004)	(0.002)	(0.001)
Urban	0.28	0.07	0.06	0.10	0.02	0.02	0.05	0.01	0.01
(s.e.)	(0.017)	(0.009)	(0.009)	(0.007)	(0.004)	(0.003)	(0.004)	(0.002)	(0.001)
Rural	0.55	0.21	0.19	0.23	0.06	0.06	0.13	0.03	0.02
(s.e.)	(0.014)	(0.012)	(0.011)	(0.007)	(0.005)	(0.004)	(0.005)	(0.003)	(0.002)

Source: Author's own calculations based on KMPS 1993, 1996

Table 3.14: Poverty Measures (household level) by Oblasts, 1993

	P_0			P_1			P_2		
	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median	Poor	Very Poor	50% Median
North									
Bishkek	0.21	0.08	0.08	0.09	0.03	0.03	0.05	0.02	0.02
(s.e.)	(0.022)	(0.015)	(0.016)	(0.012)	(0.008)	(0.008)	(0.008)	(0.006)	(0.006)
Chu	0.37	0.15	0.28	0.17	0.07	0.12	0.10	0.05	0.07
(s.e.)	(0.022)	(0.017)	(0.021)	(0.013)	(0.009)	(0.011)	(0.010)	(0.007)	(0.009)
Issykul	0.50	0.29	0.29	0.26	0.14	0.15	0.18	0.10	0.10
(s.e.)	(0.036)	(0.032)	(0.033)	(0.025)	(0.021)	(0.020)	(0.021)	(0.017)	(0.016)
Naryn	0.62	0.36	0.36	0.35	0.17	0.18	0.23	0.11	0.11
(s.e.)	(0.054)	(0.052)	(0.052)	(0.036)	(0.028)	(0.030)	(0.030)	(0.021)	(0.022)
Talass	0.46	0.21	0.22	0.22	0.11	0.11	0.14	0.07	0.07
(s.e.)	(0.052)	(0.040)	(0.040)	(0.033)	(0.025)	(0.024)	(0.027)	(0.018)	(0.018)
South									
Djalabad	0.52	0.29	0.29	0.28	0.13	0.13	0.18	0.08	0.08
(s.e.)	(0.034)	(0.032)	(0.030)	(0.022)	(0.017)	(0.016)	(0.017)	(0.012)	(0.011)
Osh	0.53	0.25	0.26	0.26	0.13	0.13	0.17	0.09	0.09
(s.e.)	(0.022)	(0.020)	(0.019)	(0.015)	(0.012)	(0.012)	(0.012)	(0.009)	(0.009)

Source: Author's own calculations based on KMPS 1993

Table 3.15: Poverty Measures (household level) by Oblasts, 1996

| | 1996 | | | | | | | | |
| | P_0 | | | P_1 | | | P_2 | | |
	Poor	V. Poor	50% Median	Poor	V. Poor	50% Median	Poor	V. Poor	50% Median
North									
Bishkek	0.20	0.03	0.03	0.06	0.01	0.01	0.03	0.004	0.003
(s.e.)	(0.021)	(0.009)	(0.008)	(0.008)	(0.003)	(0.003)	(0.004)	(0.001)	(0.001)
Chu	0.27	0.07	0.06	0.09	0.02	0.01	0.04	0.01	0.004
(s.e.)	(0.023)	(0.013)	(0.012)	(0.009)	(0.004)	(0.003)	(0.005)	(0.002)	(0.001)
Issykul	0.48	0.14	0.13	0.18	0.04	0.03	0.09	0.01	0.01
(s.e.)	(0.037)	(0.025)	(0.024)	(0.017)	(0.008)	(0.001)	(0.011)	(0.004)	(0.004)
Naryn	0.65	0.26	0.22	0.28	0.08	0.07	0.15	0.04	0.03
(s.e.)	(0.044)	(0.040)	(0.037)	(0.026)	(0.016)	(0.015)	(0.019)	(0.010)	(0.009)
Talass	0.45	0.21	0.19	0.18	0.05	0.04	0.10	0.02	0.01
(s.e.)	(0.056)	(0.045)	(0.045)	(0.029)	(0.014)	(0.011)	(0.018)	(0.006)	(0.005)
South									
Djalabad	0.58	0.25	0.22	0.25	0.07	0.06	0.14	0.03	0.03
(s.e.)	(0.031)	(0.025)	(0.026)	(0.017)	(0.010)	(0.010)	(0.011)	(0.006)	(0.006)
Osh	0.63	0.24	0.21	0.27	0.08	0.07	0.15	0.04	0.03
(s.e.)	(0.021)	(0.018)	(0.018)	(0.012)	(0.007)	(0.007)	(0.009)	(0.004)	(0.004)

Source: Author's own calculations based on KMPS 1996

Table 3.16: Relative Poverty Measures (household level), 1993 and 1996

	P_0		P_1		P_2	
	60%	40%	60%	40%	60%	40%
	of Median		of Median		of Median	
1993						
Total Pop.	0.27	0.17	0.13	0.08	0.08	0.05
(s.e.)	(0.011)	(0.009)	(0.006)	(0.005)	(0.005)	(0.004)
Urban	0.16	0.09	0.07	0.03	0.04	0.02
(s.e.)	(0.012)	(0.010)	(0.006)	(0.005)	(0.005)	(0.004)
Rural	0.36	0.23	0.17	0.12	0.12	0.07
(s.e.)	(0.015)	(0.013)	(0.009)	(0.007)	(0.007)	(0.005)
1996						
Total Pop.	0.21	0.09	0.06	0.02	0.03	0.01
(s.e.)	(0.009)	(0.006)	(0.003)	(0.002)	(0002)	(0.001)
Urban	0.10	0.04	0.03	0.01	0.01	0.004
(s.e.)	(0.011)	(0.007)	(0.004)	(0.002)	(0.002)	(0.001)
Rural	0.27	0.12	0.09	0.03	0.04	0.01
(s.e.)	(0.014)	(0.010)	(0.005)	(0.003)	(0.003)	(0.002)

Source: Author's own calculations based on KMPS 1993, 1996

Table 3.17: Relative Poverty Measures (household level) by Oblasts, 1993

	P_0		P_1		P_2	
	60%	40%	60%	40%	60%	40%
	of Median		of Median		of Median	
North						
Bishkek	0.10	0.7	0.04	0.03	0.03	0.02
(s.e.)	(0.017)	(0.013)	(0.009)	(0.007)	(0.007)	(0.005)
Chu	0.23	0.12	0.09	0.06	0.06	0.04
(s.e.)	(0.019)	(0.015)	(0.010)	(0.009)	(0.008)	(0.007)
Issykul	0.32	0.24	0.17	0.12	0.12	0.08
(s.e.)	(0.034)	(0.031)	(0.022)	(0.019)	(0.018)	(0.016)
Naryn	0.46	0.30	0.21	0.14	0.13	0.08
(s.e.)	(0.057)	(0.049)	(0.032)	(0.027)	(0.024)	(0.021)
Talass	0.24	0.16	0.13	0.09	0.08	0.05
(s.e.)	(0.044)	(0.038)	(0.027)	(0.023)	(0.020)	(0.016)
South						
Djalabad	0.38	0.24	0.17	0.10	0.10	0.05
(s.e.)	(0.034)	(0.030)	(0.018)	(0.015)	(0.013)	(0.010)
Osh	0.31	0.21	0.16	0.11	0.10	0.07
(s.e.)	(0.020)	(0.018)	(0.012)	(0.011)	(0.010)	(0.008)

Source: Author's own calculations based on KMPS 1993

Table 3.18: Poverty Measures (household level) by Oblasts, 1996

	P_0		P_1		P_2	
	60%	40%	60%	40%	60%	40%
	of Median		of Median		of Median	
North						
Bishkek	0.06	0.02	0.01	0.01	0.01	0.001
(s.e.)	(0.012)	(0.007)	(0.004)	(0.002)	(0.002)	(0.001)
Chu	0.09	0.03	0.02	0.01	0.01	0.001
(s.e.)	(0.015)	(0.008)	(0.005)	(0.002)	(0.002)	(0.001)
Issykul	0.18	0.07	0.05	0.01	0.02	0.01
(s.e.)	(0.028)	(0.018)	(0.010)	(0.005)	(0.005)	(0.003)
Naryn	0.35	0.14	0.11	0.04	0.05	0.02
(s.e.)	(0.045)	(0.030)	(0.018)	(0.011)	(0.011)	(0.007)
Talass	0.22	0.08	0.07	0.01	0.03	0.004
(s.e.)	(0.045)	(0.032)	(0.016)	(0.007)	(0.007)	(0.003)
South						
Djalabad	0.32	0.13	0.10	0.04	0.05	0.02
(s.e.)	(0.029)	(0.020)	(0.012)	(0.008)	(0.008)	(0.005)
Osh	0.32	0.15	0.10	0.04	0.05	0.02
(s.e.)	(0.020)	(0.016)	(0.008)	(0.005)	(0.005)	(0.003)

Source: Author's own calculations based on KMPS 1996

Chapter 4

An Alternative Measure of Welfare

The previous chapter presented a detailed analysis of the changes in welfare using a monetary approach to welfare measurement. This chapter looks at welfare based on subjective non-monetary measures of welfare.

4.1 Introduction

The concern in this Chapter is to examine individual welfare in the early stages of transition in Kyrgyzstan, using a somewhat unorthodox approach in that the implicit measure of individual welfare throughout this paper is self-reported satisfaction with life (measured on a five-point scale). By adopting such a general measure of welfare, the results are complementary to the those found in Chapter 3 which used a more standard approach to welfare and poverty analysis. The analysis uses data from the 1993 survey since the same questions were not asked in the corresponding Fall 1996 LSMS survey. Although the data set refers to one year, some of the questions used in the empirical analysis refer to retrospective information on aspects of welfare and hence this analysis sheds some light on the process of transition despite being only one data point.

Chapter 2, Section 2.6 details the Survey data and discusses issues of monetary based welfare measures and why an expenditure rather than income based welfare measure is better in the context of a less-developed economy like Kyrgyzstan. In particular, given

that late-1993 was a time of high inflation, in conjunction with existing problems of low monetization of the economy and widespread barter, self-reported satisfaction may in fact include broader information and provide a more accurate picture of welfare than purely monetary variables. Non-monetary measures of welfare are likely to capture aspects of well-being that are difficult to quantify, and this is even more relevant in rural economies such as the economy under analysis here.

Three main questions are analyzed using a subjective measure of well-being or happiness. The first concerns the link between happiness and income: are high-income people happier than those on low income? This is a relatively unexplored question in a transition country. The second question is whether satisfaction with life is influenced by the mean level of income in one's locality; in other words, are people affected more by absolute levels of income, or income relative to those living around them? The data also allow for the test of whether psychological variables such as perceived position on the "wealth" ladder, or concern about providing necessities for the family, have a strong effect on happiness.

The third question explores the correlates of satisfaction with other socio-economic variables: how does subjective well-being differ according to factors such as age, gender, education and labour force status? The upheaval caused by transition from state control to a market economy is likely to affect different segments of the population in different ways; for example, young people are likely to have less difficulty in adapting to the challenges of transition than the old. The link between life satisfaction and education is of particular interest in the transition context, where skills and knowledge acquired under the old regime may be of little value during the transition.

This analysis is a contribution to the growing literature on the "economics of happiness". The psychology literature regularly utilizes subjective data, and economists are starting to take more of an interest in analyzing the determinants of subjective well-being. Many economists remain wary of this approach, usually on the grounds that the use of self-reported measures of satisfaction requires interpersonal comparisons of utility, and that the data are full of random "noise". Indeed one should interpret subjective measures of well-being with caution, however, it is shown here that the numbers contain useful information, given that the definition and measurement of poverty are problematic issues. Furthermore, there is ample evidence that subjective data are often strong predictors of

observed behaviour, contradicting the view that the numbers are random and essentially meaningless. For example, job quit rates appear to be negatively related to self-reported measures of job satisfaction, see e.g. Freeman (1978), Akerlof, Rose, and Yellen (1988) and Clark, Georgellis, and Sanfey (1998) and life satisfaction is a strong predictor of mortality and illness, see Clark and Oswald (1996).

Chapter 2 has described the economic trends for the transition period and provides a context for the results given the changes in the economy. To summarize, as in other transition countries, the early years were marked by large falls in output (especially in industry), high budget deficits, and rapid inflation. Unemployment was found to be 15% in 1993 (see Table 5.1 on page 120 in Chapter 5) which is low relative to the collapse in output, with the official unemployment figures in Table 2.2 being even lower. Part of the reason is that a large number of people left the labour force in 1992 and 1993, particularly those near pension age and women caring for children. The incidence of non-payment of wages, known as wage arrears, was as high as 58% amongst workers in the Fall of 1993, particularly affecting farm workers (see Table 6.1 in Chapter 6 which looks at wage arrears). In real terms GDP did not start increasing until 1995, and the level of GDP in 1996 was only 57% of the 1989 level, a ratio comparable to other members of the Commonwealth of Independent States, see E.B.R.D. (1997). Chapter 3 has shown that the incidence of poverty was found to be as high as 49% of the population in 1993 across individuals, and as high as 57% in rural areas. It is clear that by late 1993, when the survey was carried out, the economy was in a deep depression and living conditions had become extremely difficult for the great majority of people.

The main finding in this Chapter is that satisfaction with life is strongly correlated with economic well-being, as measured by equivalized household expenditure. This result is robust to different methods of equivalization. Interestingly, there is some evidence that relative 'income' is also important for individual well-being. In particular, those who see themselves as being at the "poor" end of the spectrum are much more likely to be dissatisfied than the "rich". Ravallion and Lokshin (2000) find that such measures indicate individuals anticipated movements in welfare. Also Clark and Oswald (1996) find that job satisfaction is strongly influenced by relative, rather than absolute income. The main results in this chapter are that happiness is negatively correlated with age, unemployment

and being divorced, there are ethnic and regional differences in happiness, but neither gender nor education seems to make much difference to people's responses.

4.2 Previous Literature

Attempts to assess welfare in a broader context than just growth in national income have been undertaken since the 1950's. Self-reported happiness has been used to reflect not just economic well-being but a more broader concept of welfare. Following Pigou's dictum, that changes in economic welfare indicate changes in social welfare in the same direction if not to the same degree, the concept of welfare has been used interchangeably. There have been many studies in the past, particularly by psychologists, which attempt to capture how happy people are. Cantril (1965) devised a sophisticated method of studying fears and happiness, which he then implemented across 14 countries. In his and other subsequent studies across several countries, income and happiness were found to be positively correlated, contrasting the image of the carefree but happy poor in Inkeles (1960), similarly reached by Bradburn (1969). However the association of happiness and income was found to be much weaker within countries than across countries. Mental health was also found to be positively related to socio-economic status and a positive association was also found between happiness and years of schooling. The results also found the young were happier than the old and the married happier than the unmarried. Davies (1965) and Duesenberry (1952) suggested that it was relative income that was important to people, and used a concept of people being happy compared to others, noting that individuals did not necessarily compare themselves to everyone but those in their peer group were given a much higher weight in such comparisons, i.e. "keeping up with the Jones' ". Layard (1980) also claims that happiness depends, inter alia, on the position of individuals in some status ranking. Thus increasing everyone's income will not necessarily make people happier, despite income having gone up and hence richer countries were not likely to be happier than poor countries. It has been found that an increase in national output itself makes for an escalation in human aspirations and so negates the expected positive impact on welfare of an increase in income. Happiness was thus found to depend on income and status relative to individuals increasing expectations. Happiness is by no means the only non-monetary approach to the study of welfare. Van Praag, Kapteyn, and Van Herwaar-

den (1979) take a relative approach to welfare as the influence of a reference group to which an individual aspires, with measures of "distance" away from the reference group as relative deprivation. The importance of individuals in the reference group are weighted according to the influence those belonging to the reference group have on the individual. Desai and Shah (1988) incorporate Townsend's approach (see Townsend (1979)) to welfare deprivation in the form of an individual's exclusion from activities and events of the community or society to which he or she belong. The authors measure the frequency of non-participation in community events with the different activities weighted according to the importance the event has to the community. This is also reflected in Sen's capabilities approach (Sen 1985) where capabilities reflect what real opportunities an individual feels they have regarding the life they may lead and not just what they have achieved, i.e. an individual's functioning. Some studies have also found a clear time-series relationship between what psychologist's term as subjective well-being (a composite measure of life satisfaction) and absolute income at extremely low levels of absolute income. At very low levels of income, increases in absolute income do have lasting improvements in subjective well-being, while Diener and Diener (1995) have shown that in the middle and upper portions of the income distribution, variations in income explain less than 2% of variation in reported satisfaction levels. Over time, average satisfaction levels within a country were found not to be significantly correlated.

Recent studies on happiness have looked at happiness at work. These studies have tended to include non-economic dimensions realizing the limitations of purely economic features in determining welfare, see Ng (1978). Clark and Oswald (1996) examined whether utility depends on income relative to a comparison level, using data comprising of 5,000 British workers, and found that their satisfaction levels were inversely related to the comparison wage rate and satisfaction strongly declined with the level of education. In another study Clark, Oswald, and Warr (1996) found that job satisfaction was U-shaped in age, declining from a moderate level in the early years of employment and then increasing steadily up to retirement. They also find a similar age pattern of employees context-free mental health, suggesting that both job satisfaction and mental health are affected by non-job factors of the life-state and personal circumstances. They emphasize the importance of changes in expectations with increasing age. Veenhoven (1996) reviews the literature

on satisfaction in the context of Social Indicators Research, examining how conceptualization, measurement issues, comparative data and the use of the satisfaction concept in wider conceptions of welfare have been applied in different studies over the years. In an earlier paper, Veenhoven (1991) purports that happiness as a relative concept is often mixed up with overall happiness and contentment but if confined to overall happiness than happiness is not a relative concept and not dependent on a comparison of one's life to what it is and what it should be. Satisfaction has also been examined from the angle of political theory. Rose and Carnaghan (1995) examines satisfaction and generational attitudes to Communist Regimes and finds that the younger generation is least approving of the old regime and the generational turnover, reinforced by changes in political socialization caused by the collapse of Communist regimes, is eroding nostalgia for a Communist past.

There is a large literature on the determinants of happiness, see Veenhoven (1996) and Oswald (1997) for recent surveys spanning this topic. Here we focus on the evidence concerning the question, are richer people happier? Standard economic theory assumes a positive relation between income and happiness, or "utility", and non-satiation is one of the basic axioms of microeconomic theory. Nevertheless, economists have recognized for some time that the link between the two is not as straightforward as first thought.

An influential paper by Easterlin (1974) stimulated much of the debate in this area. Easterlin pointed out an apparent paradox: based on an examination of data from around the world, he argued that there is little relation between income and happiness across countries, although within countries rich people are consistently happier than the poor. The explanation for this, according to Easterlin, is that it is relative, rather than absolute income or wealth that matters to people.

This argument has by no means been universally accepted. Veenhoven (1991) contains a comprehensive review of the relative versus absolute debate. He concludes that the theory that happiness is relative does not fit the facts. Instead, "[H]appiness in the sense of life-satisfaction depends only partly on comparison, and even standards of comparison do not fully adjust to circumstances", Veenhoven (1991), p. 32. Also, Veenhoven (1996) notes that the correlation between happiness and income is much stronger in poorer countries. This is further evidence, he argues, against the theory that happiness is relative, which would imply a similar correlation in rich and poor countries alike.

The literature on the determinants of life-satisfaction in transition economies is very small. Blanchflower and Freeman (1997) pool cross-country survey data which includes three ex-communist countries, East Germany, Hungary and Slovenia, and estimate ordered probits of life-satisfaction. They find that the country dummies for all three countries are negative and highly significant. Blanchflower and Oswald (1997) focus on the effect of unemployment on happiness. They find that the strong negative effect found in a number of western countries carries over also to transition countries. They conclude that the magnitude of the reduction in reported well-being caused by unemployment is similar in eastern and western Europe. Finally, Ravallion and Lokshin (1998a) use Russian survey data to show that, in addition to measured income, other factors such as education, health, labour market status and location affect the extent to which people see themselves as "rich" or "poor".

4.3 Data Description

This analysis is based on data from the Fall 1993 KMPS and concerns individuals aged 14 years and above, which includes 5,647 individuals, see Chapter 2, Section 2.6 for details of the Survey. The calculation of total household expenditure can be found in Chapter 3, Section 3.4, and for this analysis individuals belonging to households with zero or negative expenditure were dropped, affecting 40 observations. Missing data on other key variables led to a loss of a further 307 observations, and the size of the final data set used in our analysis was 5,300 individuals, consisting of 2,460 males and 2,840 females.

The main variable analyzed refers to responses to the question, "to what extent are you satisfied with your life in general at the present time?" There were five possible responses (other than "don't know" or "refused"; these are eliminated from the analysis): not at all satisfied, less than satisfied, neither satisfied nor dissatisfied, rather satisfied, and fully satisfied. In the summary statistics the first two answers were grouped into the category "dissatisfied", and the last two into "satisfied".

Expenditure is reported at the household level and has been adjusted for differing household composition using a standard OECD equivalence scale, which weights the first adult with a value of 1, all remaining adults with 0.7 and all children in the household with a value of 0.5., again see Chapter 2, Section 2.6 for a detailed discussion of equivalence

scales.

4.4 Empirical Results

4.4.1 Summary Statistics

Table 4.1 presents an initial analysis, based on cross-tabulations, of the grouped answers to the question, "to what extent are you satisfied with your life in general at the present time?".

The data in Table 4.1 contain a number of points of interest, and several patterns are immediately apparent. Overall, nearly two-thirds of the sample are dissatisfied with life. Cross-country comparisons on subjective data should be made tentatively, see for example, Diener and Diener (1995) Veenhoven (1996), but this suggests a very high degree of distress relative to prosperous, non-transition countries. As a comparison, Eurobarometer data from 1975-86 shows that more than 80% of people in selected advanced western european countries describe themselves as "very happy" or "pretty happy", with the remainder being "not too happy", see Oswald (1997), Table 5. However, Veenhoven (1996) notes that, whereas in western countries the number of happy people exceeds the number of unhappy people by about three to one, the reverse pattern occurs in third-world countries, particularly when many people live at a subsistence level. This is consistent with the evidence found here for Kyrgyzstan.

An inspection of the data in Table 4.1 provides a first indication of a positive link between satisfaction and household expenditure (although the pattern seems to be reversed at the very top end of the scale).

Other correlations suggested by the data are: satisfaction decreases with age, the unemployed appear to be less happy than those in employment or out of the labour force, and dissatisfaction is higher among ethnic Russians and other Slavs, those living in urban areas, and divorced people. The unhappiness of some non-Kyrgyz ethnic groups may reflect fears that they would lose some of their privileges and favourable treatment in the new republic. In fact, many of the highly skilled Russian and Slavs had emigrated from Kyrgyzstan during the 1990s and continue to do so, partly in response to a perceived increase in Kyrgyz nationalism, see Abazov (1999) and U.N.D.P. (1990). It is difficult to

Table 4.1: Satisfaction with Life

	Satisfied	%	Neither Satisfied /Dissatisified	%	Dissatisfied	%	Total obs.
Total	*1000*	*(18.9)*	*900*	*(17.0)*	*3400*	*(64.2)*	*5300*
Gender							
Male	470	(19.1)	432	(17.6)	1558	(63.3)	2460
Female	530	(18.7)	468	(16.5)	1842	(64.9)	2840
Age Group							
14-19	224	(26.5)	180	(21.3)	441	(52.2)	845
20-29	275	(20.6)	224	(16.8)	836	(62.6)	1335
30-39	202	(17.5)	191	(16.5)	762	(66.0)	1155
40-49	88	(13.2)	112	(16.7)	469	(70.1)	669
50-59	97	(18.2)	79	(14.8)	358	(67.0)	534
60+	114	(15.0)	114	(15.0)	534	(70.1)	762
Education Level							
Up to Primary Education	148	(16.7)	140	(15.8)	600	(67.6)	888
Did not complete High School	182	(17.7)	187	(18.2)	658	(64.1)	1027
High School only	276	(20.8)	253	(19.0)	801	(60.2)	1330
High School and Vocational	189	(19.2)	163	(16.6)	633	(64.3)	985
Higher Education	205	(19.2)	157	(14.7)	708	(66.2)	1070
Household Expenditure Group, Soms per month							
1-249	226	(16.9)	234	(17.5)	874	(65.5)	1334
250-499	220	(18.2)	186	(15.4)	802	(66.4)	1208
500-749	187	(21.4)	136	(15.6)	550	(63.0)	873
750-999	119	(18.9)	123	(19.5)	388	(61.6)	630
1000-1999	183	(19.2)	167	(17.5)	605	(63.4)	955
2000-2999	46	(23.0)	41	(20.5)	113	(56.5)	200
3000-5500	19	(19.0)	13	(13.0)	68	(68.0)	100
Labour Force Status							
Employed	506	(18.1)	466	(16.7)	1817	(65.2)	2789
Unemployed	77	(15.8)	72	(14.7)	340	(69.5)	489
Out of the labour force	417	(20.6)	362	(17.9)	1243	(61.5)	2022
Ethnic Group							
Kyrgyz	655	(22.9)	500	(17.5)	1700	(59.5)	2855
Russian	78	(7.7)	159	(15.8)	771	(76.5)	1008
Other Slavs	12	(6.4)	24	(12.8)	152	(80.9)	188
Uzbeks	174	(22.1)	129	(16.4)	485	(61.6)	788
Other	81	(17.6)	88	(19.1)	292	(63.3)	461
Settlement							
Urban	290	(14.1)	324	(15.8)	1437	(70.1)	2051
Rural	710	(21.9)	576	(17.7)	1963	(60.4)	3249
Marital Status							
Never married	270	(21.3)	253	(20.0)	745	(58.8)	1268
married	651	(19.1)	569	(16.7)	2197	(64.3)	3417
Divorced & not married	18	(8.2)	55	(10.1)	179	(81.7)	219
Widow/er	61	(15.4)	56	(14.1)	279	(70.5)	396
Health Status							
Good	651	(22.6)	531	(18.5)	1694	(58.9)	2876
Fair	303	(15.6)	321	(16.4)	1339	(68.2)	1963
Poor	46	(10.0)	48	(10.4)	367	(79.6)	461

Source: KMPS 1993

see any differences with respect to gender or education. However satisfaction is highly correlated with health, perhaps providing some independent corroboration of the validity of our measure of individual welfare. Simple cross-tabulations however cannot give conditional comparisons between different groups, and hence we turn to multivariate estimation in the next section.

4.4.2 Regression Analysis

Consider the following equation,

$$S_i^* = X_i\beta + u_i \qquad (4.1)$$

where S_i^* is an unobserved latent index of satisfaction for individual i, X_i represents a standard, Mincer-type vector of individual characteristics such as age, education, marital status, and ethnicity, β is a parameter vector to be estimated and u_i is the unobservable error term. Five different levels of satisfaction are observed and it would therefore be possible to assign arbitrary values to these five values (say 1 to 5) and estimate equation (4.1) by ordinary least squares. Since the dependent variable is ordinal rather than cardinal however, this would be invalid; instead all equations are estimated by ordered probit maximum likelihood methods[1]. The results from different specifications are presented in Table 4.2. A brief description of the variables included in the regression analysis is provided in Appendix 4.6 on page 103.

Column I contains the results of the most parsimonious specification. The central hypothesis of the paper, that greater economic well-being is associated with higher levels of satisfaction, receives only weak support in this model; equivalized household expenditure has a positive but marginally insignificant (at 90%) effect on satisfaction. Females appear to be slightly less happy than males, but the effect is not statistically significant, and in fact has the opposite sign in other specifications. Satisfaction however declines with age; the positive sign on age-squared indicates that the marginal effect decreases with age, but the minimum point is not reached until 63 years. This contrasts with the U-shaped

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[1]Results from ordered logit estimation were very similar and not reported here.

Table 4.2: Satisfaction Equations

Satisfaction with life	Model I Coef.	t - ratio	Model II Coef.	t - ratio	Model III Coef.	t - ratio	Model IV Coef.	t - ratio	Model V Coef.	t - ratio
Gender (Male)										
Female	-0.035	1.11	-0.016	0.51	0.033	1.02	0.025	0.79	0.022	0.71
Age	-0.034	6.51*	-0.035	6.43*	-0.022	3.91*	-0.020	3.55*	-0.016	2.85*
Age^2 (x100)	0.027	4.61*	0.031	5.14*	0.016	2.67*	0.015	2.46*	0.010	1.68
Education (Primary School only)										
Did not complete High School	-0.043	0.69	0.057	0.89	-0.001	0.02	-0.025	0.37	-0.065	1.02
High School Only	0.012	0.18	0.003	0.05	-0.035	0.52	-0.061	0.91	-0.095	1.45
High Sch. & Other	-0.021	0.32	0.055	0.80	-0.004	0.06	-0.032	0.46	-0.071	1.05
Higher Education	0.037	0.59	0.121	1.84	0.063	0.94	-0.002	0.04	-0.053	0.82
Labour Force Status (Employed)										
Unemployed	-0.228	4.18*	-0.228	4.02*	-0.224	3.91*	-0.197	3.40*	-0.177	3.18*
Out of Lab. force	0.093	2.36*	0.091	2.21*	0.037	0.90	0.056	1.32	0.065	1.62
Marital Status (Divorced)										
Never married	0.350	3.97*	0.305	3.37*	0.242	2.65*	0.168	1.82	0.135	1.49
Married	0.509	6.59*	0.405	5.07*	0.379	4.69*	0.329	4.04*	0.318	3.99*
Widow/er	0.336	3.38*	0.238	2.32*	0.245	2.37*	0.275	2.63*	0.268	2.61*
Ln(Hhold Exp.)	0.021	1.59	0.102	6.33*	0.080	4.90*	0.045	2.71*		
Ln(Relative Exp.)									0.024	1.53
Ethnicity dummies		Yes		Yes		Yes		Yes		
Settlment dummies		Yes		Yes		Yes		No		
Concern over the provision of necessities (Not at all concerned)										
Rather unconcerned					-0.033	0.29	-0.108	0.93	-0.145	1.29
Neither un/concerned					-0.233	2.05*	-0.246	2.12*	-0.342	3.06*
A little concerned					-0.379	3.64*	-0.375	3.53*	-0.442	4.32*
Very concerned					-1.158	11.24*	-1.060	10.11*	-1.124	11.10*
Position on Wealth Ladder (Poor)										
Wealth Ladder - middle							0.686	18.58*	0.633	18.55*
Wealth Ladder - rich							1.458	12.73*	1.521	14.10*
μ_1	-1.023	6.17*	-0.946	3.96*	-1.729	6.63*	-1.424	5.41*	-1.483	5.81*
μ_2	0.083	0.50	0.273	1.14*	-0.402	1.54	-0.031	0.12	-0.183	0.72
μ_3	0.615	3.72*	0.862	3.60*	0.235	0.90	0.632	2.40*	0.436	1.71
μ_4	1.319	7.93*	1.636	6.82*	1.055	4.05*	1.485	5.64*	1.237	4.85*
No. Observations	5300		5300		5300		5300		5300	
Psuedo R^2	0.014		0.073		0.119		0.146		0.106	
Log Likelihood	-7519.23		-7067.36		-6715.96		-6510.18		-6819.669	

Notes:

1. The dependent variable is extent satisfied with life, scaled 1-5, t-statistics are absolute values.

2. The $\mu's$ are threshold parameters.

Source: KMPS 1993

pattern (with a minimum in the mid-thirties) often found in other countries. This may be a reflection of the fact that older people appear to have more difficulty adapting to the new regime, evidence for this in other transition countries is presented in Rose and Carnaghan (1995).

The results also show that happiness does not increase with the level of education. The omitted category is the lowest level (primary school only, or less) and all education dummy coefficients are insignificantly different from zero. Education and expenditure are only weakly correlated in our sample (a simple correlation coefficient between education normalized on the scale 1-5 and log equivalised expenditure is 0.11) and the education coefficients are essentially unchanged when expenditure is omitted from the regressions. In contrast, Veenhoven (1996) points out that there is usually a high positive correlation between satisfaction and education in low-income countries. It is possible that this is the result of two opposing effects: on the one hand, evidence in Rose and Carnaghan (1995) suggests that more educated people in transition economies are less likely to approve of the command economy; on the other hand, the collapse of output in traditional industries in the early stages of transition may leave many highly educated people very frustrated, as skills acquired under the old system are now obsolete. In the early years of a radically changing economy where survival is at stake, returns to education are likely to be small and formal education may be of limited use in terms of making a basic living. This is consistent with other studies on returns to education in transitional economies. Returns to education were found to have increased by the latter years of transition, in the late 1990s, particularly for younger workers, see Nookoiv, Orazem, Purr, and Vodopivec (1997) for evidence on Estonia, Vecernik (1996) on the Czech Republic and Orazem and Vodopivec (1997) and Munich, Svejnar, and Terrell (1999) on Slovenian workers.

With regard to labour market status, the unemployed are significantly less happy, whereas those out of the labour force are more happy, than the employed. If the models are run separately for males and females, the out-of-labour-force dummy becomes insignificant for men, and the unemployment dummy is insignificant for women. However, other results are virtually unchanged and a log-likelihood test does not reject the pooling restriction for males and females. The result on unemployment is similar to those found in western economies, see Clark and Oswald (1994); Winkelmann and Winkelmann (1998). Relative

to those who are divorced, all other categories (married, never married, and widowed people) are significantly happier, with the strongest effect coming from those who are married.

The main surprise in column I is the weak effect of expenditure on satisfaction. However, in column II where settlement and ethnic variation is controlled for, the coefficient is now highly significant, with a t-statistic of 6.33. Other coefficients are largely unchanged, although the higher education dummy is now positive and significant at 90%. The quantitative effect of expenditure on satisfaction, however, is not large. Based on the estimates in column II, the marginal effect of doubling equivalized expenditure, evaluated at the means of all variables and holding other variables constant, is a reduction in the probability of being "dissatisfied" (category 1 or 2) from 0.64 to 0.6, and an increase in the probability of being "satisfied" (category 4 or 5) from 0.19 to 0.22. Unhappiness in transition, therefore, is not simply caused by low income. Unemployment however has a strong effect on satisfaction. These estimates imply that moving an individual from non-unemployment to unemployment increases the probability of being in the lowest category by 0.07.

Column III adds to the previous specification by including a subjective measure of poverty: respondents were asked "to what extent are you concerned that you will not be able to provide yourself with the most basic necessities during the following twelve months?" As with the satisfaction question, there are five possible answers, ranging from "not at all concerned" to "very concerned". Not surprisingly, the results in column III indicate that, relative to those completely unconcerned, people at the more worried end of the scale are much less happy.

It is also of interest to know if people's perceptions of their position on the "wealth" scale affects their responses. The data allow this to be addressed. Respondents were asked to think of a nine-step ladder, with the poorest on the bottom rung and the richest on the top, and to say where they think they would be on this ladder. These responses were grouped into three categories: "low", "medium", and "high". In column IV, the omitted category is low, and relative to these, being on either the middle or high rungs has a strong effect on happiness, independently of equivalized household expenditure. This is consistent with the findings in Ravallion and Lokshin (2000). The authors, using Russian data, find that subjective measures of welfare can indicate anticipated movements in 'income' that

are not captured in 'income' levels.

Column V takes a slightly different approach, and investigates whether happiness is affected more by relative rather than absolute expenditure, for a recent discussion of this issue see Frank (1997). A measure of relative equivalized expenditure was constructed by calculating the mean household equivalized expenditure for each "settlement", of which there are 84 in our sample, and then dividing each by the mean for his or her settlement. Clearly for this specification the settlement dummies must be dropped otherwise the results would be identical to column IV. The main point of interest is that although relative expenditure is positive, it is marginally insignificant, and much weaker than absolute expenditure. Nevertheless, the continued significance of the wealth ladder suggests that to some extent at least, relativities are important.

A number of other specifications were tested in order to check the robustness of the findings. Ravallion and Lokshin (1998a), Ravallion and Lokshin (1998b) and Ravallion and Lokshin (2000) use the same variable for Russian data as a measure of "subjective economic welfare". Subjective measures of poverty in Russia appear to have changed during the transition period, see Milanovic and Jovanovic (1999).

The regressions were re-run with different equivalence scales, ranging from total household expenditure which reflects no sensitivity to household size, to per capita expenditure which gives no allowance for household economies of scale. The new Eurostat scale, which weighs additional adults 0.5 and children 0.3, was also used. In all cases when controlling for ethnicity and settlement, a positive and significant effect on satisfaction was still found.

The model was also tested to see whether people are less happy in regions with high inequality (an earlier test of this hypothesis was carried out using data from Israel in Morawetz et.al (1977)). Various measures of expenditure inequality were constructed (such as the Gini coefficient and the Atkinson index) by settlement and these were included one at a time in the regression equation. Rather surprisingly the coefficients in all cases were found to be positive and significant, suggesting that happiness is higher in areas with high inequality. This contrasts with Blanchflower and Freeman (1997) finding, that an aversion to inequality persists in ex-communist countries.

4.5 Conclusion

In this Chapter, cross-sectional variation in self-reported measures of happiness were examined in the early stages of transition in Kyrgyzstan. These data indeed reveal valuable information about the welfare effects of transition, by identifying broad groups in the population for whom the early years of a market economy are particularly painful. It is recognized that subjective measures of well-being are to some extent idiosyncratic and unreliable, and hence the conclusions should be treated with caution. Caution is also warranted by the fact that one cross-section cannot identify causality. However, a number of interesting and robust results have been found, which are highly relevant for policy design in Kyrgyzstan and other transition countries.

The main results are that dissatisfaction with life was widespread in Kyrgyzstan in late-1993. Economic well-being, here measured by expenditure, is correlated with happiness. Dissatisfaction with life is concentrated among the old, the unemployed, the divorced, and ethnic Russians and other Slavs. The conclusions about income, unemployment, and marital status are similar to those found in many western studies. There is also some support for the increasingly common view that the level of relative income helps make people happy or unhappy.

This analysis has indicated the fact that poverty and happiness are correlated, and in particular the finding that those who worry about providing necessities for their families are very unhappy reinforces the urgent need for raising the standard of living for all to a minimum subsistence level. The size of the coefficients reported in Table 4.2 suggests that rising incomes by themselves would not significantly alleviate unhappiness in Kyrgyzstan, and this effect would furthermore be partially attenuated by the relativity effect discussed above.

One of the most interesting results is the absence of any link between satisfaction and education. It is an unfortunate feature of transition that skills acquired under the old regime are often of little use in the new environment, and for older people especially, the upheaval can be devastating. There is an urgent need in Kyrgyzstan for major re-training programmes, in addition to the maintenance of a social safety net for vulnerable groups. Both these aspects are indeed covered by a national development strategy, see Kaiser, Kasybekov, Kumskov, Mikhalev, and Hamisov (1996) and M.L.S.P. (1998), and it would

be interesting to see the extent of the impact of these policies on measures of satisfaction in the future.

The findings suggests that using data on subjective well-being can be an information approach complementary to monetary based measures of welfare, especially in a rural transition countries such as Kyrgyzstan. As shown in the previous Chapter, those at the lower end of the income distribution were particularly worse off in 1993, consistent with the findings of individuals on lower incomes less happy about affording basic necessities and confirms the desperate situation in 1993. It would be useful to see if the conclusions found here carry over to other ex-communist countries, and it would also be of interest to see how the patterns apparent in this chapter evolve over time. This will enable an important question to be tackled, one that cannot be addressed with one cross-section, namely how do self-reported measures of satisfaction with life change during the transition process?

4.6 Appendix: Happiness Variables

Variable and Definitions

Age: Age of respondent in 1993

Concern over obtaining necessities: Scaled 1-5 where 1 refers to being not at all concerned and 5 refers to being very concerned.

Question asked was "To what extent are you concerned that you will not be able to provide yourself with the most basic necessities during the following twelve months?"

Education level:

Primary education only: less than 8 years primary and secondary schooling. Those who had no formal education were also included in this category.

Did not complete High school: 8-9 years of primary and secondary schooling

High school only: 10 or more years of primary and secondary schooling and did not study elsewhere.

High school and other: 10 or more years of primary and secondary schooling and completed one (or more) of a vocational course

Higher education: 10 or more years of primary and secondary schooling and completed one (or more) of university level.

Ethnicity: Kyrgyz, Russian, Other Slavs, Uzbeks, Others,

Health Status: Respondents were asked how they would describe their health in general. Categories were re-scaled from 1 - 5 to 1 - 3, where 1 represents those in excellent or very good health, 2 are those who said their health was fair (neither good nor poor) and those who replied poor and extremely poor are re-grouped into category 3.

Labour force status: Employed, Unemployed and Out of the labour force.

Describes the labour force status of individuals of working age 16-60 years for men and 16-55 years for women. Employed refers to those employed (full-time or part-time) as hired labour in an enterprise, organization, collective or state farm or co-operative. Those on temporary official leave for health or maternity reasons are included. The self-employed are also included as are students engaged in part-time work. Unemployed are those not in employment who have searched for work in the last thirty days. Those who are neither employed nor unemployed are defined as out of the labour force.

Ln Equivalized Household Expenditure: Natural logarithm of total equivalized household expenditure.

Total household expenditure is the summation across 9 expenditure categories; food, rent, other housing expenditures (e.g. utilities), education, health, transport and communication, clothing, private gifts, consumption of home produced goods (that would otherwise have been bought), other expenditure. It is calculated in Soms per month. Expenditure was equivalized using the OECD equivalence scale, which gives a weight of one to the first adult, 0.7 to the remaining adults and 0.5 to children in the household.

Ln Relative Expenditure: Natural logarithm of the ratio of total equivalized household expenditure to the mean of the equivalized expenditure for the settlement.

Location: Urban, Rural

Marital Status: Never married, Married, Divorced and not re-married, Widow/er.

Regions: Naryn, Talass, Djalal-abad, Issuk, Osh, Chyisk (the six oblasts) and Bishkek.

Satisfaction: Scaled 1 – 5, 1 refers to not being at all satisfied and 5 refers to being fully satisfied.

Question asked was "To what extent are you satisfied with your life in general at the present time?"

Settlements: Refers to villages in rural areas and towns/cities in urban areas. A total of 84 settlements were selected from the 57 raions which divide the 6 oblast (see Regions above).

Wealth Ladder: Three dummy variables representing "rich", "middle" and "poor".

Question asked was "Please, think of a nine-step ladder. The extremely poor would be at the foot of the ladder (step 1) and the rich would be at the top (step 9). At which step would you place yourself today?" We have grouped together steps 1-3, 4-6, and 7-9.

Part II

Labour Markets in transitional economies

Chapter 5

Examining the Labour Market

5.1 Introduction

Official statistics have reported that actual unemployment remained relatively stable at its pre-independence low level despite significant falls in output that lasted from the first half of the 1990s. The purpose of this chapter is two-fold; firstly to provide evidence using nationally representative survey data of the extent of the changes in the labour market over a transitional period and secondly, to provide a theoretical framework for the enterprise's adjustment process illustrating why these outcomes formed part of a rational outcome given the inherited institutional features.

The collapse of the Soviet Union in the early 1990s precipitated falls in output of over 20% for several years with only positive growth occurring in the Kyrgyz Republic in the late 1990s, far later than expected. Despite these occurrences there were only small movements in unemployment, see Commander, Dhar, and Yemstov (1996). Official unemployment statistics[1] reported unemployment to be less than 1% of the labour force until the early-90s, increasing to 6% by 1996, see Table 2.2 on page 28. This differs from the outcome in countries of CEE which experienced positive growth rates, albeit small, even in the early 1990s but also much larger changes in unemployment. This chapter, using nationally representative survey data, first illustrates a detailed profile of changes in the labour market over a transitional period away from the command system to examine the extent of changes in the labour market. A closer look at labour force rates disaggregated by

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[1]Includes only the registered unemployed.

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demographic and regional characteristics provide a better understanding of which groups of individuals were affected more during this transitional period.

Under the Soviet system growth targets were set and the objective of the firm was to maximize output rather than minimize costs. In addition, the enterprise was often the only provider of social benefits and facilities. Enterprises would receive a transfer from the State towards the provision of these benefits. Although the firm had cost targets, often the enterprise would run budget deficits since the objective of the firm differed from firms in market economies.

State enterprises, often large scale employers, did experience financial difficulties as State subsidies gradually fell, energy prices and the prices of inputs increased while the market for many of these unsaleable goods disappeared. During the transition to a market economy enterprises in the FSU have often been able to renegotiate finances through State banks and other institutions to cover deficits, and firms operated under what is often referred to as a soft budget constraint. The widespread occurrence of inter-enterprise arrears and tax arrears re-enforced this effect.

Even the introduction of a widespread privatization programme did little to change the behaviour of the firm. The result in many countries, as in the Kyrgyz Republic, was merely a change in ownership without the supporting institutions, financial, legal framework, bankruptcy laws, defined property rights etc. to make change in ownership effective, see Thornton (1997). Instead of actually laying off workers, those employed were subjected to reduced hours, extended leave, increased maternity leave for women (although positions previously kept available for women on maternity leave were later withdrawn) and the late payment of salaries and wages, while the enterprise went through bad times. These mechanisms had the result of decreasing the firms' wage bill in the short run for a temporary period, often costlessly (particularly in times of high inflation), while still maintaining a supply of skilled labour should demand pick up. Even when paid, workers were often paid in-kind in the output of the firm and workers would find their own outlets to sell or barter the goods. The incidence of wage arrears has been particularly severe, with little difference in whether the enterprise is state or private, see Evans-Klock and Samorodov (1998) and Windell, Anker, and Sziraczki (1995). The incidence of wage arrears is examined later in chapter 6.

To explain the small movements in employment and unemployment, which are shown to be consistent with evidence from the nationally representative survey data, we look at microeconomic behaviour at the firm level. It will be shown that given the institutional features of the labour market which were part of the Soviet system, it was in the enterprise's interest to maintain its work force in the early period of the transition process and adjust other factors, such as intensity of worker and current wage costs. A model of the employer's adjustment strategy based on a labour-managed model of firm behaviour explains why these occurrences form a rational response to the changing environment. In addition to explaining the macroeconomic outcomes that occurred, the significance of income from labour activities to overall household income provides an insight into changes in welfare and helps explain the trends found in Chapters 3 and 4 of this thesis.

First we explain the choice of framework for understanding firm behaviour in maintaining employment levels and adjusting hours and wages.

It is generally argued that insider models of the firm were appropriate for analyzing firm behaviour, see Blanchard, Commander, and Coricelli (1995). In these models wages were set as high as possible to maintain enough employment for the insiders. However, the authors state three qualifying factors to the insider model, which provide some explanation for the differences in outcomes across the FSU and CEE countries. The first qualification refers to the relative role of the workers versus managers, the second to the time horizons of both workers and managers, which in turn depend on the process of privatization (the slower the privatization process the longer the horizon and the opportunity for managers and workers to work together through restructuring), and the third to the external environment in which the firm operated, in terms of hard or soft budget constraints. These are taken in turn.

The greater role of workers in decision-making was found to be related to trade union membership. Although membership of trade unions was widespread, The degree of militancy varied and was found to be relatively low in CSFR and Hungary, compared to Poland, see Blanchard, Commander, and Coricelli (1995). It was also expected that as a result of the privatization process changes in the ownership, and ultimately the governance structure, would accelerate the elimination of any employment bias by varying the relative bargaining power of managers and workers, see Commander, Fan, and Shaffer (1996).

Changes in the governance structure through outsider stakeholders were expected to have a greater impact to restructuring within the enterprise. However this did not happen and the privatization programme resulted in insiders holding a dominant ownership. In Russia, and in the FSU in general, privatization resulted in insider control, with managers often getting a disproportionate share of control, and claimed to reflect the explicit *de facto* importance of workers in decision-making, see Blanchard, Commander, and Coricelli (1995). Even when managers were in decision-making positions it was found they rarely made decisions at odds with the perceived interests of workers. In addition, the large decline in subsidies in many CEE countries resulting in the imposition of hard budget constraints was not found to be the case in FSU countries, as mentioned previously. The operation of soft budget constraints lengthens the time horizon of managers and workers and hence provided greater opportunity for cooperation between the two groups.

Insider models in fact explain the inertia in employment levels during the reform process in the 1980 and 1990s in Latin America. There institutions were established that ensured organized workers and employers would share the rents extracted from the rest of the population, see Cortazer, Lustig, and Sabot (1998). While Trade Union power was able to influence outcomes in the Latin American firms, in the Republics of the FSU this was not the case with union power being relatively weak. Here it is argued that managers had a greater influence on operational issues which ultimately dictates outcomes, and a labour-managed model of firm behaviour is more appropriate. It is agreed that worker influence was in no way marginal and managers rarely made decisions at odds with the perceived interests of their workers, but there are several reasons to explain these outcomes. This is likely to be a combination of both adjustment costs as well as expectations with respect to future output, constituting some form of labour smoothing, as well as benevolence, which would explain the continuing high hiring rates.

The privatization of enterprises meant that there was now limited opportunity for managers to shift between positions previously appointed directly by the State. This may have provided an incentive to managers to ensure that decisions did not result in their being ousted from coveted positions by discontented workers.

One reason workers were willing to cooperate with managers over working conditions was for the provision of social benefits through enterprises, which can be seen as a social

safety net. Workers who maintain attachment to enterprises are thus able to gain access to facilities, such as kindergartens, subsidized canteens, health care, where no alternative (affordable) provision is available outside the enterprise, see Standing (1993). Welfare considerations are likely to help explain why workers remained attachment to enterprises even when wages are paid with delay, and may also help understand why wage arrears were endured by the work force. This is also reinforced given that wage arrears was relatively widespread and workers were unlikely to be paid in other places of employment, should firms be hiring. Shorter working hours were also introduced. By allowing flexibility in hours, workers are able to exert effort in other activities, formal or informal, where they are likely to be paid. However this paternalistic role of employers is likely to change over the coming years as responsibility for non-monetary benefits diminishes. See Standing (1993) on the changing role of the state.

The uncertainty regarding future expectations can be understood given the unique situation of the collapse of the Soviet Union. The demise of the CMEA Council and the liberalization of input prices resulted in sharp falls in demand for products which are unlikely to be able to compete in other competitive markets. The persistence in the down turn in demand and the need to find new markets for products caused uncertainty in production decisions. In response, managers maintained a supply of labour in lure of the increase in demand.

For these reasons it is argued that labour managed or bargaining models are more appropriate than insider models for understanding firm behaviour in the initial years of the reform process. In fact outcomes of insider models can also be explained by managers' decisions rather like a bargaining model. Rather than workers and managers colluding in the interests of the incumbent, managers decide to adjust their labour flows similar to insider models but where managers have a bigger role.

The explanation of the adjustment process incorporates features of firms adjusting worker intensity, rather than quantity, similar to that in Brechling (1965). In this paper, in the presence of hiring and training costs, firms are shown to pay existing workers a higher, bonus, wage to work additional hours rather than hire additional workers in the light of an increase in demand. Similarly here employers react to a fall in demand by reducing worker hours and delaying wage payments. Firms delay outlays to other firms

and in particular wages as a means of delaying costs. The ability to delay wage payments to workers can also be seen as the firms ability to substitute away from cash balances as in Brechling and Lipsey (1963). The authors show that trade credit can frustrate a tightening of monetary policy in one instance if there is the opportunity to substitute away from cash balances and the firm has the ability to issue transferable trade credit in the form of I.O.U.s. This can be seen as similar to the enterprise's inability in paying the workers their wages in the event of a fall in demand of its output as well as the fall in transfers from the State. Firms are able to delay workers wages, with a promise to pay later, or are able to pay in-kind in the form of the firm's production.

All these aspects mentioned should be borne in mind when examining the changing profile of the labour market in order to appreciate the effects of the reform process on different groups.

The structure of this chapter is as follows; first we examine the nature of the changes in the labour market by examining the extent of changes in labour market status across the population using nationally representative household survey data. This permits analysis of employment and unemployment reflecting a standard ILO definition of unemployment, rather than just those registered as unemployed. A closer look at labour force status by disaggregating over a number of characteristics illustrates the extent of changes in the labour market and who were affected. A model of the enterprise's objectives is then presented incorporating features of the Soviet labour market institutions to explain these patterns in the labour force. Here it is shown that given the institutional features of the Soviet labour market that were inherited upon independence, and from which the economy was operating upon, firms were rational to adjust workers intensity rather than quantity of workers, and also delay labour costs in order to maintain labour supply should demand pick up. It is shown that the adjustment strategy that the firms undertook illustrates firms options during this transitional period moving away from a centrally planned economy towards one eventually to be led by competitive behaviour.

Before embarking on an analysis of the Kyrgyz labour market a background to labour markets during the Soviet period to understand the nature of the Soviet system and the environment, in the context of the labour market, under which the transition process occurred.

5.2   Under the Soviet System

The labour market under Socialism was an all-encompassing system using labour resources in the pursuit of growth, based on a Marxian system of ideas that the commodity nature of labour power would cease and the allocation of labour would not be performed by the mechanism of market coordination (Kornai (1992)). Though no conscious employment policy was designed to produce full employment, the system pursued the fastest possible growth at any price and the immediate scope for attaining this was provided by extensive inclusion of the labour surplus into the production of the sector of public ownership. The major institutional characteristics of the Soviet form of socialism, which encompassed the FSU, was the collective ownership of virtually all property rights in physical capital and the replacement of the market as the coordinating mechanisms by State Planning. Private ownership was practically forbidden.

Socialist economies though similar in ideology were not identical in implementation. There was indeed variety in the form that the socialist regimes of China, Eastern and Central Europe and the Former Soviet Union took and this explains to a certain extent the differences in the outcomes of the process of reform. Not all countries operated a centrally planned system by the end of the communist era, with Yugoslavia having an increasing reliance on a market based economy and Hungary implementing a form of "market socialism", see Estrin (1994).

Centralized planning which was prevalent in the FSU resulted in a mismatch between labour supply and demand across different regions and this was exacerbated by the lack of available housing and the need for a valid residential permit, called a 'propiskia'. Workers were expected to have jobs for life in the enterprise, and work their way up through the highly graded system. In reality labour was relatively mobile and workers were free to change jobs and employers were free to hire whom they wanted, with the majority of hires arranged directly between workers and potential employers. By the 1950s the labour market in Central Asia was one of the least regulated of sectors, see Marnie (1990), Standing (1991), Barr (1994) and Clarke (1999). Clarke (1999) reports that by the mid-1960s overall rates of labour mobility, approximated by turnover rates in the Soviet Union, were around 20% per annum falling to approximately 15% by the mid-1980s. Such rates were comparable to many European countries but were higher than those in Japan and

lower than in the United States. He also notes that turnover was particularly high among younger and less skilled workers who were in search of better social benefits, such as housing or child care.

In the FSU wage rates were set centrally and strictly regulated. Wage levels were largely determined by a tariff system of around 20 coefficients, based on qualifications and occupation. Workers worked their way up the tariff system according to their rank with the first grade for each profession being determined by an obligatory minimum wage to maintain a certain standard of living, see Shcherbakov (1991) and Oxenstierna (1990). This egalitarian policy to suppress wage differentials had a bias towards blue collar workers particularly in productive rather than non-productive sectors. However non-monetary fringe benefits were often used by employers as a method of rewarding more valued workers, and these would include better housing, the use of a dacha, licences to purchase rationed goods amongst other things; so the more highly educated or privileged elite would in fact be better off despite relative equalities in money wage income.

Places of employment at enterprises were not only sources of wage income but also institutions through which other facilities and benefits were provided to all family members, working and non-working. These services included health and education facilities, child care, subsidized canteens and often also housing. To a greater extent than in Eastern and Central Europe, firms in the FSU provided a wider range of services usually provided by municipalities or other branches of government in market economies. According to McAuley (1997), the provision of such services and benefits through price controls and subsidies, to ensure affordability to the majority of individuals, led to severe budgetary problems in the 1980s and contributed to the collapse of communism. Recently implemented policy has been designed to cut firm benefits, including decrees that have forced firms to divest themselves of their social assets. Freed from an exogenous requirement to provide benefits, firms were expected to limit provision of benefits that are costly or risky for the firm, resulting in negative implications for employee welfare. In particular the *de novo* (newly created private) firms and recently privatized enterprises would cut back their provision of such benefits since they would be motivated more by profitability. However this has not been the case with even enterprises facing financial difficulties still providing such benefits, and even privatized enterprises providing benefits of some sort (Fajth and

Lakatos (1997) and Commander and Jackman (1997)). Though there has however been a reduction in the array of facilities. In addition the current policy structure of compensation from the State to firms, in terms of tax advantages and subsidies, is positively related to the amount of resources the firm has and creates a disincentive for enterprises to reducing the amount of labour they employ. This could also prohibit the growth of small and medium sized firms in the private sector in the FSU. However if, for example, subsidies allow for the continuation of provision of benefits in privatized SOEs, this could deter workers from looking for work in the de novo firms in the private sector where firms may only provide a limited array of benefits, if any benefits at all. Data on Russia show that expenditure on social benefits and services by firms was found to amount to about 4.1% of GDP in 1992 and 3.3% in 1993, or approximately 30% of total labour costs, with firms estimated to have contributed at least one-quarter of total expenditure to housing, health, education and cultural services in 1993, see Commander, Liberman, and Yemstov (1993). The authors purport this to be equivalent to about 14% of the enterprises total wage bill in 1993 for all firms, while for industrial firms the figure was found to be as high as 20% of the total wage bill. In contrast, they find Polish expenditure on social housing funds as a percentage of the wage bill was no more than 10% for industry in 1989. This meant that in general enterprises of the FSU entered transition with a higher level of commitment to benefit provision.

5.2.1 The Economics of Transitional Labour Markets

Models of the transition process like that of Aghion and Blanchard (1993) predicted the restructuring process would largely follow three stages. The first stage would begin with a fall in state employment leading to increased unemployment. Simultaneously, subsidies would cease, prices would be liberalized and markets opened up to competition. The unemployed would form a pool of potential labour for the growing private sector. Spells of unemployment would be relatively short with high turnover in the labour pool, see Layard and Richter (1995), Commander and Coricelli (1995) and Blanchard, Commander, and Coricelli (1995). The second stage would be characterized by a growth of firms in the private sector who would draw from the pool of unemployed and be a driving force of growth in the economy. The last stage would be characterized by private firms pulling workers

out of state sector enterprises. Unemployment would be a result of this reallocation, see Blanchard, Commander, and Coricelli (1995). In fact the extent of unemployment was often seen as an indication of the extent of the transition process, see McAuley (1991) and Boeri (1994).

Although this pattern has occurred in Eastern European countries, this has not been the experience in Republics of the FSU (Commander, Fan, and Shaffer (1996)). Dramatic falls in output were not matched by equally significant falls in employment, even less so by increases in unemployment. One reason attributed to this lack of correlation between unemployment and restructuring has been that private firms have recruited directly from the state enterprises as modern search theory would suggest. Support of this for Hungary and Russia can be found in Commander and Yemtsov (1995), Layard and Richter (1995) and Clarke (1999). Evidence has shown that there is little correlation between unemployment and restructuring. Jackman (1995) argues that in fact changes in the composition of employment across industrial sectors would be a better measure of the extent of the restructuring process, and this can indeed be seen in the Kyrgyz case (see Figure 5.1 below).

One reason attributed to this lack of correlation between unemployment and restructuring has been that private firms have recruited directly from the state enterprises, see evidence on Hungary and Russia in Commander and Yemtsov (1995), Layard and Richter (1995) and Clarke (1999), as modern search theory would suggest. It was anticipated that higher skilled workers would do better in the new environment as there would be higher returns to human capital with the new profit-orientated firms, pulling better skilled workers from state enterprises into private firms, with less skilled being pushed into unemployment, see Layard and Richter (1995). Evidence in the Slovenian labour market suggests there have been increasing returns to human capital, particularly entrepreneurial skills, and, to a lesser extent, experience, with the transition process, see Orazem and Vodopivec (1997). An analysis of the labour market in Poland found that the quality of human capital affected the speed of restructuring and the turnover of unemployment. Ineffective low skill human capital slowed down the restructuring process and reduced unemployment turnover thereby putting fewer workers with outdated human capital in the unemployment stock, see Lehmann and Walsh (1999).

In many countries, particularly the FSU, the lack of adjustment in employment can be explained by the use of various means by employers to vary workers' labour input but maintain workers attachment to the enterprise (a reaction initially unanticipated by many economic analysts of transition) or costlessly retaining workers through wage arrears. Lehmann, Wadsworth, and Acquisti (1997) have modeled the incidence of wage arrears in Russia and find that regional differences are more important than ownership type and that few individual worker characteristics are significant. By maintaining attachment to the enterprise, they not only benefit from the facilities but also lay claim to delayed wage payments. Chapter 6 examines the incidence of wage arrears across Kyrgyz workers to see if there was evidence of bias in skilled workers experiencing less wage arrears. Where previously the benefits were used to gain worker attachment, they now impede labour allocation and mobility, see Commander and Tolstopiatenko (1996). The diminished share of wages in total compensation also generates adverse incentive effects. It raises the incentive for workers to stay in benefit-providing firms delivering low effort in primary employment but moonlighting for additional money income, see Commander, Coricelli, and Staehr (1991). These issues are discussed later in Chapter 7 which looks at worker's labour supply decisions.

Before presenting a model of employers' production decisions, a profile of the Kyrgyz labour market in 1993 and 1996 is presented to examine the extent of changes in the labour market. Firstly a description of the data used is given below.

5.3 Data description

The analysis in this chapter is based on nationally representative household survey data from the KMPS for the Fall in 1993 and 1996. The details of these surveys are provided in Chapter 2, Section 2.6. The working age population is defined as individuals aged 16 years and older, and for this analysis the number of observations were 5,265 for 1993 and 5,519 observations for 1996.

Definitions pertaining to the labour market used in the analysis have been taken from ILO guidelines as far as the survey allows, see Blyton (1989) and Hughes (1989).

Labour market definitions

The working age population comprises of both those in the labour force; the active

population, and those outside the labour force; the in-active population. The definitions used are defined below.

$$\text{Participation rate} = \frac{\text{total labour force}}{\text{working age population}} = \frac{\text{active population}}{\text{working age population}}$$

where, Active Population $=$ employed $+$ unemployed

$$\text{Employment rate} = \frac{\text{employed}}{\text{active population}}$$

$$\text{Unemployment rate} = \frac{\text{unemployed}}{\text{active population}} = (1 - \text{employment rate})$$

In 1993 the "employed" includes those who are employed in an enterprise or establishment and those on temporary official leave for health or maternity reasons over the last week. It also includes those who are self-employed but excludes housewives or full-time students, unless they are engaged in part-time work. The unemployed refers to those not employed, self-employed or full-time students who have been seeking work over a reference period. It does not only include those who are officially registered as unemployed. In 1993, the reference period for the unemployed category was one month while in the 1996 survey a reference period of one week was used. This could lead to an overestimation of the unemployed and underestimation of the inactive, but this is unlikely to change the results substantially. Due to the lack of information in the 1993 survey regarding workers above retirement age seeking work, unemployment rates have only been calculated for those of working age, 16-55 years for women and 16-60 for men, and hence the unemployment figure for those the sample 16+ is the same for the working age sample 16-54/59 group. Those out of the labour force includes those neither employed nor unemployed above the age of 16 years old.

Some of the analysis focuses on workers only, excluding those classified as entrepreneurs or the self-employed over the age of 15 years old. Entrepreneurs, independent workers and the self-employed have been classified according to the particular questions asked in each of the surveys for 1993 and 1996. Although not identical, comparable criteria have been used. Entrepreneurs and independent workers in 1993 were calculated according to the responses in the labour market section of the question in conjunction with respondent's own categorization of whether they fell into either of the separate categories of entrepreneur or engaged in individual labour activity. In 1996, the labour market section of the ques-

tionnaire asked the respondent " In this work are you self-employed or an independent entrepreneur?". Only information on occupations was collected in1993 while in 1996 sector and worker type information was collected.

In 1993 the private sector was still relatively small and so from the 1993 data the number of observations classified as "worker and not entrepreneur nor independent worker", referred to as "worker", was 2,796 out of a total of 2,949 observations for the employed, or 94.8% of those employed were classed as workers. In the 1996 data, of the total number of observations of the employed, 2,167 observations, 1,682 were classified as "worker", or 77.6%. These numbers represent the initial sample sizes before any data cleaning was undertaken for the analysis.

A problem encountered with the 1993 data was the large number of responses of those who classified themselves as working for an enterprise but did not report hours of work and reported not to be on involuntary or administrative leave. Out of the 922 individuals of working age who claimed to be working, 245 were women on maternity leave while 677 remain unaccounted for. The corresponding figures for those individuals classified as workers and not entrepreneurs, independent workers or self-employed, are 822 not reporting hours, of which again 245 are women on maternity leave and 577 are farmers or workers of some sort. The rest were a variety of other occupations. The majority of the individuals belong to less skilled occupations, over 60% are from State enterprises, around 50% are men and just over three-quarters are owed wage payments. Those individuals who have reported being at work, i.e. not on maternity leave, or on holiday or official administrative leave, have been assigned a value of 0 hours worked.

5.4   A Closer Look at Labour Demand

This section examines the impact of the reforms on labour market participation and status in the Kyrgyz Republic over the transitional period 1993-1996, based on household survey data.

5.4.1 Trends in the Labour Market

From Table 5.1 on page 120, for those aged 16 years and over participation rates have fallen from around 66% to 54% over the period 1993 to 1996, a significant fall in a short space of time. The low standard errors reported support this finding of a decrease in participation rates between 1993 and 1996. Employment rates have fallen by around 15% over the period, from a high of 85% in 1993 to 78% in 1996. However unemployment has increased the most, almost doubling from 15% to 28% in 1996. These figures, as expected, differ markedly from the official statistics of registered unemployment, presented in Table 2.2 on page 28, which were 0.2% and 4.5% for 1993 and 1996, respectively. Greater disparities can be seen in regional differences, with rural areas experiencing large falls in employment and a more than doubling of the unemployment rate, from 14% to 34%. Although urban areas experienced a similar fall in participation rates to rural areas, there was no change in employment or unemployment rates in urban areas. The participation rate for women fell to 56% in 1993 compared to 76% for men. Differences between genders were not so sharp across employment and unemployment rates, with women in fact having slightly higher employment and lower unemployment rates compared to men. However the greater falls in participation for women compared to men (23% for women compared to a 13% fall for men) suggests that a greater percentage of women actually exited the labour force over this period. This pattern of lower participation rates, higher employment rates and lower unemployment rates for women compared to men is consistent across all age groups, shown in Table 5.2 (see also Table 5.8 in Appendix 5.7 on page 151 for a breakdown of the percentage distribution of the labour market across gender and settlement type).

The bottom half of the table provides results for the working age population, 16-60 years old for men and 16-55 years old for women. The estimates are higher, as expected, since there is a narrower base of those who are included compared to the figures for those aged 16 and above, with little noticeable change in the employment and unemployment rates. It is also interesting to note the stable and relatively low participation rates for workers above the retirement age in Table 5.2, which also explains why employment figures do not differ greatly between the two age groupings[2]. Although low pensions and increased

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[2]Unemployment rates are the same for those above retirement age in the two samples due to lack of information regarding job seeking.

Table 5.1: Labour force rates, 16+ and working-age, 1993 and 1996

16+ (s.e. in parentheses)		Total	Male	Female	Urban	Rural
Participation	1993	0.66	0.76	0.56	0.63	0.67
Rates		(0.007)	(0.006)	(0.007)	(0.007)	(0.006)
	1996	0.54	0.66	0.43	0.53	0.55
		(0.007)	(0.006)	(0.007)	(0.007)	(0.007)
Employment	1993	0.85	0.85	0.86	0.84	0.86
Rate		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
	1996	0.72	0.71	0.74	0.84	0.66
		(0.006)	(0.006)	(0.006)	(0.005)	(0.006)
Unemployment	1993	0.15	0.15	0.14	0.16	0.14
Rate		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
	1996	0.28	0.29	0.26	0.16	0.34
		(0.006)	(0.006)	(0.006)	(0.005)	(0.006)
16-54/59						
Participation	1993	0.78	0.85	0.72	0.77	0.79
		(0.006)	(0.005)	(0.007)	(0.006)	(0.006)
Rates	1996	0.65	0.74	0.55	0.63	0.66
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Employment	1993	0.85	0.84	0.86	0.83	0.86
		(0.005)	(0.005)	(0.006)	(0.006)	(0.005)
Rate	1996	0.72	0.71	0.73	0.84	0.65
		(0.007)	(0.007)	(0.007)	(0.005)	(0.007)
Unemployment	1993	0.15	0.16	0.14	0.17	0.14
		(0.005)	(0.005)	(0.005)	(0.006)	(0.005)
Rate	1996	0.28	0.29	0.27	0.16	0.35
		(0.007)	(0.007)	(0.007)	(0.005)	(0.007)

Source: Author's calculations based on KMPS 1993 and 1996

costs of living were expected to cause a significant increase in the number of workers of pensionable age continuing to work, the incidence has only increased by a percentage point between the 1993 and 1996, remaining constant for male pensioners.

Age disparities

The problem of surplus youth labour in the Kyrgyz Republic, as in other Republics in Central Asia, can be seen in Table 5.2. In 1993 the participation rate was lower and unemployment rate higher amongst the younger workers, 77% and 23% respectively, compared to an employment rate between 89-94% and an unemployment rate between 6-11%

Table 5.2: Labour force rates by age groups, 1993 and 1996

Rates		Total	Male	Female	Urban	Rural
(s.e. in parentheses)						
16-29						
Participation	1993	0.70	0.77	0.63	0.64	0.73
		(0.006)	(0.006)	(0.007)	(0.007)	(0.006)
rates	1996	0.54	0.65	0.42	0.46	0.58
		(0.008)	(0.006)	(0.007)	(0.007)	(0.007)
Employment	1993	0.77	0.75	0.79	0.75	0.78
		(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
rates	1996	0.64	0.64	0.63	0.77	0.58
		(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Unemployment	1993	0.23	0.25	0.21	0.25	0.22
		(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
rates	1996	0.36	0.36	0.37	0.23	0.42
		(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
30-49						
Participation	1993	0.89	0.95	0.84	0.90	0.89
		(0.004)	(0.003)	(0.005)	(0.004)	(0.004)
rates	1996	0.76	0.85	0.67	0.76	0.76
		(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
Employment	1993	0.91	0.90	0.92	0.88	0.93
		(0.004)	(0.004)	(0.004)	(0.005)	(0.003)
rates	1996	0.76	0.74	0.79	0.86	0.70
		(0.006)	(0.006)	(0.005)	(0.005)	(0.006)
Unemployed	1993	0.09	0.10	0.08	0.12	0.07
		(0.004)	(0.004)	(0.004)	(0.005)	(0.003)
rates	1996	0.24	0.26	0.21	0.14	0.30
		(0.006)	(0.006)	(0.005)	(0.005)	(0.006)
50-54/59						
Participation	1993	0.70	0.80	0.49	0.73	0.68
		(0.006)	(0.005)	(0.007)	(0.006)	(0.006)
rates	1996	0.63	0.69	0.49	0.74	0.56
		(0.006)	(0.007)	(0.006)	(0.006)	(0.007)
Employment	1993	0.94	0.95	0.90	0.91	0.95
		(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
rates	1996	0.85	0.84	0.89	0.91	0.80
		(0.005)	(0.005)	(0.004)	(0.004)	(0.005)
Unemployment	1993	0.06	0.05	0.10	0.09	0.05
		(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
rates	1996	0.15	0.16	0.11	0.09	0.20
		(0.005)	(0.005)	(0.004)	(0.004)	(0.005)
55/60+						
Participation	1993	0.07	0.12	0.05	0.11	0.05
		(0.004)	(0.004)	(0.003)	(0.004)	(0.003)
rates	1996	0.08	0.12	0.06	0.12	0.06
		(0.004)	(0.004)	(0.003)	(0.004)	(0.003)

Source: Author's own calculations based on K.M.P.S. 1993 and 1996

Table 5.3: Labour force rates by education levels, 1993 and 1996

s.e. in parenthesis)		Less than High School Educ.	High School Education	Higher Education
Participation	1993	0.43	0.69	0.83
		(0.007)	(0.006)	(0.005)
rates	1996	0.27	0.60	0.63
		(0.006)	(0.007)	(0.007)
Employed	1993	0.90	0.77	0.89
		(0.005)	(0.006)	(0.004)
rates	1996	0.70	0.66	0.81
		(0.006)	(0.006)	(0.005)
Unemployed	1993	0.13	0.23	0.11
		(0.005)	(0.006)	(0.004)
rates	1996	0.30	0.34	0.19
		(0.006)	(0.006)	(0.005)

Source: Author's calculations based on KMPS 1993, 1996

amongst the other age groups. Employment rates fell for workers of all age-groups by 1996, with the greatest fall of almost a quarter being among the 26-35 year olds. Unemployment rates also increased significantly amongst almost all age-groups, particularly in rural areas. The exception to this trend was amongst young urban workers, where unemployment actually fell from 25% to 23% in 1996. (This is consistent with the trends presented in Table 5.9 in Appendix 5.7 on page 152, which suggest that there has been shedding of agriculture and industrial workers in 1996, both activities which are concentrated in the rural areas.)

Education

Human capital encompasses a range of attributes such as; education, training, learning by doing - on the job experience, health and quality of skills. Investment in human capital is important for a more productive work force and here, due to data limitations, educational levels are taken as a proxy for human capital.

Table 5.3 presents participation, employment and unemployment rates. From the table participation rates have fallen across all education groups, with those at the very

bottom and very top of the educational ladder experiencing the greatest falls. Workers with less than high school education tended to be mainly of the older generation and this group make up a shrinking proportion of the labour forces (see Table 5.11 in Appendix 5.7 on page 154 for the percentage distribution of labour market status across education levels). The disparity between high school educated workers and higher educated workers has narrowed with those having high school only education having a participation rate of 60% and the higher educated workers having a rate of 63% in 1996. The corresponding figures for 1993 which were 69% and 83% respectively. Although all education groups experienced falls in employment and increases in unemployment, higher educated workers do fare better. The costs of education have increased tremendously over the transition period, across all levels. Although fees for primary and secondary education still remain relatively low, expenditure on books, uniforms etc. has increased dramatically, making even education up to secondary level a financial burden particularly on families with many children. Previously university students received stipends while attending university, now fees for better quality institutions have increased so that only the very rich can afford to attend. This is likely to have a significant effect on the quality of human capital over the coming years.

Regional disparities

Apart from the major cities of Bishkek (the capital), Osh and Chu, the other regions are highly rural and there is significant movement from the rural to the urban regions. The regional concentration of sectors of employment across regions means that some workers may be better placed in particular regions depending on whether a particular sector is growing or shrinking.

The first column in Table 5.4 illustrates the distribution of the total working population across oblasts, while the remaining columns illustrate the distribution of the labour force within oblasts. (The distribution of the adult population across oblasts is almost the same as the distribution of the working age population and hence the former is not shown here.) As can be seen, there is quite a disparity in the distribution of the total working population across the oblasts, persistent in both years, except for a noticeable increase in

Table 5.4: Labour Force Status across Oblasts, 1993 and 1996

(standard errors in parantheses) Oblasts		Total	Employed	Un-employed	Out of the labour force
North					
Bishkek	*1993*	13.28	52.22	7.73	40.06
		(0.005)	(0.019)	(0.010)	(0.019)
	1996	18.72	48.31	5.81	45.89
		(0.005)	(0.016)	(0.007)	(0.016)
Chu	*1993*	21.25	58.71	7.69	33.60
		(0.006)	(0.015)	(0.008)	(0.014)
	1996	16.87	35.12	11.28	53.60
		(0.005)	(0.016)	(0.010)	(0.016)
Issk	*1993*	10.12	47.28	14.07	38.65
		(0.004)	(0.022)	(0.015)	(0.021)
	1996	9.53	34.22	10.65	55.13
		(0.004)	(0.021)	(0.013)	(0.022)
Naryn	*1993*	4.18	39.55	13.18	47.27
		(0.003)	(0.033)	(0.023)	(0.034)
	1996	6.00	38.37	3.93	57.70
		(0.003)	(0.027)	(0.011)	(0.027)
Talass	*1993*	4.81	54.15	9.88	35.97
		(0.003)	(0.031)	(0.019)	(0.030)
	1996	4.60	30.31	11.81	57.87
		(0.003)	(0.029)	(0.020)	(0.031)
South					
Djalabad	*1993*	15.33	51.18	15.49	33.33
		(0.005)	(0.018)	(0.013)	(0.017)
	1996	14.97	37.53	25.42	37.05
		(0.005)	(0.017)	(0.015)	(0.017)
Osh	*1993*	31.04	63.53	6.61	29.87
		(0.006)	(0.012)	(0.006)	(0.011)
	1996	29.86	39.99	21.51	38.50
		(0.010)	(0.012)	(0.010)	(0.012)
$\sum 100^1$					

[1]*First column sums to 100 for each year. For the remaining columns, the rows sum to 100.*

Source: Author's calculations based on KMPS 1993, 1996

Bishkek and a significant fall in Chu between 1993 and 1996. The disparities imply shifts in the working age population towards the main cities and away from the rural areas, which would have implications for economic recovery in rural areas if they are populated with a disproportionate number of the older generation. The proportion of the total working population across oblasts in 1993 ranges from 4% in Naryn to 33% in Osh, while in 1996 Talass had only 4% of the working age population with Osh having the largest share of 31%. The major cites of Bishkek and Osh maintain relatively greater proportions of employment, with Bishkek and Naryn actually showing a fall in the percentage unemployed by 1996. In 1993, Naryn had the highest percentage of the working age population inactive, over a third, and by 1996 this had increased to over half the working age population. All regions except Osh had an increase in the percentage inactive by 1993. Although Djalabad, a highly rural oblast and the poorest in the South, experienced a relatively small increase in the percentage inactive by 1996, the percentage unemployed increased from a relatively high figure of 18% to almost a third (31%) of it working population. Differences across oblasts by age-groups were not particularly distinctive but are provided in Table 5.10 on page 153 in Appendix 5.7. In general the results indicate more prosperous urban areas doing better, and rural areas doing much worse.

Sectorial Changes

Figure 5.1 uses official data from the National Statistical Committee of the Kyrgyz Republic. From the figure it can be seen that all sectors have reduced workers since the beginning of the 1990s. The greatest falls have been in the agricultural sector, the largest employer, which has steadily shed workers with a particularly steep fall between 1994-1996. Manufacturing and mining, the second largest sector in the Republic has also experienced steep falls in employment. The low level of unemployment reflects the level of registered unemployed but even this measure of unemployment showed an increase after 1995. These trends are consistent with Jackman (1995) which professes that changes in employment is more indicative of restructuring then changes in unemployment. (Table 5.14 in Appendix 5.7 on page 157 illustrates the breakdown of the labour force across sectors in 1996 using KMPS data. The agricultural sector employs 35% of the work force. Equivalent sectorial information in the 1993 survey was not collected).

Figure 5.1: Distribution of Unemployment and Employment across Sectors, 1991-1997
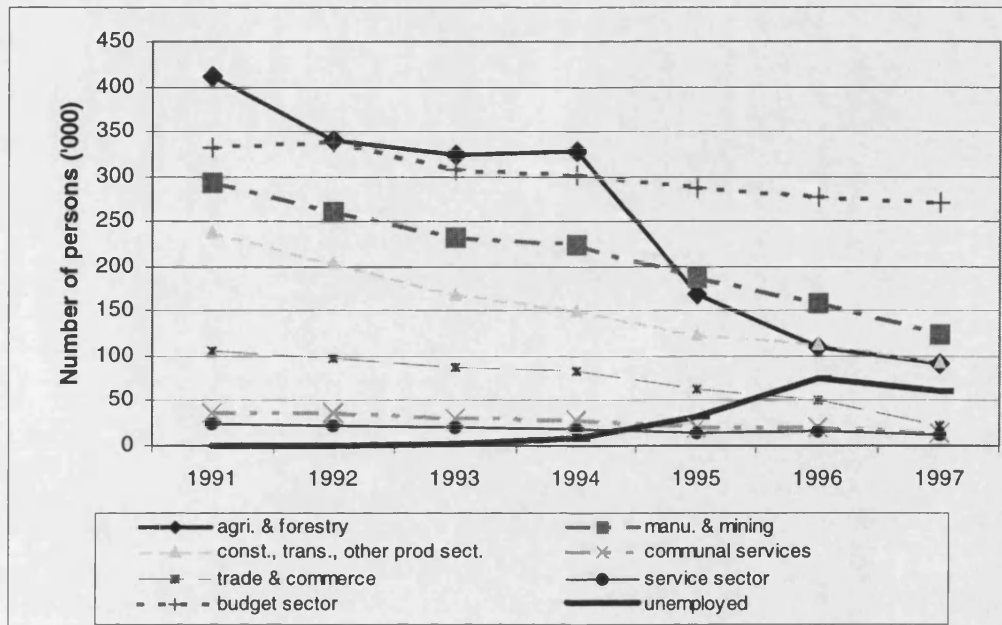
5.4.2 Summary of findings

This section has shown evidence of restructuring in the labour market between 1993 and 1996. There has been an undoubted fall in participation and employment rates over the period, with women and less skilled men exiting the labour market. Unemployment has increased, particularly in the rural areas and amongst the younger workers exacerbating the existing unemployment problem amongst this group. Although there are little differences across education levels, those with higher education have experienced smaller falls in employment and smaller increases in unemployment. Participation rates however decreased by more for this group and would reflect the loss of educated women from the labour market. It is important to note that jobs were no longer kept for women on maternity leave by 1996 and this group was as much as 8% of the employed in 1993. Looking at sectorial trends over a longer period of time, using official data, all sectors have experienced falls in employment, although the fall has been minor for communal service workers, while employment in the service sector has remained constant. The agricultural sector has experienced the greatest falls in employment, though the industrial sector and construction and other productive sectors, have experienced falls in employment steadily

for over a longer period.

Interestingly there have been great falls in participation and increases in unemployment despite the gradual improvement in output over this period. With these trends in the labour market, we present a formal model of why the changes in the labour market occurred later in the process of reform. The next section formalizes the movement in the labour market over the course of the transition process in terms of employer behaviour.

5.5 Explaining the Behaviour of the Firm

5.5.1 Introduction

The previous section provided evidence, using nationally representative survey data, that participation and employment levels were high at the beginning of the reform process, though unemployment levels were much higher than official statistics. Despite the recovery in output by the late 1990s, unemployment had almost doubled from its 1993 level and employment and participation rates had fallen by 1996. This section provides a framework for understanding the delayed impact on the labour market at the beginning of the reform process found in the previous section. We shed some light on the lack of initial movement by examining what happened at the enterprise level. Exploring the interaction between workers and employers within the context of inherited soviet institutional features provides a greater understanding of the adjustment process that occurred.

At the enterprise level, the legacy of the Soviet period created incentives which led to distortions in economic behaviour, focusing on short-term gains. Informational problems of the central planning agency and the distortions of price and lack of private property are attributed with causing x-inefficiency or 'organizational slack' in the allocation of resources (Poser 1999). Output maximization seemed to be a central issue, with senior managers awarded generous bonuses for meeting prescribed targets (Bergson (1964), Chapter 5). However targets were set not only for output levels, but also for per unit costs. If output targets were met, there was some flexibility over employment and wage bill targets and hence it was in the employer's interest to consider both input and output targets, though it was not unusual for firms to run budget deficits (see Portes (1969)).

State enterprises were often large employers, particularly in the FSU, and were also

places where social benefits were provided though the cost was often borne by the State through a transfer or subsidy. The amount of transfers was dependent on the resources, namely labour, the enterprise utilized. The economies of scale of large scale benefit provision meant that it was relatively cheaper for a large scale firm to provide such benefits to a large number of workers. However, with the collapse in output and the loss of transfers from Moscow, state enterprises did experience financial difficulties as enterprise subsidies gradually reduced, energy prices and the prices of inputs increased while the market for many of these unsaleable goods disappeared. This led to the worsening of the financial position of many enterprises.

The transition period was expected to be a period over which the firm's objectives moved towards profit maximization under competitive behaviour. Since a loss-making firm was not expected to become a profit making firm instantaneously, in the interim period the firm was often able to gain some additional financing from state banks or other financial institutions to cover some of these deficits. The firm was thus able to operate under what was referred to as a soft budget constraint. The absence of formal bankruptcy laws and the ability to gain additional finances and postpone outlays in the FSU, and in particular in the Kyrgyz Republic, have enabled unprofitable firms to continue production and is important in understanding the slow adjustment in the labour market despite the falls in demand.

The availability of additional financing permitted the continuation of old practices in State enterprises and this was perpetuated by the privatization process which led to a majority of the enterprises being sold to their managers, or employees, and enterprises became largely insider dominated, Blanchard, Commander, and Coricelli (1995).

Privatization gave enterprises greater control over decisions, such as adjusting the wage level and setting output targets. Some enterprises in particular sectors were considered nationally important and exempted from the privatization process, such as utilities or the airline industry in the Kyrgyz Republic (see page 32 for details on the privatization programme). Managers were now in a prime position for appropriating assets, particularly since accountability for the running of the enterprise was no longer directly with the associated Ministries. However, at the same time it was not in the interest of employers to alienate the workers and similarly if workers were interested in keeping their jobs during

these turbulent times they would have to be flexible over working conditions. Under the previous Soviet system, enterprise managers had established a network of links between suppliers and distributors, which ensured both forward and backward vertical integration of production and workers relied on managers' past experience to ensure continuity in production. However, as centralized planning ceased and production became demand driven the previous channels became less relevant. The dearth in management skills meant that many employers coped through a process of 'learning-by-doing' in order to establish their own input supply channels as well as the marketing of their products. Employers, aware of the restricted opportunities in the new environment, were keen to retain their position since the costs of losing their job were high. It was in the employer's interest to ensure workers did not collectively oust them from their position. The governance of enterprises can be understood in the framework of both internal labour market structures and what is termed as 'survival-oriented' behaviour (see Marsden (1995) for the former and Poser (1999) for the latter and also Abraham and McKersie (1990), Doeringer and Piore (1980), Marsden (1999)). These approaches provide an understanding of the gains of cooperation between workers and employers which have existed over the years.

The uncertainty of the change in demand also led to employers being reluctant to get rid of skilled labour which they would need if demand were to pick up. The reluctance to adjust the quantity of labour is reinforced if employers encounter costs of hiring and training new workers and thus the loss of workers would be a loss of investment. These non-wage costs and specific worker skills result in labour being costly to adjust in the short term, hence labour can be seen as a quasi-fixed factor in the short term, see Oi (1980). Rather than varying employment levels, employers varied hours of input and accepted flexibility in workers' effort levels. This is similar to the adjustment described in Brechling (1965) using the example of British manufacturers, where for an unexpected change in demand it is optimal for the firm to pay its existing workers a higher wage for additional hours rather than hire additional workers which would involve hiring and training costs. Adjustment is in terms of the hours of utilization of the work-force rather than quantity of work force. In the Kyrgyz Republic, and in the FSU in general, instead of actually laying off workers, those employed were subjected to reduced hours, extended leave, particularly maternity leave for women (although as mentioned positions previously kept available for

women on maternity leave were later withdrawn) and wage arrears, while the enterprise went through bad times. These mechanisms had the result of decreasing the firms' wage bill, often costlessly in terms of unpaid leave or wage arrears particularly in times of high inflation, while still maintaining a supply of skilled labour should demand pick up. Enterprises would pay wages in arrears rather than reduce wages or even partially pay workers' wages. Delaying payment, even for a temporary period (which turned out often to be over many months or even years) has a greater effect in reducing the firm's wage bill in the short run. Workers are unlikely to be paid in another enterprise, should they be hired, are willing to reduce effort and maintain attachment to the firm. By remaining attached to the firm workers are able to access social benefits and other entitlements as well as lay claim to unpaid wages. Even when paid, workers were often paid in-kind in the output of the firm that the firm could not sell and workers would find their own outlets to sell or barter the goods. The incidence of wage arrears has been particularly severe, with little difference in whether the enterprise is state or private, see Evans-Klock and Samorodov (1998) and Windell, Anker, and Sziraczki (1995).

Another reason for inducing more cooperative work relations is due to the asymmetrical information about the nature of the work and the effort and skill required, which only employees truly know, see Williamson (1975) and Birdsall (2000). The effects of morale on productivity, particularly in large organizations, where workers feel they are merely raw inputs in the production process rather than part of the organization, has been documented as far back as Florence (1953) and King (1990). These two issues of asymmetric information between employer and employee in the nature of the occupations and problems of low morale are followed up in Chapter 7, which looks at labour supply as decisions between the formal and informal sector.

The result of the persistence in labour hoarding from not adjusting employment levels is declining average productivity in the short run. This is well known even in market economies (Brechling 1965). This phenomenon is embodied in Okun's work, (Okun 1981), which states that output fluctuates more than employment in the course of the trade cycle and the average productivity of labour is pro-cyclical. Again according to Okun's work the average productivity of labour rises with employment and output, and falls when they decline. This is consistent with previous Soviet ideology that the way to

maximize output is to use all surplus labour. The consequences of the divergence between actual average productivity increases with employment and the usual assumptions about diminishing returns to employment explain the differences in outcome of employment from falls in output. This relationship is illustrated in Figure 5.2 below, which illustrates the consequence of an output fall, such as that in the Kyrgyz Republic and similar transitional economies.

5.5.2 A Graphical Illustration

In Figure 5.2 the production function labelled 'apparent' production function has the property that the average productivity of labour increases with employment and output, while the 'true' production function embodies the usual assumptions of the law of diminishing returns[3].

An output fall from X_1 to X_2 should result in a fall of employment from N_1 to N_2 at point B, the long-run cost minimizing level. Instead employment falls only to N_3 at C, along the apparent production function. The costs associated with production are embodied in the cost function, C_f, in the bottom half of the figure. Instead of the costs falling from $C_1(X_1, N_1)$ to $C_2(X_2, N_2)$, the cost of production along the true production function with output OX_2 at point B, the cost of production falls only to $C_2(X_2, N_3)$ at point E, corresponding to point C on the apparent production function. However, in addition, costs in the short run are further reduced when firms reduce their outlay by delaying payments to other firms and or to workers in the form of wage arrears. This reduces firms costs to the cost function $\acute{C}_f$. So in fact in the short run firm experiences lower costs, $C_2'(X_2, N_3)$, point F.

The disparity between these two production functions, the apparent and the true, explains why in the short run employment did not appear to adjust fully to output falls. The lowering of costs by delaying payments explains why these small shifts in employment persisted.

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[3]Although it should be noted that at some point the apparant production function will eventually exhibit diminishing returns to scale.

Figure 5.2: Output, Employment and Costs under Labour Hoarding
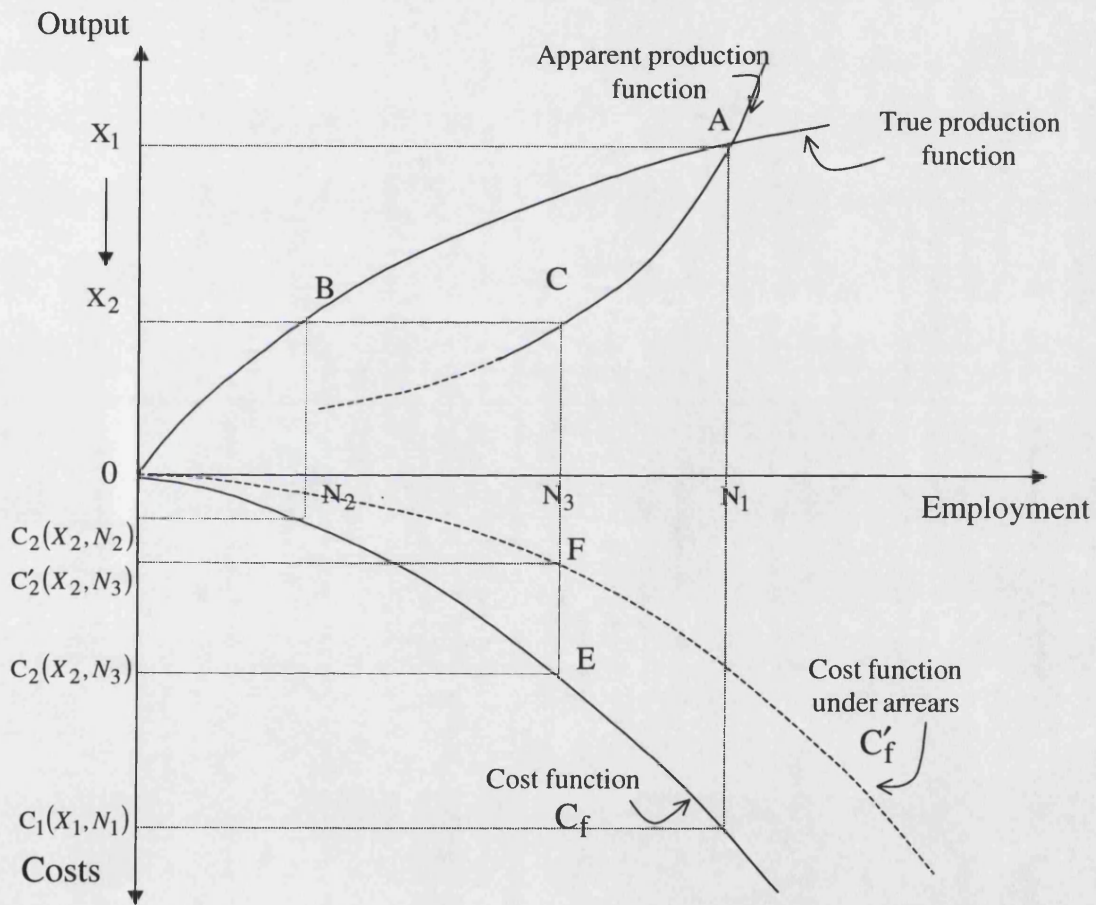
5.5.3   A Model of Firm adjustment

Here we formalize the adjustment process, illustrated in Figure 5.2, based on stylized facts of soviet institutional features in a model of employers' production decisions. It is necessary to understand the environment in which firms operate to appreciate the adjustment path that firms took. Firms operating under the Soviet ideology differ from firms operating under competitive markets for several reasons. Firstly, enterprises provide social benefits to the worker through the enterprise. The costs of these benefits are covered by a transfer from the State which is dependent on the amount of labour resources the firm utilizes. Secondly, firms have neither equity nor debt and thirdly, the compulsion to make profit is weak. The objective under central planning was not profit maximization and hence it was not unusual for the firm to operate at a financial loss. In the transitional period to a market economy the firm is able to renegotiate additional finances to cover the deficits from State Banks and institutions, though there is a limit on the amount of finances the firm can continuously renegotiate. This is income over and above the revenue received from selling the output and allows the firm to operate within a soft budget constraint. The enterprise knows that it can only renegotiate a limited, but positive, amount of finances during the transition period. Thus it is assumed that rather than maximizing profits, which is the conventional approach for firms operating under competitive markets, enterprises aim to minimize the deficit. The deficit is the difference between the revenue employers gain from both the output produced and the subsidy from the State, and the costs of production and costs of provision of social benefits. This differs from the firm's objective of profit maximization and cost minimization since there is the added dimension of subsidies and costs to the firm which are dependent on the quantity of labour, which alters the firm's objectives. This is also consistent with the objective of maximizing output whilst minimizing unit costs, as described in Bergson (1964) and Desai and Estrin (1992). Despite these differences, the firm's behaviour can be analyzed using the standard tools as long as we adapt it for the particular institutional circumstances. Here it is necessary to distinguish between the subsidies received for providing employee benefits and also the costs to the firm of doing so in the production function. The inputs used in production are defined as the amount of labour, capital, and all other inputs, as well as the hours worked as an indicator of the intensity in which labour is used. This allows employers to

adjust hours of work as well as the amount of labour (and capital and all other inputs), see Brechling (1965). For this reason hours of labour input enters the firms production function.

The objective function of the enterprise is to minimize the deficit, D,

$$\min_{h,w,N} D \equiv \{C_1 + C_2\} - \{R + S\}$$

subject to the revenue and cost function constraints,

$$C_1 = whN_i + ru(k_i) + p_I I \tag{5.1}$$

$$C_2 = N_i C_2(N_i) \tag{5.2}$$

$$R = F_i(hN_i, u(k_i), I)p \tag{5.3}$$

$$S = N_i \Phi(N_i) \tag{5.4}$$

C_1 is the cost of production and C_2 is the cost of providing the social benefit to workers. R is revenue from the production of output, represented by the production function $F_i(hN_i, u(k_i), I)$ times the price of p. For employer i, the production function includes N_i workers, hired h hours, physical capital k and all other inputs I. S is the subsidy from the State to the enterprise for the provision of social benefits. S and C_2 are the new elements relative to the standard model. Here subsidies and costs are specified as so much per worker $\Phi(N_i)$ and $C_2(N_i)$ respectively, but alternative formulations can be provided e.g. $\Phi(N_i)$ as a lump sum, independent of the number of workers. It is assumed there are economies of scale of benefit provision.

The first order condition for minimizing the deficit D is;

$$dD \equiv dC_1 + dC_2 - dR - dS = 0 \tag{5.5}$$

and the first order derivatives for each component are given as;

$dC_1 = whdN_i + wN_idh + hN_idw + ru'_k(k)dk + u(k)dr + p_IdI + Idp_I$

$dC_2 = C_2(N_i)dN_i + N_iC'_2(N_i)dN_i$

$dR = pdF + Fdp$

$$dF = F_h N_i dh + F_N h dN_i + F_k u'_k(k)dk + F_I dI$$

$$dS = \Phi(N_i)dN_i + N_i \Phi'(N_i)dN_i$$

The whole expression can be written as;

$$
\begin{aligned}
dD =\ & \{whdN_i + wN_i dh + hN_i dw + ru'_k(k)dk + u(k)dr + p_I dI + I dp_I\} \\
& + \{C_2(N_i) + N_i C'_2(N_i)\}\ dN_i \\
& - \{pF_h N_i dh + pF_N h dN_i + pF_k u'_k(k)dk + pF_I dI + F dp\} \\
& - \{\Phi(N_i) + N_i \Phi'(N_i)\}\ dN_i
\end{aligned}
\tag{5.6}
$$

A more intuitive way of writing Equation 5.6 is;

$$dD = \{wN_i dh + hN_i dw\} + \{(r - pF_k)u'_k(k)dk\} + u(k)dr\}$$

(wage bill)   (capital costs)

$$+\{(p_I - pF_I)dI + I dp_I - F dp - pF_h N dh\} + \{wh - pF_N h\}dN_i$$

(Non-labour costs   −   Revenue) + (wage − marginal product of labour(5.7)

$$+\ \{C_2(N_i) + N_i C'_2(N_i) - \Phi(N_i) - N_i \Phi'(N_i)\}\}dN_i$$

(net cost of benefit provision)

where $dF > 0$, $p > p_I$ and $F_h > 0$, $F_k > 0$, $F_N > 0$ with diminishing returns, $F_{hh} < 0$, $F_{kk} < 0$, $F_{NN} < 0$.

Alternatively Equation 5.6 can be expressed as,

$$dD = A + B = 0 \tag{5.8}$$

where A is the standard (neoclassical) term for a change in profit or loss and B is the institutionally specific terms due to subsidies, or costs of reducing workers.

In equilibrium we assume that the rate of interest, capital accumulation and all other inputs are fixed i.e. $\bar{r}$, $\bar{k}$ and $\bar{I}$ hence $dr = 0$, $dk = 0$ and $dI = 0$. Enterprises cannot influence p and p_I directly hence also $dp = 0$ and $dp_I = 0$.

So in equilibrium A and B can be defined as,

$$A \ = \ whdN_i + wN_idh + hN_idw - pF_hN_idh - pF_NhdN_i \qquad (5.9)$$

$$B \ = \ \{C_2(N_i) + N_iC_2'(N_i) - \Phi(N_i) - N_i\Phi'(N_i)\}dN_i \qquad (5.10)$$

In a neoclassical firm in equilibrium it would be expected that $A = 0$ (i.e. no change in profits or loss), but here since in equilibrium the change in the deficit must equal zero, $dD = 0$, it is possibly that in fact $A > 0$, and $B < 0$, i.e. firms can experience a loss while in receipt of subsidies.

Thus re-arranging Equation 5.9, A can be rewritten as;

$$A \ = \ (w - pF_h)N_idh + (w - pF_N)hdN_i + hN_idw \quad > 0 \qquad (5.11)$$

$$= \ (\quad \alpha dh \quad) \ + \ (\quad \beta dN_i \quad) \ + \ (\ \gamma dw \ )$$

while B remains the same.

Before transition each of the two terms α and β above could be taken as positive, or at best zero, since workers are paid a premium above productivity. This is illustrated in Figure 5.3. Prior to reform, workers are employed for h_1 hours and are paid a wage, w, which is higher then their marginal product, at point f. As the enterprise reduces the hours of work from h_1 to h_2 the wage equals the marginal product at point e and with h_2 hours. In this case it is in the firm's interest to reduce worker hours. Then the firm may travel along the curve to reduce hours to h_3 and this will raise marginal product to g.

If *hours* are cut (i.e. $dh > 0$, $dN_i = 0$, $dw = 0$) then the marginal product of hours of labour, F_h, would increase ($F_{hh} < 0$). Thus $(w - pF_h)N_idh$ would be decreasing i.e. getting less positive if hours are cut.

Alternatively, rather than changing hours, employers could change employment (i.e. $dN_i > 0$, $dh = 0$, $dw = 0$). If *employment* is adjusted the effect would be

$$\beta dN_i \qquad + \qquad B \qquad (5.12)$$

or

$$\{(w - pF_N)h + C_2(N_i) + N_iC_2'(N_i) - \Phi(N_i) - N_i\Phi'(N_i)\}dN_i \qquad (5.13)$$

Figure 5.3: Changes in marginal product as hours changes
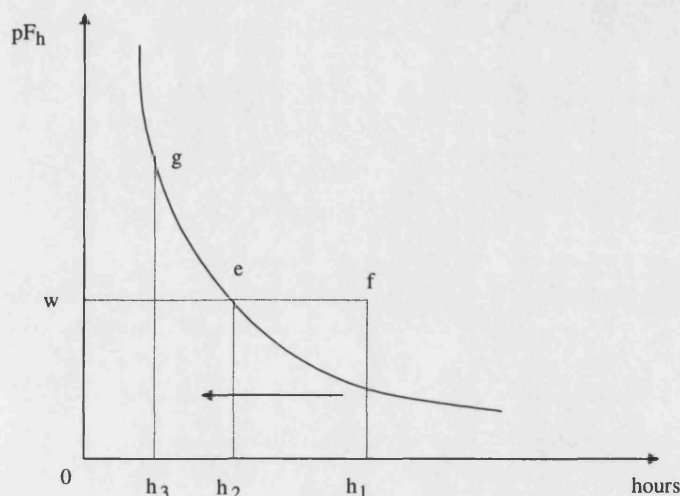
From Equation 5.13 the affect of adjusting the numbers employed will depend largely on the net cost of benefit provision, since this term is dependent on the number of workers. If this term is negative, i.e. $C_2(N) < \Phi(N)$, then adding an additional worker will decrease the firm's deficit by increasing the revenue of the firm and firms will hire more workers (since the subsidy the employer receives for hiring an additional worker is higher than the cost of providing social benefits). If the net cost of provision of social benefits is positive, i.e. $C_2(N) > \Phi(N)$, then employers will increase revenue if they decrease employment. The first case, with costs per worker of benefit provision less than the per worker State transfer, is likely to be the situation at the start of the reform process. This is not unreasonable since there are likely to be economies of scale in providing benefits at the firm and hence for large scale employers, the transfer for an additional worker is assumed to cover the additional cost of benefit provision. Hence not only is the amount of transfer from the State important, but also the level of employment at the enterprise since the size of the enterprise's work force affects which benefits the firm can afford to provide.

So firms can alter hours or quantity of workers, dh or dN_i. However, if employers encounter large hiring costs when they employ an additional worker, employers could incur huge losses by firing workers. So in the short run at least, the quantity of employees will be fixed. Employers will than vary the intensity of the use of labour if they cannot change the number of workers. In the long run however both factors, the intensity and quantity of

workers, will be variable. If there were no hiring costs associated with employing workers than both hours of work and number of workers employed would be variable in the short run and the effects to revenue would be the same as described in the long run above and will depend upon differences in $\Phi(N)$ and $C_2(N)$.

In both cases it has been assumed that wages were not adjusted, $dw = 0$. From Equations 5.11 and 5.13 it can be seen that cutting wages, $dw < 0$, would have a negative impact on A and would reduce overall losses in the short term (dw only appears in Equation 5.11). Hence by delaying wages and cutting hours firms would re-enforce the effect on losses.

As enterprises move towards more competitive behaviour, firms will no longer be responsible for providing benefits and hence subsidies to the firm will also cease i.e. the terms $S()$ and $C_2()$ drop out from employer's objective function. So rather than minimizing the deficit, the firm's objective will be to maximize profits. Firms will have to reduce costs of productions and this will initially be a reduction in the provision of benefits (reducing $C_2(N)$).

The following sections provide support for the theoretical implications described here.

5.5.4 Empirical Analysis

Here we show some empirical evidence that employers initially adjusted worker intensity early in the reform process, in 1993, before significant adjustments in the quantity of labour were made later on, in 1996. The reduction in employee's work-load is seen as a tool by which managers are able to reduce labour costs whilst maintaining employment levels at the enterprise. In the absence of employer or enterprise data, the empirical approach applied here is to look for changes in hours worked in the primary place of employment.

For this study, those working less than 41 hours a week are considered to be working less than full-time, or working reduced hours. An examination of the 1993 data found the majority of workers clustered around a 41 hour week while for the 1996 Survey workers were asked about their working schedules corresponding to a 41 hour week. This is different from a widely used classification of part-time work which is usually based on 15 hours or less a week since during the Soviet period part-time work was, and is, relatively scarce, see Oxenstierna (1990) and hence it is important to examine how widespread the occurrence

was of workers working less than full-time. Official part-time workers made up as little as 4% of the work force in 1996, which translates to 12% of those on reduced hours. Though there are no comparative figures for 1993, evidence suggests it is unlikely to have been higher than the 1996 rate, a relatively low figure given the high fertility rate and employment rate for women. Oxenstierna (1990) also notes that part-time work was even rare amongst women. Although however officially working full-time, women who had to manage responsibilities both at home and at work did in fact have low productivity at work.

Here we look at those workers working less than full time hours including those placed on official reduced schedules. We do not differentiate between workers voluntarily working less than 41 hours from those on official reduced schedules in the summary statistics but do account for this difference in the regression analysis.

Here the incidence of workers working less than full-time is examined across worker characteristics.

Summary Statistics

Table 5.5 illustrates the incidence of less than full-time working schedules for specified characteristics. In 1993 the incidence of workers working less than a full-time schedule was as high as 25%. However when the number of workers who were working and did not report any hours are included (as higher as 21%) the figure increases to 46% of workers. The incidence fell to 32% by 1996. The low standard errors suggest this fall is statistically significant. Female workers had a higher incidence of working less than full-time compared to men in 1993, while in 1996 the disparity reduced with the incidence falling to just over 30% for both men and women. While there is no particular age bias, in 1993 younger workers experienced a slightly lower incidence of less than full-time schedule and in 1996 older workers (50-54/59 years old) had a distinctly lower incidence at 19% compared to the other age groups which ranged between 30% and 46%.

The difference across workers experiencing delays in wage payments and those that do not is supportive of the hypothesis that workers adjusted intensity of hours. In 1993 the

Table 5.5: Working less than full-time per week, 1993 and 1996

Less than Full-time[1]	1993		1996
Maternity Leave[2]	8.8		
Reported hours missing[2,3]	20.8		
Reported +ve hrs less than f/t	25.2 (0.011)		
Total *including missing	**46.0** (0.011)		**32.0** (0.012)
Official part-time jobs			4.0
Men	33.0 (0.014)		31.0 (0.016)
Women	53.1 (0.018)		33.4 (0.018)
Age group			
16-29	38.1 (0.019)		37.2 (0.022)
30-49	41.9 (0.015)		30.2 (0.015)
50-54/59	45.9 (0.035)		18.7 (0.034)
55/60+	50.0 (0.065)		46.0 (0.063)
Wage arrears/non-wage arrears			
Wage arrears	36.9 (0.015)		51.8 (0.026)
No wage arrears	46.1 (0.016)		26.4 (0.012)

Occpuation		**Sector**	
Military	0.4 (0.171)	Agriculture	55.0 (0.021)
Legislators	30.8 (0.074)	Mining	26.7 (0.114)
Professionals	65.0 (0.030)	Manufacturing	17.7 (0.028)
Technicians	56.5 (0.033)	Elec. gas, water	7.3 (0.041)
Clerks	48.8 (0.046)	Construction	16.4 (0.050)
Service Workers	28.0 (0.043)	Commerce	15.4 (0.041)
Skilled Agri & Fishery wrks.	14.1 (0.066)	Transport	11.8 (0.032)
Craft & related trade	50.2 (0.030)	Financial	3.1 (0.031)
Plant & Machine operators	35.4 (0.026)	Services	23.9 (0.019)
Elementary Occupations	27.1 (0.018)		
Enterprise ownership			
State	45.4 (0.013)	State	19.8 (0.014)
Public Organization	35.1 (0.079)	Social Organization	38.1 (0.106)
Work Collective	26.5 (0.022)	Cooperatives	30.8 (0.037)
Private Individuals	44.8 (0.065)	Joint-stock/ventures	21.3 (0.031)
		Private firms	13.0 (0.038)
		Farming communities	43.7 (0.053)
		Private farming	69.7 (0.026)
Other	29.6 (0.088)	Other	44.4 (0.096)

Oblast			
North			
Bishkek	59.5 (0.030)		12.6 (0.016)
Chu	41.0 (0.022)		23.6 (0.028)
Issy-kul	44.7 (0.040)		28.8 (0.039)
Naryn	45.5 (0.076)		17.9 (0.047)
Talass	54.7 (0.059)		12.1 (0.057)
South			
Djalabad	39.5 (0.028)		44.2 (0.030)
Osh	31.7 (0.018)		50.3 (0.023)

[1] Less than full-time is taken as less than 41 hrs/week.
[2] Out of all workers, [3] Includes those on maternity leave.
Source: Authors calculations based on KMPS 1993, 1996

incidence of less than full-time work was high across both categories of workers while by 1996, those workers experiencing wage arrears had a higher incidence of working less than full-time compared to those workers receiving wages. This would suggest that employers adjusted worker intensity early in the transition process and by 1996, those employers likely to be experiencing bad times, would use both delays in payment and reduction in hours. The incidence was as high as 52% for workers experiencing wage arrears and 26% for those not experiencing wage arrears, see Chapter 6 for the incidence of wage arrears which was as high as 58% in 1993 but had fallen to 24% in 1996,.

There are some distinctions across occupations with higher skilled occupations, professionals and technicians, and the very lower skilled occupations, clerks and craft and related trade workers, experiencing significantly higher reduced working schedules than the other occupations. The incidence amongst these groups was as high as 50% and above. Interestingly workers in elementary occupations and skilled agricultural and fishery workers experienced the lowest incidence of less than full-time work, apart from those in the military. The category elementary workers includes largely farm workers, and these workers could well have continued to work on the land for their own purposes (though it is important to note that agricultural workers were subject to particularly high incidences of wage arrears, again refer to Chapter 6). In 1996 the agricultural and service sectors both had higher incidences of less than full-time working schedules, 59% and 22% respectively, both sectors which are dominated by low skilled workers. Interestingly the mining sector retained a relatively high incidence of reduced working schedules in 1996, despite this sector having a significant component of foreign ownership largely in gold mining industry. The majority of enterprises had not been privatized in 1993 and hence State enterprises have a higher percentage of workers on reduced schedule, 84%, than other categories. Work collectives had as many as 10% on less than working schedule. Work collectives were largely agricultural based enterprises and included the Kolkhozs and Sovkhozs (collective and state farms), with approximately 80% of workers from rural areas. Work collectives also includes workers of cooperatives, and the latter tended to operate in areas of catering and consumer goods and tended to be productively more efficient than many other forms of non-state ownership, and their workers often received higher than average wages, see Kuznetsova (1991). See Table 5.12 in the Appendix for the distribution of workers across

enterprise categories. These patterns are consistent across ownership type and region.

In 1993 there was a higher incidence of less than full-time work in the less rural areas, though in general the frequency was 40% and over. In 1996 the incidence was much lower across all regions, though rural regions had a higher incidence of less than full-time work, particularly in the south which experienced higher incidences of 44% and 50% in Djalabad and Osh, compared to 20% or less in the rest of the country.

These trends are consistent with the dire situation in 1993 which was particularly bad for agricultural workers who may have worked longer hours in agricultural activities as part of a subsistence-level coping strategy. In 1996, employers have adjusted quantity of employment to some extent, but still employers reduce work intensity and costs. Agricultural workers, who still tend to be the worse off in 1996, may have had to reduce hours in primary employment and substitute employment with off-farm activities and this would account for the reduction in hours.

The above results showed evidence that reduction in work intensity was higher in 1993 compared to later in 1996 when participation rates had fallen and unemployment increased. However summary statistics provide a picture of incidence of a reduced working schedule across different worker characteristics. In order to capture the interaction between different effects regression analysis is used.

Regression Analysis

For this analysis the tobit model or censored regression, is used since the distribution of the dependent variable (hours of work) being analyzed is a mixture of discrete and continuous outcomes i.e. workers with zero and positive hours of work. A brief definition of the variables included in the regressions can be found in Appendix 5.7 on page 160.

The regression model The regression is specified as follows;

$$y_i^* = \beta' x_i + \varepsilon_i$$
$$y_i = 0 \text{ if } y_i^* \leq 0$$
$$y_i = y_i^* \text{ if } y_i^* > 0$$

where y_i^* is the natural log of weekly hours worked of workers in the primary place of employment. The vector x_i is a vector of both individual characteristics of workers, including worker type and enterprise characteristics.

As mentioned in the data section, Chapter 2, Section 5.3, on page 116, due to differences in the surveys there are slight differences in the work-related variables included in the 1993 and 1996 regressions. For 1993 only information on the wage that workers receive is included. In 1996 information on workers' salary, as well as amount received, was provided and so both variables are included. In both years a dummy for those who work in additional activities is included, as well as the average income from these activities for those workers. Workers who have been placed on a reduced working schedule by their employer are identified by a dummy variable called "Reduced hours". In 1993 information on occupation codes were collected, while in 1996 there is information on worker type and sector, as well as information on individuals' years in the firm and in the occupation.

The determinants of hours worked in the primary place of employment is likely to differ for men and women and hence number of children, both of the young (6-15) and very young (0-5) are included. Location dummies account for differences in the economic conditions across regions. The oblast level rather than a lower geographical level is included since workers are unlikely to be limited to working within a narrow regional area. An array of household assets/durables is also included to provide some control for the economic status of the household. In both years the list of assets comprised of the following list; refrigerator, washing machine, black and white television, colour television, video cassette recorder and a car. The regression for 1993 also includes information on the ownership of a motorbike. This information is not available in the 1996 survey and so was not included in the 1996 regression. These items were selected to reflect those that were not necessarily biased by location, since all areas have access to electricity and hence there is no urban bias in the selection.

Ideally information on workers' salary, not just amount received, would have been useful. However this information was not collected in 1993, though given that wages were still following the highly centralized rewarding system, distinctions between workers in 1993 are likely to be captured in other work related variables. Despite the slight differences in the survey, comparable information has been incorporated and any loss of generality in

the results is likely to be small.

Results

Due to the problems of accurate reporting of information on income and secondary employment we note which characteristics are significant rather than attaching importance to the value of the associated coefficient.

Table 5.6 on page 147 presents the results of the tobit regression for workers in 1993. From these results it can be seen that wage arrears and a reduced working schedule have a negative effect on hours worked, as does the amount of income workers earn from additional activities. The latter indicates workers may be working outside their enterprise and hence are cutting down hours of work in their primary employment. Plant operatives work less hours than elementary workers, and interestingly only "other" defined enterprise workers work less than State enterprises, with workers in work collectives working longer (consistent with the finding of agricultural workers working longer on land for their own gain as found in the summary statistics). This is also consistent with urban workers working less hours than workers in rural areas. As expected, men work longer than women and having very young children have a negative impact on hours work.

Focusing on the separate male and female results, these results carry over with only a few notable observations. There are no significant differences across occupation groups for men, though female plant operators work less than female elementary workers and again urban and rural differences carry over for women workers. Income from secondary activities is only (negatively) significant for men.

Although not presented in the table, the array of durables were found to be jointly significant but only the ownership of a refrigerator was (positively) significant across all three regressions.

In the 1996 results, in Table 5.7 on page 148, again wage arrears, reduced working schedules and income from secondary activities have a negative impact on hours worked. The amount of wages the worker actually receives is negatively correlated with hours worked and this is consistent with workers on higher salaries work longer hours. Owners and members of a manufacturing cooperative work more hours compared to white collar workers, and workers in manufacturing work more hours than agricultural workers, again

consistent with higher paid workers working longer hours. The number of plant and machine operators is a rough indication of the relative size of blue collar workers in the manufacturing sector. (This group comprises of approximately 16% of workers in 1993, though many may also be found in the category for elementary workers, see Tables 5.13 on page 156 and 5.14 on page 157 in Appendix 5.7.)

The insignificance of educational differences in the overall model could be because worker type and sectorial differences capture all differences in qualifications (see Table 5.16 on page 159 in Appendix 5.7 for the distribution of workers across enterprises by education). There is little indication that highly skilled workers left for privatized enterprises by 1996, with State and Public/Social Organizations still retaining a higher proportion of individuals with higher education in their work force. This is not entirely unexpected given that privatization was carried out on a sectorial basis. Workers with specific skills would have not been choosing between State or non-State enterprises, but between sectors which could lie wholly in one or the other form of ownership (see Tables 5.15 and 5.16 in Appendix 5.7 for the distribution of the work force across education levels, by occupation and sector, and enterprise ownership).

Despite including the number of years a worker has worked in his or her present occupation or for his or her present firm in the 1996 regression, neither of these variables were significant. Though in the male only sample, workers with less than high school education work more hours than those with higher education.

The differences between the regression results for men and women were less notable, except that the result for higher salaries and inverse amount of wages received is significant for women not men, while again income from additional activities is only negatively significant for men. Also interestingly, is that having older children in the household has a negative impact on male workers rather than female workers. The lack of effect of children in the household on female workers may be due to changes in the provision of child care facilities (one facility that has been greatly reduced in many enterprises) which has meant that pregnant women or women who do have to look after young children have had to withdraw from the labour market altogether. Ownership of household durables items were not found to be significant in the three regressions. Asset ownership may have been a more distinguishing feature amongst households in 1993, when households actually ran down

their assets during the peak of the recession while by 1996 households asset ownership was not significantly different across households.

Also, compared to the 1993 regression results, the constant term has become more significant, reflecting the importance of the omitted dummy variables in explaining hours worked. Less skilled workers in agricultural areas seem to work less hours in primary employment. In 1993 the economic conditions were far worse and hence all workers (both highly skilled and less skilled) were affected by the situation, though again less skilled workers in agricultural activities did do badly even then. The improvements of the fit of the model (the log likelihood estimate falling from -4964.69 to -1892.50) provide some support for this too, implying that work related variables appear to better explain workers' patterns, more so than in 1993. The reduction in the number of censored observations which reflects the number of workers employed but not working at the enterprise over the period is also an indication of change in employers' behaviour. This is consistent with a reduction in labour hoarding, and a general fall in (rural) employment rates.

Table 5.6: Tobit regression of hours worked, 1993

ln hrs worked a week	All		Male		Female	
	Coeff.	*t*	*Coeff.*	*t*	*Coeff.*	*t*
constant	1.14	2.12 *	2.34	3.67 *	2.39	2.70 *
Age	0.04	1.53	0.01	0.32	-0.02	0.37
age^2	-0.05	1.38	-0.02	0.38	0.04	0.62
Gender (Female)						
Male	1.12	9.98 *				
Education level (Higher education)						
Less than High School	0.01	0.08	-0.04	0.29	0.00	0.00
High School	-0.46	3.30 *	-0.36	2.14 *	-0.56	2.41 *
Occupation Group (Elementary Workers)						
Managers	0.26	0.67	-0.09	0.24	0.43	0.40
Professionals	-0.05	0.27	-0.02	0.07	0.06	0.20
Technicians	-0.26	1.43	0.19	0.66	-0.45	1.74
Clerical	0.27	1.20	0.59	1.56	0.04	0.11
Personal Services	-0.17	0.75	0.08	0.26	-0.54	1.45
Agri. Labour	-0.49	1.28	0.05	0.13	-1.93	1.61
Craft	-0.20	1.10	0.09	0.48	-0.57	1.25
Operatives	-0.38	2.38 *	0.01	0.08	-1.46	3.75 *
Work Characteristics (Full-time)						
Arrears	-0.87	6.55 *	-0.04	2.62 *	-1.24	5.60 *
Reduced Hours	-2.16	6.58 *	-2.29	6.75 *	-1.69	2.40 *
Ln mthly wages received	0.00	0.70	0.00	0.74	0.00	0.89
Hold second job	0.56	1.60	0.66	1.65	0.12	0.20
Ln Income other labour activ.	-0.001	2.26 *	-0.001	2.41 *	-0.001	1.12
Enterprise (State)						
Public Organization	0.51	1.37	0.58	1.20	0.24	0.42
Work collective	0.32	2.45 *	-0.03	0.24	0.89	3.93 *
Private Firms	0.24	0.77	0.19	0.57	0.84	1.47
Other	-0.74	1.91 *	-1.45	3.40 *	0.29	0.40
Household attributes						
No. of child. 0-5 years old	-0.24	4.84 *	0.04	0.68	-0.66	7.47 *
No. of child. 6-16 years old	0.00	0.05	-0.04	0.92	0.09	1.43
Assets						
Type of Region (Rural)						
Urban	-0.30	2.14 *	-0.17	1.00	-0.50	2.24 *
Oblasts						
Ethnicity						
Observations	2684		1419		1265	
Log likelihood	-4964.69		-2676.234		-2187.133	
Psuedo R^2	0.0422		0.0349		0.0622	
LR Chi (d.f)	437.14 (42)		193.84 (41)		290.03 (41)	
no. of censored obs.	861		348		513	

Omitted groups for dummy variables are in (italics)

* statistically significant at the 5% level

Source: Author's calculations based on KMPS 1993

Table 5.7: Tobit regression of hours worked, 1996

Ln hrs worked a week	Total Coeff.	t	Male Coeff.	t	Female Coeff.	t
constant	3.17	10.75 *	3.68	10.22 *	2.66	5.19 *
Age	-0.00	0.84	-0.00	0.24	0.01	0.27
age^2	0.01	0.43	0.03	0.16	-0.03	0.10
Gender (Female)						
Male	0.20	4.40 *				
Education level (Higher education)						
Less than High School	0.15	1.72	0.23	2.19 *	0.07	0.48
High School	-0.03	0.47	-0.05	0.75	0.01	0.11
Worker type (White collar)						
Blue collar	-0.09	1.43	-0.14	1.82	-0.03	0.32
Owner	0.73	3.44 *	0.57	2.06 *	0.99	2.97*
Manu. Coop.	0.43	3.28 *	0.26	1.66	0.71	2.98*
Professional	0.03	0.10	0.12	0.67	0.02	0.06
Domestic services	-1.27	1.50	-1.76	2.26 *		
Skills/Experience (Years in firm & Occupation)						
Work Characteristics						
Arrears	-0.76	3.63 *	-0.22	2.21 *	-1.04	2.97 *
Reduced hours	-0.73	7.10 *	-0.07	3.99 *	-0.82	4.89 *
ln mthly Salary	0.12	3.94 *	0.00	1.01	0.21	3.40 *
ln mthly wages received	-0.09	2.48 *	-0.00	0.56	-0.12	2.03 *
Hold second job	0.33	1.30	0.10	0.34	0.06	0.90
ln Income other activities	-0.10	1.99 *	-0.002	3.42 *	-0.00	0.97
Enterprise (State)						
Social Organization	-0.24	1.32	-0.16	0.52	-0.18	0.72
Cooperative	-0.08	0.88	0.01	0.08	-0.23	1.37
Joint Company	-0.08	1.06	-0.10	1.11	-0.02	0.11
Private firms	0.12	1.18	0.13	1.01	0.11	0.67
Farming community	-0.11	0.93	-0.07	0.59	-0.26	0.92
Private farm	-0.40	4.30 *	-0.39	3.76*	-0.44	2.35*
Other						
Sector (Agriculture)						
Mining	-0.31	1.33	-0.17	0.76		
Manufacturing	0.23	2.25 *	0.27	2.36*	0.20	0.94
Utility	0.10	0.65	-0.01	0.04	0.35	1.09
Construction	0.14	1.05	0.19	1.42	-0.03	0.08
Commerce	0.06	0.49	0.10	0.62	-0.02	0.11
Transport	0.01	0.12	0.13	1.06	-0.20	0.75
Finance	0.10	0.60	0.07	0.29	0.04	0.13
Services	0.05	0.55	0.02	0.17	0.05	0.28
Other	0.53	0.57			0.45	0.50
Household attributes						
no. of child 0-5 years old	-0.04	1.57	-0.03	1.08	-0.05	1.09
no. of child. 6-15 years old	-0.05	2.67 *	-0.07	2.86 *	-0.03	0.92
Assets						
Type of Region (Rural)						
Urban	0.06	0.85	-0.09	1.03	0.18	1.60
Oblasts						
Ethnicity						
Observations	1539		857		682	
Log likelihood	-1892.50		-968.00		-892.01	
Psuedo R^2	0.0897		0.1112		0.0873	
LR Chi (d.f)	372.97 (53)		242.29 (51)		170.59 (50)	
no. of censored obs.	73		32		41	

Omitted groups for dummy variables are in (italics)
* statistically significant at the 5% level
Source: Author's calculations based on KMPS 1996

5.6 Conclusion

The focus of this chapter was to explain why changes in employment took place so much later in the reform process despite the large falls in output. Here we try and explain why this was a rational process of adjustment given the particular institutional features of the Soviet labour market. The analysis begins by examining labour market trends in household survey data. The results indeed reveal that there have been significant falls in participation rates and increases in unemployment between 1993-1996, despite output having improved by this stage. There is also evidence that women made up a larger proportion of those who left the labour market and that unemployment increased considerably in rural areas and amongst younger workers, exacerbating the problem of surplus labour in the region.

The main contribution of this chapter was a model of employers' adjustment strategy, based on a labour-managed, bargaining model of firm behaviour, which illustrated that whilst firms provided enterprise benefits and were in receipt of State subsidies, it was in their interest to vary worker intensity (hours of work) and delay costs (wage arrears). As subsidies dried up, and it became too costly for firms to provide social benefits, employers reduced the quantity (number) of workers and hence employment fell and unemployment increased. This shift is a reflection of a change in behaviour towards a more competitive behaviour in the labour market

Intensity of work and delaying of costs were modelled using hours of primary work and wage arrears, respectively. Empirical evidence found here supports the predictions of the model, namely that while in receipt of subsidies for the provision of benefits firms varied hours of work but as these subsidies decreased employment levels changed. The incidence of both these aspects were high in 1993, while by 1996 both wage arrears and the proportion of workers working less than full-time had fallen significantly. The general bad economic conditions prevalent in 1993 is reflected in the prevalence across all worker characteristics in the 1993 data. In 1993 all occupations had a relatively high proportion of workers working less than full-time, and there was little difference across the enterprise ownership type. An important consideration in 1993 was the large number of workers who reported being employed but no hours of work, as many as 822, again an indication of employers maintaining workers on record but allowing for flexibility in intensity of work. Many of these workers were low skilled or farm workers. In the 1996 data, summary

statistics show that agricultural workers fared worse in terms of working less than full-time work, though the incidence was also high for the service and the industrial based sectors. The results of 1996 suggest that working schedules were more in-line with what would be expected in a competitive labour market, with higher paid workers working longer hours and the negative effects of wage arrears and additional employment activities.

Delays in labour market adjustment that has lagged behind falls in output can be seen to form a rational adjustment process by employers in the light of the specific institutional features of the Kyrgyz (and other FSU) Republics, namely the provision of social sector benefits not provided outside the enterprise, enterprise subsidies based on resource holdings and in particular the availability of additional finances permitting the firm to operate against soft budget constraints. So although very slight, there do appear to be some evidence of change in the labour market between the two periods, with the labour market responding a little more to expected patterns by 1996. There is evidence to support the hypothesis of a gradual change in the labour market a more profit orientated environment, though there is a long way to go before a full adjustment can be said to have taken place.

5.7 Appendix: Labour Market Trends

Additional Summary statistics on Labour market trends.

Table 5.8: Distribution of the labour force by gender, 1993 and 1996

% (s.e. in parenthesis)		Total	Males	Urban Males	Urban Females	Rural Males	Rural Females
Employed	*1993*	56.01	64.51	59.55	48.24	67.36	49.09
		(0.07)	(0.010)	(0.016)	(0.015)	(0.012)	(0.012)
	1996	39.26	47.08	52.05	39.17	44.60	27.90
		(0.007)	(0.010)	(0.017)	(0.015)	(0.012)	(0.011)
Unemployed	*1993*	9.53	11.67	13.45	7.48	10.64	7.87
		(0.004)	(0.006)	(0.012)	(0.008)	(0.008)	(0.006)
	1996	14.89	19.01	11.85	5.56	22.58	14.48
		(0.005)	(0.008)	(0.011)	(0.007)	(0.010)	(0.008)
Out of the	*1993*	34.45	23.83	27.01	44.28	22.00	43.04
		(0.006)	(0.009)	(0.015)	(0.015)	(0.011)	(0.012)
labour force	*1996*	45.84	33.92	36.10	55.28	32.82	57.63
		(0.007)	(0.009)	(0.016)	(0.015)	(0.011)	(0.012)

Source: Author's own calculations based on KMPS 1993, 1996

Table 5.9: Distribution of the labour force by urban/rural, 1993 and 1996

% (s.e. in parenthesis)		Total	Urban	In Urban Areas	In Rural Areas
Employed	1993	56.01	36.45	53.19	54.66
		(0.007)	(0.009)	(0.011)	(0.009)
	1996	39.26	40.61	44.94	34.33
		(0.007)	(0.011)	(0.011)	(0.008)
Unemployed	1993	9.53	40.64	10.09	8.77
		(0.004)	(0.022)	(0.007)	(0.005)
	1996	14.89	19.95	8.38	17.93
		(0.005)	(0.014)	(0.006)	(0.006)
Out of the labour force	1993	34.45	40.90	36.71	36.57
		(0.006)	(0.012)	(0.011)	(0.008)
	1996	45.84	36.13	46.68	47.74
		(0.007)	(0.010)	(0.011)	(0.008)

Source: Author's own calculations based on KMPS 1993, 1996

Table 5.10: Labour Force Rates by age groups, 1993 and 1996

Rates (s.e. in parentheses) 16+		North					South	
		Bishkek	Chu	Isskul	Naryn	Talass	Djalabad	Osh
Participation	1993	0.60	0.66	0.61	0.53	0.64	0.67	0.70
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
rates	1996	0.54	0.46	0.45	0.42	0.42	0.63	0.61
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Employment	1993	0.87	0.88	0.77	0.75	0.85	0.77	0.91
		(0.005)	(0.004)	(0.006)	(0.006)	(0.005)	(0.006)	(0.004)
rates	1996	0.89	0.76	0.76	0.91	0.72	0.60	0.65
		(0.004)	0.006)	(0.006)	(0.004)	(0.006)	(0.007)	(0.006)
Unemployment	1993	0.13	0.12	0.23	0.25	0.15	0.23	0.09
		(0.005)	(0.004)	(0.006)	(0.006)	(0.005)	(0.006)	(0.004)
rates	1996	0.11	0.24	0.24	0.09	0.28	0.40	0.35
		(0.004)	(0.006)	(0.006)	(0.004)	(0.006)	(0.007)	(0.006)
16-29								
Participation	1993	0.55	0.71	0.66	0.55	0.67	0.76	0.74
		(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
rates	1996	0.50	0.46	0.32	0.35	0.47	0.68	0.63
		(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)
Employment	1993	0.80	0.84	0.56	0.61	0.68	0.67	0.85
		(0.005)	(0.005)	(0.007)	(0.007)	(0.006)	(0.006)	(0.005)
rates	1996	0.88	0.69	0.56	0.89	0.66	0.47	0.59
		(0.004)	(0.006)	(0.007)	(0.004)	(0.006)	(0.007)	(0.007)
Unemployment	1993	0.20	0.16	0.44	0.39	0.32	0.33	0.15
		(0.005)	(0.005)	(0.007)	(0.007)	(0.006)	(0.006)	(0.005)
rates	1996	0.12	0.31	0.44	0.11	0.34	0.53	0.41
		(0.004)	(0.006)	(0.007)	(0.004)	(0.006)	(0.007)	(0.007)
30-49								
Participation	1993	0.88	0.91	0.89	0.83	0.93	0.83	0.92
		(0.005)	(0.004)	(0.004)	(0.005)	(0.003)	(0.005)	(0.004)
rates	1996	0.76	0.73	0.75	0.62	0.64	0.83	0.80
		(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.005)	(0.005)
Employment	1993	0.89	0.90	0.90	0.82	0.95	0.86	0.95
		(0.004)	(0.004)	(0.004)	(0.005)	(0.003)	(0.005)	(0.003)
rates	1996	0.89	0.77	0.85	0.92	0.74	0.67	0.67
		(0.004)	(0.006)	(0.005)	(0.004)	(0.006)	(0.006)	(0.006)
Unemployment	1993	0.11	0.10	0.10	0.18	0.05	0.14	0.05
		(0.004)	(0.004)	(0.004)	(0.005)	(0.003)	(0.005)	(0.003)
rates	1996	0.11	0.23	0.15	0.08	0.26	0.33	0.33
		(0.004)	(0.006)	(0.005)	(0.004)	(0.006)	(0.006)	(0.006)
50-54/59								
Participation	1993	0.73	0.82	0.65	0.39	0.87	0.64	0.70
		(0.006)	(0.005)	(0.006)	(0.007)	(0.005)	(0.007)	(0.006)
rates	1996	0.80	0.56	0.63	0.50	0.33	0.75	0.57
		(0.005)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)
Employment	1993	0.92	0.93	0.88	1	1.0	0.93	0.97
		(0.004)	(0.003)	(0.004)	(0.000)	(0.000)	(0.003)	(0.002)
rates	1996	0.90	0.86	0.73	0.88	1.0	0.78	0.87
		(0.004)	(0.005)	(0.006)	(0.004)	(0.00)	(0.006)	(0.005)
Unemployment	1993	0.08	0.7	0.12	0	0.0	0.07	0.03
		(0.004)	(0.003)	(0.004)	(0.000)	(0.00)	(0.003)	(0.002)
rates	1996	0.11	0.14	0.27	0.13	0.0	0.22	0.13
		(0.004)	(0.005)	(0.006)	(0.004)	(0.00)	(0.006)	(0.005)
55/60+								
Participation	1993	0.14	0.08	0.01	0.02	0.11	0.10	0.05
		(0.005)	(0.004)	(0.001)	(0.002)	(0.004)	(0.004)	(0.003)
rates	1996	0.14	0.04	0.04	0.06	0.04	0.14	0.05
		(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.003)

Source: Author's own calculations based on KMPS 1993, 1996

Table 5.11: Distribution of Labour Force Status across Education Levels, 1993 and 1996

% (s.e. in parenthesis)		Less than High School Educ.	High School Education	Higher Education
Total working	1993	33.63	26.69	39.68
		(0.006)	(0.006)	(0.007)
population, 16+	1996	20.64	42.72	36.64
		(0.006)	(0.007)	(0.007)
Employed	1993	22.29	25.20	52.51
		(0.008)	(0.008)	(0.009)
	1996	9.70	42.86	47.43
		(0.006)	(0.011)	(0.011)
Unemployed	1993	19.80	43.40	36.80
		(0.018)	(0.022)	(0.022)
	1996	10.98	59.85	29.17
		(0.011)	(0.017)	(0.016)
Out of the	1993	56.09	24.49	19.42
		(0.012)	(0.01)	(0.009)
labour force	1996	32.74	37.35	29.91
		(0.009)	(0.010)	(0.009)

Source: Author's calculations based on KMPS 1993, 1996

Table 5.12: Percentage of workers by enterprise type, 1993 and 1996

(s.e. in parenthesis)	Total	Male	Urban		Total	Male	Urban
1993	%	%	%	1996	%	%	%
State	72.9	50.4	38.2	State	46.4	51.8	54.5
	(0.008)	(0.011)	(0.011)		(0.012)	(0.018)	(0.018)
Public Organ.	1.7	49.0	60.8	Social Organ.	1.3	31.8	36.4
	(0.002)	(0.070)	(0.068)		(0.003)	(0.099)	(0.103)
Work Collective	18.1	61.9	21.2	Cooperatives	9.5	57.5	20.0
	(0.007)	(0.021)	(0.018)		(0.007)	(0.039)	(0.032)
Private Firms	3.2	65.2	64.1	Joint-stock/ventures	10.6	58.7	67.6
	(0.003)	(0.050)	(0.050)		(0.008)	(0.037)	(0.035)
				Private firms	4.9	51.2	78.1
					(0.005)	(0.055)	(0.046)
				Farming Comm.	5.3	71.9	2.3
					(0.006)	(0.048)	(0.016)
				Private farming	18.3	61.6	0.0
					(0.009)	(0.028)	(0.0)
Other	5.2	56.3	39.1	Other	3.8	46.0	20.6
	(0.004)	(0.040)	(0.009)		(0.005)	(0.063)	(0.051)

Source: Author's calculations based on KMPS 1993, 1996

Table 5.13: Distribution of workers by occupation group, 1993

(s.e. in parenthesis)	Total	Male	Urban Areas
1993	**%**	**%**	**%**
Military	0.3	87.5	100.0
	(0.000)	(0.117)	(0.000)
Legislators	1.7	85.7	67.4
	(0.002)	(0.050)	(0.067)
Professional	11.2	38.9	48.9
	(0.006)	(0.027)	(0.028)
Technicians	11.7	21.8	43.3
	(0.006)	(0.022)	(0.027)
Clerks	5.2	23.4	53.9
	(0.004)	(0.034)	(0.040)
Service Workers	5.1	47.3	44.0
	(0.004)	(0.041)	(0.041)
Skilled Agri & fishery workers	1.4	83.3	7.1
	(0.002)	(0.056)	(0.040)
Craft & related trade	11.1	84.4	53.5
	(0.006)	(0.020)	(0.028)
Plant & Machine operators	15.1	83.1	32.7
	(0.007)	(0.018)	(0.022)
Elementary Occupations	30.7	45.4	17.1
	(0.008)	(0.017)	(0.013)
Entrepreneurs	2.7	65.0	58.8
	(0.003)	(0.053)	(0.055)
Undefined occupations	4.0	53.9	42.7
	(0.004)	(0.046)	(0.046)
$\sum 100$			

Source: Author's calculation's based on KMPS 1993

Table 5.14: Distribution of workers by sector and worker type, 1996

(s.e. in parenthesis)	**Total**		*Male*	*Urban Areas*
Worker type	**%**		*%*	*%*
White collar	38.7		43.1	53.5
	(0.010)		(0.020)	(0.020)
Blue collar	53.9		64.4	34.2
	(0.011)		(0.016)	(0.016)
Owner	1.1		50.0	5.6
	(0.002)		(0.118)	(0.054)
Mem of manu. coop.	5.4		62.5	1.1
	(0.004)		(0.052)	(0.011)
Individual Professional	0.8		46.2	76.9
	(0.002)		(0.138)	(0.117)
Domestic servants	0.1		50.0	0.0
	(0.000)		(0.354)	(0.00)
Entrepreneurs	22.4		63.7	44.3
	(0.009)		(0.022)	(0.023)
Other	2.0		44.2	27.9
	(0.03)		(0.076)	(0.068)
$\sum 100$				

Sector	**Total**	Entrepeneur	*Male*	*Urban Areas*
	%	**%**	*%*	*%*
Agriculture	35.0	21.8	68.7	3.0
	(0.010)	(0.015)	(0.017)	(0.006)
Mining	0.8	16.7	100.0	72.2
	(0.002)	(0.088)	(0.000)	(0.106)
Manufacturing	9.3	5.0	59.4	70.3
	(0.006)	(0.015)	(0.035)	(0.032)
Elec. gas, water	2.3	16.0	72.0	66.0
	(0.003)	(0.052)	(0.064)	(0.067)
Construction	3.4	23.3	86.3	46.6
	(0.004)	(0.050)	(0.040)	(0.058)
Commerce	10.0	61.1	45.4	71.8
	(0.006)	(0.033)	(0.034)	(0.031)
Transport	6.3	22.1	80.0	64.0
	(0.005)	(0.036)	(0.034)	(0.041)
Financial	1.7	5.6	44.4	77.8
	(0.003)	(0.038)	(0.083)	(0.069)
Services	30.2	17.9	38.7	54.9
	(0.010)	(0.015)	(0.019)	(0.020)
Other	1.1	4.2	29.2	25.0
	(0.002)	(0.041)	(0.093)	(0.088)
$\sum 100$				

Source: Author's calculations based on KMPS 1996

Table 5.15: Occupation/Sector by education level, 1993 and 1996

% (s.e. in parenthesis)	Less than High School Educ.	High School Education	Higher Education
1993			
Military	0.0	0.0	100.0
	(0.000)	(0.000)	(0.000)
Legislators	10.2	2.0	87.8
	(0.043)	(0.020)	(0.047)
Professionals	6.7	0.6	92.7
	(0.014)	(0.004)	(0.014)
Technicians	20.4	9.9	69.8
	(0.022)	(0.016)	(0.025)
Clerks	15.6	19.5	64.9
	(0.029)	(0.032)	(0.038)
Service Workers	14.0	17.3	68.7
	(0.028)	(0.031)	(0.038)
Skilled Agri & Fishery wrks.	14.3	40.5	45.2
	(0.054)	(0.076)	(0.077)
Craft & related trade	31.8	18.4	49.9
	(0.026)	(0.021)	(0.028)
Plant & Machine operators	29.1	14.5	56.4
	(0.022)	(0.017)	(0.024)
Elementary Occupations	26.9	49.7	23.4
	(0.015)	(0.017)	(0.014)
Entrepreneurs	12.5	30.0	57.5
	(0.037)	(0.051)	(0.055)
Undefined occupation	19.7	29.9	50.4
	(0.037)	(0.042)	(0.046)
1996			
Agriculture	13.9	67.0	19.1
	(0.013)	(0.017)	(0.014)
Mining	17.7	23.5	58.8
	(0.093)	(0.103)	(0.119)
Manufacturing	5.5	41.6	53.0
	(0.016)	(0.035)	(0.035)
Elec. gas, water	12.5	29.2	58.3
	(0.048)	(0.067)	(0.071)
Construction	19.4	29.2	51.4
	(0.047)	(0.054)	(0.059)
Commerce	7.5	36.9	55.6
	(0.018)	(0.033)	(0.034)
Transport	6.7	37.3	56.0
	(0.022)	(0.042)	(0.043)
Financial	0.0	17.1	82.9
	(0.000)	(0.064)	(0.064)
Services	6.7	23.1	70.2
	(0.010)	(0.017)	(0.018)

Source: Author's own calculations based on KMPS 1993, 1996

Table 5.16: Distribution of education by enterprise type, 1993 and 1996

% (s.e. in parenthesis)	Less than High school educ.	High school education	Higher education
1993			
State	21.9	25.0	53.1
	(0.009)	(0.009)	(0.011)
Public Organization	19.6	15.7	64.7
	(0.056)	(0.051)	(0.067)
Work Collective	23.7	28.2	48.1
	(0.018)	(0.020)	(0.022)
Private Individuals	18.5	17.4	64.1
	(0.040)	(0.039)	(0.050)
Other	21.9	27.2	51.0
	(0.034)	(0.036)	(0.041)
1996			
State	6.2	26.8	67.0
	(0.009)	(0.016)	(0.017)
Social Organization	9.1	31.8	59.1
	(0.061)	(0.100)	(0.105)
Cooperatives	5.1	68.2	26.7
	(0.018)	(0.037)	(0.035)
Joint-stock/ventures	5.6	40.8	53.6
	(0.017)	(0.037)	(0.037)
Private firms	4.9	35.4	59.7
	(0.024)	(0.053)	(0.054)
Farming communities	14.6	64.0	21.4
	(0.037)	(0.051)	(0.043)
Private farming	16.6	67.9	15.5
	(0.022)	(0.027)	(0.021)
Other	19.3	45.2	35.5
	(0.050)	(0.063)	(0.061)

Source: Author's calculations based on KMPS 1993, 1996

Variable and Definitions for Tobit Regression

Age: Age of respondent in 1993 or 1996

Education level: Less than High School: Those individuals who had no more than 9 years of primary and secondary schooling. This category also includes those with no formal education.

High school only: 10 or more years of primary and secondary schooling and did not study elsewhere.

Higher Education: Includes those who undertook 10 or more years of primary and secondary schooling and completed one (or more) of a vocational course or 10 or more years of primary and secondary schooling and completed one (or more) of university level.

Arrears: Those classified as employed and working over the reference period but who had not received a wage payment in the last month.

Reduced hours: Those officially placed on reduced working schedules, where less than full-time is taken as less than 41 hours a week. This variable tries to capture those workers who did not voluntarily decide their hours of work.

Ln mthly wage received: Natural log. of the amount of wages received for the month.

Ln mthly Salary received: Natural log. of monthly salary, in the 1996 data.

Hold Second job: If worker engaged in activities additional to primary employment in 1993, or held a second job in addition to primary employment in 1996.

Ln Income other labour activities: Natural logarithm of income from additional activities for 1993 data. Natural logarithm of income from secondary job for 1996 data.

Assets: Electric stove or central gas supply, refrigerator, washing machine, black and white television, colour television, video cassette recorder, car and motorbike in 1993, refrigerator, washing machine, black and white television, video cassette recorder, car in 1996. The assets included are those that are comparable between the surveys. Additional assets were chosen in 1993 to captures differences between households given the worse conditions experienced in 1993 and hence the extended list better distinguishes between social groups in 1993.

Type of Region: Urban or Rural.

Oblasts: Naryn, Talass, Djalal-abad, Issuk, Osh, Chui (six oblasts), Bishkek (capital).

Ethnicity: Kyrgyz, Russian, Other Slavs, Uzbeks, Others.

Chapter 6

The Incidence of Wage Arrears

6.1 Introduction

The previous chapter presented theoretical and empirical evidence of employers' adjustment strategy, which included adjusting worker intensity and reducing costs by delaying wage payments, in order to maintain employment levels in the short run. Chapter 5 looked at why enterprises paid wages in arrears, while this chapter focuses on who experienced wage arrears. Here we take a closer look at the incidence of non-payment of wages to workers to see if there are certain workers more likely to experience wage arrears than others. This analysis also has important implications for welfare since arrears represent the loss of a major source of household income, particularly given the recent liberalization of prices on goods and services.

The decision to delay wage payments rather than cut wages in the short run can be seen as a consequence of the former having a greater budgetary impact in reducing firms production costs since wage arrears represent an immediate reduction in production costs. Hence the total outlay in the wage bill is greater reduced by the non-payment of wages, even if temporarily, than only a partial reduction in costs from a cut in wages or from partial wage payments. This is reinforced by the resistance to reduce employment levels and implies a greater budgetary impact. Given the economic conditions, and the recent liberalization of prices, a promise to pay (full) wages with an unknown delay is likely to have been more acceptable to workers than an explicit cut in wages, even assuming firms has the cash flow to pay them. If the incidence of wage arrears is widespread this will

reduce the risk of firms losing skilled labour, since workers are no more likely to be paid at another firm. The non-payment of wages, sometimes with substantial delay (as in the highly publicized case of the Russian miners and teachers in 1996 who had not been paid for several years) is an effective reduction in the wage to the worker given the levels of inflation that have been prevailing over the years, see Table 2.3 in Chapter 1 on page 29, as well as reducing production costs to the enterprise. From the start of the reforms, firms did not adhere to strict budget constraints that were needed to turn loss-making enterprises into profit making firms, with some firms still benefiting from subsidized inputs and energy prices. Many enterprises remained in production despite the lack of demand for their output, as well as enduring delays in payment from other firms in the chain of production for the payment of inputs and outputs leaving and entering the firm. As a way around the cash shortage, especially in agricultural based enterprises, workers were often paid in-kind in the form of unsold goods and would then sell or barter the products themselves, see Oxenstierna (1990). Although not a new practice, the payment of wages in-kind has increased since the reform process as firms became even more cash constrained. Even when not paid in cash or in-kind, workers remain attached to the firm in the hope of being paid or for the non-monetary benefits that firms provide, Evans-Klock and Samorodov (1998) and Rein, Friedman, and Worgotter (1997). The extensive fall in output in conjunction with the relatively high employment levels has been attributed to the continuation of soft budget constraints (enterprise is able to renegotiate funds from State banks)and the implementation of the variety of strategies to reduce input labour costs. Workers are retained relatively costlessly by delaying wage payments and while still officially employed with the enterprise workers are not entitled to severance pay. There was a breakdown of contractual obligations at all levels, reinforced by the State Agencies' failure to enforce business law, see Desai and Idson (2000)

There are several studies examining the prevalence of wage arrears in Russia. Wage arrears were as high as 30% in Russia in the mid 1990s, peaking to 45% in 1996, see Desai and Idson (1997), Desai and Idson (2000) and Earle and Sabirianova (1999). Wage arrears were found to be on a rise in Russia between 1994-1998, with the budget sectors experiencing wage arrears as high as 15-20%. The introduction of policy reform in Central Asia has not been too dissimilar from that in Russia after the collapse of the Union, but

the consequences of the reform process have precipitated differing effects due to differences in resources, industrialization and development of the different economies of Central Asia. This chapter investigates whether there are indeed any real discernible features amongst those experiencing wage arrears.

6.2 Possible Explanations

It is not obvious that there will be systematic biases against certain groups of workers in the non-payment of wages. Different regions may be affected in different ways due to the sectorial distribution of labour across regions, and hence workers may have suffered in a random ad hoc way, with workers experiencing delays in payment at different intervals of time and over differing lengths of time. It is not clear that even within firms managers have a particular policy of differentiating which workers are to be paid or not. Earle and Sabirianova (1999) postulate that if all employers in a region decide not to pay their employees wages this creates a "lock-in" effect for workers to the firm where they are employed. If all workers in the area are experiencing similar problems of wage arrears, this provides few alternative work opportunities. In addition, since workers are unlikely to receive unpaid wages if they leave their place of employment, this also creates an incentive for workers to remain at their place of employment particularly if they are no more likely to be paid if they worked in another firm.

Lehmann, Wadsworth, and Acquisti (1997) have modeled the incidence of wage arrears in Russia and find that regional differences are more important than ownership type. The authors also find little significant differences across worker characteristics. The authors also find that although younger workers, females and the more educated are more likely to experience wage arrears, the adjustment mechanism has been mainly through prices, in terms of falling real wages, rather than varying labour demand. There is little evidence that skilled workers are less likely to suffer from wage arrears, and so highly skilled workers may prefer to remain at enterprises where they may benefit from non-monetary facilities/services that are not provided outside state enterprises, since they are no more likely to receive wages in non-state enterprises.

One way of reducing financial pressure for the firm is to reduce production costs. Firms face a trade-off between delaying the wage payment of more costly workers, which would

reduce the production costs, at the risk of losing these workers who tend to be highly skilled or experienced workers who would be needed when the demand in the economy improved. Due to the previous rewarding system, workers in productive rather than the non-productive sectors were often paid more and hence higher education levels were not necessarily an indication of a person being highly paid. Rather remuneration depended on the nature of the industry and sector and so it is not clear that better educated workers would experience lower incidences of wage arrears. In fact in the Kyrgyz Republic although wage levels dropped across all sectors, mining, trade and finance sectors paid the highest wage, see M.L.S.P. (1998).

Alternatively younger and less experienced workers may appear to be more at risk as they have no specific skills of value to the firm and would seem more dispensable. However they are relatively cheap and hence less expensive in terms of costs. Many managers had started their career at low ranks and worked their way up the firm hierarchy and may not be so easily inclined to penalize low ranking workers. In addition individuals in high ranking positions are also likely to have an influence to affect their own wage payments and hence may experience lower wage arrears despite the advantage of reducing costs if the salaries of such workers were withheld, see Desai and Idson (1997).

There are few women in very senior positions and women throughout the Soviet period have tended to work both at home as well as in the factories in positions that facilitate the flexible schedules required by many who have dependents to look after. As a result many women are concentrated in lower paid and more flexible jobs that also render them relatively less expensive and so it is not clear if there are systematic gender biases against women. Withholding wage payments to highly paid workers will have a greater effect of reducing the enterprises wage bill as well as appealing to fairness. In fact, it may be that regional disparities play a more determining role, with regions less resource-rich being affected or the effects being concentrated in declining industries, agricultural sectors, company towns, etc. that lead to a high incidence of wage arrears amongst workers in that area.

This Chapter examines the phenomenon of wage arrears, in which employees are not paid their monthly wages, given they have worked over the previous month. Workers who are paid in-kind are seen as being paid their equivalent salary, and hence are not

considered to be experiencing wage arrears. By modelling the incidence of wage arrears across a number of characteristics we examine whether certain groups of workers are more likely to experience wage arrears than others.

6.3 Wage Arrear Data

The data used here is the nationally representative household survey, KMPS for the Fall of 1993 and 1996. Chapter 2, Section 2.6 outlines details of the KMPS while the data section in Chapter 5 provides definitions of those classified in the labour market and such definitions are not detailed here. The availability of cross-sectional household data provides valuable information of both individual and household dimensions and it can be used to track the outcomes or behaviour for groups of individuals. One drawback of cross-sectional data is that it is a snapshot of events for a particularly year, with many questions based on responses referring to a month recall period. Longitudinal data or panel surveys make it possible to see how survey magnitudes change for individual households. Panel data would permit the estimation of the persistence of wage arrears, examining dynamics at the individual level by estimating how observations change for a given individual, while controlling for variability across respondents. Panel data are not available for the Kyrgyz Republic but the comprehensiveness of the nationally representative surveys allows for meaningful estimations and implications to be drawn. Firm level data would also have been a useful source for analyzing incidences within firms of delays in wage payments but again such data are not available.

For this analysis, the incidence of wage arrears is defined as a person who is employed and who has not received payment in the last month. Wage arrears are estimated across only employees, *excluding* the self-employed and employers, but including those working above the retirement age; 55 years for women and 60 years for men. Women on maternity leave are excluded from the analysis. The number of observations used in this analysis is 2,687 for the Fall of 1993 and 1,732 for the Fall of 1996. The question pertaining to wages in the 1993 questionnaire was "How much did they pay you at your primary place of employment during the last 30 days after any deductions for taxes? If the payments were made not in Soms, convert it into Soms and give the total". In 1996 the question asked was "In the past month, how much salary did you receive from this work? Include

cash and barter goods". In 1996 the employed were also asked about their monthly salary, but this question was not asked in 1993. The 1993 survey does not provide information as to whether the payment the worker received was the total amount or a partial payment. Analysis of the 1996 household survey data and anecdotal evidence suggests that workers are paid in full, whether in cash or in-kind or in both, either on time or with delay. There is little evidence of partial payment and so workers are considered here either to be paid in full or paid with delay.

There are no means to distinguish in which sector the employed worked in 1993 but there is information on occupation type and ownership of the enterprise. As mentioned previously in Chapter 5, full-time workers were defined as those working 41 hours or more a week. Also as mentioned in Chapter 5, in the 1993 data there are 877 observations of workers with unreported hours of work. Though they are classified as employed and not on involuntary or administrative leave and these observations are included in the analysis of wage arrears since this is a large number of observations and are categorized as those with "Unreported hours". Around three-quarters of these responses report wage arrears and the majority are from less skilled occupations.

Additional to modelling the incidence of wage arrears it would be useful to test if the amount of wages outstanding and the number of months over which wage arrears had accumulated were important factors. The former would bear relevance to whether higher paid workers were in fact less likely to experience delays in wage payments, while the latter would have indicated if certain workers experienced wage arrears more often. Again due to insufficient data only the incidence of wage arrears is examined in this chapter.

6.4   A Picture of Arrears in Kyrgyzstan

Table 6.1 provides summary statistics of the incidence of wage arrears by worker characteristics. As many as 58% of workers in the fall of 1993 experienced delays in wage payments, and by 1996 the incidence had fallen to 24% of workers, a sizeable decrease from an initially high level. This is a considerable fall and although it reflects the incidence of wage arrears in the Fall of 1996, the problem of "mass wage arrears" was still a significant problem in 1996, see M.L.S.P. (1998). However it is important to take account for the fact that the analysis is amongst those employed, and there are likely to be

a high incidence of non-payment amongst those individuals who were workers but have now either left the labour force or are unemployed, as noted in Desai and Idson (2000) who examine wage arrears in Russia. This is certainly consistent with the adjustment of worker quantity over this period. However by 1996 the problem of wage arrears was high on the Government agenda and according to reports by the late 1990s intergovernmental relations were re-examined and a new institutional setup was established to eliminate local wage arrears and encourage local revenue efforts, see I.M.F. (1998).

Men had a higher incidence of wage arrears than women, albeit only slightly higher in 1993. The incidence of wage arrears was high across young and prime aged workers, with only older workers over 50 years of age having significantly lower incidences. With-in group incidences were also high for both these former groups and followed the same trend, with over 50% of prime age workers, 30-49, experiencing wage arrears. In 1996 the incidence had increased slightly for this group, but with-in group incidences had fallen for all groups but was roughly 20-25% for all workers except those of retirement age. In 1993, those with higher education had a higher incidence than those with high school education, 47% compared to 32%, though the incidence was still relatively high for workers with less than high school education, 22%. However with-in group incidences were higher for the higher education group, with over half of those with higher education experiencing wage arrears. In 1996, the pattern had shifted a little, with over half of those experiencing wage arrears having only high school education. There was little difference across groups for with-in group incidences although those with higher education had a slightly lower incidence of 18% compared to around 28% for the other two categories. A greater proportion of the work force belong to the less skilled category of elementary workers in 1993, which also experience a higher incidence of wage arrears than the other occupation categories. Within group incidences illustrate that the incidence of wage arrears was high across all workers, though military and legislative workers had a slightly lower incidence, around 20% and elementary workers had a particularly high incidence of 75%. In 1996, using sector information, over half the incidence of wage arrears were in agriculture. Again within group incidences were in general lower and averaged around 25-30% for most groups, and was lower only for workers in the transport and financial sector. Despite the relatively high proportion of workers working less than full time, 25% in 1993 and 32% in 1996

(see Table 5.5 in Chapter 5, on page 140), 70% of those experiencing wage arrears were full-time workers in 1993 while in 1996 the incidence was relatively uniform across the two groups. However, for those workers on less than full-time schedules in 1996, the incidence of wage arrears was much higher, 39% compared to 16% for full-time workers. Regional differences were also significant. Workers in rural areas experienced more wage arrears than urban workers, while within group incidences for rural workers were as high as 73% in 1993, dropping to 31% in 1996 (the incidence of wage arrears across ethnic group and enterprise ownership type is presented in Appendix: 6.8, on page 178). Here again the data illustrates high incidences amongst agricultural and less skilled workers in 1993. Though incidences had fallen by 1996, interestingly after agricultural workers, service sector and manufacturing workers who are relatively highly paid, experienced the next highest incidence of wage arrears, 18% and 12% respectively.

6.5 Modelling Wage Arrears

Summary statistics provide a general pattern of wage arrears across different characteristics but do not illustrate which characteristics are more important. Here a probit regression model analysis is used to examine which characteristics are more correlated with delays in wage payments.

6.5.1 The model

We model the incidence of wage arrears using a binary choice model, for details see Greene (1997). The model is built around the regression model, $Y_i = X_i\beta + \epsilon_i$, where $Y_i = 1$ if a worker receives no salary over the previous month, and $Y_i = 0$ otherwise. X is the set of explanatory variables and β is the set of parameters. The error term ϵ is defined as having $E[\epsilon] = 0$ and $Var[\epsilon] = \sigma^2$.

We define

$$\Pr(Y_i = 1) = 1 - \Pr(Y_i = 0) \tag{6.1}$$

$$\equiv 1 - \Pr(\epsilon = -X\beta) = \Phi(X\beta) \tag{6.2}$$

where $\Phi(.)$ is the cumulative distribution function. For the purpose of this analysis we assume ϵ follows a normal distribution. This model is known as the probit model[1].

The resulting coefficients cannot be interpreted in the same way as in the linear regression model, and so they are transformed into marginal effects[2],

$$\frac{dE[y|x]}{\partial x} = \{\frac{d\Phi(\beta'X)}{d(\beta'X)}\}\beta$$

$$= \phi(\beta'X)\beta \tag{6.3}$$

where $\phi(.)$ is the standard normal distribution.

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[1]An alternative distribution to the probit model is the logit model, based on the logistic cumulative distribution function. However, when applied to relatively large sample sizes, as used here, the results are robust to the choice of distribution function used.

[2]In the regression estimation the marginal effects are calculated at the mean observation, rather than the mean of the marginal effects across all observations. Given the relatively large sample size that these estimations are based on the results are robust.

Table 6.1: Incidence of wage arrears across selected characteristics

(s.e. in parenthesis)	1993	1996	1993	1996
Total	57.5	23.8		
	(0.010)	(0.010)		
	across group incidences		*with-in group incidences*	
Gender				
Male	60.4	61.1	60.8	26.3
	(0.013)	(0.024)	(0.013)	(0.014)
Female	39.6	38.9	53.5	20.8
	(0.013)	(0.024)	(0.015)	(0.015)
Age groups				
16-29	39.4	35.4	65.3	25.8
	(0.013)	(0.024)	(0.016)	(0.019)
30-49	49.6	57.1	54.3	24.5
	(0.013)	(0.025)	(0.014)	(0.014)
50-54/59	9.0	6.5	52.2	19.4
	(0.008)	(0.012)	(0.031)	(0.034)
55/60+	2.0	1.0	41.4	6.4
	(0.004)	(0.005)	(0.059)	(0.031)
Education Level				
Less than High School	21.6	10.2	52.1	27.4
	(0.011)	(0.015)	(0.020)	(0.037)
High School	32.0	52.9	75.4	29.2
	(0.012)	(0.025)	(0.017)	(0.017)
Higher Education	46.5	36.8	51.6	18.0
	(0.013)	(0.024)	(0.014)	(0.014)
Occupation				
Military	0.1		25.0	
	(0.001)		(0.153)	
Legislators	0.75		22.5	
	(0.002)		(0.060)	
Professional	9.2		45.1	
	(0.008)		(0.029)	
Technicians	8.3		42.3	
	(0.007)		(0.029)	
Clerks	3.9		41.3	
	(0.005)		(0.042)	
Service Workers	4.1		44.8	
	(0.005)		(0.043)	
Agri & fishery workers	2.8		83.7	
	(0.004)		(0.053)	
Craft & related trade	10.9		50.0	
	(0.008)		(0.028)	
Plant & Machine operators	17.1		58.7	
	(0.010)		(0.024)	
Elementary Occupations	42.9		74.9	
	(0.013)		(0.015)	
Sector				
Agriculture		54.4		35.2
		(0.025)		(0.020)
Mining		1.0		26.7
		(0.005)		(0.114)
Manufacturing		12.2		24.5
		(0.016)		(0.031)
Elec. gas, water		2.6		23.8
		(0.008)		(0.066)
Construction		4.2		28.6
		(0.010)		(0.060)
Commerce		3.9		17.9
		(0.010)		(0.042)
Transport		2.3		8.5
		(0.007)		(0.027)
Financial		0.5		5.9
		(0.004)		(0.040)
Services		18.8		13.4
		(0.019)		(0.015)
Employment Status				
Less than Full-time	29.8	54.9	47.6	39.3
	(0.015)	(0.025)	(0.016)	(0.021)
Full-time	70.2	45.1	52.4	16.1
	(0.015)	(0.025)	(0.014)	(0.011)
Settlement				
Urban	18.3	21.9	30.0	13.2
	(0.010)	(0.021)	(0.015)	(0.013)
Rural	81.7	78.1	72.7	30.8
	(0.010)	(0.021)	(0.011)	(0.010)

Source: Author's calculations based on KMPS 1993, 1996

For both years, the incidence of non-payment is modelled against independent variables comprising individual characteristics; age, gender, education attainment, ethnicity and characteristics related to employment; ownership of enterprise, occupation/sector, worker type and hours of work. Regional disparities were controlled for at the oblast (county) level. A non-linear relationship is allowed for in the variables; age, hours worked a week in both years, and in the 1996 data, salary and years worked in the occupation and years worked with the firm were also assumed to be non-linear. The respective squared terms are included in each year. Robust estimates of the standard errors are calculated based on the Huber/White/sandwich estimator, see Huber (1967), White (1980) and White (1982).

Omitted variable problem

In 1993 respondents were not asked about their monthly salary but only how much they received in the last month, see Section 6.3 on page 165 for details of the precise question asked. The level of workers' salaries is likely to be an important explanatory variable in the incidence of wage arrears. Although the lack of this information is important given that in 1993 salaries were set according to a specified grid system dependent on occupational and demographic variables, meaningful results can still be derived from estimating the model since these variables are included. Yatchew and Griliches (1985) demonstrate that if the conditional distribution of the omitted variable, given the included variables, depends on these included variables the resulting coefficients will be consistent estimators, but however there will be *bias in the coefficients*. This will also be the case, even if the omitted variable is uncorrelated with the included variables. However in 1993 the inflation rate was over 700% and the real value of wages were extremely low and so it is not clear how much explanatory power the actual real wage variable would have in such a circumstance. Although the specification for 1993 should ideally include the log of the real monthly wage, the regression can provide some meaningful results given the economic environment in the Kyrgyz Republic in 1993.

6.6 Regression Results

The results of the probit regression and marginal effects are reported in Table 6.2 and Table 6.3. We examine whether the incidence of wage arrears is determined by work-related characteristics and regional effects or whether personal or individual characteristics greatly

affect the incidence of wage arrears. Model I includes the work-related characteristics while Model II consists of Model I variables, plus personal or individual characteristics.

6.6.1   Results for 1993

Table 6.2 below illustrates the results for workers in 1993. From the results of Model I, across the different occupations it can be seen that highly qualified workers have a lower probability of experiencing wage arrears than workers engaging in elementary occupations. This is reinforced with the education variable, with workers with secondary school level only having a higher probability of experiencing wage arrears than workers with higher education. Workers who were officially placed on a reduced working schedule are not significantly different from those who were not. However for workers who did not report working any hours over the past week, this variable is significant and positive. This indicates that workers who are working in particular enterprises where wage arrears are significant may actually reduce their hours, totally in this case, rather than be put officially on a reduced schedule. This variable is also highly significant in Model II. Although there are workers who did not report working any hours over the past week across all occupations groups, the incidence is highest amongst less-skilled workers and as relatively high (10%) amongst skilled workers in the category technicians and clerical workers. Looking at differences across enterprise ownership, workers in work collectives and "other" defined enterprises have a higher probability of experiencing wage arrears than workers in State enterprises. In addition, despite controlling for differences across oblasts, workers in rural areas have a higher probability of experiencing wage arrears compared to urban workers. All this suggests that agricultural workers, particularly low skilled workers are likely to fare much worse in terms of delays in wage payments. In general less-skilled and less qualified workers in agricultural based work have a greater probability of experience wage arrears in 1993. Looking at Model II which includes variables reflecting personal characteristics, such as age and gender, it can be seen that although these variables are not significant except for the ethnicity dummies (which are jointly significant), the inclusion of these variables does improve the fit of the model greatly. The constant term is significant in both specifications of the model, indicating the importance of the omitted dummy characteristics, even when personal characteristics are included. Again this indicates that less skilled male workers

in rural areas fare worse and that work and enterprise characteristics specified in the regressions do not capture to a large extent the incidence of wage arrears.

6.6.2 Results for 1996

Table 6.3 presents the results for workers in 1996. Again Model I estimates the incidence on largely work related characteristics. In 1996 hours of work are significant and negatively related to the incidence of wage arrears, reaching a maximum at 39 hours. This is relatively high, reflecting the hours of a full-time job. Those workers officially on a reduced work schedule however are not significantly different from those who are not. Across enterprises, workers in Public Organizations, Joint companies and farming communities have a lower probability of experiencing wage arrears than workers in State enterprises. Joint companies are likely to experience less wage arrears since many of them are ventures with foreign companies. Farming communities employ a relatively small percentage of workers, less so than private farms (see Table 5.12 on page 155 for the distribution of workers across the different enterprises in the Appendix to Chapter 5). Across sectors, workers in the mining and transport sectors are less likely to experience wage arrears than agricultural workers. The former is not surprising as the mining sector is dominated by joint venture companies. Model II includes more personal characteristics as well as skills and worker characteristics. Interestingly these additional characteristics again are not significant but the inclusion of them does change the significance of the original variables defined in Model I. While in the Model I, (natural logarithm of) workers' salary was not significant it is significant in Model II and negatively related to the incidence of wage arrears, implying that controlling for age, gender and experience etc., workers with higher salaries are less likely to experience wage arrears. Hours worked is still significant in Model II but now reaches a maximum at 46 hours a week. Again greater hours are associated with a lower incidence of wage arrears, reflecting economic stability within the enterprise. In Model II, farming communities are no longer significantly different from workers in State enterprise, with the only workers in the transport sector faring better than workers in State enterprises. In general, in 1996

Table 6.2: Results of Probit Regresson, 1993

Total workers	Model I			Model II		
	Total Coeff.	Marginal Coeff.	t	Total Coeff.	Marginal Coeff.	t
Constant	1.00		7.39 *	1.48		4.65*
Age				-0.02	-0.01	1.42
Age^2				0.02	0.01	1.04
Male (Female)				0.14	0.05	2.09 *
Occupation Group (Elementary occupations)						
Managers	-1.04	-0.39	5.55 *	-1.05	-0.39	5.62 *
Professions	-0.36	-0.14	3.36 *	-0.34	-0.13	3.03 *
Technicians	-0.46	-0.18	4.45 *	-0.43	-0.17	4.10 *
Clerical	-0.43	-0.17	3.26 *	-0.38	-0.15	2.85 *
Personal Serv.	-0.38	-0.15	2.85 *	-0.40	-0.16	2.98 *
Agri. Labour	-0.04	-0.01	0.15	-0.08	-0.03	0.33
Craft	-0.11	-0.04	1.12	-0.18	-0.07	1.71
Operatives	-0.16	-0.06	1.81	-0.21	-0.08	2.21 *
Education Level (Higher education)						
Less than High School	-0.05	-0.02	0.74	-0.05	-0.02	0.65
High School	0.14	.05	1.77	0.16	0.06	1.96 *
Work Characteristics						
hours/week	-0.01	-0.0002	1.84	-0.01	-0.002	2.06 *
hours/week^2* 1000	0.07	0.03	2.57 *	0.01	0.03	2.70 *
Unreported hours	0.34	0.13	2.97 *	0.32	0.12	2.73 *
Reduced hours	0.004	0.001	0.02	0.01	0.002	0.02
Enterprise (State)						
Public Organization	-0.23	-0.09	1.11	-0.22	-0.09	1.05
Work collective	0.38	0.14	5.07 *	0.37	0.14	4.96 *
Private Individual	0.31	0.11	1.93	0.30	0.11	1.85
Other	0.56	0.19	2.91 *	0.57	0.19	2.95 *
Type of Region (Rural)						
Urban	-0.94	-0.36	14.08 *	-0.89	-0.34	12.55 *
Raions						
Ethnicity	not included					
Observations	2517			2517		
Wald Chi^2	776.11 (25)			805.72 (32)		
Loglikihood	-1326.42			-1311.61		

Notes: The dependent variable is y =1,wage arrear'.

Omitted groups for dummy variables are in (italics).

* statistically significant at the 5% level

Source: Author's own calculations based on KMPS 1993

educational differences were not so important and workers earning relatively lower salaries across all sectors except transport and services were just a likely to experience wage arrears as agricultural workers in State enterprises. In neither models are the differences between urban and rural workers significantly different. In general, in 1996 educational differences were not so important and workers earning relatively lower salaries across all sectors except transport and services were just a likely to experience wage arrears as agricultural workers in State enterprises.

Also interesting in these results is that the constant term is not significant in either model though the overall fit of the regression is greatly improved from the 1993 results. This suggests that enterprise and job characteristics do explain to a larger extent the incidence of wage arrears which is what would be expected as the labour market tends to a more competitive market environment.

Table 6.3: Results of Probit Regression, 1996

All workers	Model I			Model II		
	Total Coeff.	Marginal Coeff.	t	Total Coeff.	Marginal Coeff.	t
Constant	0.45		1.61	0.14		0.26
Age				0.02	0.00	0.66
Age^2				-0.34	-0.09	1.08
Male (Female)				0.22	0.06	2.64 *
Education level (Higher education)						
Less than High School				-0.21	-0.05	1.42
High School				-0.01	-0.05	1.40
Worker type (White collar)						
Blue collar				0.06	0.02	0.57
Owner				0.56	0.18	1.35
Manu. Coop.				0.02	0.00	0.08
Professional				-0.21	-0.05	0.34
Skills/Experience						
Years in firm				-0.03	0.01	1.23
Years in firm^2 * 100				0.04	0.01	0.63
Yrs in occupation				0.05	0.01	2.30
Yrs in occup.^{2} * 100				-0.06	-0.02	-1.0
Work Characteristics						
hours/week	-0.03	-0.01	3.68 *	-0.03	-0.01	3.84 *
hours/week^2 * 100	0.03	0.01	2.73 *	0.03	0.01	3.06 *
Reduced hours	0.52	0.16	2.64 *	0.58	0.18	2.86 *
Ln mthly Salary	-0.04	-0.01	1.08	-0.10	-0.02	1.99 *
Enterprise (State)						
Public Organization	-0.09	-0.02	0.26	-0.04	-0.01	0.10
Cooperative	-0.46	-0.10	3.48 *	-0.54	-0.11	3.72 *
Joint Company	-0.07	-0.02	0.50	-0.06	-0.02	0.44
Private Indiv.	-0.48	-0.10	2.45 *	-0.51	-0.10	2.69 *
Farming comm	-0.27	-0.06	1.46	-0.19	-0.04	0.99
Private farm	0.11	0.03	0.68	0.16	0.04	0.88
Sector (Agriculture)						
Mining	-0.42	-0.09	1.24	-0.33	-0.07	0.87
Manu.	0.07	0.02	0.40	0.17	0.05	0.90
Construction	-0.00	-0.00	0.01	0.15	0.04	0.52
Utility	0.07	0.02	0.32	0.11	0.03	0.45
Commerce	-0.14	-0.04	0.68	0.02	0.00	0.08
Transport	-0.52	-0.11	2.93 *	-0.53	-0.11	2.97 *
Finance	-1.05	-0.16	4.20 *	-0.94	-0.15	3.15 *
Services	-0.44	-0.11	3.24 *	-0.26	-0.06	1.68
Type of Region (Rural)						
Urban	0.17	0.05	1.36	0.18	0.05	1.42
Raions						
Ethnicity	not included					
Observations	1538			1538		
Wald Chi^2	201.27(25)			249.94 (42)		
Loglikihood	-691.71			-674.08		

Notes: The dependent variable is y =1,wage arrear.
Omitted groups for dummy variables are in (italics).
* statistically significant at the 5% level
Source: Author's calculations based on KMPS 1996

6.7 Conclusion

The purpose of this Chapter was to examine the prevalence of wage arrears in 1993 and 1996 and to discern which workers were more likely to experience wage arrears than others. The main findings are that wage arrears amongst workers were high in 1993, 58%, and fell by 60% to 24% in 1996. This fall in the incidence of wage arrears can be attributed to the nature of the recorded wage arrears being amongst those who are working. There has been a significant contraction in the labour market between 1993 and 1996, with unemployment increasing significantly. The incidence of wage arrears is likely to be high amongst those workers who have left the work force, but these incidences are not captured in the survey. The incidence was high across all workers in 1993, with few distinguishing personal or work-related characteristics. All workers had a relatively high probability of experiencing wage arrears and this is consistent with the worse economic situation in the early 1990s. Despite the tightening of the labour market, seen in falling employment rates and increasing unemployment in the previous chapter, the incidence of wage arrears was still significant amongst the labour force. By 1996, there is evidence that the incidence of wage arrears was more concentrated amongst agricultural sector, and less skilled, and less costly, workers. The results suggest that general economic conditions rather than personal worker characteristics determined the pattern of wage arrears, particularly given the regional concentration of the sectors. The positive relationship between wage arrears and reduced working schedules illustrates that these are complementary tools and those firms unable to pay workers are also likely to reduced worker intensity.

This result has significant consequences for household welfare and provides support for the continuing problem of the 'working poor', for whom having a job is no guarantee of labour income and thus avoiding poverty. In addition, the continuation of enterprises reneging on contractual agreements to pay workers is a sign that necessarily institutions are not in place to ensure labour markets function as they should.

6.8   Appendix: Wage Arrears

Table 6.4: Incidence of wage arrears across additional characteristics, 1993

(s.e. in parenthesis)	1993	1996	1993	1996
	Across group incidences %		With-in group incidences %	
Ethnic Group				
Kyrgyz	63.0	65.3	66.8	26.6
	(0.013)	(0.024)	(0.013)	(0.014)
Russian	10.7	15.0	31.6	16.1
	(0.008)	(0.018)	(0.021)	(0.019)
OtherSlavs	3.3	1.0	53.3	12.9
	(0.005)	(0.005)	(0.053)	(0.060)
Uzbeks	15.6	12.5	58.9	27.9
	(0.010)	(0.016)	(0.025)	(0.034)
Other	7.5	6.2	57.3	21.9
	(0.007)	(0.012)	(0.10)	(0.039)
Ownership of Enterprise				
State	69.2	34.2	53.7	17.6
	(0.012)	(0.024)	(0.012)	(0.014)
Public/Social Organization	1.2	0.8	38.6	13.6
	(0.003)	(0.004)	(0.073)	(0.073)
Work Collective	25.1		74.3	
	(0.011)		(0.020)	
Private Individuals	2.1		44.8	
	(0.004)		(0.061)	
Other	2.5	11.2	75.0	71.4
	(0.004)	(0.016)	(0.010)	(0.057)
Cooperatives		7.0		17.5
		(0.013)		(0.030)
Joint-Stock/Venture		9.7		27.8
		(0.015)		(0.031)
Private		1.3		6.1
		(0.006)		(0.026)
Farming Community		6.5		29.2
		(0.012)		(0.048)
Private Farming		29.4		38.4
		(0.023)		(0.028)

Source: Author's own calculations based on KMPS 1993, 1996

Variable and Definitions for Tobit Regression

Arrears: Those classified as employed and working over the reference period but who had not received payment in the last month.

Education level:

Less than High School: Those individuals who had no more than 9 years of primary and secondary schooling. This category also includes those with no formal education.

High school only: 10 or more years of primary and secondary schooling and did not study elsewhere.

Higher Education: Includes those who undertook 10 or more years of primary and secondary schooling and completed one (or more) of a vocational course or 10 or more years of primary and secondary schooling and completed one (or more) of university level.

Reduced hours: Those officially placed on reduced working schedules, where less than full-time is taken as less than 41 hours a week. This variable tries to capture those workers who did not voluntarily decide their hours of work.

Ln mthly Salary received: Natural logarithm of monthly salary, in the 1996 data.

Hold Second job: If worker engaged in activities additional to primary employment in 1993, or held a second job in addition to primary employment in 1996.

Ln Income other labour activities: Natural logarithm of income from additional activities in 1993. Natural logarithm of income from secondary job in 1996.

Unreported hours: The 677 workers who reported positively to be employed but did not declare number of hours worked in the 1993 data set.

Type of Region: Urban or Rural.

Oblasts: Naryn, Talass, Djalal-abad, Issuk, Osh, Chui (the six oblasts) and Bishkek (capital).

Ethnicity: Kyrgyz, Russian, Other Slavs, Uzbeks, Others.

Chapter 7

Labour Supply Decisions

7.1 Introduction

The upheavals in the labour market in the form of delays to wage payments, reduced working schedules, involuntary leave and changes in the provision of social benefits within the enterprise, have been analyzed in the context of the effects to the demand for labour. These mechanisms have been shown (in Chapter 5) to form a rational adjustment strategy for employers. Till now the effects of these adjustment mechanisms have not been examined from the supply side and how workers have reacted to these changes in the formal labour market.

A consequence of these changes described above has resulted in the increase in informal sector activities. The presence of an informal sector is not a new phenomenon arising as a result of the reforms but has increased over the transition period, with workers needing to engage in secondary employment just to survive. Informal sector activities provide an opportunity to supplement low or non-existent wages and hence are an important coping mechanism for families facing economic hardship. In the Kyrgyz Republic the size of the informal private sector was roughly estimated to include 300,00 people, see I.M.F. (1995). Although the informal sector has been described as an alternative sector to the formal sector, many activities are not a substitute for full-time work. The nature of employment in the informal sector is often part-time, or infrequent, and work can be largely characterized into either low skilled, manual, work, such as repair work or selling goods from stalls or alternatively highly paid such as interpreter/translator, official driver, tour guides and

most notably taxi driving. There are workers who work wholly in the informal sector, but excluding illicit activities and those for purposes of tax evasion, these activities may be rather limited, particularly in highly agricultural republics of Central Asia within the FSU. Here we do not consider *illegal* activities.

Despite the large estimate for informal sector activity for the Kyrgyz Republic, empirical evidence from the KMPS suggests that even in the face of wage arrears workers continue to work relatively long hours in formal employment (see Table 7.2 on page 205 in this chapter). Why do workers continue to work when they do not receive a wage, particularly for such long hours? Why do they not work longer hours in the informal sector where they are likely to be paid, particularly now that monetary wages are more important than before the reform process began? It is evident that reasons other than purely wage differences play an important role in workers' labour supply decision and it is these considerations that are explored in the model of labour supply presented in this chapter. Here we model workers' decisions across the two sectors but empirically focus only on those workers already employed in the formal sector and then engaging in additional activities in the informal sector due to data limitations, and not those working wholly in the informal sector.

The analysis presented here has foundations in the literature related to moonlighting and secondary employment. Traditional models of multiple job holdings have examined labour supply decisions under varying assumptions about both the nature of the primary and secondary job. Shishko and Rostker (1976) examine decisions to moonlight, or engage in secondary employment, when hours at the primary employment are constrained. Conway and Kimmel (1998) build on this recognizing that hours in primary employment may not be constrained and also that primary and secondary jobs may be heterogenous, hence moonlighting decisions are responsive to wage changes in both jobs. Several studies have examined labour supply decisions in the informal sector in Russia over the transition period. Foley (1997) examines workers' decisions to supply labour in secondary employment. His paper claims that institutional changes and specific economic developments in Russia during transition; low earnings, nonpayment of wages or forced administrative leave lower workers second-job reservation wage. Divestiture of social benefits in terms of child-care in particular affect women workers by increasing the shadow value of non-labour time and

leads to an increase in the reservation wage. Kolev (1999) considers workers' decisions to work across both sectors, formal and informal, as well as considering workers who undertake a second job. Although the general findings of these papers are consistent with the model presented here, the authors neglect the importance of the non-pecuniary aspects of activities in the different sectors which alter both the reservation wage as well as hours of labour workers are willing to supply between the two sectors. Johnson, Kaufmann, and Ustenko (1997) have modelled employee work intensity inside and outside the enterprise as a simultaneous model where employers and employees decide on choices of work intensity based on past behaviour. The continuum of variation in work intensity through both employers' means and the employees' ability to find work outside the enterprise is a departure from the usual discrete model of transitional labour markets, where firms decide whether to hire or release the worker. The employer may be more likely to reduce the hours of those who are working more intensely outside the enterprise; similarly workers may be more keen to search for work outside if they feel the employer will have to reduce hours or put them on leave. Their study shows that workers more likely to work outside the firm are likely to engage in strategies of survival that allow them to improve their well-being significantly. Commander and Tolstopiatenko (1996) model workers' choice between working for de novo or privatized firms and State enterprises which provide benefits. Privatized firms may have to pay higher wages to attract workers from state enterprises in which workers have a minimum level of commitment to work and for which wages may be low wages, or subject to delays, but where workers have access to social benefits. If the wage is high enough in the non-state sector, the worker may prefer to work in one firm rather than working across sectors (state and non-state) in order to gain the social benefits. The less responsibility firms have in supplying these facilities/services, the more important wage income becomes to enable workers to pay for these facilities. Certainly the provision of social benefits through the firm and the subsidies from the State to enterprises for workers will certainly effect workers and employers decisions. The model presented here is again consistent with the notion of employer and employee cooperation although the decision to work outside of primary employment is taken in the light of decisions to continue to work in the formal sector but here the formal sector is defined in a broader context, detailed later.

Another important observation is that it is often claimed that the informal wage needs to be above a minimum level before a worker will engage in work in the informal sector. However given that formal wages are often paid with delay, often over a long period of time, the reservation wage will in fact be lower than initially specified. Despite these models of multiple job holdings providing minimum reservation wage conditions, individuals can be seen working full-time in the formal sector without being paid. How do we reconcile these occurrences? Models of moonlighting or labour supply in the informal sector fail to reconcile these occurrences and it is these issues that are addressed here.

The problem is addressed by explicitly specifying the nature of the work in the formal and informal sector, something which is not done in current models of labour supply in transitional economies. The model presented here distinguishes between informal activities carried out in the formal sector, and activities in the informal sector. Firstly some workers may be able to earn unofficial payments while in formal employment. This could be from unofficial charges, e.g. doctors or medical assistance, or for work related to formal duties, such as for administrative procedures. Since the nature of the work in the informal sector, which tends to be less skilled than formal sector employment, workers may be averse to working in such activities, particularly if they are highly qualified or hold positions of authority in their primary employment. This will have a negative impact on decisions to work in the informal sector. The provision of social benefits only through the enterprise also has consequences to labour supply decisions since it increases workers' attachment to the formal place of employment. In the model presented here, the nature of the activities in the formal and informal sector as well as the specific non-pecuniary benefits associated with working in each sector are specified and this can lead to non-trivial differences in outcomes. The extensions to the regular framework of labour supply decisions in the model presented here are thus three-fold; the ability to earn additional payment from informal activities in formal employment, stigma associated with working in the informal sector and the provision of social benefits.

This chapter formalizes worker's labour supply decisions, explicitly accounting for the heterogeneity between the different employment options, with the aim of providing a more thorough explanation of workers labour supply decisions in economies in the process of reform. After a description of the nature of the activities in the two sectors a model of

workers' labour supply decisions is presented. For a rigorous empirical analysis detailed data on activities in the informal sector and informal activities is needed. Information pertaining to the informal sector is often scarce and when available is often limited in depth or reliability. This is also the case for data on informal sector and activities in the Kyrgyz Republic. However there is some limited information from the KMPS at two points in time, 1993 and 1996, on primary and secondary activities which allow for some limited empirical investigation of the model presented here and to examine the extent of these activities.

7.2   Overview of Informal Sector Activities

Informal labour activities were an integrated part of the labour market that benefited both workers and employers. From the firms' perspective informal activities provided additional flexible labour to ensure centrally planned targets are met given the previously rigid rules on hiring and production levels. From the worker's perspective it provides a means by which many workers can supplement their livelihood and improve their welfare given the incidence of low or delays in wages. In general for the population such activities provide a market for obtaining goods and services that would otherwise not exist. Most of these activities during the Soviet period were illegal, and in fact the second economy was termed as those activities that were carried out for private gain (Grossman 1977). A large exception to this were activities on private plots of land which were tolerated and relatively widespread, particularly in the highly rural areas of Central Asia.

However the selling and bartering of produce were deemed illegal and since the collapse of the Soviet Union there has been an increase in private plot production. Informal activities were prevalent from small scale bazaar activities to well organized groups of workers contracting themselves out to organizations for specific jobs. Building and repair work was an area where this was a frequent occurrence with often groups of workers, referred to as *shabashniki* (free-time workers), contracted to work on construction sites in order to meet enterprise targets (Grossman 1977). In certain occupations additional activities were endured and seen as a recompense for the low salaries earned in regular employment, such as teachers engaging in private lessons to students about to take university entrance exams. Many activities, particularly in rural areas, were in the less skilled areas of repair

and maintenance, private exchange of second hand and foreign goods, personal services, such as hair dressing, cleaning, electrical repair (Dallago 1990). The very nature of these activities meant that these were part-time activities. Also many activities were carried out during the working day, considered as the "theft" of time, with workers engaging in paid activities while at work, or engaging in agricultural activities for their own good rather than for the work collective or kholkoz (Braithwaite 1995). As noted in ?), Treml estimated the participation in the second economy to be as high as 10.2% of the Soviet work-force.

Another phenomenon documented in Grossman (1977), refers to gratuitous gifts to superiors in order to ensure the effectiveness of a procedure or official action, known as *prinosheniye*, a tradition expected by both parties. Although this was a regular gesture with authoritative figures, the payment for services above regulated fees has become relatively widespread across a variety of occupations in the process of transition, particularly with the falling value of real wages. For example, a doctor may accept or require a substantial unofficial payment for treatment or diagnosis as part of his/her regular payment. Although the doctor may not report that he is working in the informal sector but working full-time in the formal sector, he is undertaking an informal activity. The ability to command such additional payments for informal activities whilst working in primary employment often occurs in an area where a service is required, for example educational fees, medical services, cleaning etc. The undeclared nature of these activities make them difficult to quantify. A recent study of informal activities at the workplace termed these activities as "covert earning schemes" and described how complex these activities can be with some workers able to fully exploit the potential of making private gain for themselves at the expense of the employer (Birdsall 2000). Although these are informal activities and should be designated to the informal sector the activities are often complementary to the formal occupation and hence need to be treated differently.

7.3 Differences in the formal and informal sector

This section provides an explanation of the differences between the sectors that are incorporated in workers' supply side decisions.

Here a distinction is made between the informal *sector* and informal *activities*. The

standard approach to classifying informal activities is to include all additional activities outside of formal employment. Workers either have secondary 'employment'[1] in addition to the primary formal job or can work wholly outside the formal sector. In this analysis, an *informal activity* is defined to be an activity that accrues private gain to the worker at the formal place of employment, referred to as 'covert earning schemes' in Birdsall (2000). Workers often engage in informal activities in formal employment when services or a particularly skill is required. Informal sector activity is termed as an activity that take place wholly outside the formal sector. The informal sector is necessarily characterized by informal activities, but an informal activity can be undertaken in a formal setting. Informal activities are not subject to wage arrears, by their very nature they are activities that are paid for in cash.

Another distinguishing feature between the informal sector work and informal activities is not merely the payment for work in the informal sector and the ability to earn additional payments in formal employment, but the very nature of informal sector activities. Work in the informal sector is typically low-skilled and manual. To many individuals engaging in such work may be considered degrading. Workers may associate a stigma with working in low skilled jobs, or jobs requiring less skills than they are trained for, and workers are unlikely to be indifferent between the two types of work, even if the payments were identical. An alternative way of regarding this aversion to the informal sector is the ignominy associated with being outside the formal sector. Although stigma is more a psychological barrier for workers, and difficult to quantify, it is an important aspect when considering workers' supply decisions. Over the years the Soviet system emphasized the significance of being part of the formal labour force and instilled a sense of social importance. Being outside this 'official working community' is likely to bring some disutility to individuals, although the importance of this is likely to diminish over the course of the reform.

One reason for workers wishing to remain in formal employment is the provision of benefits which form a social safety net for workers. Attachment to enterprises entitle workers to benefits, such as creches, kindergartens, hospitals. Some benefits are specific to the individual e.g. uniform allowance, transportation costs, while others may be open to

---

[1]Employment is used broadly here since in the informal sector there is unlikely to be a contract or specified wage.

family members, such as medical facilities. Many fringe benefits were provided through the enterprise to employees that are otherwise provided by the local or central government in many industrialized countries. Despite the privatization programme and the fall in revenues, fringe benefits are still an important part of remuneration, although the extent and nature of provision can differ across the size of the enterprise and privatized firms, see (Commander and Jackman 1997) and (Rein, Friedman, and Worgotter 1997) and (Fajth and Lakatos 1997) which looks at fringe benefits in Hungary and (Estrin, Schaffer, and Singh 1997) in Poland. If the access to certain facilities is limited to enterprise provision only than workers may wish to maintain some attachment to enterprises in order to benefit from these facilities, even when they are not formally paid their wage. Individuals may put in a minimum number of hours, turning up at work to show they are still willing to work, while then returning to work in the informal sector. The quantity and quality of benefits vary across workers but are not dependent on the number of hours above the minimum number the individual needs to put in. When a worker is entitled to these benefits his or her family members can also benefit from these facilities. Hence at least one worker from each household will wish to remain attached to a State enterprise. As the reform progresses, many of these facilities are slowly being reduced or withdrawn. However, the access to such facilities when they are available provide workers and their families with services and facilities that they would not otherwise be able to easily afford and hence it is important to incorporate this aspect into workers' decisions.

7.4   A model of labour supply decisions

What are the possible outcomes of a worker's labour supply decision?

For the worker, there are four possible outcomes that could result:

- worker remains in the primary place of employment and has the potential to engage in undeclared informal activities *within* formal employment.

- worker remains in the primary place of employment and in addition works in the informal sector *outside* of the primary place of employment.

- worker works wholly in the informal sector

- worker leaves the labour force.

In the case of economies undergoing transition it can be claimed that workers have little choice over employment decisions when labour demand is rationed. It is argued here that workers already in formal employment may be able to choose to engage in additional activities, whether within the formal place of employment or outside, since they are formally employed and may have opportunities to be part of a network where potentials for informal activities could be pursued, see Birdsall (2000). Some workers may have the opportunity to earn additional income engaging in informal activities while at work and other workers may not. Similarly, some workers may have more opportunities to find informal work.

Given the incidence of wage arrears and the provision of benefits through enterprises, it is reasonable to assume that workers would remain attached to their formal place of employment, and indications of additional activities would show in reduced hours at the primary place of work, or whether covert activities may appear through higher hours regardless of wage arrears or wages or may depend on position and occupation. Hence it is assumed workers are unlikely to leave formal employment unless the wage was significantly higher and paid regularly in the informal sector. The fourth outcome, to leave the labour market, is again unlikely to be a choice given the Soviet philosophy of employment and given that unemployment benefits were so low, often paid with delay, as well as having stringent eligibility requirements. For most workers (voluntarily) leaving the labour force is likely to be a last resort.

Although evidence on Russia and other countries suggest a sizeable informal sector, there is little information on the diversity of the informal sector and informal activities in rural economies such as the Kyrgyz Republic and in other Republics in Central Asia. It is not clear that opportunities for informal activities actually exist to the extent that they do in other less agricultural economies such as Russia, although there is evidence of informal payments being made for health and educational services. The empirical analysis looks at the prevalence of the informal sector in the Kyrgyz Republic, which has not been looked at previously in this way and will provide some indication of how extensive secondary activities are.

7.4.1 The theoretical framework

An individual's decision to supply labour between the primary place of employment in the formal sector and the informal sector result from utility maximizing behaviour. Labour supply decisions are assumed to be sequential, and not simultaneous, with an individuals' primary employment taken as exogenous, a reasonable assumption as individuals' jobs are likely to have been largely pre-determined under the Soviet regime. Since the two possible states of employment, formal employment and the informal sector are so different they enter separately in the individuals' utility function.

Although based on the model in Conway and Kimmel (1998), several extensions are made to their model to make it more reflective of labour supply decisions in transition economies of the FSU, namely the ability to earn informal payments in the formal sector, the provision of social benefits in the formal sector, and social stigma associated with work in the informal sector. Although these aspects can be incorporated into differences in non-pecuniary benefits between the two sectors it is necessary to treat them separately. Since the ability to earn informal payments, referred to as A in this model, is a monetary component from formal sector activities, it should be distinguished from the other non-pecuniary benefits associated with working in the formal sector. Stigma associated with working in the informal sector is defined as B in this model. Similarly although B could be incorporated in U_2, the non-pecuniary benefits associated with working in the informal sector, it is necessary to specify stigma as a 'cost' to working in the informal sector and in this model it enters negatively in the expression for the informal sector 'wage'. Here four cases are examined illustrating workers' supply decisions. The first case, Case 1, provides a foundation for examining decisions across the formal and informal sector and the other 3 cases are extensions following this basic setup.

Case 1: Formal and Informal Sector

The model presented here looks at an individual's decision to work in the formal and informal sector, S_1 and S_2 respectively. The worker maximizes utility, U, over consumption C, leisure l, and the non-pecuniary benefits of working h_i hours in sector S_i , where $i = 1, 2$ for the formal and informal sector respectively, subject to the budget constraint and the time constraint. T is the total hours in the day and l represents hours of leisure. Y_0 are the

non-labour assets, A represents income from informal activities in the formal sector and B stigma associated with working in the informal sector. The non-negativity conditions hold for the four constraints. The individual's optimization problem is thus;

$$\underset{h_1,h_2}{Max}\ U\left(C,l,h_1,h_2\right)$$

$$0 \leq C \leq h_1(w_1 + A) + h_2(w_2 - B) + Y_0 \qquad (7.1)$$

$$(budget\ constraint)$$

$$0 \leq T = h_1 + h_2 + l \qquad (7.2)$$

$$(time\ constraint)$$

$$h_1 \geq 0 \qquad (7.3)$$

$$h_2 \geq 0 \qquad (7.4)$$

The Kuhn-Tucker conditions state that for a feasible and optimal outcome, (h_1^*, h_2^*), $\exists\ \lambda_i \geq 0$, $i = 1,..,4$ such that ;

$$\lambda_1(h_1(w_1 + A) + h_2(w_2 - B) + Y_0 - C) = 0$$

$$\lambda_2(T - h_1 - h_2 - l) = 0$$

$$\lambda_3 h_1 = 0$$

$$\lambda_4 h_2 = 0 \qquad (7.5)$$

and

$$(U_1, U_2) + \lambda_1((w_1 + A), (w_2 - B)) + \lambda_2(-1, -1)$$

$$+\lambda_3(1, 0) + \lambda_4\,(0, 1)$$

$$= 0 \qquad (7.6)$$

From Equation 7.5, for $\lambda_3 h_1 = \lambda_4 h_2 = 0$ to hold (other than the trivial case where both $h_1 = h_2 = 0$) either $h_1 > 0$ and $h_2 = 0$, or $h_2 > 0$ and $h_1 = 0$. Thus the worker will work wholly in one of the sectors. The resulting optimal choice of hours of work will always be the corner solution.

The First Order Conditions for the two outcomes are,

Outcome 1: Worker works wholly in the formal sector: $h_1 > 0$ and $h_2 = 0 \Rightarrow \lambda_3 = 0, \lambda_4 \geq 0$

$$
\begin{aligned}
U_1 + \lambda_1(w_1 + A) - \lambda_2 &= 0 \\
-(w_1 + A) &= -\frac{(\lambda_2 - U_1)}{\lambda_1}
\end{aligned}
\tag{7.7}
$$

Outcome 2: Worker works wholly in the informal sector: $h_2 > 0$ and $h_1 = 0 \Rightarrow \lambda_3 \geq 0, \lambda_4 = 0$

$$
\begin{aligned}
U_2 + \lambda_1(w_2 - B) - \lambda_2 &= 0 \\
-(w_2 - B) &= -\frac{(\lambda_2 - U_2)}{\lambda_1}
\end{aligned}
\tag{7.8}
$$

The $\lambda's$ can be interpreted as the shadow prices and hence the reservation wages can be re-written in the more familiar format;

Outcome 1:

$$
-(w_1 + A) = -\frac{(U_l - U_1)}{U_c}
\tag{7.9}
$$

and

Outcome 2:

$$
-(w_2 - B) = -\frac{(U_l - U_2)}{U_c}
\tag{7.10}
$$

where U_c is the marginal utility of consumption and U_l is the marginal utility of leisure. These first order conditions determine the hours of work undertaken in each sector.

Equations 7.9 and 7.10 are the reservation wages for working in the formal and informal sectors, respectively. It can be seen from these equations that the magnitude of A and B can greatly alter the outcomes, which is important since both these aspects tend to be unobservable (although additional payments can be quantified, it is not a transparent income source). If the ability to earn additional payments is large, this will lower the reservation wage for formal sector employment than in the conventional model which does not include allow for A. Similarly, if a worker associates a significant amount of stigma to

working in the informal sector, this will lower the reservation wage, even in the presence of a relatively high wage for informal sector work. The varying degrees of stigma the worker associates with working in the informal sector affects the reservation wage, with a higher reservation wage needed to compensate workers for the disutility (stigma) associated with the work. If $U_1 = U_2$ then there are no differences between the nature of the work in the two sectors, other than specified in A and B, and workers would work wholly in either the formal or informal sector whichever sector paid the highest wage according to the specifications, $(w_1 + A)$ or $(w_2 - B)$. If $U_1 > U_2$ or $U_1 < U_2$ then there are differences in the non-pecuniary benefits between the two sectors, and again workers would work in the sector for a wage satisfying the above conditions, depending on the magnitude of A, B, and U_1 and U_2. The reservation wage will be lower in the sector with the higher non-pecuniary benefit U_i. The nature of the A and B being unobservable make it necessary that a model of labour supply decisions incorporate these aspects.

Case 2: Social benefits in the formal sector

Now suppose that the precise nature of the non-pecuniary benefit in the formal sector employment, or at least part of it, is of a specific form. Suppose workers are entitled to a (social) benefit $f(h_{\min})$, after working a certain number of minimum hours, $h_{\min}$. The non-pecuniary benefits associated with working in S_1 would be of the form $U_1 = f(h_{\min}) + U_1'$, where U_1' represents non-pecuniary benefits associated with S_1 *other than* $f(h_{\min})$. Substituting the new expression for U_1 into Equation 7.9, the first order conditions are now;

$$-(w_1 + A) \quad = \quad -\frac{(U_l - (f(h_{\min}) + U_1')}{U_c} \tag{7.11}$$

$$-(w_2 - B) \quad = \quad -\frac{(U_l - U_2)}{U_c} \tag{7.12}$$

Again hours of work in each sector is determined by the first order conditions above. As in the first case, the optimal outcome is the corner solution. The only difference here is the inclusion of the value of the social benefits provided in the formal sector in Equation 7.11. The higher the value of the social benefits, the lower the dis-utility associated with working an additional hour in S_1. Workers will again decide to work in which ever sector

pays the higher wage to cover the sector-specific reservation wage.

Case 3: Social benefits not provided outside the formal sector

Case 2 has assumed that the benefits received after working $h_{\min}$ hours are accessible to all workers and hence workers are willing to work in S_2 for a reservation wage that covers the value of these non-pecuniary benefits. Suppose however that the benefits are in fact only provided in the formal sector. This would be the case where employers provide, for example, health care, education facilities or child care, within the enterprise in the formal sector but where such facilities are not provided outside of the formal sector. In this case $f(h_{\min})$ cannot be obtained by working any $h_2 > 0$, and so workers would work $h_{\min}$ hours in the formal sector in order to receive the benefit $f(h_{\min})$ and then will decide to work in either the formal or informal sector for the remaining hours. This changes the time constraint, which now becomes, $T - h_{\min} = \tilde{T} = h_x + h_2 + l$. The total income from working $h_{\min}$ hours in the formal sector would be $f(h_{\min}) + h_{\min}(w_1 + A)$. Hours worked in the formal sector are now $h_1 = h_{\min} + h_x$, where $h_{\min} > 0$. In this case, $h_{\min}$ is fixed and no longer a choice variable.

The optimization problem can then be expressed as;

$$\underset{h_x, h_2}{Max}\ U\left(C, l, h_x, h_2\right)$$

$$0\ \leq\ C \leq f(h_{\min}) + h_1(w_1 + A) + h_2(w_2 - B) + Y$$

$$0\ \leq\ \tilde{T} = h_x + h_2 + l$$

(new time constraint)

where,

$$0\ \leq\ h_x = h_1 - h_{\min}$$

$$0\ \leq\ \tilde{T} = T - h_{\min} < T$$

The first order conditions are now,

$$U_c(w_1 + A) - U_l + U_1+ \quad = \quad 0$$

$$-(w_1 + A)^* \quad = \quad -\frac{(U_l - U_1)}{U_c} \tag{7.13}$$

$$U_c(w_2 - B) - U_l + U_2 \quad = \quad 0$$

$$-(w_2 - B)^* \quad = \quad -\frac{(U_l - U_2)}{U_c} \tag{7.14}$$

where $(w_1 + A)^*$ and $(w_2 - B)^*$ are the new minimum reservation wages needed for worker i, to participate in sector S_i, respectively. Since workers are not optimizing over h_{min} hours the value of $h_{min}, f(h_{min})$, does not enter the first order conditions. The worker now maximizes over a smaller time constraint since s/he is compelled to work in the formal sector for h_{min} hours to ensure access to social benefits sector for $f(h_{min})$. Again the optimal outcome, $\left(h_x, \hat{h}_2\right)$ is the corner solution and the worker will either continue to work in the formal sector, or work in the informal sector over and above the minimum number of hours required to qualify him or her for the social benefits. Although the optimization conditions are the same as in the original case, Case 1 on page 190, the number of hours workers maximize over are now smaller, since $\hat{T} < T$ and $\hat{h}_2 < h_2^*$ (from Case 1).

It is important to appreciate that the availability of social benefits $f(h_{min})$ provided in the formal sector represents a *vertical shift* upwards of the consumption of the line for $(w_1 + A)$, [or (w_p) in Figure 7.1 on page 197 described later] rather than *a change in the slope* of the line.

Case 4: Wage arrears in the formal sector

The main purpose of the analysis is to try and explain why workers continue to work in the formal sector S when there are wage arrears. Here it is important to fully appreciate the inclusion of A, the ability to earn additional payments from informal activities in the formal sector. Allowing for other non-pecuniary benefits contained in U_1 and U_2, if A was not included, the prevailing wage for formal sector employment would be zero in the presence of wage arrears. It would be expected that workers would work in the informal sector for all hours of work above the minimum h_{min}. However when the reservation wage conditions are 'correctly' specified to include A and B, the worker's decision to work

wholly in the informal sector are no longer obvious. The inclusion of A and B can alter the outcome.

The first order conditions now become,

$$-A = -\frac{(U_l - U_1)}{U_c} \tag{7.15}$$

$$-(w_2 - B) = -\frac{(U_l - U_2)}{U_c} \tag{7.16}$$

Despite the reduction in the reservation wage for S_1, the magnitudes of the ability to earn additional payments in the formal sector, A, and the stigma associated with working in the informal sector, B, are very important.

Taking a very basic case, assume $U_1 = U_2$ so that all non-pecuniary benefits other than A and B are the same and $A > 0$ *and* $B \geq 0$. Even when there are wage arrears, $w_1 = 0$, the ability to earn additional payments in the formal sector, A, may be a significant source of income and delays in wage payments may not affect workers' decisions to work in the formal sector. The stigma associated with informal sector work could be quite large, resulting in a high reservation wage for the individual to work in that sector. The magnitude of B could in fact vary (inversely) depending on the worker's alternative opportunities. If A was small or non-existent in the face of wage arrears, it is likely that B may also fall and the worker would have a lower reservation wage for the informal sector if there was no other opportunity to earn income. In this situation the worker would work the remaining hours in the informal sector, i.e. in desperate times all types of work would be considered. This would be the outcome if A and B were not specified.

The model has shown that by including A and B, workers' labour supply decisions are no longer just dependent on observable factors. The inclusion of additional payments in the formal sector leads to a fall in the reservation wage and the presence of stigma when working in the informal sector leads to an increase in the reservation wage for the informal sector, than is usually accounted for in models of labour supply decisions. In addition, incorporating social benefits provided only in a particular sector leads to a reduced time constraint over which workers maximize their utility, which could result in shorter time engaged in the informal sector than if there were no limitations on benefit provision.

7.4.2 A Graphical explanation

The problem is represented graphically below.

Figure 7.1 examines the decision to work in the formal and informal sector when income from informal activities A and social benefits $f(h_{\min})$ are available in the formal sector and there is stigma B associated with the informal sector. Y_0 represents non-labour income. An individual worker with utility curve U_α is employed in the formal sector for a wage $w_p[= (w_1 + A)]$. After working $h_{\min}$ hours the individual is eligible for social benefits, valued at $f(h_{\min})$, and the line with slope $-w_p$ shifts vertically up by $f(h_{\min})$. The worker maximizes utility along the indifference curve U_α by working h_1^* hours in the formal sector. The individual will need a wage $w_s[= (w_2 - B)]$ to tempt them to work an additional $h_1^* - h_2$ hours in the informal sector, at point B.

If social benefits are available outside of the formal sector, for a sufficiently high wage, of at least $\hat{\underline{w}}$, a worker with utility U_γ would not work in the formal sector, since his/her reservation wage $\hat{\underline{w}}$ is higher than the wage prevailing in the formal sector, w_p. The individual could reach a higher indifference curve U'_γ for a wage $\hat{w}' > \hat{\underline{w}}$ and work positive hours in the informal sector since wage from working in the informal sector is high enough to cover the value of the social benefits $f(h_{\min})$.

Figure 7.2 illustrates what happens when a worker experiences wage arrears in the formal sector. An individual with utility U_δ earning $\overline{w}_p$ will work h_1 hours in the formal sector, at point D. Suppose the worker then experiences delays in wage payments. The wage line associated with working in the formal sector has slope $-A = -\underline{w}_p < -\overline{w}_p$ and the worker is limited to working the minimum number of hours $h_{\min}$ and shifts down to point D'. If the worker associates a high level of stigma with working in the informal sector, s/he may need a wage $w_S > \overline{w}_p > \underline{w}_p$ to entice her/him to work additional hours in the informal sector. So despite wage arrears in the formal sector, the reservation wage for working in the informal sector may be so high that a worker does not engage in additional work which would take him/her to point E, but may remain at point D'.

The theoretical model above provides a framework for analyzing labour supply decisions in an economy going through a process of transition, as in the case of the Kyrgyz

Figure 7.1: Labour supply decisions in the formal and informal sector
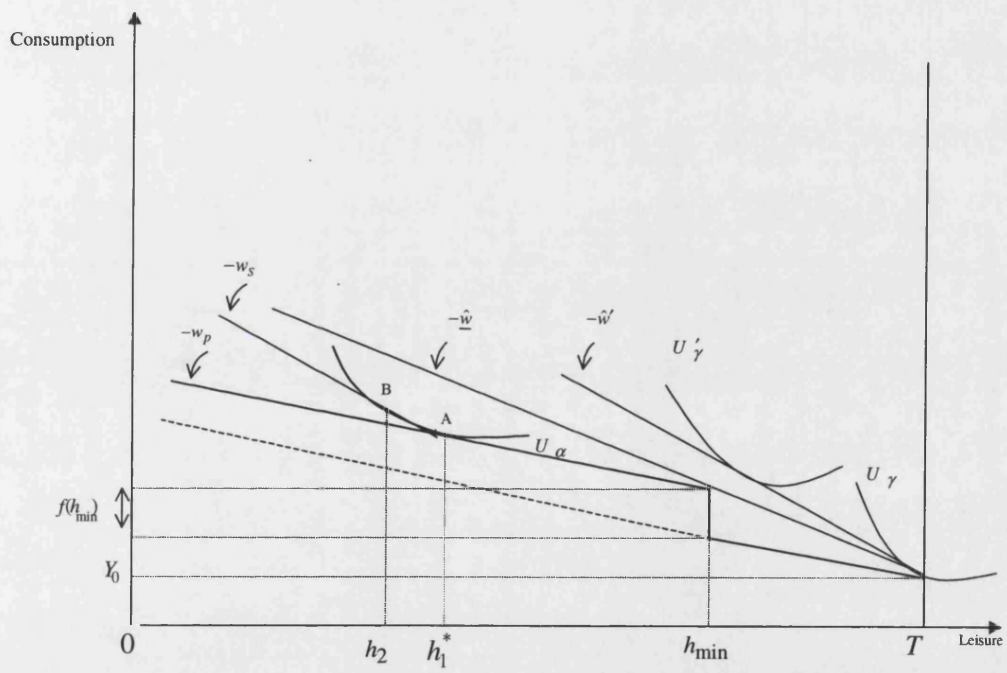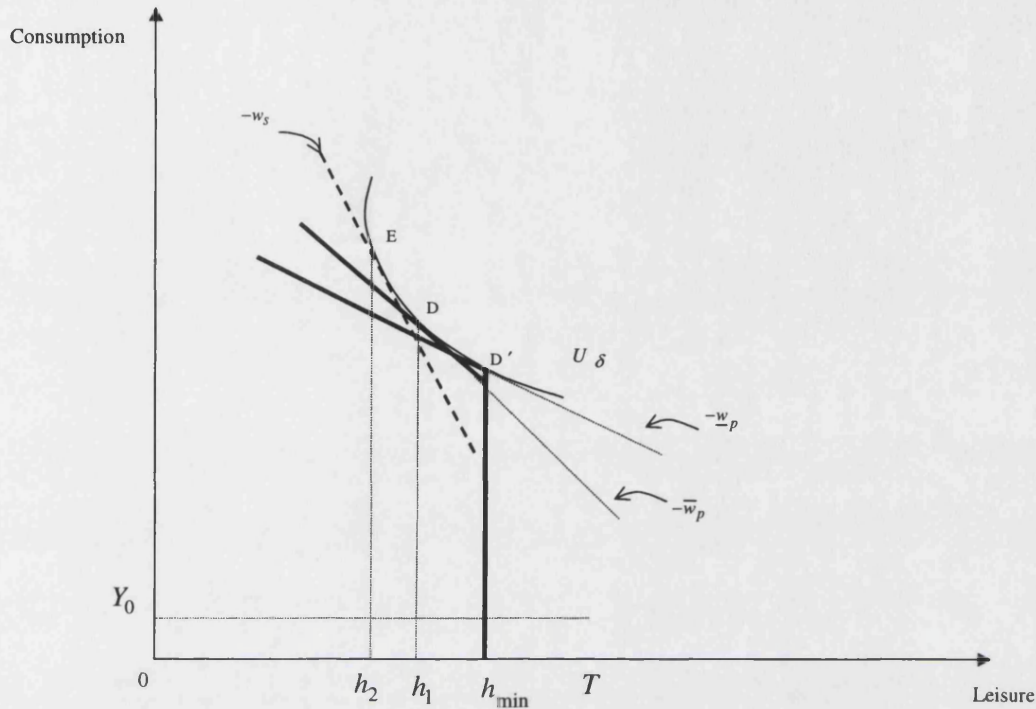
Figure 7.2: Labour supply decisions in the formal and informal sector, with wage arrears

Republic. Below we turn to an empirical analysis of the Kyrgyz Republic to examine the incidence of secondary employment in the informal sector, given workers are employed in the formal sector to see if the labour supply model can explain these observations.

7.5 Data

The empirical analysis is based on data from the Kyrgyz Multipurpose Poverty Survey for the Fall of 1993 and 1996. Details of the two surveys are provided in Chapter 2, Section 2.6, on page 36. The analysis of labour supply decisions focuses on workers, excluding entrepreneurs and students, over the age of 16 years old. Chapter 5 contains an explanation of how individuals have been classified across labour market status based on available information from the surveys and differences in the labour market information between the two surveys which differed slightly across the two years. Neither survey provides information on informal activities *within* the formal place of employment though there is information on additional activities that workers may have engaged in, *in addition* to

formal employment. In 1993 information on activities *in addition* to primary employment was based on responses from those who answered yes to *"Please tell me whether you presently work for hire at any enterprise, in any organization, on any collective farm or state farm, or in any cooperative?"*. Those who answered yes were then asked the following three questions;

"Please tell me whether you hold an additional paid job at any other enterprise or organization?"

"Now I would like to ask several questions about entrepreneurial activity. I would like to find out whether you engage in any kind of entrepreneurial activity, regardless of whether you enterprise is registered or not. Do you have your own business? Do you produce equipment, tools, make clothes, shoes, sell food products or other goods, provide medical services, tutor, work privately as a hair dresser, shoe repairman, etc."

"During the last 30 days, have you performed any work other than that about which we have already spoken, for which you were paid. Perhaps you sewed a dress for someone, tool someone somewhere in a car, helped someone repair an apartment or car, purchased and delivered goods, tool care of people who were ill, or did something else for which you were paid".

Income from additional activities was calculated as the sum of all income reported in response to these three questions.

The 1996 Survey contained only one question pertaining to involvement in additional activities outside of formal employment which was asked after questions related to the primary work place. Those who were classified as employed were asked at the end of the section referring to the respondents main work during the past 7 days, *"Did you have a second job or activity in the past 7 days?"*. Income from these activities was derived from the responses to two questions. The first was addressed to those who classified themselves as self-employed or an independent entrepreneur in their additional activities, *"During the past 30 days, how much did you earn in this work, including salary, bonuses, awards, or other payments in goods and services?"* and the second question was addressed to those who did not classify themselves as either self-employed nor an independent entrepreneur, *"In the past 30 days, what are the total earnings that you received from this work"* .

Despite the rigid grid system determining the level of wage income for workers, based

on such aspects as occupation, qualifications and seniority, enterprises often pay workers above their official state wage in order to retain more competitive workers and would conceal additional payments by providing more in-kind benefits or by paying extra payments on top of their regular wage that were not declared on the enterprise's official wage bill. In addition to their official state determined salary and the salary the enterprise pays, workers who are able to earn additional income through their employment will in fact have an actual wage income that differs between the previous two. Given that workers were asked to report the amount of wage income they received over the previous month, it could be that workers report their official state-determined salary and not the amount paid by the enterprise, of which the latter is likely to be larger. It is unlikely that workers report these additional payments that make up their actual wage income. The incidence of these payments can only be indirectly inferred from the results. It is necessary to keep this in mind when interpreting wage income information.

Another problem encountered with the 1993 data was the large number of missing observations for hours worked over the previous week. There are 877 respondents who reported positively to working for an enterprise or organization and who specified a type of enterprise they worked for but did not report working any hours over the previous week in the Fall of 1993. Workers with missing hours have been included in the sample as workers with formal employment but working 0 hours in the primary place of employment. The summary statistics presented in the next section present both figures for 1993. Here again women on maternity leave and on official leave are excluded.

7.6   Empirical Results

It is recognized that quantifying work in the informal sector is difficult due to the unwillingness of workers to openly admit engaging in unofficial activities, see for example Kaufmann and Kaliberda (1996) who estimate the approximate size of the shadow economy through electricity use. Hours worked in both the primary sector and in the informal sector, as well as total income earned in both sectors, would be necessary for informative results from regression analysis. However the lack of extensive and reliable data on informal activities in the Kyrgyz data means we can only look at those already employed in the formal sector and hence prevents a more detailed empirical analysis of workers' labour

Table 7.1: Selected Characteristics of the Labour Market, 1993 and 1996

(s.e. in parenthesis)	1993		1996
	A (%)	B	(%)
Workers (out of the total labour force)[1]	91.1	70.2[2]	77.6
	(0.005)	(0.007)	(0.010)
Secondary activities	23.5	17.2	2.6
	(0.009)	(0.008)	(0.004)
Wage Arrears	57.5	52.1	23.8
	(0.010)	(0.011)	(0.010)
Reduced schedule	1.7	1.5	4.3
	(0.003)	(0.002)	(0.005)
% of workers out of total reporting 0 hours	3.0	4.2	9.8
	(0.003)	(0.004)	(0.006)
% of workers not reporting hours in 1993	20.81		
	(0.008)		

[1]Statistics excludes those on maternity leave.

[2]Excludes 582 (20.81%) workers who did not report hours of work during the reference week in 1993.

Source: Author's calculations based on KMPS 1993 and 1996

supply decisions across both sectors. In the absence of such data, some basic inferences can be made from information captured in the number of hours worked and reported wage income of workers. This will at least provide a picture indicating some sort of worker decision between the two sectors. Here the Kyrgyz labour market is examined using the KMPS for 1993 and 1996. Due to the (un)-reliability of data it was necessary to combine all income from secondary activities together. This will limit the extent that activities in the informal sector can be distinguished from informal activities in the formal sector, but still does shed light on the importance of these activities.

Table 7.1 provides some interesting results on the incidence of workers engaging in secondary activities and those experiencing wage arrears and reductions in hours of work. For 1993 two sets of results have been derived, one includes information from workers

who claim to be employed but do not report any hours of work, column A, and the other column, B, excludes these observations. The difference in the results between including those workers who report 0 hours and excluding these workers is quite significant, with the incidence of secondary activities falling from 24% to 17% when these workers are excluded. Due to the absence of essential hours in primary employment information, the results in column B are focused on.

Between 1993 and 1996 the incidence of secondary activity fell from 17% in 1993 to approximately 3% in 1996. This is a lot lower than the estimate of around one-third of the economically active (using estimates by NSC for 1995). Although this would be expected, since the analysis here focuses only on those already employed and working in secondary activities, the disparity (3% compared to 33%) illustrates how difficult such activities are to quantify. Also over the period 1993 and 1996 the incidence of wage arrears has fallen from 37% to 24% of workers though the percentage of workers on reduced working schedule has increased from a relatively low levels from 2% to 4%. This reflects an economic improvement, albeit relatively minor, in the economy. In comparison, using labour force survey data for Russia, Foley (1997) reports that the percentage of male workers holding additional jobs, given they held a job, increased from 5.8% in 1993 to 12.0% in 1996. For women, the figures were found to be 5.6% in 1993 increasing to 8.2%. Looking at the percentage of workers engaging in informal activities, Kolev (1999) found that in 1995 depending on the definition of informal activities used, around 8-10% of Russian workers, 10%-12% of men and 6-7% of women, were engaged in informal activities. The percentage of those working and engaged in informal activities was 8% while those who classified themselves as unemployed was found to be as high as 23%. Paxson and Sicherman (1996), using U.S. data, found that on average over the period 1976-1989, around 20% of working men and 12% of working women held an additional job to their main job. So although the estimates for the Kyrgyz Republic are relatively low they do not represent the whole picture of informal sector activities and more detailed survey information would be needed to estimate those engaged wholly in the informal sector.

Examining hours worked can provide some indication of where workers' time was spent, whether in the primary place of employment or outside in the informal sector. Table 7.2 looks at hours worked under differing cases of wage arrears and secondary activities. It

appears that hours of work in the primary place of employment falls less due to secondary activities than compared to wage arrears, in both 1993 and 1996. The difference between those engaging in secondary employment and those not, was only an hour in 1993 while in 1996 the difference was 3 hours. In both cases the absolute number of hours worked in the primary place is still relatively high, over 44 hours in 1993 and over 30 hours in 1996. However in 1993, irrespective of whether a worker was engaged in secondary activities or not, those experiencing wage arrears worked longer in their primary place of employment compared to those workers who do not experience wage arrears. Although those working secondary activities reduce their hours in primary employment if they are engaged in secondary activity, the reduction is smaller compared to those experiencing wage arrears. In 1996 the trend was the same with secondary activities leading to a reduction in hours worked in primary employment, and for those experiencing wage arrears the reduction in primary hours of work was even more. The fall in secondary activity would appear to coincide with the decrease in the incidence of wage arrears, which fell from 57.5% in the Fall of 1993 to 23.8% in 1996. Interestingly the number of hours worked in primary employment in general is fewer in 1996. By 1996 firms had started to reduce the provision of some facilities through the enterprise, although not all benefits. This is consistent with a reduction in a minimum level of attachment to primary employment in order to qualify for benefits, as described in Case 4 of the theoretical model presented here.

Table 7.3 illustrates the average wage in the primary employment and income from secondary activities, deflated to November 1993 figures. It is important to bear in mind that reported wage data may greatly underestimate the actual wage received, since workers may only report their official wage. So caution should be drawn when interpreting wage and income results. Average wages of workers appear to have increased in 1996 but when looking at those who were actually paid, workers were paid 129 soms in 1993 compared to 137 Soms per month in 1996. The high standard errors for these estimates reflects the large amount of noise there is in measuring these variables. The figures for average wage across all workers indicates the large number of workers who received zero wage in fall 1993. Average income from secondary activities in 1996 was substantially higher than in 1993, with workers who engaged in these activities earning 238 Soms in 1996 compared

Table 7.2: Average hours worked in the primary place of employment, 1993 and 1996

(standard deviation in paranthesis)	1993[1] (hrs/wk)	1996 (hrs/wk)
Across all workers	46.88	37.17
	(21.48)	(14.2)
No Arrears	44.31	39.07
	(16.66)	(13.11)
Arrears	49.23	31.01
	(23.55)	(18.41)
No secondary activities	47.23	37.24
	(21.44)	(14.87)
Secondary activities	45.80	34.43
	(21.61)	(16.70)
No secd. act., no arrears	44.54	39.14
	(18.23)	(13.01)
No secd. act., arrears	49.60	31.04
	(23.61)	(18.48)
Secd. act., no arrears	43.09	36.10
	(18.75)	(16.68)
Secd.act., arrears	48.10	29.73
	(23.57)	(16.60)

[1]Excludes 582 workers who did not report hours of work during the past week in 1993.

Source: Author's calculations based on KMPS 1993, 1996

Table 7.3: Average primary wage and income by activities, 1993 and 1996

(standard deviation in paranthesis)	1993[1] (mth/TR)*	1996 (mth/TR)*
Average wage received across all workers	61.73	107.18
	(107.47)	(126.80)
Average wage received, no arrears	128.58	137.19
	(124.37)	(128.31)
Income from secondary activities	121.77	238.11
	(254.01)	(490.82)
Average wage, no secd activities	133.66	136.29
	(131.73)	(127.45)
Average wage, secd activities	112.03	172.80
	(95.00)	(156.95)

* deflated to November 1993

[1]Excluding workers with missing hours.

Source: Author's own calculations based on KMPS 1993 and 1996

to 122 soms in 1993. Interestingly the average wage in 1993 received by those workers not engaging in secondary activity was higher than for those workers actually working additionally, 134 soms compared to 112 soms. This would imply "less-skilled" workers on low wages supplementing their income by working in secondary activity. In 1996 the reverse is true and workers working in secondary activities receive a higher wage in their primary place of employment compared to those workers who engaged wholly in primary employment. This may indicate better paid outside opportunities for the most highly skilled workers.

7.7   Conclusion

The main purpose of this chapter was to provide a comprehensive model of workers' labour supply decisions in the light of the affects of the reform process on the labour

market. In particularly the model tried to explain why workers may continue to work in formal employment despite wage arrears. Here we have shown that specifying the precise nature of the work in the formal and informal sector can alter labour supply outcomes in non-trivial ways. The features included in this labour supply model that are not included in other models of labour supply applied to transitional economies, are the inclusion of additional payments in addition to the formal wage whilst working in formal employment, aversion to working in the informal sector, and the provision of social sector benefits only through formal employment. The former feature leads to a lowering of the formal sector reservation wage, while the latter increases the reservation wage for informal sector work. The restricted provision of benefits has been shown to lead to a reduction in the total number of hours workers optimize over and hence also reduce the hours workers are willing to engage in secondary activity.

By incorporating these unobservable features provides a labour supply model that reconciles the empirical findings, that workers tend to work relatively long hours in formal employment, even when experiencing wage arrears. In general the results provide some support for lower paid workers supplementing their income with informal activities in 1993, when the economy was doing particularly badly in terms of inflation and high wage arrears. This is also consistent with the patterns found in the 1996 data, by which time there was economic growth and signs of stability in the economy seen in lower inflation. Higher paid workers appear to be earning higher income from secondary activities, implying that the higher reservation wage for informal sector work is being matched by high paid work in the informal sector.

The empirical analysis here has been limited due to the lack of data. More extensive data on the informal sector and additional payments in formal employment would be needed for an in-depth analysis than can otherwise be done here. Nevertheless, the empirical findings suggest that the theoretical model presented does reconcile labour supply outcomes, given the particular setup of employment during transitional times and provides a clear framework within which to understand worker labour supply decisions.

Chapter 8

General Conclusion

This thesis has sought to contribute to our knowledge of the path of adjustment from central planning in a small rural economy. The Kyrgyz Republic provided a case-study of a small, but stable, economy with limited natural resources, that was originally claimed to have implemented rapid policies of reform. The aim was to understand both the impact of the adjustment process on the welfare of the population and on the labour market, the foremost contributor to household welfare (based on money metric utility). Recently available nationally representative household survey data has permitted analysis at two points in time soon after independence, in 1993 and 1996.

The collapse of the Soviet Union brought not only an end to transfers from Moscow but also the end of a highly specialized integrated production system which had spanned Republics across the Union, and the collapse of a vital trade Union, the CMEA. The combination of these effects contributed to the macroeconomic collapse in the economy, which could not be counteracted due to the limited potential for growth from the lack of natural resources. Due to the highly agricultural and low-monetarized nature of the economy, the economy initially reverted to its earlier structure of a subsistence economy. The result was a gradual impact of a deep recession on a fragile economy. The main findings of the thesis illustrated the extent of the impact of these reforms within this context.

Welfare was examined by household expenditure and subjective measures of welfare. Despite slight improvements in GDP in the late 1990s, chapter 3 illustrated that there were no conclusive improvements in welfare, as measured by household expenditure. It

was shown that although income inequality had fallen over the period and that incidences of severe poverty had decreased, absolute poverty had increased. Although these results are not new, disaggregated poverty measures across oblasts show that not only rural areas experienced increases in poverty but also the major urban city of Osh experienced higher poverty rates in 1996. Any indications of a recovery have been limited. The changes in poverty are shown to correspond to dynamics in the labour market, summarized below.

Subjective measures of welfare, applied in chapter 4 found that having wealth was not necessarily an indication of higher satisfaction. Again this is an indication of the low monetization in the economy despite the growing importance of prices and user charges that followed price liberalization in the early 1990s. An important result was that the unemployed were no more unhappy than those employed, and the younger generation were also found to be happier. These results reflect how important it was to be able to adapt to the new environment given the break down in the labour market. It also reflects the increasing importance of entrepreneurial skills which the older generation who have only known state ownership and central planning are unlikely to know. The results from subjective measures of welfare illustrate that such measures offer a complementary approach to monetary based measures of welfare, as well as indicating the usefulness of using subjective measures in the analysis of welfare.

Chapter 5 provides support for the hypothesis that it was in both the workers' and firms' interest for the practice of labour hoarding to persist. Empirical findings support the premise that workers' schedules were reduced and delays in wage payments were prevalent tools used to (almost) costlessly maintain employment levels. Agricultural workers, and those less educated, were more likely to be effected by these adjustment mechanisms. These results were also confirmed in Chapter 6 which focussed on the prevalence of wage arrears. The tightening of the labour market between 1993 and 1996 was reflected in the larger fall in employment rates and in the higher increase in unemployment rates in rural arrears. This combined with Kyrgyz Government reports on the prevalence of wage arrears in the mid-1990s, confirms the worsening situation for the rural population. Although the results provide empirical evidence for those in the labour market, outstanding wage payments remained a problem also for those who had left the labour market. These findings are also borne out in the analysis of poverty in chapter 3.

The reduction in working schedules and delays in wage payments has led to increased informal activities. These activities form an important part of a households' coping strategy particularly when the State can no longer offer a sufficient safety net to prevent declines in living standards. Given the importance of wage income, particularly in light of price liberalization and the ending of subsidies on many basic goods and services, it is interesting to find that many workers still work full time in their primary place of employment. Although reliable data from the household surveys are limited, chapter 7 supports the premise that workers may continue working for no official pay in enterprises which offer social benefits or which offer opportunities for earning unofficial income.

A non-functioning labour market, where workers are not paid (wage arrears) and enterprises do not honour their debts (both wage and enterprise arrears) has consequences not only for household welfare in terms of loss of formal labour income, but also for the government. Increases in income from informal activities represents a loss to the government through lost tax revenues. Such revenues would also address the government's own arrears in social assistance payments. Ways of formalizing informal activities, by making it easier for informal businesses to be registered or to enforce necessary bankruptcy laws and other legal institutions to penalize enterprises that do not conform, are necessary to address these issues. I.M.F. (1998) provides evidence from the mid-1990s to suggest there are signs of progress particularly in terms of State budgetary reforms and reducing the fiscal debt, as well as further progress in the privatization of remaining State enterprises. Even during the writing of this thesis improvements in the social safety net provided by the State were being implemented in the form of a means tested benefit to guarantee a minimum standard of living for all. The provision of such benefits, including improvements in pensions payments, should provide better economic support for those most in need.

Taking these findings together, this thesis has shown the slow adjustment of the labour market and its consequences to welfare in light of the reforms in the Kyrgyz Republic. The reluctance to implement the necessary institutions, and other laws in order to make the reforms effective, can be seen to be part of a process of learning by the Government given the new environment where decisions are no longer determined by a central authority in Moscow. It can also be seen as a way for the State to moderate the severe impacts of

rapid adjustments on the economy by gradually installing the necessarily legislation and institutions. The negative effects of the reforms are likely to cause social unrest and have ramifications to the existing power base. Hence the political considerations of the speed of reform are likely to have much more of an impact on Government decision-making than the theoretical economic considerations. This would explain why reforms have been slow in an economy not used to change and explain the divergences from conventional theoretical economic considerations.

This thesis however reflects the pace of reform until the mid 1990s. Further analysis on the Kyrgyz Republic will shed light on how the economy further evolves and sustains its new independent existence given its historical roots.

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