# Educational Inequalities in Transition: the Cases of Russia and Georgia

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**Educational Inequalities in Transition: the Case of Russia and Georgia**

Researcher declaration to accompany the submission of written work Department of Political and Social Sciences - Doctoral Programme

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# Table of Contents

## INDEX OF TABLES

**INDEX OF FIGURES**

# Summary of the thesis

Whether formal education can equalize life chances of people with different backgrounds, or further exacerbate inequalities that inevitably exist in any society, depends largely on how equally the chances to attain education are distributed among different socio-economic groups. Large-scale political, socio-economic, institutional and structural transformations that newly independent republics underwent in the immediate aftermath of the breakup of the Soviet Union 25 years ago was bound to substantially change the distribution of those chances.

Bridging the post-communist area studies with the social science scholarship on educational inequalities, with this thesis I study how inequalities in educational attainment changed in post-Soviet Russia and Georgia and what were broader implications of any such change.

Using Gender and Generations Survey data from Russia and Georgia I have examined how chances of attaining various levels of education changed for people born to parents with different social status. I have used a merged dataset of repeated cross-sectional national survey from Russia to examine if returns to educational attainment changed during 1990s and 2000s.

I find that while educational inequality has increased in both countries, particularly in attaining secondary education, returns to educational attainment, understandably small in the Soviet Union, did not increase much. This leads me to conclude that increasing educational inequalities did not contribute to the well-documented surge of income inequality.

Finally, I used quasi-experimental approach to estimate the effect of the introduction of standardized university admissions examinations on the chances of access to highly selective universities. I find moderate support for the hypothesis that the standardized exams have equalized chances of students from various backgrounds to be admitted to selective universities.

# Acknowledgements

# Introduction

The year 2016 marked the 25th anniversary of the end of what has often been referred to as the great socialist experiment: in December 1991 the Soviet Union formally ceased to exist. Several years of top-down economic reform efforts initiated by the Moscow governing elite in an effort to slowly transform the system from within proved futile. Independence movements swept through almost all the republics of the Soviet Union and 15 new independent states emerged. The geopolitical significance of this event has been studied countless times since and cannot possibly be overstated: decades of the Cold War came to an end and the global world order changed forever (Zubok, 2004; Garthoff, 1994). But on top of the global-scale geopolitical changes, each newly-independent republic was experiencing a set of socio-economic, political and cultural transformations, which had a profound impact upon the lives of the people living in these countries and which still affect the ways these countries are developing.

The world's biggest country, created in the aftermath of the bloody October Socialist Revolution and ensuing Civil War, was a unique phenomenon both in its form and substance. It consisted of 15 republics representing the widest ranging cultures and histories imaginable, stretching from the shores of the Baltic Sea to the Siberian steppes. The Union of Soviet Socialist Republics (USSR) will, however, always be remembered first and foremost as the country that embarked on an unprecedented experiment to abolish all sorts of private ownership of resources and to institute state socialism and a classless society.

Rooting out private ownership and instituting a centrally-planned economy was the key effort of the Bolshevik Government, which was first manifested in wartime Communism during the Revolutionary War of 1918-1922 (Male, 2002). The war left the economy crumbling, which in its turn threatened to crush the spirits of and demotivate the impoverished workers and peasants. Fearing the popular reaction, in 1921 Lenin declared the introduction of a set of measures termed the New Economic Policy (NEP). It implied reversing the wartime policy of full nationalization of assets. A mixture of public and private ownership was introduced with small farmers and entrepreneurs allowed to conduct economic activities while large companies and heavy industry remained under state control. As NEP was thought to be only a temporary measure to stimulate the economy, by the end of 1920s the country had reverted back to a centralized economy under the leadership of Stalin and state five-year plans were introduced (Davies, Harrison and Wheatcroft, 1994).

From then on until the end of 1980s with minor exceptions the Soviet economy was fully state-controlled and centralized while the free market and private ownership were banished. The country was built on the premise of the total control of the means of production by the people, absolute equality and a classless society. Soviet ideologists and regime scholars maintained that the equal distribution of the means of production among the entire population of the USSR guaranteed that nobody held a privileged position and that everybody was subsequently an equal possessor of status symbols, such as education, power, occupation, wealth, etc.

It has, however, been evidenced over and over again both during the existence of the Soviet Union and particularly after it was dissolved that Soviet social equality and its classless society were merely a myth, and that Soviet society, particularly in the post-World War II period, was strongly stratified (Dobson, 1977; Yanowitch, 1977), even if the nature of the stratification was different from that observed in Western countries. Still, Soviet society was built on the ideological premise of equality and the state possessed all the means to promote its ideological agenda, above all the centrally-planned economy; as wage levels were set centrally by the state, household income differences could not have been vast, at least formally. At the same time, near universal access to healthcare, early childhood education and other public services, including leisure and recreational activities, was to ensure that all citizens enjoyed a relatively equal standard of well-being. Indeed, based on the limited data available from Soviet times, it is clear that wage differentials between people with different qualifications and occupational statuses were quite small (State Committee of the USSR for Statistics, 1987).

The breakup of the USSR in 1991 brought an end to this state of affairs – the centrally-planned economy was dismantled and market reforms swiftly ensued in each of the newly independent republics. As central control over salary levels was lifted, income differences naturally increased. Rapid privatization of nationally-held assets benefited some groups of the population while others lagged behind (Milanovic, 1998). In addition to the marketization of economy, each of the republics suffered from severe economic decline and shrinking industrial output. Public spending was accordingly slashed and most subsidized services were cut or reduced. Further, privatization of many services created the basis for segregated access to services of varying quality for different groups of the population.

Even without much theoretical insight into the mechanisms of producing inequalities, or much empirical evidence, one would assume that the above factors together should have caused

an increase in inequalities. Common sense suggests that replacing state socialism with a capitalist system is bound to increase the divide between different groups of people. And indeed, when we look at the most widely accepted indicator – income inequality expressed by the Gini coefficient, we can see that inequality rose steeply in all the post-Soviet countries during the 1990s (Mitra and Selowsky, 2002a; World Bank, 1996).

What can we assume about the intergenerational transmission of privilege based on the evidence of increased income inequality? Recent studies have produced ample evidence of the positive relationship between the two phenomena. The 'Great Gatsby curve', thus named by economists after the character in F. Scott Fitzgerald's famous novel, shows that the higher income inequality in a given country, the lower the rate of intergenerational mobility measured as the elasticity between parental earnings and an adult son's earnings (Corak, 2013).[1] A positive relation between the level of economic inequality at a given time period and the extent to which parents transmit privilege to their children can be predicted from classic economic theories and education notably plays the role of the key link between the two. Human capital theory assumes that richer parents are able to invest more, or to invest more efficiently in their children's knowledge, skills, health, etc. (Becker and Lewis, 1973).

Gary Solon, expanding on the theory of human capital, assumed in his model that intergenerational transmission of skills, health and other characteristics through genetic factors is the same across all countries and systems. What makes a difference for intergenerational mobility, according to Solon's model, is the level of income inequality and government investments in public education to enhance the educational success of children from low-income families (Solon, 1999). There is some evidence showing that in countries with greater levels of inequality, the association between one's own education and one's parents' education is stronger although this in no way implies a causal relationship (Hertz et al., 2007). In other words, depending on the commitment to public education and the given level of inequality, education can serve either as an equalizer or as a stratifier.

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[1] The soundness of the Great Gatsby Curve assumptions has been called into question multiple times since. The assumptions have most often been applied to the case of the USA, arguing that increasing inequality in American society should lead to unprecedented levels of a fall in social mobility in the future (Krueger, 2012). However, further research has shown that the rise in the level of inequality is, in fact, not associated with the decline in the level of social mobility (Chetty et al., 2014). Moreover, the assumptions of the 'Curve' change entirely if absolute, not relative, mobility is considered (Gilbert, 2016).

Post-Soviet countries represent an interesting case for testing the validity of the assumption of this theoretical model that higher inequality is associated or even causes less social mobility. During the 1990s income inequality increased substantially in these countries within a few years and public funding for education shrank. In addition, there was a massive privatization of costs in higher education and newly-emerged self-employment opportunities arose, which would have been particularly attractive for young people from lower socio-economic backgrounds.

On the other hand, the introduction of market reforms also pushed for the emergence of new educational opportunities and the lifting of central control on the numbers of admissions, particularly in higher education, thus expanding access. Besides, as the value of human capital was expected to increase in the market economy (Nee, 1989), young people, particularly from less privileged backgrounds, would be more willing to invest in time and effort in education with the prospect of improving life opportunities.

These mechanisms (educational expansion and higher educational returns) could have pulled intergenerational educational inequalities in different directions during the early transition years. This thesis sets out to the examine empirical evidence on how the effect of parental background on one's educational attainments changed in the aftermath of the breakup of the Soviet Union in two post-Soviet republics: Russia and Georgia. The choice of the two cases was determined by several factors, including the characteristics of the countries as well as certain economic and policy developments, the implications of which are explored in the four empirical chapters of the thesis.

### *Choice of cases*
The two countries, while both sharing the long history of being part of the Soviet Union, are very different from each other, if only by sheer magnitude. Russia, the founder and the dominant republic of the USSR, is the biggest country in the world with an area covering over 17 million square kilometres and with about 145 million citizens. Georgia, on the other hand, a country with 70 thousand square meters of area, is home to fewer than 4 million people. Apart from the size and related differences (extent of ethnic, cultural and geographic diversity), the two countries differ in the structures of their economies, with Russia possessing a wealth of natural resources and Georgia hardly any. The economy of Soviet Russia was also much more heavy industry dependent while the Soviet Georgian economy was driven by light industry and agriculture. These differences were obviously manifested in education as well, particularly in

vocational education which provided the economy with its workforce (IMF, 1990). While the economies of both countries suffered after the breakup of the Soviet Union, the scale of decline in Georgia was far greater, with the total disruption of all industrial production and economic activity in general. This, as we shall see, had significant implications for the labour market as well as the educational system.

Post-Soviet countries witnessed certain developments in educational access and enrolment rates that are unique in their nature. Globally, the trend in educational enrolments has moved upwards throughout the last 100 years (Meyer, Ramirez and Soysal, 1992). This is true of every level of education. In the years following the breakup of the Soviet Union, in some cases we see the reversal of this trend. Both in Russia and Georgia we see that the rates of attaining secondary education shrink. The reasons for such unusual developments could have been multiple, including the emergence of self-employment opportunities in the labour market. Interestingly, governments took some active measures that encouraged young people to drop out earlier, such as imposing fees for upper secondary education in the case of Georgia and lowering the age for mandatory education in the case of Russia. We can expect that the drop in attainment rates would not have a uniform effect on all socio-economic groups. At the same time higher education expanded and, again, given that expansion mostly happened at the expense of the privatization of costs, we can question whether this would benefit certain groups more than the others.

But even before assessing this, the simple fact of more people receiving only basic education or less and more people entering higher education suggest that inequality in education, considered from an intragenerational perspective increased in the 1990s.

To sum up, enrolment (and presumably attainment) rates in higher education increased while enrolment rates in secondary education decreased. This thesis studies how much of this increased polarization in educational attainment can be attributed to social origins. Since the cases of shrinking access to education at any level of education are very rare, findings from this study can offer an important contribution to research on educational inequalities.

Russian society and its inequalities, understandably, have been the subject of numerous studies even prior to the breakup of the Soviet Union (Shubkin, 1965; Yanowitch, 1977). In more recent years scholars have studied how transition has affected inequalities in various sectors, including education (Gerber and Hout, 1995; Gerber, 2000). However, there are few up-to-date

studies that examine how the chances of gaining more education changed for the generation that had to make key educational choices in the 1990s, during the post-communist transition.

Russia, due to fluctuations in higher education enrolment rates and varying economic conditions also represents an interesting case to examine the changing effect of education in general, and university education in particular, on the returns to education in the ever-changing context.

Russia was also one of those countries, where university education reforms, particularly admissions reform, garnered substantial attention for its scope and potential impact on the inequalities in access to higher education[2]. Therefore, Russia represents an appealing case to study the effect of this popular reform on educational inequalities.

In the case of Georgia, on the other hand, studies in educational inequalities are limited to policy reports from various international organizations focusing on inequalities in educational opportunities and outcomes for young people at a given moment in time (Salmi and Andguladze, 2012; UNICEF, 2007; World Bank, 2009a). However, there is no empirical evidence on how the chances of attaining different levels of education have changed during the years of post-communist transition for people with different socio-economic backgrounds.

Another reason why I deem Georgia a good case study for this thesis is the scope of its economic transformations which included a spectacular decline of industrial production. This, in its turn, resulted in substantially shrinking vocational education sector, which was a backbone of the Soviet economy. This had potential repercussions for educational inequalities which are explored in this thesis.

### *Theoretical background*

Beyond exploring the long-term trends in the changing inequalities in educational attainment in the two countries, this thesis engages in the examination of the phenomena that are thought to be important factors in explaining why and how educational inequalities emerge, persist, or decline. In this respect, the larger theoretical premise of the thesis is loosely based upon the model of educational decision-making introduced by Breen and Goldthorpe, the central concept of which is relative risk aversion, i.e. the idea that the major goal of young people and

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[2] One of the few other countries, incidentally, is Georgia. However, due to the lack of relevant data it is impossible to study the impact of the exams on educational inequalities.

their families, when choosing their educational careers, is to achieve the level of education which allows them to attain at least the same class position that their parents have, or in other words to avoid downward social mobility at any cost.

The two other mechanisms through which the Breen-Goldthorpe model explains class differentials in educational attainment are expected utility and perceived probability of success. The former is essentially a cost-benefit analysis; it encompasses the direct costs of continuing education as well as opportunity costs such as foregone earnings and expected returns. The latter refers to the subjective expectation of overcoming the thresholds in place to access the next level of education (Breen and Goldthorpe, 1997). The different empirical chapters of the thesis reflect different aspects and components of these mechanisms.

Among the many substantial changes that the educational systems of the newly independent post-Soviet countries went through, the diminishing role of vocational education[3] was not of the least importance. Vocational education was considered an indispensable part of both the Soviet education system as well as the Soviet economy, as the system trained the workforce to engage in various sectors of centrally-planned industrial and agricultural production. As the economy collapsed, vocational education was dislocated from the industry it had previously been tied to, and consequently substantially shrank. In Georgia, this demise in vocational education was particularly spectacular: in the country, whose industry and agriculture were largely dependent on exports to other Soviet countries, production rates fell dramatically and many industries closed. The intake of students in vocational educational institutions, which supplied professionals for those industries, reduced accordingly, halving total student enrolments from the end of 1980s to the end of 1990s (Sealy, 2000).

Whether it was the supply of vocational education that fell, or demand from the side of students, or both coming together, this represents a very interesting case and opens up space in which to ask the question: what became of the students who would have opted to complete vocational education had they not been caught up in the havoc of the post-communist transition? Accepting the central premise of the Breen-Goldthorpe model that individuals would do anything to avoid downward social mobility, what paths have young people coming from different socio-

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[3] 'Primary vocational education' and 'secondary vocational education' will be used throughout this thesis to refer to the two levels of educational training in the Soviet Union designed to equip students with specific occupational skills

economic background chosen in the absence of vocational education opportunities? With the dramatic fall in enrolment rates in vocational education enrolments in the 1990s, Georgia represents a suitable case through which to look for an answer to this question. All the more so that vocational education is now becoming an increasingly popular topic among Georgian education policy-makers and experts as well as the wider public.

Another topic this thesis touches upon is the expansion of higher education in the post-Soviet era and its consequences. In some countries, the expansion was spectacular, triggered by a number of factors, perhaps the most important among them being the privatization of costs. This happened through: i. emerging private universities; and ii. The introduction of fee-paying tracks at public universities. If the numbers of students who could access higher education had previously been centrally controlled, after 1991 almost anybody who could pay for it, had the opportunity to go to university. And indeed, enrolments in higher education sharply increased almost everywhere in the 1990s (Smolentseva, 2016). This trend was very apparent in Russia, where cohort participation rates more than doubled by the end of the 1990s and beginning of the 2000s, after a brief period of decline at the beginning of the 1990s (Platonova and Semyonov, 2016). Here we have a situation where, on the one hand, it is very logical to expect a downward trend in educational inequality as access increases massively; on the other hand, most, if not all, of this increase came at the expense of an imposed tuition fee, whether at public or private universities. So another logical assumption to make, in line with the Breen-Goldthorpe model of decision-making, is that it is the privileged class who would potentially benefit most from such an expansion.

Another factor that should be considered in the light of higher education expansion is if university credentials loose value as they become more widespread. Many scholars have assumed this to be expected and it has been described as credential inflation (Collins, 1979). However, the evidence is not conclusive, mainly due to the difficulty in establishing a causal relationship. Educational expansion has, in many cases, been contemporaneous with technological advancements. This makes it difficult to disentangle the effect of expansion per se, since technological developments might either increase the returns of more education or decrease the returns of less education (as many low-qualification jobs are replaced through automation). Therefore, these two forces – expansion and technological advancement might have acted as mechanisms pulling earning differentials by education in different directions and therefore

making it often impossible to draw conclusions (Demetriades and Psacharopoulos, 1987). Goldin and Katz (2007) have found that while the increase in the relative supply of high school skills reduced educational pay gap throughout the 20th century up to the 1980s, from then on, the slowdown in the relative supply of college skills has, in fact, increased wage premiums for the highly educated (Goldin and Katz, 2007).

The massive expansion of enrolments in higher education in many post-Soviet countries offers a good opportunity to study the potential devaluation of educational credentials. However, in this case there are other factors, and not technological advancements that might have affected the process. The marketization of the economy, privatization of public assets, economic decline – all could have changed labour market demands and structure in substantial ways. But looking at how rates of returns to higher education changed throughout the course of its massive expansion in the Russian Federation will offer an important contribution to the body of literature on the costs and benefits of higher education in changing societies. This is the topic of another empirical section of the thesis, studying the economic returns to receiving more higher education in Russia throughout 1990s and the beginning of 2000s.

The next major topic of this thesis shifts the discussion to the operation of educational systems. Institutional constraints in the form of thresholds to access higher levels of education are one of the major issues in educational decision-making theories, including the Breen-Goldthorpe model. High-stakes standardized testing for accessing higher education is one such barrier and there are reasons to believe that such exams can affect the chances of admission for applicants with different socio-economic backgrounds differently. Standardized exams have long been one of the most widely debated topics in educational research. Often considered within the framework of rising neoliberal education policies (Connell, 2013; David, 2007), educators worldwide have criticized using standardized testing as a means of evaluating individual or institutional performance as unfair both in terms of the purposes of education as well as for social equity (Altshuler and Schautz, 2006; Dworkin, 2005; Hout et al., 2011; Nichols and Berliner, 2007; Ravitch, 2010).

This has been a particularly acute issue in the USA, where standardized tests have been used to assess the performance of schools. When used as an efficient measure to evaluate how schools perform, standardized testing systems, it has been argued, overlook the socio-economic

realities of schools and might unjustly punish disadvantaged schools which are, in fact, making progress in educational outcomes (Boaler, 2003; Hursch, 2007).

At the individual level, students from privileged socio-economic backgrounds consistently perform much higher compared to their less advantaged peers (Camara and Schmidt, 1999; Jencks and Phillips, 2011). This presents a problem, if admissions evaluation is not comprehensive and predominantly or exclusively (as in the case of some post-Soviet countries) depends on the outcomes of the tests. Besides, there is evidence that students from privileged backgrounds benefit from the so-called 'shadow education' – costly test-preparation tutoring – even in the USA, where the tests are used for admissions in combination with other methods (school performance, social activities, etc.) (Buchmann, Condron and Roscigno, 2010). Due to these reasons, many public universities in the USA are moving away from using standardized tests as the means of admission (Anderson, 2015).

Riding the wave of neoliberal policies and marketization of higher education, post-Soviet countries, by the end of 1990s and beginning of 2000s had introduced strikingly similar sets of reforms for funding and access to universities. Designed based on the principles of competitiveness, transparency and meritocracy, these reforms focused on the privatization of services, reduction of public funding and the introduction of standardized testing for admission to universities. The latter has been particularly important as, together with promoting meritocracy and competitiveness among applicants, it aimed to eradicate rampant corruption in university admissions. Proponents of using standardized tests for admissions in these countries claim that through the reduction of bribery and the use of social networks, testing can improve the chances of disadvantaged but talented students. Putting aside the unfavourable views of standardized testing among educationalists, it is important to examine whether such a system of admissions does in fact contribute to the increasing chances of talented, but socio-economically less privileged individuals of accessing good higher education institutions. This is another topic of investigation in the thesis, using the example of the piloting and introduction of standardized examinations in the Russian Federation.

### *Research questions and thesis outline*

To sum up, this thesis contributes empirical evidence to the existing scholarship in sociology and educational research in several ways. Firstly, it adds to the body of research on changes in educational inequalities throughout the second half of the twentieth century by

updating the existing evidence on Russia and introducing the case of Georgia, which has never been previously researched from this perspective. Second, it explores the effects of the shrinkage of certain sectors of education for people with different socio-economic backgrounds. As most educational inequality research focuses on the expansion of educational access, not its contraction, this is an interesting case and the findings can offer a hint of what might happen if educational contractions were to happen in other settings as well. As a bigger question, the thesis strives to answer who were the losers and winners in the post-communist transitions? And how does the transition from a socialist to market system affect inequalities in a society?

To take a step even further back, the starting premise of this thesis can be a more universally applicable question: why should we be concerned about educational inequalities? A recent report produced by IMF chief economists acknowledges the deep shortcomings of a wide range of policies focused on deregulation, privatization and austerity, collectively referred to as 'neoliberalism', pushed forward by, among other organizations, the IMF itself. The authors of the report argue that these very policies could exacerbate inequalities, ultimately posing a threat to economic growth and progress. They claim that the economic damage arising from inequalities should prompt policy-makers to be more open to redistributive policies than they are now. Moreover, they call on governments to support the so-called 'predistributive policies' – i.e. investing in education and training (Ostry, Loungani and Furceri, 2016). In contrast to redistribution – trying to address inequalities through taxes and transfers once they are already present – 'predistribution' attempts to prevent the emergence of these inequalities in the first place (Hacker, 2011). Providing high-quality public services, including education, is one of the ways to support 'predistribution', as proponents of the term hold. That is, investing in good public education can help avoid the emergence of inequalities or that they will emerge to a lesser extent thus eliminating the need for extensive redistributive policies.

Of course, this view of education as an equalizer rests on two important premises: that everybody should have equal access to more or less similar quality education and that returns to education are equal for everyone. If some groups have easier access to quality education, or manage to benefit more from having a formal education, then education as a social equalizer and a predistributive agency is not very effective.

Bernardi and Ballarino (2016), in their comparative study of the direct effect of social origins on destinations in 14 countries, theoretically formalize the concepts of education as a

great social equalizer (EGE) and education-based meritocracies (EBM). The former assumes that once individuals have similar educational attainments, they should attain the same social status no matter what their socio-economic, demographic, racial, ethnic and other characteristics are. The latter, the authors contend, is the setting where the direct effect of origins on destinations, net of education, is non-existent. The authors generally find no decreasing effect of origins on destination and that modern societies are far from being EBM (Bernardi and Ballarino, 2016).

One dimension that might be overlooked in many studies on the role of education in social mobility, is the quality of educational credentials. Some educational institutions, particularly when it comes to higher education, have the capacity to produce graduates who have a more competitive edge in the labour market. Whether this is due to the quality of the said universities or due to their prestige may not be entirely clear, but this can be an important new dimension of stratification, particularly as educational attainment expands.

Specific research questions that I set out to answer in various empirical chapters of this thesis, are related to this concept of education as a social equalizer and whether the role has changed in post-Soviet Russia and Georgia, namely whether inequality in educational attainment has increased during the transition and whether returns to educational credentials have changed uniformly across all groups. In addition, in order to address the above-mentioned new dimension of educational inequality, I examine the chances of access to selective universities for children with diverse backgrounds and the effects of recent educational policies on those chances.

The thesis is organized as follows: the first chapter provides a detailed overview of the Soviet educational system, social inequalities and class relations in the Soviet Union. It goes on to examine changes in the economy, societal relations and educational systems during the post-communist transition in the 1990s. The second chapter outlines the theoretical framework for the thesis, focusing on the origins of educational inequalities, factors that affect changes in inequalities over time, the expansion and contraction of educational enrolments and the implications for different socio-economic groups. In this chapter I attempt to adapt the conventional theories to the realities of post-communist societies.

The next four chapters examine empirical evidence in order to answer the following specific research questions:

- *How have educational inequalities changed in post-Soviet Russia and Georgia?*

The third chapter will examine empirical data on the trends of inequalities in educational attainment in Russia and Georgia over the past decade with particular emphasis on uncovering patterns during the transitional years of the 1990s.

- *How has the decline of vocational education in Georgia affected educational inequalities?*

The fourth chapter, and the second empirical piece, explores how the massive reduction in enrolments in vocational education in Georgia in the 1990s affected different population groups and what were the alternative paths they pursued.

- *Did returns to educational attainment change in Russia during the 1990s and 2000s?*

The next empirical section of the thesis examines if returns to educational credentials changed in view of market transition, economic fluctuations and the expansion of higher education, and whether the changes have been consistent across different groups.

- *Did the introduction of standardized admissions examinations equalize the chances of access to selective universities?*

The final empirical section looks at the effects of a very significant education policy – the introduction of standardized university admissions examinations – on students' chances of accessing top-tier higher education in Russia. Using a quasi-experimental approach, I try to establish the causal effect of the examinations.

The final section concludes the thesis with the discussion.

# Chapter 1 Soviet and post-Soviet context

The Soviet Union, often referred to as 'the great socialist experiment', was indeed a unique phenomenon in world history due to its political, economic and social structure. Throughout its 75 years of existence, the lives, fates and mindsets of the citizens of its 15 republics were definitively shaped by that political and social structure. It is difficult to apply theoretical concepts and empirical measures used in Western scholarship for studying predominantly traditionally Western societies to a fundamentally different one without understanding the history and socio-economic texture of that society. In this chapter I provide the background against which educational inequalities in the Soviet Union and post-Soviet countries can be examined. Specifically, I focus first on understanding the concept of social class, class relations and their development over time in the Soviet Union. Next, I describe the educational system and educational policies during the Soviet period and during the post-soviet transition. I also provide an overview of existing empirical evidence on the effect of parental social background on inequalities in educational attainment both during Soviet times and during the transitional period.

## *Social/occupational structure in the Soviet Union*

Rapid changes that took place immediately after the breakup of the Soviet Union offer rich material for understanding how certain institutional and structural changes might affect social stratification and inequalities. One obvious difficulty when examining social stratification in the post-Soviet countries both during the Soviet period and after the breakup is the applicability of the conventional understanding of the concept of social class as used in the Western sociological tradition. Before starting any analysis of social inequalities and mobility it is important to understand what kind of social structure was in place in the Soviet Union and how it changed in the transitional period.

### Social Class and Stratification in the Soviet Union

There is no doubt about the fact, that Soviet society was a divided one where some groups had more access to monetary, social, cultural and other kinds of privileges than others. Throughout the lengthy history of its existence, however, the actual structure of those divisions, as well as the official Soviet position on what they were like, was transformed many times.

The officially-proclaimed goal of the Soviet Union was to create a classless society and many Soviet as well as Western scholars made an attempt to suggest that this goal of eradicating class distinctions was coming true (Feldmesser, 1970; Shubkin, 1965). Class divisions were not acknowledged by the Soviet government in the beginning, throughout the Stalinist era and through the 1950s. Rather than arguing that the Soviet society was completely classless, the official position of the government was that it consisted of only two classes: peasants and workers. In addition to these there was the intelligentsia, which was not a class but a stratum within the two classes (Titma, Tuma and Roosma, 2003; Yanowitch, 1977).

Objective scholarship in the social sciences was not exactly encouraged by the Soviet government, but Western scholars always took a great interest in studying social class and occupational structure of the Soviet Union. The first major study on Soviet class structure was conducted within the Harvard Project on the Soviet Social System during 1950-53. The study, however, only included the Soviet refugees to Germany, Austria and the USA and therefore the sample was heavily self-selective. Nevertheless, based on the data gathered from 2100 participants, a tentative scale of occupational prestige in the Soviet Union was constructed. Despite the bias of the sample it can be assumed that agricultural workers were placed on the bottom of the prestige scale, preceded by manual workers and non-manual workers, while the intellectual professions were ranked highest (Inkeles, 1959).

Several local studies conducted in the Soviet Union during the 1960s by Soviet scholars examined social status and class relations. Most of these attempts were based on assessing the prestige of different occupations and aggregating the results into different class categories. This was mostly done through secondary school student surveys, parent surveys interviewing them on the desirability of different occupations for their children and plans for the future occupation of the students (Shubkin, 1965). These studies have demonstrated consistent results in which types of occupation were considered attractive by Soviet citizens (Yanowitch, 1969). In addition to the officially proclaimed divisions between workers and peasants and the 'intelligentsia', a clear distinction was made between manual and non-manual workers (Parkin, 1972).

The claim about the Soviet Union being a classless society was based on the argument about the absence of the private means of production as the stratification of society along class lines happens according to individuals' relation to the production and acquisition of goods (Weber, 1968). Income in the Soviet Union is also not a good tool to use to describe societal

divisions, as levels of household income were determined by centrally set wages (Slay, 2009). It does not, by any means, suggest that there was no income inequality in the Soviet Union. Data on earlier years is largely not available, but data from the 1980s suggests that the GINI coefficient in different Soviet republics by 1988 varied from 0.242 to 0.318 (Alexeev and Gaddy, 1993). This was roughly similar to the GINI distribution in EU countries at the same period of time, with Sweden displaying the lowest level of inequality with the GINI of 21, UK – the highest with the GINI of 37 and others in between (Italy – 0.31, Germany – 0.25 etc.) (Milanovic, 2011; OECD, 2011).

But the association between occupation and income was not always as one might expect from the experiences of Western societies. As the Soviet Union glorified manual work, professionals, such as teachers and even doctors, were often paid at the same rate as blue-collar workers (State Committee of the USSR for Statistics, 1987). At the same time, most public services were fully subsidized. This applied not only to healthcare, education, childcare and other standard services, but even to recreational and leisure activities. In addition, there were restrictions imposed, at least formally, on the types of material wealth a person could accrue, such as the size of a house, number of cars owned, etc. Therefore, in terms of income, as well as access to goods, formally there were few differences between occupational groups. However, as it later transpired, leaders and managers in the Soviet (and other socialist) societies were able to accrue much bigger personal wealth then previously believed and at the same time, there was substantial part of population that was living in poverty. So, in fact, actual socioeconomic inequality was underestimated through formal income inequality numbers (Lenski, 2011).

Even so, the level of economic inequality in the Soviet societies was definitely much smaller in scope compared to the Western societies. Thus, because of the relatively small importance of wealth accumulation and income, status privilege in the Soviet Union was somewhat more elusive than it was in Western societies. However, certainly, the private ownership of the production of goods, and income is not the sole determinant of class divisions. Some other traditionally considered determinants, such as skills, credentials, authority, cultural status symbols, etc. have all been present in Soviet society and the Soviet class structure has often been described exactly along these dimensions (Konrad, 1979).

Gerber, while discussing intergenerational social mobility, focuses on two major factors that might have been the most important in determining the class structure in the Soviet Union:

education-based skills and expertise and bureaucratic authority reflected in party membership (Gerber, 2004). When talking about educational credentials, there are opposing views as to why educational credentials could have been more or less important in the process of social stratification in the Soviet Union than in Western industrial societies. On the one hand, in the absence of a market economy and the opportunities for self-employment, education can be the only way of moving up the social ladder and thus can be theorized as having more value attached to it compared to Western countries (Inkeles, 1966). On the other hand, however, if returns to education were not high enough and doctors were making as much money as blue-collar workers, it would not make sense to invest too much effort and time in education.

Education-based skills, however, had more appeal, perhaps, for non-monetary reasons. Firstly, professional groups had much better access to high-quality public services, facilities and goods described above, than blue-collar workers. Professionals also had better access to social networks with various legal, semi-legal and illegal benefits. At the same time, having a blue-collar job at the beginning of one's career could help one get into the Communist party and climb up the party bureaucracy ladder.

Communist party affiliation could have been another factor along which intragenerational as well as intergenerational social distinctions were produced and maintained. Gerber and Hout have found that controlling for other factors, children of Communist Party members were more likely to proceed to the next level of formal education. The fact that they found this effect to have endured in the post-Soviet era, led them to conclude that party affiliation was the sign of social capital, or family ambition, more so than the sign of political status (Gerber and Hout, 1995).

We can single out several periods in Soviet history when the most important changes in the social composition of the population took place. During the 1920s the Soviet leadership exercised a deliberate effort to create the 'Socialist intelligentsia', which triggered the considerable mobility of the working class to specialist occupations (Fitzpatrick, 1979). However, these policies of direct controlled transfer from one occupational class to the other were changed after the 1930s and from that period onwards targeted measures of educational expansion (discussed in greater detail in the next section) were the main means of promoting social mobility.

One further massive shift in occupational structure happened in the 1930s and 1940s at the same time with mass industrialization all over the Soviet Union, when great numbers of peasants moved into the working class to meet the demand for the labour force of the newly-established giant industries (Connor, 1991).

An analysis of the highly localized data from some parts of Russia during 1960s and 1970s has shown that the rates of association between parental origin and the destination of offspring was indeed present from the early years of the Soviet Union and it was in fact getting stronger by the mid-1970s (Dobson, 1977; Yanowitch, 1977).

In the most comprehensive post-transitional study of intergenerational social mobility in Russia, Gerber and Hout (2004) confirmed the findings of Soviet-period local studies about the rather strong association between one's social origins and destinations, analysing the data from the cumulative dataset of pre-transitional and post-transitional surveys. They argue that education and party membership were the key characteristics through which social advantage was transferred from parents to children. More interestingly, they also find and report the strengthening of the association between the origins and destinations during the post-communist transition. Furthermore, they find that respondents who experienced substantial upward mobility in the pre-transition period, were downwardly mobile during the transition thus reversing some of the mobility trends (Gerber and Hout, 2004).

### *The educational system in the Soviet Union and during the post-soviet transition*

When 15 Soviet republics became independent, they inherited an education system that was designed for and adapted to a large, centralized economy managed by the State Planning Committee. The educational system in the Soviet Union, although changing in its character and structure, was highly centralized and standardized across all the republics throughout the whole period of its existence. This education system was the backbone of the Soviet command economy, preparing a skilled workforce for the labour market. It was therefore highly standardized and centralized in terms of structure, curriculum, enrolment levels, teacher qualifications, etc. Within the framework of Soviet ideology, education was not defined as a matter of individual development and personal choice, but rather as a resource for achieving shared Communist goals (Gerber, 2003). This called for entirely unfettered access to educational opportunities for all.

General education in the Soviet Union lasted for 10 or 11 years at different times and consisted of primary school (grades 1 through 4), lower secondary (grades 5 through 7 or 8[4]), and upper secondary school (grades 8 through 10 or 9 through 11). The first two of these levels were compulsory. After the completion of the lower secondary education students could opt out of the educational system entirely and find opportunities in the labour market. Another option was to continue on to the academic upper secondary track in order to enrol in a university later. Alternatively, students could enter a vocational education track. Within vocational education the distinction was made between primary vocational and secondary vocational education institutions. Primary vocational education was provided at professional-technical schools (PTU). PTUs were designed to train workers for manual jobs and the Soviet government, in an effort to gain respect for those jobs, attempted to popularize them and make them more attractive, even offering financial incentives. As a result of the reform in the 1960s, a new type of PTUs was introduced, called SPTUs, which, together with vocational education, also provided general education and awarded the school finishing certificate. Despite these changes and governmental efforts, primary vocational education remained the least desired option and attracted only students with learning difficulties or those who, due to family background or other reasons, could not continue onto the academic track (Matthews, 2014).

Higher-level vocational training was available for some specialized professions and was provided by specialized secondary schools (SSUZ). These specialized schools prepared mid-range non-manual workers for various industries. This was the main distinction between the content of primary and secondary vocational education. Unlike primary vocational education, which became a structurally homogenous system only after the War in the 1950s, the system of SSUZs was instituted in the 1930s by the then People's Commission, in recognition of the need for an intermediary stage of education between general schools and universities. The type of professions that SSUZ prepared students for varied and included technologists, nurses, accountants, librarians, etc. SSUZs provided secondary school diplomas together with the vocational credentials.

Finally, one-tier tertiary education was available at universities and specialized institutes. Admission to tertiary education was conditional on the completion of secondary education and

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[4] Primary and lower secondary levels – or the first nine years of general education – will be referred to as 'basic education' throughout this thesis.

passing competitive admissions examinations. In principal, graduates of SSUZs also had the chance to access higher education. In practice, however, this was rarely the case. The number of students to be admitted was strictly regulated and centralized (Dobson, 1977). Tertiary education institutions, or VUZs, were roughly divided into four different types: universities, offering a broad education in a wide range of disciplines; specialized professional institutes preparing professionals for specific disciplines such as medical institutes, polytechnic institutes, and agricultural institutes; pedagogical institutes for training teachers; and institutes training professionals in the arts and culture, such as arts academies, theatre schools, etc. So even tertiary education was highly specialized and in most cases students upon graduation received the credentials/license of the professional – a teacher, a doctor, etc. (Savelyev, Zuyev and Galagan, 1990). Despite the relatively low rates of monetary returns to education, the tertiary education option was undoubtedly the most prestigious and attractive of all. However, there were huge differences within tertiary education in terms of the prestige of various institutions and departments.

Throughout most of the 1990s, the basic structure of educational levels stayed almost the same in all post-Soviet countries. One major change in terms of the structure of the educational system was the introduction of a two-tier system of university education: one-tier five-year university education was replaced by four-year undergraduate and two-year master level studies.[5] In general, throughout the 1990s in most post-Soviet countries the educational systems continued to function largely in a state of inertia from Soviet times. The changes that did take place were in most cases not part of well thought-out national strategies, but rather haphazard developments.

## Educational expansion in the Soviet Union

Throughout the existence of the Soviet Union access to various levels of education expanded in several waves at different periods of time. Each time the expansion had implications for equality of access.

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[5] The two-tier higher education structure (four-year bachelor and two-year master's programs) is one of the key components of the Bologna Process designed for the rapprochement of European educational systems. Many post-Soviet countries were quick to introduce the two-tier system in the 1990s, even before many EU countries did. All post-Soviet countries (except the Central Asian republics with the exception of Kazakhstan) later joined the Bologna Process

The vast majority of the population in Tsarist Russia consisted of illiterate peasants. The estimates vary, but even according to the most favourable accounts, only under 40 percent of the population could read and write by 1914. Other accounts estimate literacy at 10 percent at the turn of the 20th century (Arnove, 2008). Right after the Great October Revolution the Soviet Government started implementing aggressive policies against illiteracy everywhere in the country through nationalizing education and making it compulsory. It was due to such aggressive educational policies that the literacy rate of the Soviet population grew to over 90% in the 1940s (Zajda, 1980).

Primary education participation rates dramatically increased before the Second World War and reached almost universal coverage already in the mid-1930s. Opportunities at upper levels of education expanded after the War reaching a peak in the 1960s. The massive expansion of educational participation was taking place at a much higher pace than the population growth. Lower secondary education was officially made compulsory in 1949 (Inkeles, 1959). Following this policy, almost universal lower secondary enrolment was achieved in urban areas by the mid-1960s (Matthews, 1972) and all over the Soviet Union in the mid-1970s (Zajda, 1980).

Access to upper secondary and tertiary levels was more complicated. To start with, based on the structure of education described above the crucial point of making decisions came after finishing the lower secondary level of education. Continuing with the academic track provided the opportunity to go on to a university-level education. While in theory it was possible to complete the general upper secondary in parallel with the vocational track, there were additional requirements for vocational school graduates to enter university (such as having at least three years working experience, to which vocational school graduates were centrally allocated) and in addition, university admissions examinations were so competitive that it was unlikely that those students who had chosen the vocational track would succeed in this competition (Fitzpatrick, 1979). Therefore, until enrolments in the upper secondary academic track were limited, this was the decisive point for making a decision about pursuing tertiary education.

A major change in this schema happened when universal general secondary education was declared an official goal of the Soviet Union in the mid-1960s. This goal was to be achieved by increasing opportunities for everybody to be enrolled in academic upper secondary tracks as well as adding an academic upper secondary component to the curricula in vocational training schools. The fact that all levels of general education were under the same administrative

management and housed in the same building made it easier to implement the targeted policy of upper secondary education expansion (Yanowitch, 1977).

By the 1960s, then, the number of young people either with an upper secondary academic diploma or with a supplemental upper secondary diploma from vocational schools had increased dramatically. This meant that there were more eligible applicants for post-secondary education. There was, however, neither the political will nor capacity to expand tertiary education opportunities at the same pace. There was a brief period, during Khrushchev's rule, when targeted policies were put in place to increase access to higher education, particularly for working-class children. Throughout the 1950s and through to the mid-1960s, in an effort to make higher education more accessible, quotas were established at the universities for certain social groups and distance learning courses were introduced. In addition, part-time study and distant learning courses were widely introduced in many higher education institutions in an apparent effort to improve access for less advantaged population, in particular those living in remote areas. Already by 1961 half of all the students of higher education were reported to be enrolled in evening or distant-learning programs (De Witt, 1961). These policies, however, did not resonate well with the privileged groups, who saw the extension of access to the working class as a threat to the access of their children. In addition, the heads of the educational institutions were not happy with working-class recruitments and distance learning programs, as they thought this approach lowered the standards of higher education. Subsequently, these policies were dropped or curtailed after the end of Khrushchev's premiership in 1964 and higher education again became more elitist (Matthews, 1972). By 1987, over 60 percent of all higher education enrollments were made up of full-time students, about 30 percent of students were attending distant learning program, and up to 10 percent – evening programs (Savelyev, Zuyev and Galagan, 1990). Consequently, as Gerber (1995) has shown in his analysis of the official Soviet enrolment data, enrolment in tertiary education that was conditional on the completion of upper secondary general school fell considerably – only just over 30% of upper secondary graduates enrolled in tertiary education in 1966 compared to 80% in 1961 (Gerber and Hout, 1995).

Thus, at first, when lower secondary education became compulsory and upper secondary education opportunities did not expand at an equal pace, participation rates in general upper secondary as a proportion of lower secondary graduates declined. Later however, when the goal of universal general upper secondary education was declared, this trend shifted one level higher,

this time showing discrepancies between the massive general upper secondary attendance and the relatively small tertiary education participation.

This kind of massive expansion of initially lower secondary and then upper secondary education has important implications for educational inequalities as the inevitable question of who benefits from the expansion arises. Whether or not the increasing opportunities are equally available for all groups is the key question to ask when examining the effects of expansion on inequalities.[6]

## Inequalities in education in the Soviet Union

As mentioned in the previous section, the studies regarding the specific impact of social origins on one's life chances were not undertaken in the Soviet Union until the 1960s. As has been described above, one study that did venture to describe social divisions in the Soviet Union prior to the 1960s was the Harvard Project on the Soviet Social System. Based on the data collected through the project, Inkeles found signs of strong social stratification in the early Soviet Union and the relative advantage of the children of the intelligentsia and government agency employees in access to higher education compared to the rest of the population (Inkeles, 1950). The sample, however, was a strongly self-selected group of individuals who had migrated to the USA or Europe and was therefore not representative.

Later studies by Western scholars analysing information on the social background of students also found that the children of educated parents and parents with a higher occupational status (non-manual and skilled manual workers) were more likely to aspire to higher levels of education and actually attain a better education compared to their peers (Karabel and Halsey, 1977; Yanowitch, 1977).

In addition to parental occupation and parental education these local Soviet studies found that other factors, such as the urban-rural divide and family structure, were also associated with one's aspirations for further education and actual attainment (Zaslavsky, 1982).

Some studies address the mechanisms through which these factors might have affected educational attainment. As all levels of education including the tertiary were free of charge, immediate economic costs should not have been the strongest of considerations for opting out of

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[6] In Appendix A I present statistics on enrolment rates and numbers of educational institutions at different educational levels in the Soviet Union in 1987

the formal educational system. Poor performance at school, a low perception of the probabilities of success in the competitive university admissions examinations and the need on the side of poor families to work are all cited as possible explanations for the background differences in educational attainment (Yanowitch, 1977). Other reasons that have been cited as contributing to the differences by parental background were the higher chances of being enrolled in preschool education for the privileged groups, cultural environment at home, parents' interest in the work of their children, and the ability to afford tutors and preparatory tests for the competitive university admissions examinations (Dobson, 1977). Zaslavsky talks about the importance of the difference in the quality of instruction between rural and urban areas and explains the differences in attainment in this way (Zaslavsky, 1982).

All these factors and mechanisms are, in principle, similar those found in Western societies. There are several differences, however, such as: the absence of early tracking in the Soviet Union, unlike in Germany or Netherlands, for example; the absence, or rather small degree of residential segregation by school quality, unlike in the United States; and the absence of tuition fees for higher education. On the other hand, admission numbers to higher education were centrally regulated by the Government and enrolment rates were lower than those observed in Western societies. Access to these limited spaces at higher education institutions often depended on informal social networks and the personal connections of parents to the members of university admissions commissions, as well as direct bribery. Such corrupt practices became particularly strong in the later decades of the existence of the Soviet Union.

One comprehensive piece of research conducted after the breakup of the Soviet Union that analyses the impact of social background on educational attainment in the late Soviet period is a 1995 study by Gerber and Hout. They examine how expansion in educational opportunities first at the lower secondary and afterwards at the upper secondary level could have affected inequality. Using the data from the survey of a representative sample of Russians conducted in the early 1990s, they show that ever increasing enrolments at all levels of education in Soviet Russia had significant implications for social stratification. Using the framework of Maximally Maintained Inequality (MMI), discussed at length in the following chapter, they showed that at the lower levels of education (primary and lower secondary, and to certain extent upper secondary), which reached saturation point with almost all representatives of the upper classes from the relevant age group enrolled, the impact of social origin diminished. This, however,

produced a bottleneck for entering tertiary education where the capacity for enrolment did not expand at the same pace and where students with higher social origins had an advantage initially and this advantage was increasing in comparative terms (Gerber and Hout, 1995). Thus, the assumption of MMI and the 'bottleneck' assumption were confirmed in the case of late Soviet Russia.

Most of the previous studies conducted during the Soviet period are based on the data from Russia. Empirical studies regarding social inequalities in other Soviet countries during the Soviet period are limited and were conducted after the breakup of the USSR. In this respect it should be noted that although the educational system in the Soviet Union was highly centralized and homogenous in terms of structure and curriculum, there were considerable differences between countries when it came to access to education, particularly at the higher levels. Geographically, culturally, politically and historically the Soviet republics (apart from Russia) can be divided into four groups: the European republics (Ukraine, Moldova, Belarus); Caucasian republics (Georgia, Armenia, Azerbaijan); Baltic republics (Latvia, Lithuania, Estonia); and Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan). To start with, the initial conditions in all the republics were not the same in terms of the spread of education and literacy. Central Asian countries were much further behind the other republics when they joined the Union – only about 2% of the adult population in these republics were literate compared to about 20% in more European parts (Zajda, 1980). In the European parts of the Soviet Union educational opportunities expanded at much higher pace than in the Asian parts, once again confirming the importance of urbanization for higher educational attainment rates (Fitzpatrick, 1979).

Unfortunately, accurate data on participation rates at the lower levels of education during the Soviet era is available only at the aggregate Soviet Union level and not separately for different republics. However some existing data sources suggest that total enrolment rates in upper secondary education declined in the early 1990s in most post-communist countries. At the tertiary level, however, based on the data provided by the World Bank and UNESCO statistical services, the percentage of young people from the relevant age group (17 to 24) enrolled in tertiary education was very different across the countries of the Soviet Union, ranging from 15% to 60% in the years right before the breakup. Russia, Belarus and Ukraine were the countries with highest rates of enrolment in higher education while Central Asian countries had lowest

rates (Heyneman 2010).It can therefore be assumed that the trends observed in the social composition of students at different levels and the impact of parental background documented in Russia may not have been similar in other Soviet countries.

## *Post-soviet transition*

After the breakup of the Soviet Union political and economic institutions underwent massive changes. Neoliberal policies were introduced in all the countries, which were manifested in rapid privatization, liberalization of markets and decentralization of the system. The economies in most countries declined dramatically (Heyns, 2005). These changes were bound to have significant implications for labour market outcomes, educational systems, access to education and social inequalities.

Among the factors, which should be expected to have had direct impact on the inequalities in educational attainment, are: the dramatic increase in income inequality in all post-soviet countries; increase in poverty rates; rise in unemployment rates; changes in labour market and employment structure; weakening social security systems; and the privatization of the costs of education (Gerber and Hout, 1998). These factors might all have had an effect on educational inequalities and possibly in different directions. Thus, for example, as discussed in the previous chapter economic crisis can have two opposite effects on total participation in education: on the one hand, the preference of students and their families to earn a higher income might trigger the decision to leave formal schooling, while, on the other hand, if employment opportunities are scarce, they may be willing to remain longer in the formal schooling system as opportunity costs are very low. Similarly, removing the centrally set regulations on the number of students to be admitted to higher education can increase opportunities for the youth from underprivileged families, but increasing income inequality combined with the privatization of costs could also exclude the same youth.

### Socio-economic implications of post-Soviet transition

The post-soviet transition, much like many other abrupt developments in history, was characterized by sharp economic decline, rising unemployment, rising income inequality, the deterioration of social security and support systems, the rapid transition to a market economy and mass privatization (Frydman, Murphy and Rapaczynski, 1998). Each of these factors invariably, directly or indirectly, would affect educational systems, their funding, enrolment rates, and equality of access.

Although these factors were observed in all the newly independent republics, some were more affected than others and the timing as well as pace of some of these processes varied. Georgia, together with Tajiskistan was the country whose economy suffered the most, with an average annual economic decline of 24% during 1990-1994 and its GDP constituting a mere 28% in 1994 of its 1989 level (Mitra and Selowsky, 2002b). Such a devastating impact of the transition on the Georgian economy was caused by a combination of factors in addition to the disruptions and institutional upheavals that took place in every newly independent republic. Georgia suffered a drastic civil war in 1991-92 resulting in the ousting of the first elected president and almost three years of semi-formal military rule. Ethnic conflicts in two border regions of the country – South Ossetia and Abkhazia – erupted into wars and resulted in multiple military and civil casualties as well as vast numbers of internally-displaced population and the deterioration of infrastructure and economy in the war zones and adjacent regions (Jones, 2015). The Georgian economy started growing again in 1994 but it did not manage to bounce back to the 1990 level until 2004 (World Bank, 2009b).

In Russia, the dynamics were a little different. Economic decline, although very steep by any common standard, was not as dramatic as in Georgia – in 1996 national GDP constituted about 63% of its 1991 level and during 1990-1994 the average annual decline equalled 8%. In 1997 the economy started growing again, but the crisis of 1998 caused a major setback and growth resumed from 1999.

Unemployment rates increased in both countries together with economic decline. The rate was again higher in Georgia, although by a smaller margin compared to the GDP reduction rate. However, the numbers regarding the unemployment rate are to be taken with a grain of salt since the measurements could be inaccurate and unreliable. Economic decline did not hit all groups similarly. In fact, some groups benefitted massively from the rapid privatization of national assets. This was particularly true for Russia, where privatization happened on a mass scale (Black, Kraakman and Tarassova, 2000). As a result, income inequality measures in GINI dramatically increased in both countries.

**Table 1.1 Selected economic indicators, Georgia and Russia**

| | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *Georgia* | | | | | | | | |
| Annual GDP growth | -14.8 | -21.1 | -44.9 | -29.3 | -10.4 | 2.6 | 11.2 | 10.5 | 3.1 | 2.9 | 1.8 | 4.8 | 5.5 | 11.1 | 5.9 |
| Unemployment | | 12.4 | 11.4 | 11.9 | 12.7 | 14.3 | 12.3 | 12.3 | 12.4 | 13.8 | 10.8 | 11.2 | 12.6 | 11.5 | 12.6 |
| GINI | 26.0 | 34.02 | 42.0 | 43.1 | 41.3 | 39.6 | 37.9 | 37.9 | 38.2 | 38.2 | 38.5 | 38.4 | 38.8 | 39.0 | 39.4 |
| | | | | | | | *Russia* | | | | | | | | |
| Annual GDP growth | -3.0 | -5.1 | -14.5 | -8.7 | -12.6 | -4.1 | -3.6 | 1.4 | -5.3 | 6.4 | 10.0 | 5.1 | 4.7 | 7.3 | 7.2 |
| Unemployment | 12.1 | 5.2 | 5.9 | 8.1 | 9.4 | 9.7 | 11.8 | 13.3 | 13.0 | 10.6 | 9.0 | 7.9 | 8.2 | 7.8 | 7.1 |
| GINI | 24.5 | 33.1 | 39.5 | 40.4 | 42.3 | 44.7 | 43.2 | 42.1 | 41.9 | 42.2 | 43.4 | 42.2 | 41.3 | 41.1 | 40.5 |

*Source: World Bank Data*

## *Education in transition*
### Enrolment rates

Given the political and economic developments described above, education sector suffered substantially. Again, in Georgia this was more apparent in terms of public support and funding. Even as the economy declined, the share of educational funding as a percentage of GDP also shrank from about 7 per cent in 1991 to a mere 1 per cent in 1994 (Perkins, 1998; Sharvashidze, 2005). In Russia, on the other hand, the share of public expenditure in GDP, even though it was less than in the Soviet period, fluctuated between 3.5 and 4.5 percent (Canning, Moock and Heleniak, 1999).

Enrolment trends in education at all levels shifted in significant ways. The decreasing rates of completion of upper secondary education was a very interesting and in a way unusual development. As described in the previous section of this chapter, upper secondary enrolments in the Soviet Union had risen markedly by the 1970s. This trend reversed at the beginning of the 1990s.

Starting with the case of Georgia, Table 1.2 shows absolute numbers and enrolments as a ratio of the relevant age cohort – ages 15 to 19 for upper secondary education and ages 20 to 24 for tertiary education. As we can see, if the ratio of young people aged 15 to 19 enrolled in upper secondary academic education was 0.41 in Georgia during the academic year 1991-92, this ratio dropped to 0.21 by 1994-95. This indicator later bounced back, to 29 percent, but nevertheless the sharp decline in the 1990s is obvious.

**Table 1.2 Absolute numbers (thousands) and Enrolment rates (%) Georgia,**

|                 | 1990-91 | 1994-95 | 1998-97 | 2001-02 | 2005-06 |
|-----------------|---------|---------|---------|---------|---------|
| Upper secondary | 126.6   | 64.8    | 71.189  | 81.789  | 84.567  |
| *Enrolment rate* | 0.41   | 0.21    | 0.23    | 0.28    | 0.29    |
| Tertiary        | 102.8   | 124.2   | 129.4   | 147.4   | 144.3   |
| *Enrolment rate* | 0.22   | 0.29    | 0.27    | 0.29    | 0.30    |

*Source: Own calculations from the data of the National Department of Statistics of Georgia*

This data on Georgia should be taken with a certain caution, since population estimates might not be accurate: the recent population census conducted in 2014 demonstrated that population projections in previous years were vastly overestimated. This would also cast doubt on the accuracy of the ratio to cohort indicator. However, we

can examine another measure, which is the change in total enrolments across different stages of education, as illustrated by figure 1.1.

**Figure 1.1Total enrolments at different levels of education in Georgia**
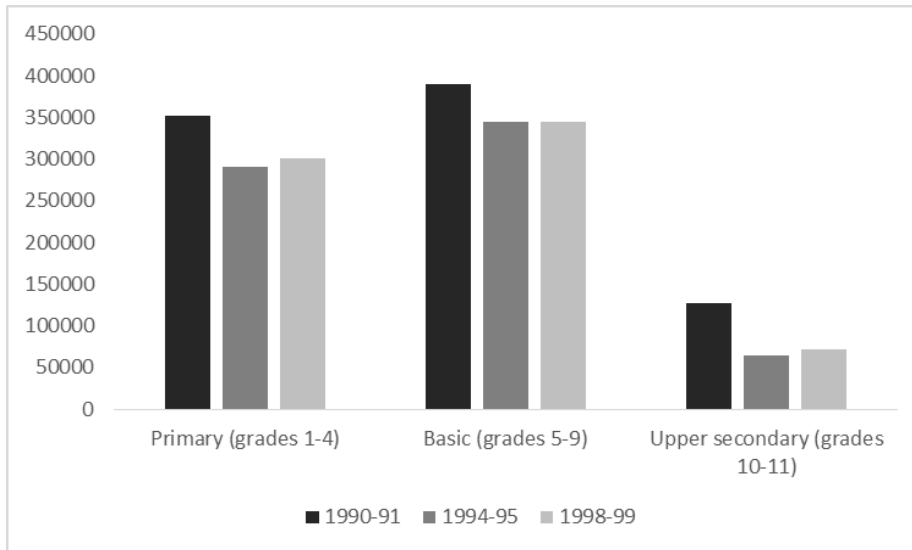


*Source: National Department of Statistics of Georgia*

As we can see, total enrolment decreased across all levels of education. This can be explained by demographic trends of a natural decrease in population numbers as well as the migration of population. However, if we compare enrolment dynamics at different levels, we can see that for primary and basic education levels total enrolment decreased by 16 and 12 percent respectively while at upper secondary level it decreased by 43 percent. So there is little doubt that in the 1990s students in Georgia started to drop out of upper secondary education at disproportionately higher rates. Secondary enrolment decreased in Russia as well but the reduction was not so sharp, as we can see from Table 1.3 with comparable data.

On the other hand, however, the lower rows in Table 1.2 and Table 1.3 indicate that higher education expanded in both countries, possibly triggered by the removal of central control over enrolment numbers. Overall, it is noteworthy that despite differences in socio-economic developments, as well as institutional changes, trends in enrolment in the two countries are somewhat similar. The next section describes changes in higher education access and enrolment in greater detail.

**Table 1.3** Enrolment rates and relative cohort ratios, Russia, (thousands, %)

| | 1990-91 | 1991-92 | 1992-93 | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Secondary general | 2041 | 1971 | 1912 | 1912 | 2027 | 2135 | 2269 | 2445 | 2660 | 2777 | 2781 | 2848 | 2922 | | |
| *Ratio to cohort size* | 0.39 | 0.37 | 0.35 | 0.35 | 0.36 | 0.38 | 0.39 | 0.41 | 0.43 | 0.44 | 0.43 | 0.44 | 0.46 | 0.00 | 0.00 |
| Higher education | 2824.5 | 2762.8 | 2638 | 2542.9 | 2534 | 2655.2 | 2802.4 | 3046.5 | 3347.2 | 3728.1 | 4270.8 | 4797.4 | 5228.7 | 5596.2 | 5860.1 |
| *Ratio to cohort size* | 0.29 | 0.28 | 0.26 | 0.25 | 0.24 | 0.25 | 0.26 | 0.28 | 0.30 | 0.34 | 0.38 | 0.42 | 0.45 | 0.46 | 0.48 |

*Source: Own calculations from the data of the Federal Service of National Statistics of Russia*

34

## Educational opportunities

As mentioned in the previous sections, some studies have found an increasing impact of parental background on one's educational attainment in Eastern European countries undergoing post-communist transition (Iannelli, 2002; Shavit and Blossfeld, 1993). Evidence from the similar transitional period of the post-Soviet countries is more limited.

In 2000 Gerber, adding one cohort to the earlier study conducted in 1995, found mixed results for the pattern of educational inequality. Namely, he found no change in the odds of making the transition to the academic track in secondary education or to the tertiary education level based on social class of origins. However, he did find the increasing effect of social origin on the probabilities of transition to the academic secondary track, which he explains by declining enrolments in this track (Gerber, 2000).

Gerber's findings regarding inequalities in the transition to higher education are less clear. Firstly, the contraction in enrolment rates in the 1990s affected mostly men. Gerber attributes this to the higher expected returns of education for females compared with males based on his earlier study. Contrary to the expectations, he finds that higher social background students experienced steeper drops in absolute rates of entry to academic tertiary education compared to their peers with a lower socio-economic background. This finding provides an interesting background for looking at the mechanisms of how contraction in educational enrolments might affect equality. Gerber provides two possible explanations for this counterintuitive finding: first, in transitional Russia, the most attractive jobs in terms of economic returns were those that did not require higher education. Second, due to the stricter selection for the academic track at the upper secondary level, those students from a lower socio-economic background who do make the transition to the upper secondary level are probably highly self-selected ones with distinguished abilities and therefore they are very likely to continue to higher education (Gerber, 2000).

Gerber later found that the effect of social background on access to post-secondary schooling in Russia was reinforced during the late Soviet and post-Soviet period. According to the findings, the effect of parental education and occupation on the

transition of all post-secondary options (university, secondary specialized schools) increased for the late Soviet/post-Soviet cohort (Gerber, 2007).

A few additional studies conducted by Russian sociologists in the transitional period contain inconclusive results. Roshchina, based on the data from the Russia Longitudinal Monitoring Survey finds a strong effect of parental background on educational attainment, although the trend of change of this effect across cohorts is not clear (Roshchina 2010). Based on a representative sample of upper secondary students in one of Russia's largest regions, Russian sociologists have found an interesting pattern of the distribution of students by parental background at the upper secondary level. They find a sharp decrease in the share of the children of blue-collar workers enrolled in academic tracks in the mid-1990s compared to the same indicator in the years 1963 and 1983. They also found that this indicator climbed back to the previous level in 2004. Such a trend is accounted for by the economic decline during which children from less advantaged families might have opted to drop out of school and engage in the labour market. When the economy later recovered, they returned to the classroom (Konstantinovskiy, 2012).

The strengthening effect of parental background on one's educational attainment during the post-Soviet transition has also been found in Estonia. While this effect diminished for cohorts born in 1940-1949, for 'transitional cohorts' it climbed back to pre-War levels and at an even rate. This effect was particularly strong among men (Saar, 2010).

Gugushvili (2014) found a strengthening effect of social origins on educational attainment during the post-Communist transition and that this effect was more pronounced in countries with weakly-developed democratic systems (Gugushvili, 2014). For most Soviet countries, there is no in-depth empirical evidence regarding the change in educational inequalities during the transitional era. Most studies and analytical reports focus on examining inequality in terms of access or attainment at a given point in time.

**Access to higher education**

Higher education systems in post-Soviet countries underwent major changes during the transitional period. These changes were bound to have significant implications for

access for different social groups. Here I focus on analysing the effect of the expansion of higher education on inequalities mainly by examining the effects of the privatization of costs and the differentiation of the system since these were the two core features that accompanied expansion.

Overall cohort participation in tertiary education fluctuated greatly in post-Soviet countries during the last years of communism and the early transition period. Although enrolment rates differed across countries during the Soviet period, at the initial stage of the transition the trend of enrolments started to fall everywhere. But later trends diverged. To start with, enrolment in higher education was always higher in the Baltic and Slavic republics, and lower in the Caucasus and Central Asia. According to Trow's classification, in modern societies higher education access is either elite (when less than 15 percent of a relative age group are enrolled), mass (when 15 to 50 percent of the age cohort are enrolled), and universal (when over half of the age group is enrolled) (Trow, 2000). If we apply this classification, the Baltic and Slavic republics were at a mass access stage, while most Caucasian and Central Asian republics were at the elite access stage. In the late 1990s and early 2000s, however, as enrolment rates soared, the Baltic republics, Russia, Ukraine and Belarus moved to the universal access stage as their enrolment rates surpassed 50 percent of the relevant age group. In some Central Asian republics and Azerbaijan access remained very low, while in the rest of the republics, including Georgia, the trends were not so pronounced, as they fluctuated significantly throughout the 1990s and 2000s.

The one common feature of higher education systems in all post-Soviet republics, regardless of their enrolment levels, was the massive privatization of costs. Higher education was provided free of costs to everyone throughout the existence of the Soviet Union except for a brief period in the 1940s and 1950s. In addition, students were also paid stipends for their living expenses (Gerber, 2000).

After the breakup of the Soviet Union, the transition from socialist to market-based economies in the newly independent republics coincided with the trend for the growing marketization of higher education globally. The convergence of the two factors led to an overwhelming increase in the share of private costs in funding higher education. This happened through two channels: the establishment of new private educational institutions

and the introduction of tuition fees in public universities. Although institutionally the management and funding mechanisms within the sector differed from country to country, the major similarity was the emergence of a fee-paying student group and the gradual increase of its share in the total number of students (UNICEF, 2007).

Given the dramatic economic decline in all post-Soviet countries and rising income inequality at the same time, it is remarkable to see the growth of enrolments, which was accounted for mostly by the privatization of costs. If we consider the example of Russia, as can be seen from the figure below, the increase in the number of students enrolled in higher education has happened almost entirely at the expense of fee-paying students, both at private and public universities, while the number of tuition-free students remains rather flat.

**Figure 1.2 Total enrolments in HEIs in Russia**
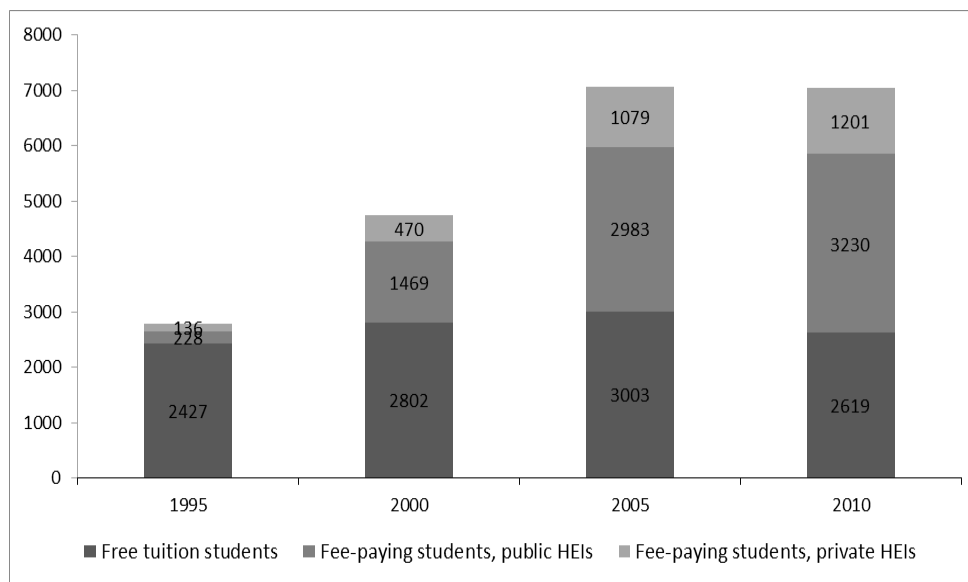


**Source: Federal State Statistics Service of Russia**

In the case of Georgia the trend is a little different as the growth of the enrolment rate was not so dramatic – about 60 percent compared to 150 percent in Russia. However, as Figure 1.3 shows, the increase in the number of fee-paying students was similarly strong here. Even so, the number of tuition-free students dropped by almost 40 percent as the total public funding for education was reduced.

**Figure 1.3 Total enrolments in HEIs in Georgia[7]**

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[7] The data on private university enrolments for the period 1993-1994 are missing.
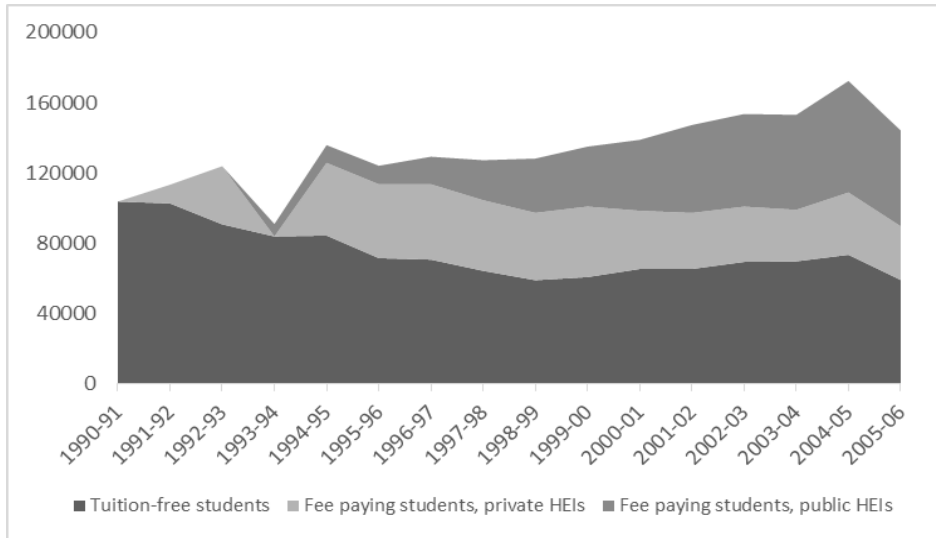
Source: National Department of Statistics of Georgia

Hence, even as average incomes dropped and inequality increased, people were ready to pay in order to have a higher education. It is unlikely that the demand on higher education emerged after the breakup of the Soviet Union as a response to the structural changes to labour markets. Rather, the demand was already there: for example, in all higher education institutions of Russia by the beginning of the 1980s there were approximately 2.5 applicants for every authorized place (Volkov, 1999). This number, however, masks substantial differences in the demand for various institutions and major specializations depending on their popularity and prestige (Cracraft, 2014). As soon as it was mandated by law, private institutions emerged to absorb the demand. Public universities were a little later in realizing the market potential and attracting fee-paying students: as we can see in the case of Georgia, private universities emerged in 1991 while public universities started to charge fees in 1993.

Such a pattern for the expansion of higher education in post-Soviet countries is indeed quite extraordinary. Unlike many other countries, where together with growing enrolment rates national governments designed policies to ease access for disadvantaged population groups through special grants or student loans, in the post-Soviet countries the costs of attending universities increased substantially without any matching increase of support from the governments. In fact, if we look at the current rate of average tuition fees in most post-Soviet countries, and specifically in Russia and Georgia, we can see that its share in GDP per capita substantially exceeds the similar indicator found in the

OECD countries (Chakhaia, 2013). At the same time, there are fewer publicly subsidized scholarships, loans, or other types of support available. This results in a situation where students and their parents bear the burden for covering most of the costs for funding higher education in these countries.

This leads to the question: as public subsidies were gradually dropped and people were forced to pay for higher education, how did the composition of the university students change? How did the access by parental background change? Based on this trend of growing private costs, we can expect a disproportionate growth in enrolments for young people from a better economic background and thus an increase in inequality to access.

Beyond expansion and the privatization of costs, another significant change in the higher education system was institutional changes and differentiation within the system. As Kogan, Gebel and Noelke observe, in post-Soviet countries with the liberalization of educational policies, the systems expanded and diversified in some cases far beyond the patterns observed in Western Europe. Diversification happened through two channels: reorganization of formerly uniform courses of study into two-step bachelor-master programs and through the introduction/proliferation of lower-tier short programs, often transformed from vocational educational programmes (Kogan, Gebel and Noelke, 2008). In some cases the short, two to three-year secondary vocational programs, such as, for example, preschool teacher training programs, were automatically transformed into tertiary education programs with a university diploma. A lot of newly-established private institutions started offering shorter diploma courses in business management, commerce etc. This sort of development was encouraged by extremely lax governmental regulations (Sharvashidze, 2005). The transformation of one-tier higher education into a two-tier one, in accordance with the Bologna Process requirements, can be seen as a new form of differentiation by social status in higher education, given the high expansion rates in higher education.

To sum up, a number of major socio-economic, political and policy developments in post-Soviet countries could have shaped the way educational inequalities changed during the transition years. These developments include:

- **A substantial increase in income inequality.** The key drivers of income inequality were: the elimination of centralized limits on wages; rapid privatization, which disproportionately benefitted a few; massive corruption and rent-seeking; and high unemployment rates due to a shrinking industry sector. Rising income inequality could affect educational inequality in at least two significant ways: 1. the disproportionate distribution of the abilities of different income groups in terms of whether they could afford the direct costs of education; and 2. the higher probability of students from low-income families to participate at an early stage in the labour market. At the same time, lifting central controls on wages could contribute to wage differentiation between people with various educational backgrounds.

- **Decrease in upper secondary enrolment rates.** While the upper secondary enrolment rate was almost universal in most post-Soviet countries, it dropped substantially during the 1990s. This was a very unusual development since historically enrolments have been growing everywhere to various degrees to the point of saturation. There are reasons to believe that not all socio-economic groups would have been equally affected by this development and therefore we can expect it to have an effect on inequality of educational access and attainment.

- **Decline of vocational education.** Vocational education, which was the backbone of the Soviet centralized economy, shrank massively as economies collapsed. Consequently, a substantial number of young people, who would have otherwise have chosen to enrol in primary or secondary vocational educational institutions, were left without this career option. They would therefore have had to explore other possibilities. We can assume that these possibilities would have varied based on their family background.

- **Privatization of education costs.** This was most prominent in higher education as private universities emerged and public universities introduced tuition fees. As public funding for education in general and for universities in particular was reduced, the number of students studying 'for free' declined as well. On the one hand, the number of students paying their own tuition increased substantially. The introduction of private costs may have affected the opportunities available to

various socio-economic groups differently. On the other hand, it also would have implications for the returns to educational attainment and benefit-cost calculations.

# Chapter 2 Theoretical framework for the study and previous research

There have been numerous attempts by sociologists, economists and education specialists to explain how inequalities in general, and educational inequalities in particular, come about: what are the personal, familial and institutional factors that can affect inequalities; how they change over time and how they compare across countries; why people from different backgrounds have different chances of succeeding at educational institutions; and how educational credentials reward people coming from different socio-economic backgrounds. The persistent focus of scholars of inequality on education is surely determined by the central role education has acquired in the life of modern societies pushing progress, development and improving quality of life at individual as well as national levels. A host of theories explore how groups with different socio-economic backgrounds participate in education and subsequently contribute to and benefit from the progress and development.

That education is a great equalizer is a popular opinion not only among social scientists, but also among politicians, journalists and the general public. And indeed, education can in principle eradicate the differences in life chances between various groups, but only if two important conditions are met: if educational resources are relatively equally distributed – i.e., everyone has similar opportunities for access to more or less similar quality education and if everybody can reap similar benefits from their educational credentials. If some groups have greater opportunities to access certain levels of education, or to access quality education, inequalities might, in fact, widen. Similarly, if already privileged groups are more likely to receive higher returns to education, financial or otherwise, education can in fact contribute to further stratification rather than equalization. Education-based meritocracies (EBM), as Bernardi and Ballarino (2016) contend, are only a possibility if social origin has no effect on educational attainment, if social origin has no effect on destination and if education has a strong effect on destination (Bernardi and Ballarino, 2016).

In this chapter, following the main research goals of this thesis, I explore sets of various theories and theoretical frameworks that are helpful in understanding what sort of changes in educational inequality we can expect in Georgia and Russia after the breakup

of the Soviet Union and whether the role of education as a social equalizer would have strengthened or weakened during this period. First, I examine theories that explain how educational inequalities by parental background emerge, and theories regarding why and how these inequalities can differ across countries and how they might be changing over time. In relation to the post-Soviet context I explore how the socio-economic and institutional changes that took place in the 1990s could have affected inequalities in education based on these theories. Among other factors, I focus specifically on the expansion and shrinking of enrolment at various levels of education to see which groups are affected. Next, I review how returns to educational credentials might change in the face of transforming socio-economic circumstances, particularly market transition, economic decline and growth, and institutional factors such as educational expansion.

## *How do educational inequalities emerge?*

In the words of the great American educator Horace Mann: "Education then, beyond all other devices of human origin, is a great equalizer of the conditions of men – the balance wheel of the social machinery" (Massachusetts Board of Education, 1849). However, as I pointed out previously, education can fulfil the function of social equalizer only if we assume that all schools are similar in terms of quality, or the chance of accessing 'better' schools for children coming from different backgrounds is random and equally distributed. If, however, children who have a better starting position due to their more privileged family background systematically end up in better schools, education can further exacerbate inequalities. This reasoning is behind the two views of education as an instrument of social mobility or social stratification. In fact, in the USA, the homeland of Horace Mann, due to strong residential segregation and the fact that most funding for public schools comes from local property taxes, the quality of schools varies enormously according to the socio-economic background of communities (Hochschild and Scovronick, 2003). As lower-class families cannot afford to live in affluent areas with good schools, schooling may even contribute to widening differences between classes.

The other issue is that education, even if we overlook the issue of quality, is not equally accessible to all. Educational inequality exists in every society in some form – it is beyond doubt that not all members of society have equal outcomes and achievements

in education. However, educational inequality is an issue worth considering when certain groups consistently demonstrate lower attainment levels than others. These groups can be women, ethnic or racial minorities, etc. For the purposes of this thesis, educational inequality is understood as unequal levels of educational attainment according to parents' socio-economic background.

Again, there is no doubt that parents' socio-economic background – however defined – is associated with offspring's educational attainment in any country at any given period in history up to the present day. Children born into families with better social, financial and cultural resources usually have higher levels of educational attainment. While this statement is hardly surprising, there is no one simple and straightforward answer to the question of how these differences come about. As educational attainment, in its turn, is associated with better life chances, it has been a central task in the research agenda of many prominent sociologists to explain how exactly family background might cause better or worse educational outcomes.

Back in 1974 Boudon introduced a very useful distinction between the different ways and mechanisms through which family background might affect one's educational attainment (Boudon, 1974). In this approach, he distinguished between primary and secondary effects. The former refers to the ways through which family background influences one's cognitive abilities and is mainly developed through children's interaction with parents and privileged social circles in general. This is reflected primarily through students' academic performance. The secondary effects, on the other hand, refer to the ways in which family background might shape one's decisions and choices in schooling regardless of one's abilities and performance (Boudon, 1974).

Clearly, this differentiation of the impact of the total family background impact into primary and secondary effects masks further distinctions and smaller details. 'Primary effects' is a collective name for all the factors that might influence one's cognitive abilities and academic performance including: genetic characteristics, patterns of interaction between parents and children, early development practices, social circle, even patterns of parental behaviour before a child is born. All of these factors are bound to

affect the performance of children at school in terms of 'objective' cognitive development indicators,[8] grades attained at school, teacher feedback, etc.

However, these characteristics are only part of the story, when it comes to the selection of educational path after the compulsory level. Secondary family effects are the ones that determine educational career options beyond academic abilities and performance. Indeed, there is ample academic evidence from many different countries that young people coming from a lower socio-economic background are less likely to opt for academic career paths compared to their more advantaged peers at every point of academic performance distribution (Contini, Scagni and Riehl, 2010; Erikson and Rudolphi, 2010; Jackson et al., 2007).

Primary and secondary effects do not emerge and develop in isolation from each other. Bernardi (2014) has introduced compensatory advantage as a stratifying mechanism in education, which in principle is the interaction between primary and secondary effects. The idea is that even when children coming from privileged backgrounds fail academically at a certain point, they have higher chance of rebounding and succeeding at a later period in time than their peers from disadvantaged backgrounds. Moreover, the efforts taken by upper-class families to compensate for their children's failure relative to lower classes far outweigh their efforts in the absence of failure (Bernardi, 2014). That is to say, the strength of secondary effects varies and is conditional on primary effects.

In addition to primary and secondary effects, some authors have identified tertiary effects of family background – i.e. the influence of teachers' socially-biased expectations, efforts and evaluations on one's choice (Esser and Relikowski, 2015). However, this can also be perceived as part of both primary and secondary effects. It can be argued that teachers are bound to have negatively biased expectations regarding the academic performance of children from disadvantaged backgrounds. Such expectations, in turn, affect the actual performance of the children through a self-fulfilling prophecy, as demonstrated by the famous experimental study by Rosenthal and Jacobson (Rosenthal and Jacobson, 1968). On the other hand, teachers exercise substantial power and

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[8] Such as standardized test scores, or IQ scores.

influence over students and their parents when the latter have to choose their career paths. And despite the level of academic performance, teachers might advise students from more privileged backgrounds to choose an academic path more often in comparison to their less advantaged peers.

## *Changes of educational inequality over time*

The fact that educational inequalities exist in any society at any time to various degree is a fact. But whether we should expect them to diminish, stay the same or even increase over time is up for debate from a theoretical perspective.

Proponents of the modernization theory argue that as societies develop, educational credentials are more and more important for better life chances, even outweighing the importance of social origins. Selection by educational institutions therefore also becomes more meritocratic and less dependent on origins (Parsons and Toby, 1977). If we accept this approach we should expect a decline in inequality as societies industrialize and modernize.

The rival theory of reproduction asserts that while the fact of the expansion of education cannot be overlooked, the patterns of inequality remain the same or are even deepening. This happens because those in advantaged social positions try to retain this position and thus exclude those from the lower strata from acquiring the same educational credentials that they have and that distinguish them (Bowles and Gintis, 1976; Brown, 1973). This approach is based on the concept of cultural capital propagated by Pierre Bourdieu (Bourdieu and Passeron, 1977). However, due to the expansion of enrolment it is inevitable that people with a lower socio-economic background are integrated into primary and lower secondary education. Therefore, selection by socio-economic background is stricter at higher levels of education.

In terms of specific mechanisms, even though the framework of primary and secondary effects is just a theoretical model and might not be very accurate, it provides certain useful guidelines when we need to explain the possible differences in educational inequalities among different countries and potential changes over time.

As Breen et al. (2009) point out, there are several reasons why we should expect primary effects to vary across countries on the one hand and across cohorts on the other. Countries differ from each other in terms of macroeconomic indicators, living conditions,

welfare provision systems, preschool care and education provision, the quality of other social services, etc. All of these might affect the size of the gap in cognitive abilities and academic performance of children coming from different backgrounds. If, for example, there is no universal preschool education available in a country, children coming from poor and less educated families arrive at primary schools already in very disadvantaged positions and from there on their relative cognitive/academic disadvantage may accumulate even further. If, however, high-quality preschool education services are available free of charge for all families, there will be fewer discrepancies in the cognitive abilities of children by the time they enter school, as children from lower-class families tend to benefit more from preschool services. If income inequality in a country is high, some parents will have disproportionately better means to provide adequate healthcare and nutrition, engage them in developmental activities which might involve financial resources, etc. Accordingly, these and other differences within a country can cause the emergence of primary parental background effects.

If we apply the same reasoning to changes over time, this can lead us to believe that the primary effects of parental background must have weakened. Universal economic growth throughout the second half of the 20$^{th}$ century, advancement of the welfare state (in Western countries), expansion of pre-primary education, reduction of family size – all these factors should be expected to have favoured the lower classes disproportionately, which, in turn would lead to decreasing primary parental effects.

Moving on to secondary effects – i.e. how parental background affects individual decision-making on whether to proceed with academic education, or to drop out – rational choice models are helpful for gaining some understanding. Breen et al. discuss the three possible mechanisms through which middle-class and working-class students with similar cognitive abilities and academic performance levels might opt for different educational careers. These are: i. the high direct or indirect costs associated with continuing education; ii. higher expected benefit/return; and iii. more incentives to continue in order to avoid the risk of downward mobility (Breen et al., 2009).

Although it is difficult to examine these mechanisms separately, we can expect social origin-based inequality of education instigated by secondary effects to have declined over time. This is particularly true regarding the first mechanism, which is very

straightforward – if the costs associated with continuing in education are high, then children from poor families will not be able to afford to carry on, even when they are performing as well as their peers from wealthy backgrounds. Individual costs associated with receiving more education have, in general, declined during most of the 20<sup>th</sup> century almost everywhere (Boli, Ramirez and Meyer, 1985) but the reduction has not been uniform for all levels of education: education though to the upper secondary level has become free of charge for everyone in almost all countries (Meyer, Ramirez and Soysal, 1992) but the situation for higher education is different. In fact, at university level the costs of education have risen in many countries during the last few decades alongside widening access (Altbach, Reisberg and Rumbley, 2009). Currently only some European and a handful of other countries provide tuition-free higher education (Tilak, 2015) while tuition fees have risen in many countries (notably in the USA and the UK). In post-socialist countries, private fees for higher education were also introduced but even in developed countries tuition fees have fluctuated greatly and in many cases have increased – most notably as demonstrated by the substantial recent fee hike in the UK. Therefore, the expectations regarding a change in educational inequalities over time based on families' financial means can be mixed depending on which level of education we are considering and at which point in time. But it can be agreed that inequalities in completing one's secondary education due to financial inaccessibility should have been reduced.

The reduction of secondary effects could be anticipated by extending the duration of compulsory education and thereby delaying the point of decision-making. This, according to the theory of life course perspective, would reduce the impact of family background on educational choices because older students are, according to this theory, less dependent on their parents socially as well as economically and their decisions would not so much be influenced by parental characteristics (Muller and Karle, 1993).

The second mechanism of the operation of secondary effects has to do with returns to educational credentials – the upper classes are more likely/willing to transition to the next level of formal schooling as they expect higher returns compared to their peers from the lower class.

The third mechanism – the higher incentive of the upper classes to avoid the risk of downward mobility – is in fact the central mechanism of the so-called Breen-Goldthorpe model of educational decision-making. According to this model the primary goal in decision-making for members of any social class is to attain at least the same level of education and consequently social status as their family/parents. Breen and Goldthorpe named this phenomenon Relative Risk Aversion (RRA). They, in fact, proposed this model to explain the persistence of secondary effects over time – i.e. why students from different social backgrounds choose different academic paths even when their academic abilities are similar.

Two other factors that Breen and Goldthorpe identify as driving the decision about continuing education are cost-benefit analysis and the subjective probability of success. Lower-class families are less likely to be willing to incur costs – direct or indirect – in order to enrol in upper levels of education as they have a high chance of achieving the same social status as their parents even without further education. Similarly, the expectation of academic success at upper levels of education is lower for lower-class students (Breen and Goldthorpe, 1997).

**Evidence for changing educational inequalities over time**

Most theoretical considerations, as seen in the previous section, predict that in modern developed societies educational inequalities should have decreased as a result of overall economic development, expansion of educational opportunities for all, the development of general welfare provisions and the reduction of costs associated with formal schooling. Before the 1970s there was a dominant conviction among social science scholars that inequalities generated by family background would diminish as meritocracy became increasingly important in modern society. It was believed that modernization would strengthen the direct effect of education on occupational outcomes on the one hand and diminish the effect of family background on the other (Treiman, 1970). However, many studies since the 1970s have shown that the effect of parental background did not in fact diminish (Blau and Duncan, 1967; Featherman and Hauser, 1978; Halsey, Heath and Ridge, 1980). Most notably, the comparative study of 13 countries by Shavit and Blossfeld in 1993 showed that while overall access increased, inequalities in educational attainment were in fact not reduced in almost all of these

countries (Sweden and the Netherlands being the only two exceptions) (Shavit and Blossfeld, 1993). Breen and Goldthorpe in fact proposed RRA as the major explanatory mechanism when following up Shavit and Blossfeld study.

These results however were later revisited by many scholars and s diminishing effect of family background has been found in different countries as well as in cross-country comparative studies (Ballarino et al., 2008; Breen et al., 2009).

The reason for the discrepancy between the findings of two different sets of studies is not still entirely clear. It can be attributed to the availability of better and larger datasets for the later studies compared to the earlier ones. On the other hand, in the last few years there was an important shift in the use of the method of analysis – instead of educational transition models, which were based on separate estimations for each transitions (Mare, 1980), later studies use cumulative (ordinal) logit models, which give a single estimate for all transitions, since the educational categories used do not necessarily have a hierarchical and sequential ordering and because there is no data on the exact educational paths that the respondents have followed (Breen et al., 2009).

Evidence from countries outside the Western industrialized world is much less abundant. Several studies have found persistent or slightly growing inequalities in Eastern European countries during the transition period. Shavit and Blossfeld study reported this result for Poland, Hungary and Czechoslovakia (Shavit and Blossfeld, 1993).

Corroborating socialist transformation theory, in Hungary researchers found initial decreases in inequality after the introduction of the socialist regime, which reappeared later and the education system thus restratified (Simkus and Andorka, 1982). Mateju, Rehakova and Simonova (2003) found that inequalities were diminishing at lower levels of education but were stable at higher levels in Czechoslovakia and Hungary (Mateju, 2003). They also found growing inequalities at the level of transition from secondary to tertiary education during the post-communist transition in the Czech Republic (Mateju, 2005). Iannelli (2002) finds increasing inequalities during the post-communist period for Hungary, Romania and Slovakia.

In Latin America, Torche studied the potential effects of economic decline and volatility on educational inequality. Using data from Brazil, Chile, Colombia and Mexico

she found growing inequalities in the transition to upper secondary and tertiary education in the 1980s, which she explains by growing numbers of early labor market entries by the lower class under economic austerity (Torche, 2010).

## *What about the Soviet Union and the post-soviet transition?*

How do these theoretical approaches play out in the Soviet and post-Soviet context? For a better understanding, it is worth recapping the gist of the narrative from the previous chapter on social class and inequalities in the Soviet Union. As described, from the limited empirical evidence available from the Soviet and Western scholars of the time, and later studies that looked into social inequalities in the Soviet Union, substantial inequalities between different social groups did exist and they were transmitted through the generations. In many ways these inequalities resembled the patterns observed in developed Western countries. However, there were also significant differences present in the dimensions along which inequalities were generated. Most notably, income differentials between various occupations were, as a rule, much smaller than in Western countries; in some cases, the incomes of professionals and manual workers were even the same or at least comparable. At the same time, everybody, despite their social or occupational status, had access to publicly-subsidized services and privileges extending far beyond education and health services and including extracurricular activities, vacations, leisure and cultural activities, etc.

This leads us to a consideration of the function of education in society and the demands on education, begging the answer to the question: if manual work was so glorified, if skilled workers were making as much money as professionals, and if almost everybody had access to publicly-subsidized services, including leisure activities, why would people invest years' worth of time and effort to get a higher education? Primary vocational education could, in principle, guarantee a decent job with a decent salary and free access to many public services. Nevertheless, vocational education, and particularly primary vocational education, was never popular in the Soviet Union. This, in fact, was a big difference between the Soviet republics and the other communist countries of Eastern Europe, where vocational education was very popular, in some cases accounting for as much as 50 percent of enrolments of relative age cohorts (Kogan, Gebel and Noelke, 2012). Conversely, in the Soviet Union there was always very high demand for higher

education, with the number of applicants far exceeding the centrally regulated number of admitted students.

Professionals and white-collar workers in the Soviet Union were enjoying more elusive forms of privilege in lieu of income, such as prestige and access to extensive social networks. At the same time, while everybody was enjoying unlimited free access to a wide variety of public services extending far beyond health and education to include cultural and even leisure activities, the quality and prestige of these services also varied and those engaged in more prestigious occupations enjoyed access to better services.

So, while resembling Western countries in the ways educational inequalities were produced and perhaps perpetuated, Soviet society displayed significant differences in what exactly made education as well as certain occupations valuable.

The theories that have been developed within the context of socialist or post-socialist countries shed some light and help us to understand the nature of educational inequalities as well as social stratification more broadly in the Soviet Union and during the post-soviet transition as well.

The socialist transformation theory advanced by Simkus and Andorka proposes that the initial equalization of opportunities right after the socialist transformation is bound to be followed by the emergence of a new dominant class and consequently of new types of stratification (Simkus and Andorka, 1982). This theory seems plausible as whichever theory of change in educational inequalities we adhere to, the key element when discussing inequalities is the existence of a privileged class. Therefore, if a given class loses its privilege, diminishing inequalities should be expected.

In accordance with this theory, when the privileged elites were replaced by the lower classes in the countries of Central and Eastern Europe and the Soviet Union, the loss of the benefits associated with their privileged position could have been expected. Subsequently, the playing field for different social groups would have been more or less levelled. However, when new elites later established themselves they would take over the privileged position and replace the old dominant class. In the context of the Soviet Union, this new dominant class was the political, or party elite.

This is in line with the proposition of Eyal et al (1998) who hypothesized that the determinants of social structure varied through different phases of development in the

history of Central and Eastern European countries. Within the scheme that they propose, three different types of capital played different roles in establishing one's social position: economic, cultural and social. The latter, they argue, materialized through the traditional status honour in the pre-communist period, as political capital (most notably in the form of Communist party membership) during communism, and rationalized as social networks in the post-communist period. Different forms of capital were important for moving up the social ladder in these different phases. They also argue that the introduction of communism meant that economic capital lost its significance and, if anything, became rather a burden rendering those who owned properties class enemies (Eyal, SzelÈnyi and Townsley, 1998).

Despite what specifically constituted the advantage of the privileged groups in the Soviet Union – party membership, belonging to the 'cultural intelligentsia', informal social networks, economic capital – we can hypothesize how that advantage would be translated into educational benefits by following some of the conventional theories of educational inequalities. 'Primary effects' of family background on educational attainment, as described in the previous section, should not have been very strong in the Soviet Union, considering the mechanisms they operated through: the income levels of households did not differ much, implying that everybody should have had comparable access to a healthy lifestyle and nutrition for children. Universal healthcare was provided to all and there was no formal differentiation in the quality of care provided to different social groups. Of course, 'primary effects' do not operate through material resources of the family only, but, in fact, rather through the quality of parental interactions with their children. It can be argued that the universal and free early childhood care, which supposedly was of uniform quality, would at least to certain extent compensate for family background disadvantages. This was all true in theory. In practice, however, cultural and political elites had easier access to better-quality public services and more superior products, potentially granting their children a developmental advantage. Of course, this is an assumption, and there is no empirical evidence to sustain it. Moreover, pinning down any observed educational inequalities to 'primary effects' would require very detailed empirical data, which is quite rare even outside the Soviet Union.

Nevertheless, this is a useful exercise in order to propose hypotheses regarding potential changes in inequalities later on during the transition.

All the above-described factors changed in the post-Soviet countries during the transition of 1990: income inequality grew, and social and public services including preschool education and early care were either dismantled or suffered from severe budget cuts. These developments could all affect the magnitude of primary effects. Any subsequent impact, however, should be observed among the younger cohorts born during or right before the early transitional period in the 1990s.

Moving on to 'secondary effects', we can again identify the factors present in the Soviet Union that had an impact on decision-making regarding paths in educational career regardless of one's abilities. First of all, tuition, including for higher education, was free for everyone and, therefore, financial means as such could not formally have been a barrier. However, there were other costs associated with getting an academic education, such as opportunity costs for young people who could, after completing short vocational training programs, enter the labour market with the prospect of decent-paying jobs. In addition, as admission to higher education institutions was extremely competitive, there was the financial cost of hiring private tutors to prepare for those exams, and the straightforward bribing of admissions commissions was a widely accepted practice as well. Therefore to say that financial costs per se were entirely absent from the decision-making process is certainly a gross overstatement.

On top of these financial costs there were other types of advantages that some groups could resort to in order to get ahead of the others and secure a better educational career. Informal social networks and personal contacts were very important for accessing higher education. Material resources also played an important role during the admissions, particularly to prestigious institutions and specialties as offering bribes to the members of university admissions commissions was a widely accepted practice (Kramer, 1977; Heyneman, 2007). Obviously, upper classes were much more likely to take advantage of these informal channels of access to higher education. At the same time, we can assume that relative risk aversion could have been a very strong factor in educational decision-making, particularly at the level of access to higher education, and particularly considering the strict limitations imposed on admissions numbers. How the strength of

these factors could have changed during the transitional period is, however, a matter of speculation.

We can speculate then that secondary effects might also have strengthened during the post-Soviet transitional period for the following reasons: the direct costs of attaining a higher education increased as tuition fees were introduced in higher education; the indirect costs of staying in a formal schooling system at general education level also increased as self-employment opportunities appeared together with the emergence of the market economy. In both cases lower-class children would have been more likely to be affected. Therefore, the importance of the family's financial situation as a dimension along which educational inequality is generated, has increased. At the same time the significance of party membership as a stratifying factor had not entirely disappeared.

Another important factor potentially affecting decision-making in post-Soviet countries during the 1990s is the substantial changes in the enrolment rates at various stages of education. As described in the next chapter, unlike other countries, the post-Soviet countries differed significantly from Western countries in this respect. While in most countries enrolment rates have, as a rule, increased at all levels throughout the $20^{th}$ century, post-Soviet countries have witnessed an uneven evolution of enrolment rates at various levels of education during the 1990s. As there were different factors at work at basic, secondary and higher education levels, we cannot expect overall inequalities to have uniformly increased or decreased. One goal of this thesis, then, as indicated previously, is to explore those differences and examine what direction changes in educational inequalities could have taken in a post-Soviet setting.

## *Educational expansion and inequalities*

Any discussion of changing inequalities in education is bound to involve arguments about educational expansion. Massive expansion of educational opportunities at different time periods in different countries has certainly affected the difference in access for various social groups. Such massive educational expansion waves were observed in the Soviet Union as I described in greater detail in the previous chapter. Therefore in order to understand how educational inequalities have changed in general and in the post-Soviet countries, it is important to discuss the theories that specifically address the effect of educational expansion.

The two issues to consider regarding the connection between educational expansion and inequalities are: firstly – who enjoys the benefits of the expansion? Do some social groups gain more compared to others or does everybody's access increase proportionally? Conversely, if access to a certain level of education decreases, who suffers the loss? Empirical evidence to answer the latter question is not abundant since the cases of shrinking enrolments in education are very rare. Exploring the effects of such shrinking on the issue of inequality in a post-Soviet context is therefore an instructive and useful exercise. The other question is whether the value of educational credentials, measured by the effect of educational attainment on the chances of accessing a given social class, decreases as education becomes accessible for larger population groups. I will address both of these issues in different chapters of my thesis.

Whether or not more access to education results in more equal outcomes in attainment does not have a clear-cut answer and both theory and empirical evidence are mixed on this point. If the opportunities offered by the expansion are taken up exclusively by the members of the upper classes, then the inequalities will not be decreased in some cases and are even more likely to increase. Thus for example Halsey et al in their study of the effects of the 1944 Education Act in the United Kingdom found that although enrolment rates for the cohorts who completed lower secondary education by this time did increase, overall educational inequality did not fall. The reason for this was that opportunities resulting from the expansion were almost fully exploited by the middle class (Halsey, Heath and Ridge, 1980).

Based on somewhat similar examples of educational expansion in Ireland, Raftery and Hout have introduced the concept of *maximally maintained inequality* (MMI). They examined how eliminating barriers for access to secondary education, most importantly by abolishing tuition fees, has affected educational inequalities. They found that access to education increased for all social classes. Inequality decreased but only at the lower levels of education. Overall, while class differences in access indeed declined, they did not disappear. The main thesis of MMI is that the association between class origin and access to education should be expected to decrease only if a given level of education is already saturated by the representatives of the upper classes. The members of the

privileged class are therefore more likely to benefit from educational expansion until the point of saturation (Raftery and Hout, 1993).

It follows from the MMI hypothesis that if the effect of class origins decreases at a certain level of education, the potential saturation of the given level by the upper classes, especially if the opportunities at the next level do not expand at an equal pace, may create a bottleneck. Thus, for example, almost universal access to secondary education will produce a higher number of high school graduates from all social classes. If, however, the opportunities to accessing tertiary education remain the same or increase only moderately, this will widen the gap between classes in the transition to the higher level.

The Soviet Union has experienced some massive expansions of educational opportunities at different times at different levels, as described in the previous chapter. Similar effects of decreasing parental background at certain levels should therefore be expected at the time of massive expansion to the saturation point but not prior to this. The MMI hypothesis was tested and mostly confirmed by Gerber and Hout in their study on educational inequalities in Soviet Russia – as secondary education became almost universal, inequalities in attainment naturally decreased (Gerber and Hout, 1995).

Empirical evidence is much more limited regarding the effects of the reversal of educational expansion – the contraction of overall enrolment rates. Theoretical considerations on this scenario are likewise scarce since all major theories of educational inequalities have been developed in Western societies, where participation rates at all levels of education have been growing steadily (albeit at various paces) or at least are remaining constant. The post-Soviet countries, however, have witnessed unstable and in some cases declining rates of participation during the early years of transition. As described in the previous chapter, enrolment rates in upper secondary education substantially decreased in post-Soviet countries throughout the 1990s. At the same time, together with the collapse of the Soviet central economy, the primary and secondary professional education sectors associated with it shrank significantly. How can contraction in enrolment rates affect educational inequality? Again, just like with expansion, if we assume that everybody is affected equally, then inequality will be unchanged. If, however, we assume that the participation of certain groups might

decrease disproportionately, then inequality can be expected to change (increase or decrease depending on which groups are most severely affected).

Torche (2010) raises similar concerns in her study of educational inequalities in Latin American countries. She examines the effects of the severe economic crisis that hit these countries in the 1980s. She argues that as a result of the crisis educational inequalities may have increased even without a change in total participation rates. The explanation is that there may be two offsetting responses to the economic crisis at work, namely income and substitution effects. For participation in education the first explanation assumes that parents, as a response to an economic crisis, would choose to remove their children from the formal educational system and engage them on the labour market; the substitution effect hypothesis, on the other hand, would assume that as the opportunity costs for education are declining due to growing unemployment during the crisis, the demand for formal education would increase. If the former effect were to be more pronounced among the poorest and most disadvantaged households, and the second more among middle-class families, this would result in increasing educational inequalities (Torche, 2010).

Even though context is very different, post-Soviet countries also experienced sharp economic decline during the early 1990s. In addition, as described in the previous chapter, further institutional and financial barriers were introduced in certain cases in order to restrict access to the academic track of upper secondary education (in the form of tuition fees in Georgia and lowering the age of mandatory education in Russia). Whether it was the negative income effect or the institutional constraints that played part in decision-making, the fact is that enrolment rates in upper secondary education declined and therefore the expectation is that among the cohort going through the key educational transition during the 1990s, secondary education attainment would be lower compared to the previous cohorts.

If MMI is useful for predicting who reaps the benefits from educational expansion, its reverse can be used to build hypotheses regarding which groups lose out when enrolment shrinks. MMI assumes that any expansion opportunities are first taken up by the advantaged classes only, and only after their demand is almost fully saturated do the benefits of expansion spill over to the lower classes. By the same token, we should expect

that if access declines, the first ones to suffer the consequences and drop out of the system will be the lower classes. Children from upper-class families might follow suit only after dropping out by the lower classes has reached saturation point.

The theory of *Effectively Maintained Inequality (EMI)* proposed by Lucas (2001) tackles the issue of what happens when access to certain level of education is close to universal. In Trow's classification of higher education expansion, this would mean that over 50 percent of the entire respective age cohort are enrolled (Trow, 1975). EMI somewhat extends the argument of MMI by claiming that inequality by social background is manifested not only through the quantity of education received but also through its quality. Lucas argues that even when access to a given level of education is nearly universal, those with privileged backgrounds will still manage to maintain their advantage by differentiating themselves through the type of tracks they have access to. Thus, Lucas asserts that social background matters not only for determining who completes a specific level of education, but also for determining the kind of education people receive. Unlike MMI, EMI allows for the possibility of horizontal differentiation by social background at a given level of education even in cases when the difference between the enrolment rates of social groups is almost zero. The differentiation in this case happens through the type of institutions people from various backgrounds are enrolled in – it concerns not the quantity but the quality of education. Lucas contends that the privileged classes ensure an advantage through retaining the differentiation between different types of tracks on the one hand and through ensuring the placement of their offspring in the better tracks on the other (Lucas, 2001).

This approach might be particularly helpful for understanding the dynamics of family effect in access to higher education in post-Soviet countries during the later years of transition and most recently. As will be described in the next chapter, participation rates in higher education first contracted in many countries during the early 1990s but rose very fast in many countries during the late 1990s and 2000s so that overall participation rates for some cohorts went beyond 80%. In such cases family socio-economic advantage would be bound to manifest itself not only through quantitative but also through qualitative advantage. The Expansion of tertiary education was accompanied by the differentiation of the system into longer versus shorter and academic versus

professional tracks, as well as the reorganization of formerly uniform courses of study into two-step bachelor-master programs (Kogan, Gebel and Noelke, 2008). We might therefore expect family background to affect the placement of students in these tracks, if we accept the theoretical premises of EMI. Thus, while educational inequalities could be expected to decrease at the higher-education level in the countries which displayed a dramatic increase in participation rates in the late 1990s and early 2000s, horizontal differentiation by background in different educational tracks might have taken place.

In addition, the quality of education, oftentimes manifested in prestige and ranking of universities, became ever more important throughout 2000s with the expansion of access. Since for the majority of population the question was not whether, but what kind of university they would attend. Therefore, in line with EMI proposition, the new dimension of stratification would be the quality/prestige of educational institutions.

Another important dimension along which the effect of parental background on access might vary following educational expansion is marketization. In other words, whether or not the parental background effect diminishes after expansion might depend on who bears the costs: if expansion happens mostly through private financing, then the chances are that it will not result in a decrease in inequality. It may even increase inequalities by disproportionately favouring financially better-off groups. If, however, the costs are largely covered by public funds, then everybody might get a fair chance to take up the new opportunities. This framework is very useful for analysing inequalities in access to higher education in post-Soviet countries as expansion, where it happened, was predominantly accompanied by the privatization of costs and the differentiation of the system. Arum et al. (2007) identify exactly these two factors as potentially affecting the impact of family background on access to tertiary education when it expands (Arum, Gamoran and Shavit, 2007).

### *Educational expansion, market transition and returns to education*
When discussing educational expansion, it is essential to look not only at what it means for the opportunities of access for various groups, but also at what it means in terms of further life chances. If more people receive an education, do the returns to educational credentials diminish? If education, as a positional good, derives its value from its scarcity, does its abundance trigger a reduction of this value? As aptly put by

Fred Hirsch, if everyone stands on their tiptoes, can anybody see anything anymore? (Hirsch, 2005). Hirsch coined the term 'positional good' to describe a product whose value diminishes together with its prevalence. Simple intuition as well as basic economic insight suggests that if there is an oversupply of a product, then the price consumers are prepared to pay for it might decrease. Whether education is treated as a positional good has important implications for exploring the change in inequalities over time. Recent empirical evidence suggests that if education is measured as positional goods as opposed to absolute goods, the decline of parental background effect on educational attainment over time is weaker (Bukodi and Goldthorpe, 2016). Some have even found that when education is measured in absolute terms, educational inequality by parental background has remained persistent or has declined, whereas when measured in relative terms it has actually increased (Fujihara and Ishida, 2016; Rotman, Shavit and Shalev, 2016).

Positionality of education is very important when considering returns to educational credentials. If educational credentials have positional value, as signaling theory assumes (Spence, 1974), then the higher the supply the more its value should diminish. In a world where everybody competes for jobs based on their relative position in the educational attainment distribution (Thurow, 1976), if a set of educational credentials become wide-spread, employers will no longer be able to differentiate who is worthy of getting the job and who is not.

Bills (2016) makes an important distinction between education as a consumption product and education as an investment. When viewed as the product to be consumed, education is an absolute good as it does not matter how many people possess the product in order for us to get maximum utility from it. However, if viewed as an investment, then its value is to a great extent determined by how many others possess the product (Bills, 2016). If we expand this approach, we can argue that general education can be treated as the product for consumption while higher education can be treated more as an investment for future personal returns. Therefore, if viewed as the consumption product, general education value does not diminish with more people possessing it. This can be an explanation for the somewhat counterintuitive findings of some studies that earnings for high school graduates in the USA in fact increased as high school attainment rates grew (Olneck and Kim, 1989). Another common interpretation of this finding is that with the

onset of almost universal general education, the absence of high school diploma signals the lack of very basic competencies.

Higher education, on the contrary, can be considered more of a positional, than an absolute good. In this case, then the more educated people there are, the less value will be attached to thid, resulting in the deflation of educational credentials (Collins, 1979). However, the evidence regarding the effect of expansion on returns to higher education is not conclusive, mainly due to the difficulty of establishing a causal relationship. Educational expansion has, in many cases, been contemporaneous with significant technological advancements. These advancements, on their part, can lead to increasing returns to education either because more education is valued higher, or because returns to education below the level of higher education decrease as many routine and manual low-qualified jobs are replaced through automation (Acemoglu, 2002). Therefore, these two forces – educational expansion and technological advancement may have acted as mechanisms pulling earning differentials by education in different directions and therefore making it often impossible to draw conclusions (Demetriades and Psacharopoulos, 1987). In Europe, there is some evidence that the association between education and destination social class has been reduced over time (Bernardi, 2003; Breen and Goldthorpe, 2001; Vallet, 2001).

In their study, Bernardi and Ballarino propose three scenarios that can play out when access to higher education is expanded based on changes in two parameters: inequality in access and returns to education. In a trade-off scenario inequality in access decreases as a result of educational expansion but so does the occupational value of credentials resulting in a situation when less privileged groups have more opportunity to receive education, but they do not get very much in return for it. In a worse-off scenario inequality in access remains unchanged, but the occupational value of the title decreases. Finally, the best-off scenario implies decreasing inequalities in access and maintaining returns to educational titles (Bernardi and Ballarino, 2014).

In addition to the theories on how expansion might affect educational returns, in the post-Soviet setting there is an additional issue of how market transition affects those returns. Perhaps it is useful to make a distinction again regarding occupational status and earnings at this point. As discussed in the previous chapter, in the Soviet Union in general

the formal earnings differential between different occupations was not very large as salaries were centrally set by the government. Educational attainment, we can assume, was tied more closely to occupational status than to earnings. By this token, leaving aside expansion and focusing solely on market transition, we can expect earnings differentials based on educational status to have become wider after the breakup of the Soviet Union.

This intuitive train of thought is formalized in the theory of market transition proposed by Nee in 1989, one of the two key theses of which is a market incentive thesis asserting that in the free market there are greater incentives for individual effort as rewards are strongly associated with individual productivity. Therefore returns to education, as an indicator of human productivity, will also increase (Nee, 1989). Studies in China have corroborated this theory (Loyalka, 2009; Zhang et al., 2005). There is some evidence pointing to increasing returns to education from Russia as well (Brainerd, 1998; Gorodnichenko and Peter, 2005). The evidence is, however, from the earlier years of transition and is sometimes based on data that are not representative data.

Based on the overview of contextual factors in Chapter 2 and the theoretical frameworks in Chapter 3, Table 2.1 summarizes the logic behind the hypotheses of each empirical chapter.

**Table 2.1 Outline of theoretical frameworks for empirical chapters**

| Premise | Key questions | Theoretical framework | Hypotheses | |
|---|---|---|---|---|
| Enrolment rates in upper secondary education dropped in the early 1990s in both Russia and Georgia; governments' commitment to public education decreased; self-employment opportunities arose | Was educational attainment of some groups disproportionately affected? | Reverse MMI: Major premise of MMI is that when education expands, upper classes are the ones who first enjoy benefits of the expansion. Reversely, if enrolment shrinks, lower classes will be the ones to drop out first.<br><br>B-G educational decision-making model: decisions about pursuing further education vs. dropping out is made based on: subjective probability of success, possession of resources, desire to retain present social status | Children of parents from the lower class more likely affected by shrinking enrolment. | Chapter 3 |
| Enrolment rates in higher education dropped in the beginning of 1990s and then substantially increased in Russia; in Georgia the rates increased throughout 1990s; university costs were privatized in both countries starting in 1991 through the establishment of private universities and introduction of tuition fee-paying tracks at public universities | Who benefitted from the expansion? | MMI<br><br>Rational choice, cost-benefit analysis | University attainment of children from upper-class families disproportionately increased | Chapter 3 |

| | | | | |
|---|---|---|---|---|
| Vocational education declined in Georgia throughout 1990s together with the transformation of the socialist command economy and opening up export market | What alternative paths were chosen by the youth instead of vocational education? | Relative Risk Aversion: individuals choose the level of education that allows them to achieve at least the social status that their parents hold | Lower class students dropped out instead of pursuing vocational education; high-class students opted for more education. | Chapter 4 |
| Marketization of the economy throughout 1990s; economic decline in the beginning of 1990s and consolidation in 2000s; uneven expansion of higher education | Have returns to educational attainment changed during the 1990s in Russia? | Market transition theory: when the command economy is replaced by free markets, efficiency and productivity are rewarded and therefore returns to human capital increase.<br><br>Credential inflation: as certain levels of education become widely accessed, returns to attaining that particular levels decrease | Returns to educational attainment increased in Russia in the 1990s.<br><br>Returns to university education decreased in the 2000s together with higher education expansion | Chapter 5 |

Chapter 6

| Unified standardized examinations (USE) introduced in Russia to replace old university-based in-person admissions exams | Have USEs helped improve chances of accessing selective universities for disadvantaged students? | Effectively maintained inequality (EMI): when certain levels of education become widely accessible, the upper classes strive to retain their advantages by accessing higher quality education | Chances of access to selective universities is higher among students with privileged backgrounds regardless of previous academic performance. |
|---|---|---|---|
| | | | USEs have increased the chances of disadvantaged students to access selective universities. |
| | | Compensatory advantage: difference by parental background in the probability of success during a certain period is smaller among the students who have academically failed previously. | The difference in parental background among low-achieving students in the probability of accessing selective universities is higher than the difference among high-achieving students. |
| | | | USE is expected to have moderated some of this compensatory advantage effect[9] |

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[9] For detailed description and theoretical framework on the potential effects of the introduction of USE on inequality, see chapter 6

# Chapter 3 Changing effect of parental background on educational attainment in Soviet and post-soviet Russia and Georgia

This chapter explores how the changes taking place in the aftermath of the breakup of the Soviet Union affected inequalities in educational attainment in Russia and Georgia. Specifically, in this section of the thesis I compare the impact of parental background on a person's highest educational attainment among the cohorts that made key educational transitions during the communist rule, before the breakup of the Soviet Union and, after the breakup, during the transitional period. I examine the odds and predicted probabilities of attaining a basic education, full secondary education and a university education for the offspring of parents with different occupational backgrounds and different educational attainment levels. As has already been shown and will be further demonstrated in this chapter, post-soviet educational systems displayed one remarkable peculiarity – attainment rates changed differently at various education levels. If in other countries attainment rates overall increased at all levels, albeit to different extent, in the post-Soviet countries secondary attainment rates dropped while university attainment rates increased. The reasons for such atypical development can be found in the peculiar socio-economic developments that took place.

## *Post-Soviet transition*

As described in the previous chapters, most of the newly independent republics did not deal very well with the aftermath of the breakup of the Soviet Union. All countries suffered from the economic downturn, rise in unemployment and the effective collapse of a number of public institutions. The extent of the damage in Georgia, however, was almost unparalleled, with the size of the economy being more than halved within three years and with civil and ethnic wars crippling the overall functioning of the government. The economic decline was spectacular in Russia as well. Yet, the extent there was more moderate compared to Georgia and the disruption of the functioning of institutions was also not as grave. This, undoubtedly, was reflected in educational policies: in Georgia, public funding for educational institutions at every level was dramatically undercut, even as a share of the shrunken GDP. In Russia, on the other hand, funding of education

relative to GDP remained more or less stable, as described in the chapter on the post-Soviet transition.

As described in Chapter two, enrolment rates at various levels of education displayed peculiar trends in the two countries under examination, particularly in Georgia. If we go back to Tables 1.2 and 1.3 in the second chapter, we can see that enrolment in upper secondary academic education declined in the 1990s. This trend was very strong in Georgia, with the share of students attending upper secondary schools relative to specific cohort size dropping from 41 percent to about 21 percent within four years. The trend was similar in Russia but to a much lesser extent, with enrolment rates dropping by a few percentage points. This in itself is a very interesting development as it is not common to see declining enrolment and attainment rates at any one time or in any one country.

The reasons for such a development can be several but are not obvious. From a theoretical perspective, economic decline and overall volatility can push families to remove their children from school and engage them in the labour market. This is what Torche, in light of microeconomic theory, calls 'negative income effect', an effect that she found in select Latin American countries (Torche, 2010). Konstantinovskiy's findings, based on a representative sample of upper secondary students in one of Russia's largest regions, somewhat corroborate this assumption. He found a sharp decrease in the share of the children of blue-collar workers enrolled in academic tracks in the mid-1990s compared to the same indicator in the years 1963 and 1983, climbing back up in 2004. Such a trend is explained by the economic decline in the 1990s and the subsequent recovery (Konstantinovskiy, 2012).

There are other factors that may have contributed to these trends. One of these was the relaxation of state control over all public domains due to the political and socio-economic turmoil and this was, again, particularly strongly felt in Georgia. Moreover, in some instances governments reversed their old policies of encouraging students from attaining an upper secondary education. An example of this is the Law of Russia on Education that lowered the upper age for compulsory education from seventeen to fifteen (Curtis, 1998). Georgia, on the other hand, experimented with introducing fees at the upper secondary academic level, albeit for very short periods of time (Perkins, 1998). It could be assumed that this monetary constraint was perhaps one of the explanations for

the quite substantial drop in upper secondary enrolment in Georgia. However, it is extremely difficult to assert any kind of causal relationship between these policies and the downwards trend in educational enrolment. In fact, it is more likely that this trend was a product of multiple factors, not a single one.

Moving on to the higher education level, the picture is entirely different. Again, Tables 1.2 and 1.3 in Chapter 2 show that enrolment rates in higher education increased during the 1990s both in Georgia and Russia. Therefore, while some young people decided to opt out earlier from the education system altogether, others, in contrast, chose to receive more education. This, in effect, increased nominal inequality in educational attainment. Whether or not it increased inequalities by parental background is the issue that will be explored in this chapter.

An important point to keep in mind, with significant implications for inequality in education, is that almost all the expansion of higher education in both countries was accompanied by the privatization of costs. Before the breakup of the Soviet Union private higher education institutions did not exist and the state fully subsidized education at public institutions. Admissions to all these institutions were strictly controlled with the government setting the number of students to be admitted. The demand on higher education was always high with the number of applicants far outweighing the number of available places. After the breakup of the Soviet Union, in each newly independent republic, private universities emerged almost immediately as soon as the centralized economy had been dismantled and private entrepreneurship was permitted. In addition, to meet the demand and generate additional income, public universities were now allowed to admit students on a tuition fee-paying basis. As Figures 2 and 3 in Chapter 2 show, the expansion of enrolments in higher education was exclusively at the expense of the rise in the number of students at private universities or students at public universities who were charged tuition fees. The share of students receiving tuition-free higher education remained largely stable in Russia, while in Georgia it actually decreased substantially (by about 40 percent) due to severe cuts to public education budget, as I have described in Chapter 2. It is also worth noting that not only was the expansion of higher education entirely privately funded by citizens, but the costs were quite high – tuition fees varied at

different institutions but as a share of GDP per capita during those years, on average they were very substantial.

In order to understand the potential effect of the privatization of costs on educational stratification it is helpful to consider the procedure according to which students were allocated to tuition-free vs. paid tracks at public universities. Admissions and allocation to one of the tracks in both countries were based on the Soviet-style admission examinations throughout the 1990s and the early 2000s. Therefore, in principle, this should have been a meritocratic process – whoever performed better at university-administered exams would be admitted to the tuition-free track. However, it is widely believed that the admissions process was highly corrupt and, apart from notable exceptions, bribing the admissions committees or personal connections (or both combined) were the only real way to access tuition-free tracks (Heyneman, Anderson and Nuraliyeva, 2007; Petrov and Temple, 2004). Notably, this system was replaced in both countries by the unified national examinations – a standardized testing procedure, which is widely believed to be fair and corruption-free. This, however, did not happen until the mid-2000s and therefore any subsequent effects will not be captured by the dataset analysed in this chapter, which was collected in 2009.

## *Hypotheses*

As described in the previous section, the post-Soviet transition was characterized by a constellation of factors that was perhaps unique and it is certainly hard to draw parallels with the developed Western countries from where most of the empirical evidence on educational inequalities comes. Nonetheless conventional theoretical frameworks on educational stratification can offer insights into the type of changes in educational inequalities associated with the transitional period.

Based on some of the key tenets of the accepted theories on changes in educational inequalities over time, discussed in detail in the third chapter, several assumptions can be made about how inequalities were shaped by the post-communist transition. As mentioned, the focus in this chapter is on basic and higher education attainment levels. The description of enrolment trends in previous sections has shown that the enrolment of students in upper secondary education dropped while enrolment in higher education increased, leaving an increasing number of young people with only basic education and

an increasing number of young people with higher education. The task then, is to figure out whether the upward change in both of these trends affected some population groups disproportionately. Firstly, I address decreasing rates of enrolment in upper secondary education during the 1990s, which, conversely means that there were more people whose highest educational attainment level was basic education. The key question to answer is, given the socio-economic and political circumstances during the transitional years that were described in Chapter 2, who would be likely to drop out earlier from formal education? If we accept the 'negative income hypothesis', young people and their families could have chosen to opt out early from education as they would have some motivation to engage in the informal labour market opportunities that emerged and were increasingly present in the transitional economies (Ledeneva, 2006; Rodgers and Williams, 2009). Since these informal opportunities were mostly low-skilled, sometimes routine jobs, they would naturally appeal more to the lower classes.

At the same time, when not even taking into account informal employment opportunities, we can expect that socially-advantaged groups would have stronger incentives not to remove their children from schools. The reverse MMI hypothesis discussed in previous chapters is perhaps applicable in this case: if attainment rates at certain levels of education decrease, the lower classes are more likely to suffer the consequences.

Further, the introduction of a small tuition fee in secondary education in Georgia and the lowering of the age for compulsory education in Russia would also disproportionately affect children from lower-income and less educated families.

*Based on all these considerations, I expect increasing inequalities by parental background in attaining only basic education in both Russia and Georgia.*

The second major point of interest in this chapter is the change in inequality regarding the attainment of a university education. Two major developments took place in higher education that had potential impacts on inequality. Firstly, as described in the previous section, total university enrolment rates increased in all post-Soviet countries, and this was the case in both Russia and Georgia, as illustrated by Figures 2 and three in the second chapter. Secondly, the costs were massively privatized with students and their

families fully covering education costs. The implications of the expansion and privatization of higher education for inequality might be different and inconsistent.

Whether or not more access to education results in more equal outcomes in attainment does not have a clear-cut answer and both theory and empirical evidence are mixed on this point, as described in the third chapter. The opportunities presented by expansion might be taken up equally by all groups, regardless of their socio-economic standing. In this case the makeup of inequality is not likely to change. If underprivileged groups, previously underrepresented in higher education, manage to jump on the opportunity and benefit from the expansion, then inequality is bound to be reduced. If, however, it is the privileged groups who are already disproportionately represented in higher education who take up most of the benefits offered by the expansion, then inequality can grow even further. This is the centrepiece of the MMI theory put forward by Raftery and Hout (Raftery and Hout, 1993).

If we look at the administrative data on university enrolment rates, we can see that in Russia total enrolment dropped in the first couple of years after the breakup of the Soviet Union, both as expressed as numbers of students and as the share in relative age-group from about 28 percent to 25 percent. Subsequently, in the mid-1990s this indicator bounced back and grew throughout the 1990s and 2000s by up to almost 50 percent (see Table 1.3 in the second chapter). This is comparable to the data presented in Gerber's article (Gerber, 2000). In Georgia enrolment in higher education increased gradually throughout the 1990s. Interestingly, despite all the economic hardships and complications with governance, there was no drop in enrolments, either as total numbers or as ratios to relevant age cohort, in the early 1990s as can be see in Table 1.2 in the second chapter. Enrolment as a share of the cohort somewhat flattened out at around 30 percent by the end of the 1990s. There was a significant drop in enrolment rates in Georgian higher education in the mid-2000s as a result of strong governmental intervention: closing down many private universities and centrally imposing a cap on admissions to public universities. However, this chapter does not cover that period as here I focus solely on the1990s and early 2000s when higher education did indeed expand.

If we build a hypothesis on the premise of MMI, we can expect this expansion in both countries to disproportionately benefit the upper classes, resulting in an increase in

inequality. But if we incorporate the other element into the equation – that of cost – this assumption can be taken even further. It could be argued that if the costs of expansion are publicly subsidized, then everybody might get an equal chance to benefit. If, conversely, the costs of expansion are covered privately, then there are greater chances that those who are better-off financially will be the ones who will benefit. Arum et al. (2007) identify the privatization of costs as one of the two key factors potentially affecting the impact of family background on access to tertiary education as it expands (Arum, Gamoran and Shavit, 2007). In many instances, the expansion of education was accompanied by a decrease in public funding per student, as the perception of higher education transformed from being predominantly seen as a public good to a personal asset with the potential to generate personal income in future. There is some evidence measuring the impact of tuition fees and cost-sharing in general on different groups of population. Studies in the US have found evidence for a fairly intuitive assumption: that the net price of studying at a university does not have much impact on the upper and middle classes but it instead disproportionately affects the lower classes and those enrolled in two-year college programs (Kane, 1995; Leslie and Brinkman, 1988). Evidence from studies examining the impact of the introduction of tuition fees in the UK in 1998 suggests that the introduction of fees did not reduce the chances that students from poorer families had to participate in higher education (Chowdry et al., 2013; Universities, 2007). Evidence from the UK also suggests that neither the introduction of fees in 1998 nor their subsequent increase in 2006 changed much as regards the chances of students with a lower-class background entering the prestigious Russell Group universities (Boliver, 2013).

The introduction of tuition fees and cost-sharing in post-Soviet countries was significantly different from the cases of other countries where tuition fees were introduced. In the Soviet Union, as described above, admission rates were strictly controlled centrally and private institutions did not exist. The institution of cost-sharing practice coincided in time with allowing private universities to operate and with public universities lifting caps on enrolment. Moreover, the entire economy and labour market structure in the newly independent republics had changed. It is therefore impossible to assess the impact of the imposition of tuition fees. What is clear, however, is that despite

the imposition of tuition fees enrolment numbers surged, suggesting that on average among general population, the imposition of or increase in fees might not negatively affect the motivation to engage in further education. But there are theoretical and empirical reasons to believe that given the contemporaneity of the introduction of cost-sharing and higher education expansion, most of the benefits of expansion would have been enjoyed by the upper classes.

*Therefore, we can expect inequality by parental background in attaining university education to have increased during the transitional period in the 1990s in both countries.*

The final point of investigation in this chapter is to compare the effects of different parental background characteristics on educational attainment levels and how these effects changed during the transitional period. There has been a tradition in social stratification literature to express social origins through the parents' ranking on a continuous social or occupational prestige scale (Shavit and Blossfeld, 1993). Later it was replaced with parental class variable – some form of EGP or CASMIN (Breen et al. 2009).

Often it has been implicitly assumed that parental occupational class can capture almost all, if not all, social background characteristics. However, some scholars have argued that while occupational class might convey economic resources of parents best, it is also necessary to consider other variables that would capture other family characteristics, such as cultural capital and social capital (Jaeger, 2007). Bukodi and Goldthorpe (2012) have similarly proposed decomposing social origins into social class, social status and education. The first, as they argue, captures not only income, but economic stability and security as well; the second captures social capital and the third – cultural capital (Bukodi and Goldthorpe, 2012). In their empirical exercise they measured the first using an improved version of EGP schema, the second – following Chan and Goldthorpe (2004), by the occupational status of three close friends, and the third - highest achieved level of education (Ibid.).

The logic behind decomposing social origins into three distinct parts is that all of these characteristics have a potential to affect educational attainment of children. I described in the theoretical chapter how parental background can affect one's educational career through primary and secondary (and in addition, through tertiary and

compensatory effects). Social class is influential as it is believed to provide for all the material resources and the economic security (to offset any opportunity costs) needed for receiving good education during the childhood as well as later. Parental education, in addition, can have distinctive effect through non-material resources: engaging in developmental and educational activities with children, in general spending more time with children, exposing them to more sophisticated forms of speech, providing informed guidance on educational systems etc. Social status of parents represents socio-cultural status of the family through their social contacts, networks and their sociocultural participation and can therefore be potentially influential. However, I believe that in terms of the impact on educational attainment this last aspect can be captured by social class and parental education jointly.

A potential problem with this approach in case of Soviet and post-Soviet countries is the omission of parental income as distinctive variable. While in Western societies social class can be a good proxy for income, the same cannot be said of the Soviet societies. As I described in chapter 1, first of all, income differentials between blue-collar workers and professionals were quite small, especially compared to the Western societies; secondly, due to the strong shadow economy, particularly during the last decades, representatives of certain trades were able to receive substantial income through informal activities. Therefore it would be interesting, in case of the Soviet countries, to include parental income as a separate variable in the analysis. Unfortunately, to the best of my knowledge, no dataset exists that would capture income level or material well-being of the family when respondents were adolescents.

It is, however, possible to investigate whether educational inequalities were affected more by parental cultural capital, captured by educational attainment, or due to parental class captured by the occupational categories. Even more interesting is the question of which of the effects changed to a greater extent during the post-Soviet transition.

We can assume, that parental education in the Soviet Union affected children's education much like it did in Western societies: through better interaction, engaging in educational activities, parental motivation, providing informed guidance on educational institutions and opportunities etc. i.e., through individual mechanisms. Parental class, on

the other hand, could have effect through more institutional factors: parents' position in the society and possibly even in party structure, access to privileged social networks. It can be argued that with the supposed onset of meritocracy together with the market transition, the role of parental education could have become stronger. At the same time, advantages arising from belonging to upper class might not have been relevant anymore as institutions disintegrated. Therefore, we can assume that *the effect of parental education on one's educational attainment became stronger during the post-Soviet transitional years*.

On the other hand, the Soviet planned economy in combination with the strong vocational education system offered social mobility opportunities for a large number of young people who left academic education at an early age, acquired the basic vocational professions, started working in large industrial enterprises in elementary positions and paved their way up (Prokofíev, Chilikin and Tiulípanov, 1961). This could have been the preferred route for the children of upper class parents who wished to attain the same class position as their parents but did not have motivation or abilities to pursue higher levels of education. If we follow this line of argument, when the Soviet planned economy was dismantled during the market transition and the vocational educational system weakened, academic education could have gained significance for entering high social class. Therefore representatives of upper classes would have more incentives to pursue higher levels of education, and we can assume that the effect of *parental class on one's educational attainment became stronger during the post-Soviet transitional years*.

## *Data, variables and methods*
### Data

In order to address the research questions and test the hypothesis outlined above, for both countries I use the dataset from the Generations and Gender Survey (GGS) conducted by the Generations and Gender Program in 19 countries. GGS is a panel study that started in 2006 and is repeated every three years. So far data is available from the first two waves in 2006 and 2009. However, for both countries I use the data from 2006

since data with original coding is available only from this wave.[10] The samples are nationally representative, covering population aged 18 to 79. The entire sample size for Russia is 11,000 respondents and for Georgia there were 10,000 respondents. I include only those respondents who were 24 years old or older by the time the survey was conducted in order to make sure that they have completed at least undergraduate level studies at university.

**Variables**

In order to compare educational attainment levels and the effect of parental backgrounds at different time periods, I divide the entire pool of respondents into five different birth cohorts with a duration of eight years each. In order to study the effects of post-communist transition, the comparison between the last birth cohort with the previous two or three cohorts is of particular interest. The respondents from the last cohort, i.e. those born between 1975 and 1982, made key educational transitions – to upper secondary education and to university education – during the breakup of the Soviet Union and the first years of the transition. I call this cohort the 'late transition cohort'. The Soviet Union officially ceased to exist by the end of 1991. However economic reforms, including attempts at privatization and the overall liberalization of the system, had started earlier. We can therefore assume that by the time the cohort born in 1967-74 had reached the ages of 15-17, they would already have been influenced by the early signs of the forthcoming socio-economic and political changes. I therefore call this cohort the 'early transition' cohort. The cohort born before this, in 1959-1966, had most likely completed their higher educational levels during the Soviet years and this cohort can therefore be viewed as a 'pre-transitional cohort'.

**Table 3.1** Description of birth cohorts

| Birth year | Cohort label | Years of educational transition |
|---|---|---|
| 1943-50 | WW2 cohort | 1958-1969 |
| 1951-58 | Post-war cohort | 1966-1977 |
| 1959-66 | Pre-transition cohort | 1974-1985 |
| 1967-74 | Early transition | 1982-1993 |

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[10] The data from the second wave recently became available from both countries. However, the coding of my key dependent variable – educational attainment – in the accessible dataset is flawed. Through communication with the project staff I managed to obtain original data from the 2006 wave and recoded it.

Here I present the results of the analysis for all five cohorts, in order to show overall trends in the bigger picture as well as to provide some historical reference. However, for the analytical purposes of the thesis I focus more on the last three cohorts and compare the 'transition cohorts' to the 'pre-transition' one. Table 3.2 below reports sample sizes for the two countries, men and women separately, by birth cohorts.

**Table 3.2** Sample sizes by birth cohorts

|                | **1943-50** | **1951-58** | **1959-66** | **1967-74** | **1975-82** | *Total* |
|----------------|-------------|-------------|-------------|-------------|-------------|---------|
| Russia, men    | 226         | 536         | 647         | 599         | 407         | 2,415   |
| Russia, women  | 556         | 932         | 1,100       | 835         | 511         | 3,934   |
| *Russia, total*| *782*       | *1,468*     | *1,747*     | *1434*      | *918*       | *6,349* |
| Georgia, men   | 381         | 636         | 747         | 702         | 651         | 3,117   |
| Georgia, women | 567         | 812         | 953         | 818         | 765         | 1,416   |
| *Georgia, total*| *948*      | *1,448*     | *1,700*     | *1,520*     | *1,416*     | *7,032* |

The key dependent variable is the respondent's highest level of educational attainment. As described in the previous sections, the Soviet educational system and the systems that were inherited by the independent republics were not strictly hierarchically arranged as it was possible to reach various levels of education through different routes – the most common route into university education was to complete the upper secondary academic track but it was also possible to go to university after completing vocational education, which awarded an upper secondary diploma. This should be taken into account, as my focus in the analysis is the highest educational level *achieved* and not educational *transition*. For the purposes of this chapter, I divide the educational attainment of the respondent into three hierarchically organized broad categories. The first category includes respondents whose highest level of formal academic education is basic/compulsory education. In most cases this means nine grades of schooling. This category also includes those respondents, who, in addition, have some type of vocational or professional education. The second category includes all respondents who have completed full secondary academic education as well those who have post-secondary non-academic education. Finally, the third category includes respondents whose highest

attained level of education is university education, whether undergraduate or graduate degrees.

To provide robustness check I conducted additional analysis, where I grouped all post-secondary education (secondary vocational and tertiary) together. As I have described elsewhere in the thesis, some secondary vocational schools were transformed into higher educational institutions and various types of other higher educational institutions proliferated. They might bear more resemblance in terms of value to secondary vocational schools rather than universities.

To measure parental background I use two variables: parental education and parental occupational class. The first captures the cultural capital that the family possesses and the second the social status of the family. I divide parental education into three categories, which are similar to the respondent's educational attainment: lower than secondary, secondary and tertiary education.

For parents' occupational class I use an adapted version of the Erikson-Goldthorpe-Portocarero (EGP) class schema. The original EGP scheme includes seven major categories, which are comprised of further sub-categories. The adapted version used in this analysis includes the following six categories: upper service, lower service, routine non-manual workers, skilled manual workers, semi-skilled and unskilled and farm labour. Most notably, occupations included in the 'self-employed category' have been entirely dropped from the adapted version used here. Self-employment is a specific variable when used in the Soviet and post-Soviet context. During the Soviet period self-employment was an illegal practice and this variable is therefore not relevant for the respondents who grew up during the Soviet period. However, during the 1990s self-employment opportunities arose together with the economic liberalization and we can thus expect respondents in the younger cohorts to have had self-employed parents at the time they were aged 15. However, the categories would not then be comparable across cohorts. Further, the dataset does not allow us to account for this category as there is no information provided on self-employment status. However, upper-class categories already include large proprietors and, moreover, in this way the categories are comparable across cohorts. Gerber and Hout apply the same approach in their article

using an adapted EGP classification, with the categories of self-employment and independent farmer omitted (Gerber and Hout, 1995).

It should be pointed out that these class categories are not to be perceived as automatically hierarchically ordered. Members of various classed might be advantaged and disadvantaged in different ways. However members of the service classes can be seen as generally privileged and the members of non-skilled working class as the least advantaged. The distinction in terms of different types of privilege between routine non-manual and skilled workers, for example, is far less clear-cut.

**Methods**
Several well-established methodological conventions are in place in sociological research when it comes to analysing inequalities in educational attainment. Mare's educational transition model is based on separate estimations for each successive educational transition and assesses the chances of moving onto the next level of education given the completion of the past level (Mare, 1980). Later studies have substituted this model with cumulative (ordinal) logit models, which is convenient since this gives one estimate for all transitions and also takes into account the fact that data on the different educational paths that the respondents may have followed is often missing (Breen et al., 2009). It is not convenient to analyse each transition as being conditional on the completion of the previous education level given that there are three potential paths that can be followed at the end of the basic education (no further education, primary vocational and secondary vocational) and four potential paths at the end of the secondary education (all the above plus university education). In addition, university education could have been attained after basic and vocational education.

As I have categorized the key dependent variable into three distinct hierarchically organized categories, it should, in principle, be possible to use the ordered logit model, which would make the results of the study comparable to those of Breen et al. and others. Ordered logit models also have the significant advantage of being parsimonious and yielding coefficients expressed in cumulative logs odds of making the transition to or achieving one more level of education. However, there are several substantial issues with using this model, particularly within the given context. To start with, having run this model, I found that the conventional parallel regression assumption was violated, as it

often is (Williams, 2006).[11] Further, and more importantly, the primary interest of this chapter is to examine the effect of parental background on educational attainment across cohorts. Because of the specificity in the change of enrolment patterns at different educational levels during the transitional period in post-Soviet countries, there are grounds to assume that inequalities could have shifted in different directions at different levels. As all the descriptive data show, upper secondary attainment rates declined during the transition and university attainment rates increased. Therefore, if inequalities increased for the attainment of upper secondary education but decreased for the attainment of university education, these two effects could cancel each other out if presented as the cumulative odds of attaining a higher level. In other studies, where ordered logit is used for a similar analysis, the attainment rates expanded across all educational levels (albeit not uniformly).

For this reason, I have chosen to fit multinomial logistic regression models. Notably, this is the method of analysis used by Gerber (Gerber and Hout, 1995; Gerber, 2000) and Torche (Torche, 2010) for Russia and Latin American countries respectively. I assess the odds of attaining the given level of education compared to other levels for different population groups.

I fit separate models for men and women for the two countries. While it is not the primary goal of this chapter to estimate differences between men and women in terms of their educational attainment, I follow the convention in the stratification literature to analyse them separately.

To capture parental background, as has been mentioned, I use two variables – occupational class and educational attainment. I first fit models where I test the effect of these two variables separately (see models 1 and 2 in Tables B.2, B.3, B.4 and B.5 of Appendix B). As Bukodi and Goldthorpe (2012) argued, it is not sensible to use class only as a proxy for other parental background characteristics. Rather, they suggest social origins to be decomposed into class, status and education as all three are likely to affect children's educational attainment differently. Moreover, they argue that the change in their effect over time would be different (Bukodi and Goldthorpe, 2012). Following their

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[11] I present the estimates from ordered logit in Table A1 in Appendix A.

example, in the full model, which is presented in this chapter (model 3 in Tables A.2, A.3, A.4 and A.5), I include both parental occupation and parental education as key independent variables. I do not include parental social status as I find it largely overlaps with occupational class.

As the most important step for the purpose of this analysis, I introduce interaction between cohort and parental occupational status on the one hand and cohort and parental education on the other. The issue of using interaction terms in logit models has been a subject of debate for a long time and has been contested by some scholars (Ai and Norton, 2003). Therefore, as a robustness check, I performed a similar analysis on each cohort separately, which yielded very similar results. In addition, as a robustness check, I have fitted linear probability models separately, with basic education and university education as binary outcome dependent variables. The coefficients of linear regression come very close to the marginal effects calculated from the multinomial logit model, with interactions that are presented in the results section.

## *Results*
### Changes in educational attainment and class origins
Before turning to regression analysis I present descriptive statistics and an overview of the change in the composition of key variables across cohorts. Figure 3.1 depicts changes in cohort educational attainment rates among women and men in Russia and Georgia at basic, full secondary and university levels. These figures largely confirm the national trends described in the previous section.

It is noteworthy that the trends for all three levels of educational attainment are strikingly consistent across the two countries and sexes despite the differences in socio-economic and institutional developments that the two countries display. In all four instances and among all birth cohorts, respondents with full secondary education represent the highest share. This is not surprising, since this category, as described above, comprises all respondents with academic upper secondary education as well as those who were awarded an upper secondary diploma through vocational education, and those who were awarded post-secondary non-academic degrees. However, we can also see that the share of respondents with this degree decreased for the last two birth cohorts. This trend is particularly well-pronounced in Georgia, both among men and women.

At the same time, Figure 3.1 shows that the share of respondents with only basic education reached its lowest point among the cohort born between 1959 and 1966. This is in line with the historical context described in the second chapter, as the 1960s and 1970s saw the aggressive promotion by the state of upper secondary education. The share of respondents with only basic education increased for the two transitional cohorts and this trend is also consistent across countries and sexes. Again, this trend is more pronounced in Georgia. Effectively this means that expansion at upper secondary education level had reversed by the end of the 1980s and beginning of the 1990s. This finding is in line with the official national statistical data on declining upper secondary enrolment rates in both Russia and Georgia after the breakup of the Soviet Union.

Conversely, as Figure 3.1 also shows, the share of university graduates increased among the transitional cohorts in the two countries for both men and women. This trend is also consistent with the official national data on the dynamics of university enrolment rates.

Notably, both in Russia and Georgia attainment rates are almost similar for men and women. Even more interestingly, there are no differences between men and women even among the earliest cohort. In fact, both in Russia and Georgia, among the earliest cohort women have a slightly higher university attainment rate. This is to be expected, considering the strong emphasis of the Soviet government on creating equal opportunities for women from the very yearly years.

These trends in attainment rates at different levels are also in line with the argument made above: higher education was released from central control and was able to freely respond to the growing demand through privatization, leading to an increase in university attainment levels. On the other hand, economic decline and changes in the labour market structure encouraged young people to leave school earlier. Thus, those who were either more motivated or capable (financially, intellectually or otherwise) were able to increasingly satisfy their demand for higher education while those who lacked the above or were in some way pushed to enter the labour market at an early stage had to drop out earlier. The total differences in attainment levels therefore increased considerably compared to the pre-transitional cohort. Based on just these descriptive statistics, then,

we can argue that intragenerational educational inequality increased for the transitional cohorts.

**Figure 3.1** Highest educational level achieved across birth cohorts in Russia and Georgia
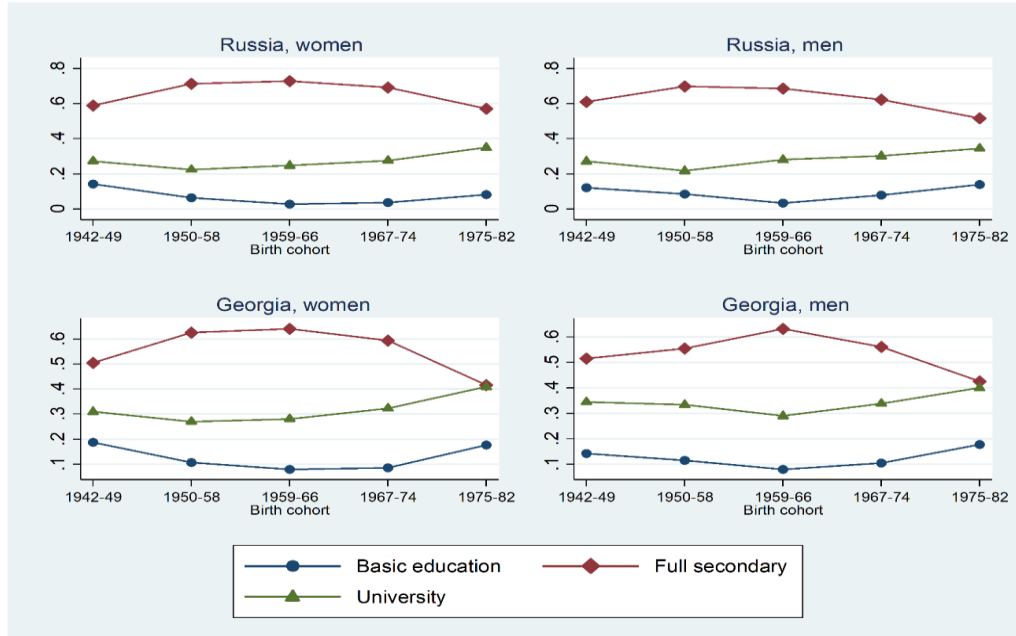


The table below shows the distribution of parental education and occupational class in Russia and Georgia across the five birth cohorts. We can see several prominent trends in occupational class, most notably the reduction in the share of farmers and the increase in the share of the service class. The latter, however, is much more pronounced in the case of Russia. In Georgia, despite the downwards trend in the share of farmers, even in the last cohort they still represent a sizable portion. Another notable trend among the parents of the Georgian respondents is a substantial increase in the share of routine non-manual workers. In Russia, on the other hand, this occupational category was strongly represented even in the earliest cohort and has remained so throughout. The country differences between parental occupations can perhaps be explained by the structure of the respective economies – while the Georgian economy was quite heavily reliant on agricultural production, the Russian economy was more industrial.

**Table 3.3** Distribution of parental occupational class and education, %

| *Categories* | **Birth cohorts** | | | | |
| --- | --- | --- | --- | --- | --- |
| | 1943-1950 | 1951-1958 | 1959-1966 | 1967-1974 | 1975-1982 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Russia, occupational class | Upper service | 14.66 | 13.4 | 15.3 | 20.12 | 23.85 |
| | Lower service | 13.35 | 13.98 | 14.31 | 16.96 | 23.01 |
| | Routine non-manual | 17.30 | 15.60 | 15.83 | 19.11 | 20.63 |
| | Skilled manual | 22.65 | 28.36 | 25.47 | 24.23 | 20.14 |
| | Semi-skilled and unskilled | 14.14 | 13.23 | 12.44 | 9.85 | 6.78 |
| | Farm labour | 17.91 | 15.23 | 16.65 | 9.76 | 5.59 |
| Georgia, occupational class | Upper service | 15.94 | 14.24 | 14.51 | 17.08 | 19.33 |
| | Lower service | 13.16 | 12.20 | 12.48 | 13.59 | 16.28 |
| | Routine non-manual | 9.82 | 9.93 | 11.32 | 15.37 | 19.63 |
| | Skilled manual | 12.47 | 17.60 | 19.56 | 19.19 | 15.24 |
| | Semi-skilled and unskilled | 15.82 | 18.70 | 17.40 | 16.73 | 14.87 |
| | Farm labour | 32.79 | 27.32 | 24.72 | 18.03 | 14.65 |
| Russia, education | University education | 9.80 | 10.10 | 13.71 | 20.03 | 29.96 |
| | Upper secondary education | 20.69 | 22.73 | 32.10 | 46.69 | 56.18 |
| | Basic education | 69.51 | 67.17 | 54.19 | 33.29 | 13.85 |
| Georgia education | University education | 19.09 | 17.79 | 19.15 | 24.06 | 30.46 |
| | Upper secondary education | 29.73 | 36.86 | 43.69 | 55.35 | 58.66 |
| | Basic education | 51.18 | 45.36 | 37.16 | 20.59 | 10.88 |

In terms of parental educational attainment, as expected, the descriptive data shows a sharp reduction in the share of parents with only basic education in both countries and a similar increase in the share of university graduates. In fact, interestingly, in Georgia the share of respondents with only basic education among the late transitional cohort is higher than the same share among their parents. In Russia it is roughly the same between parents and children.

## Changes in educational inequalities

The four tables – B.2, B.3, B.4 and B.5 – in Appendix B present the coefficients from multinomial logit models for the five cohorts, for men and women in Georgia and Russia. The first models include only parental occupational class, cohort specification and the interaction between the two. The second models in all the tables include parental educational attainment level, cohort specification and the interaction between the two. The third, full models include both parental occupation and education, as well as cohort specification and the interactions of the cohort with both parental occupation and education. I ran likelihood ratio tests for the pairs of nested models, i.e. the first model vs. the full model and the second model vs. full model, and the results (presented in Table A6) suggest that including both variables improves model fit in all four cases.

As the comparison of models 2 and 3 shows, the effects of parental education as well as the effects of its interaction with birth cohorts are similar in the second and the full models, even though these effects are somewhat weakened. As for parental occupational class, its effects are moderated by parental education to a greater extent, but they do not disappear. Moreover, the direction of change in the effects over birth cohorts remains the same for most parental occupational categories. Therefore, based on the evaluation of actual estimates as well as theoretical considerations about the multidimensionality of social origins referred to above, I base the discussion of the results on the coefficients *from the full model* including both parental occupation as well as parental education. Consequently, all the figures presented here are built based on those coefficients as well.

Upper service class, parents with medium level of education and the third pre-transitional cohort are reference categories in all the models. Effectively, the models in the tables estimate the log odds of attaining basic or tertiary education compared to the reference category of full secondary education. Therefore, the coefficients from models alone can tell us very little about the absolute sizes of any changes observed. For this reason, I have calculated the predicted probabilities for completing the different levels of education for the children of parents with different occupational status and educational attainment levels. I present the results first for the attainment of basic education and subsequently the results for higher education attainment.

*Basic education*

As described in the previous sections of the thesis, Soviet societies witnessed a sharp reduction of the population with only basic education in the 1960s and 1970s, a trend which was later reversed in the post-communist transitional period. This trend was confirmed for Russia and Georgia based on the data I analyse. Figure 3.2 below depicts the predicted probabilities of attaining basic education as the highest level of education in the Russian sample, separately for men and women, by parental education and by parental occupational class. As we can see, the trends for men and women are largely similar with only minor differences. Among women, inequality by parental education has somewhat increased over time for the last two cohorts. The probability of receiving only basic education among the women of the pre-transitional cohort (1959-66) was in general

very low and differences by parental education were small, and not statistically significant based on this sample. For those women, whose parents' highest educational attainment level was basic education, the probability increased by over 16 percentage points from the pre-transitional to the late transition cohort (1975-1982) while for the daughters of upper-secondary and university-educated parents the same probability increased by 6 and 7 percentage points respectively. When interpreting these results, we should exercise some caution and take into account the fact that parents' educational distribution substantially changed over time, particularly for the later cohorts as shown in Table 3.3. As the share of parents with only basic education radically decreased, for the late transition cohort, it would be a very negatively selected group.

In the case of men, the total probabilities of having only basic education is in general higher than among women and this is particularly again well-pronounced among the late transition cohort. Once more, the probability increases at the highest rate for the sons of low-educated parents among the late transitional cohort. However, in this case, as we can see, confidence intervals overlap and this calls for caution in the interpretation. Nevertheless, the trend clearly indicates at least a moderate increase in inequality by parental education.

**Figure 3.2** Predicted probabilities of attaining only basic education, Russia

Women, by parental education — Men, by parental education

Basic education — Full secondary education — University education

Women, by parental occupational class — Men, by parental occupational class

Upper service — Lower service — Routine non-manual — Skilled manual — Semi-skilled and unskilled — Farm labour
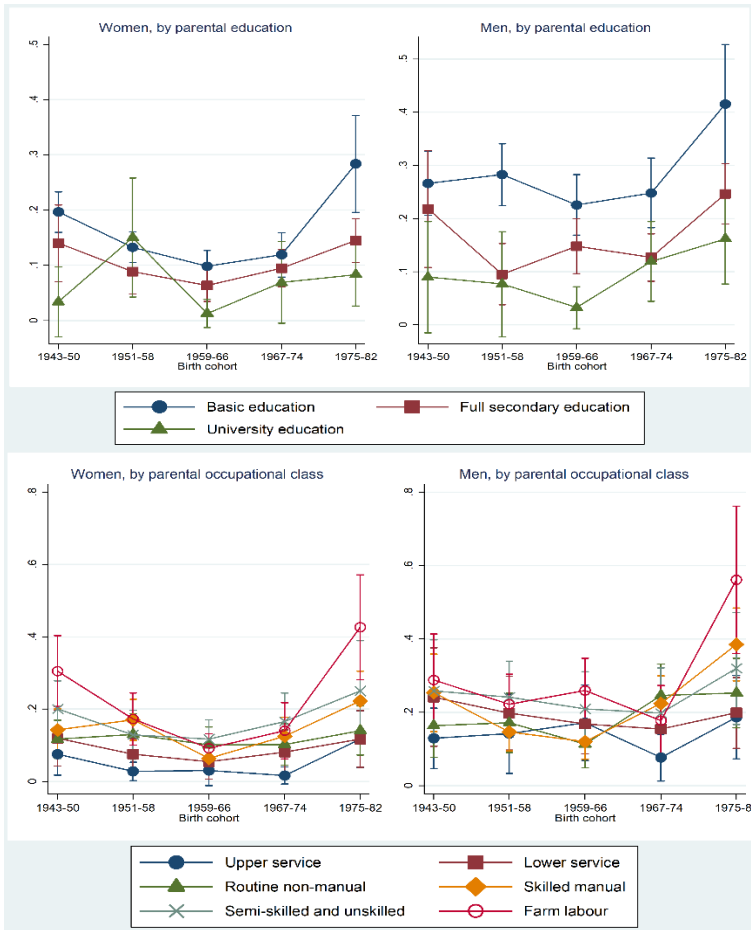
Turning to parental occupational status, we can see that the overall probabilities of attaining only basic education dropped for all respondents born between 1959-66, notwithstanding their parents' occupational status, although this trend is better pronounced for women. Among transitional cohorts, the probability increased for both men and women, particularly for those whose parents are farmers, skilled and unskilled workers. Based on the model, over 40 percent of daughters and 56 percent of sons of farm workers born in 1975-1982 have the predicted probability of achieving only basic education. This is an impressive 33 and 30 percentage point increase respectively compared to the transitional cohort. For comparison, increases for the upper- and lower-service classes were less than 10 percentage points both for men and women. Again, we must be extremely cautious with these results, because the share of farm workers in Russia has decreased substantially, as shown in Table 3.3, and due to the small sample size confidence intervals over all probabilities are very large. Nevertheless, the trend

indicates that there is a bigger division between the children of non-manual and manual workers among the late transitional cohort compared to the pre-transitional cohort, and the trend is more prominent for women. We can see the increasing trend for inequality both by parental education and parental occupational class for men and women in later cohorts, with a more visible increase for women. This confirms the findings from previous studies on Russia but again, due to large confidence intervals we should exercise some caution when offering definitive conclusions.

In Georgia, as can be seen from Figure 3.3, the trends are somewhat similar but the increase in inequality is more striking. The probabilities of respondents with low-educated parents attaining only basic education has increased substantially: for women it jumped from 14 percent among the pre-transitional cohort to 39 percent among the late transitional cohort; for men this probability increased from 16 to 44 percent. Meanwhile, for men and women of medium- and high-educated parents the probability has increased only slightly. Here again, as in the case of Russia, we have to remember that the share of low-educated parents decreased substantially for the last two cohorts and this calls for caution in the interpretation of the results. However, compared to Russia, the difference between the probabilities of respondents with low-educated parents on the one hand and medium- and highly-educated parents on the other increased to a much greater scale – by about 20 percentage points for both men and women.

The predicted probabilities of attaining only basic education by parental occupational class again display similar trends. For the first three birth cohorts, the probability is very low and any differences by parental occupational class are negligible. This starts to change for the early transition cohort and the change becomes more prominent for the late transition cohort.

**Figure 3.3** Predicted probabilities of attaining only basic education, Georgia

Women, by parental education | Men, by parental education

Women, by parental occupational class | Men, by parental occupational class

Legend: Basic education, Secondary education, University education; Upper service, Lower service, Routine non-manual, Skilled manual, Semi-skilled and unskilled, Farm labour
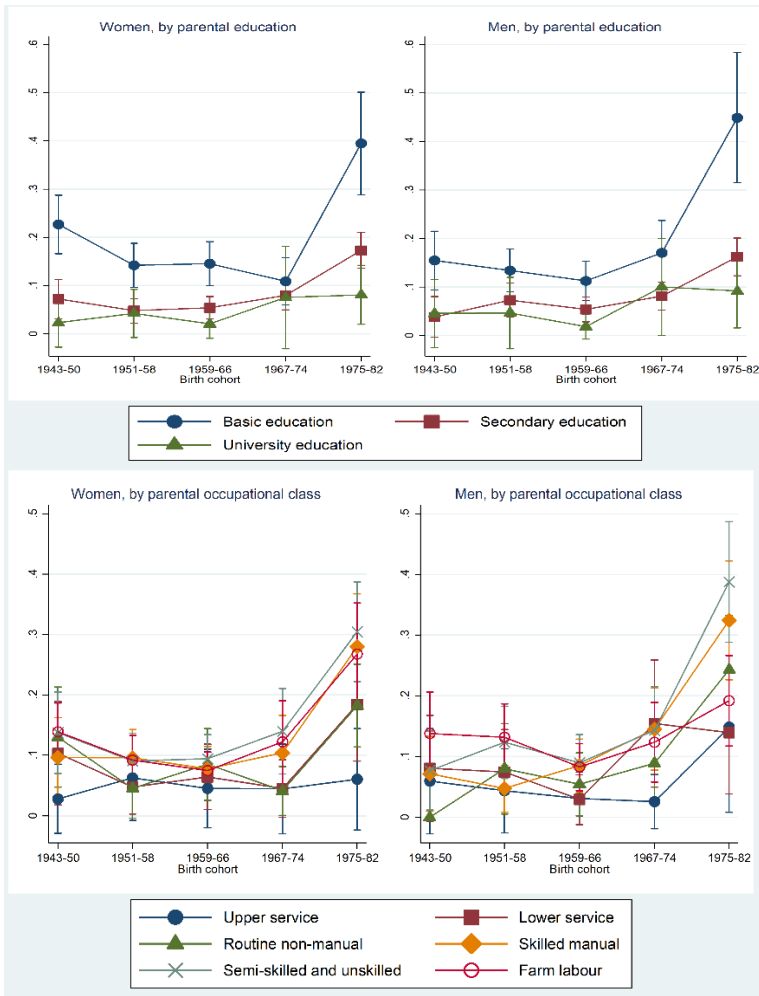
For women whose parents belong to the upper service class, the probability of attaining only basic education has remained virtually unchanged at about 5 percent for all five cohorts. For the daughters of lower-service and routine non-manual parents the probability for the latest cohort increase by about 10 percentage points compared to the pre-transition cohort, while for the daughters of all manual workers this increase was about 10 percentage points, reaching 27 to 30 percent. Among the late transition cohort, then, a clear distinction emerged between the non-manual and the manual classes, as was the case among Russian women.

Among men the non-manual/manual divide is not so visible but for both skilled and unskilled workers the probability of attaining only basic education did increase quite substantially and overall it is perhaps fair to claim that inequality among men has increased by parental occupational class as well. Unlike in Russia, in Georgia parental

occupational class distribution has remained more or less stable throughout the five birth cohorts, as we saw in Table 3.3. But here as well we must be cautious about drawing definitive conclusions since confidence intervals in many cases are overlapping. But the trend of increasing inequality is clear.

Overall, even though cautious interpretation of the findings from this analysis, there is solid evidence to support the hypothesis proposed in the previous sub-chapter, that inequality by parental background in completing secondary education has increased. Small differences by parental education were always present, even during the Soviet period, and they became much more prominent during the transition. Parental occupation, on the other hand, had very little to no effect on the chances of attaining less than secondary education as the highest level for the pre-transitional cohort; in the last cohort the effect became pronounced, with the most prominent distinction being between the service class and the rest.

*University education*

Regarding the university education attainment level, the picture is not so clear and the results of analysis tell a different story. As described in the second chapter, university enrolment rates increased during the 1990s and the descriptive data given on Figure 1.2 confirm this. However, if we calculate the probabilities for attaining a university education from the regression models presented in Appendix B, having controlled for parental education and parental occupational class, the overall probability among transitional cohorts increases only slightly for Georgian men and women while for Russian men and women it in fact, decreases.

If we look at the probabilities of attaining university education by parental background characteristics for Russia in Figure 3.4, we can see that the trends are not as clear as in case of basic education. Controlling for parents' occupational class, parental education visibly plays a very important role for one's chances of attaining university education in Russia: the gap between the chances of both the sons and daughters of highly-educated parents and everyone else is very large among all cohorts. This gap is largest among the cohort born in 1956-65, both for men and women. It is remarkable that the gap between the respondents of medium-educated and low-educated parents is quite small and based on these results we can assume that net of parental occupation, it is the

children of highly-educated parents who have benefited from university education opportunities among the early cohorts, pre-transition and transitional cohorts. For men of the transitional cohorts we see a substantial decrease in the gap for the probability of university attainment by parental education: for children of low-educated parents the probability remained stable at about 16 percent while for the sons of highly-educated parents this probability decreased from 65 to 40 percent. For women, meanwhile, the gap has remained relatively stable.

**Figure 3.4** Predicted probabilities of attaining university education, Russia
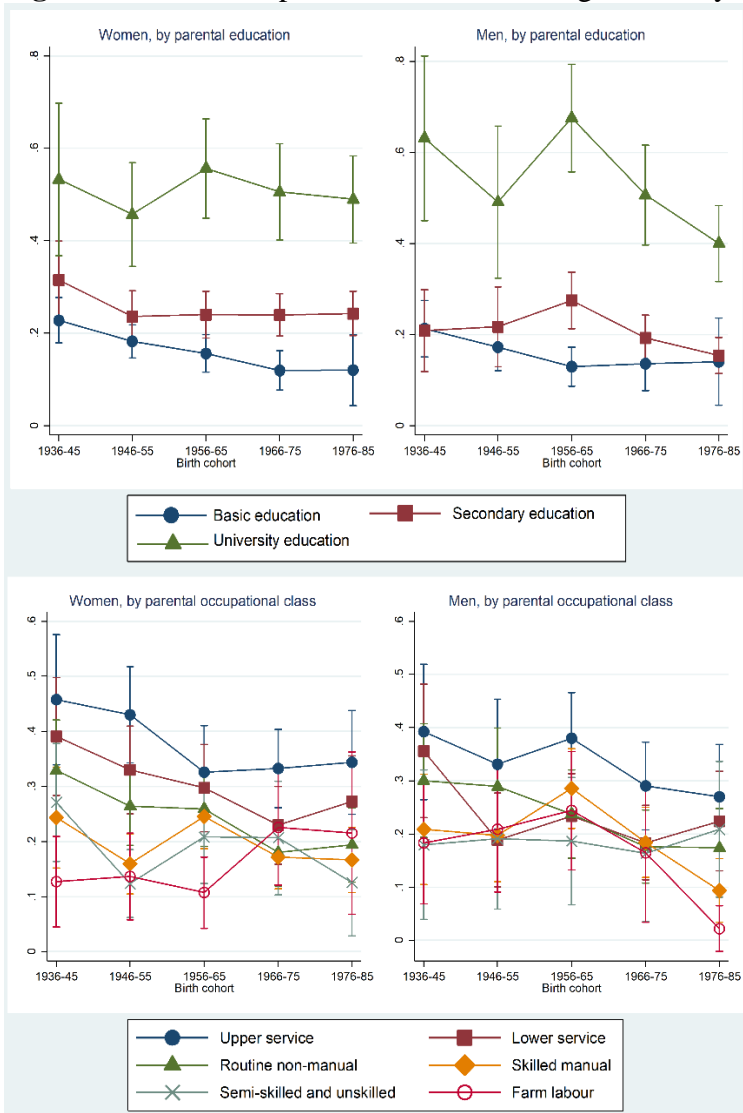


The trends of changing probabilities are even less clear by parental occupational class. Differences by parental class were, as we can see, quite large for women in the earliest cohort (1943-50), but these differences decreased among women of the pre-

transitional cohort (1956-65) except for the daughters of farm workers. Among transitional cohorts we see somewhat of a reversal of this trend, with the probabilities for the service classes remaining more or less constant and the probabilities for the working classes falling by about 8 percentage points. Again, the children of farm labourers seem to be outliers in this case too as their probability substantially increases. But we have to bear in mind that the share of farm workers in Russia shrank considerably. Therefore the number of observations in this category is very small, which can be affecting the results. Even though there is a trend, it is difficult to argue conclusively that inequality increased, or that the increase is substantial in any way, particularly considering the large overlaps between the confidence intervals.

Among men, the differences between the occupational classes are not very clear, save for the sons of upper-service class parents, who have a clear advantage in terms of attaining a university education throughout the cohorts. This advantage becomes stronger, as the gap between upper-service class children and others increases, with the notable exception of semi-skilled workers. Again, as in the case of farm labourers, we must bear in mind that the share of this occupational class also decreased considerably among the parents of the respondents born in the later cohorts.

To sum up, although it is difficult to make a conclusive argument regarding the direction of change in inequalities, it can be assumed that inequality regarding the chances of attaining a university education decreased slightly for women and even more so for men, while inequality by parental occupational class has remained stable or even slightly increased for both sexes among transitional cohorts compared to the pre-transitional ones. But notably, controlling for parental education, upper service class is the only one who had and maintained clear advantage in chances of receiving university education. Distinction between other classes is somewhat blurred.

In Georgia, the overall probabilities of attaining a university education slightly increased both for men and women born in transitional cohorts, controlling for parental occupational class and education. In contrast with Russia, in the case of Georgia we see a more uniformly spread out distribution of probabilities across categories of both parental education and parental occupational class, indicating greater levels of inequality.

Parental education is a very strong predictor of the probabilities for university attainment and it remains so throughout all cohorts. We can observe a slight increase in the gap in probabilities for the women of pre-transitional cohort and this trend is reversed for the transitional cohorts, suggesting that inequality by parental education might have slightly decreased: the gap between the probabilities of university attainment decreased from 41 percentage points among women born in 1959-66 to 34 percentage points among those born in 1975-82. This decrease can be considered sizable as it is driven mostly by the increase in the probabilities of the daughters of low-educated parents and, due to their declining share, over time it is a negatively self-selected group.

**Figure 3.5 Predicted probabilities of attaining university education, Georgia**
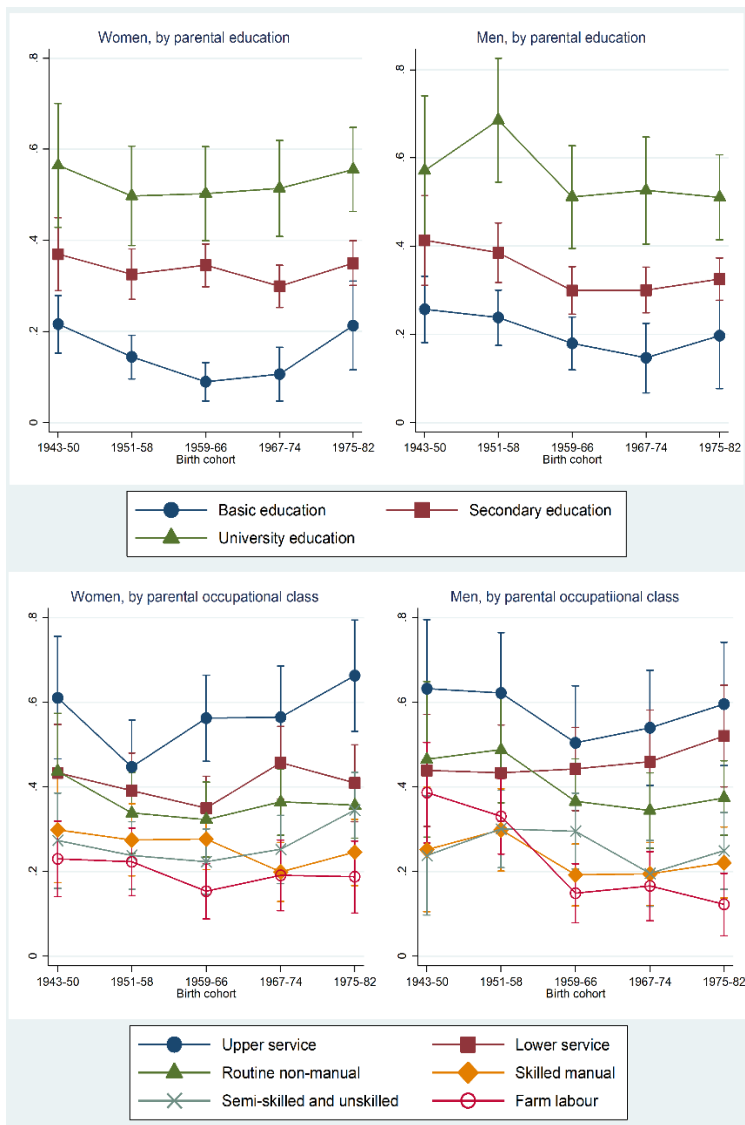
Among men, on the other hand, we see no substantial change in the differences in the probabilities of different groups – the probabilities remain remarkably stable particularly through the transitional period.

Differences by parental occupational class are substantial as well. As in the case of Russia, in Georgia respondents whose parents belong to the upper-service class have considerably higher probabilities of attaining a university education compared to the rest of the population and this is true for all the cohorts. Furthermore, we can see that it is mostly the upper- and lower-service classes who have benefitted from the expansion of university education. This is particularly visible in the case of men: the sons of both upper- and lower-service classes born in the late transitional cohort have about 10 percentage point higher chances of getting s university education compared to the respondents in the pre-transitional cohort. The sons of farm workers and unskilled workers, by contrast, have about a 6 percentage points lower chance. The results among women are more mixed as the chances for the lower classes remained stable, or even increased as in the case of the daughters of unskilled workers. However, the biggest winners among women were the daughters of upper service class parents belonging to the late transitional cohort whose chances of receiving a university education increased by about 11 percentage points.

Overall, in case of university education attainment, unlike the basic education, it is difficult to argue that inequality increased substantially and therefore the analysis does not fully support the proposed hypothesis in the previous sub-section. While differences by both parental class and education were much bigger in Georgia than in Russia, in case of both countries we observe slight decrease of inequality by parental education and increase by class (mostly manifested through the distinction between upper service class and the rest).

Figure 1 in Appendix B also presents results from an analysis where I examine the effect of parental occupational class on attaining post-secondary education – vocational and university. Results are not hugely different from the figures presented in this section. We can again observe slight increase of inequality, mostly pronounced through the difference between the upper service class and the rest. This can be indicative of the fact

that the shrinking of attainment at secondary vocational level more or less equally affected all groups.

As a final touch to this analysis, I would like to discuss how important attaining different levels of education was for the later life chances of people with different backgrounds. Due to the data limitations I cannot measure how the chances of attaining different occupational statuses changed across cohorts on the basis of various parental backgrounds and educational attainment. However, in Appendix B I present brief analysis of respondents' chances of accessing the service class from the total sample. Tables A6 and A7 show estimates from an OLS regression where I have used respondent's membership of the service class as the key outcome variable and parental class (service vs. non-service) and own education as key predictor variables. The first models in both tables estimate the effect of parental class which, in both countries, is quite large. However, as I introduce own education in the second models, the effect of parental class substantially diminishes – by about 13 percentage points in both countries. In the third model I estimate the interaction between the two key predictor variables and, as we can see, in Georgia there is almost no interaction effect – the advantage of respondents with service class parents is the same across educational attainment levels, although it is not very great. Interestingly, in Russia the distinction between the children of service-class and working-class parents in the chances of accessing service class is almost non-existent when controlling for own education: only secondary school graduates with service-class parents have a small advantage over their peers.

Overall, this brief analysis shows that educational attainment has a much stronger effect on the chances of accessing the service class than parental background. In the case of Georgia this is true only of university education – the difference between respondents with basic education and those with secondary education is almost non-existent. In Russia, on the other hand, attaining secondary education also appears to be an advantage.

## *Conclusions and discussion*

The breakup of the Soviet Union was certainly one of the main geopolitical events of the 20th century. While for some it meant the end of the cold war and for others it marked the end of history, for the people living in the fifteen Soviet republics it was a time of massive changes in their everyday lives. One inevitable consequence of the

transition from communism to capitalism was the increase in income inequality between different population groups. This is not surprising as wages were no longer centrally set by the government, whose officially proclaimed goal was to establish a classless society. The increase in income inequality in post-communist countries during the transitional period has been well documented and is not disputed, as it is relatively easy to measure. The case of inequalities in other areas, however, is not so clear, either due to difficulties in measurement, the absence of relevant data or other reasons.

The goal of this empirical chapter was to assess whether inequality in educational attainment increased in post-Soviet Russia and Georgia. In other words, whether the absolute rate of educational inequality within one generation changed during the years of the transition from state socialism to a market economy and, if so, how much of the change can be accounted for by parental background.

There are several notable conclusions to be elicited from this analysis of the inequalities in educational attainment in the two post-Soviet countries. Although the two countries are different in many ways, both due to their characteristics and the transition path, common patterns in educational attainment can be observed. First, as expected, the descriptive analysis provides solid evidence that the share of the population whose highest educational attainment level was basic or compulsory education fell to its lowest among the respondents born in 1959-1966 although then it gradually increased within the two transitional cohorts. Or, conversely, the share of those with upper secondary education decreased among these cohorts. The consistency of this trend across the two countries and both sexes suggests that it was not a random occurrence. This, by itself, is a very uncommon phenomenon as enrolment rates in post-compulsory education have been steadily increasing in most countries of the world throughout the second half of the $20^{th}$ century. At the same time, attainment rates at university level have also increased. Solely based on these two trends we can conclude that absolute educational inequality within generations has increased as some population groups have received less education and some received more compared to previous generation.

There are two sets of possible factors that could explain the growing gap in educational attainment within the transitional cohorts: those related to shrinking secondary education and those related to expanding higher education. Initially, we can

assume that, just as income became unequal as soon as it was deregulated, the same could have happened to education. Attainment of universal secondary education was a formally proclaimed and sought-after goal in the Soviet Union. As soon as the central oversight was removed, young people and their families had the opportunity to opt for either more or less education. In fact, some active measures were even introduced in order to deter young people from finishing the full secondary education cycle, such as lowering the mandatory school-leaving age in Russia and briefly imposing a small tuition fee at upper secondary level in Georgia. While it is impossible to estimate whether these particular measures had any effect, they are indicative of broader governmental policies in the education sector in the 1990s which were often ad hoc and not part of a bigger strategic development plan, but were generally based on an approach aiming at less regulation and greater private participation.

Further, the increase in early dropouts was possibly also triggered by changes in the labour market structure. From very early on in the 1990s, as private entrepreneurship was allowed, new employment opportunities for the unskilled population arose and these opportunities were likely to attract young people who were not particularly motivated or talented enough to continue with their studies.

It should be pointed out, that reversal of expansion of secondary education and increase in the share of population with only basic or less education did indeed indicate increase in the inequality in educational attainment. However, this does not necessarily mean that inequality in life chances by parental background (expressed either through income levels or destination social class) also increased.

University education, on the other hand, expanded. This expansion mostly happened through the introduction of private costs: the imposition of tuition fees at public universities and the opening of private universities. As centrally set regulations were removed there was, in principle, no limit on the number of young people who could become students as long as they could pay.

The next question to ask is whether these changes – shrinking upper secondary education and expanding higher education – affected all social groups differently. This chapter provides evidence that the increase in the share of population with only basic or less education happened predominantly at the expense of the children of less-privileged

parents. In the final years of the Soviet Union, the share of the population without upper secondary education credentials was very small and there was little difference either in terms of parental education or parental occupation. In independent Russia and Georgia, by contrast, the numbers of the sons and daughters of lower-educated parents, farm workers and manual workers who were leaving the formal education system disproportionately increased, effectively resulting in growing inequalities by parental background. Interestingly, both parental education and occupational status seem to be drivers of the decrease in upper secondary attainment. However, once both factors are accounted for, parental education seems to be the more important.

This finding is in line with what can be referred to as 'MMI reversed': namely, if under MMI it is assumed that at every level of education the lower classes participate and subsequently inequality decreases only after upper-class demand at that level is saturated, the reverse can also be true: if enrolments at a certain level (in this case upper secondary education) fall, it is the lower classes who are the first to slide back down the ladder of educational attainment. The cases of Russia and Georgia appear to confirm this assumption.

The mechanism through which this operates has to do with the 'secondary effects' of parental background on educational attainment proposed by Boudon back in 1974 (Boudon, 1974). As Breen and Goldthorpe have suggested, once individual abilities and academic performance are taken into account, the key factor that drives the choice of different educational pathways for different groups of people is the desire to retain at least the same social status as their parents (Breen and Goldthorpe, 1997).

The descriptive data shows that among the transitional cohorts there was a larger share of parents whose highest educational attainment level was basic education than the share of their offspring with this level. This suggests that at least some respondents did not achieve the same level of education that their parents had. If we accept Relative Risk Aversion theory, we can assume that in order to achieve the same social status as their parents transitional cohorts would need less education than their pre-transitional cohorts. This may have been related to the emergence of new self-employment opportunities. These opportunities might ensure that young people would attain a certain social status,

but since these jobs did not have a high profile, it is not surprising that it was the children of lower-class parents who pursued them.

University attainment shows a completely different picture. Enrolments in higher education increased, quite substantially in both countries. However, in Georgia enrolments rose right at the beginning of the 1990s and then slowed down. In Russia, on the other hand, growth at first was not strong – in fact, enrolments relative to cohort size even dropped slightly in the early 1990s but then grew at a very rapid rate by the end of the 1990s and throughout the 2000s. The descriptive statistics of the data I use confirm these trends.

The key question of this part of the analysis is: who benefited from this expansion? As noted above, most of the expansion happened through the privatization of costs with the establishment of private universities or the introduction of tuition-fee paying tracks at public universities. This leads to the hypothesis that these new opportunities would be taken up by privileged groups, as they are the ones who would be able to afford it. In the models where I controlled for parental education and occupational status, rate of university attainment is much more modest in Georgia and even less in Russia, hinting that much of the increase in university attainment is driven by parental background. The analysis has shown that parental education is a very strong predictor of one's chances for getting a university degree in both countries, but in Russia its effects seems to have declined in the transitional period. Parental occupational class seems to be an equally strong predictor in the case of Georgia and its effect even grew slightly during the transition. In Russia class differences during the communist period are much smaller net of parental education. However, the difference increased, albeit very slightly for the last cohorts. Therefore, the increase in inequality in higher education attainment by parental background, if there was any, was very small. This is somewhat surprising considering the massive increase in private costs associated with going to university.

A major drawback in this analysis is that I cannot differentiate between the types of universities that respondents went to. When higher education expanded, small private universities, often of dubious quality, proliferated in Georgia in the early 1990s and a little later in Russia, the late 1990s and early 2000s. Many of these institutions, by all accounts, did not provide quality education and served the 'demand absorbing' functions.

It is therefore likely, that as enrolment expanded, differentiation by parental background was more prominent in the type of higher education received rather than in the actual level of education attained. This phenomenon was identified by Lucas (2001) as effectively maintained inequality (EMI): when quality and not quantity of education becomes the key dimension along which inequalities are created and/or perpetuated (Lucas, 2001).

# Chapter 4 The Decline of Vocational Education in Georgia and its effect on inequality

The breakup of the Soviet Union was followed by the fundamental transformation of the centrally planned economy into the market economies of fifteen-newly independent republics. Vocational education, inextricably tied to the central Soviet economy and its source of supply with human resources, was weakened in scope and importance during the transitional years. In this chapter I examine the effects of this decline for various population groups in Georgia, where vocational education shrinkage was very substantial. The central research question of this chapter then is: How did the educational paths of people who would have pursued vocational education in the Soviet Union change during the transition?

## *Vocational education and its importance in the Soviet Union*

Vocational education played a very important role in shaping the societies in the Soviet Union from the very early years. The distinction was made between equipping the youth with general knowledge and skills on the one hand and preparing them for a professional life on the other, in other words a distinction between 'general' and 'professional' education. In accordance with this approach, all post-general education was divided into primary professional, secondary professional and tertiary professional education. Such designations emphasized the function assigned to these levels of education – each was designed to prepare individuals for different functions and types of professions so as to serve the centralized Soviet economy in different ways. Tertiary professional education was synonymous with higher education, which, unlike the western idea of the university, was also seen as an avenue to prepare professionals with narrow specializations rather than equipping young people with broad knowledge and skills.[12]

As described in the second chapter, primary professional education, referred to as primary vocational education throughout the thesis, was designed to equip students with

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[12] This is why, out of 898 higher education institutions that existed in the Soviet Union by the end of 1980s, only 69 were universities, i.e. institutions offering a wide range of educational programs by discipline, the rest were highly specialized – polytechnical, medical, agricultural, teacher preparation or arts institutions (Savelyev, Zuyev and Galagan, 1990).

the basic skills for manual blue-collar professions. Most students who opted for primary vocational education dropped out of the general school after grade nine or eight – the end of basic education, depending on the period in question. Primary vocational education was considered the least attractive option of all other educational paths, followed only by completely dropping out early from the formal system, and it was generally considered fit for those students who lacked ability, desire or opportunity to engage with more rewarding options. This was so despite the fact that manual work was glorified in the Soviet Union and professional technical schools (PTUs and SPTUs) mostly provided skills to be used in industrial production. SPTUs could formally award a full general education diploma as an academic component had been introduced. Moreover, vocational school students formally had the opportunity to continue to receive a full general academic education and thus have the opportunity to enter university, although in practice this did not happen frequently.

Primary vocational education in the Soviet Union has often been associated with the German dual education system[13]. Vocational training was designed to provide workforce for the rapidly industrializing Soviet economy and therefore close cooperation with the industries was vital. Unlike the German system, however, PTUs and SPTUs were separate institutions, and were not simply vocational tracks in general schools. The study course usually comprised of practical and theoretical parts and the theoretical parts was provided usually at state-run factories/enterprises. Vocational education was regulated by the State Committee for Vocational and Technical Education. The committee had drawn up a list of 6,000 occupations and prescribed detailed duration and course of instruction needed for each of them (Warren, 1967).

Secondary professional education, on the other hand, was provided by colleges, SSUZs or 'technikums', as they were more widely known among the population. Essentially they prepared mid-level technician personnel in industry, agriculture, construction, transport, etc. Unline primary vocational education, secondary vocational

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[13] German dual education system combines apprenticeship in the place of work with education at a vocational school (Deissinger, 1997; Bosch, 2009). The system has been considered a successful model for vocational training and has even gained recently considerable interest in the United States.

training also covered pedagogy, arts and para-medicine. Similar to primary vocational education, study programs, curricula were centrally approved, but by another institution: the Ministry of Higher and Specialized Secondary Education. Secondary vocational education institutions accepted students after the completion of basic general education in the first decades. However, after the education reforms of the 1950s a wide range of secondary professional programs required prospective students to have completed a full general education cycle while other programs still had the completion of only basic education as an entry requirement.

Understanding the emergence, development, nature and function of the Soviet vocational and professional training system is of great importance for analysing the changes in educational attainment by social background during the transitional period. In the initial decades of the existence of the Soviet Union, rapid industrialization of the economy required that the vast mass of agricultural labourers be transformed into workers in the various industries. Non-agricultural employment in the Soviet Union increased from 10 million in 1928 to over 50 million in 1958 (De Witt, National Science and National Academy of, 1961). To meet the demand of the rapidly growing economy, the Soviet Union established a unique system of vocational and professional training, preparing workers and professionals for over 10,000 classified occupations.

The peculiarity of the Soviet vocational and technical training system was that it took place in separate institutions, unlike many other countries where vocational/professional training was integrated into general education (USA) or offered as separate tracks within the same school (Germany). Students, after completing the basic stage of general education, were transferred to these vocational or professional schools (to the latter sometimes after the completion of full secondary education as described above). This was perhaps an easier way to rapidly provide a much needed labour force to the growing and transforming economy. The assumption behind the creation of the vast vocational and professional training system was that every person needed to be fully equipped with the relevant skills before joining the labour force.

Another peculiarity of the Soviet vocational and professional education system was its centralized administration and decision-making process. To start with, programs, curricula, standards, teacher training etc. were designed and determined by the central

authorities. The strict standardization of courses ensured that graduates were equipped with very specific skills to enter specific professions. The assumption was that people would remain in the sector they were being trained for, for life.

As vocational training was very much tied to the Soviet economy and specific industries, the central supervision was not provided by a single authority. Based on the type of industry or sector it was preparing professionals for, a vocational or professional school would be subordinated to a certain line ministry. There are estimates that in the Soviet Union as many as 30 different ministries (including those of finance, culture, transport, metal, gas, etc., i.e. a separate ministry for each industry) managed such schools, accounting for about 40 percent of their total number (Gijsberts, 1998). Moreover, in many cases vocational schools were established in order to provide the workforce for a specific enterprise and were therefore were directly tied to it (Gijsberts, 1998).

In the absence of a market economy, the programs were not designed on the basis of any sort of understanding of the demand for the profession but rather on central command. Therefore, by the time the Soviet Union dissolved and the economies of the independent republics collapsed, there was an oversupply of professionals in some sectors – those who were prepared to work in industry – and an undersupply in other sector, for example service sector workers (Heyneman, 1997).

In this regard it should be pointed out that, unlike the German dual education system, the role of firms in vocational training was much more restricted. But this was not in terms of their participation, but rather in terms of their flexibility. As the study program, curriculum, duration of the programs, etc. were all centrally designed and planned. At the same time production modes and goals for enterprises were also centrally planned. Therefore there was not any room for innovation and adaptation. The professional skill set that vocational schools were supposed to provide was matching the existing industrial, agricultural and service production sectors.

Apart from providing a workforce for industrial production, professional education had another, social function, which was to promote coming from disadvantaged backgrounds upwards. Specifically, secondary vocational schools served as an instrument for implementing the idea of intergenerational social mobility. Secondary professional

education schools were preparing mid-level professionals. So, if young people from low-class backgrounds managed to get into these schools, they had the opportunity to climb higher on the social status hierarchy than their parents. Many students in this stream of education were drawn from families of farm labourers and workers. However, even for the children of the privileged classes this level of education was considered a decent outcome. The specific role of vocational education as a channel of mobility has previously been identified in other communist countries as well: data from Czechoslovakia shows that during the period of communist rule, the government's affirmative policies effectively helped eliminate inequality in access to professional and vocational education, but not to academic tracks (Kreidl, 2004).

## *Vocational education in Georgia*

Vocational education in Soviet Georgia was built around the same principles as elsewhere in the Soviet Union. After gaining independence, even though certain similar trends were observed in all the republics, substantial differences also shaped the development of their educational systems.

## Key economic developments in Georgia during the transition

As discussed in the chapter on the general characteristics of the post-Soviet transition, all the independent republics experienced the rapid transformation of their economies from a centrally-planned one to the free market and a dramatic decline in the economy. Of course, the pace and scope of these changes were different – in Belarus, for example, GDP per capita dropped by about 27 percent whereas in Tajikistan it shrank by 70 percent from 1990 to 1996. Economic decline in Russia is reported to have exceeded that of the Great Recession in the USA and has been described as the 'deepest and most sustained recession in world history' (Walker, 2011). Similarly, some countries embarked on the path to a market economy and the privatization of national assets only very slowly – again, Belarus is a very good example of this – while in others the changes happened within just few years.

Georgia was among those countries whose economy suffered considerably and did not recover for a very long time. From 1990 to 1994 GDP fell by just over 70 percent, which was unparalleled even among the Soviet republics. The general political and

economic upheaval that was present throughout the country was further exacerbated by two violent ethnic conflicts and a civil war. In 1994 the economy started growing slowly, but it was not until 2007 that GDP per capita, calculated based on PPP, reached its 1990 level. Considering the fact that economic inequality grew dramatically at the same time, it is logical to assume that throughout the 1990s the well-being of those at the lower end of income distribution was far from the level of economic well-being that it had been before 1990.

A closer look at the composition of the Georgian economy before it started to break down and throughout the 1990s can shed light on how the structure of employment and labour market demands must have changed. As Table 4.1 shows, during the final years of the existence of the Soviet Union, economic activity was roughly equally distributed between agricultural, industry and the service sectors with the latter having a slightly larger share. This was different from the Soviet average during the last years of the Soviet Union, when the composition of the economic sector was 20 percent agriculture, 47 percent industry and 33 percent services (Churchward, 1987). Industrial production in Georgia, the share of which was already smaller compared to the Soviet average, shrank even further to 10 percent of total economic output in 1994.

**Table 4.1** Georgian economic growth and its composition

| Indicators | 1990 | 1992 | 1994 | 1996 | 1998 | 2000 | 2002 | 2004 |
|---|---|---|---|---|---|---|---|---|
| Annual GDP growth, % | -14.79 | -44.90 | -10.40 | 11.20 | 3.10 | 1.84 | 5.47 | 5.86 |
| *Sector composition of economic output, %* | | | | | | | | |
| Agriculture | 31.55 | 52.89 | 65.86 | 34.14 | 27.56 | 21.93 | 20.61 | 17.92 |
| Industry | 33.45 | 23.94 | 10.29 | 23.73 | 22.89 | 22.36 | 24.36 | 26.42 |
| Services | 35.00 | 23.16 | 23.85 | 42.14 | 49.54 | 55.71 | 55.03 | 55.66 |

*Source: World Bank Data*

There were several reasons why economic output in Georgia, and particularly its industrial output suffered so drastically. These reasons included disruption of the previous economic structure, as well as political events taking place in the country.

The economy of Soviet Georgia was vastly dependent on trade partnerships with other Soviet republics as trade accounted for about 40 percent of total GDP. The fifteen republics largely depended on each other for trade as economic relationships with other countries were limited. Almost all of Georgia's produce was exported to and about three

quarters of its imports came from other Soviet republics. Georgia's major export products were alloys and ferroalloys, as well as steel pipes, locomotives and other energy-intensive products. Georgia's heavy industrial production was dependent on the interconnectedness of the economies of the Soviet republics, namely artificially low prices on the production materials, such as natural gas from Turkmenistan. At the same time, products were exported to other republics at an inflated price (WTO, 2009).

Another area of major exports for Soviet Georgia was agricultural produce, namely wine, citrus and tea for which the major export market was Russia. Exports of these products depended on the limited opportunities for imports from outside the Soviet Union. After the borders opened up, disruption of traditional economic links between the Soviet republics meant the loss of both low-cost raw production materials as well as inflated markets. Subsequently, Georgia's competitive advantage in exporting both agricultural products and heavy industrial products disappeared (IMF, 2003). Georgia's export volume decreased by 90 percent, which was a huge blow to trade-dependent economy, which by 1994 was estimated to be only 17 percent of its 1990 level. Enterprises had to adjust their production for local markets which were much smaller and they also had to struggle with high production costs.

In addition to this, the political situation in the country was not conducive to the gradual and timed transition to a market economy. Political power was first granted to a rather strongly nationalist party with overwhelming popular support. Soon afterwards the first president and his team were ousted by a military coup and the country was in a state of chaos and governed by the semi-formal military groups until 1994. The country suffered from the consequences of two severe ethnic conflicts. Due to political turmoil and the collapse of the Soviet economy it was clear that it would be impossible to maintain or transform the existing industries.

## Changes in vocational education in Georgia
[14]The number of primary vocational schools halved from 159 in 1990 to 81 in 2000. The number of secondary vocational schools, meanwhile, decreased more

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[14] All the numbers regarding vocational education in Georgia in this chapter are provided from 1990 on. I consider 1990 to be a baseline year to which later developments can be compared.

moderately from 87 in 1990 to 77 in 1997 and later bounced back as private institutions appeared. Student enrolment rates on the other hand, both in primary and secondary vocational education, substantially declined in Georgia throughout the 1990s, as shown in Figure 4.1. The decline was stronger for primary vocational education. It is difficult to assess how much of this decrease was due to demographic change as the data on population estimates by age group is not very accurate. However, according to approximate estimations based on the official population data, the share of students enrolled in primary vocational education in the respective age cohort decreased from 14 percent in 1991-92 to 5 percent in 2001-02 and the share of students enrolled in secondary vocational education decreased from 20 to 10 percent over the same time period.

**Figure 4.1** Total enrolments in primary and secondary vocational education, thousands
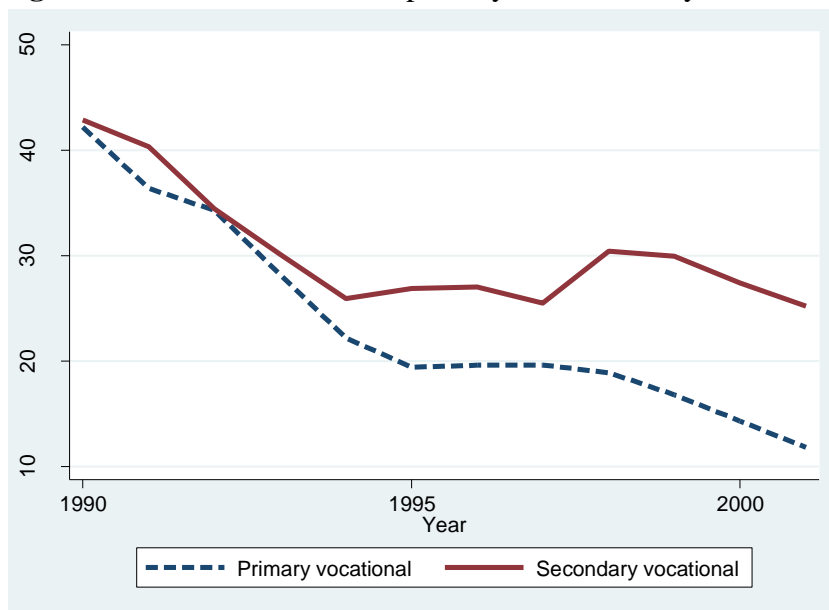


Source: National Department of Statistics of Georgia

Several different factors can be held responsible for this decline, including shrinking demand, reduction of public funding and the governance structure for vocational education.

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Georgia declared independence from the Soviet Union in 1991 so the data from 1990 effectively captures the situation during the last decade of the existence of Soviet Georgia. For previous periods, I provide the data from the Soviet Union in appendix A.

The changes in the economy described in the previous section had obvious effects on the labour market and consequently, on the system of education, particularly on vocational education, which was excessively dependent on the centralized economy and the existing labor market structure. In many cases vocational educational institutions were even directly tied to specific industrial or other enterprises. As the economy fundamentally transformed and labor market composition changed, professional qualifications provided by PTUs and technikums were no longer in demand. Specifically, as production output of heavy industry as well as agricultural enterprises declined, there was no longer a need for vocational education institutions to prepare personnel for those industries. Unlike higher education, which immediately after being released from central control started to adapt and develop according to the principles of market economy, vocational education faded away.

The picture of the changes in enrolments by sector presented in Figure 4.2 shows enrolment changes by education sector. As we can see, before the breakup of the Soviet Union about 40 percent of all the students enrolled in secondary vocational education were being trained to work in industry or construction and they far outnumbered students in any other sector. Throughout the 1990s, however, the enrolment in this sector declined tenfold and by 2000 constituted only 5 percent of total secondary vocational enrolments. In fact, it is precisely the trend for enrolment in schools with an industrial and construction profile that drives the overall trend. Enrolments in programs preparing professionals for agricultural work declined substantially as well: in 1990 students in agricultural schools made up over 18 percent of all secondary vocational students while in 2000 this indicator was only 3 percent. The reduction of demand for vocational schools with industrial and agricultural profile was likely determined by the decline of industrial and agricultural enterprises, which were no longer able to export to other Soviet republics. Enrolments in other sectors, in contrast, as we can see remained almost constant or even rose, as in the case of law and economics.

**Figure 4.2** Total enrolments in secondary vocational education by sector
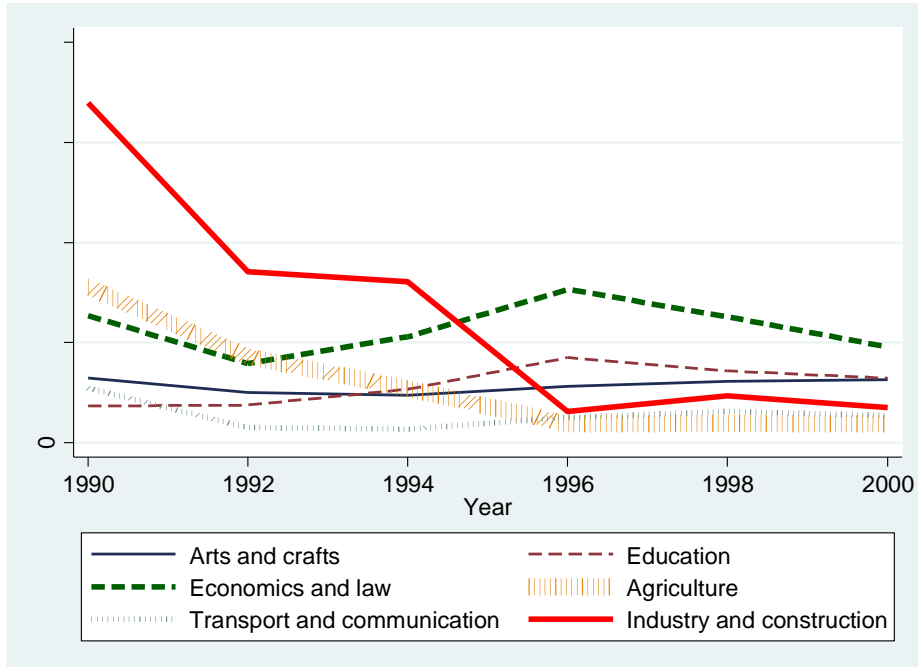
Source: National Department of Statistics of Georgia

Together with the shrinking demand for specific programs, funding of vocational institutions was also a problem. Even though there is no reliable data available on the exact amount of public funding for vocational education and how it changed during the 1990s, it fell, as did the total public funding for education (Sealy, 2000). No substantial privatization of costs happened to offset the limited budget support for vocational education. This was in stark contrast with higher education, where private institutions rapidly emerged and tuition fees were introduced at public universities.

Yet another reason for the decline of vocational education was its complicated governance structure, as the schools fell under the responsibility of various ministries such as the Ministry of Education, Ministry of Roads, Ministry of Culture, Ministry of Health, Ministry of Agriculture, etc. These ministries were in charge of programs, curricula, admissions and funding for their respective schools and it was therefore very difficult to implement any kind of standard transformation of the system.

The decline of vocational education in Georgia was thus determined by a combination of reasons, such as fading demand for certain professions, lack of funding and issues with management and governance. Most vocational education schools in Georgia were not able to adjust quickly to new realities and transform provision of programs according to new demands. There were, however, instances where secondary

vocational schools managed to enroll fee-paying students, and even private ones opened up. However, most of the demand, as indicated by figure 4.2 was in the 'soft' disciplines and not in industry, construction and agriculture – the driving forces of the Soviet economy.

In this respect it is interesting to consider the role of economic changes on completely different fates of secondary vocational and higher education. While HEIs proliferated at a high rate and demand grew substantially, even when the private costs involved were very high, secondary vocational education declined. The comparison between the two, however, might be complicated by the fact that some secondary vocational schools took advantage of extremely lax governmental regulations regarding higher education (Pachuashvili, 2009) and managed to either privatize and transform formally into higher education institutions, or start offering higher education level courses together with vocational courses (Sharvashidze, 2005). It is difficult to estimate accurately the extent of this development. However it was not negligible and could certainly have substantial impact on the study of educational inequality, as well as on the analysis presented here.

Two points, however, are in order. Firstly, the data (and no other reliable national-level large sample data) contains detailed information regarding the type of higher education respondents attended. Therefore it is difficult to differentiate between those who have graduated from traditional universities, newly established private HEIs and secondary vocational schools transformed into HEIs. Second, and more importantly, it is not the goal of this thesis to assess the quality of education and the credentials provided by different type of institutions. I start out with the assumption that holding a university degree as such on average offers an advantage for one's life chances compared to any other types of education, even if this degree is not granted by a high-quality institution.

In recent years there has been a remarkable revitalization in the Georgian vocational education sector, which was fundamentally reformed during the last decade, mostly through top-down government interventions and reforms, as well as through support from EU institutions. In fact, enrolment has been steadily growing throughout the last few years. The list of the most in-demand programs currently at vocational educational schools includes service and hospitality programs (hotelier, cook),

accounting and IT support programs. This reflects the substantial transformation that the Georgian economy and production output went through during the last two and a half decades, with tourism and service sector, as well as communication technologies being on the rise.

### *Potential effects of shrinking vocational and professional education on educational inequality*

The main research question of this chapter is how the decline of vocational education affected various population groups and what alternative educational paths were pursued by people who would have opted for vocational schools if no changes in provision had occurred. Even before answering this question it is important to ask which groups were most affected by the decline of vocational education.

There are several difficulties when trying to theorize about the possible effect of shrinking vocational education on inequalities. To start with, since attainment rates at all levels of education have been growing in all western countries albeit at very different paces, there are few theories as well as very limited empirical evidence on what should be expected to happen when there is inequality in access and which population groups would suffer most from such contractions. Limited evidence (Gerber, 2000; Torche, 2010) suggests 'reverse Maximally Maintained Inequality (MMI)'. i.e. that the first to suffer from a contraction in enrolments are the disadvantaged classes. But MMI in the case of vocational education, unlike in the previous chapter, might not be applicable. Reverse MMI would suggest that if a certain level of education shrinks, the people who drop out at that level have to slide downwards on the educational attainment hierarchical scale as was the case in the previous chapter; thus, as upper secondary attainment levels reduced, some groups were left with less education. In this case, however, if young people decided not to pursue vocational education, or if there were fewer opportunities to enrol due to the lack of provision, these young people could opt for alternative ways that could provide better or worse educational opportunities compared to vocational schools.

As described in the theoretical chapter, within the framework of the educational decision-making model proposed by Breen and Goldthorpe young people and their families aim at attaining the level of education that will allow them to achieve at least the level of social status that their parents have (Breen and Goldthorpe, 1997). In accepting

this theoretical approach, several assumptions can be made regarding the potential response of various groups to the decline of vocational education.

The problem with this approach, however, is that considering the rapidly changing social and economic context it would be difficult for parents to assess what kind of educational and occupational career could guarantee a social status similar to or higher than their own status.

What sort of social status, then, could people with a vocational education hope for in the Soviet Union? First of all, the distinction between the two should be once again underlined: primary vocational education equipped students with basic professional skills and was preparing them to take up basic manual jobs. Secondary vocational education, on the other hand, prepared middle-rank professionals. Neither of these forms of education was the preferred option for children with a privileged background. However, studying at a 'technikum' was clearly superior to studying at a PTU as it offered much better career opportunities. Therefore, primary vocational schools enrolled a very small share of students with privileged backgrounds, while in secondary professional schools enrolment was more equally distributed among classes. For students with privileged backgrounds who could not make it to university because of poor academic achievement, lack of motivation or other reasons, it was a good way to divert their educational routes to programmes that would still provide decent employment opportunities, and even career advancement. For representatives of disadvantaged social groups it was the way to find employment, improve their life chances and advance beyond the positions held by their parents. The data I am using, indeed shows that secondary vocational education provided decent opportunities for accessing the service class.

As described in the previous section, it is difficult to pin down precisely what caused the decline of vocational education. Most likely it was the combination of various factors originating both from the supply and demand sides.

It is more likely that the chief culprit in the decline of vocational education was the loss of demand. It is true that the government sharply reduced funding, and this could have caused institutions to shut down or limit enrolments. But the evidence from higher education shows that reduction of state funding was not a barrier for retaining the same number of students and even increasing enrolment – universities simply started charging

students for tuition fee. This did not happen in the case of vocational education, however: secondary vocational schools did start charging tuition fees and private ones also opened but the share of fee-paying students (both at public and private schools) did not exceed ten percent of the total student number (for comparison, in higher education this share was more than fifty percent).

This can lead us to believe that the decline in vocational enrolments happened primarily because of the lack of demand. Accepting the premise of RRA theory, we can assume that other educational paths were more appealing for students and/or their parents. For students who would, in the Soviet Union, opt to enrol in primary vocational schools, the more appealing alternative option would be to drop out entirely from the formal education system at an earlier stage without acquiring any qualifications. The newly emerged self-employment opportunities could guarantee them at least the same level of income and social standing as their parents had.

This can be true to a certain extent of secondary professional education as well. There is some qualitative support in Georgia for the assumption that the children of parents who themselves had some sort of vocational and professional education started dropping out earlier as they and their families do not see any added value in trying to attain a scarcely available professional education (Chakhaia, 2014).

Some of the lower-class children could have chosen higher education instead, especially where secondary professional education is concerned – having an alternative to dropping out of formal education without receiving any professional qualifications was not a favorable alternative However as described in the previous sections, higher education expansion was accompanied by the growth of private costs for students and families and the benefits were therefore more likely to be used by the upper classes.

*We can thus expect that students with more disadvantaged backgrounds would opt to drop out entirely before of after completing basic education instead of receiving primary vocational training, and for terminating formal education after completion of secondary education instead of receiving secondary vocational education.*

The story is very different for the privileged groups. As primary vocational education was, to put it mildly, not a prestigious option, it is safe to assume that not many young people from privileged families ended up there and those who did were probably

the least motivated or least able students. Secondary vocational education, on the other hand, was more prestigious and offered better lifetime opportunities and so more young people from better-off families would choose this educational path. Nevertheless, this level of education was clearly inferior to higher education and upper-class children who enrolled in secondary vocational schools again must therefore have lacked motivation, talent, previous achievement, or some other qualities necessary to get into a university. During the 1990s, if this group dropped out of the formal educational system instead of enrolling in secondary vocational education, they would face the risk of a sharply deteriorating social position compared to that of their parents. They would therefore opt for the options considered to be better than secondary, and particularly primary vocational education for further social and career advancement. At the same time, privileged groups would be more likely to afford to cover the costs of the newly privatized higher education.

*We can expect therefore that those students with an upper-class background who in Soviet times would have received vocational training, would complete general school instead. And those upper-class respondents who would in the Soviet times have completed a post-secondary professional education, would instead go on to receive university education.*

In an effort to investigate the mechanisms behind the potentially different responses of various groups to shrinking vocational education, I estimate the effect of educational attainment on the employment status. As described in the previous chapter, due to the specificity of the data it is impossible to estimate whether this effect has changed over time from the Soviet to the transition period: employment status, unlike educational attainment, is highly likely to change throughout one's life. Therefore, I analyse this effect on the entire sample, not by birth cohorts. Of particular interest is the association between educational attainment and self-employment. Gerber (2004), while analysing the effect of educational attainment on self-employment opportunities in Russia during the transition, makes a distinction between professional, qualified and unqualified self-employment and finds a positive association between education and self-employment among women, but not among men (Gerber, 2004). Saar and Unt (2008) find that in Estonia it was mostly less-educated groups who selected self-employment as they had no

other choice due to the massive layoffs resulting from the closure of enterprises. As the Georgian economy shrank and industry particularly suffered, I expect this to have been the case in Georgia too. More self-employment opportunities for low-educated people could trigger young people from disadvantaged families to drop out of formal education early and to pursue self-employment.

## *Variables and methods*

As in the previous chapter, I identify five birth cohorts. To capture the differences between those respondents who had to make key educational decisions in the Soviet Union and during the transition, I present detailed analysis of the last three cohorts, namely: the pre-transition cohort born between 1957 and 1965, the early transition cohort born between 1966 and 1974 and the later transition cohort born between 1975 and 1982. The key dependent variable is educational attainment level. Due to the peculiarities of the Soviet and post-Soviet educational structure, as well as the specific nature of the way data was collected, it is difficult to present educational attainment in a standard classification. The data I analyse provides two variables on educational attainment: the highest level of education achieved at general secondary school – primary, basic, or upper secondary – and the type of education (if any) the respondent received after leaving general secondary school. Students could take different routes to attaining different levels of education. For example, the most traditional way to enter university was to complete general secondary education and take university admissions exams. But it was also possible to complete only basic education, then move on to primary or secondary vocational school and be awarded a secondary school certificate and after this to advance to university. However I focus only on completed education and not on the specific trajectories since it would further complicate the analysis.

I have introduced five category specifications of educational attainment. The first category includes those respondents who have only compulsory/basic education (normally 8 or 9 grades) without any further academic or vocational training. The second category includes those who have completed primary vocational education (with or without an academic secondary education certificate). The third category includes those who have completed secondary academic education at general schools. The fourth category includes respondents with secondary vocational education, both those who first

completed academic secondary schooling and later went on to study at vocational schools as well as those who completed both at the same time. Finally, the fifth category includes those with university education.

I use the occupational class of parents as the key independent variable. For this variable I use the adapted version of the EGP scheme with 6 categories as described in the previous chapter. I include parental education as a control variable consisting of three categories: basic education, secondary or professional education and university education. Both origin variables are defined as the higher value of the two parents. I have fitted a model with only parental class as a predictor variable (the results from the model are presented in the Appendix). Adding parental education does not change coefficients much: some effects are weakened. I present all the results from the full model including parental education as a control to emphasize the fact that all the effects present are due to parental occupational class only.

For the follow-up analysis on the change in the effect of educational attainment on the chances of employment I have constructed a dummy variable with two outcomes: employed or self-employed and unemployed.

For this chapter I use the same data from GGS, as described in the previous chapter. I also use the same methodological approach of fitting multinomial logit regression with cohort and parental occupational class, and the interaction between them as key predictor variables.

## Results
### Changes in educational attainment and class origins

Before turning to regression analysis I present descriptive statistics and an overview of the change in the composition of key variables across cohorts. Figure 4.1 depicts changes in cohort educational attainment rates among men and women in Georgia. To have a better picture of the evolution of vocational education over time, in the descriptive figures I have included data from five birth cohorts. These figures largely confirm the national trends conveyed by official statistical data. I have already discussed the trends on basic education and university attainment in Chapter 2 and will therefore not dwell on them here.

As far as vocational education is concerned, we can see that both at primary and secondary levels it is reduced among later cohorts, both men and women. As we can see though, enrolment of women in secondary vocational education was much higher compared to men. This perhaps can be attributed to the type of education provided by these institutions focusing mostly on 'soft' occupations. Simply observing these figures can lead us to conclude that the declining primary vocational attainment for the transition cohorts translated into rising basic education attainment levels; similarly, declining secondary vocational education attainment levels could translate into rising higher education levels.

**Figure 4.3** Cohort attainment rates for men and women, Georgia
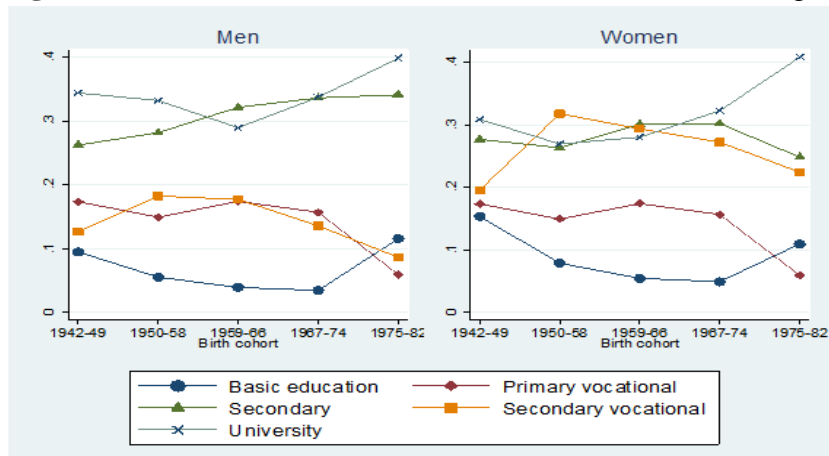


However, there are certainly finer distinctions to be made. Each of the groups of respondents who attained various levels of education at different periods has diverse backgrounds. Figure 4.4 demonstrates the distribution of respondents from each parental occupational background across five attainment levels for men and women combined and for all five birth cohorts. Focusing on vocational education, we can see that a very small percentage of the children of parents in non-manual professions has primary vocational education, which is not surprising. But in general, primary vocational attainment is quite low, even among the lower classes. As for secondary vocational education, the picture is different: a small share of respondents with upper-service class parents has credentials relating to this level of education. However, among the rest the distinctions are not very large. In fact, this is the level of education where respondents by parental background are

most uniformly distributed and it is therefore particularly interesting to see the movements from this level to other educational paths.

**Figure 4.4** Education attainment levels by parental occupational class, %
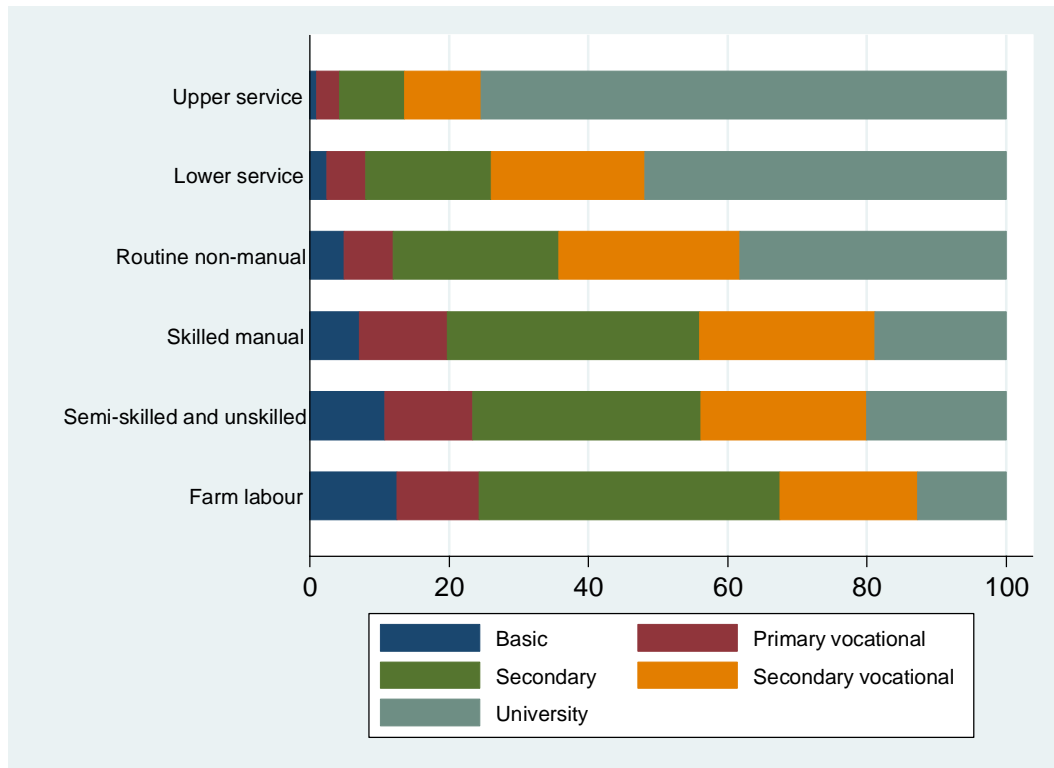


Figure 4.5 shows the other part of the origin-education-destination triangle: the shares of respondents attaining different occupational classes by educational attainment. Again, the figure presents an entire sample including both sexes and all five cohorts. A big takeaway from this figure is that access to the upper-service class is reserved almost exclusively for those respondents who have higher education credentials. Another important observation is that only among university and secondary vocational education graduates do more than half of all the respondents have non-manual occupations. This points to the fact that secondary vocational education was the most viable gateway to a 'decent' occupation, bar university.

**Figure 4.5 Occupational attainment by own educational attainment, %**
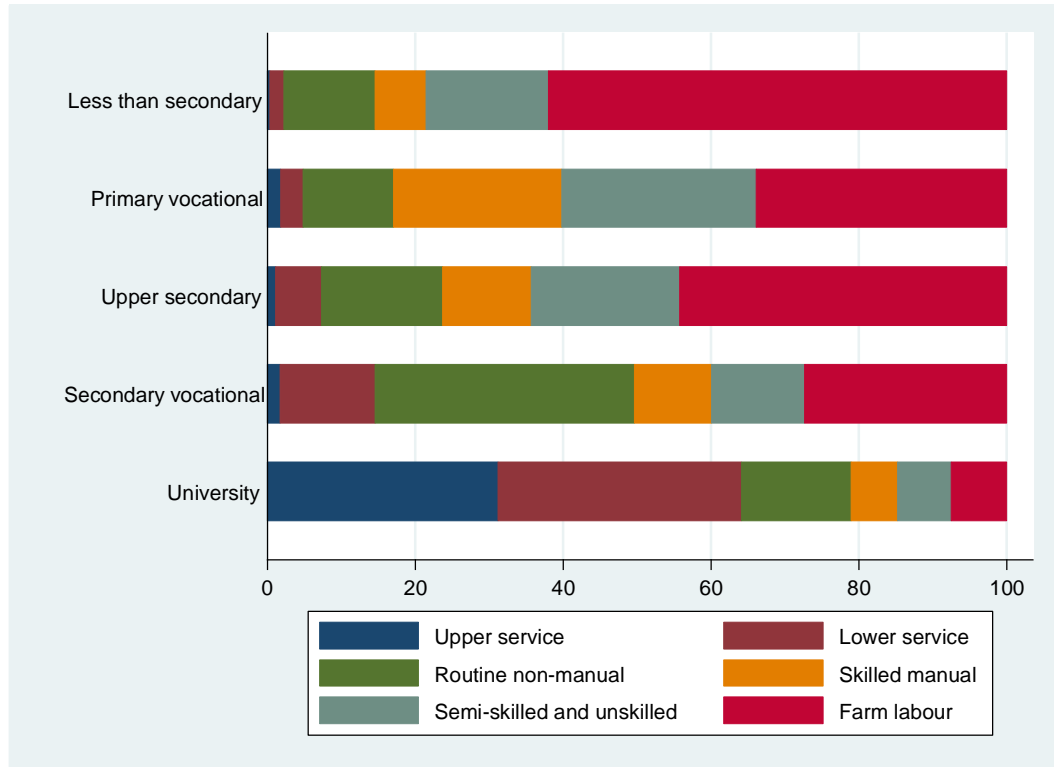
Unfortunately, it is not possible to evaluate how the association between education and destination occupation changed across birth cohorts since the data is cross-sectional and occupational class is bound to change throughout one's lifetime. Moreover, highly educated people are more likely to advance professionally at later stages in life while the low-educated are likely to achieve the highest possible occupational status earlier. Therefore, comparison of origins-destinations association across birth cohorts is a futile endeavour.

## Changes in educational attainment for each parental occupational class

Table C.1 in appendix C presents the coefficients from multinomial logit models for five cohorts, for men and women separately. The table includes two models for both sexes: first parental occupational class, cohort of birth, and interaction between cohort and parental class as independent variables. In the second model, parental educational attainment is added as a control variable. This improves model fit while only slightly altering the estimates. All estimates are calculated and presented based on this last model. Secondary education is the base outcome and upper service class is the reference category in all models. The models are estimating log odds of completing given level of

education as compared to completing full secondary education for each occupational class category in comparison to upper-service class.

Model coefficients alone can tell us very little about the absolute sizes of any changes observed. For this reason I have calculated predicted probabilities for completing different levels of education for the members of all six identified classes. All calculations are based on the multinomial logit models estimated in the tables presented in the appendix.

The major point of interest of this chapter is to understand how representatives of different classes have reacted to changes in primary and secondary vocational education and what alternative paths they have chosen. Therefore, instead of the more traditional representation of probabilities of attainment at a particular level of education over cohorts, I present the probabilities of attaining all five levels of education for each parental class category separately. Figures 4.6 and 4.7 show the probabilities of attaining different levels of education across cohorts for different classes for men and women respectively.

For men coming from upper-service class backgrounds the probability of attaining only basic education (first column) has practically not changed over the last three cohorts. The probability of attaining vocational education decreased by almost exactly the same percentage as the probability of upper secondary attainment increased. This can lead us to conclude that, as assumed in the hypothesis, those children of upper service class parents who would have received primary vocational education in the Soviet Union moved on to complete full secondary education. A drop in the provision of vocational education might have triggered them to complete secondary education, or they might themselves have opted out as the skills provided by these schools would be no longer valid in the new economy. Similarly, for the children of the same upper service class parents, the probability of attaining university education increased by almost exactly the same percentage point as the attainment of professional education decreased, leading us to assume that those upper-class children who would have ended up with secondary vocational education in the Soviet Union, went on to get higher education. It is important to recall here, that higher education very quickly adjusted to economic and labour market changes: programs were diversified in terms of contents and structure to meet demand

and costs were privatized to maintain sustainability given the conditions of drastically reduced public funding. Opportunities therefore existed in higher education for those willing and capable of – financially or otherwise – getting them.

For the lower service class the pattern is very similar, only the increase in the probability of attaining university education is not quite as high as the decrease in the probability of attaining secondary vocational education: some of those who would have received secondary vocational education were they born in 1959-1966 ended up with only secondary education instead.

**Figure 4.6** Predicted probabilities of attaining different levels of education across cohorts by class, men
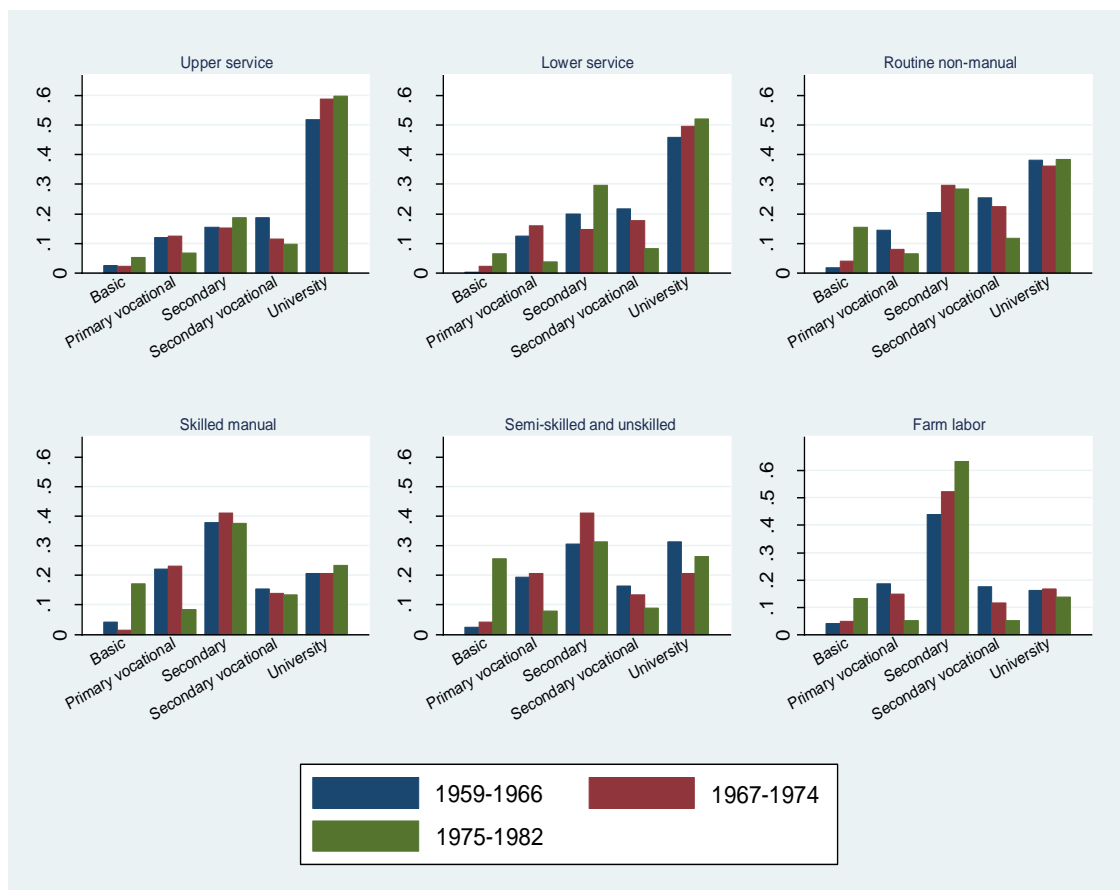


As we move on to the less privileged classes the pattern becomes different – attainment rates in primary and secondary vocational education shrank for all classes but this did not result in 'upgrading' educational attainment. The children of the lower classes, who no longer had the opportunity to go to primary vocational schools, dropped

out earlier, thus sharply increasing the share of respondents with only basic or less education, most notably of the children of semi-skilled and unskilled workers, for whom this share increased to 23 percent among the last cohort compared to a mere 4 percent among the pre-transitional cohort. This increase is even larger than the rate of the decrease in vocational attainment among the same group, indicating that not only those respondents who would have received vocational education in the Soviet Union dropped out, but also some of those who might have attained higher levels of education did not even complete full secondary school.

Secondary vocational attainment rates decreased substantially among the children of routine non-manual workers, unskilled workers and farm labourers who belong to the transitional cohorts. However, unlike children of service class parents, their probabilities of attaining university education did not increase because of this: most of them were more likely to complete full general education cycle and then opt out of the formal educational system, and some (like the children of semi-skilled and unskilled workers described above) dropped out even earlier without any training. The only exceptions are the children of skilled manual workers whose chances of attaining higher education increased slightly – by about 5 percent, which is less than the rate of increase for service class children.

While these patterns seem logical and largely confirm the hypotheses that I proposed in the previous section, it should also be noted that the differences between the coefficients as we move from one cohort to the next are, in general, not very large. It is thus advisable to interpret the results with a certain caution.

For women, as shown on the figure below, the patterns are somewhat similar, but not quite as clear as in the case of men. In general, far fewer women were enrolled in primary vocational education, possibly due to the nature of programs provided by these schools – mostly training for manual blue-collar jobs. Among the women born in the late transitional cohort, attainment of this level is almost equal to zero for all parental backgrounds. The chances of attaining secondary vocational education decreased considerably in the last cohort for women whose parents are lower service professionals while their university attainment rate increased but not to exactly the same extent. The daughters of routine non-manual workers seem to have compensated for the loss of

secondary vocational opportunities with higher education to an even lesser extent. Most women whose parents are farm workers and who would, we can assume, have completed secondary vocational schools if they had been born in 1959-1966, ended up finishing secondary education instead. This is very similar to results among the men. The lowest rate of decrease in secondary vocational attainment is observed among the daughters of skilled workers. In fact, this result also mirrors the case of men.

The case of women whose parents are unskilled workers is peculiar as the decrease in secondary vocational attainment in their case is translated to the increase in university attainment, which is not expected from this group. But we should bear in mind that the share of parents with this occupational status declined throughout the time, particularly for respondents of the late transition cohort and this can cause some idiosyncratic results.

**Figure 4.7** Predicted probabilities of attaining different levels of education across cohorts by class, women
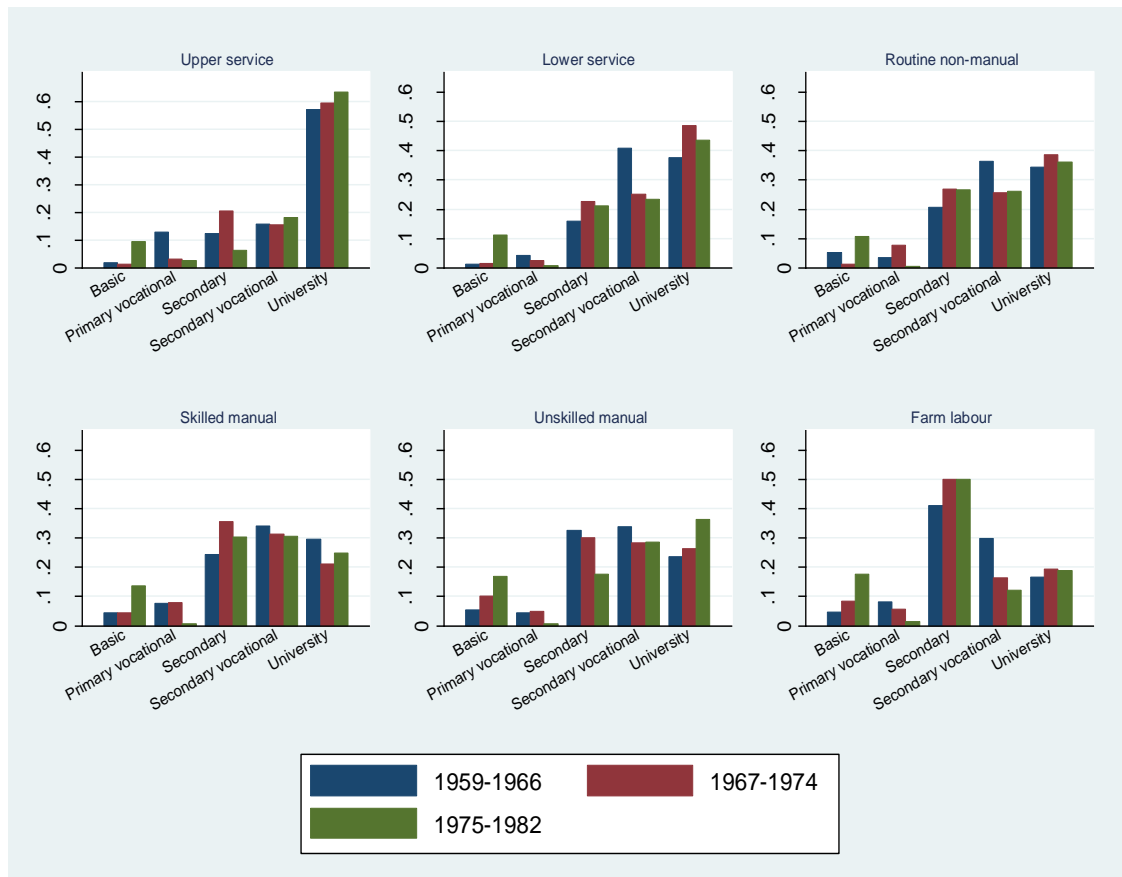
To get a better picture of what the above-described developments mean for inequality in educational attainment, in the table below I present differences between the children of upper service class and of semi-skilled/unskilled workers in predicted probabilities of attaining various levels of education, separately for men and women. As we can see, there was practically no difference between these two occupational classes in the chances of having basic education as highest attainment level among the men born in 1959-1966. For men born in 1975-1982, by contrast, this probability was 20 percent higher among the children of workers compared to the children of service class. The difference in the chances of graduating from university, on the other hand, increased by 12 percentage points to the advantage of the service class. At vocational levels, both primary and secondary, differences in the attainment probability between service and working classes has not changed substantially across cohorts. This pattern suggests that the decrease in vocational education attainment, while similar for service and working class, was translated into better educational outcomes for the first and worse outcomes for the latter.

**Table 4.2** Differences between the predicted probabilities of upper service class and unskilled workers to attain various education levels

| | Men | | Women | |
|---|---|---|---|---|
| | Pre-transitional cohort | Late transitional cohort | Pre-transitional cohort | Late transitional cohort |
| Basic | 0.00 | -0.20 | -0.04 | -0.08 |
| Primary vocational | -0.08 | -0.01 | 0.08 | 0.02 |
| Upper secondary | -0.15 | -0.13 | -0.20 | -0.11 |
| Secondary vocational | 0.02 | 0.01 | -0.18 | -0.10 |
| University | 0.21 | 0.33 | 0.34 | 0.27 |

The right panel of the table shows a different picture for women. The chances of attaining only basic education have grown disproportionately for the daughters of working-class parents, but this change is not as great as it is with the men. More interestingly, the difference in university attainment rates changed to the advantage of the working class, as shown previously in Figure 4.7. Again, we should bear in mind that sample sizes are not very large so as to allow high levels of precision for estimating coefficients for individual birth cohorts. But we can also assume that some of the socio-economic and institutional factors could have affected men more profoundly than

women: men on the whole were more likely to drop out of the school system earlier; men were also more likely to be enrolled in primary vocational schools while women had the higher likelihood of attending secondary vocational institutions. In addition, the patterns for women are different – similar to that of men – if we compare the upper service class to skilled manual workers.

A logical next step to building on this evidence is to investigate what this deepening educational inequality by social origin means for later life chances. As I pointed out before, due to the peculiarities of the data it is not possible to compare educational returns across cohorts. I did, however, estimate the association between employment status of respondents and their educational attainment for the entire sample, i.e. for all the cohorts. In Table 4.3 I present the estimated probabilities of being unemployed, employed or self-employed for respondents with various educational attainment levels. All estimates are drawn from multinomial logit model with the three-category employment status (self-identified) as the key outcome variable, educational attainment as the key predictor, and sex and birth cohort as controls. As we can see, the chances of identifying oneself as unemployed do not differ substantially across educational attainment levels. However, considerable differences are present in terms of the chances of being employed and self-employed: about half of all university-educated people report that they are employed, while for others this indicator is much lower – as much as by 28 percentage points for those with only basic education. On the other hand, this latter group appears to be successful in finding self-employment opportunities: more than half of all early drop-outs report that they are self-employed. Similarly, the chances of being self-employed are very high among secondary school graduates. This finding gives certain credence to the assumption that early drop-out rates could have increased among the latest cohorts in an effort to pursue newly-emerged self-employment opportunities.

**Table 4.3** Predicted probabilities of employment status for different educational attainment levels for all cohorts combined

|  | Unemployed | Employed | Self-employed |
|---|---|---|---|
| Basic | 0.26 | 0.22 | 0.52 |
|  | [0.18, 0.33] | [0.14, 0.30] | [0.43, 0.62] |
| Primary vocational | 0.26 | 0.33 | 0.40 |
|  | [0.21, 0.31] | [0.27, 0.39] | [0.35, 0.47] |

| | | | |
|---|---|---|---|
| Secondary | 0.30 | 0.23 | 0.46 |
| | [0.27, 0.34] | [ 0.20, 0.27] | [0.43, 0.50] |
| Secondary vocational | 0.30 | 0.32 | 0.38 |
| | [0.25, 0.36] | [0.26, 0.37] | [0.32, 0.43] |
| University | 0.27 | 0.50 | 0.23 |
| | [0.24, 0.30] | [0.46, 0.53] | [ 0.20, 0.26] |

## *Conclusions*

Vocational education was in a way the backbone of the Soviet centrally-planned economy as it provided a trained workforce for the many industrial and agricultural enterprises, both skilled manual workers as well as mid-level professionals. The fate of vocational education in post-Soviet countries depended on how these countries' economies had been shaped in this period. After the breakdown of the Soviet economy, the emerging national economies did not develop in similar ways – some retained the main structure of the economy and production. In other, like in Georgia, the economic system was completely disrupted due to a number of reasons, including civil and ethnic wars. But beyond the wars, it was the structure of the Georgian economy in the Soviet period that was simply unsustainable in open-border market conditions. The country's economic output, which was equally distributed between industry, agriculture and services, heavily relied upon the subsidized raw production materials from other Soviet republics and on the inflated export markets in those same republics. Subsequently, the economy collapsed within three years, industrial and agricultural enterprises were closed, and production was limited to minimum to cater to local market.

Vocational educational institutions, which were designed to provide these very enterprises with personnel, were no longer needed, and the enrolments declined spectacularly during the 1990s. It is difficult to track the exact causes of this decline – whether it was the reduced demand that drove schools not to accept any more students, or vice versa – as schools did not offer opportunities, demand declined. But one thing is clear: the demise of economic production was one of the key factors.

In addition, there was a dramatic reduction in public funding for the entire educational sector, including vocational schools. Unlike higher education, where private opportunities emerged almost immediately and public universities soon caught up by generating their own income through tuition fees, vocational education was much slower to transform.

Top-down reforms, on the other hand, seemed unfeasible as the government was not functional and management of vocational schools was scattered among different ministries and agencies. Only recently, through top-down governmental efforts, has it become possible to transform vocational education into an entity offering qualifications and skills for which there is demand on the labour market.

In the 1990s, however, due to the constellation of the above cited factors, vocational education enrolment, both at primary and secondary levels, did decline. In this chapter, then, I attempted to find out how this decline affected different groups of the population or, to put it differently: what educational paths did those Georgians opt for in the 1990s, who would have chosen to enrol in vocational educational schools, and were they born a decade, or two decades earlier.

To answer this question, I have tracked the movements of respondents with different parental background profiles across three birth cohorts and five educational attainment levels. The results, while the coefficients are small in size, show the trend that as attainment in vocational education declined for upper-class children, they moved onto higher levels of education – university education in the case of case of secondary vocational and upper secondary general in case of primary vocational. Respondents born to lower-class parents, on the other hand, in most cases slid one step down on the ladder of educational attainment.

Therefore, in essence, the findings from this chapter somewhat build upon and extend the findings from the previous chapter: the decline of vocational education contributed to increasing educational inequality by social origin as representatives of different occupational classes responded differently to this development.

The potential mechanism for explaining such varied responses to shrinking vocational education might be different depending on what caused the decline of vocational education. It could be driven primarily by the lack of supply – as public support for education in general and vocational education in particular subsided, there were simply no opportunities and therefore, to use Gambetta's apt description, young people were pushed out of the system (Gambetta, 1987). Conversely, it is possible that seeing traditional sectors of the economy decline, young people themselves opted out earlier, hoping to pursue new opportunities, most notably self-employment. The brief

analysis of employment status gives certain support to this hypothesis – young people with only general education credentials (basic and secondary) were the ones who had the highest probability of being self-employed. Therefore, even as students from disadvantaged parental backgrounds dropped out earlier, they were perhaps not the biggest losers of the transition.

At the same time, as the structure of the economy was changing dramatically, the perception of socio-economic status also undoubtedly. As I previously proposed, one of the main drivers of educational decision-making in the post-Soviet transition period could have been relative risk aversion – pursuing the educational track that would guarantee at least the same social status for children as that of their parents (Breen & Goldthorpe, 1997). Was the social status of a small street vendor in the 1990s perceived to be the same as the social status of a chemistry technician in a metallurgical factory? As prestige and status in the changing world is somewhat of an elusive concept, I dedicate the next chapter to the examination of monetary returns to educational attainment.

# Chapter 5  Returns to Higher Education during the Post-Soviet Transition in Russia

The two previous empirical chapters have shown that educational inequalities by social origin did not change in a homogenous way in post-Soviet Russia and Georgia at various levels and for different groups. However, all things considered, educational inequality grew in both countries during the 1990s. In this chapter I follow up on this finding by focusing on another side of the 'origins-educational attainment – destinations' triangle and examining the change in the returns to education in Russia during 1990s and 2000s.

The fact that income inequality increased everywhere during the post-Soviet transition is well-documented and is not disputed. This chapter, then, in essence explores whether this increase in income inequality was linked to educational credentials.

Market transition, economic decline and later consolidation, fluctuations in university enrolment rates – are all factors that could potentially affect the level of educational returns for different groups. All of these factors were present in Russia in the immediate aftermath of the breakup of the Soviet Union and later in the 2000s. In this chapter, using pooled data from different nationally representative surveys conducted in Russia from 1991 to 2010, I explore how the benefits of attaining various educational levels changed alongside these factors.

## *Returns to educational attainment*
## Market transition and educational returns

The transition from a centralized to a market economy was perhaps the single most important development after the breakup of the Soviet Union for each of the new independent republics. Among the many side effects associated with denationalizing property and production, change in the function of human capital is one of the most important. Market transition theory, developed in the context of rural China posits that human capital is rewarded at a higher rate during the transition to free markets compared with in socialist economies. The logic behind this assumption is that during market transition the shifting sources of power tend to favour direct producers rather than redistributors. Private actors, then, compete for and reward individual talent and productivity (Nee, 1989).

Market transition theory has found substantial support in the case of China (Bian and Logan, 1996; Zhao and Zhou, 2002). However, China represents a special case as liberalization of the economy there was not accompanied by political liberalization. Therefore, the other tenet of Nee's theory – reduction of rewards from one's political position (party membership) during market transition – is not applicable to post-communist countries.

In the Soviet Union individual incomes were determined through redistributive power and income inequality was therefore very low. Salaries were centrally set for all occupations based on egalitarian considerations. Differences between salaries by human capital as well as skills levels, were very small, particularly in the later decades of the USSR. Salaries of skilled and unskilled workers, for example, were almost the same (Connor, 1991). Empirical evidence from the Soviet Union suggests that income differentials by educational attainment were small as well: an average university graduate earned a 17 percent higher salary compared to secondary school graduates (Flakierski, 1992). Rapid liberalization of the economy, then, according to market transition theory, laid the grounds for highly-educated professionals to reap the benefits of marketization disproportionately.

The existing empirical evidence from different post-communist countries regarding returns to education during the transition is mixed. In the case of Poland (Domański, 2010) and the Czech Republic (Večerník, 2009) a clear trend of an increase in the returns to university education was found. In Russia, in contrast, Gerber and Hout (1998) found no increase in returns to schooling based on the survey data from 1991-1996 (Gerber and Hout, 1998). To explain this finding, they maintained that as Russia experienced less economic growth compared to China and the political situation was more volatile, uncertainty was high and therefore pursuing competitive enterprises was not rewarded (Ibid.). Burawoy termed the type of capitalism emerging in Russia 'merchant capitalism' – one characterized not by efficiency and rewarding productivity, but rather by opportunistic privatization of national property (Burawoy, 1997). In this respect there was a substantial difference between post-Soviet countries and other Eastern European post-communist countries. The root for such differences can be sought for in the historical background of these countries with the Soviet Union having a much longer

history of restricting private production and free enterprise. While private ownership and entrepreneurship was restricted, informal exchanges thrived. The pervasive 'shortage economy' in socialist countries caused by the systemic characteristics of the centralized economy (Kornai, 1980; Kornai, 1992) provided grounds for nurturing such exchanges. As Kornai (2000) describes, in Hungary, when the political sphere became more tolerant, private ownership and entrepreneurship started to flourish (Kornai, 2000). It should be remembered, however, that Hungary had the history of market relations before the imposition of the communist rule. In the Soviet countries, on the other hand capitalist experience was almost non-existent (with the notable exception of Baltic countries, which bear more similarities with other Eastern European countries). Thus, in a way there was a certain continuity between the informal economic activity during the last decades of the Soviet Union and the 'merchant capitalism' of the early transitional years.

Gerber and Hout refer to the same type of 'merchant capitalism' characteristics when they point out that during the early years of transition, education was not the most important form of capital, but rather 'supply and barter networks, access to locally scarce goods, connections with customs officials and local politicians, skill in the military and pleasure-providing arts' (Gerber and Hout, 1998:37).

At the same time, while former Soviet countries witnessed sharp increases in income inequality, this was not the case in Eastern European countries (Milanovic, 1998). As the analysis by Gerber and Hout was restricted to a few years following the breakup of the Soviet Union, it can be assumed that the effects of marketization might not yet have been present.

On the other hand, several studies by economists have indicated the rapid increase of the rates of returns to education in Russia, calculated as basic Mincerian earning functions based on years of schooling (Clark, 2003; Fleisher, Sabirianova and Wang, 2005; Gorodnichenko and Peter, 2005). In fact, increase in the rates of returns in Russia has been reported to be among the highest compared to other post-communist countries and it was attributed to the rapid marketization of the Russian economy, the so-called 'shock therapy' approach. However, all of the existing studies use years of schooling as the predictor variable making it difficult to disentangle the effect of university education.

In addition, most of the studies use the Russian Longitudinal Monitoring Survey, which is a panel study and it is therefore difficult to elicit conclusions about time period effects.

Extending the analysis by Gerber and Hout to later years I expect their major finding – the persistence of low returns to educational credentials and professional status to have changed. Even accepting the premise of 'merchant capitalism', it is likely that people with better educational credentials could be likely to benefit more from market transition. The so-called 'merchant capitalism' assumes that the 'economic system is driven by the pursuit of profit that comes primarily from trade rather than from transforming production' (Burawoy and Krotov, 1992:35). Therefore, this approach assumes that the major determinant of income was not efficiency and productivity but the ability to sell whatever was available. Firstly, even the ability to bargain, barter and sell would be associated with higher educational levels: managers and professionals, who were usually university graduates, were in a better position to exploit social networks and benefit from barters and sales. Further, even though the Russian economy has retained the features of merchant capitalism, production resumed as the economy picked up by the end of the 1990s, and so we can assume that human capital would become more important. Therefore if can be expected that monetary returns to education in Russia increased by the end of 1990s and 2000s.

Taking this argument about market transition even further, we can factor in the mediating role of occupational attainment in returns to education. Namely, increasing returns to occupational attainment (if any) can be expected simply based on the fact that the system of centrally regulated wages was lifted and employers were allowed to set salary levels considered worthy of the services rendered. On the other hand, the central tenet of market transition theory, the competitive advantage for people with high human capital, would manifest itself in higher earnings within the same occupational groups. Therefore any returns to educational attainment increased in Russia by the end of 1990s and throughout 2000s were not driven by occupational status only.

**Economic growth and returns to education**
Another factor likely to have had an effect on the pattern of returns to educational attainment in Russia during the transition is economic growth. A classical Kuznets Curve approach suggests that inequality, as such, increases at the initial stages of economic

growth and decreases as growth consolidates (Kuznets, 1955). However, due to the specific context in which the Kuznets Curve theory was developed (the industrialization of rural Britain), it is hardly applicable to post-Soviet Russia and, as even a cursory glance makes clear, the macroeconomic indicators presented in Table 1.1 of Chapter 1 do not support the underlying assumptions.

However, there are grounds to believe that economic growth can act as a trigger to increased returns to human capital as more skilled individuals are likely to benefit disproportionately from arising new opportunities (Chiswick, 1971). This would imply that university-educated people gain more in earnings than the rest of the population, all other factors being equal. The empirical evidence for this is strong from the USA and the UK. Income inequality by educational attainment grew in the two countries substantially during the economic boom of the 1980s (OECD, 1993). At the same time, evidence suggests that growth in the returns to educational credentials was at least partly responsible for the increase of inequality. In the USA returns to college education sharply increased during the 1980s (Morris and Western, 1999). In the UK, the ratio of the salary of university graduates compared to those with no degree increased by 8 percent while in the US, the wage premium of college graduates grew by 10 percent (Aghion, Caroli and Garcia-Penalosa, 1999).

Russia suffered from economic decline in the early 1990s, and then from an economic crisis in 1998 after the economy had briefly recovered. Growth resumed at the beginning of the 2000s (see table 1.1). Therefore, we can assume that monetary returns to educational credentials increased in the 2000s due to economic growth.

In the case of Russia in the 1990s a more pertinent question is how economic decline (and not growth) affects inequality and whether the burden of crisis is equally shared by everyone despite their background. Income inequality undoubtedly grew in Russia in the 1990s as the economy declined. But the question explored in this chapter is whether educational credentials helped alleviate some of the negative effects of economic decline and, consequently, whether the highly-educated population was less affected. There is some evidence from other regions around the world that vulnerable and less privileged groups are more likely to suffer the most from major economic crises (Pernia,

1998; Portes and Hoffman, 2003). I therefore expect that people with lower educational credentials would see their income decline more compared to more educated people.

Based on the assumptions of market transition theory and in light of economic growth patterns in Russia, I expect that:

- *Return to educational attainment increased throughout 1990s, and the increase was more pronounced from 2000 on.*
- *Increase in returns to educational attainment are present net of occupational status.*

## Fluctuation in higher education enrolments

The role and function of higher education has changed significantly during the last half century all over the world. The transformation, in terms of growth, has been described as the movement from *elite* to *mass*, and from *mass* to *universal* access in advanced societies (Trow, 2000). As higher education expanded, an inevitable question that emerged is whether the payoffs have remained the same. Psacharopoulos (1989) suggested that if education is treated as an investment, the rate of benefits from attaining more education should decline with expansion. Although he found evidence to support this hypothesis (Psacharopoulos, 1989) this approach does not, however, take into account other important factors, such as technological advancement which coincided with higher education expansion – new technologies are human capital intensive and therefore require professionals with higher education levels (Katz 1999). Employers also tend to substitute low-skilled personnel as more people get higher education. Due to these various factors it is difficult to identify the effects of the expansion of education as such on returns.

Related to this point is the concept of education credential inflation – if university credentials loose value as they become more widespread. Many scholars have assumed this to be expected and it has been described as credential inflation (Collins, 1979).

In Russia, as we saw in the first chapter, enrolment rates in higher education first dropped in the early 1990s but later expanded substantially, although almost exclusively due to the privatization of costs, specifically the imposition of tuition fees at public universities and the establishment of private universities which had not been allowed to operate before 1991. The latter, by all accounts, were often of dubious quality,

established to absorb the demand on higher education unleashed during the market transition. It is therefore not clear if these new universities were able to equip students with the necessary skills to perform in a high-functioning economy. With increasing university enrolment rates, the quality of universities could have a substantial impact on the rate of returns – graduates from less prestigious universities could be less likely to earn as much income as their peers from better universities. Due to the fact that the data does not differentiate between the type of universities the respondents attended, it is impossible to see if certain universities are more likely to generate higher returns. As for university attainment as such, the credential inflation approach would imply that by the late 2000s, when the number of university enrollees and graduates increased, *returns to university education would decline*. This is the mirror opposite of the economic growth hypothesis according to which returns to education were expected to increase by the late 2000s.

Finally, as I discuss the change in the returns to education for men and women separately, a few words are in order regarding female employment and earnings in the Soviet Union and during the transition. The Soviet Union encouraged female labour participation from the very beginning not only through formal declarations, but through the provision of generous maternity leaves, daycare and preschool services. As a result, female labor participation reached almost 80 percent (Brainerd, 2000). Evidence also suggests that ratio of women's average wages to men's average wages in Soviet Russia (69 percent) was comparable to the US (70 percent), but was substantially behind Scandinavian countries (84 percent for Sweden) (Ibid.).

As Women occupied lower positions in occupational distribution, it should be expected that when central control over wages was lifted and differentials increased subsequently, gender pay gap would also increase. This proposition has been confirmed in case of Russia (Reilly, 1999; Brainerd, 2000).

In terms of returns to education, employment opportunities in the Soviet Union for educated women were skewed towards occupations in health and education sector (Fong and Paul, 1992). Educated men, on the other hand, were disproportionately presented in the managing positions. They were also the ones who could easily take advantage of

privatization opportunities arising in 1990s, that were the major source of income increase. *Therefore I expect that income returns to education in this sample is higher for men than for women*.

## *Data and methods*
### Data

In this chapter I have used merged dataset from twenty-one cross-sectional surveys conducted in Russia between February 1991 and January 2010 (table 1).[15] The first survey from 1991 was implemented within the scope of the Comparative Class Structure and Consciousness Project (CCSCP) (Hout, Wright and Sanchez-Jankowski, 1991). All the subsequent surveys were designed and conducted by the same survey organization, the Levada Analytical Center, which is the leading survey firm in Russia. The sampling procedure used in all surveys by the Levada Center is the same. As described in Table 5.1, some of the surveys were conducted as part of the regular omnibus *Monitoring* polls and others were part of specially commissioned projects.

**Table 5.1 Sources of** survey data for returns to education in Russia

| Survey Project | Date | Valid N | Total N |
|---|---|---|---|
| Class Consciousness and Structure | February 1991 | 1410 | 2125 |
| ISSP | February 1992 | 1178 | 1916 |
| Monitoring | March 1993 | 2279 | 3901 |
| Social Stratification in Eastern Europe | May 1993 | 3341 | 5002 |
| Monitoring | July 1994 | 1588 | 2902 |
| Monitoring | January 1996 | 1197 | 2374 |
| Monitoring | January 1997 | 1192 | 2406 |
| Survey of Employment, Income, and Attitudes in Russia | | | |
| Part 1 | January 1998 | 986 | 2410 |
| Part 2 | | 926 | 2408 |
| ISSP | June 1999 | 582 | 1705 |
| Survey on Educational Stratification in Russia | | | |
| Part 1 | September 2000 | 1036 | 2405 |
| Part 2 | November 2000 | 1082 | 2404 |
| Survey of Stratification and Migration Dynamics in Russia | | | |
| Part 1 | September 2001 | 978 | 2414 |
| Part 2 | November 2001 | 995 | 2421 |

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[15] The merged dataset was provided to me by Prof. Theodore Gerber of the University of Wisconsin-Madison.

| Part 3 | January 2002 | 1004 | 2332 |
| Monitoring | October 2001 | 1031 | 2378 |
| Monitoring | May 2002 | 1012 | 2437 |
| Monitoring | January 2003 | 1054 | 2389 |
| Monitoring | July 2004 | 1062 | 2408 |
| Monitoring | January 2007 | 1134 | 2407 |
| Monitoring | March 2007 | 1074 | 2407 |
| Memory Survey | January 2010 | 1097 | 2009 |
| **Total** | | **27238** | **58083** |

All surveys, with the exception of CSSCP, are nationally representative samples (however, they do not include the sparsely-populated far eastern and northern parts of Russia or Northern Caucasus) of Russian citizens aged 16 and over. The survey conducted within CCSCP sampled respondents aged 18 and older, only from the European parts of Russia, i.e. excluding the population east of the Ural Mountains. It was also conducted by the Institute of Sociology of the Russian Academy of Sciences. This can introduce some systematic bias in comparison with later surveys. However, I believe it is especially important to include the data from this survey as well since it is the only one that was conducted while the Soviet Union still existed and it therefore captures the peculiarities of the pre-transition society. The next survey was conducted in February 1992, that is a month after the Soviet Union officially broke up. Radical economic reforms, referred to as 'shock therapy', were not yet in effect. Therefore, this survey can, in fact, serve, as a somewhat more reliable pre-transition baseline.

All the analyses presented here are limited to respondents who were 25-60 of age at the time of the surveys and who provided valid data on their age, education, occupation, and earnings.

**Variables**

The personal income of the respondents is the key outcome variable in the analysis presented in this chapter. Each survey contained a question regarding the monthly income received by the respondent in the previous month. This includes any kind of income received from employment or self-employment and excludes such income as money transfers, debt return, gift etc. Data in original surveys was reported in current rouble values but in the analysis used all income data is standardized to January 1998 rouble

values using monthly consumer price indices. As the distribution of income is skewed as expected, in all estimations I use a natural log transformation of all reported income.

The main predictor variable in this analysis is level of education, which I specify as a four-category variable to indicate having at least some university education, having a secondary vocational degree, having completed secondary school, or less (the latter category includes primary vocational education as well).

To measure the change over time, I have grouped all survey cycles in three-year periods (except the first period, which includes only 1991 and 1992 as only these two can reliably be considered as a pre-transitional baseline). The following two periods from 1993 to 1998 are the years of transition and economic decline, including the crisis of 1998. Later periods are characterized by economic recovery and subsequently growth.

Higher education expansion trends, as described in detail in the second chapter, were somewhat in line with the economic decline and recovery. The periods right after transition witnessed a decline in enrollment rates, while later enrolments substantially expanded. In this regard, another potential weakness of the dataset used in this analysis is that there are relatively few sources of data for the later periods, as shown on table 5.1.

I use the sex and age of the respondent as control variables in all models.

In order to detect the net effect of education I have also estimated the model controlling for the respondent's occupational status using an adapted version of the EGP scheme:

Ib. Upper professionals

IIb. Lower professionals

IIIab. Routine non-manual

IV. Proprietors

V/VI. Technicians, manual supervisors, and skilled manual workers

VIIab. Semi- and unskilled manual workers in industry and agriculture

To estimate the changing effect of educational attainment on earnings, I estimate OLS models with logged income as the outcome variable. The key predictor, then, is the interaction between the period and the four-category educational attainment variable.

I perform additional analysis to estimate the association between educational attainment and a. access to service class and b. access to paid employment. The latter

variable is a dummy indicating whether the respondent was employed or self-employed at the time of the interview.

## *Results*
## Descriptive results

Before turning to the multivariate analysis, I present descriptive statistics on key variables. Table 5.2 shows mean incomes for various groups throughout the 1990s and 2000s. Several predictable trends are discernable: as expected, mean incomes for all groups declined in the 1990s. After very briefly picking up in 1998, they took another plunge again after the 1998 crisis. Women's incomes were consistently lower compared to the average and women seem to have suffered more from the 1998 crisis. After the recovery, however, the difference between male and female earnings seems to have decreased. We can also see that university graduates consistently earned more than average citizens. In fact, the advantage of having graduated is roughly comparable to the advantage of being male in terms of income. It is also noteworthy that during the 2000s graduate income seems to have grown at a higher pace compared to the average.

**Table 5.2** Descriptive statistics for key variables

| Year | Mean income in January 1998 roubles, SD in parentheses | | | |
|---|---|---|---|---|
| | Overall | Women | Men | University-educated |
| 1991 | 1619 (1056) | 1285 (644) | 1996 (1282) | 1935 (1095) |
| 1992 | 797 (858) | 606 (540) | 982 (1048) | 1005 (1049) |
| 1993 | 1053 (3320) | 767 (1089) | 1420 (4842) | 1354 (5305) |
| 1994 | 1046 (2160) | 758 (640) | 1414 (3412) | 1175 (1068) |
| 1996 | 845 (960) | 641 (567) | 1072 (1224) | 1060 (1262) |
| 1997 | 820 (798) | 646 (504) | 1024 (1005) | 982 (1032) |
| 1998 | 947 (1173) | 702 (623) | 1256 (1565) | 1194 (1516) |
| 1999 | 663 (544) | 388 (367) | 719 (651) | 707 (619) |
| 2000 | 687 (820) | 532 (526) | 896 (1066) | 878 (879) |
| 2001 | 855 (808) | 695 (661) | 1069 (928) | 1079 (1035) |
| 2002 | 956 (922) | 783 (768) | 1176 (1048) | 1260 (1209) |
| 2003 | 956 (929) | 791 (711) | 1170 (1117) | 1233 (1283) |
| 2004 | 1132 (1123) | 938 (948) | 1391 (1277) | 1481 (1475) |
| 2007 | 1493 (1735) | 1211 (1040) | 1862 (2301) | 1996 (2593) |
| 2010 | 1460 (1065) | 1235 (887) | 1774 (1205) | 1758 (1224) |

Furthermore, Table 5.3 presents how distributions of various groups changed throughout the period under analysis. The trends for university completion as well as some university education confirm the patterns found in the official data presented in the second chapter: university attendance/completion rates fall slightly in the early 1990s and

increase during the 2000s. This is not so obvious with the full sample, but it is with the sample of respondents under 36 (which is more relevant since this sub-group better reflects the trend). The share of population who consider themselves employed (or self-employed) fell sharply during the 1990s, then grew during the 2000s and briefly decreased again in 2010, perhaps to be explained by the effects of the 2008 economic crisis. This trend is compatible with the national unemployment data. The share of professionals (both high and low) shrank in the 1990s and stayed more or less stable throughout the 2000s.

**Table 5.3 Distribution of various respondent groups across survey years**

| Year | % with university education | | | % employed (age 25-60) | % professionals | % female |
|------|---------------|------|-----------|------|------|------|
|      | Some college  |      | Under 36  |      |      |      |
| 1991 | 33.2 | 84 | 36.3 | 84 | 42 | 57.9 |
| 1992 | 30.3 | 84 | 33.2 | 84 | 40 | 55.8 |
| 1993 | 25.8 | 85 | 27.9 | 85 | 35 | 60.2 |
| 1994 | 23.8 | 72 | 24.9 | 72 | 33 | 61.5 |
| 1996 | 28.4 | 67 | 24.6 | 67 | 34 | 57.3 |
| 1997 | 27.1 | 67 | 23.4 | 67 | 34 | 58.1 |
| 1998 | 26.4 | 54 | 24.8 | 54 | 34 | 58.5 |
| 1999 | 17.1 | 54 | 21.9 | 54 | 27 | 54.3 |
| 2000 | 24.6 | 65 | 27.4 | 65 | 31 | 62.9 |
| 2001 | 25.6 | 63 | 28.5 | 63 | 32 | 62.1 |
| 2002 | 24.2 | 64 | 27.1 | 64 | 31 | 62 |
| 2003 | 23.7 | 69 | 24.3 | 69 | 29 | 60.2 |
| 2004 | 23.3 | 69 | 27.1 | 69 | 29 | 61.6 |
| 2007 | 26.7 | 73 | 31.9 | 73 | 30 | 62.6 |
| 2010 | 33.5 | 66 | 42.1 | 66 | 32 | 61 |

## *Results from linear models*

Table 5.4 shows the results from four linear regression models. The first model includes only the respondent's educational attainment and time period as independent variables. Without controlling any other factors, respondents with secondary and secondary vocational education earn on average 4 percent and 8 percent more respectively compared to those with basic education. This, it can be argued, is not a large difference. It is university graduates who hold a real advantage over everyone else – their average earnings are almost 40 percent higher than those with basic education. Further, we can see that average earnings declined in the 1990s compared to the 1991-1992 period. This decline reached the lowest point by 1999-2001, i.e. after the 1998 economic crisis, and it grew throughout the last three periods so that by 2008-2010 average

earnings were about 16 percent higher compared to the baseline period. In the second model I introduce sex and age of respondents as control variables. This, in fact, increases the effect of both education and period on earnings. At the same time, it is clear that being a woman is associated with substantially lower earnings. In fact, this effect is even greater than educational attainment. Net of age and education, being a man has been much more advantageous for higher earnings in Russian society during the two decades under analysis than having a university education, controlling for everything else.

**Table 5.4** Model estimates of logged income

| | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Educational attainment | | | | |
| Ref. category: less than secondary | | | | |
| Secondary | 0.041** | 0.058*** | 0.178*** | 0.164** |
| | [0.01,0.07] | [0.03,0.09] | [0.07,0.28] | [0.06,0.27] |
| Secondary vocational | 0.086*** | 0.162*** | 0.080 | -0.005 |
| | [0.06,0.11] | [0.14,0.19] | [-0.01,0.17] | [-0.09,0.08] |
| University | 0.393*** | 0.436*** | 0.310*** | 0.160*** |
| | [0.37,0.42] | [0.41,0.46] | [0.23,0.39] | [0.08,0.24] |
| Period | | | | |
| Ref. category: 1991-1992 | | | | |
| 1993-95 | -0.298*** | -0.264*** | -0.344*** | -0.351*** |
| | [-0.33,-0.26] | [-0.30,-0.23] | [-0.42,-0.27] | [-0.42,-0.28] |
| 1996-98 | -0.442*** | -0.417*** | -0.449*** | -0.482*** |
| | [-0.48,-0.40] | [-0.46,-0.38] | [-0.53,-0.37] | [-0.56,-0.40] |
| 1999-01 | -0.597*** | -0.557*** | -0.591*** | -0.600*** |
| | [-0.63,-0.56] | [-0.59,-0.52] | [-0.67,-0.51] | [-0.68,-0.52] |
| 2002-04 | -0.305*** | -0.264*** | -0.325*** | -0.340*** |
| | [-0.35,-0.27] | [-0.30,-0.23] | [-0.41,-0.25] | [-0.42,-0.26] |
| 2005-2007 | 0.051* | 0.088*** | -0.032 | -0.041 |
| | [0.01,0.10] | [0.04,0.13] | [-0.13,0.06] | [-0.14,0.06] |
| 2008-2010 | 0.162*** | 0.211*** | 0.174** | 0.157* |
| | [0.11,0.22] | [0.16,0.27] | [0.04,0.31] | [0.03,0.29] |
| Sex | | | | |
| Ref. category: men | | | | |
| | | -0.440*** | -0.443*** | -0.483*** |
| | | [-0.46,-0.42] | [-0.46,-0.42] | [-0.50,-0.46] |
| Age | | -0.000*** | -0.000*** | -0.000*** |
| | | [-0.00,-0.00] | [-0.00,-0.00] | [-0.00,-0.00] |
| Educational attainment*period | | | | |
| Secondary* 1993-1995 | | | -0.005 | -0.041 |
| | | | [-0.12,0.11] | [-0.16,0.08] |
| Secondary*1996-1998 | | | -0.160* | -0.148* |
| | | | [-0.29,-0.03] | [-0.28,-0.02] |
| Secondary*1999-2001 | | | -0.238*** | -0.229*** |
| | | | [-0.36,-0.12] | [-0.35,-0.11] |
| Secondary*2002-2004 | | | -0.177** | -0.172** |
| | | | [-0.31,-0.05] | [-0.30,-0.04] |
| Secondary*2005-2007 | | | -0.070 | -0.064 |
| | | | [-0.22,0.08] | [-0.22,0.09] |
| Secondary*2008-2010 | | | -0.214* | -0.207* |

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | | | [-0.41,-0.02] | [-0.40,-0.02] |
| Secondary vocational* 1993-1995 | | | 0.109[*] | 0.115[*] |
| | | | [0.01,0.21] | [0.02,0.21] |
| Secondary vocational *1996-1998 | | | 0.066 | 0.098 |
| | | | [-0.04,0.17] | [-0.01,0.21] |
| Secondary vocational *1999-2001 | | | 0.047 | 0.070 |
| | | | [-0.06,0.15] | [-0.03,0.17] |
| Secondary vocational *2002-2004 | | | 0.087 | 0.124[*] |
| | | | [-0.02,0.20] | [0.02,0.23] |
| Secondary vocational *2005-2007 | | | 0.176[**] | 0.208[**] |
| | | | [0.05,0.30] | [0.08,0.34] |
| Secondary vocational *2008-2010 | | | 0.116 | 0.156 |
| | | | [-0.05,0.28] | [-0.01,0.32] |
| University* 1993-1995 | | | 0.121[*] | 0.126[**] |
| | | | [0.03,0.21] | [0.03,0.22] |
| University *1996-1998 | | | 0.091 | 0.137[**] |
| | | | [-0.01,0.19] | [0.03,0.24] |
| University *1999-2001 | | | 0.161[**] | 0.185[***] |
| | | | [0.06,0.26] | [0.09,0.28] |
| University *2002-2004 | | | 0.180[***] | 0.212[***] |
| | | | [0.08,0.28] | [0.11,0.32] |
| University *2005-2007 | | | 0.210[***] | 0.233[***] |
| | | | [0.09,0.33] | [0.11,0.35] |
| University *2008-2010 | | | 0.090 | 0.124 |
| | | | [-0.07,0.25] | [-0.04,0.28] |
| Occupational status | | | | |
| *Ref. category: upper service* | | | | |
| Lower service | | | | -0.179[***] |
| | | | | [-0.21,-0.15] |
| Routine non-manual | | | | -0.232[***] |
| | | | | [-0.26,-0.20] |
| Small proprietors | | | | 0.269[***] |
| | | | | [0.22,0.32] |
| Skilled manual | | | | -0.159[***] |
| | | | | [-0.19,-0.12] |
| Unskilled manual and farm labour | | | | -0.406[***] |
| | | | | [-0.44,-0.37] |
| Constant | 6.749[***] | 7.034[***] | 7.088[***] | 7.377[***] |
| | [6.71,6.78] | [6.99,7.07] | [7.02,7.15] | [7.30,7.45] |
| R-squared | 0.115 | 0.188 | 0.191 | 0.201 |
| Degrees of freedom | 25093 | 25089 | 25071 | 24363 |
| BIC | 58338.1 | 56193.9 | 56278.8 | 54516.9 |

[*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

In the third model I introduce an interaction term between educational attainment and the time period. The interaction terms holds the answer to the main research question of this chapter – whether monetary returns to educational attainment have changed during the post-communist transition. To better illustrate this effect, I have drafted the coefficients from model 3 on Figure 5.1 (left panel). As we can see, the differences in earnings for respondents with different levels of educational attainment were not very large: while the estimate for university-educated respondents is higher compared to

others, the difference is very small, almost negligible. In fact, confidence intervals of the estimates of all four variables overlap, indicating that it is hard to say with any conviction that a better education yields higher benefits. In the next three periods, as we can see, the advantage of university-educated respondents increased considerably. The gap between them and the rest of the population reached the highest point during 1999-2001, i.e. after the1998 crisis. During this period university educated Russians had on average 35 percent higher earnings than those with secondary vocational credentials. As income levels decreased for everyone, this meant that people with lower levels of education suffered more from economic decline. This finding supports the hypothesis generated based on market transition theory as well as the expected effect of the economic crisis.

At later periods, as income levels increased, the comparative advantage of university-educated respondents somewhat reduced. This is the opposite to the economic growth hypothesis according to which people with better skills and higher human capital can reap more benefits from economic consolidation. At the same time, the expansion of higher education during the 2000s could have resulted in the inflation of university credentials. The effects of higher education expansion and economic growth might therefore have cancelled out each other. In any case, it appears as though everyone benefitted more or less equally from economic growth in the 2000s regardless of their educational attainment status.

Those with secondary vocational education seem to have fared slightly better during the transition compared to their peers with less education. However, this advantage is very small. Finishing secondary school does not seem to give any advantage in terms of monetary returns compared to having only basic education at any point of time included in this analysis. Overall, after the initial change, differences in monetary returns to people with various educational levels have largely remained stable.

**Figure 5.1** Logged income for respondents with different levels of education
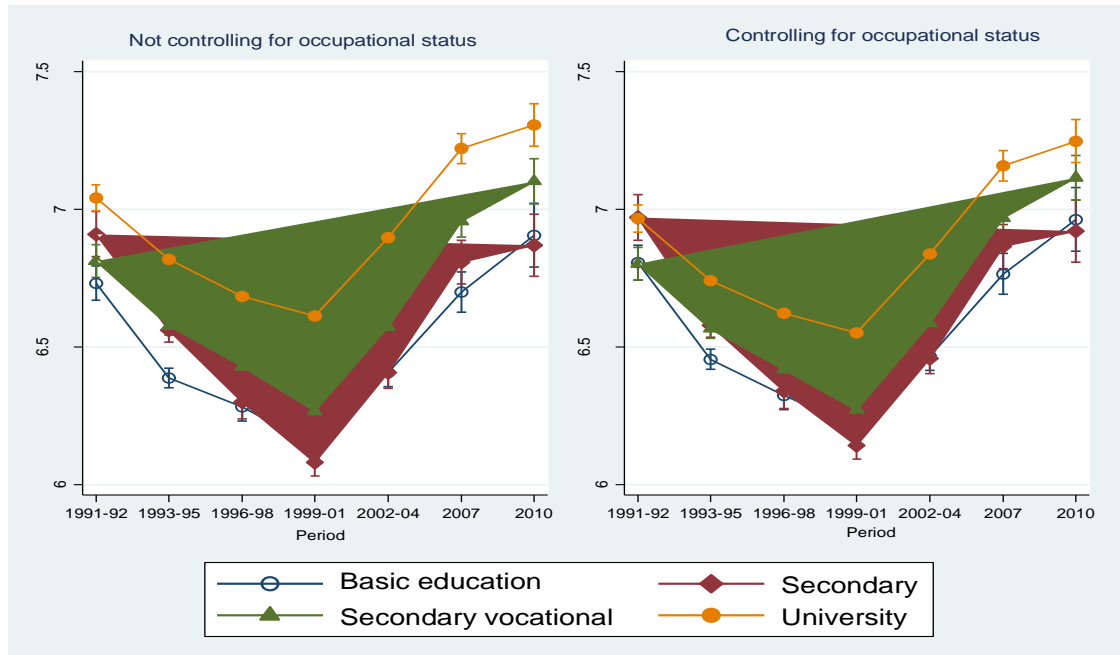
The right panel of Figure 5.1 depicts estimates from model 4, i.e. controlling for the occupational class of respondents. Even though it can be argued that educational attainment and occupational class attainment are closely associated, the inclusion of the latter in the model can be justified as this can help detect the net effect of educational attainment – differences in earnings by occupational status could have been simply caused by lifting central control over deliberately egalitarian wage-setting policies. Variation within occupational groups, then, can be attributed to educational credentials. In their similar analysis, Gerber and Hout also chose to include occupational status as a control variable (Gerber and Hout, 1998). As we can see coefficients after controlling for occupational class are very similar, if only slightly decreased, leading me to assume that any changes in the effect of educational attainment on earning have not been through occupational status, but are the effects of education per se.

To examine whether the association between educational attainment and access to high occupational status changed over time, I estimate OLS regression model with belonging to service class (upper and lower professionals) as a binary outcome variable and an interaction between period and educational attainment as the key predictor. In these models instead of the four-category educational attainment variable I have used a dummy to indicate whether the respondent has at least some university education. I have

also estimated logit model, which produced largely similar results and therefore I present estimates from OLS since it is easier to interpret. The models are presented in Table D3 of Appendix D. Model 1 includes only university education and the period as predictors. As we can see, the overall chances of accessing the service class have somewhat steadily decreased throughout the period under examination. The Effect of university education on the probability of access to the service class is quite substantial: about 50 percentage points. In the second model I have added sex and age as control variables. Interestingly, being a woman is associated with higher chances of accessing the service class while, as we may recall, in terms of earnings women are at a considerable disadvantage compared to men. This, as I described earlier in this chapter, can be explained by the nature of occupations educated men and women occupied. While educated women's occupational opportunities were heavily skewed towards health and education sector (still granting access to service class), men were more likely to have managerial positions granting them better income opportunities in the Soviet Union, and particularly during the transitional period.

In the third and final model I have introduced an interaction term between university education and the time period and the results are charted on Figure 5.2. As we can see, the association between having at least some university education and the probability of accessing the service class are, in fact, somewhat reduced over time during the period under analysis. This further reinforces the conclusion that any increase in returns to educational attainment, and university education in particular, have been due to educational credentials per se, and not through access to certain occupations.

**Figure 5.2** Predicted probabilities of accessing service class
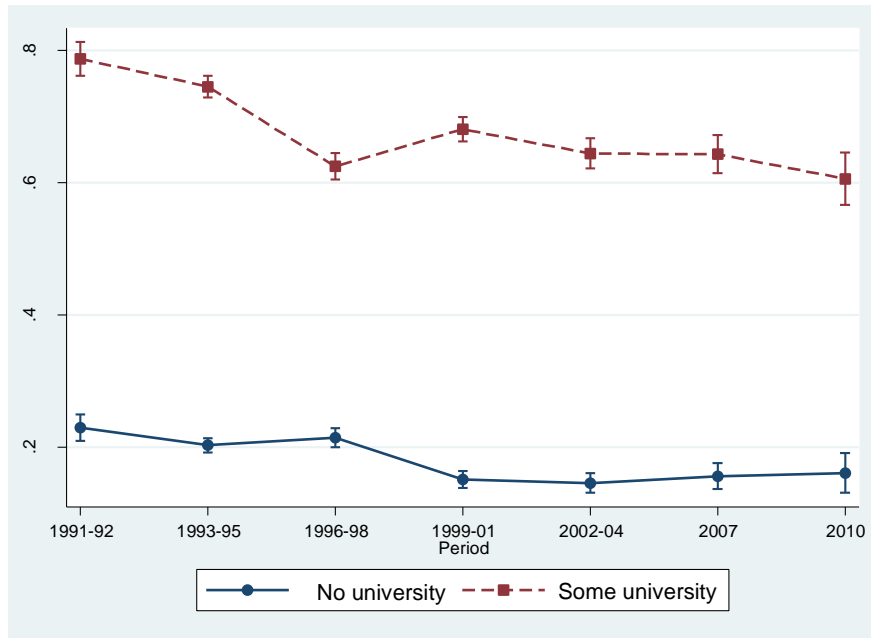
This somewhat credible manifestation of increasing income returns to educational attainment in post-Soviet Russia is based only on the sample of respondents, who were receiving payment from employment or self-employment at the time of the interview. Of no less importance is assessing the effect of educational attainment on the chances of being employed or self-employed. To examine this effect, and its potential change over time, I estimated OLS models with the employment status as a key outcome variable indicating the status of respondents being employed/self-employed or unemployed. The results are presented in Table D2 of Appendix D. Model 1 shows, as expected, that the share of the employed/self-employed population fluctuated throughout the two decades. University-educated respondents on average have a higher probability of being employed/self-employed. However, this advantage is not very large, at 7 percentage points. Model 2 indicates that women are less likely to be employed or self-employed. But again the relative disadvantage compared to men is only 7 percentage points. The third model estimates the effect of interaction between education and time period. The results, charted on Figure 6.3 demonstrate that the association between opportunities for employment/self-employment and university education, non-existent during the period 1991-1995, became considerably strong and remained so throughout the rest of the 1990s and 2000s.

152

**Figure 5.3** Predicted probabilities of being employed/self-employed
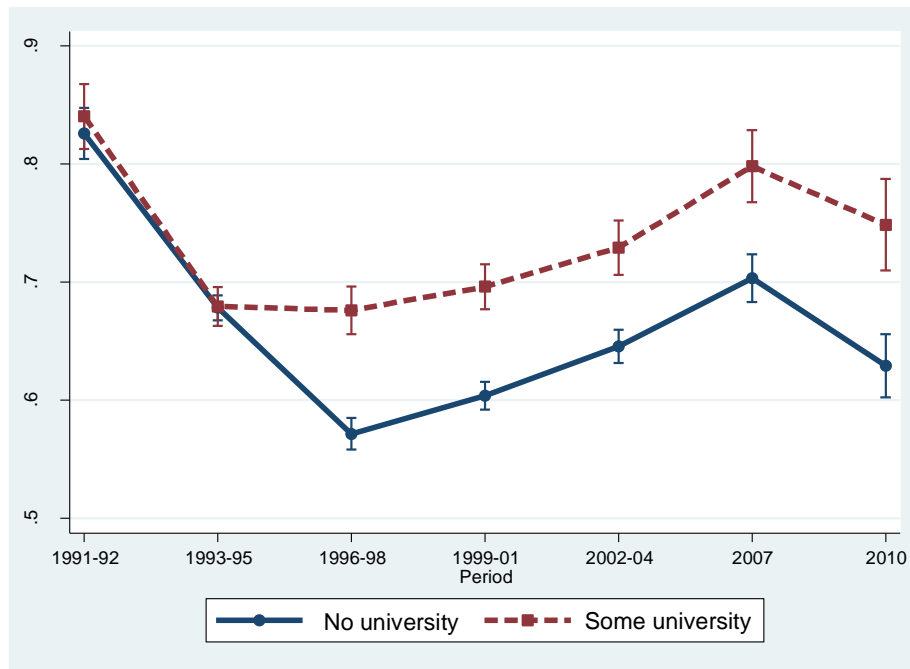


Thus, the analysis of the data provides empirical support for the hypotheses that: i. returns to educational attainment increased over time in Russia throughout the 1990s and 2000s; and ii. the chances of being employed or self-employed increased for university-educated Russians during the same period of time. Since the first analysis was conducted based only on the sample of population who did report having received income in the previous month, bridging the two findings together might suggest that the somewhat modest effect of increasing educational returns is, if anything, underreported.

## *Conclusions*

The question of whether and how more education translates into better earnings lies at the heart of human capital theory. In principle, there is no argument that in any setting and at any observed period of time, better-educated people earn more. The ideology of the Soviet Union was striving towards building a society with benefits for everyone based on their needs, irrespective of their skills and abilities. In this effort, wages were centrally set for all professions and positions thus regulating income differentials in society. In addition, a set of publicly subsidized services, extending far beyond education and health, was available for everybody. Therefore, when this system collapsed, public assets privatized and employers were free to set wages as they saw fit, it is logical that income differentials dramatically increased. Who would benefit most in terms of monetary

153

returns? Or rather, given the scale of the economic collapse, who were the biggest losers? Some commentators believed that unskilled workers, pensioners, agricultural labourers were the ones likely to suffer the most. On the other hand, others thought that professionals actually bore the burden of shrinking incomes disproportionately.

Market transition theory suggests that, contrary to the redistributive system, markets reward efficiency and productivity. During a market transition this should be manifested through increasing returns to human capital (Nee, 1989). Was the particular type of market economy that emerged in Russia at the beginning of the 1990s, sometimes referred to as the 'merchant capitalism' (Burawoy, 1997), also susceptible to the logic of this theory?

I believe that the 1990s in Russia cannot properly be viewed through the lens of classical market transition theory. Instead of asking who gained the most from market transition, then, in this chapter of the thesis I asked who lost the least and whether educational attainment was helpful in somewhat alleviating the drastic effects of economic decline. The analysis in this chapter provides certain proof that returns to university education did not diminish as much during the 1990s as they did for other levels of education. In fact this effect is concentrated in the period 1996-1998. This can also explain why Gerber and Hout did not previously find this effect as they analysed data from 1991-1995 (Gerber & Hout, 1998). On the other hand, the effect that I detected is much more modest compared to the effects found by some economists. However, the data used in those analyses was of a longitudinal nature instead of the repeated cross-sectional studies used in this chapter and this could explain the difference. In the case of longitudinal data any changes to returns observed are bound to be associated not only with the period-specific effects (in which I am interested), but with personal characteristics as well. Therefore, it would be difficult to assess the association between market transition, economic fluctuations and higher education enrolments on the one hand and returns to educational attainment on the other. The cross-sectional data used in this chapter is much more likely to produce reliable results in this respect.

I also found that during the same period, 1996-1998, while the chances of being employed/self-employed shrank substantially for the population as a whole, this effect

was weaker for the university-educated population, again suggesting that the university-educated were spared some of the hardships facing the country and the economy.

At the same time, there was practically no change in differences in returns to educational attainment for early drop-outs, secondary school and secondary vocational graduates. Bearing in mind the results of Chapter three, where I found clear evidence of increasing inequality in attaining secondary education, it can be assumed that this educational inequality did not translate into income inequality. The increase in inequality by parental background at the university attainment level was, as we may recall, much more modest.

Further, I proposed that the economic consolidation that Russia underwent starting in the late 2000s should have disproportionately benefitted better educated people as this period might have been more akin to a market transition than the early 1990s were. However, I found that economic growth during the 2000s seems to have benefitted university-educated Russians and the rest of the population at least equally, if not less.

The key to this somewhat counterintuitive finding may lie in another development that could lower returns to university education and therefore cancel out the effect of economic consolidation. This development was the expansion of higher education in the 2000s. i.e. as educational attainment expanded, credentials could lose their value and the rate of return from education could decrease. Given the substantial expansion of university education, a simple university diploma cannot serve as a sign of individual abilities and the differentiation between types of universities becomes important. This dataset does not allow us to differentiate between the kind of education that respondents receive, and graduates from the lower-quality private universities that proliferated by the end of the 1990s and beginning of the 2000s may have driven down average incomes. In the next chapter, therefore, I focus on analysing access to the highly selective universities in Russia.

# Chapter 6 Effect of Standardized Admissions Examinations on Access to Prestigious Universities in Russia

Previous chapters of this thesis focused on the changing socio-economic conditions in Russia and Georgia and the trends in inequalities in the face of those changes. This chapter shifts the focus to educational policies implemented by governments or institutions and their effect on access to education for different groups. One of the most prominent reforms in implemented in a number of post-Soviet countries that has substantially affected educational systems is the introduction of centralized standardized examinations for university admission. In Russia, Unified Standardized Examinations (USE) were first piloted and then introduced nationally in 2009. Breaking with the years-long Soviet tradition of university-based admissions, this was an important decision with significant consequences. As one of the main goals of this reform was to improve access for disadvantaged students, particularly in rural areas, in this chapter I examine if this goal was, in fact, achieved using annual data from the student monitoring survey. Rather than assessing the chances of access to higher education as such, I examine the probabilities of accessing selective universities. As higher education expanded in Russia in the 2000s, I assume that the quality/prestige of universities would become a prominent factor in generating educational inequalities. I apply a quasi-experimental approach, namely difference-in-differences, to trace the causal effect of the introduction of USE on access for rural students to prestigious universities.

However, the reform implementation design, its other characteristics and the data itself impose severe limitations for rigorous causal analysis. Nonetheless, as standardized admissions exams are a widely-debated topic in many countries, this empirical study can be an important contribution to the field and can, at the very least, foster further discussion.

## *About high-stakes testing*

High-stakes standardized testing[16] is certainly one of the most widely debated topics currently in educational research. Both elements of such testing procedure – standardization and high stakes – have been heavily criticised by scholars and policy-makers alike. Standardized forms of testing, it has been argued, are not an appropriate, or at the very least, exhaustive measure to test one's ability. Critics claim standardized tests are of very limited scope and that they do not capture relevant knowledge and skills (Kohn, 2000; McNeil, 2002; Neill and Medina, 1989).

Another important issue is the stakes that are attached to the testing procedure. As tests are often used to make important policy as well as individual decisions, many worry that these decisions might not be fair and might fail to take the bigger picture into consideration. Perhaps most notably there has been much criticism concerning the excessive reliance in the US on standardized testing for rewarding or punishing schools and teachers for their students' performance. The standard criticism in this regard is that when stakes are high, the individuals involved in the process – teachers, students, principals, etc. – tend to focus all their efforts solely on test preparation, or teaching for the test, i.e. focusing exclusively on the material covered by tests and mechanically practicing test-taking techniques (Abrams, Pedulla and Madaus, 2003; Hout et al., 2011; Nichols and Berliner, 2007; Ravitch, 2010). In addition to pedagogical concerns, sociologists have raised the issue of possible adverse effects of high-stakes testing for minority students as the standardized approach might not take into account various problems specific to these groups (Altshuler and Schautz, 2006; Dworkin, 2005).

Not all standardized testing is high stake. Standardized tests used to evaluate cognitive and other abilities of students as well as adults have been becoming increasingly popular in recent years. Such standardized evaluations are used nationally by many countries but the most prominent are international evaluations, such as TIMSS, PIRLS and PISA for school students, TALIS for teachers and PIIAC for adults. These evaluations enable scholars and policy-makers to compare results across different educational systems. They are also a good way to see differences in the performance of

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[16] A test is high stakes when it is used to make important decisions about the students, teachers, schools, etc.

various groups within a country. Therefore, to some, the importance of such evaluations cannot be disregarded. The criticism about 'standardization', however, applies to this case as well. In particular, it is argued that standardized tests cannot capture appropriately the skills and knowledge that they are designed to measure, especially when standardization of test questions happens across vastly different countries, cultures and languages (Kamens, Meyer and Benavot, 2013). In addition, excessive emphasis is always placed on comparing the average performance of students in different countries with each other, disregarding the distributions. Therefore, the comparison of averages also veils the important differences between countries' socio-economic structures (Carnoy and Rothstein, 2013).

Using standardized exams as a way of admitting applicants to various formal courses of studies or to workplaces has been popular for a long time. It is believed that standardized exams represent a very convenient shortcut to efficiently reduce large pools of applicants. Admitting students to higher education through standardized examinations is a widely accepted practice all over the world. The expansion of higher education throughout the second half of the twentieth century has caused the pool of applicants to increase. Universities therefore often decide to use standardized tests to make the selection procedure easier and quicker.

In the USA, for example, taking SATs is necessary for admission to undergraduate studies at most universities while taking GREs is a pre-requisite for continuing studies at graduate and post-graduate levels. Both SATs and GREs are administered to test general skills and ability as well as knowledge in specific disciplines. These tests are administered by independent organizations and the scores are accepted by almost all American universities. For undergraduate admissions colleges usually have official cut-off scores and applicants who score lower are automatically disqualified. For graduate studies most universities claim they do not have cut-off scores and they consider all applications. However, most recent evidence suggests that universities in fact do informally set GRE cut-off scores for applicants. There are similar types of standardized tests used to admit students to universities in other countries as well, such as A-levels in the UK, Gaokao in China, etc.

The logic behind using standardized test scores for university admissions is fairly simple – it is believed that such tests measure inner cognitive abilities and they are therefore almost purely meritocratic. Thus, on top of being efficient in filtering the applicant pool, the test should also, in principle, be equitable since they are supposed to capture the 'true abilities'. However, there is surprisingly little evidence that standardized test scores can effectively predict future academic and professional performance. On the contrary, existing evidence suggests that test scores at admittance tell us very little about how students perform academically during their studies. For example, most studies find that the correlation between SAT scores and the first-year college grades is not very significant and SAT scores can explain only 10 to 20 percent of variation in college grades (DeBerard, Spielmans and Julka, 2004; Wolfe and Johnson, 1995). Studies have also found that personality traits have a higher effect on college performance than SAT scores (Noftle and Robins, 2007). On average students enrolled at higher-ranking colleges have higher SAT scores compared to less prestigious schools. However, grade distribution within schools does not vary so much by SAT score. This makes sense, since the more prestigious colleges have the luxury of being more selective and the first criteria for selection happens to be SAT scores.

Typically standardized tests are used by HEIs in combination with other methods of admission, such as submission of information on personal achievements and previous academic performance; submission of motivation letters and references; interviewing applicants, etc.

## *Standardized testing in post-Soviet countries*
### Admission to universities in Soviet and post-Soviet Russia
Despite the Soviet leaders claiming otherwise, university education still remained somewhat elite throughout the 70 years of the Soviet Union's existence. Higher education was considered an important outlet for preparing leaders of the country in every field and 'bringing education to broad masses of people' was proclaimed to be the 'prime element of the cultural revolution accomplished in our country after the establishment of the Soviet State' (Prokofev, Chilikin and Tiulpanov, 1961:5). The proclaimed goal was to draw the most talented students from the widest circles of the society, despite their social group belonging and the financial status. In the first decades of the Soviet Union,

160

however, enrolment rates remained low and as basic education became almost universal, and general education completion expanded, there was more and more competition for admission to the limited number of places at universities. Khrushchov's reforms throughout the 1950s and until the mid-1960s were specifically designed to make higher education more accessible by establishing university quotas for certain social groups and by introducing distance education courses. They were dropped after the stood down in 1964 and higher education again became more elitist (Matthews, 1972).

Even though if was not recognized in the official rhetoric, students coming from different backgrounds did not have equal opportunities of access. However, this inequality was somewhat different from the one observed in the Western countries. Parental occupational privilege did not always go hand in hand with financial advantages and party membership played an additionally important in while deciding who was to get ahead in their educational career.

With the number of secondary school graduates increasing gradually, the pool of applicants to higher education grew as well and it was not an easy task to decide who would be admitted to the limited number of spaces offered by the higher education system. There were several different admissions methods in place which changed over time. The principal one, however, was that of university-based admissions examinations. These examinations were organized, prepared and administered by individual HEIs. Therefore the contents, complexity, subject matter and number of exams to be taken varied from one institution to another. There were typically three or four exams that every applicant was required to take in order to gain admission and these were both in written and oral form. Since all applicants had to choose their narrow field of specialization upon entering the HEI, at least two of the subjects were related to the selected major field. As exams were administered by HEIs themselves, most applicants had to travel long distances to sit the exams in person. Taking exams distantly was not an available option.

There are many empirically documented as well as anecdotal accounts of the scope and extent of academic corruption that was taking place during the admissions examinations in almost all Soviet countries and particularly in Russia. Both the financial resources and social connections of the family of the applicant were extensively used in

the process of gaining admission. There are estimates that by 2004 approximately 10.7 billion roubles (USD 455 million) were spent per year on illegitimate transactions to gain admission to universities (Galitskii and Levin, 2004). Families could spend money on admissions through several channels. The first and most obvious way was to directly bribe members of the examination commissions in exchange for being awarded a 'pass score'. Next, a commonly accepted practice was (and still is, as we shall see in subsequent sections) to hire private tutors for exam preparation from the same university. This can be considered an indirect way of bribing since these private tutors had insider knowledge of the tasks and issues covered during the exams and had an opportunity to prepare students for them or straightforwardly hand out tasks in advance.

Besides issues related to direct or indirect corruption, the previous system was socially discriminatory. There are reasons to believe that the previous system of in-person university-based admissions examinations should have disproportionately favoured certain social groups over others even if we disregard the corruption and the universal mechanisms for the reproduction of inequality. It is clear that families with more financial resources would benefit from the opportunity to be admitted, particularly to 'prestigious' universities, through bribery. Similarly, better-off families would have the opportunity to hire university-based tutors for their children. Moreover, those parents who did not necessarily have abundant financial resources but were better educated could have helped their children prepare more effectively for the examinations as they understood well how the system might work. In addition, the previous admissions system was very inflexible - one could apply to only one university a year and carefully selecting that university was therefore a very important factor in being admitted. But, as already mentioned, on top of these mechanisms, this particular form of examination could have further contributed to creating inequalities. In short, the examinations as such were designed in a way that imposed a substantial financial burden upon families. Since the examinations took place on the premises of the universities, students had to travel to sit the exams in person and remain in the location for varied periods of time, normally a few weeks. In a vast country like Russia this represented a big problem for applicants who from rural areas, small towns and areas where no 'major' universities were located. Hence, much effort, time and financial resources were required to take exams.

Given such conditions, we would expect geographical advantage to play a significant role in taking the decision to apply to higher education at all. This effect should be expected to be exacerbated by socio-economic and cultural factors. As theorized before by various authors, the subjective probability of success might be a powerful factor when deciding on one's future educational career. When the outcome is not certain, students from less privileged backgrounds tend to assess their chances of success somewhat lower (Breen and Goldthorpe, 1997). If we apply this theory to the case of admissions examinations, students from families with limited financial resources and living in remote areas would have to have had very high expectations of their potential success at the exams in order to undertake the risk of applying. Conversely, students from advantaged backgrounds and/or living in large urban areas would have been encouraged to apply even if their subjective expectation of success was not very high.

A further factor complicating their preparations for the admissions examinations for some students was the rigidity of the application process: students could in practice apply only to one university, as the examinations were held around the same time and therefore it would be impossible to apply to multiple ones. Besides, since all universities administered their own examinations, applying to more than one university would mean that they would have to hire private tutors accordingly and prepare for all the examinations separately (Ampilogov, Prakhov and Yudkevich, 2013).

To sum up, the previous system of admissions was characterized by mass corruption. On top of the negative implications of corrupt practices as such, corruption also contributed to strengthening inequality during admissions by benefitting certain groups (those with more financial resources and with better social connections) disproportionately. Besides, the system was designed in a way that would enhance inequality even without corruption. The substantial costs and efforts associated with taking the exams could deter students from small villages and other remote areas from taking the risk, particularly in applying to prestigious universities, if they did not have a very strong belief in their own ability to succeed. This was strengthened by the inflexibility of the system: there was no possibility to apply to multiple universities in one year and thus select some universities as a 'safe choice'.

**Standardized examinations for university admissions: post-Soviet experience**

Many post-Soviet countries have experimented with the introduction of standardized testing as a way (in many cases the only way) for admitting students to higher education. In fact, this reform is one of the several recurrent higher education reforms found in these countries. Why have post-Soviet countries, independently from each other, pursued similar policies in higher education, is a question that has been asked before (Heyneman, 2010) and a very important one for the discussion around policy. However, it is beyond the scope of this chapter, which will offer only a brief overview of how this particular reform was introduced in post-Soviet countries, with a detailed focus on the Russian case.

Using unified standardized examinations as the sole means of admissions is a relatively rare phenomenon. Most systems worldwide use models which mix various methods to select students into higher education. These are: university-based exams, academic performance at school, school-leaving exam scores, general student dossiers, general aptitude tests, etc. (Helms, 2008).

Georgia, Armenia, Kyrgyzstan, Russia have all introduced standardized admissions exams in different forms and at different times. The admissions systems in all post-soviet countries were not surprisingly quite similar for a very long time as they continued the Soviet practice. In the final years of the Soviet Union and in the years immediately following the breakup students were admitted to universities as a result of performance at admissions exams designed and administered by individual higher education institution (HEI). Admissions systems were later reformed in an effort to make them more easily accessible for disadvantaged groups and to address the existing corrupt practices (Karosanidze and Christensen, 2007; Osipian, 2013). In addition, the previously existing systems were inflexible since high-school graduates could apply only to one HEI while the new system allows them to apply to multiple universities.

**Standardized admissions examinations in Russia**

The Unified Standard Examinations (USE) project is considered one of the most influential institutional reforms in higher education in Russia. The admission reform started in 2001 and went nationwide in 2009. The Unified State Examination is an external examination system (analogous to the SAT system in the U.S. or matriculation

exams in Finland). This examination is uniform and intended for all Russian school graduates. Every school graduate can take the set of exams and apply to different universities (in 2010 the maximum number of applications one candidate could make was five, but this limit is formal only as there are no legal authorities which monitor the application process).

Every high school graduate may take the set of USE tests only once a year. The tests are administered by the Ministry of Education and taking them are free of charge for any high school graduates. Only two subjects are obligatory: Russian (national language) and Mathematics. Other subjects are required by different universities according to their specific field of study. After collecting the requests, education institutions (universities) rank the applications on the basis of the sum of the required exam scores and take a decision on matriculation. The admissions process takes place in two stages since the applicants have the freedom to select several options and if not all places are taken up at the first stage, at the second stage universities offer these free places to the next applicants on the lists.

At first exams were introduced in three regions, but gradually the scope increased and more regions were covered each year. As for universities, they had the choice as to whether to accept USE scores as the means of admission. Universities which did choose to accept USE, used them either as standalone method of admission or in combination with locally organized exams.

In 2009 the USE were introduced nationally. This meant that from this point on all universities were obliged by law to admit students based on their USE scores. The USE are held in every regional center and applicants can mail their scores to the universities they want to apply to by post.

One interesting peculiarity concerning the exams is that even though in theory USE should have been nationally implemented in 2009, there are many exceptions and much flexibility still left as to how to enter higher education. Applicants can be admitted to universities without taking the USE if they: i. are the winners of national academic Olympiads; ii. belong to certain categories that are considered disadvantaged, such as orphans and students with disabilities; iii. have graduated from the secondary professional education institutions. This latter channel can be used by many families to

secure admission for their children without taking the exams. Besides, some universities and certain specialties within universities have the right to conduct additional examinations in their fields of specialization.

Another major change implemented in 2009 together with the national introduction of USE was the option given to applicants to apply to three different universities at the same time. Because of this, and because of the fact that there was no longer a need to travel to the university in person to take the exam, universities were attracting a much higher number of applications from 2009. As we can see from the Figure below, the reform has resulted in a rising number of applications per place throughout the country. There can be no mistake that such a radical increase in the number of applicants is the result of this policy change. Even if all of this change was driven by applicants registering for multiple universities, it still has a potential to affect the composition of the student body.

**Figure 6.1 A**verage number of applicants per 100 places available at all higher education institutions
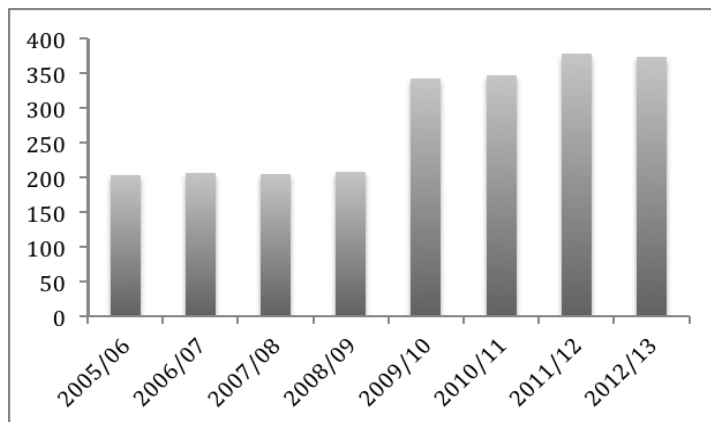


*Source: Central Committee for Statistics of the Russian Federation*

## Effect of USE – evidence so far

As described above, USE were implemented with two major goals in mind: to fight corruption and to increase the chances of admission for disadvantaged students, particularly for those from rural areas. There is no conclusive empirical evidence regarding either of these two goals. However USE have extensively been on the research

166

agenda of Russian social scientists and there are studies that shed some light as to whether the policy-makers have achieved their goal.

Both the evidence for and opinions about the effect of USE on fighting corruption are mixed. However, no empirical research has concluded that corruption has been fully eradicated from the admissions process. According to one study, 31 % of randomly selected students report some sort of violation related to corrupt practices that they have witnessed themselves or have heard first-hand from someone else. Such violations include disseminating questions before the examinations take place, using mobile phones during testing, re-opening sealed envelopes containing filled-out tests to correct mistakes, etc. (Denisova-Schmidt and Leontyeva, 2014). Besides, starting already in 2001 after the exams had been piloted, incidents have been discussed whereby information on the contents of the exams spread from the eastern regions of the country to the western ones. As Russia covers a vast territory, students in the East were taking exams considerably earlier than those in the West due to time differences. Therefore, students in the western regions had the chance to access the exam material a day earlier (2005). There have been some reports that rates of corruption have, in fact, even increased under USE. In any case, it can be safely concluded that the threat of corruption has not been eliminated through the introduction of USE, as was the intention (Transparency International 2013).

As for the other goal – equality of access, there is again no conclusive empirical evidence as to whether the introduction of the USE has lowered the level of inequality. Some research studies have revealed that although the unified State Examination should reduce the costs of preparing for university application and make admission success less correlated to household financial resources and social background, wealthier students still achieve better results and thus are more likely to enter university (Prakhov and Yudkevich 2012). Research has also shown that family background affects student's placement in more competitive colleges, notwithstanding their performance in the USE (Prakhov and Yudkevich 2014). One study looks at the change in the number of students from rural areas and small towns before and after the introduction of the USE and finds that enrollments from rural areas increased (Denisova-Schmidt and Leontyeva, 2014). However, the study compares enrollments only before and after the national introduction of the exams in the Khabarovsk area and does so by comparing fifth-year students to

first-year students in a cross-sectional study. Therefore, it cannot account for the bias of the selective drop-out of students. There are no studies that assess how the introduction of USE per se has affected the impact of family background and the place of origin on enrollments and university choices.

## *Theoretical framework for the analysis*
## Socio-economic composition of student body

As mentioned previously, one of the rationales behind the introduction of USE was increasing access for disadvantaged groups. There are reasons to believe that the previous system disproportionately favored certain socio-economic groups. To start with, as mentioned above, the monetary costs associated with going through the admissions procedures were much higher before the introduction of USE when students had to travel long distances to the selected universities to attend exams. Therefore, applicants who would have a lower subjective probability of passing the admissions exams may not have taken the risk and instead chosen not to apply at all. As the transaction costs of going through the admissions procedure diminished considerably after the introduction of USE, so did the risk of wasting money for sitting exams. It can therefore be expected that the composition of the enrolled students changed in favor of students from rural areas and far-away regions.

Second, rampant corruption in the university admissions procedures before the introduction of USE gave an unfair advantage to those from better-off families and thus able to pay bribes, or those with better social connections. Higher parental income could also help better prepare for specific exams organized by individual universities. Hence, applicants from financially disadvantaged families may have bettered their chances of getting to university after the introduction of USE.

At the same time, USE were designed and are supposed to measure the academic merit of applicants better than the previous system did. If standardized tests measure academic merit in a more non-biased way, we can expect that applicants from more educated families would be more likely to be successful at these exams.

## Access to selective colleges and universities

The main focus of this chapter is the change in the probability of entering prestigious universities. The reason for such focus is that given the dramatic expansion of

higher education in Russian in the 2000s (described in the previous sections) the quality of education could have been the major channel for privileged groups to distinguish themselves. The theory of effectively maintained inequality proposed by Lucas (2001) suggests that inequality by social background is manifested not only through the quantity of education received but also through the quality. The differentiation in this case happens through the type of institutions people from various backgrounds are enrolled in – it concerns not the quantity, but the quality of the education. Lucas contends that privileged classes ensure their advantage through retaining the differentiation between different types of tracks on the one hand and through ensuring the placement of their offspring in better tracks on the other (Lucas, 2001). In the case of Russia, the evidence suggests that given similar performances in the USE and at high school, the children of better-off families are placed in more selective colleges and universities. However, we can expect that this difference was even higher before the introduction of the USE since accessing high-ranking and highly prestigious universities was largely dependent on a family's social capital as well as the applicant's place of residence.

Hypothesis 1. *The effect of an applicant's place of residence (rural or remote areas) on placement in selective universities and colleges has been reduced after the introduction of USE.*

## Compensatory advantage in accessing prestigious universities

Beyond exploring the impact of the introduction of USE, I examine how families with different social backgrounds respond to the failures of their offspring at certain points in their academic career and how USE have affected this response. The idea that children from advantaged backgrounds fare better in terms of their educational careers regardless of their achievement has been long-discussed in sociological literature and is best encapsulated in the concept of secondary effects introduced by Boudon (Boudon, 1974). Bernardi (2014) took the idea further and introduced the formalized concept of compensatory advantage, maintaining that among those individuals who have failed academically at a certain point in time, social background inequality is greater at a later stage compared to those who have succeeded (Bernardi, 2014).

In the context under discussion in this chapter it can be assumed that the students who did not demonstrate a stellar performance in secondary school but who came from

advantaged backgrounds would have a considerably higher probability of entering prestigious universities and, more importantly, this difference would be greater compared to academically successful students. This can happen through many different mechanisms: privileged families whose children are failing might hire tutors for them, they can exploit social networks or even pay bribes for admission to good universities.

Hypothesis 2. *Differences by background in the probability of accessing prestigious universities are greater among those respondents who demonstrated poor academic performance at secondary school compared to the academically successful students*.

Bernardi formalized the notion of compensatory advantage with the following inequality (Bernardi, 2014:2):

$$P(S_{t+1}|F_t)U - P(S_{t+1}|F_t)L > P(S_{t+1}|S_t)U - P(S_{t+1}|S_t)L \qquad (1)$$

In this case, *S* (success) at *t+1* denotes access to prestigious universities; *S* at *t* denotes good performance at secondary school while *F* at *t* denotes poor academic performance at school; *U* denotes upper class (or in general, families with certain advantages) and *L* stands for lower class (disadvantaged families).

Following this line of argument, we can hypothesize how the introduction of USE might affect this dynamic. Since USE are standardized (written) examinations, they is considered a more 'objective' measure compared to the traditional Soviet-style exams. Therefore, it can be expected that low-performing students from privileged families would fare better in terms of access to good universities when the method of admission was not USE.

Hypothesis 3. *USE have equalized the chances of accessing prestigious universities for students with different parental education backgrounds given similar academic achievement/performance level.*

## *Data and methods*
### Data
There is no single database available that would be ideal for the effects of the USE on the access of students with different social backgrounds. The data I use for this

analysis therefore has significant shortcomings and it is very difficult to draw any definitive conclusions. However, the analysis can show general trends and give an idea about the possible effects of the reform.

The data comes from the annual Monitoring of Economics of Education survey conducted by the Higher School of Economics in Moscow. It has been collected since 2002 in a selected sample of Russian universities. The university selection is not random, but is a convenience sample based on pre-defined characteristics, such as: form of ownership of the university (public and private), size and location of the university, etc. The students at the universities are sampled randomly. However, since each year the sample of students at each university varies from 35 to 40, in single years they can be in no way representative. Therefore, this data cannot be treated as representative nationally or for all universities and any analysis involving statistical inference should be treated and interpreted with caution.

**Table 6.1 distribution of sample sizes by year and cohort**

|  | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total |
|---|---|---|---|---|---|---|---|---|---|
| 1st years | 668 | 686 | 596 | 581 | 630 | 495 | 623 | 631 | **4,910** |
| 2nd years | 736 | 655 | 671 | 683 | 714 | 776 | 712 | 775 | **5,722** |
| 3rd year | 682 | 656 | 769 | 770 | 621 | 677 | 676 | 625 | **5,476** |
| 4th years | 618 | 632 | 559 | 615 | 573 | 568 | 529 | 557 | **4,651** |
| 5th year | 307 | 331 | 339 | 294 | 428 | 417 | 431 | 363 | **2,910** |
| 6th years | 30 | 42 | 54 | 48 | 62 | 41 | 38 | 38 | **353** |
| **Total** | **3,041** | **3,002** | **2,988** | **2,991** | **3,028** | **2,974** | **3,009** | **2,989** | **24,022** |

**Analytical strategy**

In the classical DiD set-up we would have the data from all universities before USE were piloted in order to compare the situations in pilot and control universities. Due to the data limitations it is not possible to observe the situation before the piloting of the USE – piloting started back in 2001 and the data is available only from 2005. However, it is possible to compare the trends between pilot and non-pilot universities during the pilot phase and the implementation phase.

It is also possible to compare older cohorts – third and fourth years – assuming that those participating in the survey in in 2005 would have been admitted before the USE were piloted. However, in this case there is a risk of non-random drop-outs taking place among older cohorts. As the evidence shows, about twenty percent of students enrolled in tertiary education in the Russian Federation do not graduate (OECD, 2012). The

171

hypothetical consideration that the number of drop-outs coming originally from rural rather than urban areas is disproportionately high seems to be a valid one. As such, the analysis of these cohorts might not yield any trustworthy results regarding the effect of USE.

In a simplified form, I estimate the difference between A1 and A2, the difference between B1 and B2 and the difference between the two from the table below.

**Table 6.2** Simplified DiD design

|  | Pilot universities[17] | Non-pilot universities |
|---|---|---|
| Pilot phase | A1 | A2 |
| Implementation phase | B1 | B2 |

The logic behind the DiD is presented in the formula below.

$$E = (T(P_R\text{-}P_U) \text{ - } C(P_R\text{-}P_U))_{t0} - (T(P_R\text{-}P_U) \text{ - } C(P_R\text{-}P_U))_{t1} \qquad (2)$$

$t_0$ is the period before 2009 and $t_1$ is the period after 2009 (henceforth, the 'pilot phase' and the 'implementation phase'). $T$ indicates universities which experimented with the admission of students only through USE, and $C$ is the ones that did not. $P_R$ is the probability of accessing prestigious universities for students from rural areas and $P_U$ is the same probability for students from urban areas. Thus $E$ is the difference between the differences in effects at time 0 and time 1.

I use the OLS model to estimate the chance of accessing prestigious universities for various groups of students. Estimations using logit models have produced similar results. I perform a similar analysis on the sub-group of the first-year cohort and on the sub-group of the third and fourth year cohorts.

In the standard DiD estimation three key variables are used: a dummy used to indicate belonging to the treatment group, a dummy indicating the period before or after

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[17] Pilot universities are those which admitted students with USE before 2009, while non-pilot universities are those which started admitting students with USE after 2009. The pilot phase is the period from 2001 to 2008 (2005 to 2008 in my dataset) and the implementation phase is the period from 2009 up to the present day (2009 to 2012 in my dataset).

treatment, and the interaction term between the two. In this case however, since the effect to be estimated is the effect of coming from rural areas on the chances for access, the following formula is used:

$$Y_{it} = \beta_0 + \beta_1 T_{it} + \beta_2 P_{it} + \beta_3 X_{it} + \beta_4 T_{it} P_{it} + \beta_5 T_{it} X_{it} + \beta_6 P_{it} X_{it} + \beta_7 T_{it} X_{it} P_{it} + \varepsilon_{it} \quad (3)$$

Where Y is the probability of accessing a prestigious university. T is the main effect of being in the pilot group – i.e. a student at a university which accepted students through USE before 2009. P is the main effect of period – i.e. the pilot phase vs. introduction phase. X is the main effect of coming from a rural area or a small town. The three-way interaction term of these three variables captures the value of *E* in (2).

A major disadvantage of the dataset is the fact that the sample is drawn only from the student population. We have no information about those who are not enrolled and thus it is impossible to estimate changes in the overall probabilities of access for different groups. One way to examine the association between the probability of passing exams and the socio-economic background of students, then, is to estimate how the composition of student bodies at HEIs changes.

**Variables**

The outcome variable is a dummy indicating attendance at a prestigious university. I use two different strategies to identify this group of universities. The first is the list of 100 best universities in Russia, a ranking published annually by the independent organization Expert RA. The organization conducts ranking of the universities since 2012 and the assessment criteria include: research output, demand on the graduates from employers, quality of educational facilities. Since the ranking has been conducted only since 2011, I used another strategy to identify prestigious universities based on one variable from the survey asking respondents if the high reputation of the university is the primary reason for them for applying there. I considered those universities where over forty percent of students reported that they applied for the reasons of prestige. All of these universities were also included in the top 50 universities list at least three times during the 6 years of assessment.

Place of residence is the key independent variable, which is a dummy derived from a question asking students where their high school was located. I consider students as coming from non-urban areas if the high school they attended was located in a village or a small town.

I include in the model the following control variables: a dummy for parental education indicating whether at least one parent has university education; the number of books in the students' family homes (dummy for more or less than 500 books); and the subjective evaluation of material well-being.

For the second part of the analysis (testing compensatory advantage hypothesis) I again use access to prestigious universities as a dependent variable. I use two key independent variables to capture the status of a student's family: parental education and place of residence. To estimate compensatory advantage I introduce an interaction term between each of the origin status variables (parental education and residence) and self-reported academic performance at school, which is a binary variable with two outcomes: excellent/good performance and fair/poor performance. To test the mediating effect of USE in this process, I introduce a three-way interaction between background variables, school performance and mode of examination. The latter is a binary variable indicating whether students were admitted exclusively through USE or other methods of admissions.

## *Results*

Figure 6.2 below represents the timeline of the introduction of USE in the universities that are included in the survey. The upper three lines represent students sampled in what I call 'pilot' institutions and the lower three lines represent students sampled in 'non-pilot' institutions. For each of the two groups I represent the share of students admitted only through USE among first-year students, among fourth-year students and among all students combined. I focus on the admissions through USE only, since if used in combination with some other form of admission (university-based examination, or interview) the rationale behind the hypotheses will not apply. Thus, for example, applicants from rural or far-away areas would still have to travel to the university of their choice to sit the exam. In the case of being admitted through the USE only, there is no such need as the results can be submitted and the admission completed

without applicants being present. The division of universities into 'pilot' and 'non-pilot' almost clearly follows regional divisions.

As we can see from the figure, among the first-year students of 'no-pilot' institutions there is a clearly visible jump from the year 2008 to the year 2009, when it reached the same level as the 'pilot' group. Among the fourth-year students, as we can see, in the 'non-pilot' group the share of students admitted only through USE gradually rises. Among the first-years in the pilot group the share of those admitted exclusively through USE was already high in 2005 – almost 50%. However, this number steadily grew even higher during the following years.

**Figure 6.2** Share of students in the sample who were admitted only through USE
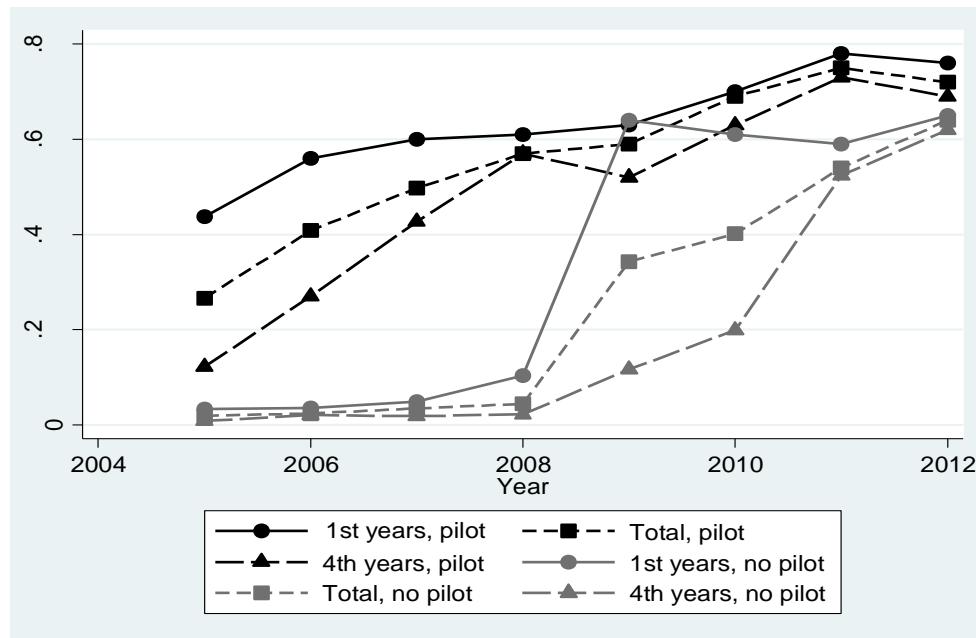


### Total student composition trends

To start with, the figure shows trends in the share of students coming from various backgrounds in total student body throughout the years. As we can see, these numbers stay almost stable throughout the years, which can suggest that introduction of USE has not affected the structure of student backgrounds at all. The only variable, which displays some stable change after 2009, i.e. after the nationwide introduction of USE in Russia, is the number of books the respondent's family possesses: the share of students whose family possesses 500 or more books decreased by about 10 percentage points.

If we focus on the variable of main interest – students' place of origin – we can see that no substantial change has occurred over time. There is at best a very slight but not substantial increase in the share of students coming from non-urban areas.

**Figure 6.3** Share of students with different backgrounds
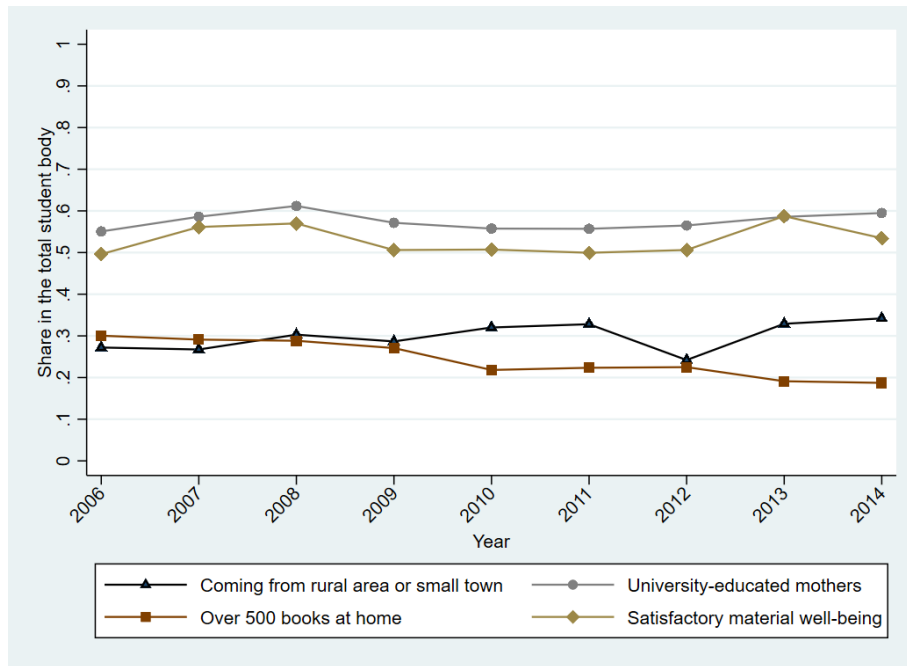


However, the numbers on this figure refer to the total student body at all universities and can therefore only be indicative of some general trends. Figure 6.4 below shows the trends in the share of students coming from non-urban areas among the first-year students at pilot and non-pilot universities. The trends are not in line with the expectation that in the pilot group the trend should be stable but it should change in the non-pilot group in 2010 – i.e. after the USE were introduced nationally.

**Figure 6.4** Share of students from urban areas at pilot and non-pilot universities
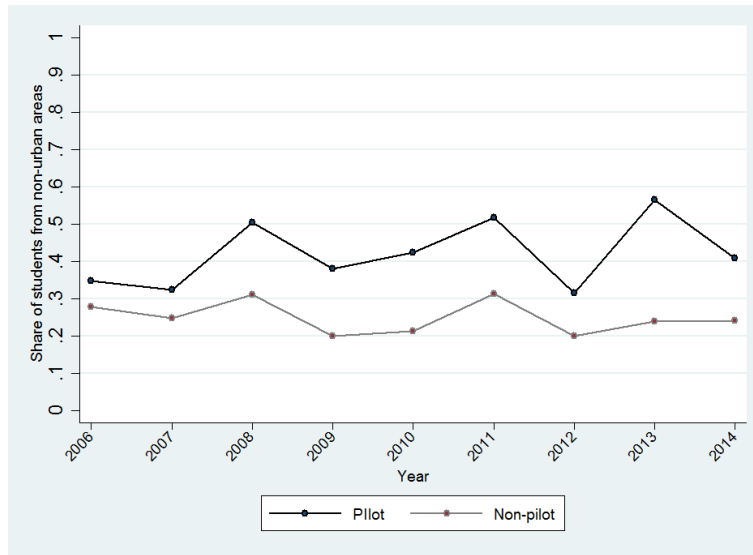
## Results from multivariate analysis

Table 6.2 shows result from OLS models with and without control variables. The first model includes only three variables of interest and the interaction between them. In the second model I added control variables. The main coefficient of interest is the three-way interaction coefficient between student's place of origin, pilot group of university and the period. As can be seen, the size of the coefficient does not change after the controls are added to the model. Even though the coeficient is not statistically significant, the existence of the effect cannot be ruled out since the size is not negligible.

**Table 6.3** OLS estimates, effect of USE on admissions

|  | Model 1 | Model 2 |
|---|---|---|
| Pilot group (vs. non-pilot) | -0.221*** | -0.203*** |
|  | [-0.264,-0.178] | [-0.248,-0.158] |
| Implementation phase (vs. pilot phase) | -0.0212 | -0.0144 |
|  | [-0.0504,0.00788] | [-0.0442,0.0155] |
| Pilot group*Period | 0.0824** | 0.0886** |
|  | [0.0211,0.144] | [0.0260,0.151] |
| Non-urban | -0.125*** | -0.0922*** |
|  | [-0.169,-0.0806] | [-0.139,-0.0459] |
| Pilot group*non-urban | 0.0809* | 0.0668 |
|  | [0.00632,0.156] | [-0.0107,0.144] |
| Period*non-urban | 0.0885** | 0.0733* |
|  | [0.0281,0.149] | [0.0111,0.136] |
| Pilot group*Period*non-urban | -0.0851 | -0.0749 |
|  | [-0.188,0.0177] | [-0.181,0.0308] |
| Parental education |  | 0.0968*** |
|  |  | [0.0735,0.120] |
| Number of books |  | 0.0402** |
|  |  | [0.0138,0.0666] |
| Subjective well-being |  | 0.0558*** |

| | | [0.0334,0.0781] |
|---|---|---|
| Academic performance at high school | | 0.0756*** |
| | | [0.0618,0.0895] |
| Constant | 0.365*** | -0.0217 |
| | [0.343,0.387] | [-0.0798,0.0364] |
| N | 6528 | 6044 |

95% confidence intervals in brackets
* p < 0.05, ** p < 0.01, *** p < 0.001

The figure below graphically represents the coefficients given in the table. As we can see, among students of pilot universities, the difference between the probabilities of urban and non-urban youth to access prestigious universities has not changed at all: students from non-urban areas have about a 4 percentage points less chance of accessing prestigous universities both during the pilot period and the impementation period. In the non-pilot group, however, the advantage of urban students decreased quite substantively. Among the students of non-pilot universities, the difference between urban and non-urban students was about 12 percentage points in the pilot phase while this difference decreased to 3 percentage points in the implementation phase. Among the students of the pilot group this difference was about 3 percentage points in both periods.

**Figure 6.5** Average marginal effect of coming from a rural area compared to urban area on access to prestigous universities
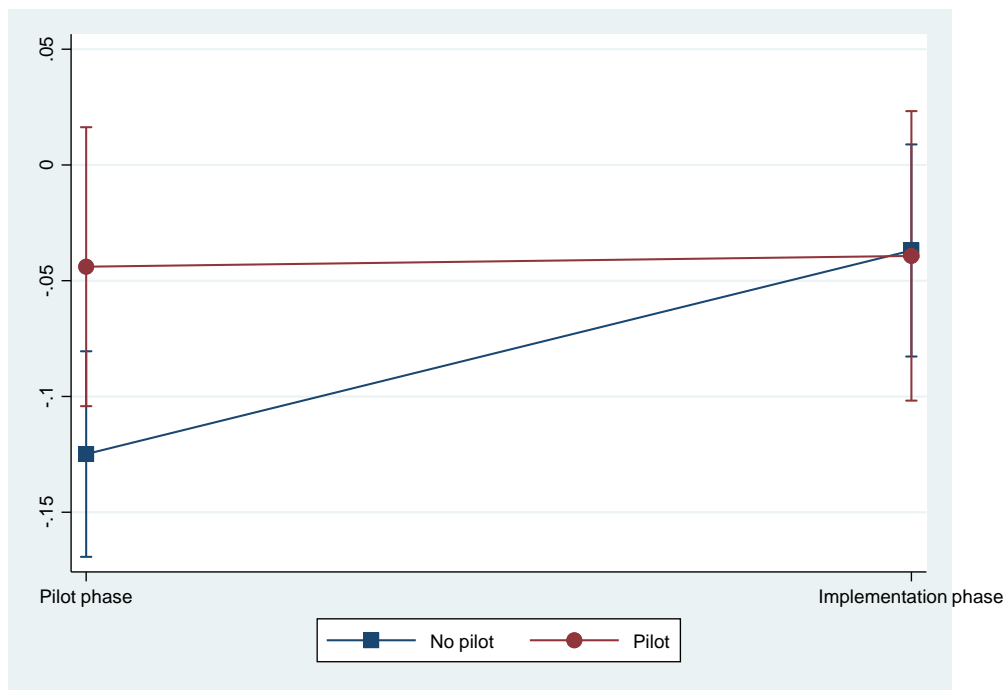
Even though the interaction term is not statistically significant, the 7 percentage point effect is not small and further examinations with better data would be needed to verify this effect. Nonetheless, this analysis is built on the series of premises outlined above, which make it very vulnerable to criticism. However, it generates at least very modest support for the policy implication which served as the main driver for implementing the reform, namley that those students coming from non-urban areas might now have better chances of accessing more prestigious universities.

I performed a similar analysis with parental educaton and parental income as the variables of interest instead of student's place of origin. These models did not generate similar results and in this case the effects remained roughly the same for all groups.

### Testing compensatory advantage mechanism

Table 6.3 represents estimates from OLS regression (I perfomed logit analysis which produced largely similar results). In model 1, I included parental education, place of residence while growing up, academic performance at secondary school and the method of admission. As we can see, students who have at least one university-educated parent are much more likely to have access to prestigious universities compared to their peers with low-educated parents – the difference is about 14 percentage points. Considering that in total about 27 percent of students from the entire sample are enrolled in this group of universities, this can be considered a substantial difference. Students who perform well at school are similarly more likely to go to better universities. However, interestingly, the effect of previous academic performance is smaller – about 10 percentage points – than the effect of parental education. Place of residence before becoming a university student does have an effect, but it is rather modest compared to parental education and previous academic performance – only about three percentage points. Method of exams does not seem to be associated with the type of university.

**Table 6.4** Testing compensatory mechanism, OLS estimates

|  | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Parental education | 0.137$^{***}$ | 0.098$^{***}$ | 0.137$^{***}$ | 0.121$^{***}$ |
| Ref. category: no higher education | [0.12,0.15] | [0.08,0.12] | [0.12,0.15] | [0.10,0.14] |
| Location | -0.033$^{***}$ | -0.029$^{**}$ | -0.025$^{*}$ | -0.032$^{***}$ |
| Ref. category: urban | [-0.05,-0.02] | [-0.05,-0.01] | [-0.05,-0.00] | [-0.04,-0.02] |
| School performance | 0.102$^{***}$ | 0.079$^{***}$ | 0.099$^{***}$ | 0.074$^{***}$ |
| Ref. category: poor performance | [0.09,0.11] | [0.06,0.10] | [0.08,0.12] | [0.06,0.09] |
| Mode of admission | -0.009 | -0.009 | -0.023 | 0.007 |
| Ref. category: not admitted through | [-0.02,0.00] | [-0.02,0.00] | [-0.05,0.00] | [-0.02,0.03] |

USE

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Parental education*school performance | | 0.064*** [0.04,0.09] | | 0.053*** [0.02,0.08] |
| Location*school performance | | -0.005 [-0.03,0.02] | -0.007 [-0.04,0.02] | |
| Location*mode of admission | | | 0.008 [-0.03,0.05] | |
| School performance*mode of admission | | | 0.032 [-0.00,0.07] | 0.004 [-0.03,0.04] |
| Location*school performance*mode of admission | | | -0.032 [-0.08,0.02] | |
| Parental education*mode of admission | | | | -0.074*** [-0.12,-0.03] |
| Parental education*school performance*mode of admission | | | | 0.042 [-0.01,0.10] |
| constant | 0.173*** [0.16,0.19] | 0.186*** [0.17,0.20] | 0.173*** [0.16,0.19] | 0.182*** [0.17,0.20] |
| R-sqr | 0.041 | 0.042 | 0.041 | 0.043 |
| dfres | 20825 | 20823 | 20821 | 20821 |
| BIC | 24592.5 | 24586.6 | 24626.6 | 24589.1 |

$^{*} p < 0.05, ^{**} p < 0.01, ^{***} p < 0.001$

In the second model, to test compensatory advantage hypothesis I introduce interaction terms between parental education and previous academic performance on the one hand, and place of residence and previous academic performance on the other. The results are graphically represented in Figure 6.6. In this case the place of residence interaction effect is almost non-existent, meaning that students coming from urban areas have roughly the same advantage over students coming from rural areas whether they performed well or poorly at secondary school.

For parental education and previous academic performance, on the other hand, we can see an interaction effect, if somewhat moderate. However, the effect does not align with the hypothesis proposed and is, in fact, in the opposite direction. Namely, the difference in probabilities of access to prestigious universities between the children of highly-educated and low-educated parents is more prominent among high-achievers compared to low-achievers: the latter is about 10 percentage points while the former is 16 percentage points. Therefore, not only is the compensatory advantage hypothesis not confirmed, but the evidence points to the exact opposite trend.

**Figure 6.6** Predicted probabilities of accessing selective universities by place of residence and previous performance
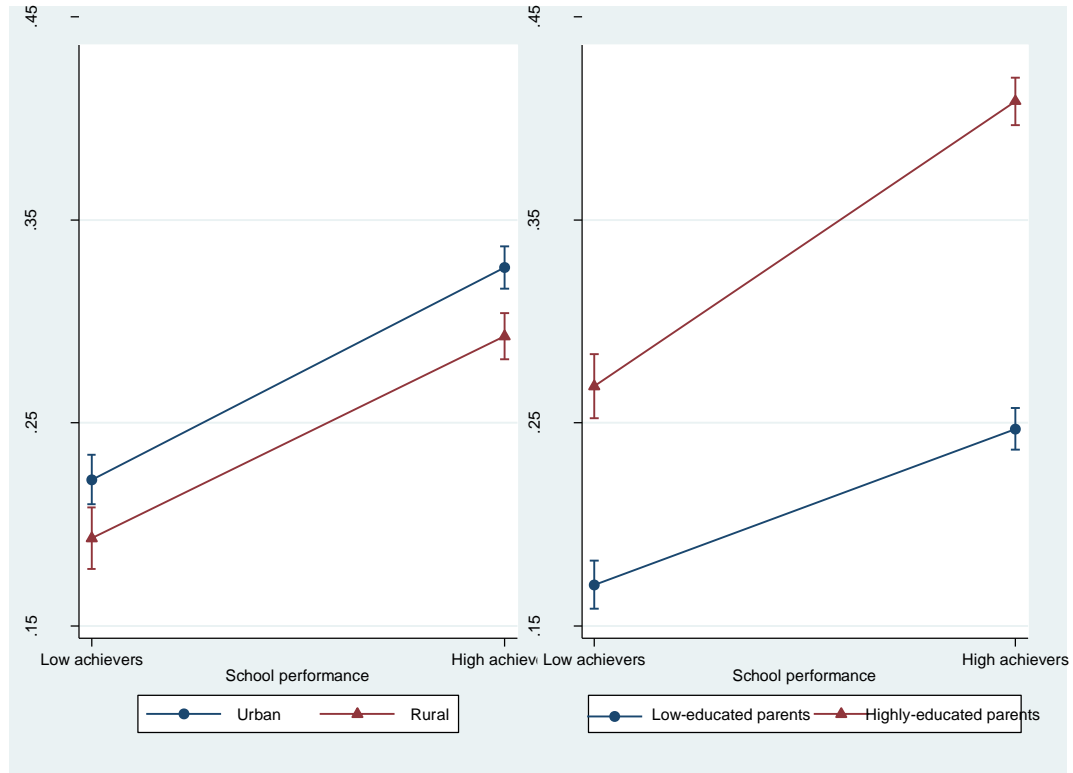
This finding might seem counterintuitive but it should be remembered that the dependent variable is not access to higher education as such, but access to good/prestigious universities. When children of well-educated parents demonstrate excellent or good academic performance, it is likely that they and their families will try to maximize their success – in this case, be admitted to prestigious universities. When the same families have children who do not perform well academically, achieving minimal success (in this case entering a university) is enough. This line of argumentation would lead us to believe that the compensatory advantage mechanism might be confirmed if 'successful outcome' was conceptualized as being admitted to (any) university. This assumption, however, needs further analysis to be confirmed, using a different dataset. Current analysis, on the other hand, confirms that horizontal inequality (by quality of the institution) is larger among academically successful students.

The next step is to examine the mediating role of USE in the above-described association between family background, previous academic performance and access to good universities. To do this, in model 3 I introduced three-way interactions between previous performance, mode of examination and place of residence. The results, depicted graphically on Figures 6.7 and 6.8 show that the method of admission does affect the way

181

in which parental background and academic performance are associated with access to prestigious universities. Students from urban areas and students with a strong academic performance have a higher probability of being enrolled in a prestigious university, regardless of the mode of admission. However, when admission happens exclusively through USE, there is a very small, almost negligible difference between urban and rural low achievers while the difference between urban and rural high-achievers is somewhat substantial – over 5 percentage points (left-hand panel of Figure 6.7). When students are admitted through other methods, difference in probabilities by place of residence is the same for low and high-achievers (right-hand panel of Figure 6.7).

**Figure 6.7** Predicted probabilities of accessing selective universities by place of residence and the method of admission
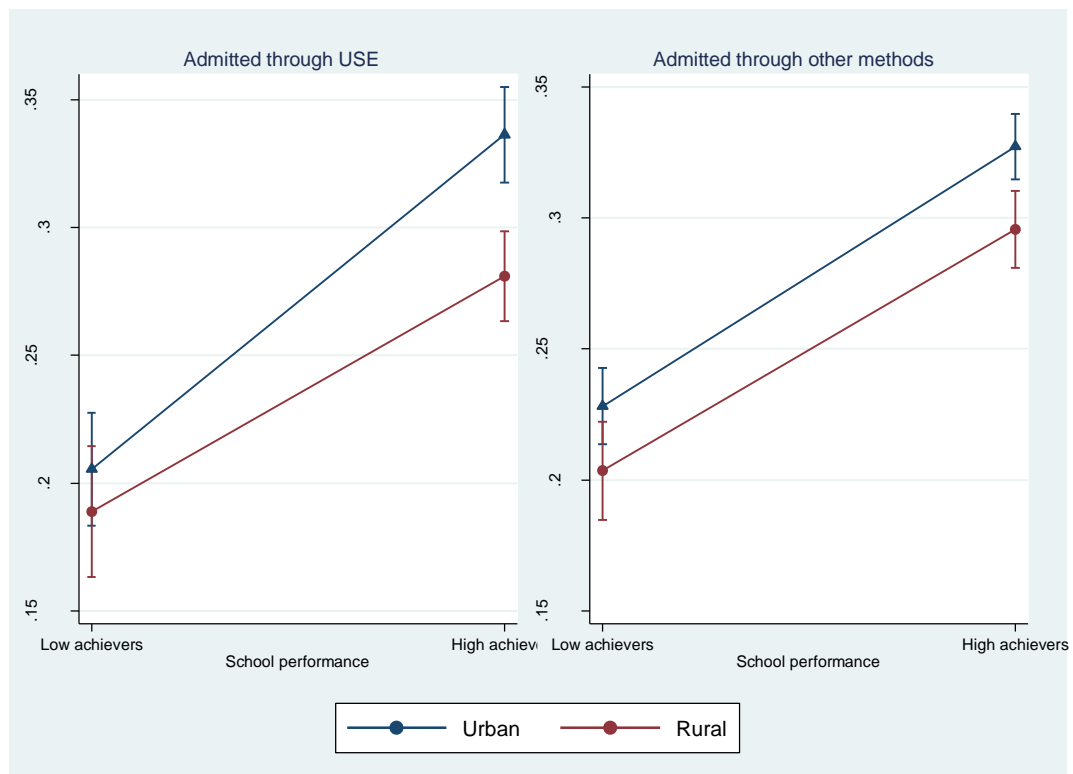


This effect is even much more pronounced in the case of parental education. As we can see on Figure 6.8, it appears that highly-educated parents cannot do much to help their low-achieving children if the method of admission is USE (their prospects almost do not differ from the prospects of children from low-educated families) although the difference is rather small (left pane). However, when the method of admission is different then low-achieving children of highly-educated parents do considerably better (right

pane). This implies that USE is equalizing chances for low-performers with different backgrounds. But for high-performers differences by background remain almost the same for different methods of admission. When the method of admission is USE, high-achieving children of low-educated parents have a higher chance of attending prestigious universities than low-achieving students of highly-educated parents. When the method of admission is not USE, this is not the case.

**Figure 6.8** Predicted probabilities of accessing selective universities by parental education and the method of admission
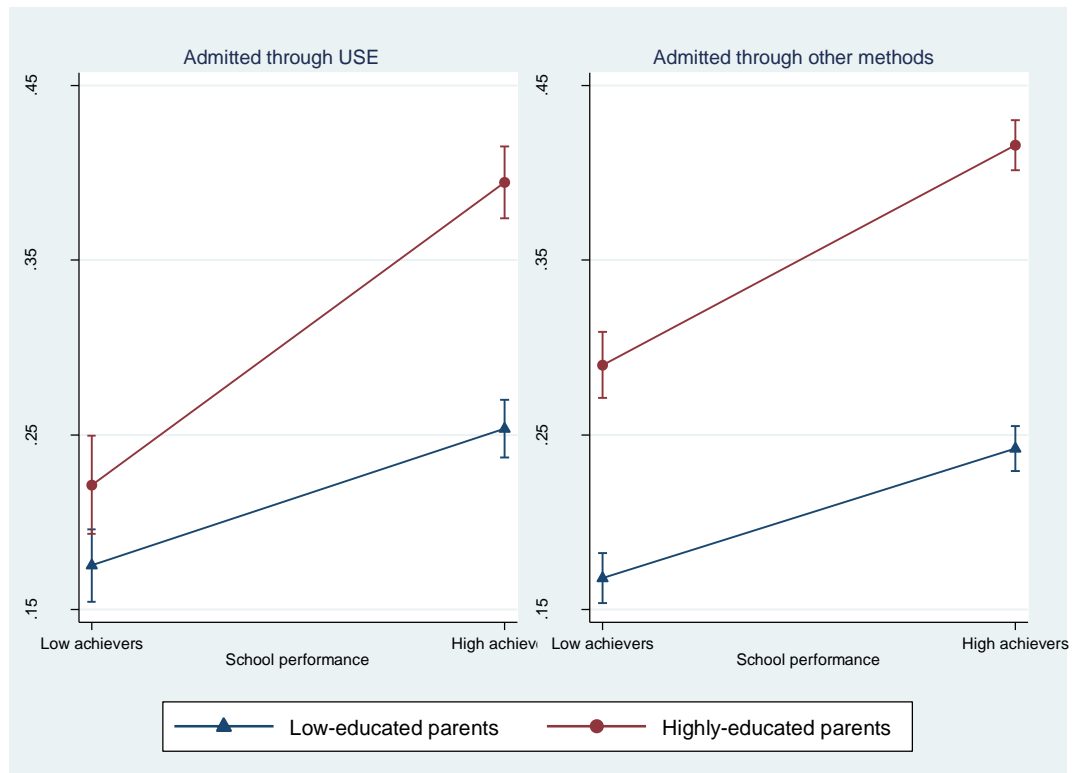


We could conclude based on this analysis that USE works somewhat as an equalizing force. However, rather than increasing the chances of high-achieving disadvantaged students, it decreases the chances of low-achieving advantaged students to access prestigious universities. This could indicate that as USE are an 'objective' and an anonymous measure, it is difficult for privileged families to secure admission to good universities for their offspring. When the method of admission is different, well-educated parents can perhaps find ways to gain admission for their low-achieving children to good universities through social networks, bribery, etc.

## *Conclusions*

University education is undoubtedly associated with higher earnings, a better social standing in society and better life chances overall. Whether university education imparts skills and knowledge that help graduates perform better than others, or whether it simply works as a flagging device to help employers and others identify talented people, it is certainly worthy investment of time, effort and in some cases finances. If university education is a limited resource, i.e. if access is not unlimited, and the demand on it is high due to the high personal returns in the future, appropriate ways to allocate this resource must exist. For any other product a free market answer would be to impose a higher price. But university education is certainly much more than a personal investment in one's future earnings and social standing. As a generator of the pool of knowledge contributing to societal development and public well-being, it is essential that universities enroll students who are talented and able to participate in the process of knowledge production. Hence the need for some type of admissions barriers to identify these deserving young people. Often, however, particularly in the absence or lack of state regulations, universities can become merely tuition-fee absorbing entities. In this case the distinction between schools of different quality becomes, perhaps, more important, than the distinction between university and no university. Therefore, in this chapter, rather than focusing on access to higher education as such, I have examined the prospects of access for different social groups to highly selective universities in Russia, where the quality of education is supposed to be better and whose graduates enjoy a better social status as well as better life opportunities.

Beyond examining inequalities in access to selective universities, I have focused on exploring the role of standardized admissions exams in shaping and possibly alleviating those inequalities. Standardized admissions are widely criticised for many different reasons, but at the same time they are considered by many a fair and objective measure to judge one's performance. In the case of Russia, the introduction of standardised admissions exams had very clear additional goals: to fight deeply-rooted corruption in the admissions systems and to improve the chances of less privileged but talented children to access prestigious universities. Most importantly, the central research question of this chapter was to answer whether the latter goal had been achieved.

To answer this question, I employed a quasi-experimental approach, making a distinction between 'pilot' and 'non-pilot' universities during the reform's pilot and implementation phases. As I made use of the student survey data, in essence, I have evaluated the change in student composition by background in the two types of universities at two different periods of time. The results of the analysis are not conclusive but suggest that the examinations were, indeed, successful in increasing the chances of students coming from non-urban areas to access high-ranking universities.

However, this analysis is bound by severe limitations from the point of view of reform design, study design and the data. Even though USE were first 'piloted', this was not a pilot study in the conventional sense. Rather, some universities chose to admit students exclusively during the pilot phase while others did not. Therefore, university self-selection effects may be present. Besides, even the self-selected 'pilot' universities used other methods of admission in some cases. Further, even after the national implementation, quite a substantial share of students are still being admitted without taking USE, or other admission methods are used in combination with USE. There are grounds to believe that students' background variables might be correlated with the type of admissions methods used.

The data used also has several pitfalls in terms of sampling, method of collection as well as the period it covers. Data from before 2001, i.e. when the USE were not used at all and admissions were done through old-style university-based examinations, is glaringly absent. In addition, the data for the period covered is not a representative sample of all Russian university students.

Despite these drawbacks, this chapter contributes to the ongoing debates on the use of standardized examinations and access to higher education in several important ways: methodologically, this particular use of a quasi-experimental approach in an attempt to establish causal relationship between the exams and access for various groups can also be used in other settings. Further, I estimate the probabilities of access to selective universities rather than simply access to higher education – as higher education expands, this is a useful distinction to make. Importantly, I find that chances of applicants coming from rural areas and small towns to access highly selective universities in Russia increased as a result of the introduction of USE. Even though this effect is modest and

needs to be validated by other data, it is an important finding, since this was the major driving force behind the introduction of USE. This chapter provides evidence that the policy in this respect was effective. Lastly, I test the compensatory advantage mechanism and while I do not find support for it, I find evidence that the introduction of USE has made it more difficult for underachievers from advantaged families to access select universities. This is further support to the assumption that USE can make access to selective universities more meritocratic, less dependent on parental background.

# Chapter 7 Conclusions

This thesis is built on the foundations of two major thematic pillars: educational inequalities and post-communist transition. The big overarching question to which various parts of this thesis seek to find an answer is: who were the losers and winners of the tumultuous transitional period characterized by the disruption of economy, disintegration of political institutions and profound transformation of cultural values? Recognizing the potential of education to both alleviate and deepen existing socio-economic inequalities, I have focused on examining how educational inequalities have changed in post-Soviet Russia and Georgia.

It is not the task of this thesis to normatively assess the ideological underpinnings of the Soviet Union. But the proclaimed goal of creating the classless society with the total collective ownership of all means of production did not quite materialize. It is true that economic capital, the central pillar of stratification in most industrialized societies, was not so important in the Soviet Union, and some even argue that it was a burden rather than an asset (Eyal, SzelÈnyi and Townsley, 1998). Indeed, wealth and income inequality, both nominal and by social groups, was very low as private ownership was banished and wages were centrally set. Instead, stratification happened along the lines of political capital (party membership), cultural and social capital.

The breakup of the Soviet Union was preceded by Perestroika – the loosening of political control and a stride towards moderate economic liberalization in an effort to increase efficiency. Despite this, the breakup itself was a somewhat abrupt and unexpected development. In fact, at the end of the 1980s virtually no one, including scholars, politicians or political pundits expected that the largest socialist economy would no longer exist in a couple of years. Political calamities, institutional upheavals and economic hardships in the follow-up period testify that nobody was ready for this dramatic change. Therefore, transition was, in most cases (with the potential exception of Baltic republics) haphazard, lacking a long-term strategy and vision for development. As the economies of the independent republics sharply declined, some were more successful than others in coping with the hardships and even taking advantage of emerging new opportunities. As a result, income inequality increased dramatically within a few years.

While this is an undisputed fact, my goal with this thesis is to explore, whether some population groups suffered/benefitted more than others from the transitional period.

To seek an answer to this question, in the first empirical chapter I explored how inequalities in educational attainment by parental background changed during the transitional period in the two countries. Acknowledging the uneven developments in enrolment and attainment rates at various levels of education, instead of estimating changes in overall transition or attainment rates, I focused on changes in inequalities in secondary education attainment on the one hand and inequalities in university attainment on the other. Specifically, I estimate the chances of attaining different levels of education for cohorts of respondents born at different times since WW2 and compare the differences between groups across birth cohorts. For this purpose, I have used cross-sectional data from Russia and Georgia gathered within the scope of the Gender and Generations Study. Large number of the survey respondents has allowed me to estimate differences between birth cohorts by parental background.

The second empirical chapter is, in a way, an extension of the previous chapter, zooming into the case of Georgia and the decline of vocational education. Slightly shifting the approach, I explored how different social groups responded to the decline of primary and secondary vocational education in the immediate aftermath of the breakup of the Soviet Union. As some educational career opportunities disappeared, new ones emerged and different groups chose to pursue different careers.

The next step, after estimating the changes in educational inequalities, is to assess whether returns to educational attainment also change. If educational inequalities increased on the one hand yet returns to education also increased on the other, the cumulative effect of these two changes would be a total increase in intergenerational inequality. For the purposes of this chapter I analysed merged cross-sectional survey data from 1990s and 2000s Russia, estimating the amount of income for respondents with different levels of education.

Allowing that educational expansion might mean that the type and quality of educational institutions are possibly more important for students' later life chances than the fact of having formal educational credentials as such, in the final empirical chapter I turned to evaluating the chances of accessing highly selective universities in Russia. At

the same time, rather than simply assessing the association between students' background and chances of accessing selective universities, I estimate the potential mediating/equalizing effect of the recently introduced standardized university admissions exams. Utilizing the annual student survey data, I employ quasi-experimental approach to detect the causal effect of the exams. In what follows, I summarize the main findings from all empirical chapters in reference to the key theoretical underpinnings outlined in Table 2.1. I then summarize what are, I believe, the major contributions of this thesis to social science scholarship. Recognizing the numerous limitations of the thesis – whether from the lack of appropriate data or methodological shortcomings – I outline them and propose possible solutions. Finally, I explore avenues for related further research.

## *Summary of main findings*
### Inequalities in educational attainment during the post-Soviet transition

In the first empirical chapter on educational inequality I find evidence that, overall, inequality in educational attainment by parental background increased both in Russia and Georgia in the 1990s. However, this increase was not homogenous at all levels of education. In a very rare development, the share of the population with full secondary education decreased substantially (or it could be stated conversely that the share of those whose highest attainment level was basic education increased). In fact, in Georgia the prospects of having only basic education for what I call the 'late transitional cohort' was higher than for their parents, indicating a substantial decline. As attainment rates at all levels of education steadily grew in almost all countries throughout the 20th century, such a decline in attainment rates is indeed not common and therefore merits particular attention. The reasons for increasing drop-outs could have been numerous, including factors that potentially pushed students out of the system (lowering the age of compulsory education in Russia, briefly introducing tuition fees for upper secondary education in Georgia, less public funding and therefore less commitment to education in both countries), as well as those that incentivized them to drop out (emerging self-employment opportunities).

I find that both in Russia and Georgia the prospects of not getting full secondary education credentials were very low among the population born in 1959-66. More importantly, differences in this respect between the children of a. high-educated and low-

educated parents and b. professionals, non-manual and manual workers were very small, almost negligible. Among the cohorts born later, who had to make key educational decisions during the post-communist transition, these chances increased disproportionately for the children of unskilled workers and for the children of low-educated parents. The increase was quite substantial, equaling or in some cases even surpassing the same probability for the cohorts born during and after WW2.

I anticipated this result based on the logic of 'reverse MMI': under MMI, the upper classes are the first to take up opportunities when education expands and the lower classes get access only when demand from the upper classes is saturated (Raftery and Hout, 1993). Conversely, when access declines, for whatever reason, the lower classes are the first to suffer. As RRA theory posits, the major motivational driver when making decisions about one's educational career, is to attain at least the same social status as one's parents have (Breen and Goldthorpe, 1997). Accepting this, lower-class youth would have much less to lose by dropping out early compared to their upper-class peers. A changing socio-economic and institutional environment could signal to them that they could attain the same social standing as their parents without finishing secondary school.

The picture is different when it comes to higher education. Enrolment rates somewhat fluctuated, particularly in Russia, but overall they grew in both countries quite substantially. Whether the demand already existed in the Soviet Union, or it emerged later, the fact is that the supply increased chiefly through the privatization of costs: emerging private universities or the introduction of tuition fee-paying tracks at public universities. In this case it is natural to hypothesize that the upper classes would be the ones enjoying the benefits of expansion, particularly considering that new opportunities involved considerable costs. Indeed, I found that attainment rates among later cohorts increased more for the children of educated and service class parents. However, it should be noted that this increase was not substantial and not nearly as great as the effect detected in the case of attaining secondary education. This might serve as a proof that loss associated with demotion on the social status attainment ladder is greater than the benefit associated with climbing up.

In case of Georgia, I zoomed in to examine changes in educational attainment in greater detail, focusing on the decline of vocational education as a result of economic and

institutional changes. I found that the lower classes responded to vanishing vocational education opportunities (both primary and secondary) by dropping out earlier while the upper classes pursued more education.

Thus, despite certain inconsistencies, I found that educational inequalities increased both in Russia and Georgia during the 1990s and this increase was particularly evident in the attainment of full secondary education. But how was this reflected in later life chances? Did growing educational inequalities also contribute to the increasing income inequality? To seek an answer to these questions, as a next step, I examined returns to educational attainment in Russia throughout the 1990s and 2000s.

## Returns to educational attainment

In the empirical chapter on returns to educational attainment in Russia I outlined how three different developments could have varying effects in this respect. These developments are: market transition, economic decline and later consolidation, and fluctuation of higher education access rates. I found that monetary returns to university attainment did, in fact, increase during the initial phase of post-communist transition as predicted by the market transition theory (Nee, 1989). However, this increase was not very large and at later periods the difference in earnings between those who were university educated and the rest remained almost constant. This could point to the fact that different factors might have pulled the effect in different directions and therefore they might have cancelled each other out. Namely, economic consolidation could have rewarded those with university education disproportionately while higher education expansion could have penalized them because of credential inflation.

At the same time, I find that differences in prospects of accessing the service class were, in fact, reduced between the university-educated respondents and the others. University education did, however, substantially affect the chances of being employed or self-employed. Interestingly, much like the effect on earnings, I detected that this effect increased during the period 1996-1998 and later remained almost unchanged throughout the period under analysis. In short, the university-educated population appears to have gained advantages both in terms of higher income and prospect of employment in 1996-1998 over those without any university education. It is difficult to assert that this was the effect of market transition – the Russian variety of capitalism in the early 1990s,

'merchant capitalism' as it has been described (Burawoy and Krotov, 1992), hardly rewarded productivity and efficiency. Based on this, it would be easy to assume that more educated people managed to hold on to their jobs and better income thanks to social connections and informal networks.

If returns to university education increased during the 1990s, the differences between other levels of educational attainment remained practically unchanged. Notably, it appears that at no point during the 1990s or 2000s was there any difference in earnings between respondents with full secondary education and those with less education. This is an interesting finding in light of the evidence from the previous empirical chapters. As we may recall, inequality in attaining secondary education by parental background increased sharply in the 1990s.

As mentioned above, the expansion of higher education and subsequent credential inflation might be one of the reasons why no increase in returns to university education is observed during the 2000s economic consolidation. Much of this expansion happened through the newly-emerged private universities, many of which were of dubious quality and served a demand-absorbing purpose more than anything else (Levy, 2006). Considering this, the quality of higher education institutions might have equal if not stronger implications for social stratification as simple access to higher education. Therefore, in the final empirical chapter I examined inequalities in accessing select universities in Russia in light of the major educational reforms.

## Effect of standardized admissions examinations on access to selective universities

In the final empirical chapter, rather than examining educational inequalities in general, I focused on evaluating the results of one of the most significant education policy reforms in Russia, the introduction of centralized standardized examinations for university admissions (although the implications might extend further as this policy has been popular in many post-Soviet countries and beyond). I used a quasi-experimental approach to assess if access to highly selective universities in Russia had increased for disadvantaged students and particularly for those coming from rural areas and small towns.

I did find some support for the hypothesis that the centralized examination system improves the chances of non-urban students to be admitted to select universities. The lack of robustness of the estimate, as well as substantial flaws in the design of the reform and the data structure do not allow us to conclusively assert that the USE did, in fact, improve the chances of non-urban students to access selective universities.

The fact that I did not find irrefutable proof of the effect is somewhat surprising: the logic behind the introduction of USE warrants that students from non-urban areas should find it much easier to apply to select universities (which, typically are located in large cities) as they do not have to travel and stay away from home for extended periods of time in order to take the traditional style exams. If the effect is not actually present it could indicate that, contrary to the justification for the reform posited by policy-makers, non-urban students did not avoid travelling long distances to sit exams if they were determined to enter good universities. Alternatively, it is possible that non-urban students, even when they have the chance to sit exams remotely and the option to list several universities in order of preference, refrain from choosing select universities. This can indicate a lack of confidence on their part. Evidence supporting this hypothesis was found in the case of Georgia (Chankseliani, 2013).

In the same chapter I tested the compensatory advantage hypothesis by estimating the chances of accessing select universities for students with various parental backgrounds, conditional on previous academic performance. I found no support for this hypothesis. In fact, contrary to what the compensatory advantage would predict, I found that the difference in accessing select universities by parental background is smaller among low-achieving students compared to their high-achieving peers. I propose that this somewhat unexpected result can be ascribed to the fact that I estimate the chances of entering select universities among those who already have access to higher education. The compensatory advantage could manifest itself if we were to estimate the chances of accessing universities in general.

I did find evidence that USE have to a certain extent equalized the chances of students from various backgrounds to access selective universities. This effect was detected only among low-achieving students, i.e. USE make it very difficult for the children of highly-educated parents and students from large urban areas to access select

universities: their chances almost do not differ from those of low-achieving, non-urban students with low-educated parents. Thus, USE did have an equalizing effect but rather than increasing the chances of high-achieving disadvantaged students, they decreased the chances of low-achieving students from advantaged backgrounds to study at select universities.

**Table 7.1** Brief summary of main findings

| Chapter | Research questions | Main findings |
|---|---|---|
| Chapter 3 | How did educational inequalities change in Russia and Georgia in the 1990s? | The effect of both parental occupation and parental education on the chances of attaining full secondary education increased substantially. Background advantage in attaining higher education was maintained and slightly increased. |
| Chapter 4 | How did different groups respond to shrinking vocational education in Georgia? | Lower class students opted out of the formal schooling system while higher-class students switched to general academic tracks. |
| Chapter 5 | Did returns to educational attainment changed during the 1990s in Russia? | Returns to university attainment slightly increased during the early 1990s and remained constant afterwards. The educational advantage remains almost unchanged when occupational status is taken into account. |
| Chapter 6 | Have USE helped improve the chances of accessing select universities for disadvantaged students? | Introduction of USE has increased the chances of students from rural areas to access select universities. No similar effect was found by other background characteristics. Introduction of USE has reduced the chances of underachieving students from advantaged backgrounds to access selective universities. |

## *Contributions and limitations of the study*

There are three distinct areas in social science scholarship to which, I believe, this thesis makes a contribution. Firstly, the findings presented enrich the scholarly literature on the post-communist transition. Much of this literature is, understandably, focused on the economic and political aspects of the transition. This thesis focuses instead on the societal aspects of the transition and seeks to find out who were those affected most by the economic, political and institutional transformations. Russia, due to its magnitude and geopolitical significance, has been the focus of researchers, both local and Western before as well as after the breakup of the Soviet Union. However, I believe that all three empirical chapters that focus on Russia have something new to offer, either in terms of approach or data sources. Georgia, on the other hand, is rarely the subject of sociological

studies and, to the best of my knowledge, there has been no previous piece of research systematically assessing the scope of educational inequalities by parental background in the country and its changes during the post-communist transition. I believe that the findings and assumptions from the empirical chapters can extend beyond the two countries analysed and can apply to other post-Soviet societies as well.

Further, I have contributed to the vast body of literature on educational inequalities not only by adding two additional case studies, but also adopting a somewhat different approach, focusing separately on the attainments at different levels of education. I have examined the rare case of shrinking secondary educational attainment and proposed and tested hypotheses regarding how inequalities change when attainment rates wean.

In terms of methodological contributions, I have adopted a quasi-experimental approach to estimating the effects of a major educational reform policy. Given the reform design flaws and data limitations, I came up with the solutions to effectively estimate change in student composition and to juxtapose the pilot phase of the reform with the implementation phase (rather than pre-pilot with pilot).

This approach to analyzing the reform impact can be considered a limitation of the study as much as a contribution. Ideally, for this study I would compare pilot universities with non-pilot ones before (baseline) and after the reform was piloted. However, this was not possible as data is not available from the period before the piloting of the reform. In addition, the reform design itself has major flaws: a somewhat ambiguous distinction between pilot and non-pilot universities and the existence of many exceptions to the rules.

Further, in none of the empirical chapters did I have the chance to estimate the direct effect of origins on destinations and related changes during the transitional period. In the first two chapters I estimate change in educational attainment in different birth cohorts. However, unlike educational attainment, which is more or less stable throughout the life course, socio-economic status is more susceptible to change with age. Moreover, the prospects for changing status are not equally distributed across occupational ranks and educational attainments. As such, the occupational status of different birth cohorts from a single cross-sectional data are not directly comparable. In the chapter on

educational returns I do use the dataset which could be used to assess the changing effect of social origins on destinations. However, data on parental occupation in this dataset is not consistent, displaying certain irregularities and I thus decided not to include it in the analysis.

Absence of any differentiation between the types of educational credentials beyond the level of education might be considered a significant shortcoming of the thesis. Indeed, how did the fact of having graduated from a 'technikum' in 1970s compare to having graduated from a newly-established demand-absorbing private university in 1990s? Are the two comparable and can it be said with certainty that one is superior/inferior to the other? As I pointed out in earlier chapters, it is impossible, based on the data available, to make distinction between the types of higher education credentials the respondents claim. And more importantly, one of the starting assumptions of the thesis, corroborated by empirical evidence is that on average, holding university credentials offers certain advantage compared to any other type of educational credentials.

The choice of cases for the thesis might seem somewhat arguable. What makes Russia and Georgia particularly enticing cases to examine the overarching question that the thesis is attempting to answer? Initially, I would like to underscore that it is not an intention of this thesis to be in any way representative of all Soviet countries. The 15 republics, even if they had similar economic setup and educational systems, differed substantially in terms of culture, history, geography, demographics, economy etc. Therefore it would not be reasonable to claim that whatever is observed in Georgia will also be found in, say, Kyrgyzstan or Moldova.

Instead, I have identified research questions that, I believe, are useful in exploring the changing role of education as a social stratifier during the post-Soviet transition, and which make sense in post-Soviet context due to structural and socio-economic changes that took place. Thus, fundamental changes in economy, its liberalization and the removal of central control directly affected vocational education, which was a backbone of the Soviet economy. Having witnessed substantial shrinking of the vocational education sector, Georgia presents a fitting case to examine what alternative paths were pursued by the youth who would have opted for vocational education. Similarly, Russia, with its ups

and downs in economy, rapid liberalization of market and fluctuating higher education enrolment rates, is a good case study for examining changes in education return rates.

The final empirical chapter, which might seem slightly out of tune with the rest of the thesis, in fact, deals with two issues, which are very relevant currently, particularly in the post-Soviet countries: introduction of national standardized examinations for university admissions and the horizontal differentiation between higher educational institutions by their quality. Russia implemented a highly publicized reform effort in this area, which merits an in-depth study and importantly, availability of data makes the study feasible.

In general, choice of cases was, in small part, driven by the availability of data: while there are several datasets available from a few post-Soviet countries available, what makes the data from Gender and Generations Survey (which is used in the first two empirical chapter of this thesis) attractive, is a very large sample size giving the opportunity to conduct reliable analysis by birth cohorts. Russia and Georgia are the only two non-Baltic post-Soviet countries included in this survey.

The thesis can be seen as an attempt to solve different parts of one big puzzle without providing key to the entire puzzle itself. This can be considered a substantial shortcoming of this thesis. However, I believe it represents a solid foundation which can be turned into a substantial study of educational opportunities and the role of education in stratifying the post-Soviet societies with a few meaningful extensions.

One serious caveat to the empirical analysis presented in chapters 3, 4 and 5 of this thesis is the omission of migration as a significant factor during the post-Soviet transition. Sampling frame of all the surveys I am using is the population living in Russia or Georgia respectively at that moment which automatically excludes everyone who migrated. Migration rates during the post-Soviet transition have been extremely high both in Russia and in Georgia. While in the Soviet Union even migration between the 15 republics were limited and the outside borders were practically closed, break-up of the Union inadvertently resulted in free movement of people across and beyond borders (Tishkov, Zayinchkovskaya and Vitkovskaya 2005).

Russia has been both on the sending and receiving ends of population migration in 1990s. On the other hand, many Russians left the country heading mostly to the

Western Europe and the USA, but also other destinations. An estimated 2.5 million Russians emigrated only during 1991, 1992 and 1993. Major destination countries were Germany, Israel and the USA (Heleniak, 2001). On the one hand, citizens from other post-Soviet countries migrated in even larger quantities to Russia (including Georgia) (Ibid.).

In Georgia, accurate data on the extent of migration is lacking. Before the break-up of the Soviet Union, emigration from Georgia was a very rare occurrence and it is estimated that 95 percent of all Georgians lived in Georgia (Badurashvili and Nadareishvili 2012). However, according to the official census data, the total population in 2002 was 4.4 million, i.e. 20 percent less compared to the 1989 level (Ibid.). Part of this decline can be attributed to the reduction of net birth rate (which, in its turn, is difficult to estimate as any numbers would also include the effect of migration). However it is estimated that most of this change was due to emigration. In fact, according to some sources, in 1990s Georgia had the second highest net migration rate after Kazakhstan of all post-Soviet countries (Mansoor and Quillin 2006).

The fact that the analysis presented here disregards the migration trends in 1990s and subsequent change in population structure might be consequential for the findings. Namely, if those, who migrated from the countries differ from the remaining population according to the key variables of interest in this study, then the analysis will be biased as populations before and after the break-up of the Soviet Union will not be comparable. In case of Russia both outward and inward migration is bound to have had a potential effect on population structure. According to the limited available data, by 2006 approximately 30 percent of all Russians who left the country after the break-up of the Soviet Union had higher education. This is smaller compared to the number observed in the sample under analysis (27 percent). However, only 21 percent of those who have migrated into Russia hold the degree (Migration Policy Center, 2013). In Georgia it is reported that about 32 percent of migrants hold university diplomas (Migration Policy Center, 2013a). This is similar to the number reported in the sample. However, without more detailed comparison between the migrating and remaining populations it is difficult to claim the bias in data in any direction with any certainty. It is a caveat in the analysis which should be borne in mind while analyzing and presenting the results.

I started out working on this thesis project with the purpose of finding out whether educational inequalities grew during the post-Soviet transition. I was looking for an answer more complex and sophisticated than 'of course inequalities grew when socialism was replaced with capitalism'. Indeed, it turned out that the answer is not so simple and straightforward: while, overall, I found educational inequalities to have grown in post-Soviet Russia and Georgia, the scope and consequences of this growth are not homogenous. Moreover, I sought to discover what educational attainment and therefore inequalities in attainment meant for later life chances, if education played a role in equalizing opportunities for people with various backgrounds, or rather it served as an avenue for stratification. The results suggest that the role of educational attainment as a stratifier somewhat increased compared to the Soviet period, but not quite as much as could be expected.

This thesis, bar the last empirical chapter, was a largely descriptive effort to examine social changes in post-Soviet Russia and Georgia. Due to the constellation of a host of substantial changes, all happening at the same time, it is very difficult to pinpoint the causes of any of the effects observed. Using other datasets, including any longitudinal studies will be useful in further exploring educational and other inequalities in post-Soviet societies. There are a few such datasets available from a number of countries: Russia Longitudinal Monitoring Survey, Ukrainian Longitudinal Monitoring Survey, Life in Kyrgyzstan Survey, and GGS (I have used GGS as cross-sectional dataset since it was started in 2006 and it therefore does not capture 1990s). Moreover, a pseudo-experimental study design can be used to establish causal links between various phenomena employing such exogenous factors as wars and ethnic conflicts, which took place in many post-Soviet countries.

More importantly, many post-Soviet governments experimented with the introduction of wide ranging reform efforts in various sectors that could have affected the status of inequalities. While not all these reforms were carefully designed and implemented, they represent interesting cases for analysis. In the field of education some of the prominent reforms include: introduction/increase of tuition fees, teacher professional development reforms, public education funding and management reforms, curriculum reforms, etc. However, in most cases a rigorous examination of the effects of

reform policies is almost impossible due to the absence of data, the presence of faulty data, or unconventional policy design. But I do believe that this approach – assessing the effects of various policies and producing research that can later be used to feed those policies – is what should drive much of social science research.

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# Appendix A – Chapter 1

**Table A.1** Numbers of institutions and students at various educational levels in the Soviet Union, 1987

| Level of education | No of institutions | No of enrolled students |
|---|---|---|
| Preschool | 143,000 | >17 million |
| General education (grades 1-11) | 135,000 | 45.4 million |
| Primary vocational | | 4.2 million |
| Secondary vocational | 4,508 | 4.4 million |
| Higher education | 898 | 5 million |

Source: Savelyev, Zuyev and Galagan, 1990

**Table A.2** Higher education institutions and enrolments in Russia and Georgia

| | 1940-41 | 1960-61 | 1970-71 | 1980-81 | 1984-85 | 1985-86 | 1987-88 |
|---|---|---|---|---|---|---|---|
| No of HEIs, Russia | 481 | 430 | 457 | 494 | 500 | 502 | 506 |
| No of students, Russia, 000 | 478.1 | 1,496.7 | 2,671.7 | 3,045.8 | 3,041.2 | 2,966.1 | 2,834.9 |
| No enrolled per 10,000 of population, Russia | 43 | 124 | 204 | 219 | - | 206 | 194 |
| No of HEIs, Georgia | 21 | 18 | 18 | 19 | 19 | 19 | 19 |
| No of students, Georgia, 000 | 28.5 | 56.3 | 89.3 | 85.8 | 89.0 | 88.5 | 86.4 |
| No enrolled per 10,000 of population, Russia | 77 | 134 | 189 | 169 | - | 169 | 163 |

Source: Savelyev, Zuyev and Galagan, 1990

**Table A.3** Enrolment numbers in vocational and higher education in the Soviet Union, million

| Level of education | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 |
|---|---|---|---|---|---|---|---|
| Primary vocational | 0.3 | 0.7 | 0.5 | 0.6 | 1.4 | 2.2 | 3.7 |
| Secondary vocational | 0.4 | 0.5 | 0.9 | 1.2 | 2.6 | 4.1 | 4.2 |
| Higher education | 0.3 | 0.4 | 0.7 | 1.1 | 2.5 | 4.2 | 4.6 |

Source: Official enrolment data, Soviet Union, State Committee of the USSR for Statistics

# Appendix B – Chapter 3
## Table B.1 Ordered logit estimates for educational attainments, log odds

| | Georgia | Russia |
|---|---|---|
| **Parental occupational status** | | |
| *Reference category: upper service class* | | |
| Lower service | -0.749** | -0.297 |
| | [-1.30,-0.20] | [-0.78,0.18] |
| Routine non-manual | -0.675* | -0.661** |
| | [-1.28,-0.07] | [-1.13,-0.19] |
| Skilled manual | -1.249*** | -1.115*** |
| | [-1.82,-0.68] | [-1.58,-0.65] |
| Semi-skilled and unskilled | -1.497*** | -1.365*** |
| | [-2.05,-0.94] | [-1.90,-0.83] |
| Farm labour | -1.584*** | -2.125*** |
| | [-2.08,-1.09] | [-2.62,-1.63] |
| **Birth cohort** | | |
| *Reference category: 1943-1950* | | |
| 1951-58 | -0.316 | -0.147 |
| | [-0.82,0.19] | [-0.58,0.29] |
| 1959-66 | -0.195 | -0.106 |
| | [-0.69,0.30] | [-0.53,0.32] |
| 1967-74 | 0.040 | -0.152 |
| | [-0.47,0.55] | [-0.57,0.26] |
| 1975-82 | 0.043 | -0.080 |
| | [-0.46,0.55] | [-0.49,0.33] |
| **Parental occupation*birth cohort** | | |
| Lower service*1951-58 | 0.291 | -0.280 |
| | [-0.41,1.00] | [-0.90,0.34] |
| Lower service *1959-66 | 0.172 | -0.428 |
| | [-0.51,0.85] | [-1.04,0.18] |
| Lower service *1967-74 | 0.191 | -0.556 |
| | [-0.51,0.89] | [-1.16,0.05] |
| Lower service *1975-82 | -0.021 | -0.477 |
| | [-0.71,0.67] | [-1.06,0.11] |
| Routine non-manual *1951-58 | 0.213 | 0.033 |
| | [-0.53,0.96] | [-0.58,0.64] |
| Routine non-manual * 1959-66 | -0.131 | -0.047 |
| | [-0.85,0.59] | [-0.65,0.55] |
| Routine non-manual * 1967-74 | -0.318 | -0.535 |
| | [-1.03,0.40] | [-1.13,0.06] |
| Routine non-manual * 1975-82 | -0.625 | -0.793** |
| | [-1.34,0.09] | [-1.40,-0.19] |
| Skilled manual * 1951-58 | 0.353 | 0.116 |
| | [-0.34,1.04] | [-0.46,0.69] |
| Skilled manual * 1959-66 | 0.020 | 0.468 |
| | [-0.65,0.69] | [-0.10,1.04] |
| Skilled manual * 1967-74 | -0.505 | 0.025 |
| | [-1.19,0.18] | [-0.56,0.61] |
| Skilled manual * 1975-82 | -0.931** | -0.564 |
| | [-1.64,-0.23] | [-1.17,0.04] |
| Semi-skilled and unskilled * 1951-58 | 0.421 | 0.215 |
| | [-0.25,1.09] | [-0.46,0.89] |
| Semi-skilled and unskilled * 1959-66 | 0.322 | 0.402 |
| | [-0.34,0.98] | [-0.27,1.08] |

| | | |
|---|---|---|
| Semi-skilled and unskilled * 1967-74 | -0.220 | 0.014 |
| | [-0.89,0.45] | [-0.71,0.74] |
| Semi-skilled and unskilled * 1975-82 | -0.647 | -0.269 |
| | [-1.34,0.05] | [-1.07,0.53] |
| Farm labour * 1951-58 | 0.526 | 0.785$^{*}$ |
| | [-0.08,1.13] | [0.15,1.42] |
| Farm labour * 1959-66 | 0.227 | 0.901$^{**}$ |
| | [-0.36,0.82] | [0.28,1.52] |
| Farm labour * 1967-74 | -0.166 | 0.848$^{*}$ |
| | [-0.78,0.45] | [0.16,1.53] |
| Farm labour * 1975-82 | -0.750$^{*}$ | -0.878$^{*}$ |
| | [-1.39,-0.11] | [-1.63,-0.12] |
| Parental education | | |
| *Reference category: basic education* | | |
| Secondary education | 0.912$^{***}$ | 0.561$^{***}$ |
| | [0.78,1.04] | [0.40,0.72] |
| University education | 1.894$^{***}$ | 1.324$^{***}$ |
| | [1.68,2.10] | [1.15,1.50] |
| Sex | -0.097 | 0.082 |
| | [-0.20,0.01] | [-0.03,0.19] |
| Constant 1 | -2.954$^{***}$ | -3.316$^{***}$ |
| | [-3.42,-2.49] | [-3.72,-2.91] |
| Constant 2 | 0.324 | 0.742$^{***}$ |
| | [-0.14,0.78] | [0.35,1.13] |
| *N* | *6580* | *6298* |

$^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$

## Table B.2 Multinomial logit estimates for Georgian men, log odds

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| **Basic education (Reference category: upper secondary education)** | | | |
| **Parental occupational class** | | | |
| *Reference category: upper service* | | | |
| Lower service | 0.268 | | -0.185 |
| | [-2.19,2.72] | | [-2.19,1.82] |
| Routine non-manual | 0.914 | | 0.361 |
| | [-1.33,3.15] | | [-1.38,2.10] |
| Skilled manual | 1.298 | | 0.639 |
| | [-0.78,3.37] | | [-0.90,2.18] |
| Semi-skilled and unskilled | 1.646 | | 0.834 |
| | [-0.43,3.72] | | [-0.72,2.38] |
| Farm labour | 1.596 | | 0.559 |
| | [-0.45,3.64] | | [-0.97,2.09] |
| **Birth cohort** | | | |
| *Reference category: 1967-74* | | | |
| 1943-50 | 1.681 | 0.684[**] | 1.190 |
| | [-0.82,4.18] | [0.18,1.19] | [-1.16,3.54] |
| 1951-58 | 1.347 | 0.298 | 0.494 |
| | [-1.13,3.83] | [-0.18,0.78] | [-1.88,2.87] |
| 1967-74 | 0.721 | 0.420 | -0.281 |
| | [-1.74,3.18] | [-0.12,0.96] | [-2.74,2.18] |
| 1975-82 | 1.903 | 1.742[***] | 2.522[*] |
| | [-0.32,4.12] | [1.14,2.34] | [0.47,4.57] |
| **Parental occupation*cohort** | | | |
| Lower service * 1943-50 | -0.521 | | 0.100 |
| | [-3.65,2.61] | | [-2.73,2.93] |
| Lower service * 1951-58 | -0.171 | | 0.350 |
| | [-3.22,2.88] | | [-2.53,3.23] |
| Lower service * 1967-74 | 1.407 | | 2.124 |
| | [-1.54,4.36] | | [-0.57,4.81] |
| Lower service * 1975-82 | -0.414 | | -0.156 |
| | [-3.20,2.37] | | [-2.62,2.30] |
| Routine non-manual * 1943-50 | -14.732[***] | | -14.828[***] |
| | [-17.47,-11.99] | | [-17.36,-12.30] |
| Routine non-manual * 1951-58 | -0.673 | | -0.003 |
| | [-3.56,2.21] | | [-2.69,2.69] |
| Routine non-manual * 1967-74 | -0.403 | | 0.640 |
| | [-3.18,2.37] | | [-2.06,3.34] |
| Routine non-manual * 1975-82 | -0.425 | | -0.172 |
| | [-2.93,2.08] | | [-2.36,2.01] |
| Skilled manual * 1943-50 | -1.272 | | -1.152 |
| | [-3.98,1.44] | | [-3.70,1.40] |
| Skilled manual * 1951-58 | -1.861 | | -1.208 |
| | [-4.54,0.82] | | [-3.73,1.32] |
| Skilled manual * 1967-74 | -0.243 | | 0.709 |
| | [-2.82,2.33] | | [-1.79,3.21] |
| Skilled manual * 1975-82 | -0.427 | | -0.251 |
| | [-2.77,1.92] | | [-2.32,1.81] |
| Semi-skilled and unskilled * 1943-50 | -1.578 | | -1.281 |
| | [-4.27,1.11] | | [-3.82,1.26] |
| Semi-skilled and unskilled * 1951-58 | -1.013 | | -0.312 |
| | [-3.61,1.58] | | [-2.75,2.13] |

216

| | | | |
|---|---|---|---|
| Semi-skilled and unskilled * 1967-74 | -0.660 | | 0.499 |
| | [-3.24,1.92] | | [-2.02,3.02] |
| Semi-skilled and unskilled * 1975-82 | -0.370 | | -0.008 |
| | [-2.71,1.97] | | [-2.06,2.05] |
| Farm labour * 1943-50 | -0.597 | | -0.063 |
| | [-3.18,1.98] | | [-2.48,2.35] |
| Farm labour * 1951-58 | -0.731 | | 0.094 |
| | [-3.28,1.82] | | [-2.33,2.52] |
| Farm labour * 1967-74 | -0.685 | | 0.547 |
| | [-3.24,1.86] | | [-1.99,3.09] |
| Farm labour * 1975-82 | -1.258 | | -1.177 |
| | [-3.57,1.06] | | [-3.27,0.91] |
| **Parental education** | | | |
| *Reference category: basic education* | | | |
| Secondary education | | -0.736[*] | -0.662 |
| | | [-1.35,-0.12] | [-1.34,0.02] |
| University education | | -1.932 | -1.482 |
| | | [-3.95,0.08] | [-2.99,0.03] |
| **Parental education*birth cohort** | | | |
| Secondary education * 1943-50 | | -0.822 | -0.689 |
| | | [-2.06,0.42] | [-2.13,0.76] |
| Secondary education * 1951-58 | | 0.151 | 0.191 |
| | | [-0.71,1.02] | [-0.74,1.13] |
| Secondary education * 1967-74 | | 0.038 | 0.003 |
| | | [-0.78,0.86] | [-0.91,0.92] |
| Secondary education * 1975-82 | | -0.281 | -0.800 |
| | | [-1.11,0.54] | [-1.76,0.16] |
| University education * 1943-50 | | 0.969 | 0.668 |
| | | [-1.56,3.50] | [-1.73,3.07] |
| University education * 1951-58 | | 1.324 | 1.259 |
| | | [-1.19,3.84] | [-1.12,3.64] |
| University education * 1967-74 | | 1.677 | 1.534 |
| | | [-0.54,3.89] | [-0.49,3.55] |
| University education * 1975-82 | | 0.251 | -0.286 |
| | | [-1.96,2.46] | [-2.22,1.65] |
| Constant | -3.389[***] | -1.750[***] | -2.318[**] |
| | [-5.38,-1.39] | [-2.11,-1.39] | [-3.80,-0.84] |

| University education (reference category: general education) | | | |
|---|---|---|---|
| **Parental occupational class** | | | |
| *Reference category: upper service* | | | |
| Lower service | -0.824[**] | | -0.283 |
| | [-1.43,-0.22] | | [-0.98,0.41] |
| Routine non-manual | -1.362[***] | | -0.600 |
| | [-1.99,-0.74] | | [-1.38,0.18] |
| Skilled manual | -2.520[***] | | -1.534[***] |
| | [-3.16,-1.88] | | [-2.33,-0.74] |
| Semi-skilled and unskilled | -2.023[***] | | -0.904[*] |
| | [-2.65,-1.40] | | [-1.71,-0.10] |
| Farm labour | -3.056[***] | | -1.868[***] |
| | [-3.74,-2.38] | | [-2.73,-1.01] |
| **Birth cohort** | | | |
| *Reference category: 1959-1966* | | | |
| 1943-50 | 0.346 | 0.821[**] | 0.740 |
| | [-0.46,1.15] | [0.32,1.33] | [-0.47,1.95] |
| 1951-58 | 0.680 | 0.472 | 0.513 |
| | [-0.03,1.39] | [-0.00,0.95] | [-0.60,1.63] |

217

| | | | |
|---|---|---|---|
| 1967-74 | 0.418 | -0.411 | -0.069 |
| | [-0.19,1.03] | [-1.13,0.31] | [-1.28,1.14] |
| 1975-82 | 0.578 | 0.351 | 1.086 |
| | [-0.06,1.22] | [-0.51,1.21] | [-0.23,2.41] |
| **Parental occupation*cohort** | | | |
| Lower service * 1943-50 | -0.239 | | -0.571 |
| | [-1.32,0.84] | | [-1.71,0.57] |
| Lower service * 1951-58 | -0.704 | | -0.557 |
| | [-1.67,0.26] | | [-1.65,0.54] |
| Lower service * 1967-74 | 0.229 | | 0.193 |
| | [-0.67,1.13] | | [-0.82,1.21] |
| Lower service * 1975-82 | 0.081 | | -0.148 |
| | [-0.80,0.96] | | [-1.12,0.82] |
| Routine non-manual * 1943-50 | -0.105 | | -0.281 |
| | [-1.26,1.05] | | [-1.67,1.11] |
| Routine non-manual * 1951-58 | -0.172 | | 0.035 |
| | [-1.18,0.84] | | [-1.17,1.24] |
| Routine non-manual * 1967-74 | -0.414 | | -0.227 |
| | [-1.28,0.45] | | [-1.32,0.86] |
| Routine non-manual * 1975-82 | -0.085 | | -0.323 |
| | [-0.96,0.79] | | [-1.37,0.72] |
| Skilled manual * 1943-50 | -0.089 | | -0.257 |
| | [-1.30,1.12] | | [-1.66,1.15] |
| Skilled manual * 1951-58 | -0.365 | | -0.042 |
| | [-1.34,0.61] | | [-1.24,1.15] |
| Skilled manual * 1967-74 | -0.259 | | -0.107 |
| | [-1.17,0.65] | | [-1.25,1.04] |
| Skilled manual * 1975-82 | 0.165 | | -0.132 |
| | [-0.79,1.12] | | [-1.27,1.01] |
| Semi-skilled and unskilled * 1943-50 | -0.686 | | -0.963 |
| | [-1.88,0.51] | | [-2.37,0.44] |
| Semi-skilled and unskilled * 1951-58 | -0.688 | | -0.540 |
| | [-1.64,0.27] | | [-1.72,0.64] |
| Semi-skilled and unskilled * 1967-74 | -0.758 | | -0.732 |
| | [-1.67,0.16] | | [-1.89,0.43] |
| Semi-skilled and unskilled * 1975-82 | 0.018 | | -0.423 |
| | [-0.92,0.96] | | [-1.57,0.72] |
| Farm labour * 1943-50 | 1.118[*] | | 0.877 |
| | [0.06,2.17] | | [-0.43,2.19] |
| Farm labour * 1951-58 | 0.368 | | 0.606 |
| | [-0.59,1.33] | | [-0.61,1.82] |
| Farm labour * 1959-66 | 0.000 | | 0.000 |
| | [0.00,0.00] | | [0.00,0.00] |
| Farm labour * 1967-74 | -0.202 | | -0.026 |
| | [-1.19,0.79] | | [-1.27,1.22] |
| Farm labour * 1975-82 | -0.373 | | -0.800 |
| | [-1.45,0.71] | | [-2.08,0.48] |
| **Parental education** | | | |
| *Reference category: basic education* | | | |
| Secondary education | | 1.002[***] | 0.667[**] |
| | | [0.56,1.44] | [0.18,1.16] |
| University education | | 2.676[***] | 1.624[***] |
| | | [2.16,3.20] | [0.91,2.34] |
| **Parental education*birth cohort** | | | |
| Secondary education * 1943-50 | | -0.363 | -0.067 |
| | | [-1.06,0.33] | [-0.86,0.73] |

218

| | | | |
|---|---|---|---|
| Secondary education * 1951-58 | | -0.142 | 0.015 |
| | | [-0.75,0.47] | [-0.66,0.69] |
| Secondary education * 1967-74 | | 0.325 | 0.261 |
| | | [-0.47,1.13] | [-0.59,1.11] |
| Secondary education * 1975-82 | | -0.061 | -0.456 |
| | | [-0.98,0.86] | [-1.48,0.56] |
| University education * 1943-50 | | -0.489 | -0.280 |
| | | [-1.35,0.37] | [-1.45,0.89] |
| University education * 1951-58 | | 0.268 | 0.423 |
| | | [-0.54,1.08] | [-0.66,1.51] |
| University education * 1959-66 | | 0.000 | 0.000 |
| | | [0.00,0.00] | [0.00,0.00] |
| University education * 1967-74 | | 0.897 | 0.509 |
| | | [-0.00,1.80] | [-0.65,1.67] |
| University education * 1975-82 | | -0.071 | -0.560 |
| | | [-1.07,0.93] | [-1.80,0.68] |
| Constant | 0.862*** | -1.842*** | -0.570 |
| | [0.43,1.30] | [-2.20,-1.48] | [-1.34,0.20] |
| Pseudo R-squared | 0.15 | 0.14 | 0.17 |
| Log-likelihood | -2542.48 | -2636.90 | -2426.57 |
| BIC | 5564.7 | 5514.4 | 5491.5 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

## Table B.3 Multinomial logit model estimates for Georgian women, log odds

| | Basic education (reference category: upper secondary education) | | |
|---|---|---|---|

**Parental occupational class**
*Reference category: upper service*

| | | | |
|---|---|---|---|
| Lower service | 0.376 | | 0.055 |
| | [-1.33,2.08] | | [-1.80,1.91] |
| Routine non-manual | 0.779 | | 0.339 |
| | [-0.85,2.41] | | [-1.45,2.12] |
| Skilled manual | 0.851 | | 0.182 |
| | [-0.67,2.37] | | [-1.51,1.87] |
| Semi-skilled and unskilled | 1.117 | | 0.339 |
| | [-0.39,2.63] | | [-1.34,2.02] |
| Farm labour | 0.802 | | 0.006 |
| | [-0.69,2.30] | | [-1.65,1.66] |

**Birth cohort**
*Reference category: 1967-74*

| | | | |
|---|---|---|---|
| 1943-50 | -0.160 | 0.953*** | -0.162 |
| | [-2.62,2.30] | [0.54,1.37] | [-2.90,2.57] |
| 1951-58 | 0.549 | 0.276 | 0.216 |
| | [-1.21,2.31] | [-0.14,0.70] | [-1.87,2.31] |
| 1967-74 | 1.235 | -0.022 | -0.106 |
| | [-0.56,3.03] | [-0.57,0.52] | [-2.61,2.39] |
| 1975-82 | 0.395 | 1.809*** | 0.850 |
| | [-1.64,2.43] | [1.25,2.36] | [-1.46,3.16] |

**Parental occupation*cohort**

| | | | |
|---|---|---|---|
| Lower service * 1943-50 | 1.081 | | 1.089 |
| | [-1.69,3.85] | | [-1.85,4.03] |
| Lower service * 1951-58 | -0.706 | | -0.464 |
| | [-2.94,1.53] | | [-2.88,1.95] |
| Lower service * 1967-74 | -1.122 | | -0.553 |
| | [-3.38,1.14] | | [-3.10,1.99] |
| Lower service * 1975-82 | 0.771 | | 0.783 |
| | [-1.55,3.09] | | [-1.68,3.24] |
| Routine non-manual * 1943-50 | 0.953 | | 1.119 |
| | [-1.77,3.67] | | [-1.83,4.06] |
| Routine non-manual * 1951-58 | -1.289 | | -0.863 |
| | [-3.54,0.97] | | [-3.36,1.63] |
| Routine non-manual * 1967-74 | -1.909 | | -1.103 |
| | [-4.11,0.29] | | [-3.89,1.69] |
| Routine non-manual * 1975-82 | 0.468 | | 0.372 |
| | [-1.77,2.70] | | [-2.06,2.81] |
| Skilled manual * 1943-50 | 0.787 | | 0.668 |
| | [-1.83,3.40] | | [-2.21,3.54] |
| Skilled manual * 1951-58 | -0.235 | | 0.048 |
| | [-2.15,1.68] | | [-2.16,2.25] |
| Skilled manual * 1967-74 | -1.227 | | -0.168 |
| | [-3.17,0.72] | | [-2.76,2.43] |
| Skilled manual * 1975-82 | 0.900 | | 0.991 |
| | [-1.25,3.05] | | [-1.39,3.37] |
| Semi-skilled and unskilled * 1943-50 | 1.086 | | 0.918 |
| | [-1.47,3.64] | | [-1.93,3.76] |
| Semi-skilled and unskilled * 1951-58 | -0.582 | | -0.227 |
| | [-2.48,1.32] | | [-2.43,1.98] |
| Semi-skilled and unskilled * 1967-74 | -1.060 | | 0.106 |
| | [-2.98,0.86] | | [-2.47,2.68] |
| Semi-skilled and unskilled * 1975-82 | 1.044 | | 1.212 |

| | | | |
|---|---|---|---|
| | [-1.10,3.19] | | [-1.15,3.57] |
| Farm labour * 1943-50 | 1.352 | | 1.211 |
| | [-1.17,3.88] | | [-1.57,3.99] |
| Farm labour * 1951-58 | -0.071 | | 0.109 |
| | [-1.93,1.79] | | [-2.06,2.28] |
| Farm labour * 1967-74 | -1.003 | | 0.181 |
| | [-2.92,0.91] | | [-2.39,2.76] |
| Farm labour * 1975-82 | 0.911 | | 0.992 |
| | [-1.22,3.04] | | [-1.35,3.34] |
| **Parental education** | | | |
| *Reference category: basic education* | | | |
| Secondary education | | -0.697* | -0.754** |
| | | [-1.23,-0.16] | [-1.29,-0.21] |
| University education | | -1.517* | -1.502 |
| | | [-2.97,-0.07] | [-3.04,0.04] |
| **Parental education*birth cohort** | | | |
| Secondary education * 1943-50 | | -0.524 | -0.418 |
| | | [-1.38,0.33] | [-1.31,0.48] |
| Secondary education * 1951-58 | | -0.450 | -0.218 |
| | | [-1.27,0.37] | [-1.06,0.62] |
| Secondary education * 1967-74 | | 0.464 | 0.644 |
| | | [-0.31,1.24] | [-0.17,1.46] |
| Secondary education * 1975-82 | | -0.305 | -0.314 |
| | | [-1.05,0.44] | [-1.10,0.47] |
| University education * 1943-50 | | -1.028 | -0.534 |
| | | [-3.51,1.45] | [-3.36,2.29] |
| University education * 1951-58 | | 0.465 | 0.712 |
| | | [-1.33,2.26] | [-1.35,2.78] |
| University education * 1967-74 | | 1.547 | 1.942 |
| | | [-0.20,3.29] | [-0.32,4.20] |
| University education * 1975-82 | | -0.449 | -0.078 |
| | | [-2.14,1.24] | [-1.93,1.78] |
| Constant | -2.839*** | -1.738*** | -1.817* |
| | [-4.27,-1.41] | [-2.05,-1.43] | [-3.42,-0.21] |

| University education (reference category: Upper secondary education) |
|---|

| | | | |
|---|---|---|---|
| **Parental occupational class** | | | |
| *Reference category: upper service* | | | |
| Lower service | -1.428*** | | -1.048*** |
| | [-1.98,-0.88] | | [-1.66,-0.44] |
| Routine non-manual | -1.745*** | | -1.167** |
| | [-2.33,-1.16] | | [-1.88,-0.45] |
| Skilled manual | -2.335*** | | -1.432*** |
| | [-2.88,-1.79] | | [-2.11,-0.75] |
| Semi-skilled and unskilled | -2.815*** | | -1.739*** |
| | [-3.41,-2.22] | | [-2.48,-1.00] |
| Farm labour | -3.542*** | | -2.268*** |
| | [-4.17,-2.91] | | [-3.03,-1.51] |
| **Birth cohort** | | | |
| *Reference category: 1967-74* | | | |
| 1943-50 | -0.110 | 1.402*** | 0.969 |
| | [-0.74,0.52] | [0.79,2.01] | [-0.10,2.04] |
| 1951-58 | -0.717* | 0.870** | 0.035 |
| | [-1.28,-0.15] | [0.27,1.48] | [-0.98,1.05] |
| 1967-74 | 0.404 | 0.373 | 0.242 |
| | [-0.22,1.03] | [-0.42,1.16] | [-0.92,1.40] |
| 1975-82 | 0.425 | 1.663*** | 1.451* |

|  | | | |
|---|---|---|---|
|  | [-0.18,1.03] | [0.82,2.51] | [0.26,2.64] |
| **Parental occupation*cohort** | | | |
| Lower service * 1943-50 | 0.453 | | 0.390 |
|  | [-0.44,1.35] | | [-0.60,1.38] |
| Lower service * 1951-58 | 0.811* | | 0.762 |
|  | [0.02,1.60] | | [-0.10,1.62] |
| Lower service * 1967-74 | 0.274 | | 0.471 |
|  | [-0.55,1.10] | | [-0.45,1.39] |
| Lower service * 1975-82 | 0.109 | | 0.104 |
|  | [-0.70,0.92] | | [-0.78,0.99] |
| Routine non-manual * 1943-50 | 0.497 | | 0.576 |
|  | [-0.46,1.46] | | [-0.62,1.77] |
| Routine non-manual * 1951-58 | 0.643 | | 0.624 |
|  | [-0.20,1.49] | | [-0.38,1.63] |
| Routine non-manual * 1967-74 | -0.207 | | 0.106 |
|  | [-1.05,0.64] | | [-0.91,1.12] |
| Routine non-manual * 1975-82 | -0.171 | | -0.052 |
|  | [-0.99,0.65] | | [-1.06,0.95] |
| Skilled manual * 1943-50 | 0.169 | | 0.097 |
|  | [-0.79,1.13] | | [-1.07,1.26] |
| Skilled manual * 1951-58 | 0.673 | | 0.626 |
|  | [-0.13,1.47] | | [-0.36,1.61] |
| Skilled manual * 1967-74 | -0.792 | | -0.521 |
|  | [-1.65,0.06] | | [-1.56,0.52] |
| Skilled manual * 1975-82 | -0.116 | | -0.238 |
|  | [-0.96,0.73] | | [-1.27,0.80] |
| Semi-skilled and unskilled * 1943-50 | 0.631 | | 0.322 |
|  | [-0.32,1.59] | | [-0.85,1.49] |
| Semi-skilled and unskilled * 1951-58 | 0.921* | | 0.712 |
|  | [0.08,1.77] | | [-0.33,1.75] |
| Semi-skilled and unskilled * 1967-74 | 0.020 | | 0.210 |
|  | [-0.86,0.90] | | [-0.88,1.30] |
| Semi-skilled and unskilled * 1975-82 | 1.050* | | 0.735 |
|  | [0.18,1.92] | | [-0.34,1.81] |
| Farm labour * 1943-50 | 0.888 | | 0.599 |
|  | [-0.04,1.81] | | [-0.55,1.75] |
| Farm labour * 1951-58 | 1.269** | | 1.150* |
|  | [0.41,2.13] | | [0.09,2.21] |
| Farm labour * 1967-74 | 0.029 | | 0.284 |
|  | [-0.94,0.99] | | [-0.87,1.44] |
| Farm labour * 1975-82 | 0.586 | | 0.176 |
|  | [-0.38,1.55] | | [-0.98,1.33] |
| **Parental education** | | | |
| *Reference category: basic education* | | | |
| Secondary education | | 2.069*** | 1.757*** |
|  | | [1.53,2.61] | [1.19,2.32] |
| University education | | 3.754*** | 2.444*** |
|  | | [3.16,4.35] | [1.73,3.16] |
| **Parental education*birth cohort** | | | |
| Secondary education * 1943-50 | | -1.086** | -1.139** |
|  | | [-1.81,-0.36] | [-1.92,-0.36] |
| Secondary education * 1951-58 | | -0.807* | -0.771* |
|  | | [-1.49,-0.12] | [-1.50,-0.04] |
| Secondary education * 1967-74 | | -0.464 | -0.388 |
|  | | [-1.31,0.38] | [-1.28,0.50] |
| Secondary education * 1975-82 | | -1.438** | -1.343** |

222

| | | | |
|---|---|---|---|
| | | [-2.33,-0.54] | [-2.26,-0.43] |
| University education * 1943-50 | | -1.339** | -1.030* |
| | | [-2.16,-0.52] | [-2.06,-0.00] |
| University education * 1951-58 | | -1.239** | -0.695 |
| | | [-2.01,-0.46] | [-1.66,0.27] |
| University education * 1967-74 | | 0.151 | 0.202 |
| | | [-0.78,1.09] | [-0.89,1.29] |
| University education * 1975-82 | | -1.429** | -1.193* |
| | | [-2.39,-0.47] | [-2.29,-0.10] |
| Constant | 1.195*** | -2.816*** | -1.038** |
| | [0.79,1.59] | [-3.31,-2.32] | [-1.78,-0.29] |
| Pseudo R-squared | 0.14 | 0.16 | 0.18 |
| Log-likelihood | -2913.69 | -2948.23 | -2747.62 |
| BIC | 6320.4 | 6143.9 | 6151.6 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Table B.4 Estimates from multinomial logit models for Russian men, log odds**

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| **Parental occupational class** | | | |
| *Reference category: upper service* | | | |
| Lower service | -0.185 | | -0.331 |
| | [-1.12,0.74] | | [-1.31,0.65] |
| Routine non-manual | -0.493 | | -0.800 |
| | [-1.45,0.46] | | [-1.83,0.23] |
| Skilled manual | -0.364 | | -0.667 |
| | [-1.22,0.49] | | [-1.62,0.28] |
| Semi-skilled and unskilled | 0.490 | | -0.097 |
| | [-0.41,1.39] | | [-1.16,0.97] |
| Farm labour | 0.680 | | 0.306 |
| | [-0.17,1.53] | | [-0.67,1.29] |
| **Birth cohort** | | | |
| *Reference category: 1967-74* | | | |
| 1943-50 | -0.078 | 0.456[*] | -0.366 |
| | [-1.12,0.97] | [0.05,0.86] | [-1.60,0.87] |
| 1951-58 | -0.215 | 0.394[*] | -0.025 |
| | [-1.26,0.83] | [0.02,0.77] | [-1.38,1.33] |
| 1967-74 | -0.984 | 0.189 | -0.884 |
| | [-2.13,0.17] | [-0.25,0.62] | [-2.24,0.47] |
| 1975-82 | -0.084 | 1.146[***] | 0.371 |
| | [-1.07,0.90] | [0.59,1.70] | [-0.93,1.67] |
| **Parental occupation*cohort** | | | |
| Lower service * 1943-50 | 0.817 | | 1.081 |
| | [-0.62,2.26] | | [-0.43,2.59] |
| Lower service * 1951-58 | 0.204 | | 0.508 |
| | [-1.16,1.57] | | [-1.03,2.04] |
| Lower service * 1967-74 | 0.597 | | 0.799 |
| | [-0.84,2.03] | | [-0.67,2.26] |
| Lower service * 1975-82 | -0.096 | | 0.039 |
| | [-1.37,1.18] | | [-1.32,1.40] |
| Routine non-manual * 1943-50 | 0.678 | | 0.896 |
| | [-0.69,2.05] | | [-0.56,2.36] |
| Routine non-manual * 1951-58 | 0.936 | | 0.956 |
| | [-0.41,2.28] | | [-0.62,2.53] |
| Routine non-manual * 1967-74 | 1.570[*] | | 1.883[*] |
| | [0.18,2.96] | | [0.42,3.34] |
| Routine non-manual * 1975-82 | 0.641 | | 0.789 |
| | [-0.62,1.90] | | [-0.59,2.16] |
| Skilled manual * 1943-50 | 0.992 | | 1.212 |
| | [-0.24,2.23] | | [-0.16,2.58] |
| Skilled manual * 1951-58 | 0.735 | | 0.464 |
| | [-0.47,1.94] | | [-0.99,1.92] |
| Skilled manual * 1967-74 | 1.500[*] | | 1.640[*] |
| | [0.19,2.81] | | [0.23,3.05] |
| Skilled manual * 1975-82 | 1.203[*] | | 1.213 |
| | [0.04,2.36] | | [-0.10,2.53] |
| Semi-skilled and unskilled * 1943-50 | 0.104 | | 0.619 |
| | [-1.24,1.44] | | [-0.91,2.15] |
| Semi-skilled and unskilled * 1951-58 | 0.451 | | 0.579 |
| | [-0.84,1.75] | | [-1.00,2.16] |
| Semi-skilled and unskilled * 1967-74 | 0.923 | | 0.865 |
| | [-0.50,2.35] | | [-0.80,2.53] |

| | (1) | (2) | (3) |
|---|---|---|---|
| Semi-skilled and unskilled * 1975-82 | 0.051 [-1.28,1.38] | | 0.533 [-0.98,2.05] |
| Farm labour * 1943-50 | 0.124 [-1.12,1.37] | | 0.389 [-1.02,1.80] |
| Farm labour * 1951-58 | 0.166 [-1.06,1.40] | | 0.082 [-1.41,1.58] |
| Farm labour * 1967-74 | 0.388 [-1.00,1.77] | | 0.324 [-1.22,1.87] |
| Farm labour * 1975-82 | 1.037 [-0.31,2.39] | | 0.885 [-0.66,2.43] |
| **Parental education** | | | |
| *Reference category: basic education* | | | |
| Secondary education | | -0.417 [-0.92,0.09] | -0.314 [-0.87,0.25] |
| University education | | -1.141 [-2.43,0.15] | -1.150 [-2.55,0.25] |
| **Parental education\*birth cohort** | | | |
| Secondary education * 1943-50 | | -0.125 [-1.00,0.75] | 0.015 [-0.96,0.99] |
| Secondary education * 1951-58 | | -0.972* [-1.85,-0.10] | -1.017* [-1.93,-0.10] |
| Secondary education * 1967-74 | | -0.378 [-1.11,0.35] | -0.478 [-1.28,0.33] |
| Secondary education * 1975-82 | | -0.711 [-1.47,0.05] | -0.552 [-1.37,0.27] |
| University education * 1943-50 | | 0.332 [-1.54,2.20] | 0.655 [-1.38,2.70] |
| University education * 1951-58 | | 0.023 [-1.88,1.93] | 0.066 [-2.01,2.14] |
| University education * 1967-74 | | 0.588 [-0.92,2.09] | 0.870 [-0.80,2.54] |
| University education * 1975-82 | | -0.472 [-1.98,1.03] | 0.093 [-1.56,1.75] |
| Constant | -1.136** [-1.86,-0.41] | -1.034*** [-1.31,-0.75] | -0.748 [-1.64,0.14] |
| **University education (reference category: upper secondary education)** | | | |
| **Parental occupational class** | | | |
| *Reference category: upper service* | | | |
| Lower service | -1.299*** [-1.96,-0.64] | | -1.079** [-1.80,-0.36] |
| Routine non-manual | -1.735*** [-2.40,-1.07] | | -1.094** [-1.82,-0.37] |
| Skilled manual | -1.771*** [-2.36,-1.18] | | -0.751* [-1.43,-0.07] |
| Semi-skilled and unskilled | -2.318*** [-3.22,-1.41] | | -1.331* [-2.40,-0.26] |
| Farm labour | -2.084*** [-2.88,-1.28] | | -0.804 [-1.72,0.12] |
| **Birth cohort** | | | |
| *Reference category: 1967-74* | | | |
| 1943-50 | -0.509 [-1.22,0.20] | 0.716** [0.22,1.21] | 0.479 [-0.55,1.51] |
| 1951-58 | -0.653 [-1.33,0.02] | 0.522* [0.04,1.00] | 0.237 [-0.80,1.27] |
| 1967-74 | -0.110 [-0.70,0.48] | -0.020 [-0.65,0.61] | 0.176 [-0.79,1.14] |

| | | | |
|---|---|---|---|
| 1975-82 | 0.058 [-0.52,0.64] | 0.333 [-0.53,1.20] | 0.695 [-0.51,1.90] |
| **Parental occupation*cohort** | | | |
| Lower service * 1943-50 | 1.363* [0.27,2.45] | | 1.002 [-0.17,2.17] |
| Lower service * 1951-58 | 0.299 [-0.72,1.32] | | 0.181 [-0.92,1.28] |
| Lower service * 1967-74 | -0.161 [-1.07,0.74] | | -0.152 [-1.14,0.83] |
| Lower service * 1975-82 | -0.076 [-0.94,0.79] | | -0.005 [-0.95,0.94] |
| Routine non-manual * 1943-50 | 0.972 [-0.08,2.02] | | 0.584 [-0.56,1.73] |
| Routine non-manual * 1951-58 | 1.051* [0.05,2.05] | | 0.844 [-0.30,1.99] |
| Routine non-manual * 1967-74 | 0.028 [-0.89,0.95] | | -0.008 [-1.00,0.98] |
| Routine non-manual * 1975-82 | -0.237 [-1.18,0.70] | | -0.193 [-1.21,0.82] |
| Skilled manual * 1943-50 | 0.272 [-0.74,1.29] | | -0.170 [-1.37,1.03] |
| Skilled manual * 1951-58 | 0.405 [-0.51,1.32] | | -0.106 [-1.23,1.01] |
| Skilled manual * 1967-74 | -0.130 [-0.98,0.72] | | -0.290 [-1.24,0.66] |
| Skilled manual * 1975-82 | -0.850 [-1.86,0.16] | | -1.087 [-2.19,0.01] |
| Semi-skilled and unskilled * 1943-50 | 0.775 [-0.64,2.19] | | 0.198 [-1.47,1.87] |
| Semi-skilled and unskilled * 1951-58 | 0.939 [-0.39,2.27] | | 0.581 [-1.00,2.16] |
| Semi-skilled and unskilled * 1967-74 | 0.124 [-1.28,1.53] | | 0.098 [-1.49,1.69] |
| Semi-skilled and unskilled * 1975-82 | 0.593 [-0.70,1.89] | | 0.450 [-0.97,1.87] |
| Farm labour * 1943-50 | 0.558 [-0.67,1.78] | | -0.243 [-1.68,1.19] |
| Farm labour * 1951-58 | 0.812 [-0.35,1.98] | | 0.146 [-1.24,1.53] |
| Farm labour * 1967-74 | -0.250 [-1.61,1.11] | | -0.438 [-1.92,1.05] |
| Farm labour * 1975-82 | -1.167 [-2.93,0.60] | | -2.300 [-4.69,0.09] |
| **Parental education** | | | |
| *Reference category: basic education* | | | |
| Secondary education | | 1.063*** [0.58,1.55] | 0.891*** [0.37,1.41] |
| University education | | 2.903*** [2.27,3.54] | 2.538*** [1.82,3.26] |
| **Parental education*birth cohort** | | | |
| Secondary education * 1943-50 | | -0.645 [-1.42,0.13] | -1.002* [-1.94,-0.06] |
| Secondary education * 1951-58 | | -0.937* [-1.70,-0.18] | -0.887* [-1.76,-0.01] |
| Secondary education * 1967-74 | | -0.562 [-1.33,0.21] | -0.603 [-1.44,0.23] |

| | | | |
|---|---|---|---|
| Secondary education * 1975-82 | | -1.026[*] | -1.060 |
| | | [-2.00,-0.05] | [-2.15,0.03] |
| University education * 1943-50 | | -0.704 | -0.734 |
| | | [-1.73,0.32] | [-1.97,0.50] |
| University education * 1951-58 | | -1.252[**] | -1.217[*] |
| | | [-2.16,-0.34] | [-2.36,-0.07] |
| University education * 1967-74 | | -0.422 | -0.602 |
| | | [-1.33,0.49] | [-1.64,0.44] |
| University education * 1975-82 | | -0.915 | -1.264[*] |
| | | [-1.98,0.15] | [-2.51,-0.02] |
| Constant | 0.554[*] | -1.768[***] | -0.874[**] |
| | [0.12,0.99] | [-2.13,-1.40] | [-1.52,-0.22] |
| Pseudo R-squared | 0.08 | 0.10 | 0.13 |
| Log-likelihood | -2845.90 | -2696.02 | -2548.34 |
| BIC | 6170.0 | 5630.1 | 5729.4 |

[*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

**Table B.5 Estimates from multinomial logit models for Russian women, log odds**

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| **Parental occupational class** | | | |
| *Reference category: upper service* | | | |
| Lower service | 0.991 | | 0.621 |
| | [-0.67,2.66] | | [-1.13,2.37] |
| Routine non-manual | 1.547* | | 1.261 |
| | [0.01,3.09] | | [-0.33,2.85] |
| Skilled manual | 1.209 | | 0.726 |
| | [-0.31,2.73] | | [-0.86,2.31] |
| Semi-skilled and unskilled | 1.879* | | 1.365 |
| | [0.36,3.40] | | [-0.23,2.96] |
| Farm labour | 1.514* | | 0.964 |
| | [0.00,3.03] | | [-0.62,2.55] |
| **Birth cohort** | | | |
| *Reference category: 1967-74* | | | |
| 1943-50 | 1.386 | 0.918*** | 1.244 |
| | [-0.30,3.07] | [0.56,1.28] | [-0.53,3.02] |
| 1951-58 | 0.527 | 0.320 | -0.025 |
| | [-1.21,2.27] | [-0.04,0.68] | [-1.87,1.82] |
| 1967-74 | 0.140 | 0.185 | -0.755 |
| | [-1.70,1.98] | [-0.27,0.64] | [-2.93,1.42] |
| 1975-82 | 1.367 | 1.387*** | 1.645 |
| | [-0.24,2.97] | [0.87,1.90] | [-0.13,3.42] |
| **Parental occupation*cohort** | | | |
| Lower service * 1943-50 | -0.407 | | -0.185 |
| | [-2.45,1.63] | | [-2.29,1.92] |
| Lower service * 1951-58 | -0.118 | | 0.286 |
| | [-2.15,1.91] | | [-1.81,2.39] |
| Lower service * 1967-74 | 0.127 | | 0.933 |
| | [-2.04,2.29] | | [-1.44,3.30] |
| Lower service * 1975-82 | -0.958 | | -0.727 |
| | [-2.89,0.98] | | [-2.74,1.29] |
| Routine non-manual * 1943-50 | -0.949 | | -0.969 |
| | [-2.80,0.91] | | [-2.86,0.93] |
| Routine non-manual * 1951-58 | -0.230 | | 0.173 |
| | [-2.13,1.67] | | [-1.76,2.11] |
| Routine non-manual * 1967-74 | -0.117 | | 0.477 |
| | [-2.12,1.89] | | [-1.74,2.69] |
| Routine non-manual * 1975-82 | -1.293 | | -1.250 |
| | [-3.07,0.49] | | [-3.08,0.58] |
| Skilled manual * 1943-50 | -0.401 | | -0.316 |
| | [-2.22,1.41] | | [-2.19,1.56] |
| Skilled manual * 1951-58 | 0.411 | | 0.867 |
| | [-1.42,2.24] | | [-1.05,2.79] |
| Skilled manual * 1967-74 | 0.332 | | 1.240 |
| | [-1.63,2.29] | | [-0.97,3.45] |
| Skilled manual * 1975-82 | -0.317 | | -0.154 |
| | [-2.05,1.42] | | [-1.96,1.65] |
| Semi-skilled and unskilled * 1943-50 | -0.568 | | -0.467 |
| | [-2.39,1.26] | | [-2.36,1.43] |
| Semi-skilled and unskilled * 1951-58 | -0.703 | | -0.173 |
| | [-2.59,1.18] | | [-2.16,1.81] |
| Semi-skilled and unskilled * 1967-74 | 0.145 | | 0.992 |
| | [-1.84,2.13] | | [-1.27,3.26] |
| Semi-skilled and unskilled * 1975-82 | -0.782 | | -0.682 |

| | (1) | (2) | (3) |
|---|---|---|---|
| | [-2.62,1.06] | | [-2.61,1.25] |
| Farm labour * 1943-50 | 0.300 | | 0.325 |
| | [-1.50,2.10] | | [-1.55,2.20] |
| Farm labour * 1951-58 | 0.182 | | 0.607 |
| | [-1.67,2.03] | | [-1.34,2.55] |
| Farm labour * 1967-74 | 0.284 | | 1.215 |
| | [-1.71,2.28] | | [-1.06,3.49] |
| Farm labour * 1975-82 | 0.729 | | 0.817 |
| | [-1.07,2.53] | | [-1.09,2.72] |

**Parental education**
*Reference category: basic education*

| | (1) | (2) | (3) |
|---|---|---|---|
| Secondary education | | -0.593[*] | -0.385 |
| | | [-1.14,-0.05] | [-0.99,0.22] |
| University education | | -2.108[*] | -1.538 |
| | | [-4.11,-0.11] | [-3.64,0.56] |

**Parental education*birth cohort**

| | (1) | (2) | (3) |
|---|---|---|---|
| Secondary education * 1943-50 | | -0.093 | 0.077 |
| | | [-0.98,0.80] | [-0.81,0.97] |
| Secondary education * 1951-58 | | -0.090 | -0.019 |
| | | [-0.86,0.68] | [-0.87,0.84] |
| Secondary education * 1967-74 | | 0.216 | 0.274 |
| | | [-0.54,0.97] | [-0.57,1.12] |
| Secondary education * 1975-82 | | -0.598 | -0.374 |
| | | [-1.37,0.17] | [-1.22,0.47] |
| University education * 1943-50 | | -0.021 | -0.030 |
| | | [-2.88,2.84] | [-2.95,2.89] |
| University education * 1951-58 | | 1.998 | 2.171 |
| | | [-0.19,4.19] | [-0.15,4.49] |
| University education * 1967-74 | | 1.375 | 1.529 |
| | | [-0.89,3.64] | [-0.95,4.00] |
| University education * 1975-82 | | 0.298 | 0.558 |
| | | [-1.87,2.47] | [-1.74,2.85] |
| Constant | -3.466*** | -1.834*** | -2.900*** |
| | [-4.90,-2.03] | [-2.11,-1.56] | [-4.42,-1.38] |

**University education (reference category: upper secondary education)**

**Parental occupational class**
*Reference category: upper service*

| | (1) | (2) | (3) |
|---|---|---|---|
| Lower service | -0.442 | | -0.117 |
| | [-0.95,0.07] | | [-0.68,0.44] |
| Routine non-manual | -1.059*** | | -0.273 |
| | [-1.59,-0.53] | | [-0.87,0.32] |
| Skilled manual | -1.361*** | | -0.406 |
| | [-1.85,-0.88] | | [-0.99,0.18] |
| Semi-skilled and unskilled | -1.606*** | | -0.576 |
| | [-2.23,-0.98] | | [-1.33,0.18] |
| Farm labour | -2.469*** | | -1.485*** |
| | [-3.20,-1.74] | | [-2.36,-0.61] |

**Birth cohort**
*Reference category: 1967-74*

| | (1) | (2) | (3) |
|---|---|---|---|
| 1943-50 | 0.228 | 0.680*** | 0.838 |
| | [-0.35,0.80] | [0.31,1.05] | [-0.01,1.69] |
| 1951-58 | 0.097 | 0.179 | 0.627 |
| | [-0.39,0.59] | [-0.17,0.53] | [-0.12,1.37] |
| 1967-74 | 0.069 | -0.165 | -0.149 |
| | [-0.40,0.54] | [-0.65,0.32] | [-0.94,0.64] |
| 1975-82 | 0.350 | 0.226 | 0.160 |

|  | | | |
|---|---|---|---|
|  | [-0.14,0.84] | [-0.56,1.01] | [-0.88,1.20] |
| **Parental occupation*cohort** | | | |
| Lower service * 1943-50 | 0.035 | | -0.103 |
|  | [-0.79,0.86] | | [-1.00,0.79] |
| Lower service * 1951-58 | -0.113 | | -0.267 |
|  | [-0.83,0.60] | | [-1.04,0.51] |
| Lower service * 1967-74 | -0.155 | | -0.377 |
|  | [-0.86,0.55] | | [-1.14,0.39] |
| Lower service * 1975-82 | -0.088 | | -0.274 |
|  | [-0.79,0.61] | | [-1.02,0.47] |
| Routine non-manual * 1943-50 | 0.108 | | -0.259 |
|  | [-0.72,0.94] | | [-1.18,0.67] |
| Routine non-manual * 1951-58 | -0.016 | | -0.368 |
|  | [-0.76,0.73] | | [-1.19,0.45] |
| Routine non-manual * 1967-74 | -0.349 | | -0.542 |
|  | [-1.11,0.42] | | [-1.37,0.29] |
| Routine non-manual * 1975-82 | -0.273 | | -0.593 |
|  | [-1.02,0.47] | | [-1.42,0.23] |
| Skilled manual * 1943-50 | -0.156 | | -0.552 |
|  | [-0.97,0.66] | | [-1.51,0.41] |
| Skilled manual * 1951-58 | -0.517 | | -0.877[*] |
|  | [-1.22,0.19] | | [-1.70,-0.05] |
| Skilled manual * 1967-74 | -0.318 | | -0.443 |
|  | [-1.04,0.40] | | [-1.26,0.38] |
| Skilled manual * 1975-82 | -0.245 | | -0.561 |
|  | [-0.98,0.49] | | [-1.40,0.28] |
| Semi-skilled and unskilled * 1943-50 | 0.407 | | -0.126 |
|  | [-0.53,1.35] | | [-1.24,0.99] |
| Semi-skilled and unskilled * 1951-58 | -0.597 | | -1.088[*] |
|  | [-1.50,0.30] | | [-2.13,-0.05] |
| Semi-skilled and unskilled * 1967-74 | -0.106 | | 0.050 |
|  | [-1.09,0.87] | | [-1.06,1.16] |
| Semi-skilled and unskilled * 1975-82 | -0.498 | | -0.725 |
|  | [-1.71,0.71] | | [-2.04,0.59] |
| Farm labour * 1943-50 | 0.447 | | -0.105 |
|  | [-0.66,1.55] | | [-1.40,1.19] |
| Farm labour * 1951-58 | 0.463 | | 0.011 |
|  | [-0.54,1.47] | | [-1.18,1.20] |
| Farm labour * 1967-74 | 0.959 | | 1.054 |
|  | [-0.06,1.98] | | [-0.11,2.22] |
| Farm labour * 1975-82 | 1.197 | | 1.293 |
|  | [-0.10,2.49] | | [-0.17,2.76] |
| **Parental education** | | | |
| *Reference category: basic education* | | | |
| Secondary education | | 0.836[***] | 0.511[*] |
|  | | [0.45,1.22] | [0.07,0.95] |
| University education | | 2.422[***] | 1.889[***] |
|  | | [1.96,2.88] | [1.30,2.48] |
| **Parental education*birth cohort** | | | |
| Secondary education * 1943-50 | | -0.020 | -0.105 |
|  | | [-0.62,0.58] | [-0.81,0.60] |
| Secondary education * 1951-58 | | -0.062 | -0.208 |
|  | | [-0.60,0.48] | [-0.83,0.42] |
| Secondary education * 1967-74 | | 0.108 | 0.334 |
|  | | [-0.51,0.72] | [-0.32,0.99] |
| Secondary education * 1975-82 | | -0.212 | 0.191 |

| | | | |
|---|---|---|---|
| | | [-1.08,0.65] | [-0.74,1.12] |
| University education * 1943-50 | | -0.471 | -0.665 |
| | | [-1.29,0.35] | [-1.66,0.33] |
| University education * 1951-58 | | -0.019 | -0.316 |
| | | [-0.71,0.67] | [-1.16,0.52] |
| University education * 1967-74 | | -0.000 | 0.179 |
| | | [-0.71,0.71] | [-0.67,1.03] |
| University education * 1975-82 | | -0.378 | -0.082 |
| | | [-1.30,0.54] | [-1.15,0.98] |
| Constant | -0.051 | -1.815*** | -1.200*** |
| | [-0.40,0.30] | [-2.08,-1.55] | [-1.76,-0.64] |
| Pseudo R-squared | 0.08 | 0.09 | 0.12 |
| Log-likelihood | -3799.1 | -3695.32 | -3512.01 |
| BIC | 8102.6 | 7642.1 | 7692.8 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Table B.6 Log-likelihood ratio tests for models in tables A2, A3, A4 and A5**

| | |
|---|---|
| Georgian men, model 1 vs. model 3 | LR $\chi^2$=148.98, p=0.000 |
| Georgian men, model 2 vs. model 3 | LR $\chi^2$=196.25, p=0.000 |
| Georgian women, model 1 vs. model 3 | LR $\chi^2$=259.79, p=0.000 |
| Georgian women, model 2 vs. model 3 | LR $\chi^2$=167.15, p=0.000 |
| Russian men, model 1 vs. model 3 | LR $\chi^2$=179.03, p=0.000 |
| Russian men, model 2 vs. model 3 | LR $\chi^2$=95.3, p=0.004 |
| Russian women, model 1 vs. model 3 | LR $\chi^2$=203.32, p=0.000 |
| Russian women, model 2 vs. model 3 | LR $\chi^2$=207.39, p=0.000 |

**Table B.7 Parental class, own education and chances of access to service class, OLS estimates, Russia**

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| **Parental class** | | | |
| Ref. category: non-service class | 0.206*** | 0.071*** | 0.014 |
| | [0.18,0.23] | [0.04,0.10] | [-0.07,0.09] |
| **Sex** | | | |
| Ref. category: woman | 0.218*** | 0.213*** | 0.212*** |
| | [0.19,0.24] | [0.19,0.24] | [0.19,0.24] |
| **Own education** | | | |
| Ref. category: basic education | | | |
| Secondary | | 0.159*** | 0.144*** |
| | | [0.12,0.20] | [0.10,0.18] |
| University | | 0.628*** | 0.644*** |
| | | [0.59,0.67] | [0.59,0.70] |
| **Parental class*own education** | | | |
| Service*secondary | | | 0.082 |
| | | | [-0.01,0.17] |
| Service*university | | | 0.014 |
| | | | [-0.08,0.11] |
| Constant | -0.060** | -0.270*** | -0.262*** |
| | [-0.10,-0.02] | [-0.32,-0.22] | [-0.31,-0.21] |
| R-sqr | 0.089 | 0.272 | 0.273 |
| Degrees of freedom | 5291 | 4817 | 4815 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Table B.8** Parental class, own education and chances of access to service class, OLS estimates, Georgia

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| Parental class | | | |
| Ref. category: non-service class | 0.361*** | 0.143*** | 0.084 |
| | [0.33,0.39] | [0.11,0.18] | [-0.05,0.21] |
| Sex | | | |
| Ref. category: woman | 0.090*** | 0.066*** | 0.066*** |
| | [0.06,0.12] | [0.04,0.09] | [0.04,0.09] |
| Own education | | | |
| Ref. category: basic education | | | |
| Secondary | | 0.034* | 0.040** |
| | | [0.01,0.06] | [0.01,0.07] |
| University | | 0.503*** | 0.467*** |
| | | [0.46,0.54] | [0.42,0.51] |
| Parental class*own education | | | |
| Service*secondary | | | -0.005 |
| | | | [-0.14,0.13] |
| Service*university | | | 0.115 |
| | | | [-0.03,0.26] |
| Constant | 0.046* | -0.058** | -0.054** |
| | [0.01,0.09] | [-0.10,-0.02] | [-0.09,-0.01] |
| R-squared | 0.151 | 0.359 | 0.362 |
| Degrees of freedom | 3458 | 3456 | 3454 |

$^{*}p < 0.05,$ $^{**}p < 0.01,$ $^{***}p < 0.001$

**Figure B.1** Effect of parental occupational class on achieving post-secondary education (vocational or university education)
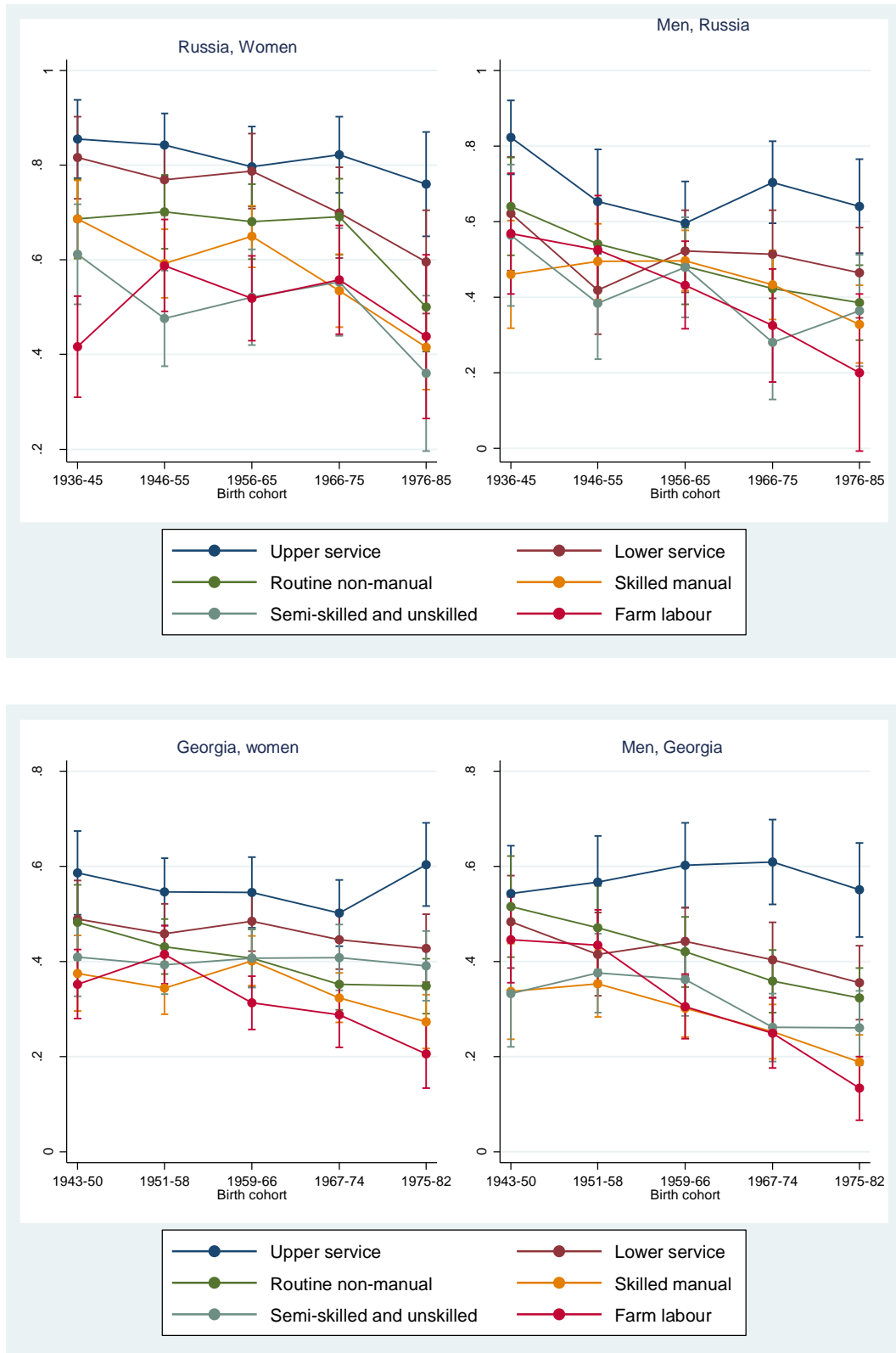
# Appendix C – Chapter 4

**Table C.1 Estimates from multinomial logit models**

| | Men, M1 | Men, M2 | Women, M1 | Women, M2 |
|---|---|---|---|---|
| **Basic education (reference category – upper secondary)** | | | | |
| Parental occupation | | | | |
| *Ref. category: upper service* | | | | |
| Lower service | -14.001[***] | -14.020[***] | -0.429 | -0.792 |
| | [-16.11,-11.89] | [-16.13,-11.91] | [-3.31,2.45] | [-3.68,2.09] |
| Routine non-manual | -0.354 | -0.527 | 0.844 | 0.382 |
| | [-3.23,2.52] | [-3.37,2.32] | [-1.48,3.16] | [-1.97,2.73] |
| Skilled manual | 0.241 | -0.132 | 0.966 | 0.215 |
| | [-1.96,2.44] | [-2.34,2.07] | [-1.19,3.12] | [-1.96,2.39] |
| Semi-skilled and unskilled | 0.153 | -0.507 | 1.050 | 0.166 |
| | [-2.10,2.41] | [-2.79,1.77] | [-1.08,3.18] | [-1.99,2.32] |
| Farm labour | 0.600 | -0.338 | 0.706 | -0.191 |
| | [-1.53,2.73] | [-2.50,1.82] | [-1.41,2.82] | [-2.32,1.94] |
| Birth cohort | | | | |
| *Ref. category: 1959-67* | | | | |
| 1943-50 | -13.866[***] | -13.985[***] | 0.014 | -0.391 |
| | [-16.16,-11.58] | [-16.16,-11.81] | [-2.88,2.91] | [-3.29,2.50] |
| 1951-58 | -13.240[***] | -13.258[***] | 0.767 | 0.630 |
| | [-15.48,-11.00] | [-15.49,-11.02] | [-1.79,3.32] | [-1.99,3.25] |
| 1967-74 | -0.190 | -0.081 | -0.132 | 0.114 |
| | [-3.09,2.71] | [-3.00,2.84] | [-3.02,2.75] | [-2.86,3.09] |
| 1975-82 | 0.394 | 0.600 | 1.153 | 1.568 |
| | [-2.14,2.93] | [-1.97,3.17] | [-1.43,3.74] | [-1.16,4.30] |
| Parental occupation*birth cohort | | | | |
| Lower service * 1943-50 | 27.864[***] | 27.767[***] | 2.160 | 2.235 |
| | [24.75,30.98] | [24.76,30.78] | [-1.53,5.85] | [-1.48,5.95] |
| Lower service * 1951-58 | 27.107[***] | 26.840[***] | 0.391 | 0.426 |
| | [24.05,30.17] | [23.77,29.91] | [-3.09,3.87] | [-3.09,3.94] |
| Lower service * 1967-74 | 14.186[***] | 14.143[***] | 0.171 | 0.073 |
| | [10.60,17.77] | [10.51,17.77] | [-3.88,4.22] | [-4.05,4.20] |
| Lower service * 1975-82 | 13.881[***] | 13.886[***] | 0.326 | 0.232 |
| | [11.03,16.73] | [11.02,16.75] | [-3.07,3.73] | [-3.25,3.71] |
| Routine non-manual * 1943-50 | 0.480 | 0.499 | 1.061 | 1.304 |
| | [-2.72,3.68] | [-2.60,3.59] | [-2.19,4.31] | [-1.96,4.57] |
| Routine non-manual * 1951-58 | 13.677[***] | 13.653[***] | -0.938 | -0.824 |
| | [10.03,17.32] | [10.00,17.31] | [-3.97,2.09] | [-3.92,2.28] |
| Routine non-manual * 1967-74 | 0.468 | 0.663 | -1.638 | -1.720 |
| | [-3.25,4.19] | [-3.06,4.39] | [-5.31,2.03] | [-5.52,2.08] |
| Routine non-manual * 1975-82 | 1.282 | 1.428 | -0.672 | -0.947 |
| | [-2.02,4.59] | [-1.86,4.72] | [-3.55,2.20] | [-3.96,2.07] |
| Skilled manual * 1943-50 | 14.581[***] | 14.008[***] | 0.342 | 0.463 |
| | [11.97,17.19] | [11.44,16.58] | [-2.72,3.40] | [-2.62,3.55] |
| Skilled manual * 1951-58 | 12.236[***] | 12.013[***] | -0.635 | -0.663 |
| | [9.48,14.99] | [9.24,14.78] | [-3.36,2.09] | [-3.45,2.13] |
| Skilled manual * 1967-74 | -1.059 | -1.112 | -0.626 | -0.644 |
| | [-4.38,2.26] | [-4.46,2.23] | [-3.70,2.45] | [-3.81,2.52] |
| Skilled manual * 1975-82 | 0.737 | 0.912 | -0.532 | -0.567 |
| | [-1.99,3.46] | [-1.84,3.66] | [-3.27,2.20] | [-3.44,2.31] |
| Semi-skilled and unskilled * 1943-50 | 14.864[***] | 14.817[***] | 0.973 | 0.967 |
| | [12.22,17.51] | [12.24,17.39] | [-2.05,3.99] | [-2.08,4.01] |

| | | | | |
|---|---|---|---|---|
| Semi-skilled and unskilled * 1951-58 | 14.028*** | 13.896*** | -0.770 | -0.712 |
| | [11.51,16.54] | [11.36,16.44] | [-3.46,1.92] | [-3.48,2.06] |
| Semi-skilled and unskilled * 1967-74 | 0.147 | 0.409 | 0.316 | 0.363 |
| | [-3.03,3.33] | [-2.81,3.63] | [-2.69,3.32] | [-2.73,3.46] |
| Semi-skilled and unskilled * 1975-82 | 1.405 | 1.911 | 0.228 | 0.277 |
| | [-1.35,4.16] | [-0.89,4.71] | [-2.50,2.95] | [-2.58,3.13] |
| Farm labour * 1943-50 | 15.178*** | 15.254*** | 1.239 | 1.390 |
| | [12.75,17.61] | [12.91,17.60] | [-1.72,4.20] | [-1.58,4.36] |
| Farm labour * 1951-58 | 13.880*** | 13.848*** | -0.144 | -0.247 |
| | [11.51,16.25] | [11.46,16.24] | [-2.79,2.50] | [-2.96,2.46] |
| Farm labour * 1967-74 | -0.142 | 0.091 | 0.021 | -0.109 |
| | [-3.17,2.89] | [-2.98,3.16] | [-2.97,3.01] | [-3.19,2.97] |
| Farm labour * 1975-82 | -0.025 | 0.312 | -0.330 | -0.328 |
| | [-2.68,2.63] | [-2.39,3.01] | [-3.02,2.36] | [-3.15,2.50] |
| **Parental education** | | | | |
| *Ref. category: basic education* | | | | |
| Secondary education | | -1.370*** | | -1.007*** |
| | | [-1.86,-0.88] | | [-1.34,-0.68] |
| University education | | -1.212* | | -1.775*** |
| | | [-2.15,-0.28] | | [-2.66,-0.89] |
| Constant | -2.340* | -1.297 | -2.414* | -1.250 |
| | [-4.40,-0.28] | [-3.37,0.77] | [-4.46,-0.36] | [-3.33,0.83] |

**Primary vocational (reference category – upper secondary)**

| | | | | |
|---|---|---|---|---|
| **Parental occupation** | | | | |
| *Ref. category: upper service* | | | | |
| Lower service | 0.196 | -0.081 | -0.756 | -0.939 |
| | [-1.15,1.54] | [-1.46,1.30] | [-2.25,0.74] | [-2.49,0.61] |
| Routine non-manual | 0.419 | 0.081 | -1.073 | -1.305 |
| | [-0.86,1.70] | [-1.26,1.42] | [-2.55,0.40] | [-2.88,0.27] |
| Skilled manual | 0.152 | -0.095 | -0.379 | -0.681 |
| | [-1.01,1.31] | [-1.32,1.13] | [-1.52,0.77] | [-1.96,0.60] |
| Semi-skilled and unskilled | 0.286 | -0.032 | -1.173 | -1.487* |
| | [-0.90,1.47] | [-1.28,1.22] | [-2.38,0.03] | [-2.83,-0.14] |
| Farm labour | -0.163 | -0.437 | -0.831 | -1.140 |
| | [-1.31,0.99] | [-1.66,0.79] | [-1.93,0.27] | [-2.39,0.11] |
| **Birth cohort** | | | | |
| *Ref. category: 1959-67* | | | | |
| 1943-50 | 0.512 | 0.428 | -1.840 | -1.948 |
| | [-1.09,2.12] | [-1.19,2.05] | [-4.11,0.43] | [-4.27,0.37] |
| 1951-58 | 0.876 | 0.816 | -1.768 | -1.823 |
| | [-0.73,2.48] | [-0.79,2.42] | [-4.05,0.52] | [-4.09,0.45] |
| 1967-74 | 0.033 | 0.051 | -0.496 | -0.434 |
| | [-1.43,1.49] | [-1.41,1.52] | [-1.99,1.00] | [-1.93,1.07] |
| 1975-82 | -0.781 | -0.778 | -1.276 | -1.163 |
| | [-2.43,0.87] | [-2.42,0.87] | [-3.60,1.05] | [-3.49,1.16] |
| **Parental occupation*birth cohort** | | | | |
| Lower service * 1943-50 | -0.764 | -0.634 | 2.325 | 2.421 |
| | [-2.85,1.32] | [-2.73,1.46] | [-0.46,5.11] | [-0.40,5.24] |
| Lower service * 1951-58 | -1.142 | -1.100 | 2.371 | 2.270 |
| | [-3.19,0.90] | [-3.15,0.95] | [-0.32,5.06] | [-0.43,4.97] |
| Lower service * 1967-74 | 0.440 | 0.482 | -0.454 | -0.468 |
| | [-1.45,2.33] | [-1.42,2.38] | [-2.82,1.91] | [-2.83,1.90] |
| Lower service * 1975-82 | -0.907 | -0.854 | -0.659 | -0.679 |
| | [-3.10,1.28] | [-3.04,1.33] | [-3.92,2.60] | [-3.94,2.58] |
| Routine non-manual * 1943-50 | -0.232 | -0.145 | 2.329 | 1.989 |
| | [-2.47,2.00] | [-2.39,2.10] | [-0.50,5.16] | [-0.98,4.96] |

| | | | | |
|---|---|---|---|---|
| Routine non-manual * 1951-58 | -0.978 | -0.930 | 2.197 | 2.246 |
| | [-2.98,1.02] | [-2.93,1.07] | [-0.52,4.91] | [-0.46,4.95] |
| Routine non-manual * 1967-74 | -0.983 | -1.018 | 0.929 | 0.909 |
| | [-2.76,0.80] | [-2.80,0.77] | [-1.08,2.94] | [-1.10,2.92] |
| Routine non-manual * 1975-82 | -0.386 | -0.371 | -0.636 | -0.717 |
| | [-2.34,1.57] | [-2.32,1.57] | [-3.88,2.61] | [-3.96,2.52] |
| Skilled manual * 1943-50 | -0.912 | -0.912 | -14.234*** | -13.461*** |
| | [-2.77,0.94] | [-2.78,0.95] | [-16.61,-11.86] | [-15.87,-11.05] |
| Skilled manual * 1951-58 | -1.056 | -0.987 | 1.341 | 1.394 |
| | [-2.79,0.68] | [-2.73,0.76] | [-1.12,3.80] | [-1.06,3.84] |
| Skilled manual * 1967-74 | 0.061 | -0.085 | 0.103 | 0.091 |
| | [-1.52,1.64] | [-1.67,1.50] | [-1.61,1.82] | [-1.63,1.81] |
| Skilled manual * 1975-82 | -0.063 | -0.177 | -1.330 | -1.338 |
| | [-1.92,1.79] | [-2.03,1.68] | [-4.44,1.78] | [-4.44,1.77] |
| Semi-skilled and unskilled * 1943-50 | -0.661 | -0.672 | 3.127* | 3.245* |
| | [-2.49,1.17] | [-2.55,1.20] | [0.66,5.59] | [0.73,5.76] |
| Semi-skilled and unskilled * 1951-58 | -0.963 | -0.893 | 2.163 | 2.251 |
| | [-2.72,0.79] | [-2.65,0.87] | [-0.31,4.64] | [-0.21,4.71] |
| Semi-skilled and unskilled * 1967-74 | -0.204 | -0.258 | 0.614 | 0.597 |
| | [-1.82,1.41] | [-1.88,1.36] | [-1.20,2.42] | [-1.21,2.41] |
| Semi-skilled and unskilled * 1975-82 | -0.086 | -0.129 | 0.060 | 0.034 |
| | [-1.96,1.79] | [-2.01,1.75] | [-3.09,3.21] | [-3.11,3.18] |
| Farm labour * 1943-50 | 0.215 | 0.324 | 1.698 | 1.764 |
| | [-1.52,1.95] | [-1.43,2.08] | [-0.70,4.10] | [-0.68,4.20] |
| Farm labour * 1951-58 | -0.789 | -0.802 | 1.995 | 2.007 |
| | [-2.51,0.93] | [-2.53,0.92] | [-0.39,4.38] | [-0.36,4.38] |
| Farm labour * 1967-74 | -0.377 | -0.446 | -0.068 | -0.127 |
| | [-1.97,1.22] | [-2.05,1.15] | [-1.77,1.63] | [-1.83,1.58] |
| Farm labour * 1975-82 | -0.816 | -0.895 | -0.569 | -0.582 |
| | [-2.71,1.08] | [-2.79,1.00] | [-3.33,2.19] | [-3.34,2.18] |
| Parental education | | | | |
| *Ref. category: basic education* | | | | |
| Secondary education | | 0.066 | | -0.231 |
| | | [-0.21,0.34] | | [-0.60,0.14] |
| University education | | -0.482 | | -0.583 |
| | | [-1.13,0.16] | | [-1.45,0.28] |
| Constant | -0.689 | -0.377 | -0.646 | -0.223 |
| | [-1.77,0.39] | [-1.55,0.79] | [-1.65,0.35] | [-1.41,0.96] |

**Secondary vocational (reference category – upper secondary)**

| | | | | |
|---|---|---|---|---|
| Parental occupation | | | | |
| *Ref. category: upper service* | | | | |
| Lower service | -0.199 | -0.067 | 0.601 | 0.724 |
| | [-1.26,0.86] | [-1.15,1.01] | [-0.36,1.56] | [-0.26,1.71] |
| Routine non-manual | -0.090 | 0.081 | 0.178 | 0.342 |
| | [-1.12,0.94] | [-1.00,1.16] | [-0.78,1.13] | [-0.65,1.34] |
| Skilled manual | -1.290** | -1.038* | -0.181 | 0.093 |
| | [-2.24,-0.34] | [-2.05,-0.03] | [-1.05,0.68] | [-0.82,1.01] |
| Semi-skilled and unskilled | -1.027* | -0.755 | -0.554 | -0.218 |
| | [-2.00,-0.05] | [-1.79,0.28] | [-1.42,0.31] | [-1.13,0.69] |
| Farm labour | -1.312** | -1.056* | -0.998* | -0.602 |
| | [-2.23,-0.39] | [-2.04,-0.07] | [-1.84,-0.16] | [-1.49,0.29] |
| Birth cohort | | | | |
| *Ref. category: 1959-67* | | | | |
| 1943-50 | -1.444 | -1.388 | -0.731 | -0.634 |
| | [-3.24,0.35] | [-3.19,0.41] | [-1.89,0.43] | [-1.80,0.53] |
| 1951-58 | -0.105 | -0.070 | 0.682 | 0.717 |

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
|  | [-1.55,1.34] | [-1.52,1.38] | [-0.37,1.74] | [-0.34,1.77] |
| 1967-74 | -0.456 | -0.468 | 0.294 | 0.251 |
|  | [-1.63,0.72] | [-1.64,0.71] | [-0.71,1.30] | [-0.76,1.26] |
| 1975-82 | -0.821 | -0.832 | 0.325 | 0.254 |
|  | [-2.02,0.37] | [-2.03,0.36] | [-0.87,1.51] | [-0.94,1.45] |
| Parental occupation*birth cohort |  |  |  |  |
| Lower service * 1943-50 | 0.945 | 0.872 | 0.113 | 0.042 |
|  | [-1.20,3.09] | [-1.28,3.03] | [-1.41,1.63] | [-1.48,1.57] |
| Lower service * 1951-58 | 0.113 | 0.101 | -1.049 | -1.064 |
|  | [-1.66,1.88] | [-1.67,1.88] | [-2.39,0.29] | [-2.41,0.28] |
| Lower service * 1967-74 | 0.590 | 0.559 | -1.122 | -1.123 |
|  | [-1.01,2.19] | [-1.04,2.16] | [-2.42,0.17] | [-2.42,0.17] |
| Lower service * 1975-82 | -0.518 | -0.554 | -1.340 | -1.356 |
|  | [-2.13,1.10] | [-2.17,1.06] | [-2.77,0.09] | [-2.79,0.08] |
| Routine non-manual * 1943-50 | 2.158 | 2.130 | 0.376 | 0.336 |
|  | [-0.07,4.39] | [-0.10,4.36] | [-1.15,1.91] | [-1.19,1.87] |
| Routine non-manual * 1951-58 | -0.056 | -0.080 | -0.810 | -0.838 |
|  | [-1.86,1.75] | [-1.89,1.73] | [-2.14,0.52] | [-2.17,0.49] |
| Routine non-manual * 1967-74 | -0.043 | -0.040 | -0.687 | -0.725 |
|  | [-1.48,1.39] | [-1.48,1.40] | [-1.94,0.57] | [-1.98,0.53] |
| Routine non-manual * 1975-82 | -0.282 | -0.303 | -0.880 | -0.851 |
|  | [-1.77,1.21] | [-1.79,1.19] | [-2.27,0.51] | [-2.24,0.53] |
| Skilled manual * 1943-50 | 1.203 | 1.131 | -0.201 | -0.214 |
|  | [-0.87,3.28] | [-0.95,3.21] | [-1.59,1.19] | [-1.62,1.19] |
| Skilled manual * 1951-58 | 0.108 | 0.142 | -0.785 | -0.750 |
|  | [-1.51,1.73] | [-1.49,1.78] | [-1.98,0.41] | [-1.96,0.46] |
| Skilled manual * 1967-74 | 0.367 | 0.263 | -0.497 | -0.541 |
|  | [-1.01,1.74] | [-1.12,1.65] | [-1.64,0.64] | [-1.68,0.60] |
| Skilled manual * 1975-82 | 0.755 | 0.685 | -0.471 | -0.502 |
|  | [-0.69,2.20] | [-0.77,2.14] | [-1.81,0.86] | [-1.84,0.84] |
| Semi-skilled and unskilled * 1943-50 | 0.895 | 0.895 | 0.742 | 0.724 |
|  | [-1.19,2.98] | [-1.19,2.98] | [-0.62,2.10] | [-0.65,2.10] |
| Semi-skilled and unskilled * 1951-58 | 0.217 | 0.158 | -0.577 | -0.594 |
|  | [-1.41,1.84] | [-1.48,1.79] | [-1.77,0.62] | [-1.79,0.60] |
| Semi-skilled and unskilled * 1967-74 | 0.024 | -0.046 | -0.105 | -0.187 |
|  | [-1.39,1.44] | [-1.46,1.37] | [-1.26,1.05] | [-1.35,0.97] |
| Semi-skilled and unskilled * 1975-82 | 0.269 | 0.176 | 0.362 | 0.249 |
|  | [-1.25,1.79] | [-1.35,1.70] | [-1.01,1.73] | [-1.12,1.62] |
| Farm labour * 1943-50 | 1.820 | 1.826 | 0.697 | 0.614 |
|  | [-0.13,3.77] | [-0.13,3.78] | [-0.58,1.97] | [-0.68,1.90] |
| Farm labour * 1951-58 | 0.796 | 0.711 | -0.207 | -0.196 |
|  | [-0.76,2.35] | [-0.86,2.28] | [-1.36,0.95] | [-1.35,0.96] |
| Farm labour * 1967-74 | -0.109 | -0.125 | -0.870 | -0.953 |
|  | [-1.47,1.26] | [-1.49,1.24] | [-2.02,0.28] | [-2.11,0.20] |
| Farm labour * 1975-82 | -0.763 | -0.811 | -1.130 | -1.229 |
|  | [-2.32,0.80] | [-2.38,0.76] | [-2.51,0.25] | [-2.61,0.16] |
| Parental education |  |  |  |  |
| *Ref. category: basic education* |  |  |  |  |
| Secondary education |  | 0.097 |  | 0.441[***] |
|  |  | [-0.20,0.39] |  | [0.22,0.66] |
| University education |  | 0.327 |  | 0.631[**] |
|  |  | [-0.20,0.85] |  | [0.22,1.04] |
| Constant | 0.301 | 0.038 | 0.426 | -0.110 |
|  | [-0.52,1.12] | [-0.87,0.95] | [-0.35,1.20] | [-0.96,0.74] |

**University education (reference – upper secondary)**

Parental occupation

*Ref. category: upper service*

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Lower service | -0.916* | -0.351 | -1.188** | -0.668 |
| | [-1.80,-0.04] | [-1.26,0.56] | [-2.03,-0.34] | [-1.53,0.19] |
| Routine non-manual | -1.371** | -0.578 | -1.785*** | -1.044* |
| | [-2.25,-0.49] | [-1.52,0.37] | [-2.63,-0.94] | [-1.94,-0.15] |
| Skilled manual | -2.953*** | -1.894*** | -2.498*** | -1.469*** |
| | [-3.79,-2.12] | [-2.79,-1.00] | [-3.26,-1.73] | [-2.28,-0.66] |
| Semi-skilled and unskilled | -2.416*** | -1.223** | -3.237*** | -2.046*** |
| | [-3.25,-1.59] | [-2.11,-0.33] | [-4.03,-2.45] | [-2.88,-1.21] |
| Farm labour | -3.583*** | -2.311*** | -4.074*** | -2.745*** |
| | [-4.44,-2.72] | [-3.23,-1.39] | [-4.88,-3.27] | [-3.60,-1.89] |
| **Birth cohort** | | | | |
| *Ref. category: 1959-67* | | | | |
| 1943-50 | -0.101 | 0.103 | -0.600 | -0.416 |
| | [-1.19,0.99] | [-1.03,1.23] | [-1.48,0.28] | [-1.34,0.51] |
| 1951-58 | 0.740 | 0.865 | -0.441 | -0.325 |
| | [-0.39,1.87] | [-0.29,2.02] | [-1.36,0.48] | [-1.26,0.61] |
| 1967-74 | 0.201 | 0.162 | -0.579 | -0.679 |
| | [-0.70,1.10] | [-0.75,1.08] | [-1.43,0.27] | [-1.53,0.17] |
| 1975-82 | 0.002 | -0.033 | 0.519 | 0.341 |
| | [-0.87,0.87] | [-0.92,0.86] | [-0.47,1.51] | [-0.66,1.34] |
| **Parental occupation*birth cohort** | | | | |
| Lower service * 1943-50 | -0.073 | -0.367 | 0.650 | 0.469 |
| | [-1.50,1.35] | [-1.82,1.09] | [-0.62,1.91] | [-0.83,1.76] |
| Lower service * 1951-58 | -0.873 | -0.907 | 0.410 | 0.259 |
| | [-2.30,0.56] | [-2.36,0.54] | [-0.81,1.63] | [-0.97,1.49] |
| Lower service * 1967-74 | 0.381 | 0.215 | 0.703 | 0.649 |
| | [-0.89,1.65] | [-1.08,1.51] | [-0.43,1.84] | [-0.48,1.78] |
| Lower service * 1975-82 | -0.053 | -0.245 | -0.722 | -0.816 |
| | [-1.20,1.09] | [-1.42,0.93] | [-1.96,0.51] | [-2.06,0.42] |
| Routine non-manual * 1943-50 | 0.813 | 0.786 | 0.849 | 0.814 |
| | [-0.85,2.48] | [-0.94,2.52] | [-0.44,2.14] | [-0.54,2.17] |
| Routine non-manual * 1951-58 | -0.379 | -0.433 | 0.378 | 0.285 |
| | [-1.84,1.08] | [-1.93,1.06] | [-0.85,1.61] | [-0.96,1.53] |
| Routine non-manual * 1967-74 | -0.587 | -0.594 | 0.600 | 0.544 |
| | [-1.75,0.58] | [-1.79,0.60] | [-0.53,1.73] | [-0.59,1.67] |
| Routine non-manual * 1975-82 | -0.165 | -0.334 | -0.697 | -0.633 |
| | [-1.30,0.97] | [-1.49,0.83] | [-1.91,0.52] | [-1.86,0.60] |
| Skilled manual * 1943-50 | 0.232 | 0.222 | 0.114 | 0.168 |
| | [-1.22,1.69] | [-1.25,1.70] | [-1.07,1.30] | [-1.05,1.38] |
| Skilled manual * 1951-58 | -0.466 | -0.395 | 0.275 | 0.300 |
| | [-1.80,0.87] | [-1.76,0.97] | [-0.85,1.40] | [-0.85,1.45] |
| Skilled manual * 1967-74 | 0.376 | 0.154 | -0.599 | -0.700 |
| | [-1.29,1.01] | [-1.42,0.92] | [-1.06,1.08] | [-1.16,0.99] |
| Skilled manual * 1975-82 | -0.303 | -0.431 | 1.233* | 1.108 |
| | [-0.77,1.52] | [-1.01,1.32] | [-1.80,0.60] | [-1.91,0.51] |
| Semi-skilled and unskilled * 1943-50 | -0.747 | -0.879 | 0.723 | 0.596 |
| | [-1.76,1.15] | [-1.93,1.06] | [0.04,2.42] | [-0.15,2.36] |
| Semi-skilled and unskilled * 1951-58 | -0.682 | -0.918 | 1.081 | 0.890 |
| | [-2.08,0.58] | [-2.24,0.49] | [-0.42,1.87] | [-0.57,1.76] |
| Semi-skilled and unskilled * 1967-74 | 0.150 | -0.226 | 1.065 | 0.781 |
| | [-1.84,0.48] | [-2.09,0.25] | [-0.01,2.17] | [-0.21,1.99] |
| Semi-skilled and unskilled * 1975-82 | 1.762** | 1.735* | 1.329* | 1.351* |
| | [-0.99,1.29] | [-1.39,0.94] | [-0.17,2.30] | [-0.47,2.03] |
| Farm labour * 1943-50 | 0.443 | 0.376 | 1.174* | 1.252* |
| | [0.44,3.09] | [0.37,3.10] | [0.20,2.46] | [0.17,2.53] |

| | | | | |
|---|---|---|---|---|
| Farm labour * 1951-58 | [-0.88,1.76] | [-0.98,1.73] | [0.03,2.32] | [0.09,2.42] |
| | -0.174 | -0.304 | 0.778 | 0.679 |
| Farm labour * 1967-74 | [-1.38,1.03] | [-1.52,0.92] | [-0.36,1.92] | [-0.46,1.82] |
| | -0.248 | -0.514 | 0.073 | -0.214 |
| Farm labour * 1975-82 | [-1.49,1.00] | [-1.78,0.75] | [-1.19,1.33] | [-1.50,1.07] |
| | | | | |
| Parental education | | 0.743\*\*\* | | 1.255\*\*\* |
| *Ref. category: basic education* | | | | |
| Secondary education | | [0.46,1.03] | | [0.98,1.53] |
| | | 1.729\*\*\* | | 2.158\*\*\* |
| University education | | [1.31,2.15] | | [1.76,2.56] |
| | 1.910\*\*\* | 0.387 | 2.284\*\*\* | 0.367 |
| Constant | [1.24,2.58] | [-0.38,1.16] | [1.65,2.91] | [-0.35,1.08] |
| Pseudo r-square | 0.11 | 0.13 | 0.11 | 0.13 |
| Log-likelihood | -4040.30 | -3896.27 | -4598.80 | -4397.15 |
| BIC | 9040.0 | 8814.0 | 10183.6 | 9844.5 |

$^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

# Appendix D – Chapter 5

**Table D.1** Estimating chances of access to service class, OLS

|  | Model 1 | Model 2 | Model |
|---|---|---|---|
| Period |  |  |  |
| Ref. category: 1991-1992 |  |  |  |
| 1993-95 | -0.031[**] | -0.035[***] | -0.026[*] |
|  | [-0.05,-0.01] | [-0.05,-0.02] | [-0.05,-0.00] |
| 1996-98 | -0.065[***] | -0.067[***] | -0.015 |
|  | [-0.08,-0.04] | [-0.09,-0.05] | [-0.04,0.01] |
| 1999-01 | -0.084[***] | -0.091[***] | -0.078[***] |
|  | [-0.10,-0.06] | [-0.11,-0.07] | [-0.10,-0.05] |
| 2002-04 | -0.098[***] | -0.106[***] | -0.084[***] |
|  | [-0.12,-0.08] | [-0.13,-0.09] | [-0.11,-0.06] |
| 2007 | -0.086[***] | -0.099[***] | -0.073[***] |
|  | [-0.11,-0.06] | [-0.12,-0.08] | [-0.10,-0.05] |
| 2010 | -0.100[***] | -0.110[***] | -0.068[***] |
|  | [-0.13,-0.07] | [-0.14,-0.08] | [-0.10,-0.03] |
| Education | 0.506[***] | 0.504[***] | 0.557[***] |
| Ref. category: no university education | [0.50,0.52] | [0.49,0.51] | [0.53,0.59] |
| Sex |  | 0.131[***] | 0.131[***] |
| Ref. category: men |  | [0.12,0.14] | [0.12,0.14] |
| Age |  | 0.000[***] | 0.000[***] |
|  |  | [0.00,0.00] | [0.00,0.00] |
| Education*period |  |  |  |
| 1993-95*some university |  |  | -0.016 |
|  |  |  | [-0.05,0.02] |
| 1996-98 *some university |  |  | -0.147[***] |
|  |  |  | [-0.19,-0.11] |
| 1999-01 *some university |  |  | -0.028 |
|  |  |  | [-0.07,0.01] |
| 2002-04 *some university |  |  | -0.059[**] |
|  |  |  | [-0.10,-0.02] |
| 2007 *some university |  |  | -0.071[**] |
|  |  |  | [-0.12,-0.02] |
| 2010 *some university |  |  | -0.113[***] |
|  |  |  | [-0.17,-0.05] |
| Constant | 0.244[***] | 0.139[***] | 0.117[***] |
|  | [0.23,0.26] | [0.12,0.16] | [0.09,0.14] |
| R-sqr | 0.253 | 0.273 | 0.275 |
| dfres | 28362 | 28355 | 28349 |
| BIC | 30123.3 | 29369.0 | 29339.1 |

$^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

**Table D.2** Estimating chances of being employed/self-employed, OLS

| | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| Period | | | |
| Ref. category: 1991-1992 | | | |
| 1993-95 | -0.152*** | -0.147*** | -0.147*** |
| | [-0.17,-0.13] | [-0.17,-0.13] | [-0.17,-0.12] |
| 1996-98 | -0.231*** | -0.223*** | -0.254*** |
| | [-0.25,-0.21] | [-0.24,-0.20] | [-0.28,-0.23] |
| 1999-01 | -0.205*** | -0.196*** | -0.222*** |
| | [-0.22,-0.19] | [-0.22,-0.18] | [-0.25,-0.20] |
| 2002-04 | -0.165*** | -0.156*** | -0.180*** |
| | [-0.19,-0.14] | [-0.18,-0.14] | [-0.21,-0.15] |
| 2007 | -0.109*** | -0.094*** | -0.122*** |
| | [-0.13,-0.08] | [-0.12,-0.07] | [-0.15,-0.09] |
| 2010 | -0.179*** | -0.160*** | -0.197*** |
| | [-0.21,-0.15] | [-0.19,-0.13] | [-0.23,-0.16] |
| University education | 0.071*** | 0.064*** | 0.015 |
| Ref. category: no university | [0.06,0.08] | [0.05,0.07] | [-0.02,0.05] |
| Sex | | -0.070*** | -0.071*** |
| Ref. category: men | | [-0.08,-0.06] | [-0.08,-0.06] |
| Age | | -0.000*** | -0.000*** |
| | | [-0.00,-0.00] | [-0.00,-0.00] |
| Education*period | | | |
| 1993-95*some university | | | -0.014 |
| | | | [-0.05,0.03] |
| 1996-98 *some university | | | 0.090*** |
| | | | [0.05,0.13] |
| 1999-01 *some university | | | 0.078*** |
| | | | [0.04,0.12] |
| 2002-04 *some university | | | 0.069** |
| | | | [0.02,0.11] |
| 2007 *some university | | | 0.080** |
| | | | [0.03,0.13] |
| 2010 *some university | | | 0.105*** |
| | | | [0.05,0.16] |
| constant | 0.813*** | 0.984*** | 1.004*** |
| | [0.80,0.83] | [0.96,1.00] | [0.98,1.03] |
| R-sqr | 0.021 | 0.045 | 0.046 |
| dfres | 37736 | 37729 | 37723 |
| BIC | 49530.3 | 48622.1 | 48611.9 |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$