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SOTSIAALTEADUSTE DISSERTATSIOONID

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FERTILITY DEVELOPMENT IN ESTONIA DURING THE SECOND HALF OF THE XX CENTURY: THE ECONOMIC CONTEXT AND ITS IMPLICATIONS

Analytical Summary

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Analytical summary

Estonian Institute for Population Studies, Tallinn University

The dissertation is accepted for the commencement of the degree of Doctor of Philosophy (demography) by the Doctoral Committee of Social Sciences of Tallinn University on August 30, 2010.

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PREFACE

Economic growth affects issues recurrently addressed in scholarly as well as public debate. Steady economic growth is generally regarded as a desirable feature of a country's development, especially in the light of the recent economic crisis that escalated to a global scale. Popular belief seems to favour the notion that higher per capita incomes and rising living standards are the foundation upon which the other domains of society, including demographic developments, rest. Such a view conforms with daily life experience in which economic conditions in their various manifestations (income, availability of jobs, housing etc.) are perceived as factors that facilitate or constrain the choices of individuals.The role of economic factors has also attracted considerable interest in demographic research. The relationship between economic conditions and demographic outcomes has been studied from a variety of theoretical perspectives, drawing on both macro- and micro-level data and applying a broad range of analytical methods. The findings from such studies reveal the salience of economic underpinnings but also point to a noticeable variation in specific relationships between economic and demographic phenomena in different societal contexts and over time.

This study aims to complement that research by addressing the implications of the economic context for fertility developments in Estonia since the end of the Second World War. It is assumed that the successive and profound transformations in the country's economic system over that period offer favourable ground for analysing the relationship. The study focused on the dynamics of the Gross Domestic Product at the macro-level and on differentials in economic well-being across subgroups of the population at the micro-level as plausible correlates with childbearing trends. An analysis of educational differentials in childbearing was included in the study in order to cast further light on the role of economic factors in family formation decisions.

The results of the study indicate that the economic context, especially an abrupt change in the level of well-being, is likely to play a role in fertility development, but its importance should not be overestimated. In a comparative perspective, similar macro-economic developments have not produced identical fertility trends, which suggests that the phase of population development and demographic path dependency may be more important than short-term economic influences. The wealth of a society and its members is one element in a complex array of factors that influence demographic behaviour. It therefore seems unlikely that a universal cure for low fertility will be found among economic variables. Measures and policies that are targeted towards increasing fertility must be considered in a broader framework.

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from the support of the Estonian Ministry of Education and Research for the framework of the research (no. 0132703s05), as well as grants from the Estonian Science Foundation (nos. 7619 and 7624). Gratitude is extended to the Max Planck Institute for Demographic Research and the International Max Planck Research School for Demography, which invited the author to participate in the 2008–09 winter programme. The author attended a number of conferences during his doctoral study. Participation in IEHA's World Economic History Congress in Helsinki in 2006 and EAPS's European Population Conference in Barcelona in 2008 were supported by the SA Archimedes programme. The author also took part in the 2009 IUSSP population conference in Marrakech, thanks to financial support from the European Social Fund's Doctoral Studies and Internationalisation Programme – DoRa. The author participated in three summer schools organised by the GlobalEuroNet economic history network, and financial assistance from ESF (GlobalEuroNet) for travel and accommodation expenses is gratefully acknowledged. Finally and most importantly, the author is greatly indebted to his colleagues at the Estonian Institute for Population Studies, whose guidance and support made the completion of this work possible.

The author would like to thank the external reviewers, Prof. Kalervo Hovi from Turku University and Prof. Tiit Tammaru from Tartu University, and the participants at the pre-defence seminar whose valuable comments and suggestions helped to improve this dissertation.

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LIST OF PUBLICATIONS

I Klesment, Martin; Puur, Allan (2010). Effects of Education on Second Births before and after Societal Transition: Evidence from the Estonian GGS. *Demographic Research*, 22 (28), 891–932.

II Klesment, Martin; Sakkeus, Luule (2010). *Estonian Household Income Surveys in the 1950–1980s. Feasibility Study and Standard Tabulations.* RU Series C, 29. Tallinn: Eesti Kõrgkoolidevaheline Demouuringute Keskus.

III Klesment, Martin; Puur, Allan; Valge, Jaak (2010). *Childbearing and Macro-economic Trends in Estonia in the XX century.* RU Series B, 63. Tallinn: Eesti Kõrgkoolidevaheline Demouuringute Keskus.

IV Klesment, Martin (2009). The Estonian Economy under Soviet Rule: A Historiographic Overview. *Journal of Baltic Studies*, 40 (2), 245–264.

V Klesment, Martin (2008). Estonian Agricultural Production Data: An Interpretation through Comparison. *Acta Historica Tallinnensia*, 12 (1), 145–162.

VI Klesment, Martin; Valge, Jaak (eds.) (2007). *Eesti rahvastiku majandustegevuse näitarve XX sajandil.* RU Sari D, 6. Tallinn: Eesti Kõrgkoolidevaheline Demouuringute Keskus.

Additional publications related to the dissertation

A Klesment, Martin (2010). A Comparison between Native and Immigrant Population in Estonia Regarding the Effect of Education on Second Births. In: *European Population Conference 2010. Programme and Abstracts.*

B Klesment, Martin; Puur, Allan (2010). *Education and Second Births: Analysis of the Estonian GGS.* RU Series B, 62. Tallinn: Eesti Kõrgkoolidevaheline Demouuringute Keskus.

C Klesment, Martin (2009). Interpretation and Adjustment of Foreign Concepts in Soviet Estonia: the Discussion and Adaptation of Management Theories. *European Review of History = Revue européenne d'Histoire*, 16 (1), 151–167.

D Klesment, Martin (2008). Eesti majandusarengu dünaamika näitajaid sõdadevahelisel perioodil. *Tuna. Ajalookultuuri ajakiri*, 38 (1), 25–37.

E Klesment, Martin (2009). Trends of Household and Personal Income: the case of Estonia from the 1950s to 1980s. In: *XXVI IUSSP International Population Conference. Programme and Abstracts.*

F Klesment, Martin (2008). Historical Household Income and Expenditure Surveys in Estonia: A Feasibility Study. In: *European Population Conference 2008. Programme and Abstracts.*

The author's contribution to co-authored publications

Klesment, Martin; Puur, Allan (2010). Effects of Education on Second Births before and after Societal Transition: Evidence from the Estonian GGS. *Demographic Research*, 22 (28), 891–932. – The author performed the Estonian GGS data analysis and event history modelling, and wrote the respective sections of results on the findings.

Klesment, Martin; Sakkeus, Luule (2010). *Estonian Household Income Surveys in the 1950–1980s. Feasibility Study and Standard Tabulations.* RU Series C, 29. Tallinn: Eesti Kõrgkoolidevaheline Demouuringute Keskus. – The author conducted the feasibility study, archival data collection, data quality analysis, post-stratification analysis, wrote the respective sections, and produced the standard tabulations.

Klesment, Martin; Puur, Allan; Valge, Jaak (2010). *Childbearing and Macro-economic trends in Estonia in the XX Century.* RU Series B, 63. Tallinn: Eesti Kõrgkoolidevaheline Demouuringute Keskus. – The author analysed post-WWII macro-economic trends and their implications for fertility, participated in the analysis of fertility trends and wrote the respective sections.

Klesment, Martin; Puur, Allan (2010). Education and Second Births: Analysis of the Estonian GGS. *RU Series B*, 62. Tallinn: Eesti Kõrgkoolidevaheline Demouuringute Keskus. – The author was responsible for data preparation and event history modelling, and for writing sections on theoretical perspectives and results.

Klesment, Martin; Valge, Jaak (eds.) (2007). *Eesti rahvastiku majandustegevuse näitarve XX sajandil.* RU Sari D, 6. Tallinn: Eesti Kõrgkoolidevaheline Demouuringute Keskus. – The author wrote the chapter on statistics in the state socialist period, reconstructed and harmonised the time series of production indicators in the appendix, and produced the tabulations and international comparisons.

INTRODUCTION

Following the completion of the transition to the modern demographic regime in developed nations, childbearing trends have repeatedly taken unexpected turns, and the future course of fertility continues to be difficult to foresee. European fertility reached its lowest point since the Second World War early in the 21st century, and despite a recent upward trend in period fertility rates, a substantial percentage of childbearing aspirations remains unrealised. Furthermore, there is recent evidence for several countries of Europe that young people are increasingly adopting sub-replacement fertility ideals. In the countries concerned, particularly in Southern and Eastern Europe and German-speaking countries, the persistence of contemporary fertility levels may eventually lead to a long-term population decline, and a degree of demographic ageing with which modern welfare systems can hardly be sustained. On the other hand, some countries, mainly in the northern and western parts of the continent, have fared better and managed to avoid the decline of fertility rates to very low levels.

Against the backdrop of the diversity of fertility regimes in contemporary Europe, this doctoral study focuses on childbearing trends and patterns in Estonia during the second half of the 20th century, in a changing economic context. Previous research (e.g. Katus 1997; 2000, Katus *et al.* 2002) has documented the general trajectory of post-transitional fertility in the country; however, the elements underlying the observed changes remain quite obscure. This study attempts to take a further step towards filling this knowledge gap and gaining insight into economic development as a plausible correlate of the observed childbearing patterns.

The timeframe of the study spans the aftermath of the Second World War to the beginning of the 21st century. From the socio-economic point of view, the timeframe of the study encompasses two profound transformations – Sovietisation in the late 1940s and 1950s, and the return to a market economy after the beginning of the 1990s. Both transformations have far-reaching implications for societal institutions and the lives of the individuals they frame. In a demographic perspective, the period of the study almost completely covers the stages and turning points since the completion of the transition to controlled fertility and the slow alteration of generations. The latter fact is particularly appealing from the methodological viewpoint as both transformations occurred in the context of the modern demographic regime. In comparative perspective, such a configuration appears quite unique, since most countries of Central and Eastern Europe were still at the stage of secular fertility decline when the post-war political and economic changes commenced. In planning the study, we expected that the characteristics of the Estonian setting described above would allow us to highlight the role of the demographic stage in conditioning the alleged response to changes in the economic context, thus adding value to the study.

In addressing childbearing patterns, the economic context and their interactions, the study combines research at two complementary levels – the macro-level and the micro-level. The approach is supported by the choice of appropriate data sources and analytical methods. In implementing the study, it was discovered that the availability of information pertaining to economic development lagged seriously behind that which existed in the demographic domain. Therefore, although the study is guided by demographic questions, more research effort has been applied to the economic domain. In particular, this refers to the retrieval and harmonisation of comprehensive archival materials and preparing them for scholarly use.

The doctoral study has been organised as a collection of articles and books. A historiographic overview (Klesment 2009) describes the available literature on Estonian economic development during the state socialist period. The physical production volume indicators have been published in Klesment and Valge (2007) and aggregated to a certain extent in Klesment (2008b). The general trends of demographic and economic development in Estonia have been summarised in Klesment *et al.* (2010). The collection of micro-economic data is described, and the results are included as standard tabulations, in Klesment and Sakkeus (2010). The individual-level research on fertility differentials is published in Klesment and Puur (2010b). Some of the results, and the synthesis of the main findings, however, appear first in this analytical summary.

This text has five sections. Section 1 describes the theoretical perspectives of the study, introduce the Estonian context, and explain the research objectives. In Section 2, the data and methodology used in the dissertation are introduced. Following the division into macro- and micro-level issues, the main results of the study are explained in Section 3. The interpretation of results is provided within the discussion in Section 4. Section 5 completes the study by identifying the main results and some prospects for future research.

1. THEORETICAL PERSPECTIVES

1.1 THEORETICAL VIEWS ON THE ROLE OF ECONOMIC FACTORS IN FERTILITY DEVELOPMENTS

The scholarly interpretation of economic conditions as a factor influencing demographic patterns has a long history. Economic progress has fuelled sustained growth in productivity and brought society from the subsistence level to modern urban-industrialism. Along this path, rising incomes and improving standards of living exert an influence on virtually every aspect of human activity. Therefore, it is not surprising that socio-economic factors have received careful consideration in developing the theory of demographic transition – the most prominent overarching framework for the description and explanation of changes that have occurred in human populations in the course of modernisation (Chesnais 1992, Kirk 1996).

The progression towards low fertility and mortality has been thoroughly documented and the empirical record is beyond dispute. The causes of the transition, however, have been a subject of serious debate. Arguably the most influential statement concerning the role of economic development in fertility decline was formulated by Frank Notestein (1953). According to his formulation, the emergence of the small family ideal was intimately linked to the rise of urban industrial society. Economic change and urban life stripped the family of many production, consumption, recreation and education functions. Rapidly developing technology made education increasingly important, and, as a consequence, the cost of childrearing increased and the opportunities for economic contributions from children decreased. At the same time, declining infant mortality rates increased the size of the family to be supported and further lessened the motivation to have many children. In other words, the rising costs and dwindling economic value of children were the central forces Notestein believed to be driving fertility declines: a diminished desire to have children combined with decreased child mortality led to the adoption of parity-specific fertility control.

Notestein's formulation of the impact of socio-economic modernisation on demographic behaviour came to be referred to as the classical theory of demographic transition, and stimulated a great deal of empirical research. A comprehensive test of the theory was the Princeton European fertility study, which used data from more than 600 provinces of European countries for the period 1870–1960 (Coale and Watkins 1986). Unexpectedly, the results uncovered no systematic and universally binding relationship between the onset of the fertility decline and socio-economic variables such as the proportion of non-agricultural employment and level of urbanisation. Another key finding drew attention to the role of cultural boundaries in the process of fertility decline: once a region of a country had begun a decline, neigh-

bouring regions with the same culture usually followed suit in a short time, even when they were economically less developed.

Thus the Princeton study called into question the primacy of socio-economic factors as the single engine of fertility transition. To account for this, Ansley Coale (1973) identified three preconditions for fertility decline to occur (summarised as "ready", "able" and "willing"): i) fertility must be within the calculus of conscious choice, ii) reduced fertility must be advantageous, and iii) effective techniques to control fertility must be available. Among certain subgroups (e.g. groups with higher socio-economis status, urban dwellers) these preconditions may be fulfilled earlier than in the rest of the population (Livi-Bacci 1986). These early adapters can be seen as forerunners whose innovative demographic behaviours diffuse to other groups. Demographic transition theory in its early formulation had primarily focused on the second precondition, namely, that there must be a perceived economic gain to motivate couples to want fewer children. By adding the first and third preconditions, Coale underscored the cultural legitimation of behaviours that disseminate knowledge and challenge traditional values. Coale's assertion was supported by solid empirical evidence (e.g. Bongaarts and Watkins 1996, Lesthaeghe 1983, Lesthaeghe and Wilson 1986).

In the countries that completed the transition to low fertility in the 1920s–1930s, the conventional description usually divides the postwar fertility trend into two distinct periods. The first period – the baby-boom – extended for nearly two decades and featured fairly high levels of childbearing: in several countries which had experienced sub-replacement fertility in the interwar years, the period TFRs amounted to three children or more per woman in the peak years of the baby-boom (Macunovich 2002). After the mid-1960s, a new wave of changes in family formation and fertility came to the fore. It began in the countries of north-western Europe, spread to the southern part of the continent in the late 1970s and 1980s, and reached central and eastern Europe mainly after the fall of the Iron Curtain. With regard to childbearing patterns, the contrast with the baby-boom was so vivid that it gave rise to the term baby-bust to characterise the new phase that was distinguished by fertility rates that were far below replacement levels. In the late 1980s, an increasing awareness that advanced industrialised countries might be entering a new stage in their demographic history led Ron Lesthaeghe and Dirk van de Kaa (Lesthaeghe and Van de Kaa 1986) to introduce the concept of a second demographic transition (SDT). In their view, the SDT constitutes a major transformation in demographic patterns, with interrelated changes in childbearing, family formation and dissolution (decline of marriage, rising non-marital cohabitation and divorce), and living arrangements (increased frequency of single habitation) at its core.

The observed shifts in demographic patterns are seen as a result of the interplay of structural, cultural and technological factors during a complex process of social change (van de Kaa 1987). With regard to the economic drivers, the theory refers to changes that have improved the well-being of individuals and families: the rise of the modern service economy, the expansion of advanced levels of education, an increase in living standards,

consolidation of the welfare state, which protects citizens from the vagaries of life, etc. In the cultural domain, extensive changes in value systems are regarded as an equally important mainspring of the SDT. These ideational transformations accentuate higher-order non-material needs and individual autonomy, involve the rejection of various forms of institutional authority and controls, and exhibit a surge in expressive values connected with self-fulfilment, which compete with more traditional values (Lesthaeghe and Surkyn 2002). As regards technological innovation, the theory of the SDT underlines the role of highly efficient contraceptives and easier access to abortion and sterilisation as catalysts of the demographic change. It should be noted that in its three main pillars – structural, cultural and technological change – the explanatory framework of the SDT bears a close resemblance with the concept of the "first" demographic transition, as restated in the 1970s and 1980s. In this interpretation, economic progress is seen as conducive to demographic modernisation, but the complexity of interactions and the relative independence and systemic nature of the phenomena cautions against the deterministic interpretation that was inherent in the early formulation of the demographic transition theory.

Although the SDT concept has its critics (e.g. Cliquet 1991, Coleman 2004), it nevertheless constitutes the mainstream theoretical framework among population scientists studying contemporary demographic patterns in European societies. Despite the centrality of the SDT, however, there are other theoretical constructs that are relevant to this study. For several decades, various economic theories have held prominent positions in the low fertility debate (for an overview, Robinson 1997).

At a macro-level, Easterlin (1975) and colleagues (Easterlin and Crimmins 1991) have advanced a theory of relative economic deprivation that links childbearing decisions to economic opportunities. These opportunities are related to cohort size and judgements based on expected levels of economic well-being that are driven by demographic and economic cycles. According to this theory, small cohorts would have better employment and income opportunities, and, therefore, earlier marriage and higher fertility, whereas large cohorts would have less favourable life chances and inverse demographic responses. Easterlin's theory accounted relatively well for the baby-boom of the 1950s and 1960s, and also for the subsequent baby-bust of the 1970s. The theory also predicted further cycles, and hence a return of fertility to higher levels when smaller cohorts reach the reproductive years. However, the course of fertility in recent decades has offered little support for Easterlin's assertions.

At a micro level, the economic theory of fertility dates from the attempt by Leibenstein (1957) to formalise the turning point at which fertility declines in the demographic transition. Later Becker (1960; 1993) reformulated this approach into a more general model of completed fertility, based on the neoclassical assumptions of fixed preferences, utility-maximising behaviour and the existence of equilibrium solutions for all decisions. Becker adapted his model to a household production function paradigm, linking the fertility decision to household economic processes, including labour force participation

and consumption. At the core of the theory is the proposition that children are a particular type of capital goods that produce utility and entail costs for parents. In the micro-economic framework, fertility decisions rely on the balance between the former and the latter. Although the static aspect of the theory has been criticised – it conceptualises demographic processes as the results of decisions of atomised individuals operating under a set of fixed preferences (e.g. Lesthaeghe 1983, Mason and Jensen 1995) – micro-economic theory has provided a starting point for much of the research on fertility and family dynamics in the recent decades.

Much of the work guided by micro-economic theory has focused on increased female autonomy, the movement of more women into the labour force, the rise in their educational attainment, and its implications on the direct and indirect costs of childbearing in the family economy. The time spent caring for and raising children could be used for gainful employment, and staying at home means a loss of potential income, slower career advancement, and human capital depreciation. Thus, with growing earning opportunities for women, the theory predicts the substitution of other activities for childbearing and child-rearing at the individual level. Yet at the national level, the correlation between the levels of female employment and fertility reversed from negative in the 1960s to positive since the 1990s (Kögel 2004, Morgan 2003). To explain the reversal, it has been argued that the inhibiting effect of employment on fertility has been at least partially removed by social and institutional arrangements such as the provision of publicly funded and easily accessible childcare, parental leave arrangements and labour market flexibility (Engelhardt and Prskawetz 2004, Rindfuss *et al.* 2003).

Additional evidence contesting the predictive ability of micro-economic theory comes from empirical studies focusing on childbearing differentials. Elevated second and third birth intensities among highly educated women has become a standard finding in the Nordic countries (Gerster *et al.* 2007, Hoem and Hoem 1989, Kravdal 2007, Vikat 2004). Similar results have also been found in several countries of Western Europe (Ermisch 1989, Hoem *et al.* 2001, Köppen 2006, Kreyenfeld 2002, Kreyenfeld and Zabel 2005). The positive gradient of educational differences in these settings is commonly attributed to family- and gender-related welfare state policies. Public policies supporting the compatibility of work with family life and gender equity are believed to be capable of modulating the relationship between women's education, labour market participation and fertility (Esping-Andersen 1999, Gornick *et al.* 1998, McDonald 2000, Morgan 2003). This is further corroborated by international comparisons showing that countries which disburden women of some of the costs associated with parenthood are typically experiencing higher fertility rates. The salience of this finding is also acknowledged by SDT theorists who have recognised a need for sub-narratives of the SDT that take into account contextual features of the countries and the historical path dependency of demographic development (Lesthaeghe 2010).

A third stream of reasoning links the emergence of new demographic patterns characteristic of the SDT to various forms of economic hardship. With regard to Western Europe, for instance, it was at first thought that the eco-

nomic recession ensuing from the oil crises in the early 1970s was responsible for decreasing marriage rates and postponement of childbearing (Lesthaeghe and Van de Kaa 1986). In a somewhat different formulation, globalisation is believed to influence individuals through changes in the labour market, which increase uncertainty and consequently lead to lower fertility levels (Blossfeld and Hofmeister 2006, Blossfeld *et al.* 2005). These plausible links were supported by the experience of Eastern Europe after the beginning of the 1990s, when a direct connection was established between the rapid fall of marriage and fertility rates on the one hand, and the effects of a difficult economic transition on the other. According to the "economic crisis" argument, these demographic changes were attributed to rising unemployment and labour market uncertainty, the end of lifelong employment guarantees, the sudden drop in household incomes and the enhanced risk of poverty (e.g. UNECE 1999; 2000). However, the course of fertility has provided only partial support for this hypothesis. By the late 1990s the economies of several former state socialist countries were recovering along with per capita incomes. But there was no return to earlier patterns of childbearing and family formation. The verdict seems to be that the economic crisis had indeed destabilised the earlier demographic pattern, but the root cause is related to a wider range of structural and ideational changes that were underway in the region (Frejka 2008, Sobotka 2008). It has also been noted that several features of the SDT were nascent in eastern Europe before the 1990s.

Finally, after the turn of the millennium the analysis of childbearing trends led to the identification of yet another factor – a systematic postponement of childbearing to older ages – that emerges as an essential determinant of cross-country variation in period fertility levels. To underscore the universality of the phenomenon in contemporary demographic settings, Kohler, Billari and Ortega introduced the term "postponement transition" (Kohler *et al.* 2002). This dissertation tests these theoretical perspectives against empirical evidence from Estonia since the Second World War.

1.2 THE ESTONIAN SETTING

Historically, the demographic development in Estonia has shared several commonalities with the countries of Northern and Western Europe. In terms of nuptiality, the country formed the eastern boundary of the so-called European marriage pattern (Hajnal 1965). This pattern of relatively late marriage, with a remarkably high proportion never marrying, became established in the country by the 18th century and persisted until the Second World War (Palli 2004).

Although the emergence of a new marriage pattern is in itself not regarded as a transition to a modern demographic demographic regime, it is generally agreed that the European marriage pattern paved the way towards a subsequent more radical development, the shift to controlled marital fertility. The indices derived from the Princeton European fertility study reveal

that the decline of marital fertility had reached the point of no return in Estonia by the late 1880s. In comparative perspective, modern reproductive patterns emerged first in Estonia among the nations of the Russian Empire, and synchronously with the forerunners of the fertility transition in Western and Northern Europe (Coale *et al.* 1979, Coale and Watkins 1986). Consequently, fertility first fell below replacement levels in the late 1920s, and, as is typical of a pattern of demographic transition with rather limited growth in the size of the population, the country experienced its first peacetime negative natural increase in the 1930s.

The similarity of fertility trends in Estonia and Northern and Western Europe ended in the aftermath of the Second World War, when Estonia was incorporated into the Soviet Union. The general trends of Estonian fertility development in the postwar period are relatively well documented (Katus and Puur 2006, Katus *et al.* 2002); however, attempts to link this discontinuity of demographic patterns to the changing societal context have been rather limited, and more speculative than based on empirical evidence. The differentials in childbearing across subgroups of the Estonian population have received less attention than the general trends. In previous studies, the main focus has been on comparison of the native and foreign-origin populations (e.g. Katus *et al.* 2002; 2000, Sakkeus 2000). These analyses revealed systematic differences in fertility patterns between the two major sub-populations from the beginning of the period of demographic transition. Because of the relative size of the foreign-origin population, these differences produce an aggregate of rather divergent and sometimes contrasting elements that may cancel each other out. Therefore, to obtain a more precise description of behavioural patterns, the authors of earlier studies opted to analyse the native and foreign-origin populations separately.

Against that backdrop, however, differentials in fertility by economic status have not been studied in any significant detail. A plausible contributing cause is the limited information on Estonia's economic development during the 20$^{\text{th}}$ century. In that timeframe, the economic system of the country as well as the system of national accounting and recording economic statistics changed repeatedly and profoundly. This makes the investigation of long-term economic trends a rather complicated and demanding endeavour. The first major economic re-orientation occurred after Estonia gained independence from the Russian Empire (Valge 2006) and in the 1920–30s the country developed a new structure of the national economy (for a general description see Kahk and Tarvel 1997). The economic policy and industrial development of that time is relatively well researched (Kõll and Valge 1998, Pihlamägi 1991; 1999, Valge 1991; 1995). In the 1940s, following the incorporation of Estonia into the Soviet Union, Sovietisation moulded the Estonia economy to the Soviet model. This included the full-scale nationalisation of businesses, collectivisation of agriculture and extensive development of heavy industry (e.g. Mertelsmann 2003; 2006). From the perspective of the local population, collectivisation and forced industrialisation were unwarranted and unwelcome developments that could be viewed as colonialism (Kukk 2005).

The historiography of economic development in Estonia during the Soviet period is discussed in Klesment (2009), an article prepared within the framework of this dissertation. The historiographic overview revealed that a general account of the macro-economic trends in Estonia in the 20th century is largely missing. The periods covered by previous research and/or data were limited to the interwar period (Valge 2003) and the transition to a market economy after the beginning of the 1990s. The only estimate for the intervening comes from A.Maddison, who had constructed per capita GDP series for a large number of countries. With regard to the USSR in 1945–1989, Maddison provided an estimate for just one year (1973).[1] The 1973 estimate by Maddison suggests that per capita GDP in the USSR was higher than in Hungary and Poland, but lower than in Czechoslovakia. Maddison's estimates for Estonia in 1973 and in 1990, however, surpassed even that of Czechoslovakia (Maddison 2006), which seems to be an obvious overstatement.

Analyses systematically focusing on the economic well-being of the population during the Soviet period are fairly limited. Reference can be made primarily to research carried out in the West that aimed to provide insights into living standards and incomes in the Soviet Union (e.g. Bergson 1984, McAuley 1979, Ofer 1981, Ofer and Vinokur 1992, Vinokur and Ofer 1987). Some studies addressed differentials by gender, educational attainment, and other socio-demographic characteristics (Alexeev 1988, Echols 1980, Ofer and Vinokur 2008, Pugh and Lewin 1990, Schwartz 1979, Yanowitch and Dodge 1968; 1969). As a comprehensive account of the economic well-being at the level of households and individuals, however, the value of such studies is limited, overwhelmingly due to the narrow scope of the secondary data to which the authors had access. Moreover, the main focus of these studies was the situation in the Soviet Union at large, which was not necessarily identical to the situation in individual republics, such as Estonia.

1.3 RESEARCH OBJECTIVE AND ORGANISATION OF THE STUDY

The objective of this study is to investigate fertility trends and patterns in Estonia during the second half of the 20th century, in the context of the country's economic development.

Within the timeframe of this study, Estonia experienced two major transformations in its economic system. In the aftermath of the Second World War, the country underwent Sovietisation, which was characterised by the forced rearrangement of the entire system of societal organisation by means of terror and deportations. Although the methods of the regime became

[1] Maddison uses the Geary-Khamis international dollar as the unit of measure, which is equal to the purchasing power of the US$ in 1990. According to Maddison, per capita GDP in the USSR in 1973 was 6,059 international dollars, but he found considerable variation among the republics, e.g. Estonia 8,657, Latvia 7,846, Lithuania 7,593, Russia 6,582, Belarus 5,233, and Ukraine 4,924 international dollars.

less harsh after Stalin's death, the authorities introduced uniform models in virtually all sectors of administration (Kahk and Tarvel 1997, Mertelsmann 2003). The application of centralised models extended to the institutions that framed the daily life and influenced the life courses of the population, such as the functioning of the labour market, the organisation of the educational system, health care, social security and the like. Starting from the 1960s, Estonia and the other Baltic republics developed the image of the "Soviet West" because of their allegedly higher standard of living than the other provinces of the USSR (Misiunas and Taagepera 1993).

The second transformation in Estonia occurred at the beginning of the 1990s, following the dissolution of the Soviet Union. As elsewhere in Central and Eastern Europe, the collapse of the former system was accompanied by a significant decrease in production, a rise in economic uncertainty, and a decline in the standard of living. Estonia's transition to a market economy featured relatively major adjustments and rapid restructuring. In retrospect, the chosen path of radical reforms and a liberal economic environment seems to have paid off in the vigorous economic growth that occurred following the mid-1990s (UNECE 2010).

Against the backdrop of theoretical considerations outlined in the previous section, the study explored the extent to which the stages and turning points in the country's economic development may have modulated the patterns of childbearing in Estonia. To address this issue, the study was organised into four inter-related streams, each of which is characterised by specific objectives, data sources and analytical methods:

1. *Trends and patterns in childbearing.* The first stream of research focused on fertility trends and patterns in Estonia. By revisiting the results of earlier studies in the field and adding new evidence from the most recent period, the analysis aimed to map the trajectory of the country's post-transition fertility development, and identify the principal turning points in the trend. Furthermore, the analysis applied a comparative lens and sought to pinpoint the characteristic features of Estonian fertility development.

2. *Macro-economic trends.* The second stream of research aimed to provide a generalised macro-level account of the country's post-war economic development by constructing, for the first time for Estonia, a continuous series of estimates of the gross national product. The comparison of the newly developed national estimates with those available for other countries allowed Estonia's development to be placed in comparative perspective and its performance monitored relative to other European countries and regions.

3. *Differentials in economic well-being across the population groups.* The third stream of research sought micro-level evidence concerning the variation in levels of economic well-being among the population. As the data to support this type of analysis were not readily available, the task involved a comprehensive archival search and the computerisation of household income surveys conducted in Estonia from the

1950s to the 1980s. Following careful quality assessment, these newly available data were used to explore shifts in the economic status of major subgroups of the population, defined by age, number of children, educational attainment and other characteristics, and the changes in their respective patterns over time. Owing to the focus of the surveys, differentials in economic well-being were operationalised mainly in terms of net equivalised household income and its derivatives.

4. *Differentials in childbearing associated with socio-economic characteristics.* The fourth stream of research focused on differentials in childbearing associated with education. In the context of demographic research, the relationship between female education, which can be regarded regarded as a proxy for earnings capacity and economic resources, and fertility has attracted considerable scholarly attention. This is the first time that kind of analysis has been conducted for Estonia, and its specific objective was to cast light on the role of economic opportunities and constraints in family formation decisions, and in transforming the social and economic environment of the country. The analysis focused on second births, as the transition to the first child had become fairly universal in the cohorts covered by the study, and in these circumstances, the decision to have a second child is critical to setting contemporary fertility levels and the ultimate family size of the population. As the educational differentials related to second births have been found to vary considerably across the countries and regions of Europe, the analysis also sought to ascertain the position of Estonia with respect to the education-childbearing nexus. To ensure the homogeneity of the target population, discussed in the preceding section, the analysis focuses on the native population.

The following section provides a concise overview of the data sources and methods used in the study, and the main findings. A summary of results is provided in the concluding section.

2. DATA AND METHODS

2.1 DATA SOURCES

The study draws on multiple sources of demographic and economic information. The analysis of fertility trends and patterns is based on vital and census statistics, compiled by the Estonian Statistics Office. Since the beginning of the 1990s, the Estonian Demographic Association has been carrying out systematic work to recalculate and harmonise national demographic data from the state socialist period, in order to overcome the statistical discontinuity between the Soviet period and the preceding and subsequent periods (Anderson *et al.* 1994, Katus and Puur 2006, Katus *et al.* 1997). The results have been entered into the Estonian Population Databank and also used in this dissertation. Publications and databases of the European Population Committee and Eurostat have been used to place Estonian trends into comparative perspective with other countries and regions (Council of Europe 2006, Eurostat 2010).

Regarding comparative macro-economic data, the compilation of macro-economic statistical series of European countries began in the interwar period (Maddison 2004). Major international projects were launched in the second half of the 20th century to render national series comparable (Kravis 1984, Kravis *et al.* 1978); the refinement of this data is still in progress and the coverage of different countries and regions remains uneven (Heston *et al.* August 2009). The lack of comparable economic data for the state socialist period in the former USSR and several CEE countries is mostly due to their methods of national accounting, but there are also errors in the statistics (e.g. Bergson 1947, Davies 2004, Kornai 1992). The western world invested considerable effort in researching the accounting system of the USSR (Studenski and Wyler 1947) and estimating its economic development (Bergson 1950a;b, Chapman 1954, Jasny 1947), but internationally comparable GDP series have not yet been established. The same issues apply to Estonia.

Thus, the study of the economic development and standard of living during the state socialist period presents serious challenges. This led the author of this dissertation to employ the least problematic economic indicators – measures of the physical volume of key agricultural and industrial production – in order to construct a time-series of Estonian physical output from 1920 to 2000. Inclusion of the pre-WWII period provides a longer time perspective and the context to evaluate development during the state socialist period. Production volume data was collected from different sources (statistical publications of the interwar period, unpublished materials from the archives of the Bureau of Statistics for the Soviet period, and its database) and harmonised according to contemporary definitions to the extent possible. Complete harmonisation, however, was not feasible due to gaps in

the series and irregularities in data collection for some time periods. The agricultural series are reasonably well covered, but industrial production includes only a basic series of the main sectors of industry. Services were mostly omitted due to measurement issues. The validity of agricultural production figures was investigated (for possible inflated production figures) by comparing them to data from neighbouring countries (see Klesment 2008b, Klesment and Valge 2007).

To gain insight into the economic well-being of the population at the micro-level, a special feasibility study was conducted to collect household income data from the Soviet period. The study started with the exploration of materials pertaining to the social statistics section of the Statistics Office, stored in the State Archive (funds R-10-17, R-10-18, R-10-27 – more than 8,000 volumes in total). As a result, two major collections were identified and examined: family budget surveys (conducted annually since 1952) and household income surveys (since 1958, but carried out systematically since 1967). After the preliminary mapping of the collections and weighing the advantages/disadvantages of both sources, the household income survey collection was selected for further research. The choice resulted from three main considerations: a significantly larger sample size in the household income surveys (more than 3,000 households), better comparability of subsets of the data over time, and feasibility in terms of the amount of work and resources. Also, Western observers had noted that this series of surveys was arguably the best source of micro-level income data in the USSR (McAuley 1979).

At the next stage, a detailed inventory of archival materials related to the household income surveys was compiled, including questionnaires, metadata (methodological materials, sample descriptions, interviewer's manuals) and results (tabulations, analytical reports, etc.). The inventory revealed that the collection was fairly complete. Most importantly, the full sets of questionnaires were located in the archive for six rounds of the survey (1958, 1972, 1975, 1978, 1981 and 1984). Despite the inability to locate the questionnaires for two rounds (1967 and 1987), it became obvious that the archival material had great potential to provide unique insight into the economic well-being of the population under the state socialist regime. Computerisation of the household income survey data was carried out in the archives, followed by data quality analysis and compilation of standard tabulations containing the main indicators for the years 1958 (n=8,630), 1975 (n=12,533), and 1981 (n=10,552) (published in Klesment and Sakkeus 2010). The main demographic value of the household income surveys is that it allows economic well-being to be linked to population variables. In addition to the income figures for members of the household, the surveys collected detailed information on household composition, the educational attainment of household members, housing conditions, and the availability of consumer durables.

The comparison of well-being during the state socialist era with that of the period of transition to a market economy required additional data sources. For that purpose, the Estonian Labor Force Survey (LFS) from 1995 was

considered appropriate due to its fairly large sample size (n=29,202).

Table 2.1.1: Data sources and methods by research directions

Objective	Data source	Methods
1. Trends and patterns in childbearing	Vital statistics; census data 2000; Estonian GGS 2004–2005.	Descriptive measures of period and cohort fertility, parity progression ratios, fertility intentions.
2. Macro-economic trends	Archival data: physical measures of production volume.	Harmonisation of time series, composite indices, backward extrapolation.
3. Differentials in economic well-being	Archival data: Household income surveys 1958, 1975, and 1981; Estonian LFS1995.	Descriptive statistics; linear regression modeling.
4. Differentials in childbearing	Estonian GGS 2004–2005.	Descriptive measures, parity progression ratios, event history analysis, piecewise constant intensity regression.

The analysis of childbearing differentials by socio-economic characteristics drew on the Estonian Gender and Generations Survey (GGS) from 2004–2005, carried out in the context of the international Gender and Generations Programme (Vikat *et al.* 2008). The GGS is a demographic survey (n=7,855) that uses the event history approach. As a result, time-dependent processes can be modelled using this data. The Estonian GGS questionnaire covers all the main demographic processes (parental home, home-leaving, partnering, birth career, migration, education, work career etc.) and also includes an additional module for health-related questions. A description of the Estonian GGS and standard tabulations is published in Katus *et al.* (2008a).

2.2 METHODS

Several analytical methods were used in this study. Fertility trends were analysed by means of period and cohort total fertility rates and parity progression ratios. Shifts in the timing of childbearing were ascertained by age of first birth and the age pattern of childbearing. Due to important changes in the timing of childbearing, the calculation of tempo-adjusted TFRs was deemed necessary. Fertility trends in Estonia were compared to those of major European regions.

Reconstructing the per capita GDP series combined backward extrapolation with physical volume indicators (not to be confused with the physical indicator regression method, which compares data from several countries to obtain an estimate of GDP[1]). In order to evaluate economic development during the state socialist period in Estonia, the Soviet period data

[1]The physical indicator regression method would require a country with similar eco-

was anchored to post-Soviet data. Fortunately, internationally comparable, purchasing power parity-adjusted estimates of GDP are available for the period since 1990 (UNECE 2010). These are probably the best figures for Estonia that have ever been produced, in terms of international comparability. In order to produce a time series matching the historical series calculated by A. Maddison (Maddison 2006), UNECE series were converted from 2005 US$ to 1990 US$. Furthermore, the GDP estimates prepared by the Estonian Statistics Office for the period 1980–1990[2] were linked to the UNECE series, resulting in a per capita GDP time series for 1980–2008 expressed in 1990 US$.

Figures for the earlier part of the state socialist period were estimated on the basis of physical volume indicators for key products. All product series were calculated per capita. Broad simplifications were necessary for the aggregation of single product series into more generalised indices. For instance, agricultural production was aggregated according to energy content, as explained by Klesment (2008b). To calculate industrial production, sectoral indices were constructed for industry, transport, and construction.[3] A weighted average was used to aggregate single product volume indices to create an economic sector index. Finally, the four sector indices were aggregated into a composite index using weights for each sector (according to its proportion of national income as reported in official statistics). This derived composite index was used as an estimate of economic growth for the period 1950–1980, and linked at 1980 to the 1990 US$ series, as noted above. For the interwar period, the study used calculations by Jaak Valge (2003), who estimated the series in relation to Maddison's figures. Valge's estimates were later adjusted by sectoral deflators (Klesment 2008a), which improved the precision of the growth rate to a certain extent. Regarding backward extrapolation from 1990, the relationship between the interwar period and the beginning of the 1950s was not established due to poor data availability for the 1940s.

The GDP estimates obtained in this manner for 1950–1979 rest on the assumption that growth in the so-called non-material production sector (the bulk of the tertiary sector that was not included in the material product system) was more or less comparable to growth in material production. The technical details of the estimation process are described in Klesment *et al.* (2010).

A different array of methods was used for the micro-data from the household

nomic structure and known GDP for comparison with a country with unknown GDP. This method is shortly explained in Harrison (1994).

[2]Material product system accounts were converted to a system of national accounts by the Statistics Office using methods suggested by United Nations' document F.20 "Comparison of the System of National Accounts (SNA) and the System of Balances of the National Economy (MPS)." These series are inflation-adjusted and include all sectors of an economy. See Eesti Statistika (1992).

[3]Industry includes energy production, heavy and light industry, the timber and paper industry, and the production of construction materials. Transport includes the transport of freight by rail, road and sea. Construction refers to square meters per capita of new construction.

income surveys; a methodological description of this part of the study is included in Klesment and Sakkeus (2010). The first step was to analyse the programme of household income surveys and procedures from different survey rounds and to identify variations in the methodology. Three household income surveys were selected for computerisation, processing and tabulation (1958, 1975, and 1981). Due to slight variations in the questionnaires, a data entry program was tailored for each survey round. Raw data were converted to Stata statistical program files for further processing. The processing for analysis included systematic data quality checks (for data entry errors and other inconsistencies) and cleaning. The analytical aspect required computation of a set of derived variables, from both the individual and household perspective (standardised household size, net equalised household income, etc.) that are observable in standard tabulations. As a result, the household income data yielded income distribution indicators that are internationally comparable.

Another analytical approach, called event history analysis (e.g. Blossfeld and Rohwer 2002), was applied to analyse the data from the 2004–2005 Estonian GGS. Event history analysis is a method that makes it possible to follow the transition of subjects from one status to another, which reveals a demographic process at the macro-level. Furthermore, it is possible to take into account the changes of covariates during the period of the process that are expected to have an effect on the transition. A study that examined the transition to second child was carried out employing these techniques. The study focused primarily on the effect of educational attainment on women's decisions to have a second child. The event history approach combined with regression analysis allowed the influence of education on reproductive behaviour to be estimated. Since the Estonian GGS sample includes generations born since 1924, it was possible to study the effect of education under different societal regimes and at different stages of an individual's life. Piecewise constant-intensity regression was used for modelling purposes, including a number of time-dependent (e.g. educational level, activity status, marital status) and fixed-time covariates. The methodological details of the intensity regression models are explained in Klesment and Puur (2010a;b).

3. RESULTS

Macro and micro level results were obtained within the framework of this dissertation. Both types of results are further subdivided into demographic and economic issues. The first part of this section describes the findings from the macro level analyses, both with regard to fertility development and the economic context, and is followed by the findings from the micro level analyses. The interpretation and synthesis of the results pertaining to fertility trends and the economic context is provided in Section 4.

3.1 MACRO LEVEL RESULTS

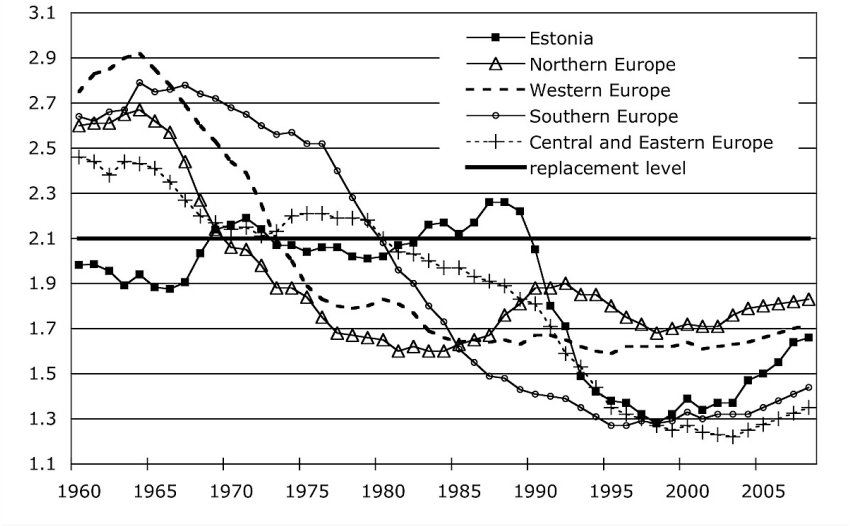
3.1.1 Childbearing trends

Modern demographic patterns emerged in Estonia and Latvia earlier than in the other nations of the Russian Empire and simultaneously with the forerunners of the fertility transition in Europe (Coale *et al.* 1979, Coale and Watkins 1986). With regard to the period addressed in this study, the analysis of childbearing trends and patterns (Klesment *et al.* 2010) corroborates the main finding of previous studies – that the similarity of fertility development in Estonia to that of Northern and Western Europe ended in the aftermath of the Second World War.

Unlike other nations that experienced sub-replacement fertility in the interwar years, Estonia did not experience a baby boom in the 1950s and 1960s. Instead, fertility remained below replacement level during that period, and was one of the lowest in the world (Figure 3.1.1). In the late 1960s, contrary to the trends emerging in the countries that were pioneering the second demographic transition, Estonian fertility rates increased and stayed close to replacement level for the two following decades, until the beginning of the 1990s. The increase in fertility levels was corroborated by the trend in completed cohort fertility that increased from 1.8 children per woman among the generations of the native population born in the late 1920s to 2.1 in the birth cohorts of the late 1950s and early 1960s. Examination of parity progression ratios allows us to conclude that the upward trend in completed fertility in that cohort range was driven by several concurrent shifts in parity progression. On the one hand, these cohorts experienced a decrease in the proportions of childless women and women with only one child. At the same time, there was an increase in the relative number of women with two and three children, and, to some extent, also in higher parities.

In comparative perspective, the analysis revealed that the combination of these two features – the absence of both a baby boom and a baby bust – resulted in noticeable stability of the post-war Estonian fertility levels

Figure 3.1.1: Total fertility rate in Estonia and European regions, 1960–2008.



Source: Council of Europe (2006), Eurostat (2010).

up until the 1990s. Somewhat paradoxically, it was precisely this stability that, by the end of the 1980s, brought about the reversal of the country's position from the bottom to the top – relative to the fertility levels of the major regions of Europe.

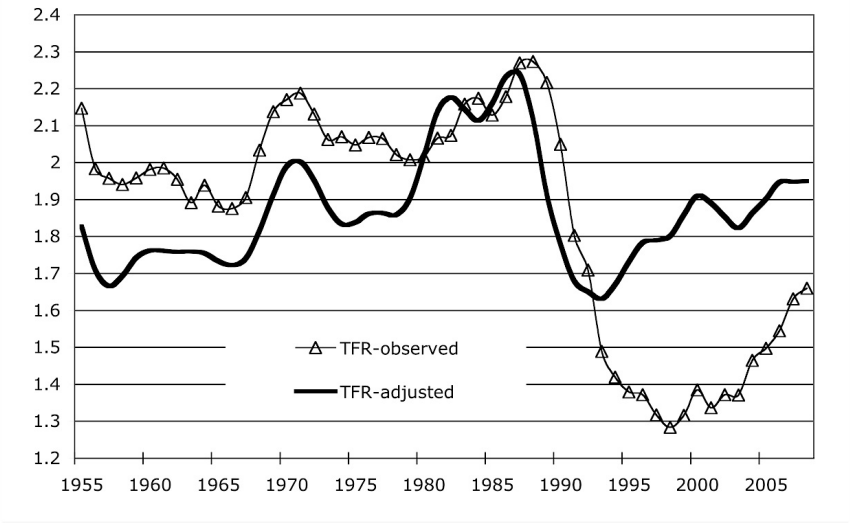
As elsewhere in Central and Eastern Europe, the 1990s witnessed a steep downturn in fertility rates. In less than a decade, an almost twofold reduction in the number of births occurred in Estonia, and the period TFR fell below 1.3 children per woman in the late 1990s. In relative terms, the decline in Estonia appeared to be one of the most precipitous among the countries of the CEE region. However, the analysis showed that for several reasons the scale of fertility decline in the 1990s tends to be overstated.

First, it was the relatively high fertility level in the preceding decades rather than the low level in the 1990s that exaggerated the scale of fertility decline in the country. Second, the analysis revealed the salient role of the "postponement transition" – the term coined by Kohler *et al.* (2002) to emphasise the universality of the phenomenon – that started in Estonia after the beginning of the 1990s. The adjustment of the fertility rate indicates that the change in the tempo of childbearing accounts for approximately half of the decrease that occurred in the period TFR in the early 1990s. The synchroneity of the start of fertility postponement and the onset of societal transformation leaves little doubt about the causal link between the two.

For earlier periods, the results indicate the opposite gradient of the tempo effect, with the prolonged advancement of childbearing pushing fertility lev-

els persistently upward. The consideration of tempo-effects[1] over a longer time-span yielded a novel and rather unusual perspective on the post-war fertility trend in Estonia (Figure 3.1.2). It turns out that the opposite shifts in the tempo of childbearing account for a major share of the contrast between fertility levels observed before and after the societal transformation. Except for the 1980s and early 1990s, the tempo-adjusted fertility levels appear fairly similar during the period of state socialism and the contemporary societal regime.

Figure 3.1.2: Observed and tempo-adjusted TFR in Estonia 1955–2008.



Source: census 2000, own calculations.

After reaching its lowest point in 1998 with a TFR between 1.2 and 1.3, period fertility gradually began to increase at the beginning of the 21st century. With some fluctuations, Estonia has witnessed a parallel increase in tempo-adjusted and non-adjusted period TFRs. In 2008, the observed total fertility rate reached 1.66, and the tempo-adjusted measure reached 1.95. The analysis revealed that in comparative perspective, Estonia has demonstrated a stronger recuperation of fertility levels than most countries of Central and Eastern Europe. Since 2005, Estonia has exhibited the highest total fertility rate in the region.

Finally, a significant amount of uncertainty remains regarding future trends in completed fertility and generation replacement involving the cohorts born in the late 1970s and early 1980s. Nonetheless, the analysis allows us to sketch a tentative outline of these trends. Although a gradual downward drift from replacement level is certain, its scale is likely to be much smaller than indicated by the drop in period fertility rates in the late 1990s and early

[1]The formula for calculation of the tempo-adjusted total fertility rate is offered by Bongaarts and Feeney (1998).

2000s. The evidence drawn from childbearing intentions and age-cumulative fertility rates indicates that among the native population, completed fertility may approach 1.8–1.9 for the generations born in the mid- and late-1970s. This constitutes a considerable decline in comparison with the birth cohorts of the late 1950s and early 1960s, who had more than 2.1 children on average, but at the same time it is on par with the cohorts born in the late 1920s and 1930s. However, as is the case with any prediction, such an assertion depends on the extent to which the younger generations will recuperate their delayed births, particularly second births, in their thirties.

3.1.2 Economic trends

The analysis of macro-economic trends can be regarded as a major contribution of this study, because generalised quantitative accounts of long-range economic development are severely intermittent for Estonia. As noted earlier, for the 20th century, such accounts are available only for the 1920s–1930s (Valge 2003) and for the transition from the state socialist system to a market economy (Eesti Statistika 1992; 2004) Between these two periods, comparable time series for the state socialist period are still virtually missing. Angus Maddison – one of the most frequently cited (but also criticised[2]) contemporary authors in economic history, who estimated the per capita GDP series for most of the countries in the world – has provided only an occasional estimate (year 1973) for the USSR and its republics.

The main results from the reconstruction of the GDP per capita series are portrayed in Figure 3.1.3. The results show that in the interwar period, Estonia's economic growth was relatively slow, similar to other European countries at that time. A closer look at the analysis revealed a rapid advancement in the first half of the 1920s, followed by a slowdown and the Great Depression. The second episode of interwar economic growth in Estonia began after the economic crisis. Due to fairly strong growth in the 1930s, the average annual growth rate from 1923 to 1938 was 3.2%.

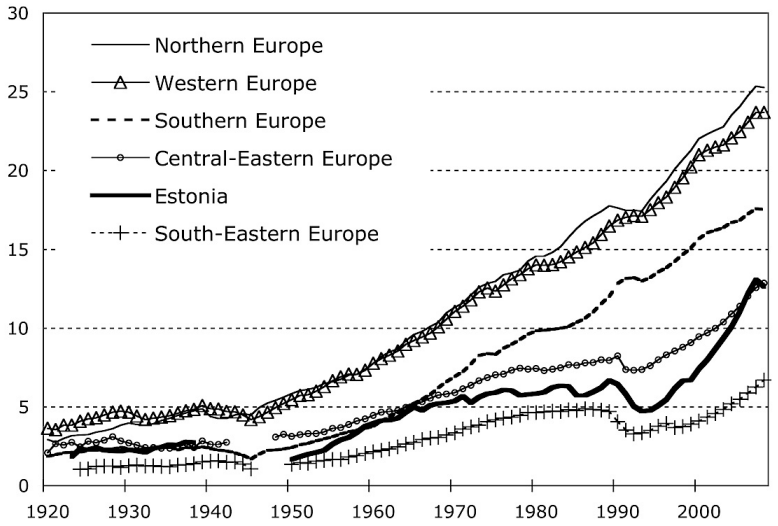
In comparative perspective, the analysis revealed that in the interwar period, Estonia's GDP level was rather close to the average for Central-Eastern Europe and Southern Europe, but clearly above South-Eastern Europe. On the other hand, the levels in Northern and Western Europe were much higher than in Estonia. With regard to individual countries, Estonia's per capita GDP was comparable to Finland, Czechoslovakia and Hungary, and above that of Poland and the USSR.[3] The vigorous economic growth towards the end of the 1930s contributed to the gradual improvement of the country's position in international rankings.

The results disclose a major setback in the level of economic development

[2]For criticism of Maddison's estimates see Clark (2009).

[3]For other estimates about CEE and the USSR in the interwar period see for example Harrison (1994). For the post-WWII period CEE countries, estimates are offered by Alton (1962; 1963), Alton and Korbonski (1965), Marer (1985).

Figure 3.1.3: GDP per capita in thousand 1990 US$. Estonia and European regions, 1920–2008.



Sources: A.Maddison. Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD, electronic file available at http://www.ggdc.net/maddison/, last accessed June 20, 2010; Maddison (2007); UNECE Statistical Division Database; Valge (2003); Eesti Statistika (1992); Klesment and Valge (2007). Author's calculations.
Note: 1990-2008 are PPP-adjusted UNECE figures. The regions are defined as follows: Northern Europe – Denmark, Finland, Norway, Sweden; Western Europe – Austria, Belgium, France, Germany, Netherlands, Switzerland, United Kingdom, Ireland; Southern Europe – Greece, Italy, Portugal, Spain; Central-Eastern Europe – Czech Republic, Hungary, Poland; South-Eastern Europe – Bulgaria, Romania, Albania, Yugoslavia until 1989.

in Estonia following the Second World War. Although gaps in the input data did not allow the reconstruction to be extended to the 1940s, in the early 1950s the estimated per capita GDP is still below the level attained towards the end of the interwar period. The analysis suggests that despite high rates of economic growth – judging from the composite volume index, annual growth rates in the 1950s and 1960s reached 9–10%, pre-war per capita GDP was achieved in Estonia no earlier than the late 1950s. However, bearing in mind the nature of economic development in the USSR, which strongly favoured the military and heavy industries, it seems likely that in terms of the standard of living, GDP parity with the late interwar period was reached only in the 1960s.

The setback caused by WWII and its aftermath is substantiated by international comparison. The results show that in the early 1950s, the per capita GDP in Estonia had fallen below the levels observed in all the major regions of Europe, except the South-Eastern. The relatively strong economic growth, which is probably parallel to the USSR's at that time (Allen 2001),

was found to continue in Estonia until the 1960s, when Estonia closed the gap with Central-Eastern and Southern Europe. However, the analysis revealed that the convergence in per capita GDP levels was short-lived. In the 1970s and 1980s, a marked slowdown occurred and negative annual growth rates recurred in Estonia. During that period, the disparity between the levels of economic development in Estonia and the CEE countries reappeared. Especially pronounced is the growing disparity with Southern Europe, which in a broader framework reveals the difference in economic performance between centrally planned and market economies in Europe. Our estimates also suggest that Maddison's estimate for Estonia in the 1970s is unrealistically high and should be corrected downwards.

The trajectory of per capita GDP since 1990 confirms the efficiency of economic reforms conducted in Estonia since the beginning of the 1990s. Despite the steep decline in per capita GDP at the early stage of transition, the recovery has proven to be vigorous and the GDP levels have risen more rapidly than in most countries of the former Eastern bloc. As a result, Estonia has closed the gap – for the second time since the end of the Second World War – with the countries of Central and Eastern Europe. It is assumed that the long-range trajectory of Estonia's per capita GDP revealed by this analysis offers not only a generalised description of the country's economic performance but is also valid as an approximation of the changes in the standard of living.

3.2 MICRO LEVEL ANALYSIS

3.2.1 Data quality of household income surveys

This section presents the results of an archival study that investigated the possibility of retrieving the individual records (micro-data) of household surveys administered by Soviet authorities in Estonia from the 1950s to the 1980s, and assessed their value for contemporary demographic and social research. The detailed results of the study have been published in the TLÜ EDI series (Klesment and Sakkeus 2010). The computerised datasets were subjected to systematic data quality analysis, guided by the findings from the analysis of the metadata, and covering all key aspects of survey data.

The surveys collected information on basic socio-demographic characteristics and various types of incomes (e.g. wages, salary, pensions, stipends, family allowances) for all household members, the dwelling, consumer durables, and small-scale agricultural production for the household. Among these items, the reliability and accuracy of income data often poses a problem in survey statistics; however, this concern seems fairly minor in the case of Soviet income surveys – the analysis revealed that the information on salaries (the main source of income) was not self-reported but retrieved from the bookkeeping of enterprises/organisations in which the respondents were employed. Furthermore, a short time reference (the preceding month) and the limited variability of incomes in a state socialist setting contributed

to the accuracy of the data. The analyses also show that the data collection procedure included various features to minimise errors caused by unobservant interviewers, ranging from simple checksums in the questionnaire to systematic re-interviewing. Consequently, conceptual and reporting errors appear minor.

Table 3.2.1: Household income survey data quality

Type of error	Assessment
1. Conceptual error	Minor: measurement of incomes generally conforms the concept of disposable net income; with minor adjustment, the income data and socio-demographic characteristics are comparable to contemporary statistical standards.
2. Reporting error	Minor: incomes are reported with high accuracy; item-specific non-response and digit preference are very low; data are internally consistent.
3. Processing error	Minor: the prevalence of errors in editing, coding, data entry and processing is low and does not imply systematic bias.
4. Coverage error	Major: households with all members economically inactive, particularly elderly households are underrepresented; in 1958 survey the agricultural population is grossly underrepresented. To account for the problem, post-stratification is applied; the data for older age groups (60+) should be treated with caution.
5. Non-response error	Minor: non-response rates are very low
6. Sampling error	Minor: sample sizes are sufficiently large to provide reliable estimates.

Source: Klesment and Sakkeus (2010).

In the context of today's concern about persistently growing reluctance towards survey participation, the analysis revealed very low unit non-response to the Soviet income surveys in Estonia. Refusals were almost exceptional, and non-participation occurred mainly due to changes in residence, employment or ill health. However, an obvious problem was found in the coverage of the survey. Income surveys employed a two-stage procedure with the samples of responding households. In the first stage, instead of sampling area units – a standard approach in household surveys – the Soviet income surveys selected enterprises/organisations from a list of economic entities, stratified by sectors of the national economy. In the second stage, employees were selected from enterprises/organisations sampled in the first stage. Although both stages were carefully implemented, from the population perspective, the procedure prevented the inclusion of households in which all members were economically inactive. To address this problem, since 1975

special subsamples of retirees were added to the surveys. Also, it was established that the samples of two earlier surveys (1958 and 1967) did not include collective farmers.

The tests performed against the population censuses corroborated the findings from metadata analysis with regard to coverage error. In particular, the analysis revealed an underrepresentation of the elderly population: although the introduction of subsamples of retirees had alleviated the problem, they were evidently too small to completely remove the bias. Due to the sampling procedure, economically active persons and those residing with adult children were found to be overrepresented among the older respondents in the surveys. To account for the observed coverage error and reduce the resulting bias, a post-stratification procedure was deemed necessary. Using external weights from censuses, the procedure adjusts the proportions of the sample population with respect to 5 key demographic characteristics (Klesment and Sakkeus 2010). In regard to other types of survey error (e.g. item non-response, digit preference, internal consistency), the micro-data analysis confirmed the high quality of the data. The main findings from the data quality analysis are summarised in Table 3.2.1.

The overall assessment of the quality of the newly computerised micro-data is good. With the main caveats identified, the material household surveys provide a unique insight into the variation in economic well-being across population groups since the late 1950s.

3.2.2 Economic well-being across population groups

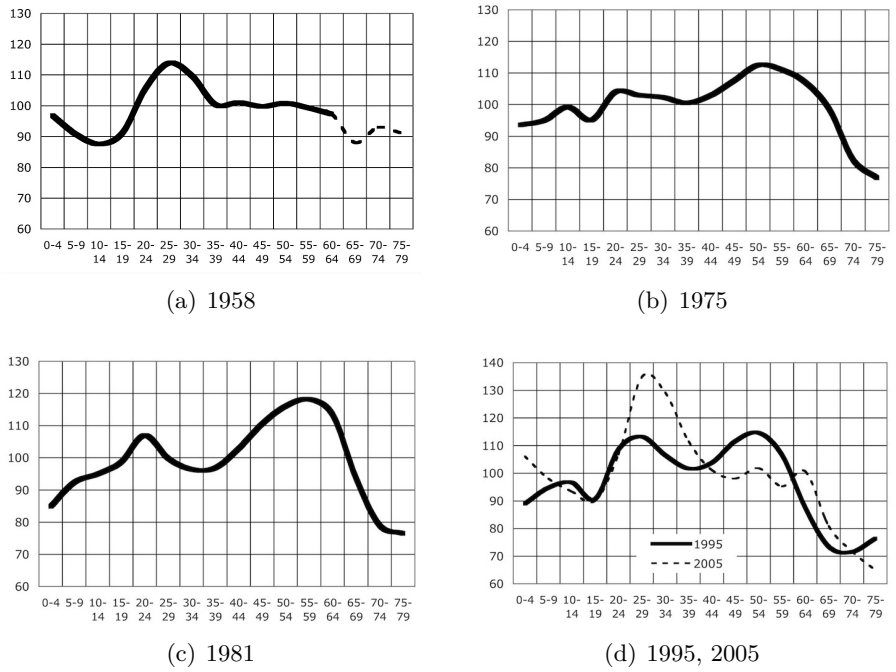
This section summarises the first results of the analysis of household income surveys carried out in Estonia during the state socialist period and computerised in the framework of the doctoral project. As explained above, the main scholarly value of these surveys stems from their capacity to document the differentials in economic status and well-being among the population, and the changes in their respective patterns that have evolved over time.

Detailed results of the analysis are available in the volume of standard tabulations published in the TLÜ EDI series (Klesment and Sakkeus 2010). The tabulations systematically map the distribution of economic well-being and its main components (income, housing conditions, consumer durables, etc.) across subgroups of the population defined by age, gender, educational attainment, settlement type, native/foreign origin, partnership status, activity status and employment sector and household type. This material can be explored from a wide range of analytical viewpoints; the presentation in this section draws attention to aspects that are considered to be of central importance in the demographic framework.

Figure 3.2.1 presents the age profiles of net equivalised household income constructed from the micro-data of the 1958, 1975 and 1981 income surveys. To allow for comparison with the transition and market economy settings, the results from the Estonian Labour Force Survey (1995) and the

Estonian component of the EU-SILC (2005) are added. These profiles indicate how economic well-being was distributed and re-distributed across major demographic segments of the population – children, young adults, the middle-aged and the elderly – in the changing societal environment. In analyses of well-being, such an overarching view is often missing. The institutional age segregation and the concomitant split between the research and policy communities addressing the needs of the young and their families, on the one hand, and those focusing on the aged, on the other hand, entails a considerable risk of neglecting some vital welfare implications of different societal regimes.

Figure 3.2.1: Age profiles of net equivalised household income. Average income in each survey = 100%.



(a) 1958 (b) 1975

(c) 1981 (d) 1995, 2005

Sources: Individual data from the Estonian household income surveys 1958, 1975, and 1981; Estonian Labor Force Survey 1995. Aggregate data from Estonian Social Survey 2005 provided by Statistical Office. Author's estimates.

Perhaps the most unexpected finding pertains to the strong variability of age profiles, across as well as within the two socio-economic regimes that have followed each other in Estonia since the Second World War. A brief glance is enough to reveal that there are no identical age profiles in the figure – the shape of the income curve is transformed in each successive decade. Overall, this finding seems to pinpoint the remarkable dynamism of the age pattern of economic well-being.

At a more specific level, the results allow us to identify the demographic

segments of the population that have fared better or worse in different periods since the middle of the 20th century in Estonia. In the late 1950s, young adults in their late 20s and early 30s seem to have outperformed all other age groups in terms of household income, whereas the lowest incomes were characteristic of teenage children and their families. By the mid-1970s, the income peak had shifted from young adults to the older population of pre-retirement age, in their 50s and early 60s. Compared to the earlier period, the largest relative losses were sustained by the elderly; however, this part of the findings probably represents a statistical artefact rather than a true deterioration in the income maintenance of older persons.[4] The 1980s witnessed the emergence of a twin-peak profile with a minor peak for young adults in their early 20s and a major peak around the statutory retirement age.

The analysis corroborates the popular notion about "winners" and "losers" during the transition to a market economy. The age profiles show a considerable weakening in the relative economic position of the middle-aged population and a rise in the well-being of young adults. As a result of these shifts, by the mid-1990s, the earlier and later peaks of the income profile had become almost equal. The evidence for the early 21st century, presented in the fourth panel of Figure 3.2.1, reveals a further re-distribution of economic well-being along the age scale, with further significant gains made by young adults in their late 20s and 30s. In part, these improvements are mirrored among young children who are exhibiting – possibly for the first time ever – household income above the population average.

From the analytical perspective, the transformation of income profiles portrayed by our analysis constitutes the combined outcomes of a host of demographic, social and economic factors. In the demographic domain, these influences include patterns of childbearing, union formation and dissolution, longevity and generational co-residence that mould the size and composition of households. The socio-economic domain is comprised of patterns of male and female employment, levels of unemployment, labour market entry and retirement, the role of seniority in wage-setting mechanisms, transfers and income support schemes for various segments of the non-active population, etc. The access to micro-data allows us to further elaborate on the role of different factors in bringing about the observed transformations in income profiles.

Given the demographic underpinning of the study, special attention was paid to the economic well-being of children. The evidence in Figure 3.2.1 shows that at any time – with the possible exception in the case of 2005 – children have persistently exhibited household incomes below the population average. In line with our expectation, the contribution of children to the economic well-being of households turned out to be strongly parity-specific (Table 3.2.2).

[4]The 1958 income survey, unlike the later surveys, does not include non-working pensioner households. This biases the level of income in age groups 65+ upwards, marked as dotted line in Figure 3.2.1(a).

Table 3.2.2: Net equivalised household income by number of children

1958	Coeff.	Std. Err.
0	0.124**	(0.011)
1	Reference category	
2	-0.140**	(0.011)
3+	-0.263**	(0.034)
Intercept	4.429**	(0.023)
N		8,630
R^2		0.256
$F_{(14,8615)}$		211.512

1975	Coeff.	Std. Err.
0	0.136**	(0.009)
1	Reference category	
2	-0.052**	(0.009)
3+	-0.313**	(0.024)
Intercept	4.162**	(0.020)
N		12,531
R^2		0.192
$F_{(15,12515)}$		198.798

1981	Coeff.	Std. Err.
0	0.190**	(0.010)
1	Reference category	
2	-0.110**	(0.009)
3+	-0.281**	(0.022)
Intercept	4.094**	(0.020)
N		10,549
R^2		0.292
$F_{(15,10533)}$		289.664

1995	Coeff.	Std. Err.
0	0.098**	(0.008)
1	Reference category	
2	-0.103**	(0.009)
3+	-0.344**	(0.025)
Intercept	4.518**	(0.022)
N		28,415
R^2		0.257
$F_{(13,28401)}$		755.203

Sources: Household Income Surveys 1958, 1975 and 1981; Estonian Labor Force Survey 1995.
Note: dependent variable is the logarithm of household income index (average net equivalised household income at given year taken as 100%). Controlled for gender, age group, educational attainment, type of settlement, nativity, and the number of employed in the household. For 1995, outliers (household income less than 15% of the average) were excluded for better fit.
Significance levels: † : 10% ∗ : 5% ∗∗ : 1%

Controlling for the influence of other factors, the regression models indicate a prevailingly inverse association between parity and equivalised per capita household income. The effect mainly operates through the varying ratio between income earners and dependent household members. Model estimates for successive surveys reveal some variation in parameter estimates; however, the general pattern remains unaltered and there seems to be no clear trend towards an increase or decrease in economic risks associated with the presence of children. In other words, our analysis suggests that there have been no major changes in the ways the number of children has affected the relative level of family income under different societal regimes.

Beyond the issues and details that have been omitted in this summary, in our view, the main thrust of the achieved results is that the range of factors affecting economic well-being and the numerous ways in which these factors interact make it very difficult, if not impossible, to predict the ultimate outcome of the distribution of well-being across population groups. In a broader framework, these results underscore the value of systematically applying a demographic perspective to the analyses of economic well-being.

3.2.3 Effects of education on second births

The results presented in this section focus on socio-economic differentials in childbearing behaviour. The analysis employed data from the Estonian GGS, conducted in 2004–2005. The results have been published in the TLÜ EDI series (Klesment and Puur 2010a), and in a journal article in *Demographic Research* (Klesment and Puur 2010b).

The analysis focused on the progression from first to second births, which is known to play a salient role in shaping the childbearing levels and parity distribution in contemporary low-fertility settings. Socio-economic status was represented by female education, which, for a number of reasons, has attracted considerable scholarly interest among demographers. First, women with advanced education are regarded as trendsetters who introduce novel behaviours that are subsequently adopted by other groups. Second, the comparison of fertility patterns among women with different levels of schooling contributes to the understanding of opportunities and constraints within which family formation decisions are made. And third, as the proportion of young people who attain higher education has been rising with each successive cohort, educational differentials are increasingly influencing fertility trends on the aggregate level. The ways in which educational attainment and enrolment have influenced the transition to second births as the country moved from one social system to another was of particular interest to this analysis.

To analyse the effect of education on the likelihood of second births, the differences in the ultimate number of children and the cohort parity progression ratios were examined, and a series of piecewise constant intensity regression models were estimated. The analysis focused on native women in the birth cohorts 1924–83. Post-war immigrants and their descendants were excluded from the analysis for reasons explained in Section 1.

The descriptive analysis drew additional evidence from the 2000 population census, which allowed us to include generations born after the turn of the 20th century, who have shaped the fertility trend since the 1930s. The analysis revealed a convergence in completed fertility among women with different educational attainment born from the 1900s to the end of the 1930s, and the stability of educational differentials in the following generations. The descriptive analysis also revealed that the rise in fertility that followed the secular decline characteristic of the demographic transition was found to be positively associated with educational attainment – in relative terms, it was most pronounced for women with tertiary education. Similar findings emerged from the analysis of parity progression ratios (Klesment and Puur 2010a). In particular, with regard to the transition to second births, women with tertiary education almost equalled their counterparts with vocational and general secondary education. In comparative perspective, the observed patterns resemble the findings recently reported for the Nordic countries (Andersson *et al.* 2009).

The relationship between educational attainment and the propensity of second births was further elaborated in the multivariate framework, by esti-

mating a series of intensity regression models. Unlike previous studies on the countries of Eastern Europe, the modelling resulted in a consistently positive and relatively strong effect of high educational attainment on second births in Estonia. The elevated intensity of second births for women with vocational and tertiary education appears to be a genuine result and is not due to misspecification of the model. In fact, the effect grew stronger after controlling for age at the onset of childbearing, partnership status and partner's education, and socio-demographic background characteristics (Table 3.2.3).

Table 3.2.3: Effect of educational attainment on transition to second birth. Initial and final main effects model.

	Initial model		Final model	
Educational level				
Basic	1.09	(0.220)	1.08	(0.326)
Secondary	1		1	
Vocational	1.17	(0.005)	1.22	(0.001)
Tertiary	1.19	(0.016)	1.52	(0.000)
Activity status				
Studying	0.89	(0.460)	0.75	(0.062)
Working	1		1	
Home	1.16	(0.008)	1.14	(0.027)
Log-likelihood 0	-4681		-4681	
Log-likelihood	-4414		-4112	

Note: Both models controlled for years since first birth. The final model is controlled for age at first birth, partnership status, partner's education, calendar period, residence type of parental home, and number of brothers-sisters.
Note: Parameter estimates are presented as relative risks, reference category = 1; p-values are in parentheses. Source: Estonian GGS 2004–05.

The strengthening of the effect suggests that the later onset of childbearing, because of decreased fecundity at later ages and/or other reasons, partially offsets the higher rate of progression to second births characteristic of highly educated women. The effect of low educational attainment remained marginally positive in the final model; however, it failed to reach the level of statistical significance and does not approach the effect observed for higher levels of education. The results for educational participation indicate an inverse association between the incidence of second birth and school enrolment.

To gain insight into changes in the effect of education, the analysis examined interactions between calendar period and education variables. Contrary to expectations based on the micro-economic theory, however, the data revealed that the largest differences associated with educational attainment occurred during the period of state socialism.[5] In addition, the pattern is

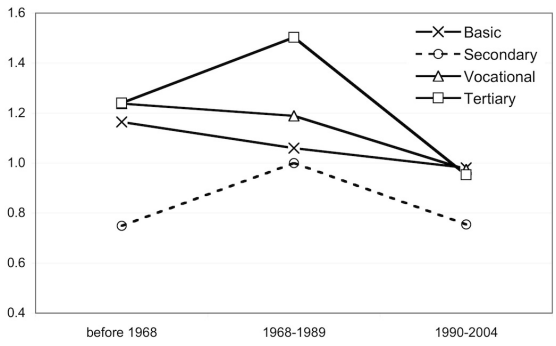
[5]According to author's calculations based on the 1958, 1975 and 1981 household income surveys, during the state socialist period, the wage premium for having higher education compared to secondary education was about 18% for both sexes, 25% if only female wage income is considered. However, wage differentials due to education had a decreasing trend from the 1950s to 1980s, which is revealed by household income survey data. In the post-socialist period, on the other hand, the relative income potential of the highly educated increases substantially.

not uniform, but changes from one sub-period to another (Figure 3.2.2).

In the 1950s and 1960s, the relationship between women's level of education and progression to second births appeared U-shaped. The propensity to have a second child was lowest among women with general secondary education, while both lower and higher educational attainment were associated with an elevated incidence of second births. In the 1970s and 1980s, the pattern transforms from a U-shape to an inverse L-shape. The effect of tertiary education maintained its strong positive gradient, whereas a pronounced reduction was characteristic of women with vocational education, and low education ceased to have a positive effect on second birth rates. For the period since 1990, the analysis indicated that the positive gradient of incidence of second births became weaker for women with high educational attainment. On the other hand, it neither disappeared nor reversed direction.

As the relative incidence of women with lower levels of education grew stronger, the relationship between educational attainment and transition to second births returned to the U-shape observed in the earlier stages of state socialism. Contrary to the prevailing notion of societal transformation – a period of sharply rising contrasts and inequality among social groups – our results indicate that since 1990, there has been a noticeable contraction of educational differences in the propensity to have a second child. Neither did the analysis reveal an increase in incompatibility between educational enrolment and the likelihood of having a second child, as compared to the status of other activities (working or being at home). In the concluding sections, Klesment and Puur (2010a;b) offer some plausible explanations for the observed patterns.

Figure 3.2.2: Interaction of educational attainment and calendar period.



Source: Estonian GGS 2004–05.
Note: controlled for years since first birth, age at first birth, partnership status, partner's education, calendar period, residence type of parental home, and number of brothers-sisters.

4. DISCUSSION OF RESULTS

This study has addressed the childbearing trends and patterns in Estonia in the second half of the 20th century, in the context of the economic development of the country during the same period. As shown in the preceding sections, the similarity of fertility trends in Estonia and other countries of the early demographic transition was lost in the aftermath of the Second World War. The lack of a baby boom in the 1950s and early 1960s, and the rise of fertility to near replacement levels in the 1970s and 1980s were found to account for the observed deviance from the latter regions. Estonia's post-war fertility trends also did not conform to the developments in most countries of Central and Eastern Europe, a feature that was further highlighted by an analysis of educational differentials in childbearing.

In search of possible explanations, the study examined the concurrent economic development of the country, combining the evidence from both macro-level (reconstructed internationally comparable time series of the national GDP) and micro-level (newly computerised data from Soviet household income surveys). To what extent, then, can this new evidence on the country's economic performance and the distribution of economic well-being among subgroups of the population account for the observed features in the patterns of childbearing in post-war Estonia?

Starting from the low fertility during the immediate post-war decades, the estimates produced in the study did indeed indicate a pronounced setback in per capita GDP in Estonia in the aftermath of WWII. Although the estimates did not cover the late 1940s, a crude interpolation, based on the experience of countries for which continuous data are available, is enough to reveal the severity of the decline that inevitably translated into a sharp downturn in the standard of living. The evidence thus lends support to the "economic crisis" hypothesis and points to the hardship caused by Sovietisation as a plausible correlate of Estonia's low fertility in the early post-war decades. This inference appears to be in line with an earlier viewpoint expressed by Frejka and Sardon (2004) who, in their comprehensive account of childbearing trends in the low-fertility countries, pointed out that "post-war fertility developments in the Baltic countries have to [be] viewed in light of the political developments, namely the Soviet occupation and the extremely violent reorganisation /. . . / of the society."

Despite the plausible contribution of the economic downturn to the lack of a baby boom in Estonia, its role should not be overstated. If it had been the deciding factor, then in comparative perspective, the effect of an economic downturn on fertility levels should also be visible in other state socialist countries (CEE states or south-east European countries) in the post-WWII period. The latter, however, experienced fertility levels considerably higher than Estonia's in the post-WWII years, although their level of economic

development at that time was fairly close to that of Estonia. In the Baltic countries, for instance, Lithuania experienced an economic downturn and transformation very similar to Estonia's, but its fertility rate remained significantly higher until the 1960s (Katus *et al.* 2009). It is therefore plausible that in Estonia, as well as in Latvia, the demographic stage reached in the 1920s and 1930s – the wide spread of parity-specific fertility control in particular – was an essential precondition for sub-replacement fertility in these countries during the early postwar decades. In a broader perspective, this draws attention to the modulating effect of the stage of population development on the demographic outcomes of external influences, including macro-economic.

Obviously, it is difficult in hindsight to disentangle the influence of economic changes from that of direct repression and the overall rise in uncertainty. To address the issue, one requires a set of micro-data that would provide information pertaining to different aspects of life for generations who were in their prime childbearing years in the 1940s and 1950s. Although potentially feasible by means of retrospective surveys, such an endeavour is beyond the scope of this study.

The study reveals no macro-economic underpinnings for the rise in childbearing that brought Estonian fertility rates close to the replacement level during the 1970s and 1980s. The evidence drawn from reconstructed macro-economic trends corroborates the notion that the latter decades of state socialism were a period of slackening growth in Estonia. In comparative perspective, the country's economic performance lagged behind concurrent developments in other countries, including not only advanced market economies but also, to a certain extent, the former socialist countries of Central Europe. Neither did the analysis of fertility and macro-economic development reveal a connection between the two domains in other major regions of Europe during the same period. For instance, the steady upward trend in per capita GDP provides no clue to the reasons for the shift towards lower fertility that has predominated since the late 1960s, starting in Northern Europe.

From the micro-economic perspective, it was hypothesised that there might have been some changes in the centrally administered income distribution mechanisms that could have contributed to the economic well-being of families with children, and thus potentially account for the observed increases in fertility rates in the 1970s and 1980s. Such an assertion, however, was not supported by evidence from the household income surveys. The age-income profiles showed that during the period since the late 1950s, households with children appeared persistently economically disadvantaged in comparison to the average of the Estonian population. Perhaps, then, were families with a larger number of children somehow assisted by the state? Yet again, the results did not support such an assertion – an increase in the number of children was associated with systematically lower levels of per capita household income, a pattern virtually unchanged from one survey to the next. And finally, it was the age groups not actively engaged in childbearing or -rearing whose economic well-being improved in the 1970s and 1980s, rather

than families with children.

The inability to directly associate higher fertility levels in the 1970s and 1980s with specific developments in the economic domain does not necessarily imply that the idea of some economic correlates operating in the background of the demographic trends during that period must be completely abandoned. In our view, the higher fertility observed in the 1970s and 1980s may be considered in the context of a gradual "normalisation" of the standard of living after the turmoil of Sovietisation and the hardship it entailed. A plausible, albeit imperfect, trajectory of such normalisation is visible in the series of national GDP estimates developed as part of this study. In essence, this series exhibits a reasonable similarity to the dynamics of cohort fertility rates over the same period. Among the native population, these figures dropped to the lowest point (ca 1.8 children per woman) in generations born around the mid-1920s, followed by a gradual increase over the next 30 years. In such an interpretation, both of the observed features of the post-war childbearing trend in Estonia – comparatively low levels until the late 1960s and the ensuing rise – may be related to Sovietisation. In the immediate post-war decade, this process operated through direct negative influences, ranging from a marked downturn in the standard of living to overt political repression. Such influences lessened around the mid-1950s; however, the legacy of the early post-war years plausibly survived as a new benchmark against which the dynamics of social and economic conditions began to be evaluated.

The early phase of societal transition in the 1990s witnessed a pronounced deterioration in the country's economic performance and a parallel decline in fertility rates. This lends some support to the "economic crisis" hypothesis; however, the plausibility of the connection should not be overstated. In particular, the study highlighted the salient contribution of the "postponement transition" that began in Estonia shortly after the beginning of the 1990s and markedly swelled the scale of the fertility decrease in annually reported measures. In the mid- and late 1990s, the latter was driven exclusively by the shift towards later childbearing; the tempo-adjusted TFR never dropped below 1.6 children in Estonia. In interpreting these developments, we subscribe to the view that relates the onset of the fertility postponement transition in Central and Eastern Europe to the removal of mechanisms that upheld the pattern of comparatively early family formation in the state socialist setting, including the rules of housing allocation, limited enrolment in tertiary education, high job security and structured career paths etc. (Frejka 2008). As noted by Sobotka (2004), societal transformation noticeably increased economic uncertainty but it also expanded the possibilities for self-realisation, including enrolment in advanced education and career building. In such a context, postponement of childbearing can be seen as a rational response to profoundly transformed structure of opportunities and constraints (Kohler *et al.* 2006).

The study indicates a marked improvement in the country's macro-economic performance since the mid-1990s, coupled with a gradual recovery of fertility levels. At first, the recovery was restricted to tempo-adjusted measures but

subsequently the rise also became apparent in non-adjusted fertility indicators. Can these developments be accounted for by vigorous economic growth and the ensuing improvement in the standard of living? A positive contribution from economic trends seems plausible and in accord with conventional wisdom. At the same time, however, economic growth can hardly offer a sufficient explanation. This becomes evident when Estonia is compared to other countries. As revealed by the study, despite the postponement of childbearing strongly in progress, since 2005 Estonia has exhibited persistently the highest period TFRs of all the countries of Central and Eastern Europe. In the context of the latter region, neither Estonia's economic performance nor standard of living fully justifies the country's high ranking in terms of fertility.

What else then might underlie the observed pattern? This study cannot pretend to provide a definite answer but it points to some correlates that plausibly make a positive contribution to fertility levels and for which Estonia catches the eye in international comparisons. As pointed out in the article on childbearing differentials, an essential contributing factor may be gleaned from the institutional framework, which significantly reduced the opportunity costs of childbearing for families.

This factor relates to public childcare, which had already reached high coverage by the 1960s, and the availability and affordability of which deteriorated only temporarily for a short period after 1990. An advanced degree of reconciliation of work and parenthood can be judged from the levels of female employment, according to which Estonia has ranked close to the top in international comparisons, at least since the 1970s. Following a downturn in the early stages of the economic transition, the country has featured the highest rates of women's employment among the EU member states in the 2000s (European Commission 2009). Combined with a long-established pattern of female educational attainment, Estonia demonstrates an advanced degree of gender equity in the public sphere. In the private sphere, although it is difficult to establish each country's standing in this sector, gender equity seems less advanced in Estonia. Based on a PPA survey conducted in the early 2000s, in terms of prevailing gender role attitudes, Estonia is positioned in the middle of the countries included in the analysis (Philipov 2008).

Although the above argument seems valid, it still may not completely account for the childbearing patterns observed in this study. The insufficiency of the gender equity argument, particularly with regard to the public sphere, can be highlighted by the comparison of Estonia to other countries of Eastern Europe that shared basically similar institutional frameworks in the 1970s and 1980s. As revealed by the analysis of childbearing differentials, none of these countries have reported a persistently positive gradient of incidence of second births for highly educated women.

In search of additional correlates, we looked for commonalities between Estonia and the countries in which a positive effect of higher education on second and higher-order births has been found. As pointed out in the study, in this context, Estonia captures attention because of its advanced position

in terms of the spread of new family forms and the far-reaching disconnection of childbearing from marriage. Thus, with respect to the proportion of extra-marital births, Estonia has belonged to the leading nations in Europe since 2001, and is second after Iceland (Eurostat 2010). In a broader framework, it seems quite conceivable that the latter ranking and Estonia's comparatively high fertility are not accidental, as over the past decade or more in Europe, higher fertility has tended to accompany the decline of marriage and an increasing diversity of living arrangements. Shortly after the turn of the millennium, Lesthaeghe and Surkyn (2002) envisaged a similar scenario for the countries of Central and Eastern Europe. They posited that "those countries with the faster rate of transition in household structures will be the first to move to fertility recuperation /. . . /, and hence to be the first to recover to more acceptable levels of sub-replacement fertility." The evidence presented in this study indicates that for Estonia, Lesthaeghe and Surkyn's assertion has become a fact of life.

This brings us to the idea of the continuity or path dependency of demographic development that may manifest itself over long periods of time, notwithstanding intervening changes in socio-economic regimes. If the disconnection of childbearing from marriage and the spread of new family forms represent the hallmarks of the Second Demographic Transition, then Estonia, with its contemporary pattern of family formation and childbearing, obviously qualifies for inclusion among the forerunners of the SDT. In support of the latter argument, recent research on union formation has indicated that in Estonia the onset of the shifts towards new pathways of family formation dates back to the late 1960s – the same period in which the SDT came to the fore in Europe (Katus *et al.* 2007; 2008b, Rahnu 2009). It has been suggested that unlike in the latter countries, in Estonia the emerging behavioural patterns were partly disfavoured in the state socialist setting and became fully manifested only after the beginning of the 1990s. This reasoning would also help us to understand how it was possible for Estonia to catch up so quickly with the forerunners of the SDT in this regard.

In the longer-term historical perspective, the idea of path dependence draws on the synchronism between Estonia and other forerunner countries in the transition to a modern demographic regime and parity-specific family limitation, which started a century earlier (Coale 1994, Coale and Watkins 1986). In this light, the comparatively high fertility levels observed in recent years and the positive effect of high educational attainment on the incidence of second births may represent a characteristic of the fertility regime that is commonly associated with the countries of Northern and Western Europe.

To conclude, the proposed interpretations of the findings obtained in this study are not exclusive and should be further elaborated in the future. By the same token, the features of contemporary Estonian fertility trend continue to attract scholarly attention and merit careful monitoring and research.

5. CONCLUSIONS

The main conclusions drawn from the study can be summarised as follows:

1. In the aftermath of the Second World War, childbearing trends in Estonia lost their earlier similarity to the forerunner countries of the demographic transition in Europe. The lack of a postwar baby boom and the rise of fertility to near replacement levels in the 1970s and 1980s exemplify this divergence in both a period and cohort perspective; the divergence is also mirrored in the prolonged shift towards earlier childbearing that reversed only at the beginning of the 1990s. The timeframe in which these observed peculiarities in demographic patterns emerged and receded points to the effects of a changing societal context.

2. Macro-economic developmentst, reconstructed as part of the study, plausibly moulded fertility trends in post-war Estonia. Lending some support to the "economic crisis" hypothesis, this influence operated through a downturn in the standard of living in the immediate postwar decade, although it is difficult to isolate the role of economic conditions from other adverse influences of Sovietisation. In the context of the latter phenomenon, the gradual "normalisation" of the standard of living can be viewed as an economic underpinning of the somewhat higher fertility characteristic of the latter decades of state socialism in Estonia.

3. In comparative perspective, the salient role of the stage of population development must be acknowledged; it has been seen to modulate the demographic outcomes of external influences, including those arising from economic factors. In particular, the completion of the fertility transition by the 1930s formed an essential demographic antecedent for low fertility during the early post-war decades, when Sovietisation was occurring in Estonia. This helps to clarify why fertility rates below the replacement level did not emerge in most of the other countries of Central and Eastern Europe, such as Lithuania among the Baltic republics, that underwent similar economic changes.

4. Evidence from the newly computerised household income surveys provides no specific support for the economic argument in explaining the rise in fertility rates in the 1970s and 1980s. Since the late 1950s, households with children have been persistently economically disadvantaged relative to the average of the Estonian population. In general, a noticeable redistribution of economic well-being across population subgroups occurred during the state socialist period; however, it was the older middle-aged population, which was not engaged in childbearing and child-rearing, whose incomes improved in the 1970s and 1980s.

5. The rise in fertility rates since the 1990s has brought Estonia to the top-ranking position among the countries of Central and Eastern Europe. Although the positive contribution of successful reforms should not be downplayed, the recent fertility trends cannot be fully accounted for by the country's economic performance. In search for additional explanations, the study lends support to the arguments that underscore the role of gender equity and mechanisms that favour the reconciliation of parenthood and paid employment.

6. In the micro-economic framework, the positive gradient for higher education in the propensity to have a second child suggests that income effects supersede price effects in childbearing decisions among the native population of Estonia. The account derived from the study conforms to the notion that the more highly educated are the trendsetters of demographic behaviour.

7. In comparative perspective, the educational differentials in childbearing observed in Estonia exhibit a noticeable similarity to those prevailing in the countries of Northern and Western Europe. In addition to the remarkable spread of new family forms and the widespread disconnection of childbearing from marriage, this similarity can also be interpreted as evidence of a demographic path dependence which is manifesting itself over long periods of time, notwithstanding the intervening changes in societal regime.

In the policy context, one central conclusion seems to emanate from the different parts of this study. Sound economic performance and a decent standard of living should be regarded as essential prerequisites for the demographic sustainability of modern societies. At the same time, however, economic performance on its own is not a *panacea*. It must be coupled with a set of measures for different policy sectors that support couples and families in fulfilling their childbearing intentions. Although Estonia has been fairly successful in implementing such measures, efforts to strengthen the existing package of family-friendly policies should be continued.

In summary, several interpretations of the findings proposed in this study are not conclusive and should be further elaborated in the future. There are several avenues along which such prospective research could and should be pursued.

With regard to childbearing patterns in the early post-war decades, analyses drawing on life history surveys could be undertaken to provide a direct micro-level account of the alleged fertility impact of Sovietisation in Estonia. The analysis of educational fertility differentials, based on the Estonian GGS, could be extended to other parities (1st, 3rd) on the one hand, and to the population of foreign origin, on the other hand. An exploratory analysis has already indicated that the positive educational gradient observed for the native population may not be characteristic of post-war immigrants and their descendants in Estonia. A third direction of prospective fertility analysis should explore the rise in fertility since the late 1990s; in this regard, the

use of register data in particular could provide interesting new insights into the role of economic position and policy measures in childbearing decisions.

The GDP estimates for the state socialist period are also in need of further elaboration. In particular, the exercise of converting the MPS accounts into internationally comparable estimates, undertaken by the Statistics Office for the 1980s, should be extended to earlier periods. Finally, only modest use of the collection of Soviet household income surveys was made in this study. These unique datasets have the potential to provide novel insights into the welfare outcomes of Soviet economic and social policies. They could be instrumental in placing developments since the 1990s into a longer-term historical perspective and investigating the factors that may have influenced childbearing decisions under state socialism.

Eesti sündimusareng XX sajandi teisel poolel: majanduslik taust ja selle mõju

Kokkuvõte

Käesolev doktoritöö käsitleb Eesti sündimusarengut ja selle majanduslikku tausta 20. sajandi teisel poolel. Teoreetilistes käsitlustes on arutletud majanduslike mõjude olulisuse üle demograafilisele käitumisele ning erinevad koolkonnad on selles osas eri seisukohtadel. Eesti demograafiline ja majanduslik areng 20. sajandil pakub hea võimaluse sedalaadseid probleeme analüüsida, sest suhteliselt lühikese aja jooksul on majanduskeskkond läbinud kardinaalseid muutusi. Töös vaadeldakse demograafilist ja majanduslikku arengut ajaloolises perspektiivis nii makro- kui mikrotasemel. Vastavalt on käibesse toodud andmeallikaid, mis selliseid analüüse teha võimaldavad. Eesti majanduse makrotrendi koostamiseks on kasutatud füüsilise toodangu aegridasid; isiku- ja leibkonnatasandi uurimiseks on individuaalandmetena käibesse toodud rida nõukogudeaegseid leibkonna tulu-uuringuid.

Sündimus- ja majandusarengu seose selgitamiseks seati doktoritöös neli peamist ülesannet. Esiteks, uurida Eesti üldist sündimustrendi demograafilise ülemineku järgsel perioodil. Teiseks, üldistada Eesti makro-majanduslikku arengut 20. sajandi teisel poolel. Kolmandaks, vaadelda leibkonnatasandil majandusliku heaolu erinevusi rahvastikurühmade vahel. Neljandaks, sündmuslooliselt analüüsida sotsiaalmajanduslike tegurite mõju sündimusele, täpsemalt teisessünnile.

Püstitatud ülesannete lahendamise tulemused on lühidalt järgnevad. Eesti demograafilise trendi omapära Teise maailmasõja järel leidis kinnitust, võrreldes nii Lääne-Euroopa riikide kui Kesk- ja Ida-Euroopa maadega. Sellele otsiti selgitusi sotsiaalamajanduslikes tegurites. Leiti, et makromajanduslik trend väljendatuna sisemajanduse kogutoodangus elaniku kohta on elatustaseme kaudu üks võimalik sündimusetrendi mõjutaja, kuid ühest determineerivat seost nende kahe vahel näha on raske. Võrdlused teiste riikidega osutavad rahvastikuarengu faasile antud seose võimaliku modulaatorina. Argumenti elatustasemest kui sündimuse määravast mõjutajast Eestis ei toeta ka leibkondade tulu analüüs, mis näitab, et lastega pered on alates 1950. aastatest olnud majanduslikult halvemas seisus kui keskmine leibkond. Kõrvutades Eesti kuni 1980. aastate teise pooleni tõusva sündimustrendi lastega perede suhtelise majandusliku heaoluga, on raske leida puhtmajanduslikke põhjusi, mis võinuks soodustada kasvavat sündimustaset.

Pikaajalise rahvastikuarengu kontekstis huvipakkuvana tõuseb esile sündmusloolise analüüsi tulemus, mis eristab Eestit teistest Kesk- ja Ida-Euroopa riikidest. Teisessünni ja haridustaseme seoste poolest sarnaneb Eesti põlisrahvastiku sündimuskäitumine pigem Põhjamaadele. Eesti kõrgharidusega naiste teisessünni tõenäosus on nõukogude perioodil ja ka hiljem kõrgem kui madalama haridustasemega naiste oma. See viitab teatud pioneerrühma olemasolule rahvastikus ja käitumisele, mis vastandub sündimuse majandusliku teooria argumentidele.

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TALLINN UNIVERSITY
DISSERTATIONS ON SOCIAL SCIENCES. Abstracts

TALLINNA ÜLIKOOL
SOTSIAALTEADUSTE DISSERTATSIOONID. Analüütilised ülevaated

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