Doctoral School of General and Quantitative Economics

SUMMARY OF THESIS

András Olivér Németh

THE THEORY OF ECONOMIC GROWTH AND THE EXPERIENCE OF CENTRAL AND EASTERN EUROPE

Ph.D. dissertation

Supervisor:
Péter Ákos Bod, Doctor of the Academy
Professor

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Department of Economic Policy

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1. MOTIVATION AND PREVIOUS RESEARCH

Growth theory is one of the most important and most exciting fields of economics. Its importance comes from the fact that the desire for development is a (or: the) main driving force of mankind. Although growth itself is only one layer of this development, it can also contribute to other elements of the latter. "Economic growth matters not just because it leads to rising prosperity. People living in countries with growing economies tend to be happier and more optimistic. Material improvement leads to general satisfaction; stagnation or decline leads to misery and pessimism. Economic growth matters because its absence causes long-term unemployment and falling living standards for many." (Marer, 2013, p. 242)

It is not surprising then that theoretical and empirical research of the main mechanisms and driving forces of growth has long been a focal point in economics. Also, these questions of economic growth are very inspiring and interesting, as Robert Lucas (1988, p. 5) put it: "Once one starts to think about them, it is hard to think about anything else."

My thesis is positioned in this field. It has two main building blocks, which have different viewpoints and approaches, but which are also connected to each other. Chapters 2 and 3 discuss general questions about economic growth, while Chapters 4 and 5 examine the growth performance of Central and Eastern European countries in the last 25 years.

Growth theory is covered in many books in a detailed manner. My aim with Chapter 2 was not to reproduce them, instead I wanted to provide a brief summary about the *most important steps in the development of the theory* and the *interconnections of the different models*. Despite its brevity, this summary contains such branches of growth theory as well, which are usually omitted from the textbooks. Chapter 3 complements this with the description of *different methodologies to empirically analyse economic growth*.

The second half of the thesis examines *Central and Eastern European countries*, which is a natural field of interest in Hungary. The objective of Chapters 4 and 5 was to analyse the 25-year growth performance of the post-socialist countries jointly, and to assess it in the light of growth theory.

Csaba (2007) discusses the question whether these countries can still be validly analysed together. Although he emphasises the differences, and classifies the countries based on them, in my opinion examining the countries together still may be a proper approach. The main reason is that there are several *common features* of these countries, including the heritage of socialism or the EU membership, which are really important from an institutional viewpoint. Of course, there are *important differences* as well in the growth performance or in the economic policy decisions, and the aim of this thesis is not to obscure them, instead to shed some light on them at given points. Still, there is a common pattern and one can make such statements that are valid for the majority of the countries.

A central question of the second half of the thesis is *how sustainable the growth model of Central and Eastern European countries is*. This growth model made it possible for these countries to develop quickly before 2008, and to achieve real convergence towards the Western European economies. But the financial crisis changed external circumstances, and the question arises: can these countries find back to the path of fast economic growth that they followed before the crisis?

This thesis and the choice of topic is not without antecedents also from a personal viewpoint. I have approached economic growth and public finance issues of the Central and Eastern countries in several papers. I have examined the connection of macroeconomic policy and growth first with an emphasis on political business cycles (Németh, 2009), then in a more general manner (Németh, 2010, 2011b, 2012c). I build on these papers in subsection 5.2. Also, I use some elements and results of my prior writings on political business cycles (Németh

2011a, 2014, 2015b) in subsection 5.6. In Németh (2012a) I made a tax policy comparison similar to that of subsection 5.5, while a description of the growth performance of Central and Eastern European countries appears in Németh (2013). I have some experience regarding the methodologies of growth regressions (Németh, 2011c) and growth accounting (Németh, 2015a) too.

2. APPLIED METHODOLOGY

Chapter 2 of the thesis provides a brief history of economic growth theory. This is more than just a literature survey necessary for the analysis of the topics examined in the second half of the thesis. It was an important objective in itself to discuss the different growth models in a unified framework, and to show the connections between them. This chapter goes further than the textbooks on the topic in the sense that it covers a wider variety of models and theories. On the other hand, it also differs from the approach of textbooks in that the main emphasis is not on the detailed analysis of the models, instead on the effects the different waves of the theory had on each other, and on the development of the ideas. In some cases (e.g. in the case of the Harrod–Domar model or the Solow model, which are at the same time very important steps in the development process and relatively easy to interpret) the equations and the formal deduction of the main conclusions also appear, while in other cases I only concentrated on the most important features of the models. In the case of equations and formalised models I didn't stick to the original notations, instead I tried to use a general notation system for all models.

The chapter begins with the description and simple formalisation of the most important thoughts of *Thomas Malthus* (1993 [1798]) and *Adam Smith* (1999 [1776]) about economic growth. Afterwards, it continues with the first formalised growth models that concentrate on physical capital accumulation and take technological development as exogenous. This class contains the *Harrod–Domar model* (Harrod, 1939, Domar, 1946) as well as the *Neumann- or Leontief-type multisector models* (Neumann, 1945–1946, Leontief, 1986) and the *Solow model* (Solow, 1956), which is an achievement of central importance in the development of growth theory. The limited explanatory power of these models gave incentives to develop further theories that concentrate on other factors and variables. The chapter describes the *models of endogenous technological development*, including both the *AK model* (Arrow, 1962), which assumes that technological development is a by-product of capital accumulation, and the models where the former appears as a result of a separate research and development process. Then I continue with the models that put *human capital* in the centre (Uzawa, 1965, Lucas, 1988), while the described development of growth theory ends with the analysis of the *fundamental causes of growth* and therefore the role of *institutions* (Acemoglu, Johnson and Robinson, 2005).

Chapter 3 provides a description of the most important methodologies that are used to empirically analyse economic growth. Three main directions are covered: growth accounting, development accounting, and growth regressions. *Growth accounting* is based on Solow (1957) and its objective is to decompose the growth performance of a given country to the contributions of different factors: capital, labour, and total factor productivity. *Development accounting* can be seen as a cross-section version of the same methodology: in this case the emphasis is not on the development of a given economy, instead on the relative differences of a set of countries compared to a reference country. Development accounting decomposes the differences in the income level to the differences in the production factors. Finally, in the econometric method of *growth regressions* the dependent variable is the rate of growth in a given period, while the independent variables contain the measures of demography, capital accumulation, available human capital, institutional quality, political stability etc. In all three cases I tried to draw attention to the limits of these methodologies, and I also cite some important and well-known empirical results. The chapter concludes with some growth accounting and development accounting results regarding the Central and Eastern European countries (Dombi, 2013) and Hungary (Kónya, 2015).

This leads us to the second part of the thesis, which examines the *growth performance of Central and Eastern European economies in the period of 1990–2015*. The analysed countries are the eleven post-socialist member states of the European Union: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. In each case when I use the terms "the countries of the region", "post-socialist countries" or "Central and Eastern European states" in the thesis, I refer to them. This means that I do not cover those transition economies that are not members of the European Union (yet). Firstly, because – even if the eleven examined countries are still heterogeneous in many ways – the EU membership means a significant common ground in an institutional aspect, which is also important from the perspective of growth. Secondly, because if I would like to involve other countries as well, I would be confronted with data availability problems that can be avoided by concentrating on EU member states.

The *analysis and interpretation of macro data* stand in the centre of *Chapter 4*. Main data sources are UNSTATS (2016), Eurostat (2016), and AMECO (2016), although in some cases I used other sources as well. From the perspective of economic growth, the last quarter of a century can be divided to *three main phases*: the transformational recession, the period of real convergence towards Western Europe, and finally the recession and the decline of the rate of growth as a result of the financial crisis.

In the thesis I examine these three phases chronologically. Besides the GDP itself, I cover the *most important features of the growth model* of the post-socialist countries: capital accumulation, and in strong connection with this: financial and trade openness. The unsustainability of the model building on external sources is shown by the strong negative correlation between the average current account deficit before the crisis and the loss of speed of growth afterwards.

In *Chapter 5* I turn to those aspects of fiscal policy that are important from the viewpoint of economic growth. After summarising the theoretical results, I examine the *connection between the fiscal and growth data* of the EU member states. After this and the description of the *main fiscal data of the Central and Eastern European countries*, I analyse two subtopics. First, I examine the common features of the *tax policy* of post-socialist countries, by showing the main differences in tax centralization ratios, tax structures, and tax rates compared to the more developed EU-15 countries. Second, I analyse the appearance of *political budget cycles* in the region, which is relevant from the aspect of macroeconomic instability. In this, I compare average cyclically adjusted primary balance data of election and non-election years, and those of leftist and rightist governments.

The main results of Chapters 4 and 5 are summarized in the next section.

3. RESULTS OF THE THESIS

3.1. The economic growth experience of the Central and Eastern European countries (Chapter 4)

- Although the growth performance and chosen economic policy path of Central and Eastern European countries are not homogeneous in the last 25 years, a *common pattern* can also be seen. This period can be divided to three distinctive sub-periods in all countries, even if the break between the sub-periods took place in somewhat different years in different countries:
  (1) A *transformational recession* followed the regime transition.
  (2) At the middle or the end of the 1990s a period of *fast economic growth* started in all of the post-socialist countries. This also meant a *real convergence* to the Western European developed economies.
  (3) As a result of the financial crisis *GDP fell significantly* in the whole region with the exception of Poland. Besides the recession itself, a *seemingly lasting decline in the rate of economic growth* can also be seen.
- Regime transition caused a serious decline in the output of all economies in the region. Based on the data of Cerra and Saxena (2008) both the size and the length of the recession were significantly larger than the average. However, besides the severity of the drop in output, the *transformational recession* (Kornai, 1993) has important distinctive features compared to the recessions due to the natural cyclicality of the economy:
  (1) The *'vacuum' between the co-ordination mechanisms*: the collapse of the institutions of bureaucratic co-ordination was quick, while the formation of the institu-

tions of market co-ordination took much more time. This involves formal institutions (stock exchange instead of planning bureau) and legal frameworks as well as informal (supply or sales) relations.

(2) A *specific form of the Schumpeterian 'creative destruction'* acted especially strongly. The driving force in this case was not a wave of innovations, instead the fact that due to the liberalisation of prices and trade the previously suppressed demand and the market factors started to have an effect. This lead to a significant change in relative prices, which resulted in a large-scale shift in the economic structure. Aggregate output dropped because the fall of the companies and sectors affected negatively by this shift was much quicker than the rise of new ones.

(3) The effects of the decline in aggregate demand (due to e.g. the collapse of foreign trade markets, and the fall in consumption as a results of the recession and the sudden rise in unemployment) were aggravated by the *appearance of the demand-driven economy*, the transformation from sellers' market to buyers' market.

- Significant differences can be seen both in the size and the length of the transformational recession. The Baltic states were hurt more severely than other countries in the region, because they had been tied to the Soviet economy much more tightly than the satellite states in Central and Eastern Europe. Regarding the temporal pattern, one extreme is the rapidly liberalising Poland, where the economy started to grow as early as 1992, while the other is Romania, where the positive output change of 1993–1995 was followed by a second recession in 1996 as a result of the previously postponed, but necessary transitional measures. The lasting recovery in Romania started only in 2000.
- After the transformational recession and the formation of the institutions of market economy, a *period of fast economic growth* started in all countries, which lasted until 2007–2008. The average yearly rate of growth was 6–7 percent in the Baltic states, 6

percent in Bulgaria and Romania, which countries joined the growth period with a delay, 5 percent in Slovakia, and 3–4 percent in the other five countries.

- This fast economic growth also resulted in a *real convergence* towards Western Europe. In 1995 the Czech Republic and Slovenia stood at 63–65 percent of the EU-15 average, while the other countries started from a significantly lower relative level (27–43 percent). By 2008, Slovenia has reached the 80 percent, the Czech Republic the 73 percent of the EU-15 average, and the other post-socialist countries also have increased their level of relative development remarkably (41–64 percent). The data also show *Hungary's relative decline within the region*: it was the third of the eleven countries in 1995 and in 2000, while in 2008 it was only in the sixth (in 2015 the seventh) position among the post-socialist economies.
- The majority of the Central and Eastern European countries witnessed a significant *negative trend in population*, both as a result of natural decrease and the East–West migration within the European Union. This negative demographic trend leads to two conclusions regarding economic growth and convergence:
  (1) The output significantly higher than its 1990 level is now produced by a smaller population in the majority of the post-socialist countries. This means that the economies went through an even more remarkable increase in efficiency than what is shown by the GDP data themselves.
  (2) The other side of the same phenomenon is that a part of the real convergence that appears in the per capita GDP data is simply a result of population loss (a decrease in the denominator of the quotient). Population loss, however, can hardly be seen as economic development.
- From the perspective of growth potential, the role of *labour market* is also essential (labour force matters more in this sense than population itself). In this aspect, the Cen-

tral and Eastern European countries can be classified in two groups. The Baltic states, the Czech Republic, Slovakia, and Slovenia had an activity rate and (with the exception of Slovakia) an employment rate close to or even above the EU-15 average in the growth period. In the other five countries labour market participation was significantly lower (the lowest in Hungary).

- The primary 'engine' of the fast growth of Central and Eastern European countries was *physical capital accumulation*. This can be clearly seen in the fact that before the financial crisis all these countries had a significantly higher net investment ratio than the EU-15 average. In the years directly before 2008 the ratio surpassed 10 percent in the majority of the countries, and even 20 percent in Bulgaria, Estonia, and Romania.
- Due to the insufficiency of domestic savings this quick capital accumulation could only be financed by *external sources*, that is, FDI inflows were crucial for all the economies in the region. Directly after the regime transition the inflow of FDI was the fastest in Hungary, then it gained its highest speed in Estonia and Slovakia. Finally, in the years immediately before 2008, the rate of increase of the amount of FDI was extraordinary in Bulgaria.
- Besides the quicker pace of capital accumulation, another important consequence of the involvement of external financing was an *exploding deficit of the current account*: in Croatia, Hungary, and Slovakia it reached the 6–8 percent of the GDP, which is usually seen as significantly higher than the acceptable and sustainable level. However, current account deficit was even much higher in Bulgaria, Romania, and the Baltic states, and it also increased in a remarkable rate since the beginning of the 2000s. By 2007 current account deficit has reached the 13–16 percent of the GDP in Estonia, Lithuania, and Romania, while the peak was 21 percent in Latvia, and 24 percent in Bulgaria. Such an extreme external imbalance is *unsustainable* in the long run.

- *Trade openness* also had an important role in the Central and Eastern European growth model. Export-to-GDP and import-to-GDP ratios increased practically constantly in the whole period, that is, the post-socialist countries have integrated in the global economy in a trade sense as well. This strongly contributed to economic growth through the availability of larger markets, and by strengthening foreign economic relations, but a dependency on export markets may also cause *vulnerability*: the stagnation or slower growth of these markets decreases the demand for production, therefore hurts the domestic economy. The economic vulnerability of post-socialist countries had other aspects as well, e.g. the credit boom, or the loss of competitiveness.
- Another important driving factor of the growth performance of Central and Eastern European countries is the significant amount of *transfers from the European Union*. The post-socialist countries received financial support from the EU even before the accession, but the amount of transfers reached a much higher level in the 2007–2013 fiscal period: in these years the net position of these countries was a yearly inflow of EU funds equal to 1–4 percent of the GDP. Although this directly doesn't cause vulnerability, it also contributes to the unsustainability of the rate of economic growth, as the amount of transfers is going to decline in the future.
- With the exception of Poland, *output fell* significantly in all countries as a result of the financial crisis. The most vulnerable Baltic countries were hit most severely in 2008–2009 (they suffered a cumulative loss of 15–21 percent).
- There are important differences in the patterns of the recession:
  (1) The serious fall in the Baltic countries were followed by a quick 'reconstruction period' (Jánossy, 1966) in 2011–2012.
  (2) The pattern is similar in Bulgaria, Romania, and Slovakia, however, the amplitude is smaller (both the fall in output and the rate of recovery were more moderate).

(3) The crisis had a W shape in the Czech Republic, Hungary, and Slovenia, as the output of the economy decreased again in 2012–2013.

(4) The recession lasted longest in Croatia, where the GDP continued to decline in every year between 2009 and 2014.

- Besides the direct loss in GDP, the financial crisis also resulted in a *decline of the speed of growth*: the average yearly growth rate in the 2009–2015 period was 1.5–5 percentage points lower in all post-socialist countries than between 2002 and 2008. This means a remarkable economic slowdown of the region.
- The growth theories described in the first half of the thesis provide at least three different narratives for this phenomenon:

(1) According to the *Solow growth model*, during the process of convergence towards their equilibrium growth path, in the countries that originally are less endowed with physical capital, capital accumulation leads to an output growth rate that is higher than its equilibrium (therefore sustainable) level. This means that as the capital–labour ratio increases, the declining trend in the rate of economic growth is natural. The fact that this didn't take place gradually may be the result of institutional factors and sudden changes in global financial trends.

(2) Another interpretation is provided by the *Jánossy trendline theory*. In this narrative the fast economic growth before the financial crisis can be seen as a reconstruction period after the transformational recession (or in a wider sense: the decades of socialism), while the slower growth of recent years indicates the return to the trendline of development.

(3) According to the *current account constrained growth models*, small open economies can't grow without either increasing export or capital inflows. The slowdown of the world economy (and within it, the slowdown of the European Union, which

is the most important export market for the Central and Eastern European countries), together with the drop in capital inflows due to the global decline of the willingness to invest therefore significantly draws back the growth potential of the post-socialist countries compared to the previous period.

- All the three abovementioned narratives lead to the same conclusion that the *earlier fast rate of economic growth is unsustainable*, which means that the examined countries probably won't be able to achieve a similarly fast growth and convergence towards Western Europe in the foreseeable future, than what they witnessed before 2008. The unsustainability of the Central and Eastern European growth model is also shown by the *correlation in the EU countries between external imbalances that appear in current account deficits and the slowdown of economic growth after the financial crisis*.

3.2. Fiscal policy and economic growth in Central and Eastern Europe (Chapter 5)

- According to theory *public spending may have both positive and negative effects* on economic growth. By providing public goods, or realising socially beneficial public investment projects the government can increase social welfare. The same is true for decreasing harmful inequalities through redistribution of incomes. On the other hand, the efficiency of government spending programmes can be questionable, both based on information problems, or e.g. due to corruption. Public spending also has to be financed; financing by debt causes crowding-out effect, while financing by taxes leads to deadweight loss.
- In the data of the EU member states, the dominance of negative effects can be seen:

  (1) a *negative correlation between the average income redistribution ratio and the rate of economic growth* in the 1995–2008 period;

(2) a *positive correlation between the average budget balance and the rate of economic growth* in the same period;

(3) a *negative correlation between the 2002 debt-to-GDP ratio and the rate of economic growth* in the 2002–2015 period.

- This doesn't mean that public spending is in itself harmful for the economy, instead the conclusion is that in the majority of European countries the size of government may be above the level that would be optimal from the perspective of economic growth.
- The following can be seen in the fiscal data of the Central and Eastern European countries:

(1) The majority of the countries in the region (with the exception of Hungary, and partially Croatia and Slovenia) has *significantly lower income centralisation and redistribution ratios* than the Western European average. Before 2008 a similar difference can also be seen in *indebtedness* (again Hungary is an exception), however, debt-to-GDP ratios have increased significantly in several post-socialist countries due to the financial crisis. In the case of *fiscal balance*, the picture is heterogeneous: Bulgaria or Estonia usually has had surpluses, while serious deficits showed up in all the Visegrád countries in the 1998–2006 period.

(2) *Hungary* has had an income redistribution ratio close to the EU-15 average around 50 percent in the whole examined period. Between 2002 and 2012 it was the most indebted country in the region due to the unsustainably high deficits, mainly in election years (1998, 2002, 2006). This unsustainable fiscal policy had negative consequences both in the 2006 slowdown of economic growth due to the necessary stabilisation, and in the fact that as a result of the previous deficits the Hungarian

government was not able to run expansionary fiscal policy during the financial crisis to smooth the recession.

(3) The reform of public policies that can be seen in *Slovakian* data is remarkable even in international comparison: the spending-to-GDP ratio dropped from 52 percent to 36 percent in the 2000–2007 period. The decline in the revenues started earlier and followed a somewhat different pattern, therefore around the millennium the deficit reached the 6–12 percent of the GDP, but finally the reform resulted in the lower redistribution ratios and only moderate and acceptable deficits in the 2000s.

(4) The *Baltic states'* redistribution ratios have been even lower than the regional average, and their conservative fiscal policy resulted in approximately balanced budgets before 2008. However, Estonia reacted differently to the financial crisis than the other two Baltic countries: the former kept deficits at bay by increasing revenues, while the others let the fiscal balance worsen, which resulted in a significant increase of the debt-to-GDP ratio. One of the main reasons of the strictness of Estonian fiscal policy during the financial crisis is that it coincided with the assessment period before the adoption of the euro, therefore maintaining fiscal balance to meet the Maastricht criteria was central for the decision makers.

(5) While the objective of conservative fiscal policy in the Baltics was to maintain the low level of the debt-to-GDP ratio, budget surpluses were necessary in *Bulgaria* to be able to quickly reduce the inherited indebtedness.

- Important conceptual differences can be seen in the *tax policy* of Central and Eastern European countries compared to the more developed Western Europe. The following general features can be seen in the region:

(1) A significantly lower level of *tax centralisation* compared to the EU-15 average in most of the post-socialist countries.

(2) A *tax structure* different from the Western European practice. Lower relative importance of taxes on capital (with the aim of increasing the ability to attract capital) and of taxes on labour (to increase both employment and competitiveness). On the other hand, the weight of taxes on consumption is higher both expressed as a percentage of GDP and that of overall tax revenues.

(3) In concordance with the previous statements, *lower tax rates* in the case of personal and corporate income taxes. Seven of the eleven examined countries use *linear personal income tax systems*, and also in the case of the progressive PIT systems of Poland and Slovenia, the top tax rate is significantly lower than that of the Western European countries.

- The *political budget cycles* relevant from the perspective of macroeconomic stability appeared in the 1995–2008 period both in the founding members of the Eurozone and in the post-socialist countries. There is no significant difference in the size of this cyclicality between the two groups of countries; in both cases the cyclically adjusted primary balance worsened by around or more than 1 percent of the GDP from non-election years to election years in the half of the countries. However, in the more developed countries of Western Europe this usually means a decrease in a(n even remarkable) primary surplus, while in the Central and Eastern European countries the politically motivated expansion increased an already existing primary deficit.
- In the majority of post-socialist countries no tendentious differences can be seen between the *fiscal data of leftist and rightist governments*. The main reason of this finding is that in new democracies the political and economic policy ideologies of the parties are not entirely clarified yet, and the ruptures between political parties also follow a different pattern than in Western Europe.

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