Pielikums Nr. 5

**Tālis Putniņš, Assistant Professor, Stockholm School of Economics in Riga
Member of FICIL Capital Markets working group**

This document describes how extrapolation from existing studies can be used to estimate the magnitude of gains to the Latvian economy from raising the development level of Latvia’s capital markets to that of neighbouring countries.

*Why should the development of capital markets affect economic activity?*

Broadly speaking, the role of the financial sector is to channel resources from savers to investment projects. The two main theoretical reasons why the development of the financial sector has causal effects on the level of economic activity relate to the quantity and quality of resource channelling, i.e.: (i) better screening and monitoring of fund seekers increases the efficiency of resource allocation; and (ii) greater liquidity, enhanced ability for risk sharing and a larger choice of instruments encourages the mobilisation of savings.

*Empirical estimates of the relation between capital market development and growth*

The early empirical literature establishes a strong correlation between capital market development and growth but fails to control for other determinants of growth and fails to identify the direction of causality. Advances in econometrics (particularly due to Arellano, Bond, and Blundell, and methods such as GMM and VAR) have been used by more recent empirical papers to estimate causal effects, at least in a Granger-causal sense. Two key papers, Rousseau and Wachtel (2000) and Beck, Levine and Loayza (2000), both find significant causality from financial development to real GDP, with estimates of similar magnitude. I extrapolate from the results in the former paper (Rousseau and Wachtel, 2000) which uses a trivariate (real per capita GDP, activity of deposit-taking institutions, and stock market development) panel vector autoregression estimated with an adaptation of the generalised method of moments technique developed by Arellano and Bond (1991). This model allows identification of the dynamic lead/lag relations between the three variables. Their sample consists of 47 countries, with annual observations during 1980-1995. The list of countries is based on availability of data in annual issues of the International Finance Corporation’s Emerging Markets Factbook, and could be described as a mix of emerging markets from around the world. I base my extrapolation on the estimates of the five-year cumulative impulse responses of real per capital GDP to exogenous shocks in the financial development variables. These provide the expected increase in annual real per capital GDP growth for a 10 percentage point increase in various financial development variables. I scale these estimates by the difference between Latvia and the country of comparison (e.g., Estonia) in each of the various financial development variables.

*Measures of capital market development and data sources*

The estimates are based on three commonly used measures of capital market development: (i) M3/GDP (a measure of the activity and depth of depository institutions), (ii) stock market capitalisation to GDP (a measure of the relative size of a stock market) and (iii) stock market volume to GDP (a measure of the liquidity and size of a stock market). The latter two development measures are correlated with the availability of other sources of capital such as venture capital and therefore capture the effects of more than just the stock market. Together the three variables measure the overall development of the financial system in a country. I obtain data from the World Bank and Eurostat.

*Interpretation of extrapolated results comparing Latvia to Estonia*

There are many ways to present the various estimates. One that I think is particularly striking is as follows. The estimated combined effect of increasing the development of Latvia’s capital markets to the current levels of Estonian capital markets (activity/depth of depository institutions and relative size/liquidity of the equity market), is an 8.96 percentage point increase in the growth rate of real GDP per capita over 5 years (1.79 percentage points annually), which would close the income gap between the two countries by one third (from the current gap of 22.6% down to 15.4% in 5 years’ time). In total, this adds up to an additional EUR 1.64 billion in GDP over 5 years (EUR 328 million per year), or in terms or tax revenue, an additional EUR 120 million in taxes collected per year.

*Interpretation of extrapolated results comparing Latvia to Poland*

The estimated effect of increasing the development of Latvia’s capital markets to the current levels of Polish capital markets (activity/depth of depository institutions and relative size/liquidity of the equity market), is a 16.6 percentage point increase in the growth rate of real GDP per capita over 5 years (3.32 percentage points annually). In total, this adds up to an additional EUR 3.04 billion in GDP over 5 years (EUR 608 million per year), or in terms or tax revenue, an additional EUR 223 million in taxes collected per year. These estimates may seem large, but that is because they must interpreted as the effects of an instant and exogenous rise to the Polish level of development, which is unrealistic. If we consider a more plausible hypothetical scenario of arriving at the Polish level of development gradually in the course of 5 years, then the effects on GDP per year become smaller because the annual change in the level of development is only 1/5 of what it was in the initial scenario.

*How much development is required to achieve the estimated gains reported above?*

In the measure of activity/depth of depository institutions relative to GDP Latvia has a score of 45.3%, compared to 61.9% for Estonia and 58.5% for Poland. In the measure of relative stock market size Latvia has a score of 7.0% of GDP compared to 13.9% in Estonia and 31.5% in Poland. In the measure of stock market liquidity and size Latvia has a score of 0.08% compared to 2.0% for Estonia and 13.0% for Poland.

**Summary**

**We estimate that increasing the development of Latvia’s capital markets to the level of Estonia’s would increase the annual growth rate of real GDP per capita by 1.8 percentage points, thereby closing the income gap between the two countries by one third in five years and generating an additional EUR 120 million in tax revenue per year.**