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Testing for the existence of an S-curve in Croatia, Hungary, and Slovenia: A Note

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Abstract

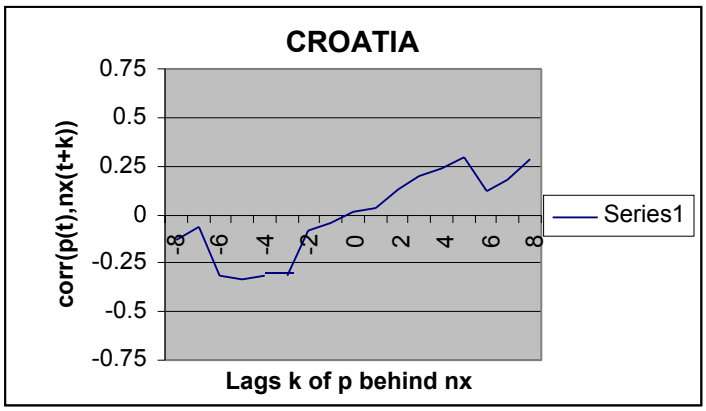
In this note we check the existence of an S-surve for Croatia, Hungary and Slovenia. We interpret the results in the spirit of the business cycle literature. We compare institutions, fiscal/monetary policy, whether they had currency/banking crises within the sample, how much they trade trade and how are those countries similar or different compared to the evidence from international data.

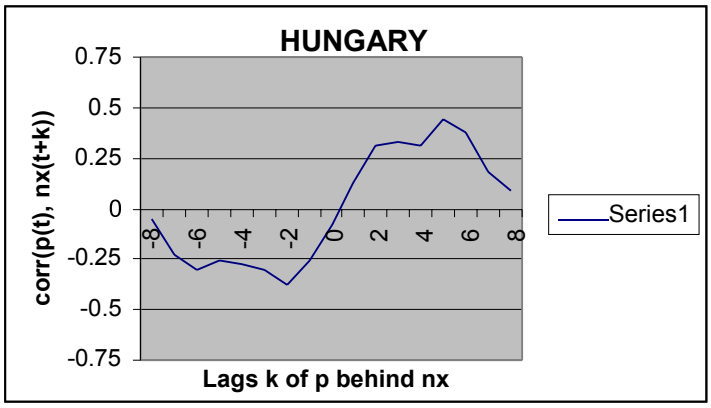
We start by taking the raw REER series and making sure that it corresponds to the terms of trade, defined as the ratio of price of imports over price of exports, following the approach used by Backus et al. (1994) After that REER series is seasonally adjusted using X-11method, multiplicative adjustment. Then natural logs are taken and H-P filter is applied to remove the trend.

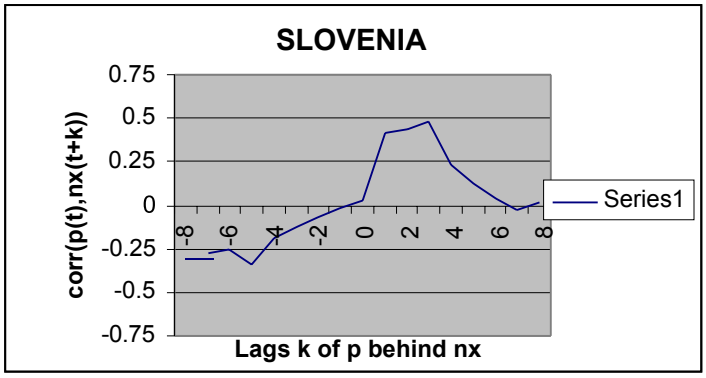
For the net exports we proceed in a similar way, following the methodology in Benczur and Ratfai (2005).First the raw series is taken, then it is divided by GDP. Then seasonal adjustment was made using X-11method, additive adjustment since nx/gdp ratio was a negative number in most of the cases. At the end, H-P filter is applied to remove the trend.

Cross-correlation functions are constructed as in Backus et al.(1994) with 8 leads and 8 lags, tabulated below. As we note from the table, the contemporaneous correlation between REER and NX/GDP is negative for Croatia nad Hungary and very slightly positive for Slovenia(but not statistically different from 0).

Lags	CROATIA	HUNGARY	SLOVENIA
-8	-0.1273	-0.0524	-0.2734
-7	-0.0601	-0.2302	-0.2702
-6	-0.3185	-0.2987	-0.2574
-5	-0.3311	-0.2592	-0.3397
-4	-0.3172	-0.2763	-0.1941
-3	-0.3192	-0.3066	-0.128
-2	-0.0862	-0.3811	-0.0664
-1	-0.0461	-0.2564	-0.0194
0	**-0.019**	**-0.0815**	**0.0263**
1	0.0363	0.1245	0.4158
2	0.126	0.3163	0.4382
3	0.2027	0.327	0.4815
4	0.2385	0.3109	0.2358
5	0.292	0.4402	0.1207
6	0.1197	0.3806	0.0428
7	0.1765	0.1849	-0.022
8	0.2812	0.084	0.0172







Our findings add to the empirical evidence provided by Backus et al that NX/GDP ratio is countercyclical, usually negatively correlated with the currentand future movement of the terms of trade, but positively correlated with the lagged values. The magnitudes of the contemporaneous correlation correspond to a theoretical economy with large elasticity of substitution (sigma equals 2.5) calibration, as well as the two- shock specification. Slovenia is the exception because of the slightly positive contemporaneous correlation betwqeen REER and net exports. However, some economists regard it as a small command economy because of its very small size. Slovenia was also an outlier from the Central and Eastern European countries in terms of the behaviour of its macroeconomic variables, as documented in Ratfai and Benczur(2005) In addition, in Agenor, Mc Dermott and Prasad(2000), the 10

developing countries in their sample all have positive contemporaneous correlations between terms of trade and net exports.

All the graphs depict an S-curve, as predicted in the literature of two-country general equilibrium business cycle models. We can think about a world where each of the three countries will play the role of the home country and the foreign country will be the rest of the world (ROW). Both the home country and the ROW produce differenciated goods(or services, like tourism), which are substitutes to some extend. Goods are produced using capital, and that is a necessary condition for the S-curve to appear. Withous capital, NX movement reflects only the output dynamics that results from the productivity shock and the consumption smoothing effect. Another necessary condition is that there is a technological shock, because if there is only a government shock there is a tent-like relationship between REER and NX/GDP and subsequently no S-curve. Trade balance will be pro-cyclical in those special cases. Time to build and time to ship are important realistic additions to the benchmark business cycle model, given the investment and trade activity in those countries, which can influence the shape of the S-curve in terms of delayed transmission from ToT to NX.

So the story about Croatia, Hungary and Slovenia goes like this: The home country in each of the three cases gets a technology shock. Capital starts flowing in, there is a resource shifting effect, since capital is more productive in the home country than anywhere else. Investment increases, output in the home country increases, as well as consumption (but less than output because of the Permanent Income Hypothesis). Home prices decrease. Net Exports fall in order to keep the National Income Identity: the intuitive explanation is that when output(income) rises, the demand for imports rises. This decreases the net exports, holding export level constant. Over time, the return on capital equilizes between the two countries and capital stops flowing into the home country, investment slows down. Consumption stays relatively smooth. Goods produced at home become relatively cheaper abroad, while foreign-produced ones are more expensive in the home country, so as time goes by, the NX improves – that is, exports increase and imports decrease.

The lagged response from the shock to the terms of trade to the net exports may be attributed to the ways deals are contracted internationally: whether goods are paid in advance or on the delivery date, etc. In addition, exporters may need time to change capacity or to recalculate the prices in foreign currency. In addition, there might be some nominal rigidities in their price setting schemes due imperfect competition and international price discrimination.

All the countries in the sample are relatively small, export oriented economies that trdae a lot. Imports as percentage of GDP are much higher for all the three countrie is higher than what we see for countries like US or Canada. There is a lot of a synchronization of the business cycle with the EU member countries and in technology shocks respectively, also vertical specialization and intra-industry trade as proposed in the Kose-Yi theoretical economy – not only final, but also intermediate goods.

Concentrating on each of the three countries in greater detail, we note that most of Slovenia's exports are oriented to the EU. Slovenia has strong commercial ties and

linkages to the other member states. It is very similar to any Western European country in terms of lifestyle. Slovenia's strategic position is the main reason for the low transportation costs of the exporting companies. Since the country is in the EU, there are no competitive devaluations of the ER. Slovenia also exports services, such as tourism to Germans, Austrians, Italians and Croatians. In addition, it attracts a lot of FDI, which includes investment in physical capital. Slovenian government leads prudent monetary and fiscal policies.

Croatia is also an export-oriented economy. However, it is still feeling the negative effects from the liberation war in the 90s. Output is growing steadily at 4-5% per year due to services(mostly tourism). Private consumption is growing rapidly as well, most of the products constituting imported goods. That led to the deterioration of the CA balance, but that is compensated by the FDI, which are a guarantee for future productivity and enhanced capacity. In addition, privatization is not complete, and direct sales generate foreign reserves. In many aspect, Croatia is close to the Emerging market economies depicted by Aguiar and Gopinath(2004) and Kaminsky, Reinhard and Vegh (2005).Foreign debt burden, however, is worrying – around 67% of GDP. It will necessitate stronger fiscal discipline: more taxes and lower government spending have to be implemented. Labor markets have to be restructures and made more flexible. Those factors are negative government shocks, and that explains the flatter shape of the S-curve, because the positive productivity shock is somehow muted. In addition, Croatia lacks important raw materials and oil and is very vulnerable to the price of oil on the international markets, which constitutes a classical ToT shock, e.g. during the war in Iraq.

Hungary had a lot of policy changes and reversals, which means a lot of government shocks have to be put in a theoretical economy model to fit Hungarian reality well. There was a high unemployment of around 12% in 1993, the beginning of the observation period, 250% of debt/GDP and CA and budget deficits of 10% od GDP. Bokros' package was implemented in 1995, an austerity program, which was combined with aggressive privatization and export-stimulating ER. By the end of '97, the macroeconomic situation improved significantly. That attracted a lot of FDI and set Hungary on the high growth path, which led in turn to EU accession in 2004. Between 98-02 there was an increased government role in the economy and switch away from export-driven to domestic demand-driven development, which at the end led to increased budget deficit. The next government lowered it but allowed for lax monetary policy by eliminating capital controls and widened the ER band of the already convertible forint. In the summer of 2002 conflicting monetary and fiscal policies made international markets volatile and led to the forint surging against the Euro.

Hungary's exports to EU amount to 85% of the total, and main trading partners are Germany and US. In addition FDI was the key to Hungary's economic success story since the beginning of the transition peroid. Foreign companies account for over 70% of Hungary's exports, 33% of GDP and one-forth of new jobs, according to the CIA World Factbook(2004). So through foreign companies Hungary found its niche on the world market and thus we have a typical S-curve with two-shock scenatio, trade integration and large elasticity of substitution.

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