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## TRANSMISSION MECHANISMS OF MONETARY POLICY IN CENTRAL AND EASTERN EUROPE

### *NON-TECHNICAL SUMMARY*

As more central banks across Central and Eastern Europe (CEE) move towards inflation control –either in the form of direct inflation targeting or indirectly through informal targets– good knowledge of transmission mechanism in the economy becomes crucial for implementing good policies. So far the volume of studies in the region devoted to this issue is not overly impressive. Specifically, there have been no attempts made to study the issue in a comparative context of several economies. We wanted to fill this gap by investigating transmission mechanism using the same methodology for 10 CEE countries: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

We start our paper by reviewing literature related to transmission mechanism of monetary policy in CEE countries. In the case the region concerned, this research field, like many others, is naturally constrained by at least two important factors. The first is the lack of data in terms of both length of time series and of quality and reliability. The second is constant institutional changes in the studied countries which renders the different models and techniques structurally unstable and the results – generally volatile. The review we provide is probably one of the most comprehensive and up-to-date review of transmission mechanism for the region of CEE.

In the following chapter of our paper we present a discussion on various issues related to transmission mechanism of monetary policy. The narrative description was meant to shed some light on how the process of transition might impact the various transmission channels, i.e. in what way are CEE countries different as far as the analysis of transmission is concerned. The main conclusion of the chapter was that during transition the environment in which monetary policy was conducted was far from "neoclassical" conditions. With respect to

the formal analysis of monetary transmission in these countries during this period, at least two important observations need to be emphasized.

The first one is that some specific constraints and behavioral incentives in the transition context may render traditional policy tools less effective than a neoclassical environment would suggest. During transition, the institutions which are important for the effectiveness of monetary policy are underdeveloped by definition, while processes hampering monetary transmission (budget deficits, bad loans, various predatory projects) may be very strong or even dominant at times. This environment may even force the monetary authority itself into inconsistent actions, decreasing their effectiveness even further.

The second observation is that the transition is a very dynamic phenomenon, which was subject to constant qualitative change in all reviewed countries since the early 1990s. Structural change was observed throughout the period and thus the underlying environment of the data was changing and was not homogeneous for the period. It may be claimed that towards the end of the observed period the monetary environment was much closer to Western standard conditions than in the beginning. Thus all countries have experienced at least one structural break, with later periods more favorable for formal analysis than earlier ones.

Following the narrative part we proceeded to the empirical analysis. Because inflation behavior is central to analysis of transmission mechanism, the choice of inflation indicator is very important to subsequent research. In view of considerable noise in price data during transition we decided not to use the conventional CPI. Rather, we made use of core inflation indices that are less prone to short term reversible supply shocks and thus better indicate the general price trend. However, no single core inflation definition prevails and so we had to choose among several available series for each countries. We based the selection process on the commonly used criteria, such as stability, unbiasedness, attraction and exogeneity. Inflation as well as other variables used in subsequent analysis (industrial production, interest rates, euro exchange rates) were first checked for the level of integration and then crucial interactions among the variables were investigated.

In this paper we decided to restrict ourselves to studying two major transmission channels: exchange rate channel and interest rate channel and their pass-through on inflation and output.

Far from describing the complete transmission mechanism, these channels are easily identifiable and are operating in all countries in the panel. Analysing other channels, such as expectations or credit channel, is likely to pose considerable problems with finding comparable data and making cross-country inferences.

We began our analysis by testing conventional Granger causality to find out to what extent interest rates and exchange rates have an impact on inflation and output. To capture the dynamic pattern of the relationships we run the tests in a 3-year rolling windows. The analysis confirmed previous findings about on the relative importance of interest and exchange rate channels. For most countries exchange rate channel is stronger and much more stable than the interest rate channel.

As a next step we tried to find cointegration in the system of 4 above-mentioned augmented by European Union producer price index, industrial output and interest rates. For all countries except Estonia and Slovenia we found evidence of the existence of cointegrating relationships which suggests that there is a systematic interaction between variables in the long run . Further tests indicated that we could identify 2 or 3 such relationships depending on the country.

Empirical analysis was concluded by investigation of impulse response functions that shed light on how inflation and industrial output reacted to surprise changes in key policy variables, i.e. interest rates and exchange rates. For most countries, again, responses of inflation were consistent with the theory, i.e. it was dampened by interest rate rise and boosted by exchange rate depreciation. Output was boosted by depreciation in the majority of countries while other responses strongly vary by country.