CONSTRAINED DISCRETION : MONETARY POLICY FRAMEWORKS, CENTRAL BANK INDEPENDENCE AND INFLATION IN CENTRAL EUROPE, 1993-2001

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Constrained discretion:

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in Central Europe 1993-2001

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Abstract

The thesis has two overarching objectives. One is to understand monetary policy in the Czech Republic, Hungary, Poland and Slovakia during 1990s and early 2000s; the other to use these findings to shed light on monetary policy in less developed, but highly open and financially integrated market economies. In order to achieve its aims, it analyses specific factors with significant influence on the conduct or outcomes of monetary policy in these countries; it analyses the transmission mechanism of monetary policy in Central Europe, based on a technique called vector autoregression; and examines use of principal types of constraints on policy discretion, such as central bank independence, exchange rate commitments and domestic targets for monetary policy, in countries of the sample. The thesis finds that strong internal and external pressures, together with frequent bouts of fiscal irresponsibility and sizeable additive and parametric uncertainty regarding the working of the economy, led, in all four countries, to pronounced macroeconomic vulnerability and a need for periodic adjustment to dangerous fiscal and external imbalances. Reaction of policy-makers in countries of the sample to this environment can be characterized as discretion constrained by a strong nominal anchor and real exchange rate considerations. Experience of Central European countries shows that various elements of a commitment by monetary authorities are not duplicatory or contradictory, but interdependent in contributing to the goal of constraining discretion. During the period studied, the two key overall developments in policy were the gradual shift of emphasis from exchange rate targets to domestic targets and (within domestic targets) a

shift from monetary targets to inflation targets. This approach has been largely successful.

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List of abbreviations

AIC   – Akaike Information Criteria

ATS   – Austrian Schilling

BIC   – Bayesian Information Criteria (or Schwartz Information Criteria)

BIS   – Bank for International Settlements

CBI   – Central Bank Independence

CEEC – Central and Eastern European Countries

CEO   – Chief Executive Officer

CMEA – Council for Mutual Economic Assistance

CNB   – Czech National Bank

CPI   – Consumer Price Index

CTK   – Czech Press Agency

DEM   – German Mark

ECB   – European Central Bank

EMU   – European Monetary Union

ERM   – Exchange Rate Mechanism

EU   – European Union

FDI   – Foreign Direct Investment

FIDESZ – Hungarian Civic Party

FRF   – French Franc

GBP   – Great Britain Pound

GDP — Gross Domestic Product

HDF — Hungarian Democratic Forum

CHF — Swiss Franc

ICEG — International Center for Economic Growth

IMF — International Monetary Fund

IT — Inflation Targeting

LDC — Least Developed Country

M0 — Monetary Aggregate (Monetary base)

M2 — Monetary Aggregate (Broad money)

MNB — National Bank of Hungary (also NBH)

NATO — North Atlantic Treaty Organization

NBH — National Bank of Hungary

NBP — National Bank of Poland

NBS — National Bank of Slovakia

OECD — Organization for Economic Cooperation and Development

PM — Prime Minister

PPI — Producer Price Index

SLD — Democratic Left Alliance (Polish political party)

SVAR — Structural Vector Autoregression

USD — United States Dollar

VAR — Vector Autoregression

VAT — Value-Added Tax

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Introduction

The thesis has two overarching objectives. The first one is to understand monetary policy, its results and underpinnings in a group of countries (Czech Republic, Hungary, Poland and Slovakia) undergoing, during 1990s and early 2000s, a unique shift from command economies to countries on the eve of EU accession. The second aim is to use these findings to shed some light on economic theory on monetary policy in less developed, but highly open and financially integrated market economies.

In other words, it is our aim to understand what happened and why and what lessons can be drawn from these developments. This might be relevant not only for other transition countries, but also in the debate between economists specialising in different clusters of emerging market economies – e.g. Latin America or Southeast Asia.

To be able to arrange our thoughts in a clear and comprehensive manner, an analytical framework is necessary. The thesis uses, as such a framework, the view espoused by Mishkin and Savastano (2001) that the debate about monetary policy and monetary policy frameworks in emerging market countries "should be over what is the best way to constrain discretion over monetary policy". (p. 45)

In order to answer this question for Central European countries, the thesis is going to examine the following issues related to the overall philosophy of constraining discretion over monetary policy:

- does an independent central bank remove a need for other constraints on discretion and, if not, how does it interact with other constraints?
- what are the costs, consequences and effectiveness of an exchange rate commitment as a constraint on discretionary policy?
- what is the experience with commitment expressed in domestic monetary variables, i.e. monetary and inflation targets?

The literature provides a number of hypotheses in this regard that the thesis will specifically test by an in-depth analysis of a small sample, in tradition of Berger and de Haan (1999) or Mishkin and Savastano (2001).

The thesis is concerned with four neighbouring countries, providing it with sample of much similarity, but also of many differences. The initial conditions and policy responses chosen by macroeconomic policy-makers often differed substantially. The methodology is based on using the sample for case studies and then drawing some generalised conclusions. A sample of four avoids many pitfalls of studying just one country, but it also allows an in-depth look at individual countries, something not possible in a cross-country study dealing with 20 or more countries.

This is particularly valuable when the working of monetary institutions is studied. As the thesis will show, the actual state of central bank independence or a foreign exchange-rate regime can rarely be fitted into simple quantitative evaluations. On the other hand, having four cases instead of one or two goes a

significant way towards making sure that individual idiosyncrasies are not transformed into general truths.

The thesis is structured into seven chapters.

Chapter 1 reviews existing literature in areas most relevant for the findings presented here – objectives, frameworks and institutions of monetary policy. Its emphasis is on small open economies, especially the ones in transition.

Chapter 2 turns to an empirical investigation of the Central European countries, with the focus on specific factors that have had significant influence on the conduct or outcomes of monetary policy during the 1990s and early 2000s in the Czech Republic, Hungary, Poland and Slovakia. It examines issues such as fragility, shallowness and monopolistic structure of financial markets, imbalances in the relationship between the real economy and the financial sector, difficulty of controlling inflation, its reasons and consequences, as well as expectations and pressures of future EMU membership. In addition to four country case studies, it summarises the findings that can be generalised for the whole sample.

Chapter 3 analyses the transmission mechanism of monetary policy in Central Europe in the 1990s and early 2000s. It contains an econometric analysis of the transmission mechanism individually for all four countries concerned, based on a technique called vector autoregression (VAR). It demonstrates that while policy-makers could count on some robust channels of transmission, many of the

channels identified for economically and financially more developed economies have been erratic or are difficult to spot at all.

The introductory chapters set the stage for an examination, in the following three chapters, of principal types of constraints on policy discretion – central bank independence, exchange rate commitments and domestic targets for monetary policy.

Chapter 4 conducts an in-depth analysis of central bank independence in the countries concerned in order to expand our understanding not only of what happened there, but also what implications this has for the theory in general. To this purpose, it explores not only the well-known indices of legal independence of central banks and their deficiencies, but tries to look beyond to other determinants of actual central bank independence. It focuses, in particular, on constitutional factors affecting independence of central banks, as well as the rule of law, personal independence and political role of central banks, central bank autonomy in exchange rate policy and exogenous factors contributing to effective central bank independence.

Chapter 5 looks at developments of nominal and real exchange rates and their role in monetary policy of Central European countries. It brings together various empirical results to form a unified explanation of the role of the exchange rate in monetary policy of small open economies, with emphasis on actual behaviour of monetary authorities. This framework involves trade-offs between real exchange

rate misalignment, nominal predictability and swift disinflation and paths of progression along various combinations of these trade-offs.

Chapter 6 turns to domestic targets – targets for monetary policy expressed in terms of domestic variables such as growth of monetary or price aggregates. It analyses their role in two sections; one dealing with issues of monetary targeting, the other with inflation targeting. The analysis is linked to exchange rate considerations and the analysis of central bank independence.

Chapter 7 summarises findings of the thesis and brings them together in the form of the two strands presented in the beginning - what happened in Central Europe and what is its relevance.

The first strand, focusing on explaining monetary policy in Central Europe, looks at factors underpinning monetary policy, their consequences for policy-makers and reactions thereof. Its conclusion is that despite different initial conditions and expectations in individual countries, all countries had the ability to achieve overall rapid structural adjustment and successful transition. Therefore, despite problems and crises, the Central European story is essentially a story of success.

During transition, the countries of the region were affected both by internal and external pressures. Internally, inflationary pressures unrelated to monetary and fiscal policies as such and dysfunctional structure of the financial sector and peculiarities in relationship between the real economy and the financial sector presented particular challenges for policy-makers. On the external front, the

policy was shaped primarily by expectations of future EU/EMU membership, high level of trade and financial openness and limited instruments of adjustment to external shocks.

These factors, together with frequent bouts of fiscal irresponsibility and sizeable additive and parametric uncertainty regarding the working of the economy, led, in all four countries, to pronounced macroeconomic vulnerability and a need for periodic adjustment to dangerous fiscal and external imbalances. The adjustment took place either through a financial/currency crisis or an austerity package prior to a potential crisis.

Reaction of policy-makers in the Czech Republic, Hungary, Poland and Slovakia to this environment can be characterised as "discretion constrained by a strong nominal anchor and real exchange rate considerations" - flexible monetary policy strategies that, however, impose limitations by use of an explicit and visible nominal anchor and pay attention to developments in the real exchange rate. Approach of Central European countries was consistently based on high levels of central bank independence and avoidance of hard pegs. At the same time, they have not practiced true exchange rate flexibility. Countercyclical policy was generally not a part of the package.

The second strand of the thesis has the ambition to develop further existing theory of monetary policy in less developed, but highly open and financially integrated market economies. Experience of Central European countries provides some answers to the question of how to constrain discretion in monetary policy

pursued in such economies. about the role of the external constraint in policy-making and about the relevance of domestic policy co-ordination and credibility.

The thesis shows that the various elements of a commitment by monetary authorities are not duplicatory or contradictory, but interdependent in contributing to the goal of constraining discretion. It provides an instrument for analysis of effectiveness of various combinations by making their objective – constraining discretion – explicit and showing that various combinations can achieve similar results.

The experience of Central Europe shows that the combination of institutions aimed at constraining discretion is not a simple, two-dimensional, discrete matrix of a given level of central bank independence and publicly announced targets. A set of feasible combinations develops in line with development of financial and factor markets and their integration with global markets

Within such a framework. it is much easier to understand changes in targets publicly announced and pursued by policy-makers in Central Europe. The two key overall developments were the gradual shift of emphasis from exchange rate targets to domestic targets and (within domestic targets) a shift from monetary targets to inflation targets. Even though each country had its idiosyncrasies, two combinations proved to be popular and successful. One is a combination of high central bank independence and an exchange rate commitment complemented by monetary or inflation indicators of supplementary value; it is suitable in periods of limited financial integration and earlier stages of development towards market

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economy. The other one brings together high central bank independence and inflation targeting with limited role for exchange rate commitments or targets related to monetary aggregates. It has been used in the latter stages of transition. In both cases, true exchange rate flexibility is unacceptable for policy-makers.

Chapter 1: Literature review

1.1 Introduction

The first chapter reviews existing literature dealing with monetary policy in order to set the stage for the rest of the thesis. It focuses on those areas of monetary policy research that are most relevant for the findings presented here – objectives, frameworks and institutions of monetary policy – with emphasis on empirical research on small open economies, especially the ones in transition.

It is clear from the literature on monetary policy targets and central bank autonomy that the foreign exchange rate regime, money targeting and inflation targeting are widely perceived as alternative instruments policy-makers can use as intermediate targets/nominal anchors to achieve the final target of non-inflationary economic growth and are frequently analysed with a view to their mutual interaction and/or substitution in these roles.

On the other hand, the interaction between these instruments and central bank independence was largely ignored until recently and central bank independence tends to be analysed separately as an institutional device that can (or cannot, according to some) bring about low inflation regardless of the monetary policy framework. A possible exception to this rule concerns the relationship between an

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exchange rate regime and central bank autonomy, which has been analysed quite extensively since the early 1990s.

Fischer (1994) pointed out that monetary and exchange rate policies cannot be independent, especially under a fixed exchange rate, where the independent ability of the central bank "to determine the rate of inflation and interest rates is sharply curtailed". (p. 304) Empirical research confirmed this *a priori* assumption, with Anyadike-Danes (1995) showing that for countries with fixed exchange rates, the connection between central bank independence and the inflation performance was much weaker than in countries where no such rule was in place. Wyatt (1999) also found that while central bank independence was significant for inflation performance even in countries with a fixed exchange rate, it was much less so than in countries with flexible frameworks.

Alogoskoufis et al. (1992) and Hadri et al. (1998) claim, based on empirical studies, that while a pegged exchange rate cannot substitute for an independent central bank when it comes to stopping governments from instituting a short-run election boom, it is a partial substitute for central bank independence (CBI) in stopping governments from indulging their preferences in the long run.

A more recent literature betrays an increasing awareness that central bank independence, the foreign exchange rate regime and so-called domestic targets (money/inflation targets), particularly in a small open economy, all interact together

in constraining the discretion of policy-makers and assuring their continuing commitment to low inflation. Despite approaching the issue from different perspectives, Cukierman (1994), Freytag (2001), Hayo and Hefeker (2001), Kuttner and Posen (2001) as well as Mishkin and Savastano (2001) all agree that in order to analyse the choices made by policy-makers with regard to monetary policy, an integrated analysis of central bank independence and traditional intermediate targets is necessary.

Hayo and Hefeker (2001) argue that "societies have to make two decisions about monetary policy. First, they decide on the importance being attached to fighting inflation as an important objective. Then the second decision has to be made on what is the best institutional arrangement to achieve the objective of price stability, given the existing political, legal and economic framework". (p. 22)

Cukierman (1994), Freytag (2001) and Hayo and Hefeker (2001), based on research focusing on central bank autonomy, conclude that while delegation of authority to an independent central bank, together with an unequivocal mandate to focus on price stability, is an important institutional device for committing monetary policy, alternatives, such as inflation targets, fixed exchange rates and inflation contracts exist. In other words, an independent central bank is neither a necessary, nor a sufficient instrument for low inflation. (Hayo and Hefeker, 2001)

Mishkin and Savastano (2001) start from an analysis of exchange rate regimes in emerging market economies, but come to a similar conclusion that the debate over monetary policy regimes in emerging market countries should not be about flexibility of the exchange rate, but about what is the best way to constrain discretion over monetary policy. Even though an increasing though small number of monetary economists pose this question, few have attempted to answer it explicitly and empirically.

Kuttner and Posen (2001), based on their empirical study, state that domestically based monetary constraints like inflation targeting or central bank independence confer nearly the same benefits as an intermediate exchange rate regime, but without large discrete depreciations. They conclude that a "combination of inflation targeting plus exchange rate float (and central bank autonomy) would appear to be a full substitute for a hard exchange rate commitment in terms of inflation level and exchange rate depreciation with an improvement in both exchange rate volatility and inflation persistence". (pp. 3-4)

Based on a review of the situation in Latin American countries, Mishkin and Savastano (2001) conclude that "there are some emerging market countries which may not have the political and other institutions to constrain monetary policy if it is allowed some discretion. In these countries there is a strong argument for hard pegs, including full dollarisation, which allow little or no discretion to the monetary authorities. On the other hand, there are many emerging market countries that seem

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to have the ability to constrain discretion, with Chile being the clearest example, and for these cases we believe that inflation targeting is likely to produce a monetary policy which keeps inflation low and yet appropriately copes with domestic and foreign shocks". (pp. 45-7) On the other hand, Eichengreen and Hausmann (1999) are skeptical about the ability of developing countries to develop institutions which would promote good monetary policy and prefer a currency board or full dollarisation.

1.2 Monetary policy objectives and frameworks

This section will briefly review the literature defining key terms used in discussion of the topic such as final targets of monetary policy, intermediate and operational targets and nominal anchor. The section is predicated on the emerging consensus in macroeconomic policy identified by Allsopp and Vines (2000), which points to two normative lynchpins of monetary policy – clear and unequivocal commitment to the medium-term control of inflation and a view that the commitment should be honoured at minimum cost in terms of fluctuations in output and inflation. (Allsopp and Vines, 2000, pp. 27-8) Similarly, Ball (1997) defines an efficient rule for monetary policy as one that minimises an appropriately weighted sum of output variance and inflation variance, with the weights decided by the political process.

The tentative consensus is based on two assumptions. The first, which has become nearly universally shared during the last 25 years, is that while expansionary monetary policy cannot expand output in the long-run, it is very likely to decrease it. A relaxed and expansionary monetary policy does not induce long-term growth (Friedman, 1968). On the contrary, there is a solid body of evidence that high inflation caused by a relaxed monetary policy damages economic growth. Barro (1995) and Ghosh and Phillips (1998) come to a conclusion that the negative relationship between inflation and growth is statistically significant at all but the lowest levels. Sinclair (2000) and Brault (1995) conclude that the result is not as clear-cut, but conclude that even though faster inflation can both increase or decrease the rate of growth, the balance of arguments points strongly to a negative effect (Sinclair, 2000): well-run economies tend to exhibit both low inflation and high growth. (Briault, 1995)

King (2002) summarises principal costs of both anticipated and unanticipated inflation. Even an anticipated increase in prices causes front-end loading of debt burdens and distortions to cash balances, decreases savings due to incomplete indexation of the tax system and involves costs of changing price lists. Unanticipated inflation, in addition to all these problems, increases aversion to long-term contracts, induces devotion of excessive resources to hedging inflation risks and is accompanied by distortions to production and investment resulting from mistakes in distinguishing between relative and absolute price changes, as well as by redistribution of wealth between debtors and creditors.

The economic case is supported by political-economic arguments and self-reinforcing expectations. Because of an increasing belief that a stable currency, i.e. a currency with low inflation, is the best contribution that a central banker can make to long-term prosperity, central banks have been gradually abandoning targets other than monetary ones and this has been reflected in their statutes – particularly in the run-up to the creation of EMU in Europe. Also, as Scheve (2001) documents, public opinion is highly concerned with inflation even in low-inflation countries and the concern increases sharply as actual inflation grows. O'Flaherty (1990) argues that if someone is hired to mend the plumbing and instead bakes a cake, she would not be hired again regardless of whether the employer desired, after hiring the plumber, that he had acquired the services of a cook. Therefore, price stability as the principal goal of central banks reinforces the anti-inflationary role of central banks even in situations when the electorate might ex post have different short-run inflation-output preferences than before.

A price stability target does not represent an effort to achieve zero measured inflation. In developed economies, price stability is typically understood to mean price increases at about 1-2% per year. (Begg, Halpern and Wyplosz, 1999) The measured and published inflation rate usually overestimates actual price growth. Although there are no relevant studies available in the transition economies, research shows that in certain cases the actual rate of inflation overestimates reality by as much as 5% (Skreb, 1998). Price stability can be interpreted in various ways;

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nevertheless, all these interpretations are concerned not only with consumer prices, but also with the prices of industrial producers and asset prices. The exchange rate (which expresses the price of one type of asset – foreign exchange) is thereby connected, too. In practice, price stability is usually seen as the stability of consumer prices. It is an index that reflects the type of inflation which is strongly felt by consumers/citizens/the electorate. Producer prices and the exchange rate are ultimately reflected in consumer prices.

This normative view of price stability as the final target of monetary policy can, in practice, be replaced by any positive inflation target set by policy-makers, while still resting on the assumption that influencing the price level is the only thing a central bank can and should do in the medium- to long-run.

The second assumption underpinning the emerging consensus identified by Allsopp and Vines (2000) is that monetary policy can and should have a short-run stabilisation role. Medium-term commitment to price stability certainly does not exclude a short-run objective of minimising the variance of output.

In order to successfully achieve the ultimate target of price stability or a given inflation target, all policy-makers face several challenges related to controllability and credibility. The relationship between instruments of monetary policy (usually a short-term interest rate) and inflation outcomes is tenuous and fraught with lags and uncertainties. At the same time, inflation expectations of economic agents and

their beliefs about the development of nominal variables have a powerful role in determining the success of monetary policy in achieving the final target.

Therefore, monetary policy-makers often have, in addition to a final target of inflation, an intermediate target - an economic variable, which is closely related to the ultimate goal, but can be at the same time relatively well influenced by the instruments of monetary policy.

Monetary policy also tends to rely on a nominal anchor - an economic variable capable of stabilising the expectations of economic agents with respect to future inflation. (Bozo, 2000) A nominal anchor can coordinate the anti-inflationary forces in society around a specific numerical value, making it easier for the central bank to build credibility. (Wagner, 2000) Mishkin (1999) argues that a nominal anchor is needed because it both provides conditions that make the price level uniquely determined and serves as a constraint on discretionary policy that helps weaken the time-inconsistency problem.

It is generally the case that the variable chosen as the intermediate target of monetary policy and the variable chosen as the nominal anchor are identical in a given monetary policy framework and some authors seem to implicitly assume the equivalence. However, such equivalence is not inevitable though, in case of separation, conflict can easily arise between efforts to preserve/achieve nominal anchor and intermediate targets. This is not a theoretical problem - as Fry et al.

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(2000) note, central banks announce, on average, targets for 1.5 variables. Additionally, some central banks focus policy on a variable for which they do not announce an explicit target and virtually all countries that classify themselves as money targeters also publish inflation targets, guidelines or reference values.

Until recently, monetary policy used two kinds of intermediate targets/nominal anchors: exchange rate and monetary aggregates. The former entails commitment to a pre-specified/pre-announced path for the nominal exchange rate, which can take many forms. The latter means commitment to a pre-specified/pre-announced growth path of the chosen monetary aggregate and adjustment of monetary policy instruments to this effect.[1]

More recently, inflation targeting was added as the fourth option. Inflation targeting can be seen as dispensing with an intermediate target (though not with a nominal anchor) altogether by announcing specific targets for inflation. This, however, raises the question of how policy-makers achieve the target given the difficulties of controlling inflation outlined above. The alternative view therefore states that even inflation targeting has an intermediate target in the form of the inflation forecast produced by the central bank based on all the information available at any given moment. (Svensson, 1998)

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[1] Another – third – possible approach is targeting nominal income. It has been discussed in the literature (e.g. Bean, 1983; Brittan, 1981 and Meade, 1978), but it has not been implemented in practice.

Finally, monetary policy generally also has a formally defined operating target – a variable that has "a direct relationship with the available instruments of the central bank, so monetary policy steps are immediately reflected in the values of the operating target variables". (Bozo, 2000, pp. 56–7) In industrial countries, the operating target has almost universally been narrowed down to a short-term interest rate. In the emerging market economies, the shift towards interest rate targeting has been less widespread and many countries continue to target bank reserves or the somewhat broader concept of the monetary base. (Van't Dack, 1999)

1.3 Central bank independence – literature review

1.3.1 Sources and constraints of central bank independence

There is an extensive literature on the effectiveness of central bank independence to which we are going to turn shortly. An issue that has received less attention and with which the review starts is the question: what are the sources and constraints of central bank independence? Why are central banks independent in some countries and not in others? As Goodman (1991) and McCallum (1995) explain, independence can be taken away by the same body that granted it, be it government or parliament. Can central banks that are aware of this limitation really be considered independent? Can these two questions be conceptually separated?

Overall, most of the literature takes the view that the establishment and maintenance of independent central banks are driven by similar pressures. Hypotheses on determinants of central bank independence usually focus on the need for wider social and political support for low inflation. Granting independence makes a difference since there is usually a political cost of reversal. (Goodman, 1991)

Cukierman and Webb (1995) state that if "parties alternating in power share a consensus on many basic tenets of economic policy, then the parties might agree to grant the central bank considerable autonomy to pursue price stability so that the aspect of economic policy on which they agree would not suffer from political contests over other issues". (p. 399) Bagheri and Habibi (1998) confirm that party political instability leads to a higher level of CBI.

Cobham et al. (1999) show for three EU countries that even if formal independence is limited, informal independence of the central bank can be high if there is a general acceptance of monetary policy as the business of the central bank and its expertise in this respect as well as widespread social consensus about objectives and instruments of macroeconomic policy.

Hayo (1998) hypothesises that independence of central banks can be related to public attitudes towards inflation via a "historical feedback process that has led to an anti-inflation culture and public consensus on monetary stability in countries with low inflation rates". He finds empirical support for the existence of a stability

culture in low-inflation countries and higher electoral sensitivity to an increase in the actual inflation rate in such countries.

Posen (1995), Maxfield (1997) and McNamara (2002) argue that central bank independence is a reflection of the strength and preferences of a more narrowly defined financial community. Posen (1995) claims that CBI levels reflect national differences in effective financial opposition to inflation and based on data from developed countries rejects the assumption that the pattern of CBI seen prior to 1989 was random: "both CBI and a coalition in society committed to protecting that independence are necessary to achieve the low inflation". (p. 271) However, De Haan and Van't Hag (1995) show that the results hold only if CBI indices developed by Cukierman (1992) are used.

Maxfield (1997) hypothesises that politicians use central bank independence to signal creditworthiness to foreign investors and counterparts and McNamara (2002) presents a sociological argument that delegation is based on symbolic properties of CBI – "signalling agreement with a broader series of economic management principles and conveying credibility to external audiences about the economic and political character of a government". (p. 67) This view is shared by Cukierman et al. (2001) as a reason for the high level of CBI granted by transition countries to their monetary policy-makers.

At the other end of the spectrum, but surprisingly in a similar vein, Hetzel (1990) argues that the degree of central bank independence depends on the country's commitment to a free market economy based on voluntary exchange coordinated by the price system, open competition for control over resources and a stable set of property rights. An independent central bank is, in this view, a bulwark of the market economy and limited government involvement.

The literature thus generally sets an identical analytical framework for granting as well as maintaining central bank independence. A small body of research, however, distinguishes, at least implicitly, between conditions necessary for the establishment and for the maintenance of CBI by emphasising the role of checks and balances.

Moser (1999) finds that CBI is correlated to the strength of checks and balances in the political system, specifically that the legal independence of central banks is significantly higher in those OECD countries with checks and balances and that these central banks are also behaviourally more independent as documented by the stronger negative correlation in these countries between legal CBI and inflation. Keefer and Stasavage (1999) concur that central banks are associated with better inflation outcomes in the presence of checks and balances and find that the turnover of governors is reduced when tenure is protected by checks and balances.

An interesting catch is the possibility of a reverse influence from central banking on politics, which is going to receive some attention in the thesis. Research on the topic

has been meagre, with Sieg (1997) presenting a model showing how central banks may create political cycles to suit their partisan preferences and Vaubel (1997) finding econometric evidence that the Bundesbank tries to improve the electoral prospects of the government if the government commands a partisan majority in the central bank council and it tries to prevent the government from being reelected if the opposition parties have a partisan majority in the central bank council.

1.3.2 Central bank independence – does it matter and why?

The theoretical case for an independent central bank is usually based on seminal papers by Kydland and Prescott (1977), Barro and Gordon (1983), Backus and Driffill (1983) and Rogoff (1985). Kydland and Prescott (1977) and Barro and Gordon (1983) pointed out that a welfare-maximising policy-maker would be tempted to inflate unexpectedly, after inflation expectations and wages have been set, to achieve higher growth and employment – the so-called time-inconsistency problem. Economic agents with rational expectations, being aware of this temptation, would factor it into their inflation expectations, leading to an inflation bias without higher employment or growth.

Barro and Gordon (1983), Backus and Driffil (1983) and Rogoff (1985) showed how such a problem might be resolved by adhering to a strict policy rule, reputation-building or delegating policy to an independent central banker with more conservative (inflation-averse) preferences than the median voter. However, the

policy-rule and reputation-building approaches are subject to time-inconsistency problems as the temptation to renege on them raises identical issues. Therefore, delegation to an independent central bank remained as the dominant theoretical paradigm for solving the time-inconsistency problem.

However, this view has been subject to serious criticism on two fronts. McCallum (1995) argued that inflation bias is not inevitable: "All that is needed for avoidance of the inflation bias is for the central bank to recognise the futility of continually exploiting expectations that are given this month while planning not to do so in the future and to recognise that its objectives would be more fully achieved on average if it were to abstain from attempts to exploit these temporarily given expectations". (p. 208-9) Goodhart and Huang (1998) cast doubt on the intellectual framework for time-inconsistency arguments by pointing out that in many economies, frequency of wage-setting and the transmission lag for policy are such as to allow the setting of wages after inflation has been determined rather than the other way around.

However, acknowledgement of validity of these counterpoints does not mean that the theoretical case for central bank independence is invalid. Bean (1998) provides an alternative view of how inflation bias emerges and how it can be resolved. In his view, governments are inclined to push output above the natural rate because the electorate expects them to deliver a high level of output through the whole range of their policies, with the level of economic activity becoming a signal of government competence. As the rate of potential output growth and the natural rate of

unemployment is not known with any certainty, it is not surprising that governments are frequently willing to risk a more expansionary monetary policy than is really prudent. Policy-makers can argue that such a policy is not likely to be inflationary, but is rather consistent with their successful efforts to raise the output potential of the economy. Through delegation to a genuinely independent central bank, this problem disappears. Bean shows both an alternative mechanism of how inflation bias is generated and how an autonomous central bank can resolve it.

A similar view is espoused by Forder (1998b), who argues that inflation bias can be generated by a "combination of policy-makers with short time horizons and economic agents with backward looking expectations formation". (p. 330) In that case, central bank independence can provide a benefit if it reduces the policy maker's discount rate.

Beginning in the late 1970s, but particularly since the end of the 1980s, a plethora of empirical studies have attempted to determine whether central bank independence has a measurable impact on inflation. In order to test hypotheses about central bank independence, it is necessary to quantify central bank independence in individual countries and then compare it with various macroeconomic variables.

Quantification of central bank independence has usually been based on two pillars:

- reliance on analysis of central bank statutes, i.e. on legal determinants of central bank independence

- use of statutes to construct an index of central bank independence with multiple criteria and weights determined by the authors

Parkin and Bade (1978), Grilli et al. (1991), Cukierman (1992) and Alesina and Summers (1993) are generally seen as the seminal studies, all confirming that central bank independence is negatively correlated with inflation, but not with output. The most important findings concerning the relationship between central bank independence and inflation were confirmed for a variety of country samples by Banaian et al. (1995), Brumm (2000), De Haan and Kooi (2000), Eijffinger et al. (1997), Eijffinger et al. (1998), Franzese (1999a, 1999b), Froyen and Waud (1995), Hall and Franzese (1998), Jonsson (1995) and Kilponen (1999).

The literature differs significantly on what actually constitutes the element of central bank independence that is associated with lower inflation. In the most complex indices – Cukierman (1992) or Grilli et al. (1991) – there is a multiplicity of questions concerning appointment and recall procedures of central bank officials, setting of monetary policy targets and lending conditions enjoyed by governments when borrowing from a central bank. On the other end of the spectrum, Banaian et al. (1995) use a simple independence dummy based on absence of government override for monetary policy decisions and find that it is significant in inflation equations when controlling for other variables.

De Haan and Kooi (1997) disaggregate traditional central bank indices into two elements – conservativeness (aversion to inflation) and independence (autonomy to use instruments to achieve given ends). Using data for OECD countries over the periods 1972–89, they show that instrument independence matters while conservativeness does not, a conclusion shared by Kilponen (1999), but disputed by Iversen (1998a, 1998b) who finds that it is conservativeness that decreases inflation.

There is a strand in the literature asserting that the empirical relationship between inflation and central bank independence exists, but is weak or barely significant – e.g. Dolmas et al. (2000), Fujiki (1996), or Walsh (1997). Alternatively, central bank independence is shown to be negatively associated with inflation, but only under certain circumstances - during disinflation (Jordan, 1997) or if periods of high inflations are included in the sample. (Sturm and De Haan, 2000) In a similar vein, Cukierman (1994) argues that CBI works mostly as a safeguard against the onset of high inflation, but is less important as a remedial device. Kaltenhalter and Anderson (2000) claim that the importance of CBI for inflation diminished significantly during the 1980s and hypothesise that the reason is that, in the 1980s, fighting inflation became a political priority for governments and independence of central banks became much less relevant.

The empirical literature propounding the importance of central bank independence for inflation performance has provoked a large body of comprehensive criticism. The criticism focuses on three areas. First of all, critics of the central bank

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independence literature allege that existing indices and indicators do not measure actual independence, which cannot be deduced from central bank statutes, and illustrate the point by various examples from the real world. (Forder, 1996) Walsh (1993) points out that if the implicit basis for the assessment of the quality of central bank independence indices is whether they show association with inflation, they can hardly be said to prove the link with inflation. Cobham et al. (1999), while emphasising the importance of central bank independence for monetary policy, show that legal independence in developed countries provides limits, within which informal independence can both vary widely and be extremely important.

Berger et al. (2001) answer the criticism by pointing out that legal CBI indices serve as proxies for actual independence, but they acknowledge their noisiness in this respect. Nonetheless, they claim that an exhaustive survey of research shows that such indices are quite robust in OECD countries. Cukierman (1994) makes a subtly different point when he states that legal independence is a necessary, but not a sufficient condition for actual independence.

Uncertainty about the robustness of legal indices led to attempts to evaluate central bank independence not by analysis of law, but by measuring turnover of governors based on the assumption that more stability indicates higher independence. The turnover of governors as measured by Cukierman (1992) is significantly and positively related to inflation in developing countries while legal indices are not,

leading to a hypothesis that where the rule of law is weaker, legal indices largely lose their meaning.

The second type of criticism concentrates on the actual methodology used in the construction of individual indices and on points assigned to individual countries. Mangano (1998), based on a detailed analysis of indices constructed by Grilli et al. (1991) and Cukierman (1992), shows that the authors diverged on 30% of the legislation consulted to construct the indices, rising to 50% in some countries. They also disagreed on what criteria to include, sharing only nine out of 15-16 criteria used in the two indices. He also finds that if ranking is used instead of quantitative values, the statistical relationship between CBI and macroeconomic variables becomes largely insignificant. However Berger et al. (2001) claim that the methodology used by Mangano in normalisation is controversial and not straightforward.

Forder (1998a) claims that if the factual mistakes in Parkin and Bade (1978), Alesina (1989) and Emerson et al. (1992) are corrected, the relationship between central bank independence and inflation largely disappears. Cargill (1995) comes to the same conclusion, though he claims only that the link between CBI and inflation becomes much weaker if major flaws in measurement concerning certain countries are corrected.

The third group of doubts concerning the measurement of the relationship between central bank independence and inflation is based on empirical studies disproving the existence of the relationship. Campillo and Miron (1997) claim that their results prove conclusively that CBI is not a substantial causal factor in inflation performance and that institutional arrangements do not by themselves seem to be of much help in achieving low inflation. Akhand (1998) and Banaian et al. (1998) find the relationship between independence and inflation fragile and largely inconclusive. Cornwall and Cornwall (1998) and Fuhrer (1997) go even further, demonstrating that central bank independence is insignificant for inflation, but has negative consequences for growth and unemployment.

A similar though subtly different point is made by Posen (1998) who claims there is no evidence to support the hypothesis that "the mechanism by which central bank independence leads to low inflation is the enhancement of credibility of commitments to price stability... Disinflations cost more, rather than less, and take just as long in countries with relatively high central bank independence". (pp. 355-6) The finding is confirmed partially by Jordan (1997) who concludes that CBI is significant during disinflation, but involves higher sacrifice ratios. Froyen and Waud (1995) argue to the contrary – according to their findings, CBI generally improves the Phillips curve for developed countries.

The most significant and most frequently discussed determinant of effectiveness of central bank policy is fiscal policy. There is a widespread agreement that, following

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the logic of the unpleasant monetarist arithmetic of Sargent and Wallace (1981), even an independent central bank can be overwhelmed by a sufficiently excessive fiscal policy into monetisation of budgetary deficits. The issue of the relationship between central bank independence, fiscal policy and inflation is not clear-cut for less extreme situations – both theoretically and empirically – and raises issues of causality and mutual influence.

In a simplified model, two regimes can be discerned: fiscal dominance and monetary dominance, depending on whether monetary policy can determine the price level by its decisions or not. (Canzoneri and Diba, 1996) Competition for dominance can lead to strategic behavior by monetary and fiscal authorities to test the other one, resulting in suboptimal outcomes. (Alesina, 1988, 1989) This 'high-stake game of chicken' (Forder, 1998a) can be very dramatic indeed.

Barnhart and Darrat (1988), Brown and Yousefi (1996), Giannaros and Kolluri (1985), Karras (1994) and Protopapadakis and Siegel (1987) find no or little evidence of monetisation of budget deficits, while Burdekin and Laney (1988), Burdekin and Wohar (1990). De Haan and Zelhorst (1990), Demopoulos et al. (1987) and Dornbusch and Fischer (1981) find that fiscal deficits do indeed tend to be monetised.

Regarding the influence of central bank independence on monetary expansion, research by De Haan and Sturm (1992), Cukierman (1992) and Cukierman et al

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(1992) indicates that CBI is negatively correlated either with the budget deficit or central bank credit.[2] On the other hand, Fry (1998), Grilli et al. (1991), Masciandaro and Tabellini (1988) and Sikken and de Haan (1998) do not find significant relationships between these variables.

There is an apparent consensus that central bank independence attenuates the political business cycle and tends to reduce partisan effects on the economy[3] – see, for example, Alesina et al. (1992), Alesina et al. (1993), Alesina and Roubini (1993), Clark et al. (1998) and Hadri et al. (1998).

The importance of fiscal policy for inflation and effective central bank independence is magnified in developing and transition economies. Fry (1998) goes so far as to argue that in these countries, central bank independence is *determined* by both the size of the fiscal deficit and the methods by which it is financed.

Mas (1994, pp. 11-18) describes the potential channels of influence:

> "consider a case of a government sustaining large fiscal deficits which the ICB [independent central bank] is reluctant to monetise. In an LDC with shallow capital markets and limited access to foreign savings, substantial domestic debt financing of deficits might induce inordinately high real interest rates and crowd out credit to the private sector. By claiming that these are monetary problems, the government might be able to shift political

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[2] Central bank credit is a better measure of the fiscal deficit and its monetisation in many developing countries, where quasi fiscal liabilities often dwarf the official fiscal deficit and the budget imbalance is a key driver of money creation.

responsibility for its fiscal actions to the ICB... the limiting case is where the size of the financial sector is so small relative to budget deficits that the central bank has no choice but to monetise deficits... if fiscal dominance applies, the anti-inflation stance of the ICB will not be credible and institutional CBI does not translate into independence of monetary policy... ICB will not generate any credibility in economic policies if the country faces fiscal dominance, the banking sector is in a precarious financial condition or if there are no clear mechanisms to resolve conflicts between monetary and fiscal policies".

In other words, developing countries are subject to the same problems as developed countries, but to a much higher degree.

The importance of actual fiscal policy for effective central bank independence is further confirmed by Cukierman's (1994) observation that compliance with legal limitations on lending indicates that it is generally poor in developing and transition economies, so that even formal legal commitment by government is not enough in the absence of commensurate budgetary action.

Fiscal policy is not the only factor interacting with central bank independence and inflation, even though it is the one that is most frequently discussed. The structure of labour markets has received growing attention in late 1990s though with diverging results. Franzese (1999a, 1999b) and Hall and Franzese (1998) claim that central bank independence is significantly related to inflation on average, but the magnitude of importance in a given country depends on the level of central wage bargaining. Cukierman and Lippi (1999) also find a hump-shaped relationship between central

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[3] Partisan effects refer to different macroeconomic effects of left-wing and right-wing governments.

bank independence and centralised wage bargaining. Jenkins (1996) finds that "nations with the highest inflation rates tended to be the least corporatist economies and nations with the best inflation performance tended to have the most corporatist economies". (pp. 262-3)

The relationship between central bank independence, inflation and responsibility for banking supervision remains under-researched. Cukierman (1994) mentions in passing that "when deposit insurance and other prudential functions are allocated to the central bank, large-scale bank failures risk being monetised more easily than when those functions are performed outside the central bank" (p. 1445) and Jenkins (1996) supports this conjecture by findings that countries where central banks carried the heavy regulatory burden of the banking industry have had the worst inflation records. On the other hand, Goodhart and Schoenmaker (1995) argue that even though a formal separation of function of monetary policy and banking supervision can be justified because taxpayers' funds are generally used in bank rescues, they are doubtful whether central banks can be effectively disentangled from the financial system due to their lender of last resort functions and their concern for the systemic stability of the financial system. Indeed, it is "possible to argue that where such conflicts really become important (...), they have to be internalised within a single authority to obtain an efficient solution". (p. 547)

1.3.3 Central bank independence in transition

Studies focusing on central bank independence and its effects on monetary policy emerged surprisingly soon after the actual transition began, given that new central bank laws were passed even in the most advanced Central European countries only in 1991 and 1992. As Pospisil (1997) argues, there is no point in analysing pre-1989 laws as these were communist laws for a communist economy, generally based on a monobank system.

Siklos (1994) and Eijffinger and Van Keulen (1995) present early studies on the role of newly created central banks in an emerging market economy of transition countries, followed later by Knight (1997), Loungani and Sheets (1997), Pospisil (1997), Radzyner and Riesinger (1997) and Abel et al. (1998). Lybek (1999), Hochreiter and Kowalski (2000), Maliszewski (2000) and Cukierman et al. (2001) complete the first decade of transition studies on central bank independence with more sophisticated and extensive analyses of the topic.

Knight (1997), Pospisil (1997) and Radzyner and Riesinger (1997) are purely descriptive without attempts to quantify central bank independence in the sample of countries or to estimate effects of CBI on inflation. The papers focus, respectively, on countries of the former Soviet Union, the Czech Republic and five Central European countries. Nonetheless, they present an interesting source of thinking on

'softer' aspects of central bank independence, particularly on political interplays between central bank leadership and governments.

Siklos (1994) - slightly modified in Abel et al. (1998) - and Dvorsky (2000) got further in quantifying central bank independence, relying on existing indices with some modifications to reflect what the authors perceived as the idiosyncrasies of countries in transition. Siklos (1994) bases his analysis of four countries of Central Europe (Czech Republic, Hungary, Poland and Slovakia) on a modified index by Cukierman (1992). Instead of testing for the relationship between CBI and inflation, he studies the relationship between the monetary policy reaction function and CBI, finding a fragile relationship. In Abel et al. (1998), the previous research is extended to Bulgaria.

Dvorsky (2000) focuses on a detailed assessment of central bank independence in five Central European countries (Czech Republic, Hungary, Poland, Slovenia and Slovakia), estimating both Cukierman (1992) and Grilli et al. (1991) indices and then verbally analysing their impact on inflation developments. Her assessment is wrong in at least in one respect, by claiming that banking supervision in Czech Republic and Slovakia is not a sole responsibility of the central bank. She also has explicit disagreements with Maliszewski (2000), another ambitious and detailed assessment. The indices as compiled by Dvorsky are shown in table 1.1

Table 1.1: Legal CBI in the CEEC – 5 Measured by the Cukierman Index

	Czech Republic	Hungary	Poland	Slovakia	Slovenia
1.Chief executive officer (CEO)					
term of office	0.75	0.75	0.75	0.75	0.75
appointment procedure	0.50	0.25	0.50	0.25	0.50
conditions of dismissal	0.83	0.83	0.83	0.83	1.0
incompatibility clause	1.0	0.50	1.0	1.0	0
2. Policy formulation (PF)					
policy autonomy	1.0	1.0	1.0	1.0	1.0
conflict resolution	1.0	1.0	1.0	1.0	1.0
involvement in budget	0.0	1.0	1.0	0.0	0.0
3. Central bank objectives (OBJ)					
statutory objective	0.6	0.6	0.8	0.6	0.6
4. Limitations on lending (LL)					
limits on advances	n.a	0.66	1.0	n.a	0.66
limits on securities	0.66	1.0	1.0	0.66	n.a
limits on decision	1.0	0.66	n.a	1.0	0.66
limits on borrowers	0.66	1.0	n.a	0.66	0.66
type of limits on credit	0.33	0.33	n.a	0.33	0.33
limits on maturity	1.0	1.0	n.a	1.0	0.66
limits on interest rate	0.25	0.75	n.a	0.25	0.25
limits on primary mkt.	0	1.0	n.a	0	0
Index 1 (LVAU, unweighted)	**0.6907**	**0.7841**	**0.9140**	**0.6818**	**0.6004**
Index 2 (LVAW, weighted)	**0.7000**	**0.7485**	**0.8987**	**0.6853**	**0.6044**
Siklos (1994)	0.56	0.39	0.46	0.33	n.a
Cukierman et al. 2001 (LVAW)	0.69	0.67	0.46	0.62	0.6

Source: Dvorsky (2000)

Table 1.2: Legal CBI in the CEEC – 5 Measured by the GMT Index for Transition Economies

	Czech Republic	Hungary	Poland	Slovakia	Slovenia
Political Independence					
Governor					
G1	**	*	**	*[4]	**
G2	*	*	*	*	*
Board					
B3	*	*	*	6	*
B4	*		*		*
B5[5]	*	*	*	*	
Relationship with government			*	*	*
R6	*	*	*	*	*
R7	*	*			
Constitution					
C8	*	*	*	*	*
C9					
Index P.I.	9	7	9	6	8
Economic Independence					
Direct credit to the government					
D1	*	*	*	*	*
D2[7]		*	*		
D3	*	*	*	*	*
D4	*	*	*	*	*
D5		*	*		
Monetary Instruments					
M6	*	*	*	*	*
M7		**	*	*	
Index E.I.	4	8	7	5	4
Overall Index O.I.	13	15	16	11	12
O.I. Maliszewski (1997)	14	9	12	12	12

Source: Dvorsky (2000)

Definitions:

G1: governor not appointed by the government (*) and not appointed by the parliament only (**)

G2: governor appointed for more then five years

B3: no board member appointed by the government

B4: board appointed for more then five years

R6: no mandatory government representative on the board

R7: government/parliamentary approval of monetary policy is not required

C8: statutory responsibility to pursue monetary policy

C9: presence of legal provision supporting the Bank in conflicts with the government

D1: direct credit facility is not automatic

D2: direct credit facility is at the market interest rate (or at the basic CB rate)

D3: direct credit facility is temporary

D4: direct credit facility is of limited amount

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[4] Maliszewski assigns no asterisks to Slovakia on item G1.

[5] This is not a criterion originally used by Grilli, Masciandaro and Tabellini, so it is not used in further analysis.

[6] In contrast to Maliszewski, no asterisks is assigned to Slovakia on item B4.

[7] In contrast to Maliszewski, no asterisks is assigned to the Czech Republic and Slovakia on item D2.

D5: the bank does not participate in the primary market for public dept
M6: the discount rate is set by the central bank
M7: supervision of commercial banks is not entrusted to the central bank (**) or not entrusted to the central bank alone (*)

Dvorsky (2000) also follows Cukierman (1992) by calculating the turnover of governors as an alternative proxy of CBI in countries where the rule of law is weak, but shows that the results depend critically on the length of period used and the interpretation of individual appointments. She also asserts that inflation at the early stage of reform was typically fuelled by factors specific to the transition and often beyond the direct control of the central bank and that the role of CBI in both early and advanced stages of transition for central bank independence was rather limited.

The third and most ambitious body of literature not only quantifies central bank independence in transition countries, but also tries to empirically test its influence on inflation. Eijffinger and Van Keulen (1995) analyse the Czech Republic, Hungary and Poland within a sample of 11 developed and transition countries, using several indices, including the one by Grilli et al (1991), shown in table 1.3 For the whole sample, the findings are rather ambiguous.

Table 1.3: GMT Index of political independence as measured by Eijffinger and Van Keulen (1995)

	1	2	3	4	5	6	7	8
Czech Republic	1	1	1	1	1	1	1	7
Hungary		1				1	1	3
Poland		1		Cannot be det.	1		1	3

Source: Eijffinger and Van Keulen (1995)
Note:
1: governor not appointed by the government (*) and not appointed by the parliament only (**)
2: governor appointed for more then five years

3: no board member appointed by the government
4: board appointed for more then five years
5: no mandatory government representative on the board
6: government/parliamentary approval of monetary policy is not required
7: statutory responsibility to pursue monetary policy
8: presence of legal provision supporting the Bank in conflicts with the government

Lybek (1999) creates a new index of autonomy for central banks of the former Soviet Union and calculates simple correlations for the period of the mid-1990s. Higher autonomy is correlated with lower inflation and higher growth, but the paper sees the overall commitment to reform as the reason behind both rather than assigning any specific role to central bank independence as such.

Loungani and Sheets (1997) also come up with their own index and test it on 12 transition countries and find a negative correlation between legal CBI emerging between 1989 and 1992 and inflation in 1993 even after they control for fiscal policy, overall reform efforts and turnover of governors.

Maliszewski (2000) studies 20 transition countries using a modified Grilli et al. (1991) index. Despite differences with Dvorsky (2000) on several indications, he makes the same mistake of stating that Slovakia has banking supervision outside the central bank. The results are shown in table 1.4

Table 1.4: Elements of political (PI) and economic (EI) central bank independence as measured by Maliszewski (2000)

	G1	G2	G3	B4	B5	R6	R7	C8	C9	D10	D11	D12	D13	D14	D15	M16	M17
Czech Rep 92	*	*	*	*	*		*	*	*	*		*	*		*	*	
Hungary 91		*	*					*		*	*	*	*			*	*
Hungary 97		*	*					*		*	*	*	*	*		*	*
Poland 89	*			*		*		*		*			*		*	*	
Poland 92	*	*	*	*		*		*		*			*		*	*	
Poland 97	*	*	*	*	*		*	*		*	*	*	*	*	*	*	
Slovak Rep 92		*	*				*	*	*	*		*	*		*	*	*

Source: Maliszewski (2000)

Notes:

G1: Governor not appointed by the government.
G2: Governor appointed for more than five years.
G3: Provisions for governor's dismissal non-political only.
B4: None of the board appointed by the government.
B5: Board appointed for more than five years.
R6: No mandatory government representative in the board.
R7: Government approval of monetary policy is not required.
C8: Statutory responsibility to pursue monetary stability.
C9: Presence of legal provision supporting bank in conflicts with the government.
D10: Direct credit facility is not automatic.
D11: Direct credit facility is at the market interest rate.
D12: Direct credit facility is temporary.
D13: Direct credit facility is of limited amount.
D14: CENTRAL BANK does not participate in the primary market.
D15: All direct credit is securitised.
M16: Discount rate is set by the central bank.
M17: Supervision of commercial banks is not entrusted to the central bank (**) or not entrusted to the central bank alone (*).

Maliszewski (2000) finds that inflation in the year after enactment of a central bank law is negatively correlated to central bank independence, but that central bank independence is not a substitute for other elements of stabilisation programs and exerts a downward pressure on inflation only at the high level of liberalisation after the initial price shock has been contained. Hochreiter and Kowalski (2000) look at the issue from a slightly different perspective – their research confirms the

importance of central bank financing of fiscal deficits for inflation and stability in transition countries.

Cukierman et al. (2001) provide the most ambitious and sophisticated assessment of effects of central bank independence in countries of transition based on their assessment of legal and actual independence and their interaction with other factors contributing to inflation developments. They find that postcommunist economies created central banks with levels of legal independence that are substantially higher, on average, than those of developed economies during the eighties. A weaker rule of law as well as the unique circumstances of early transition probably negated much of this legal accomplishment as (controlling for other variables) CBI was unrelated to inflation during the early phases of liberalisation. However, once liberalisation is high and sustained and abstracting from wars and price liberalisation, Cukierman et al. (2001) find that legal CBI and inflation are usually significantly and negatively related. Since the countries studied in the thesis are the ones with rapid, high and sustained liberalisation, the paper implies, contrary to Dvorsky (2000), that CBI played an important role indeed in their inflation developments during transition.

1.3.4 Conclusions

Gartner (2000) warns against premature policy recommendations based on research into political macroeconomics – in his view, the area is still under such a rapid development that there are no certain truths yet. Nonetheless, two recent surveys

attempted to settle the issue of central bank independence and its relationship with monetary policy and inflation. Berger et al. (2001) conclude that the negative relationship between central bank independence and inflation is quite robust, while Hayo and Hefeker (2001) argue that central bank independence is neither necessary nor sufficient for low inflation.

In terms of necessity, it was already argued in the review of the literature that there are other instruments to achieve low inflation and there is no reason to assume that even proponents of CBI would disagree with that. In terms of sufficiency, Hayo and Hefeker (2001) go on to argue the familiar case that CBI unsustainable without wider social and political support, which again seems to be shared by those who believe in the importance of CBI. Overall, this view is not mutually exclusive with the view that central bank independence is robustly related to low inflation. There are other ways of achieving low inflation, but central bank independence, embedded in a supportive socioeconomic environment, is certainly one of them.

1.4 Experience with domestic targets of monetary policy

This section reviews the empirical evidence on the so-called domestic targets of monetary policy (Kuttner and Posen, 2001) – money and inflation targets. Implemented individually, together or in conjunction with other mechanisms of constraining discretionary policy. money and inflation targets continue to be among

the most important tools of monetary policy despite the apparent worldwide shift from targeting money to directly targeting inflation.

Several notes of caution are in order though before reviewing the existing literature on the advantages, disadvantages and implementation of various domestic targets. irst of all, as Muscatelli and Trecroci (2000) note, research on the relationship between actual observed reaction functions of monetary policy and formal policy frameworks indicates that formal institutional reform is neither sufficient nor necessary to achieve change in the actual conduct of policy. This seems to be particularly valid for shifts and changes between money and inflation targeting, where Fry et al. (2000) argue that differences between money and inflation targeting do not necessarily reflect differences in a central bank reaction function since even money targeters usually defer to inflation considerations in face of velocity shocks. They note that central banks on average announce target for 1.5 variables and that virtually all countries that classify themselves as money targeters also publish inflation targets, guidelines or reference values. As Mishkin and Savastano (2001) write, inflation targeting is in the eye of the beholder.

Secondly, even central banks focusing solely on domestic targets usually take into account the development of asset prices including the foreign exchange rate. Wadhwani (2000) Cecchetti et al. (2001) argue that the central bank "is likely to achieve superior performance in inflation by adjusting instruments to asset prices as well... and policy-makers should watch for asset price misalignment... asset prices

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contain information about future inflation". (pp. 2-3) Divorcing domestic and foreign targets is therefore difficult both in conceptual and practical terms.

1.4.1 Monetary targeting

Use of monetary targeting by central banks attempting to achieve their final inflation targets is predicated on two assumptions:

- the relationship between growth of a chosen monetary aggregate and the growth of the price level is stable and/or predictable
- monetary policy is able to control the development of the monetary target chosen as the intermediate target of monetary policy

Until the 1970s, both theory and reality seemed to validate the two assumptions, explaining why monetary targeting was adopted by many industrial countries in the 1970s after the Bretton-Woods system of fixed exchange rates broke down. The theoretical case rested on the modern quantity theory of money, which assumed a stable money velocity, leading to a direct relationship between the growth of money and the growth of nominal income. Consequently, controlling the growth of money meant control of the nominal income in the short run and of inflation in the medium run. (Goodhart et al., 1994) Provided real income developments could be predicted, the relationship between money and prices becomes proportional and predictable.

Empirically, this seemed also to be the case. Since the central bank was seen as effectively controlling the money supply, controllability was a technical issue.

However, money targets were formally abandoned or lost their key position in decision-making during the 1980s because the promises they held out had not been fulfiled in any country. (Goodhart et al., 1994; Mishkin and Savastano, 2001; Oliver, 2001)The relationship between money and prices proved to be highly unstable. De Grauwe and Polan (2001) in their analysis of 160 countries over the last thirty years show that a strong positive relation between the long-run inflation and money growth rate is due to the presence of high (or hyper-) inflation countries in the sample. On the other hand, the relationship between inflation and money growth is weak for low inflation countries - defined as less than 10% per annum on average over the last 30 years.

The issue of controllability also proved to be much more problematic than originally thought – the central bank can closely control narrow monetary aggregates, particularly M0 (monetary base), but in practice only at a prohibitive cost in terms of extreme interest rate instability, which policy-makers were unwilling to accept. Even if they had been willing to do so, the relationship between narrow aggregates and inflation is less certain than that for broader aggregates (M2 or M3).

For M2 or M3, capital mobility and rapidly changing financial markets (new financial instruments, technology, financial globalisation) caused unpredictable

shifts in velocity. (Goodhart 1994; Coats, 2000) So arose a combination of uncertain effects on inflation and weak controllability (particularly for small open economies where capital flows are an important contribution to money creation, which cannot be fine tuned by small movements in the interest rate).

As Mizen (2000) points out, money targeting seems to be, more than other regimes, subject to Goodhart's law – any observed statistical relationship in monetary policy breaks down once that relationship is used as a transmission/targeting mechanism. Even in Germany, often perceived as the principal money targeter, the targets were not adhered to completely and were achieved only about 50% of the time (Oliver, 2001). Despite Germany and Switzerland remaining officially money targeters at least until the start of EMU in 1999, Bernanke et al. (1999) claim that it would be more apt to describe them as proto-inflation targeters.

Generally, money targets can hardly be expected to serve as anchors for expectations of economic agents due to their apparent obscurity and technical complexity. As mentioned already, nearly all money targeters also announce some sort of inflation target or reference value to alleviate the problem.

All of the problems of money targeting tend to be even more acute during transition and reduce its suitability as an intermediate target. (Coats, 2000) It might, therefore, seem surprising that a high number of postcommunist economies, especially in Central and Eastern Europe, formally subscribed to money targeting for an extended

period of time. However, a closer look reveals that money targets were often used together with exchange rate targets and, when in conflict, the foreign exchange rate target prevailed. This is true not only for countries that formally pegged their currencies, but also for those with officially floating currencies and money-based stabilisation programs – e.g. Slovenia. (Wagner, 2000) The same experience is true for Latin America, where "no country has truly followed a monetary targeting strategy, and those that have tried or have been regarded as trying, have instead conducted a highly discretionary monetary policy which is, of necessity, non-transparent and has the potential of breaking down at any point". (Mishkin and Savastano, 2001, pp. 45-7)

1.4.2 Inflation targeting

Inflation targeting dispenses with a formal intermediate target and attempts to target inflation directly. The boundary between inflation targeting and other monetary policy frameworks (such as money targeting and discretionary policy with an implicit anchor) is highly uncertain and frequently in the eye of the beholder. (Mishkin and Savastano, 2001)

As outlined in Almeida and Goodhart (1998), inflation targeting in developed countries has usually been adopted under one of the following two circumstances:

- collapse of a fixed exchange rate regime

- after a period of discretionary policy with unsatisfactory results.

After several developed economies – e.g. Canada, New Zealand, United Kingdom, Sweden, Spain, Finland and Australia - adopted inflation targeting in the early to mid-1990s and early evaluations indicated the relative merits of the new framework (see Brunila and Lahdenpera, 1995 and Leiderman and Svensson, 1995), it was rapidly instituted by many developing and transitional economies, which either voluntarily or under duress gave up their fixed exchange rate. Among more recent inflation targeting converts are Brazil, the Czech Republic, Hungary, Israel, Mexico and Poland (e.g. Bogdanski et al.. 1999; Carstens and Werner, 1999, Leiderman and Bar-Or, 2000).

Green (1996), Bernanke and Mishkin (1997) and Bernanke et al. (1999), assert that the switch to inflation targets should contain more than just a straightforward announcement of the precommitment to achieving a given quantitative target for inflation. Even though the experiences of individual countries differ significantly, the introduction of inflation targeting usually means:

- the announcement of an explicit, quantitative target for inflation. Such a target specifies the price index, the target level, the tolerance interval, the time frame and situations under which the target might not be adhered to (Almeida and Goodhart, 1998; Leiderman and Svensson, 1995)

- the absence of other monetary policy targets or, at least, if there is a conflict, the clear subordination of other targets to (achieving) inflation aims (ibid.)

- an institutional commitment to price stability as the primary, long-term goal of monetary policy and increased communication with the public about the plans and objectives of policymakers (Bernanke and Mishkin, 1997, p. 97)

- increased transparency of monetary policy (Bernanke et al., 1999, pp. 297-8)

- increased discipline of monetary policymakers and their accountability for achieving inflation objectives. (Bernanke et al., 1999, pp. 24-5, 296-7)

If these conditions are met, announced inflation targets can become credible nominal anchors and stabilise the inflation expectations of agents. The remaining problem is the missing intermediate target and the ability of policy-makers to achieve the direct inflation targets. Since the monetary policy lag is substantial and estimated to last usually between one and two years, this is usually resolved by setting targets for the horizon which is believed to be most influenced by current policy decisions. Additionally, many countries produce formal inflation forecasts for this horizon and by changing policy instruments to hit the target within the forecast framework effectively set the inflation forecast as an intermediate target.

1.5 Foreign exchange rate regime and exchange rate targeting

Monetary policy everywhere has to deal with the choice of foreign exchange rate regime and its consequences for monetary policy as a whole. Foreign exchange rate developments are an important policy transmission channel for any country, but particularly so for small open economies. Since all the countries studied in the thesis are small and very open, the discussion of the foreign exchange rate in this section, indeed in the whole thesis, will focus on small open economies unless explicitly stated otherwise.

Exchange rate targets are among several kinds of intermediate targets of monetary policy, entailing commitment to a pre-specified path for the nominal exchange rate, which can take many forms. Even though discussion of exchange rates is often simplified to a fixed vs. flexible dichotomy (Caramazza and Aziz, 1998), with fixed exchange rates associated with exchange rate targeting, Frankel (1999) points out that the actual range is much more diverse, containing at least nine official foreign exchange rate regimes:

- currency union – sharing currency with another country
- currency board – exchange rate fixed by law and domestic currency issued only to extent backed by foreign assets
- truly fixed exchange rate – peg with an ostensibly permanent parity
- adjustable peg – peg with a declared option to realign

- crawling peg – regular resetting of exchange rate – daily, weekly, monthly

- basket peg – exchange rate is fixed in terms of a weighted basket of currencies

- target zone or band – pledge to intervene when the exchange rate hits pre-announced margins on either side of a central parity

- managed float – readiness to intervene without defending any particular parity

- free float – no intervention in the foreign exchange market

With the exception of the free float, all involve a degree of exchange rate targeting though the currency union and currency board are much more than that, involving both formal and actual renunciation of almost any monetary policy independence.

As Reinhart (2000), Reinhart and Rogoff (2002), Bofinger and Wollmershaeuser (2001) and Yeyati and Sturzenegger (1999) recognise, official exchange rate regimes can be quite misleading as they often are in conflict with the actual observed behaviour of central banks in exchange rate management. Yeyati and Sturzenegger (1999), for example, define four regimes - flexible, dirty float, crawling peg and fixed - based on observed movements in exchange rate volatility,[8] volatility of exchange rate changes[9] and volatility of reserves.[10]

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[8] The average of the absolute monthly percentage changes in the nominal exchange rate during the year.
[9] The standard deviation of the monthly percentage changes in the exchange rate.
[10] The average of the absolute monthly change in international reserves relative to the monetary base in the previous month.

In small, open and/or developing economies, the foreign exchange rate channel has historically been one of the most frequent and strongest monetary policy channels used in the control of inflation. In a small open economy, the sustainable change in domestic prices of tradables is, *ceteris paribus*, equivalent to the change in the foreign exchange rate and foreign inflation. This led some authors to declare that the foreign exchange rate policy is the monetary policy in small, open developing countries (e.g. Worrell, 2000), especially since an overwhelming number of these countries have some sort of exchange-rate target. (see Fry et al., 2000)

In transition countries, the importance of the foreign exchange rate channel of monetary policy has been reinforced by the low reliability of other channels. In most developing countries and particularly in transition countries, the banking system is often an unreliable transmission mechanism for monetary policy due to its strongly oligopolistic structure, insolvency or at least the heavy burden of non-performing loans and other structural rigidities. Other asset markets (stock market, real estate, commodities) are underdeveloped and often unimportant. In such an environment, the foreign exchange rate channel is often not only more important, but also more direct and controllable than other channels of monetary policy (Kamin, Turner, and Van't Dack, 1997).

The nominal foreign exchange rate is also crucial for inflation expectations and as a potential nominal anchor. This is particularly true in economies with a high level of

foreign exposure in trade and investment flows, a history of political and/or economic upheaval or low credibility of domestic economic policy in general. However, it is not only the *nominal* exchange rate which matters for inflation. As Fischer (2001) points out "there is almost certainly a short-run trade-off between the real exchange rate and inflation". (p. 12)

At the same time, the nominal and particularly the real exchange rate are closely associated not only with internal balance (inflation), but also with external balance as represented by the current and capital accounts of the balance of payments. There is an extensive literature on external imbalances, foreign exchange rate misalignment, currency crises and potential policy responses (e.g. Esquivel and Larrain, 1998; Flood and Marion. 1998; Dornbush, Goldfajn and Valdes, 1995).

It is the current account of the balance of payments that is usually the focus of sustainability analysis, particularly with regard to a given foreign exchange rate. (Roubini and Wachtel, 1998) The reason is that capital flows are variable and volatile and it is their variability and volatility that makes currencies susceptible to sudden crises. (Eichengreen. Rose and Wyplosz, 1996; Eichengreen, Rose and Wyplosz, 1995; Esquivel and Larrain, 1998; Gerlach and Smets, 1995) Capital inflows represent a natural response to investment opportunities beyond what can be financed by domestic savings and to high potential returns on investment. (Lipschitz, Lane and Mourmouras, 2001) On the other hand, capital inflows in Asian countries before the 1997 crisis were also regarded as benign, because they corresponded to a

high level of domestic investment and domestic savings, rapid growth and strong fiscal positions.[11] Based on this experience, there is a widespread perception that "countries receiving substantial capital inflows [need] to consider carefully the reasons for these flows and the appropriate policy response". (ibid., p. 1)

While foreign direct investment is presumably driven by factors that are not subject to rapid change and not subject to rapid outflows, net FDI flows can still change dramatically after a major crisis as shown by the Russian post-1998 experience. The development of other flows – particularly portfolio and loan capital inflows – is strongly influenced by the perceived risk premium, which can change rapidly based both on external and internal developments and can also be subject to self-fulfiling effects (for analysis of one or the other, see Drazen, 1998; Cole and Kehoe, 1996; Krugman, 1996 and Obstfeld. 1996).

There is no *a priori* level of external imbalance that can be considered unsustainable. Any current account deficit can be theoretically covered by capital inflows of equal size. However. there is a body of evidence that significant external imbalance can be and often is a *source* of a currency crisis, which is an important factor in a wider economic crisis. (Krugman, 1979; Summers, 2000) A currency crisis is conventionally defined as a period during which the exchange rate falls significantly despite an attempt to prevent the currency depreciation by a sharp increase in interest rates and/or an official intervention on the currency markets.

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[11] This was incidentally true for the Czech Republic and Slovakia prior to the 1997 and 1998 crises as well.

Such an imbalance is associated with a certain level of the real exchange rate (holding fiscal policy constant). Such an exchange rate can be considered unsustainable given the prevailing economic and policy environment (for a more complex discussion, see Kaminsky and Reinhart, 1996). An unsustainable real foreign exchange rate can precipitate a crisis or require a painful adjustment process to prevent a crisis. Therefore, policy-makers are generally expected to have a strong incentive to prevent such a situation and to be risk-averse in approaching this issue. (Mishkin, 1999; Mussa et al., 2000)

When the foreign exchange rate channel is dominant in monetary policy, it is largely responsible for forming expectations. As a result, de facto exchange rate stability is usually not sufficient for the exchange rate to serve as a nominal anchor and an explicit commitment to a fixed exchange rate is seen as a necessary precondition. A typical analysis emphasises the importance of both importing credibility and imposing constraint on monetary policy via a fixed exchange rate. (De Grauwe, 1997; Frankel, 1999; Sachs. 1996) The fixed exchange rate, if accompanied by appropriate monetary policy, should lead to an inflation rate equivalent to that in the anchor country. Therefore, neither the nominal nor the real exchange rate should change (after an initial period of adjustment in case of the real exchange rate due to a period of more or less gradual disinflation). An officially fixed exchange rate also imposes a pressure on domestic monetary policy to adjust to policy of the anchor country if the fixed exchange rate is to be sustainable.

However, as Tornell and Velasco (1998) and Mishkin (1999) warn, based on empirical studies, a fixed exchange rate does not impose more fiscal discipline as fiscal laxity will undermine a peg only after some time, forcing a discrete devaluation in the future. Bleaney (1999) showed that pegging does not reduce inflation automatically, but only if persistence of inflation is particularly low in the reserve country.

The fixed exchange rate significantly decreases the foreign exchange rate risk for economic agents in the short term, but it does not necessarily do so in the long term as its sustainability is not assured. Consequently, pegs make it difficult to determine the proper long-term level of foreign exchange rate risk for agents as it becomes a bipolar consideration instead of a continuum. (Obstfeld and Rogoff, 1995) This reinforces the overall tendency for risk assessment to focus on short-term horizons. Soft pegs are also often trapped by political logic, according to which "when the currency is strong, the authorities generally see no reason to move off the peg... when it is weak, they argue that devaluation or widening of the band would be counterproductive". (Fischer, 2001, p. 18)

Another key issue is the cyclical influence of the exchange rate - usually limited to discussion of the exchange rate channel of the monetary policy transmission mechanism, according to which a decline in the value of domestic currency makes domestic goods less expensive than foreign goods, thereby causing a rise in net

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exports and hence in aggregate output. (Obstfeld and Rogoff, 1995) However, as Mussa et al. (2000) explain, depreciation, especially a substantial devaluation, has usually not been accompanied by an export-led boom in developing countries. On the contrary, devaluation and depreciation are usually associated with economic downturns or crisis. An explanation is provided by the exchange-rate version of the so-called balance-sheet effect.

The general balance-sheet effect is described in Mishkin (1995) and Bernanke and Gertler (1995). According to this view, a contractionary monetary policy increases costs of debt service and decreases equity prices, leading to a lower net worth of firms, increasing moral hazard and adverse selection (collateral), thus decreasing investment and aggregate demand (this is true for households as well). Contractionary monetary policy also decreases the prices of financial assets, increasing the likelihood of financial distress, decreasing consumer durable and housing expenditure and aggregate demand. In the case of the foreign exchange rate, the cause of change in the balance sheet is a change in the value of the currency. Nonfinancial firms, banks and governments in emerging market countries issue much of their debt in foreign currencies. On the other hand, assets are typically denominated in domestic currency. Therefore, currency depreciation causes *ceteris paribus* deterioration in their balance sheets, causing an economic contraction.

This problem exists with both fixed and flexible intermediate foreign exchange rates. However, its effects are much more dramatic under a fixed exchange rate

regime. Its stability means that the net worth of agents does not change frequently due to changes in the value of the currency. However, once depreciation of a currency occurs, it is a highly nonlinear event because it involves devaluation. "The result is that a devaluation leads to a substantial deterioration in balance sheets and a decline in net worth, both for nonfinancial firms and financial firms," which in turn leads to reduced credit activity, investment and economic slowdown. (Mishkin, 1999, pp. 584-5)

Such a problem is strengthened by a tendency for a currency to overshoot its depreciation after a formerly fixed currency is floated. This mechanism is caused by an 'intrinsic perversity' in the interactions between their exchange rate regimes and other problems in their economies, especially weaknesses in their financial sectors:

> "When it becomes clear that the monetary and fiscal authorities are trapped in a situation where they want to defend the exchange rate, but for any reason dare not raise domestic interest rates (credibly and substantially) and are running short of reserves, a crisis occurs as the speculative pressures against the exchange rate become overwhelming. The market, which is not used to operating without official support tends to become illiquid and move erratically. Downward pressures build as recognition of the adverse consequences of financial disruption associated with massive depreciation become mutually reinforcing." (Mussa et al., 2000, pp. 39-40)

Theoreretically, a fixed exchange rate is not the only way to decrease risks associated with the exchange rate. Under a floating regime, foreign exchange rate risk and uncertainty in transactions can theoretically be limited by hedging of

foreign currency transactions. Research shows, however, that exchange rate risk can be hedged only to the limited extent that nonresidents are willing to hold local currency exposure. According to Mussa et al. (2000), few developing or transition countries have organised markets for currency futures and options and those markets located in industrial countries deal mainly in industrial country currencies. Their conclusion is that there is "no indication of significant net capacity to shift foreign exchange risks abroad at a reasonable price", (pp. 28–29) a conclusion shared by Mishkin (1999). Under floating exchange rate regimes, emphasis is placed on self-protection by each economic agent, but the extent to which they can do actually do so remains questionable.

At the same time, Flood and Rose (1999), reviewing their own as well as others research, state that "fundamentals are irrelevant for exchange rate volatility except in high inflation countries and in the long run... there are multiple equilibria and endogenous changes in the market structure". (p. 671) In other words, there is not neccessarily a unique or stable short- to medium-term equilibrium for a floating exchange regime.

Given these facts and the already reviewed importance of the exchange rate for monetary and macroeconomic policy in general, it is not suprising to find that small open economies rarely if ever allow their currencies to truly float. As demonstrated by Calvo and Reinhart (2000). Reinhart (2000) and Bofinger and Wollmershaeuser (2001), many officially floating currencies exhibit behaviour much closer to pegged

exchange rates than to true floaters such as the US, Japan or eurozone (and Germany before that).

In analysis and evaluation of various foreign policy regimes, one should remember that "a reasoned judgment of the desirable exchange rate regime needs to be based not only on how it performs in a crisis, but how it performs over time on average... in general, it is not the exchange rate regime alone that is the fundamental source of pre-crisis vulnerability and of subsequent substantial damage... and changing the exchange rate regime will not automatically correct other critical problems". (Mussa et al., 2000, p. 38)

Problems of the European Monetary System in the early 1990s and the number of currency crises in developing and transition economies with adjustable pegs (Asian crisis, Mexico, Brazil, Czech Republic, Slovakia) during the 1990s stimulated the view that fixed exchange rate regimes are not sustainable unless they are very hard indeed, involving a currency board or a currency union. (e.g. Eichengreen, 1994; Summers, 1999) This view defined the vanishing middle – fixed exchange rates that were subject to discretionary adjustments by policy-makers.

A consensus emerging recently is more nuanced and can be summarised in three points (Fischer, 2001; Frankel, 1999; Masson, 2000; Mussa et al., 2000; Reinhart, 2000):

- the vanishing middle has not vanished nor is it likely to, but it is unsuitable for small open economies closely integrated with international financial markets

- so-called soft pegs can be suitable and sustainable for countries that share a combination of some of the following: a low degree of involvement with international financial markets and high foreign exchange rate reserves, a high share of trade and symmetric shocks with the country to which it is pegged as well as widespread reliance of the financial system and economy on the anchor country. flexible and sustainable fiscal policy and labour markets

- A wide variety of flexible exchange rate arrangements is possible and small open economies that officially float their currencies generally do not practice benign neglect of the exchange rate, which is unlikely to be a desirable policy option

1.6 Conclusion

The first chapter reviewed existing literature dealing with objectives, frameworks and institutions of monetary policy. It integrated three strands of commitment in monetary policy – central bank independence, domestic policy targets and exchange rate instruments – into one framework for policy analysis of small open economies. Whenever possible, it included empirical evidence on situation on countries in transition, which are the focus of the thesis.

Chapter 2: Review of macroeconomic developments
with emphasis on inflation and monetary policy developments

2.1 Introduction

The purpose of this chapter is to review briefly macroeconomic history of Central Europe during the 1990s and early 2000s in order to introduce a reader not familiar with Central Europe to the transition period. In a group of cross-cutting sections, it explores specific factors that have had significant influence on the conduct or outcomes of monetary policy in the Czech Republic, Hungary, Poland and Slovakia. The focus is on issue that tend to be overlooked in closed-economy models or ones concerned with developed economies approximately on the same level of development. The second half of the chapter contains four country case studies with an introduction to political and economic developments, monetary policy framework and its evolution during transition as well as macroeconomic context of monetary policy-making.

We focus on the following specific factors that have had significant effects on the conduct and/or effect of monetary policy:

- fragility, shallowness and monopolistic structure of financial markets
- imbalances and peculiarities in the relationship between the real economy and the financial sector
- difficulty of controlling inflation, its reasons and consequences   —

- expectations and pressures of future EMU membership
- Gradual financial integration into the world economy

Additionally, uncertainty about the equilibrium real exchange rate was also a very important factor, but is more closely analysed in the chapter on the relationship between foreign exchange rate and monetary policy.

There are authors – (e.g. Golinelli and Rovelli, 2001a; Golinelli and Rovelli, 2001b) – who believe that these problems have not substantially affected the robustness of monetary policy; indeed some believe that this was so even before the end of communism. The aim of this chapter, therefore, is to demonstrate why and how the problems mattered.

2.2 Fragility, shallowness and monopolistic structure of financial markets

During most of the communist period, central banks and commercial banks in the region existed only in name. The State Bank of Czechoslovakia, The Hungarian National Bank and the National Bank of Poland were the so-called monobanks– they combined central and commercial banking functions. The role of the financial sector was to fulfil the investment plan as well as other financing requirements of the state enterprises and the government budget. Central planners determined targets in the

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real economy and adjusted financial flows to achieve them. In this passive role, financial institutions had no role in credit allocation. (De Melo et al., 1997)

It was only in the late 1980s that the two-tier banking system became established again in Central Europe. Hungary was the pioneer and created a two-tier banking system on January 1, 1987. In Poland, the establishment of new banks was slightly liberalised already in 1982, but it was only from February 1989 that the NBP divested itself of most of its commercial banking functions. Czechoslovakia was the last, dividing the State Bank of Czechoslovakia into several institutions on January 1, 1990.

Even though the policy instruments used by newly established central banks evolved fairly quickly - by 1992/93, all the central banks relied primarily on indirect instruments and countries had established formal T-bill markets (De Melo et al., 1997) – this posed challenges of its own. As Mathieson and Haas (1995) point out: "premature reliance on auction-based indirect monetary policy instruments can give rise to adverse selection, moral hazard and collusion problems that can create large public sector funding obligations because of credit risk assumed by the public sector." (p. 200)

In the period studied in the thesis (1993-2001), one can therefore talk about a liberalised financial environment. In such an environment, the efficacy of the monetary transmission process depends to great extent on the responsiveness of the

interest rates faced by borrowers and savers to the interest rate that the central bank influences the most – usually a short-term money market rate. (Kamin, Turner and Van't Dack, 1997)

The responsiveness of interest rates faced by savers and borrowers to money market rates depends on many factors, primarily on the depth and maturity of the financial system. Cottarelli and Kourelis (1994) evaluated transition countries in this respect in 1994, concluding that there was a lack of maturity and depth, which impeded the smooth transmission of monetary policy impulses. Six years later, Schaechter, Stone and Zelmer (2000) still shared this view in their assessment.

The problem was not necessarily in the formal level of intermediation, which differed substantially - Czechoslovakia had a much higher level at the beginning of transition (an M2/GDP ratio of 0.68) than Hungary (0.38) and Poland (0.22), where moderate to high inflation and the smaller extent of forced savings had eroded bank deposits. (De Melo et al., 1997, p. 24) The real issue was the insolvency of individual banks and the banking system as a whole. In all four countries, there was a systemic insolvency of the banking sector as a whole in the early transition period and the problems continued to be particularly acute in the Czech Republic and Slovakia until the end of the 1990s. Schaechter, Stone and Zelmer (2000) argue that one of the reasons why the impact of interest rates on credit was limited was the highly interest inelastic lending policies of banks burdened by nonperforming loans and the high probability of future bailouts, a conclusion shared by De Melo et al.

(1997) and Kamin, Turner and Van't Dack (1997). Banking sector privatisation was substantially delayed (with the exception of Hungary) and so the largest banks were state-owned for most of the 1990s and often politically influenced in their lending policies.

The financial fragility had an additional impact on monetary policy in pushing central banks to preserve the peg for too long due to the foreign exchange-dominated liabilities of domestic investors while, at the same time, preventing them from raising interest rates high enough to defend the peg. (Mussa et al., 2000 and Kamin, Turner and Van't Dack, 1997)

Table 2.1: Level of dollarisation (deposits in foreign currencies as a share of M2), end of year , 1993-2001

	Slovakia	Czech Republic	Hungary	Poland
1993	9.94%	7.97%	16.76%	28.77%
1994	12.61%	6.99%	18.07%	28.54%
1995	11.07%	8.42%	23.07%	20.43%
1996	9.88%	7.62%	20.78%	17.27%
1997	10.44%	11.35%	19.02%	17.12%
1998	13.30%	11.09%	18.44%	14.69%
1999	14.43%	10.65%	16.59%	14.68%
2000	17.09%	10.65%	17.44%	14.02%
2001	17.05%	9.86%	16.75%	15.01%

Source: central banks

The solvency challenge was exacerbated by structural liquidity problems. Banking sectors were dominated by a few large banks and there were usually substantial liquidity imbalances between the banks, with a former monopoly savings institution supplying much of the market liquidity. (Kamin, Turner and Van't Dack, 1997 and De Melo et al., 1997)

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On the positive side, the short maturity of most loans in transition countries and the frequent use of variable-rate loans led to a relatively quick effect of policy interest rate changes on bank lending. which together with the strong influence of the foreign exchange rate channel meant that policy decisions were transmitted rapidly into the real economy even if the signal might have been scrambled. As Hornok and Jakab (2002) show, central banks in the region forecast inflation with a horizon of 4-6 quarters (Slovakia, Poland) or 6-8 quarters (Hungary, Czech Republic), with the strongest impact of monetary policy in 3-6 quarters, depending on country.

2.3 Imbalances and peculiarities in the relationship between the real economy and the financial sector

Delayed privatisation of banks in the Czech Republic, Poland and Slovakia, as well as political unwillingness to impose a hard budget constraint on certain groups of enterprises (e.g. engineering national champions in the Czech Republic, sensitive sectors in Poland or important regional employers in depressed regions in the Czech Republic and Slovakia) combined to create a situation where lending was often driven by political considerations and corporate borrowers were highly differentiated in terms of both liquidity and solvency. In such an environment, the effects of monetary policy depend both on the overall balance-sheet position of the corporate sector, but more importantly on its distribution among firms. If their condition is as dispersed as it was in the Czech Republic, Poland and Slovakia, the

effects of monetary policy will be much more unpredictable than where most firms have rather similar balance sheets. (Kamin, Turner and Van't Dack, 1997 and Coats 2000)

At the same time, while firms were highly dependent on bank financing in the Czech Republic and Slovakia (see Buchtikova, 2001), households in all four countries were much less so as lending to households continued to develop quite gradually in all four countries. Therefore, the impact of monetary policy on consumption as a sizeable part of aggregate demand was influenced by monetary policy only indirectly through the foreign exchange rate channel and changes in the financial situation of enterprises. This has begun to change only in the late 1990s with the rapid development of consumer credit.

Another issue, prominent in the advanced transition economies, was a divergent currency structure of exports and imports and the introduction of a new currency. All countries had a much more substantial share of dollar imports than dollarxports. The exports gradually became more and more dominated by eurozone countries or countries with close ties to the eurozone, but this was true for imports only to a limited extent. This meant that movements in the EUR/USD rate had a significantly different impact on export and import prices and monetary policy.

Before the euro was introduced, the natural 'world' currency to use in the region was the dollar despite the dominance of EU trade. The reason was the lack of a

single EU currency. The dollar was a currency used in many lending operations, which mattered due to limited potential for hedging. Therefore, there was occasionally a mismatch between policy-makers, who understandably focused on the euro after its introduction, and households and enterprises with their widespread focus on the dollar exchange rate.

2.4 Price misalignment and limited controllability of inflation

Koen and De Masi (1997) present the following ten stylised facts about prices in transition, which present probably the most concise available summary of inflation developments and underlying dynamics:

- price liberalisation translated into an overall surge of prices
- the initial burst was followed by a prolonged period of relatively high inflation
- seasonality and administrative price changes have caused misleading fluctuations around core disinflation
- prices of goods moved rapidly towards international levels, with the exception of certain staples
- an identical, but delayed process took place with services as well
- the relative price structure also moved closer to that in market economies
- relative prices have been converging across transition countries
- wild price level disparities remain

- full convergence of price levels towards the level of industrialised countries will be a very long-term process

Focusing on those factors that were most significant for inflation developments in Central European countries. one should start with price misalignment both in absolute and relative terms. In other words, a combination of structural deficiencies in the economy and price regulation led to imbalances in relative prices and, especially in former Czechoslovakia, to prices that did not clear the market and led to demand-supply mismatch. The result was a low price level – see table 2.2 – and a burst of inflation upon price liberalisation even in Czechoslovakia, which was otherwise macroeconomically quite balanced.

Table 2.2: Comparative price levels (% of German price level)

	1991	1999
Czech Republic	21.7	35.7
Hungary	34.6	39.3
Poland	34.9	43.0
Slovakia	23.3	31.5

Source: Backe (2001)

According to Coorey et al. (1998), Pujol and Griffiths (1998) and Wozniak (1998), shifts in relative prices accompanying the adjustment process created an upward and persistent pressure on inflation in transition countries above and beyond the direct influence, reflecting a general theory of the influence of relative prices – see Ball and Mankiw (1995).

In some countries, this played out rather quickly - in Hungary, relative price changes decreased significantly from 1993-4 onwards (see Vincze and Zsoldos, 1995-6), in

others, the movements lasted until the late 1990s or even the 2000s (Czech Republic and Slovakia), primarily because increases in administered prices to cost-recovery level were delayed for political reasons.

Other important inflationary impulses during the transition period were already mentioned elsewhere - fiscal deficits, soft bank credits, backward-looking wage indexation. (Coorey et al., 1996; Nuti, 1996; Richards and Tersmann, 1995 and Desai, 1998)

Equally significant is the fact that monetary policy has only had a limited control over inflation. Both regulated prices and supply-determined prices, such as food and commodities, exist also in developed economies, but their share is much higher in transition economies. Table 2.3 presents a rough breakdown of the CPI basket in the V-4 countries. We can see that 'core' prices, which are not primarily determined by supply or political shocks, were in a minority as late as 1999.

Table 2.3: CPI composition in Central European countries, 1999,%

Group of prices	Czech Republic	Hungary	Poland	Slovakia
Food, alcoholic beverages, tobacco	32.7	30.2	35.8	31.2
Energy and/or regulated prices	23.2	25.2	15.7	20.5
Core prices	44.1	44.6	48.5	48.3
Total	100	100	100	100

Source: Czech and Slovak central banks. Hungarian Statistical Office, Polish Main Statistical Office

2.5 Expectations and pressures of future EMU membership

So far, many of the issues discussed in the chapter would be familiar to economists and policy-makers in emerging markets of Latin America or Southeast Asia. Their combination with the prospect of membership in the Economic and Monetary Union (EMU) is truly unique though. Therefore, the point of this brief section is to explain that the existence of the 'finish-line' of EMU membership influenced monetary policy in the countries studied during the whole transition – specifically since the Maastricht Treaty was signed in 1991.

The expectation of EMU membership has presented a clear exit strategy though with an uncertain date. All advanced transition countries have a clear 'light at the end of the tunnel' – entry into the European Monetary Union, abolishing their own currencies together with independent monetary policy and adopting the euro. Therefore, monetary policy, in both its framework and execution, can rely on and has to reflect these expectations. Since EMU entry is linked to a 2-year waiting period in the ERM-2 system, the countries aware of their future obligations took this into account in designing foreign exchange rate regimes.

EMU membership is also linked to fulfiling the Maastricht criteria, especially the ones focusing on the maximum inflation (1.5%) and long-term interest rate (2%) differential vis-à-vis the EMU countries as well as the maximum fiscal deficit (3% of GDP) and debt (60% of GDP). These requirements largely determine the medium-term monetary and fiscal policy targets in acceding countries.

On the other hand, there is also the issue of internal contradiction in these criteria, particularly between nominal exchange rate stability and low inflation. These two criteria can be contradictory in the presence of a strong Balassa-Samuelson effect. (Szapary, 2000)

Overall, medium-term policy frameworks adopted in Central European countries since 1998 strongly reflected these needs and largely defined medium-term inflation targets in line with expected EU entry in the 2003-2004 period and the EMU entry 2-3 years later.

In addition to expected EU and EMU, membership in two other exclusive clubs – OECD and NATO – had important policy influences both before and after the entry. All four countries became members of OECD between 1995 and 2000 and members of NATO in 1999 or 2002.

2.6 Gradual financial integration into the world economy

The command economy practiced in Central Europe from late 1940s until the end of 1980s relied, in its economic interactions with a non-communist world, on a combination of non-convertible currency and a foreign trade monopoly by the state. Replacement of this model by one with largely liberalised foreign trade and a partially convertible currency was one of the first steps taken in each country as it began the transition. However, the full liberalisation of current and capital accounts took much longer as did actual integration into world financial markets, with important impact on monetary policy as practised during 1990s and early 2000s. The section briefly describes these developments.

The first step along regulatory change was renewal of membership in the International Monetary Fund. Politically more liberal and economically weaker Poland and Hungary rejoined the IMF already during 1980s (Hungary in 1982, Poland in 1986). In Czechoslovakia, this happened only 1990 in the aftermath of the political change. A similar progression, though much more compressed, happened with liberalisation of currency transactions for foreign trade purposes – 1988 in Hungary, 1990 in Poland and 1991 in Czechoslovakia.

Table 2.4 contains summary of further changes in the regulatory regime during the 1993-2001 period. The table is based on the IMF Annual Report on Exchange Arrangement and Exchange Restrictions, the most authoritative source of data for

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such an analysis. (Edison et al., 2002) It reveals two milestones. One took place in 1995 and 1996, when all four countries officially accepted obligations of Sections 2, 3 and 4 of Article VIII of the IMF Articles of Association,[1] making their current accounts fully convertible. Another was spread over the 1999-2001 period when the four countries fulfilled most obligations of OECD membership related to complete liberalisation of the capital account. The table also reveals that elimination of restrictions progressed steadily throughout the whole period studied.

Table 2.4: Changes in currency and capital account restrictions during the 1993-2001 period

Year	Czech Republic	Hungary	Poland	Slovakia
1993	-	-	-	-
1994	exports and imports of securities denominated in domestic currency fully liberalised	elimination of restrictions on purchases of foreign currency for business travel purposes	-	-
1995	Acceptance of obligations of Article VIII, Sections 2, 3 and 4	Exporters no longer required to convert export proceeds into domestic currency	all remaining restrictions on current international transactions removed, acceptance of obligations of Article VIII, Sections 2, 3 and 4	all remaining restrictions on current international transactions removed, acceptance of obligations of Article VIII, Sections 2, 3 and 4
1996	-	acceptance of obligations of Article VIII, Sections 2, 3 and 4; liberalisation of purchases of securities by foreigners with maturity of more than 1 year, equity investment abroad liberalised	Limited liberalisation of FDI by residents abroad	liberalisation of currency imports and exports, liberalisation of long-term credits by residents to residents of OECD countries and vice versa, liberalisation of real estate investment and FDI by residents in OECD countries

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[1] Section 2 deals with avoidance of restrictions on current payments; Section 3 with avoidance of discriminatory currency practices; and Section 4 with convertibility of foreign-held balances.

1997	liberalisation of trade in foreign securities domestically	liberalisation of issue and introduction of bonds with a maturity of more than 1 year and of shares of OECD-based corporations with investment-grade rating	insurers permitted to purchase high-grade securities from OECD countries, nearly complete liberalisation of investment by residents abroad and by non-residents in Poland	liberalisation of trade in foreign securities domestically
1998	-	liberalisation of issue and introduction of shares of all OECD-based corporations, liberalization of real estate investment abroad by residents	lending to non-residents liberalized	full liberalisation of holding of foreign currency
1999	elimination of most remaining controls on operations with foreign securities, derivatives and extending credits with sureties	-	liberalisation of trade in derivatives	-
2000	liberalisation of investment abroad by insurance companies and pension funds	liberalisation of medium-term and long-term lending to non-residents from OECD countries	partial liberalisation of investments by pension funds abroad	liberalisation of medium-term and long-term lending to non-residents from OECD countries
2001	liberalisation of deposits by residents abroad, liberalisation of issuance of debt and money market securities locally and abroad by both residents and non-residents	complete liberalisation of foreign currency possession domestically and abroad, elimination of all remaining restrictions on capital transactions	-	liberalisation of lending and borrowing between residents and non-residents. liberalisation of issue, sale and purchase of all securities abroad by residents or domestically by non-residents

Source: author based on IMF data

Liberalisation of the regulatory framework is, at least to a certain extent, necessary, but not a sufficient condition for actual financial integration. Whether cross-border financial flows become significant also depends at many other factors. In mid-1990s,

several factors induced substantial capital inflows in all four countries in addition to gradual liberalisation of the capital account, namely resumption of growth after the initial transition depression, credible fixed exchange rates and, high interest rates. Since then, even if in fits and starts, the level of financial integration has continued steadily. The developments are illustrated by table 2.5, which measures openness by the actual level of financial assets and liabilities compared to country's GDP, an approach developed by Kraay (1998). To enable a comparison, data for several other small, open economies on a similar or higher level of economic development are included. The table shows that the level of financial openness for Central European countries is comparable to their peers.

Table 2.5: Financial openness in selected small open economies, 1993-2001

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Chile	n.a.	n.a.	n.a.	n.a.	76.5	88.8	111.3	108.5	119.2
Czech Republic	41.5	42.9	52.4	57.8	67.8	65.5	76.7	76.4	77.0
Greece	n.a.	n.a.	n.a.	n.a.	n.a.	75.1	81.6	94.2	n.a.
Hungary	n.a.	n.a.	n.a.	n.a.	90.6	97.6	104.3	107.5	105
Israel	62.1	63.7	64.5	64.7	72.3	75.2	103.5	103.0	95.4
Korea	15.5	17.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	58.5
Poland	n.a.	51.6	49.1	49.8	54.5	43.2	41.9	44.1	38.3
Slovakia	n.a.	34.3	30.5	28.0	29.4	36.1	43.7	49.2	51.3

Source: author based on International Financial Statistics
Note: openness is measured as a percentage of GDP represented by a sum of foreign assets and foreign liabilities

2.7 Key economic and monetary developments in the Czech Republic: 1993 - 2001

2.7.1 Introduction

The Czech Republic is one of two successor states of Czechoslovakia, the other one being Slovakia. As in many other communist countries, the ruling regime was overthrown at the end of 1989, paving the way for a rapid transition to market democracy. Following two parliamentary elections (1990, 1992), Czechoslovakia ceased to exist on December 31, 1992, based on a mutual agreement of the two constituent nations. The Czech Republic was governed essentially by the same centre-right coalition from 1992 until 1998, when it was replaced by a minority left-wing government, which was confirmed in power by the parliamentary elections in June 2002, but chose to include two smaller centrist parties in order to gain a majority status.

The Czech Republic entered 1993 as a newly independent country, but one still sharing a monetary union with Slovakia. This arrangement rapidly proved to be unsustainable and the union was dissolved in February 1993. Since then, the Czech Republic has conducted its own, independent monetary policy.

The heritage of Czechoslovakia was overall macroeconomic stability. The country had been a bulwark of fiscal and monetary prudence during communism (what Tosovsky, 1996, calls the "tradition of valuing price stability, even under central

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planners", p. 156) and the early transition policies confirmed this trend. (Drabek et al., 1994) Restrictive monetary and fiscal policies accompanied the start of reforms on January 1, 1991, ensuring that inflation fell rapidly after the initial one-time jump caused by price liberalisation. After falling to approximately 10% in 1992, inflation rose again to 20% in 1993 due to introduction of VAT in the Czech Republic on January 1, 1993. A stable, pegged exchange rate introduced in January 1991 was undoubtedly a key nominal anchor contributing to the containment of inflation.

The Czech economy had historically been very open. During the 1990-1992 period, it had to deal not only with internal shocks stemming from transition, but also with the collapse of its key external markets, particularly East Germany, the Soviet Union and other CMEA countries. The economy managed to reorient much of its production towards OECD markets within the first two years of transition.

As a consequence, the Czech Republic was emerging from the transition recession already in late 1992, but the break-up of Czechoslovakia had a negative impact on trade between the Czech Republic and Slovakia, tipping the Czech economy back into recession, albeit a mild one. This proved to be a very short-term influence – despite a continuing decline in bilateral trade with Slovakia, growth resumed in 1993.

Therefore, the years 1993 to 1997 can generally be labelled as a period of prosperity. The economy recovered and the growth rates were quite high. Growth was

accompanied by low unemployment rates without parallel in other transition countries and rapid real wage growth.

However, this was, to use a term applied to a similar period in Slovakia (Marcincin and Morvay, 2001), a macroeconomic illusion. Voucher privatisation, conducted primarily in the years 1992-1995, formally dispersed ownership between millions of individual shareholders, but due to a peculiar combination of state-owned major banks and bank-owned voucher investment funds, the state indirectly continued to control much of the economy. Bank credit remained the means of propping up large industrial enterprises. The growth of real wages was significantly faster than increases in labour productivity, leading to accumulating growth of unit labour costs – by 3.6, 1.2 and 3.9% between 1994 and 1996. (CNB, 2000a, p. 7) Visible corporate governance problems also arose in several small and medium-sized banks, leading to expensive liquidation and clean-up.

Inflation stabilised around 10% despite attempts by the central bank to lower it, with a pegged exchange rate remaining at the level set in January 1991. The result was a persistent real exchange rate appreciation of the Czech currency. Even though there is a general consensus on the scope for some real exchange rate appreciation, some authors (e.g. Frait and Komarek, 1999) argue that the real appreciation before 1997 was too fast.

In the second half of 1995, the Czech Republic completely liberalised the current account of the balance of payments. This step essentially formalised and legalised already existing practice. As a result of its relatively high nominal interest rates, stable nominal exchange rate and low perceived political risk, the Czech economy began to attract significant amounts of both short-term and long-term capital inflows in 1994 and 1995, amounting to 8-16% of GDP. This began to pose severe problems for the policy-makers, as the inflows meant large sterilisation costs and the sterilisation was perceived as only partially effective. The dilemma was partially solved in February 1996, when the central bank widened the currency band from 0.5% to 7.5% around the parity, thus discouraging some of the speculative inflows. Capital inflows interacted with structural weaknesses of the economy, and excessive growth of liquidity based on capital inflows allowed rapid growth of lending, contributing to rapid investment growth and excessive wage growth during the 1993-96 period. (Jonas, 2001)

Fiscal policy was relatively conservative compared to other transition countries and led to a continuing decline in public debt until 1997. In the early transition period, Czechoslovakia, unlike Hungary and Poland, did not use seigniorage to finance the fiscal deficit. (Budina et al., 1994) However, this overall picture masks the fact that the fiscal deficit between 1994 and 1995 reached 1 to 2% of GDP and was accompanied by an increase in the so-called hidden deficits. The structural deficit reached 2.5% of GDP in 1996. (CNB, 2000a, p. 7) The low deficit also reflected "the lack of those structural reforms, that have resulted in other transition economies

in significant real and financial costs (rise in unemployment, banking sector consolidation, etc.) and worsening fiscal balances." (ICEG, 2002, pp. 65-69) More importantly, it was not the size of the fiscal deficit that mattered, but its quite expansionary dynamics during the period when other components of domestic demand were growing. (Jonas, 2001, p. 14)

Another factor worth mentioning is the asset bubble experienced by the Czech economy during the 1994-1997 period. As Singer (1999) argues, the privatisation mix of cash sales and bankruptcies used by Hungary and, to some extent, Poland, tends to produce an early undervaluation of assets and increase in unemployment. On the other hand, loan-based sales and voucher privatisation as utilised by the Czech Republic and Slovakia tend to lead to asset price bubbles as overvalued privatised assets bought 'on the cheap' are used as collateral and/or stimulate consumption via the wealth effect (see CNB, 2000a; Hampl and Matousek, 2000). The existence of a bubble was confirmed, when 1997 and 1998 meant a significant (and unique) decrease in prices of real estate in the Czech Republic during the transition period. (Hampl and Matousek, 2000, pp. 47-8)

Capital inflows, continuing real exchange rate appreciation, the lagging corporate restructuring, rapid wage growth and an overall asset bubble together caused swift growth of domestic demand which far outstripped domestic supply and therefore increased the current account deficit, which reached nearly 8% in 1996. It is worth noting that domestic demand grew faster than domestic supply during the whole

1992-1997 period (Jonas, 2001. p. 10) Reflecting sluggish export growth and strong increase in imports, economic growth also began to slow down gradually in 1995 and 1996.

The central bank reacted to what it perceived as an unsustainable macroeconomic stance and lack of government action by increasing interest rates in the second half of 1996, which stimulated a nominal appreciation of the currency and further contributed to an existing slowdown in real GDP growth. Spurred by a combination of potential currency crisis and a recession, the government passed, in April 1997, an austerity package containing expenditure cuts, other measures to dampen domestic demand and medium-term institutional and structural measures to stimulate the supply-side of the economy. This was not enough to counter the coming effects of the Asian crisis and the Czech Republic (together with other transition economies) saw an attack on its currency in May 1997. While the crisis was set off by speculative attacks from non-residents, these were successfully seen off. It was the second-round pressures caused by the domestic corporate sector and households, which became too strong and forced the currency into a managed float. (Smidkova et al., 1998) With the benefit of hindsight, there is widespread agreement that only a much more vigorous fiscal policy could have saved the peg and even that is questionable if one takes into account the lack of microeconomic restructuring (see e.g. Begg, 1997; Brada and Kutan, 1999). It is also clear, retrospectively, that the economy was already heading into a period of very low growth even prior to the crisis (Brada and Kutan, 1999, p. 319)

The currency crisis set off more fundamental changes in the Czech economy by changing both the political and the economic landscape. In the ensuing and quite deep recession (it lasted until 1999), many unviable enterprises finally went bankrupt or at least underwent substantial restructuring. The delayed corporate restructuring pushed unemployment up from 3.5% in 1996 to 9.4% in 1999. If one looks at other countries of the region, this second slow-down is not unusual as the other three countries also had, at some point, to deal with the combination of insufficient enterprise restructuring and acute fiscal and external imbalance. What makes the Czech Republic different is the depth of this recession – it was the only country out of the four to actually experience negative growth; at its climax -4.1% year-on-year GDP growth.

Both fiscal and monetary policies contributed to the depth of recession by their relative strictness. In the case of monetary policy, the restrictive policy was a response to a very high level of uncertainty regarding inflation following the depreciation and floating. For fiscal policy (and to some extent for monetary policy), the key factor was a fear of a recurring attack if the current account and overall fundamentals did not improve. Consequently, the fiscal tightening declared before the crisis was even strengthened after the floating.

The third important factor was a credit crunch in the banking sector. With problematic balance sheets even prior to the crisis, change in the political climate

away from industrial policy via easy credit and feeling acutely the recession, Czech banks significantly decreased their lending to the real economy and particularly to enterprises.

As a result, inflation, instead of rising, dropped dramatically. It also undershot significantly the targets set by the central bank for 1998 and 1999. Within two years, the Czech Republic essentially achieved the disinflation which it had been unable to achieve during the 1993-1997 period and which qualified it for EMU entry.

By early 2000, the economy had emerged from the recession. A massive wave of foreign direct investment starting in 1999, together with both private-led and state-led restructuring of the existing corporate sphere, reinvigorated industrial production. The new government, elected in 1998, undertook a massive clean-up and privatisation of major banks and this, together with changes in already existing private banks, led to a revival in lending activity. Fiscal policy was significantly relaxed to pay the costs of the banking restructuring, but also to stimulate demand by investment in infrastructure and significant increases in pay for public employees. Unemployment stabilised and inflation remained low and stable.

Table 2.6: Macroeconomic data, Czech Republic, 1993-2001, in %

	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP growth	0.6	3.2	6.4	4.8	-0.8	-1.2	-0.4	2.9	3.8
average inflation	20.8	10.0	9.1	8.8	8.5	10.7	2.1	3.9	5.4
unemployment	3.5	3.2	2.9	3.5	5.2	7.5	9.4	8.8	8.5
CA deficit/GDP	0.4	-0.1	-2.7	-7.4	-6.1	-2.3	-1.9	-4.7	-5.7

Source: ING Barings

2.7.2 The monetary policy framework

In the Czech Republic, as in other Central European countries, disinflation was the key challenge for monetary policy. The Czech Republic entered the transition with stable macroeconomic fundamentals, generally managed to implement prudent fiscal and monetary policies and, consequently, the issues faced by monetary policy during the initial years of transition were, in many respects, not as daunting as was the case in the other three countries. However, as the transition progressed, there has been a convergence of policy challenges, with the Czech Republic temporarily sharing an acute problem of external constraint and fiscal imbalance.

In studying the monetary policy framework in the Czech Republic, several specific factors need to be mentioned - see Buchtikova (2001); Cincibuch and Vavra (2000); Hampl and Matousek (2000) for a more detailed analysis on which the following paragraphs are based. In addition to strong nominal wage rigidity, it is the role of banking that makes the Czech economy different from Hungary and Poland and, to a lesser extent, Slovakia.

Banking is the dominant form of financial intermediation in all transition countries, but in the Czech case, this dominance is absolute. During the 1970s and 1980s, the balance sheets of enterprises were transformed by emphasising a switch to bank loans. In this period, this was little more than an accounting operation that allowed more control of planners over enterprises. However, as a result, the Czech economy

was highly monetised even prior to transition and the corporate sector highly indebted. During the 1990s, again unlike in Hungary and Poland, the low inflation did not allow enterprises to inflate away their loans from the communist period. The voucher privatisation and loan-based privatisation continued in this tradition. This phenomenon of overbanking has had several effects on the transmission mechanism, not all of them obvious. It strengthened the hold of monetary policy over enterprise activity, but in a highly non-linear manner. As long as the budget constraint was soft on many enterprises, as it remained in the Czech Republic, demand was quite inelastic to the interest rate, especially as for many enterprises a decrease in their loans would mean acute and possibly terminal problems in the production or distribution process.

At the beginning of transition, the Czech policy-makers had to institute a monetary policy framework that would take advantage of sound macroeconomic fundamentals, but would also be able to deal with the uncertainties of transition. The policy response was a fixed exchange rate as the intermediate target of monetary policy complemented by a monetary target. The central bank also announced inflation targets in terms of the headline consumer price index, but the exchange rate peg remained the true nominal anchor for agents as the central bank did not make extensive use of the inflation target as an instrument to stabilise expectations. Details of the policy framework and its fulfilment are shown in table 2.6

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At the same time, administrative controls were crucial in the early transition period: "Credit ceilings, interest rate ceilings and even moral suasion contributed to the outcome that, in an environment with discontinuities and institutional reforms, credit extension and growth of the money supply did not get out of the hands of the monetary authorities." (Tosovsky. 1996, pp. 150-1)

Table 2.7: Monetary Policy Framework in the Czech Republic

Year	Operational target	Intermediate Target (actual developments in parentheses)	Final Target (actual end-of-the-year inflation in parentheses)
1993	Monetary base	Exchange rate band of ±0.5 % and complementary target of M2 growth of 19% (20.5 %)	Target for CPI inflation: 18% (20.8%)
1994	free reserves	Exchange rate band of ±0.5 % and complementary target of M2 growth of 12-15% (21.5%)	Target for CPI inflation: 10-12% (10.2%)
1995	free reserves	Exchange rate band of ±0.5% and complementary target of M2 growth of 14-17% (19.6%)	Target for CPI inflation: 9-11 % (9.1%)
1996	short term interest rates	Exchange rate band of ±7.5 % and M2 growth 11-17% (18%)	Target for CPI inflation: gradual decline in order to achieve EU level (8.8%)
1997	short term interest rates	Exchange rate band of ±7.5 % (floating from 27 May) M2 growth 7-11% (10.1 %)	Target for CPI inflation: gradual decline in order to achieve EU level (8.5%)
1998	short term interest rates		Target for net inflation: 5.5-6.5% (1.7%)
1999	short term interest rates		Target for net inflation: 4 -5% (1.5%)
2000	short term interest rates		Target for net inflation: 3.5-5.5% (3%)
2001	short term interest rates		Target for net inflation: 2-4% (2.4%)

Source: author, based on National Bank of Slovakia data, Horska (2001) and CNB (1998)

As we can see, the basic policy framework was quite stable between 1993 and 1997. The final inflation targets were generally achieved by the central bank though this reflected uneven adherence to intermediate targets, where the exchange rate peg remained the bulwark of policy implementation, but monetary targets were consistently overshot in the 1993-1995 period and undershot in 1996.

The policy irrelevance of monetary targeting in the environment of high and unstable capital inflows was one of the reasons why the Czech central bank switched to direct inflation targeting after the exchange rate crisis of 1997. In 1998, the central bank explicitly argued that monetary targeting had a problem in a lack of predictable relationship between monetary aggregates and inflation in the unstable Czech environment: "Despite several econometric analyses, there was a high level of uncertainty." (CNB, 1998, pp. 1-2) On the other hand, Cihak and Holub (1998) countered that: "research confirms a strong relationship between M2 and inflation measures including net inflation and confirms it for various periods... [the problem is that the] coefficients are unstable." (Cihak and Holub, 1998, pp. 225-226) Parameter uncertainty though has been enough to prevent the central bank from seriously reconsidering monetary targeting.

In the early years of transition, the central bank changed the operational target twice before settling on an interbank interest rate once the money market was sufficiently developed and deep in 1996. It also simplified the currency basket and gradually

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increased the weight of DEM as the currency of the key export markets (directly in Germany, but also indirectly in other ERM member countries).

Table 2.8: Currency basket composition in the Czech Republic, 1991-1997

Period	Composition of the currency basket
January 1991-December 1991	USD 31.3 %, DEM 45.5 %, ATS 12.4 %, GBP 4.2 %, CHF 6.6 %
January 1992-April 1993	USD 49.1 %, DEM 36.2 %, ATS 8.1 %, FRF 2.9 %, CHF 3.8 %
May 1993-May 1997	USD 35 %, DEM 65 %

Source: Czech National Bank

The most significant change in the policy framework that centred on the exchange rate occurred in 1996, when the Czech National Bank widened the exchange rate band to 7.5% around the parity to discourage speculative inflows. This attempt was quite successful as evidenced *inter alia* by monetary expansion far below its target for the year. A potential for 15% fluctuation of a variable that served as the intermediate target and the nominal anchor should have required an increasing role for the monetary or inflation target to accompany the move. This did not happen, reflecting the fact that the central bank did not really allow the currency to fluctuate within the full band and largely continued to use it as the nominal anchor.

After the 1997 currency crisis, a brief seven month period of monetary targeting followed until a new regime was devised. (CNB, 2000a, p. 6) The Czech central bank became the first transition central bank to introduce, in December 1997, an inflation targeting framework, to be followed by Poland, Hungary and, arguably, Slovakia.

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As table 2.7 illustrates, the direct inflation targeting was not a clean break with the past (indeed Cihak and Holub (1998) called it "an old wine in new bottles"). Czech monetary policy was already predicated on announcing end-of-year inflation targets 12 months in advance. With the anchor of a fixed exchange rate gone, this was given more prominence and the target horizon was gradually lengthened – e.g. the 2002 target was announced already in April 2001, 20 months in advance. The expected EU and EMU entry provided a suitable medium-term target of 1-3% based on the Maastricht criteria and the expected entry date of 2005.

The central bank temporarily targeted core inflation instead of the previous headline inflation targets, but this was a purely practical matter based on political uncertainty surrounding the timing and size of a generally acknowledged need for massive increases in administered prices. As soon as a stable government emerged and put together a credible calendar for further deregulation of utility prices, the Czech central bank switched back to headline inflation targets though it announced them hand in hand with a core inflation target. (ICEG, 2002, pp. 65-69)

An unexpected problem of the new framework was the unfamiliarity of the macroeconomic territory, with the Czech Republic experiencing an unexpectedly deep recession, which could not be explained and modelled purely in cyclical terms. As a result, the first two targets were massively undershot, threatening the hard-won credibility of the central bank. For example, nominal wage contracts signed for 1998 were frequently based on the central bank target and turned out to mean high

real wage increases, which worsened the recession and contributed to rising unemployment. (Jonas, 2001. p. 45) However, inflation targets were fulfiled in 2000 (with a small undershooting) and in 2001, restoring the credibility of the central bank and of the inflation targeting framework.

2.7.3 Monetary developments 1993-2001

Interest rates were negative in real terms during 1993 and early 1994, but were raised sharply and then more moderately during the 1994-1997 period to battle inflationary pressures. The central bank had to impose a restrictive policy to halt inflation, but high interest rates simultaneously encouraged capital inflows. The real appreciation and the large current account deficit made the Czech Republic vulnerable to a speculative attack on the currency (see Brada and Kutan, 1999). At the same time, a pegged exchange rate meant nominal stability, but sharp real appreciation due to an inflation rate 6-7% higher than in the anchor countries - Germany and the US. Between 1993 and 1997, the real exchange rate appreciated by nearly 30%.

After the Czech currency was floated in late May 1997, inflation rapidly increased, seemingly on the basis of currency depreciation and inflation expectations. However, if we look at core inflation (headline inflation adjusted for the impact of regulated prices), we see a much less dramatic increase, which took inflation back to the level of late 1996. Indeed, most of the increase in headline inflation was caused

by one-time increases in regulated prices in mid-1997 and in January 1998, which temporarily but dramatically opened the gap between headline and core inflation. At the same time, the nominal exchange rate depreciated by 10% below the former parity and fluctuated close to this level until spring 1998. Until March 1998, inflation expectations were also not in line with the targeted disinflation path. (Hrncir and Smidkova, 2000)

Looking at these numbers, it is possible to understand why monetary policy reacted to the currency crisis and its aftermath by bringing nominal interest rates down quite slowly and kept them around 15% until it became clear, in the spring of 1998, that the inflation was falling. The central bank explicitly argued that "after the loss of the nominal anchor, there was a threat that inflation would remain at the two-digit level". (CNB, 1998, p. 1) Ex post, it is clear that this was too strong a medicine for an economy heading into recession and facing a restrictive fiscal policy. However, at the time both domestic and international observers (see e.g. Cihak and Holub, 1998 and OECD, 1998) were worried that a permissive policy could lead to a significant increase in inflation, which would later be very costly to reverse.

Despite two more substantial increases in regulated prices in mid-1998 and in January 1999, both core and headline inflation began to fall rapidly beginning in February-March 1998 and this sustained fall lasted until June-July 1999. During this period, headline inflation decreased from 12.6% to 1.1% and core inflation from 7.5% to -0.6%. This constitutes an astonishing drop of 8% (if measured by core

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inflation) within 16 months for inflation, which was already in single digits. As already mentioned, the disinflation was accompanied by a rarity in central Europe after 1993 – an actual and deep recession. Between 1997 and 1999, there was also a 16% decrease in the nominal volume of loans to industry (Hampl and Matousek, 2000, p. 42)

The extraordinary inflation performance can only be understood if certain exogenous factors are taken into account (see CNB (2000a); CNB (2000b); ICEG (2002) for a more in-depth analysis).Volatility in financial markets following the Asian and the Russian crisis, downward pressure on food prices and collapse in the price of oil were the principal culprits. Changes in oil and food prices accounted for a 2-3% decrease in prices in 1999. (CNB, 2000a; CNB, 2000b)

There were also structural factors at work. As ICEG (2002) notes, deregulation, increased corporate and banking sector financial discipline and the simultaneous increase in unemployment contributed to an unexpectedly speedy decrease in inflation. (ICEG, 2002, pp. 65-69)

The nominal foreign exchange rate recovered from post-crisis depreciation in spring 1998 and fluctuated around the former parity until late 2000. Initially, this meant that the real exchange rate appreciated even beyond its pre-crisis level. However, due to rapidly falling inflation, nominal exchange rate stability in 1999 also began to mean real exchange rate stability. ⸺

Monetary policy reacted by repeated cuts in interest rates (the repo rate) from 15% in March 1998 to 5.25% in November 1999. However, by cutting only in reaction to actual inflation decreases, the policy preserved positive real interest rates, which were quite high for an economy in recession, especially if one takes into account core inflation rather than headline inflation.

In 2000 and 2001, both inflation and interest rates stabilised, headline and core inflation moving in the 3-5% range, keeping real interest rates essentially at zero. On the other hand, the nominal exchange rate began to appreciate rapidly, leading to nominal and real appreciation by 10% in 2000 and 2001.

2.8 Key economic and monetary developments in Hungary: 1993-2001

2.8.1 Introduction

Hungary differed from both Czechoslovakia and Poland in its political development during the 1970s and 1980s. In Czechoslovakia, the resistance to the ruling regime was successfully isolated and scattered and Poland was witness to an open and mass political struggle between the government and a non-communist opposition. Hungary, scarred by the experience of the 1956 Soviet invasion, implemented conciliatory political and economic policies – the so-called "goulash communism".

As a result, by the late 1980s, much of the ground had already been prepared for political and economic transition and political change was negotiated without major setbacks or conflicts. After the first free elections in 1990, Hungary had a conservative right-wing government, which was then replaced, in 1994, by the government of the postcommunist party. The government changed again towards the right wing in 1998 and again back to the postcommunists in 2002. Hungarian governments, however, more than governments of any other country in the sample, defy ideological labels – e.g. the toughest reform measures were taken by the postcommunist government between 1994 and 1998.

Economic reforms introduced before the end of communism included price liberalisation, which had taken place in a very gradual manner since the 1960s. The communist central bank was split in 1987 to create a two-tier banking system, two to three years before Czechoslovakia or Poland. In 1989 and 1990, Hungary introduced a modern tax system including VAT and income tax, again three years before the other countries studied in the thesis.

On the other hand, the overriding policy objective of the 1970s and 1980s was to placate the population by increases in the standard of living, which were not necessarily based on productivity or output growth, and that led to a rapid accumulation of debt. As Kornai (1998) argues, it was a typical feature of "goulash communism" to place "much greater weight on raising present-day material welfare", (Kornai, 1998, p. 172) particularly in comparison with two neighbours –

Czechoslovakia and Romania. In 1989, Hungary had a 65% gross external debt/GDP ratio, nearly all of which was, for understandable reasons, sovereign debt. (Barabas et al., 1998, p. 59) While official domestic debt was nearly non-existent, many hidden liabilities surfaced during transition, as in other transition countries. (Tanzi, 1992)

This mixture of structural reforms and soft policy towards households continued unchanged during the first years of transition – dubbed by Kornai as "goulash postcommunism". (ibid.) On one hand, modern accounting and commercial laws as well as a tough bankruptcy law came into effect in 1991 and 1992, leading to a much more rapid enterprise and bank restructuring than in either Czechoslovakia or Poland and contributing to a surge of FDI that made Hungary the transition country with the highest FDI per capita.

On the other hand, Hungary continued to have an unusually large public sector compared even to other transition countries and the decline in tax revenue was not matched by expenditure cuts. Real wages declined significantly less than output, based partially on lax fiscal and monetary policies in 1992 and 1993. After its peak in 1991, the inflation proved to be sticky at levels around and above 20%, to some extent reflecting a heritage of two decades of relatively high inflation compared to other communist countries. This led, despite frequent devaluations, to significant real exchange rate appreciation. At the same time, there was a widespread backward wage indexation. (Krzak, 1996)

The economy recovered by the end of 1993 and continued to grow in 1994. As during the communist period, however, growth quickly ran into an external constraint. By the end of 1994, the current account deficit exceeded 9% of GDP, the fiscal deficit exceeded 8% of GDP and public debt exceeded 85% of GDP. The new government that came to power in the summer of 1994 was confronted by the threat of a Mexican-style crisis and decided, in early 1995, to act. (Cottarelli, 1998)

The 1995-1996 period is usually seen as a fundamental turning point in Hungarian economic history. It included both short-term and medium-term steps aimed at making fiscal policy and the current account sustainable and creating the environment for long-term growth. The adjustment was based on a significant increase in all administered prices, a switch to a crawling peg and fiscal retrenchment focusing on public sector wages, structural reforms in health care and pension systems and cuts in transfers and subsidies. The results were a steep 16.5% decrease in real wages between 1995 and 1997, but also a decrease in the current account deficit from 9.5% to 2.25% of GDP between 1994 and 1997, a decrease in consolidated government expenditure of 13.2% of GDP and in revenue of 8.3% of GDP between 1994 and 1997. External debt reached 37.6% of GDP in 1997, compared to 65% in 1989. (Barabas et al., 1998, p. 59) On the other hand, unemployment did not rise significantly from its previous level of 10-11% and one-time inflation shocks did not translate into a sustained increase in inflation. It soon returned to 20% from the peak of approximately 30% in early 1995. At the same

time, the structural measures undertaken earlier together with continuing privatisation, FDI inflows and healthy macroeconomic policies meant that, despite dramatic fiscal retrenchment, growth remained positive, albeit low in 1995 and 1996. In January 1996, full convertibility of the current account was introduced. (NBH, 2001, p. 3)

Between 1997 and 1999, Hungary entered a period of increasing growth and sharply falling inflation. Exports grew dramatically, assisted by a recovery in the country's main trading partners. The rate of exchange rate crawl was gradually decreased slightly ahead of the falling inflation and thus contributed to disinflation, which proceeded quite successfully between 1997 and early 1999, helped by a fall in oil prices as well as a region-wide fall in food and agricultural prices. As a result, real GDP grew by 4.9% and 4.4% in 1998 and 1999 respectively, while average CPI inflation reached 14.3% and 10%. The government ran a conservative fiscal policy and real wage growth was quite moderate (with the exception of the election year 1998).

After the 1998 elections, the new government continued to operate prudent fiscal policies for two years, but then began to reverse them again in 2001, in the run-up to elections. A substantial hike of minimum wages and the wages of state employees not only meant fiscal expansion, but contributed to rapid growth in real wages in the economy as a whole. Although wages grew dynamically in 2001, there was still no sign of excess household consumption growth (see ICEG, 2002, for details).

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Inflation and export performance were quite uneven, mostly due to exogenous factors (e.g. the business cycle in the eurozone and commodity prices), but this did not have a significant impact on overall growth, which continued to be between 4 and 5% annually.

Table 2.9: Macroeconomic data, Hungary, 1993-2001, in%

	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP growth	-0.6	2.9	1.5	1.3	4.6	4.9	4.2	5.2	5.1
average inflation	22.5	18.8	28.2	23.6	18.3	14.3	10.0	9.8	9.3
unemployment	12.1	10.4	10.4	9.2	7.7	7.0	6.5	6.0	5.5
CA deficit/GDP	-9.0	-9.4	-5.6	-3.7	-2.1	-4.9	-4.3	-3.3	-3.4

Source: ING Barings

2.8.2 The monetary policy framework

Monetary policy in Hungary during the relevant period (1993-2001) has been driven by a key objective of reducing inflation from the prevailing high level, but also by the objective of continuity in disinflation. In other words, a stop in disinflation or even a temporary reversal has been considered in a different light than in a country with a stable level of inflation. (Bozo, 2000, p. 49)

Monetary policy in Hungary, as much as in other Central European countries, was influenced by distortions in the monetary transmission mechanism. During much of the 1990s, two thirds of household deposits were concentrated in one bank, which caused nominal upward stickiness of deposit rates. Other banks, which inherited a

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large loan portfolio, therefore had to rely heavily on interbank and central bank financing. This imbalance changed only gradually. (Szapary, 1997, p. 25)

At the same time, bank deposits and credits have been largely short-term and the average duration weighted by the present value of disbursements even in the most developed market (that of fixed govt. papers) was 1.4-1.5 years even in 2000. The share of facilities maturing within a year bearing variable interest is also high on both the credit and the deposit side. (Bozo, 2000, p. 48, 72) Both of these factors reduce the lag in the monetary transmission mechanism in Hungary.

Monetary policy has faced a paradox - the overall objective has been related to disinflation, but the actual policy has been driven primarily by considerations of external (im)balance. As Bozo (2000) writes: "In Hungary, external equilibrium is inseparable from the objective of reducing inflation and achieving price stability... Tensions arising from imbalances in domestic production and absorption typically first lead to the deterioration of the current account. Inflationary pressures only appear later when measures (such as devaluation, indirect tax increases) are taken to address the problem of external disequilibrium." (ibid, p. 50)

Therefore, it is not surprising that it was the exchange rate that was used by the National Bank of Hungary as its intermediate target from 1987 until 2001 and also used as a nominal anchor between 1995, when the crawling peg was introduced, and 2001. (ibid., pp. 53-4) During this period, monetary targets in the form of M3 were

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also used as a complementary indicator, but they were repeatedly overshot and generally were overridden in the interest of the exchange rate target. (Gollinelli and Rovelli, 2001)

Developments in the way the intermediate exchange rate target was implemented are shown in tables 2.10 and 2.11. Most trade-related foreign exchange rate transactions were liberalised as of January 1, 1990. From 1990 until early 1995, Hungary followed a policy of discrete small devaluations, of which the majority ranged between 1 and 2%. In March 1995, as a part of the overall change in macroeconomic policy, the regime of discrete changes was replaced by a continuous devaluation, i.e. by a crawling peg. The rate of crawl was frequently decreased, until the peg became stable in May 2001.

At the same time, changes in the exchange rate regime were accompanied by changes in the width of the foreign exchange rate band and in the currency basket. While the period of frequent and discrete devaluations involved an extremely narrow band, it was widened slightly to 2.25% during the period of the crawl, allowing monetary policy not only some flexibility, but also limited market feed-back.

Table 2.10: Developments in fixed exchange rate regime in Hungary, 1990-2001

Type of the exchange rate regime	Period and size of change
Fixed-but-adjustable peg	January 1, 1990 – March 11, 1995
Parity adjustments	1.0%: January 31, 1990
	2.0%: February 6, 1990
	2.0%: February 20, 1990
	15.0%: January 7, 1991
	5.8%: November 8, 1991
	1.9%: March 16, 1992
	1.6%: June 24, 1992
	1.9%: November 9, 1992
	1.9%: February 12, 1993
	2.9%: March 26, 1993
	1.9%: June 7, 1993
	3.0%: July 9, 1993
	4.5%: September 29, 1993
	1.0%: January 3, 1994
	2.6%: February 16, 1994
	1.0%: May 13, 1994
	1.2%: June 10, 1994
	8.0%: August 5, 1994
	1.1%: October 11, 1994
	1.0%: November 29, 1994
	1.4%: January 3, 1995
	2.0%: February 14, 1995
Introduction of the crawling peg	March 12, 1995
Changes in the rate of crawl	1.9%: March 12, 1995
	1.3%: July 1, 1995
	1.2%: January 1, 1996
	1.1%: April 1, 1997
	1.0%: August 15, 1997
	0.9%: January 1, 1998
	0.8%: June 15, 1998
	0.7%: January 1, 1998
	0.6%: January 1, 1999
	0.5%: July 1, 1999
	0.4%: October 1, 1999
	0.3%: April 1, 2000
End of the crawling peg	October 1, 2001

Source: National Bank of Hungary

Nominal stabilisation of the exchange rate around a fixed parity in 2001 was accompanied by a substantial widening of the band to 15%, preparing Hungary for the ERM 2 system. At the same time, 1990s saw a gradual shift from pegging with an equal role for the US and European currencies to a regime strictly pegged to the euro.

Table 2.11: Band width of the Hungarian peg, 1990-2001, in%

Period	Band width around parity in%
Until 31/5/1994	0.3
1/6/1994 – 4/8/1994	0.5
5/8/1994 – 21/12/1994	1.25
22/12/1994 – 3/5/2001	2.25
4/5/2001 – abandonned 10/2001	15.0

Source: National Bank of Hungary

Table 2.12: Development of currency baskets in Hungary, 1991-2000

Period	Basket composition
January 1991 – November 1991	basket of 9 currencies
December 1991 – April 1994	USD 50%, DEM 50%
May 1994 – December 1996	USD 30%, ECU 70%
January 1997 – December 1998	USD 30%, DEM 70%
January 1999 -	EUR 100%

Source: National Bank of Hungary

The widening of the band in 2001 also meant that while Hungary still preserved some limits on nominal exchange rate flexibility, the nominal exchange rate ceased to fulfil its role as the nominal anchor and the intermediate target of monetary policy. In an economy, where inflation is in single digits, a variable with potential fluctuation of 30% clearly cannot serve either of the two purposes.

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Therefore, exchange rate targeting was, at the end of the period under study, replaced by inflation targeting. Hungarian inflation targeting involves public announcement of an inflation target in terms of headline inflation (set to 4.5% for December 2002 and 3.5% for December 2003). The inflation target is surrounded by a 1% tolerance band. The central bank prepares and publishes an inflation forecast, with a conscious aim of making it the new nominal anchor for anchoring expectations of economic agents. Therefore, the inflation forecast can be seen as the new intermediate target of monetary policy.

It is also important to note that the concept of core inflation is quite developed in Hungary and both the central bank and the statistical office have, for several years, calculated and published a core inflation index. The central bank core index excludes effects of seasonal foodstuffs (egg, potatoes, fruit, vegetables), solid and liquid fuel and gasoline, and covers 91% of the CPI. (Valkovszky and Vincze, 2000, p. 6) Nonetheless, the inflation target is specified in terms of headline inflation.

Table 2.13: Monetary Policy Framework in Hungary

Year	Operational target	Intermediate Target	Final Target
1993		Net domestic credit stock and a fixed nominal exchange rate with ± 0.5% fluctuation band	To reduce current account deficit (actual deficit USD -3.5 bn.) and curbing inflation (22.5%)
1994	Money market operations to influence lending capacity of the banking system and money market interest rates (actual weighted monthly average yields of discounted treasury bills maturing in 1 and 3 months were 29.3% and 30.4% respectively)	Net domestic lending of the CB (net domestic assets) and maintaining the real exchange rate (not allowing appreciation), using a fixed nominal exchange rate, with a band that was widened from ± 0.5 % to ±1.25% in August and to ± 2.25% in December	Main target: to reduce the current account deficit (target: USD -2.6 bn, actual: USD -3.9 bn). Complementary target: further cut in inflation (18.8%)
1995	Short-term money market interest rates; actual 90-day treasury bill yield (end of period): 30.5%	Nominal exchange rate - pre-announced crawling peg with ± 2.25% fluctuation band	Continued reduction in the rate of inflation (28.2%)
1996	Short-term money market interest rates; actual 90-day treasury bill yield (end of period): 22.2%	Nominal exchange rate - pre-announced crawling peg with ± 2.25% fluctuation band	Continued reduction in the rate of inflation (23.6%)
1997	Level of money market interest rates; actual 90-day treasury bill yield (end of period): 19.4%	Nominal exchange rate - pre-announced crawling peg with ± 2.25% fluctuation band	Continued reduction in the rate of inflation (18.3%)
1998	Level of money market interest rates; actual 90-day treasury bill yield (end of period): 16.1%	Nominal exchange rate - pre-announced crawling peg with ± 2.25% fluctuation band	Continued reduction in the rate of inflation (14.3%)
1999	Level of money market interest rates; actual 90-day treasury bill yield (end of period): 12.4%	Nominal exchange rate - pre-announced crawling peg with ± 2.25% fluctuation band	Continued reduction in the rate of inflation (10.0%)
2000	Level of short term money market interest rates; actual 90-day treasury bill yield (end of period): 11.6%	Nominal exchange rate - pre-announced crawling peg with ± 2.25% fluctuation band	Continued reduction in the rate of inflation (9.8%)
2001	Short term 3 month money market (primarily government security market) interest rate; actual 90-day treasury bill yield (end of period): 9.7%	Inflation projection (from 13 May 2001 the fluctuation band was widened to ± 15% and subsequently on 1 October 2001 the crawling peg was abandoned)	Direct inflation targeting (target: 7% ± 1% for December 2001 – actual 6.8% in December, average is 9.2%)

Source: author based on data provided by National Bank of Hungary and National Bank of Slovakia

Hungary has been quite stable in terms of operational instruments used by monetary policy to achieve operational targets. Until the early 1990s, the central bank was strongly restricted in developing its monetary policy instruments, partly because of the absence of a money market. partly because of a limited competition between banks. During that period, it used direct refinancing credits to banks as the main policy instrument, but because of the soft budget constraint of both banks and enterprises, demand was virtually unlimited and credit rationing had to be implemented. (see Bozo, 2000, p. 82)

Due to an early start in the development of the banking sector, the central bank was able to switch to the use of repo instruments by 1993. For several years now, it has been the two-week deposit rate that has acted as the key policy rate. Since autumn 1995, the Hungarian banking sector has had surplus liquidity which is withdrawn by the central bank from the banking sector through its reverse repo. (Bozo, 2000, p. 66)

The operating target has also been quite stable, involving a group of 3-6 month interbank and government paper interest rates, which were considered to be most relevant for overall policy transmission. More recently, this was limited to the 3-month interbank rate only.

2.8.3 A detailed look at monetary developments in Hungary during the 1993-2001 period

After the deep transition recession that started in 1991, monetary and fiscal policy were rapidly loosened in 1992. Fiscal and monetary expansion resulted in further current account deterioration and external borrowing. Increasing current account deficits and external indebtedness forced repeated devaluations and indirectly increased inflation. According to Suranyi and Vincze (1998), real interest rates were negative between mid-92 and mid-93, the fiscal deficit increased steadily from mid-92 and monetary accommodation was an important source of inflation.

Monetary policy changed its course in mid-1993 and began to tighten, but was powerless to change the underlying fundamentals without the co-operation of fiscal policy. It proved ineffective in promoting domestic savings by "increasing interest rates when deteriorating fundamentals destroyed public confidence and made forint investments too risky". (Barabas et al., 1998, p. 65) The reason is that under the planned economy, policymakers "preferred to solve the problems arising from supply–demand imbalance by inflation rather than rationing – this means that any sign of external imbalance brings inflation expectations." (Suranyi and Vincze 1998, p. 164)

To understand the fiscal policy in Hungary during that period, it is useless to look at official fiscal figures as the following examples illustrate very well. Before 1997, much of the pre-1989 debt was channelled through interest rate-free loans from the

central bank, the true interest cost showed in the NBH accounts and not directly in the fiscal deficit. (NBH, 2001a) Between 1992 and 1993, the difference between the change in the public debt/GDP ratio and the cash flow deficit was 10%, which indicates the size of off-budget deficits. (Barabas et al., 1998, p. 68)

At the same time, the exchange rate was subject to two conflicting central bank objectives: to promote external competitiveness and to provide a nominal anchor, a conflict worsened by uncoordinated fiscal and income policies. (Golinelli and Rovelli, 2001)

In 1993, the central bank resolved this conflict in favour of decreasing inflation and began to delay devaluations and increase interest rates. However, the exchange rate policy was not credible, as the deteriorating external imbalance reinforced expectations of future devaluations and inflation, causing an actual heightening of inflation expectations. (Szapary and Jakab, 1998, pp. 694-5) The inertial element in Hungarian inflation was strong until 1996 and was to a large extent caused by inflation expectations. (Barabas et al., 1998, p. 60)

At the same time, the main practical concern of the monetary authorities regarding the monetary aggregates became how to sterilise excessive money creation caused by capital inflows as intermediate monetary targets were systematically overshot because of insufficient sterilisation. (Golinelli and Rovelli, 2001, p. 10)

By 1994, the central bank came to believe that "any additional tightening would have been ineffective: further devaluation would only serve to validate inflation and interest rate increases would simply raise fiscal debt service or accelerate capital inflows." (OECD, 1995)

During the 1995-1996 period, monetary policy and monetary developments should be seen as an integral part of the overall policy package, with monetary policy closely co-operating with fiscal policy on reducing internal and external imbalance and setting the stage for sustainable growth.

While fiscal policy focused on cutting the fiscal deficit and revenues at the same time (including a substantial increase in regulated prices), monetary policy concentrated primarily on restoring external balance. To this end, both a devaluation in March 1995 and a switch to a crawling peg with a relatively high depreciation rate of 1.9%/month were chosen. Interest rates were sharply raised to ensure both positive real interest rates and currency stability.

After the dramatic first half of 1995, "monetary policy has intentionally not attempted to engineer a faster pace of disinflation because external equilibrium improvements and real GDP growth were considered vulnerable." (OECD, 1997, p. 4) Inflation also played a decisive role in the quick and huge reduction of the real value of expenditures in Hungarian public finance (Laszlo, 1998, p. 149) even though there is no proof that this was an explicit policy consideration.

The rate of crawl was cut to 1.3% per month by July 1995, but subsequent reductions in the pace of exchange rate depreciation were gradual. The change in the rate of crawl interacted with the foreign exchange movements within the allowed band, contributing to a much lower depreciation in 1996 and 1997, but a much higher one in 1998 after the Russian crisis caused a temporary movement from the appreciation limit of the band towards the depreciation limit. On the other hand, since inflation continued at a higher rate, there was still substantial real exchange rate appreciation. Real interest rates were consciously preserved at 3-4% as inflation declined. Since 1995, the nominal exchange rate has become, econometrically, the key determinant of prices. (Suranyi and Vincze, 1998)

Table 2.14: Development of key monetary indicators between 1995 and 1998

	3-month interbank interest rate	Core CPI inflation	CPI inflation	12-month currency depreciation
December 1995	29.5	24.4	24.9	26.8
December 1996	22.3	18.2	18.0	10.5
December 1997	19.6	16.8	16.9	7.8
December 1998	17.6	10.2	9.8	11.4

Source: National Bank of Hungary

The smooth fall in inflation was interrupted in mid-1999, when it began to rise for the first time in four years and disinflation stalled for two years until mid-2001. Higher EU inflation, a closing output gap in Hungary and an increase in administered, commodity and food prices have been identified as the principal culprits of the phenomenon, which could also have been observed in Poland at the same time and, to some extent, in Czech Republic and Slovakia.   —

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The increase in world prices for energy caused an upsurge in inflation both directly through market-determined household energy inflation (NBH, 2000, p. 7), but also through producer prices. Food prices were an important source of inflation, due to poor crops, policy choices and a certain catching up with the overall price level. (ICEG, 2002, pp. 49-57) Regulated prices were also important: 2.8% of the 11.2% rise in the consumer price index in December 1999 is accounted for by the rise in this category. (NBH, 2000, p. 7)

As a consequence, the central bank core inflation index, which excludes the effects of seasonal variations in food prices and changes in prices of petrol and certain energy sources as well as regulated prices from headline inflation, remained below 10% and even declined at the same time as the headline inflation was increasing.

It needs to be noted that these supply-side explanations are insufficient - even the core inflation index stopped its downward path during 2000 and rose to the same rates as headline inflation. The additional factor is that EU producer prices also started to increase at the end of 1999 and "due to the high openness of the Hungarian economy, the unfavorable evolution of EU PPI had a strong impact on domestic production costs." (ICEG, 2002, pp. 49-57) In general, continuing robust recovery of the Hungarian economy and the recovering domestic demand began to limit the scope for painless and quick disinflation without external risks. The inflation differential vis-à-vis the euro area remained in the 7.5-8% range during much of

2000. At the same time, the current account deficit remained low compared to previous years.

The policy response was quite vigorous in exchange rate policy, as the rate of crawl was cut from 0.7% at the end of 1998 to 0.3% in April 2000. This is seemingly contradicted by substantial cuts in interest rates during 1999, but these were anti-inflationary in the sense that they were primarily aimed at decreasing the profitability of speculative capital inflows.

From April 2000 until May 2001, monetary policy remained neutral, with the central bank arguing that "economic shocks that fueled the inflation [in 2000] primarily affected the supply side of the economy". (NBH, 2001b, p. 9) However, the effects of all the factors mentioned above continued to keep inflation between 8 and 10%.

In 2001, monetary policy took some decisive steps to achieve further disinflation. The crawl was stopped and the fluctuation band widened to 15% in both directions. The central bank did not intervene when the currency strengthened considerably and the result was 8% year-on-year nominal appreciation and 12.5% year-on-year real appreciation at the end of 2001. Nominal interest rates were kept essentially stable around 10% regardless of the decline in inflation from May 2001, and the central bank adopted an inflation-targeting regime. (NBH, 2002) One of the reasons for this strong response was the experience of previous years, when the real appreciation

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based on price indicators was much lower than the improvement in unit labour costs. (ICEG, 2002, pp. 49-57)

At the same time, the factors that contributed to stable and/or rising inflation in 1999 and 2000, were reversed: the euro appreciated against the dollar, oil prices fell and EU PPI dropped sharply and food inflation decreased. As a result, price pressures began to decrease after May 2001 and there was a 4% and 3% decrease in headline and core inflation by the end of 2001 compared to just six months earlier.

2.9 Key economic and monetary developments in Poland: 1993-2001

2.9.1 Introduction

Poland started the communist period on a lower level of economic development than Czechoslovakia or Hungary and faced growing political and economic problems from the 1960s on, which it tried to resolve during the 1970s and 1980s by a combination of standard-of-living increases based on foreign borrowing and a partial economic reform. At the same time, the government faced a much better organised political opposition than in the other two countries, primarily due to a strong backbone provided by the Catholic Church and, after his 1978 election, by the Pope John Paul II. The economic and political problems came to a head in 1980-81 when a deep recession contributed to mass protests and a resulting martial law.

After the martial law was abolished, the country experienced a decade of mild political repression, which ended in late 1989 in a negotiated hand-over of power to the first non-communist government in four decades. The shock therapy instituted in January 1990 led to massive government unpopularity and the political fragility manifested itself in government reshuffles.

The 1993 elections were won by the postcommunist party, which governed in a coalition with an agrarian party. The 1993-1997 period meant a slow-down, but not a stop of structural reforms and macroeconomic policies were moderate. After the 1997 elections, the new right-wing coalition tried to speed up structural reforms of the economy, to reform the health, public administration and education sectors and to institute conservative fiscal policies. Results were mixed and the 2001 election saw a return of the 1993-97 left-wing government, which has had to deal with a significant fiscal deficit and a stagnant economy.

As Wellisz (1998) writes, the new government formed in the autumn of 1989 inherited a partially liberalised and half-dismantled command system and an economy on the verge of hyperinflation. Imbalances in the economy, particularly on the fiscal and quasi-fiscal side, were enormous. Poland had a very high debt, which it was not able to service fully. Due to high inflation, the economy suffered from extensive dollarisation and demonetisation. In general, Poland was considered to have significantly worse initial conditions than other Central European countries. (Kolodko, 1989; Sachs, 1993) On the other hand, it should be noted that there was

already a sizeable private sector at the outset of transition and much more experience with the features of a market economy than in Czechoslovakia. (De Broeck and Koen, 2000)

In January 1990, a comprehensive stabilisation and liberalisation programme called the Balcerowicz Plan was introduced, including a fixed exchange rate. Fiscal and monetary tightening, structural reforms and the breakdown of CMEA markets caused a sharp recession, but a shorter and milder one than in other Central European countries. At the same time, inflation was reduced from more than 1000% to 100% within a year and 50% within two years. The initial peg lasted longer than expected, but was replaced, after one devaluation, by a crawling peg in October 1991.

The economic recovery started in late 1991 and Poland enjoyed moderate growth and gradually decreasing inflation until 1994, when the growth rate increased even further and the economy grew by more than 5% annually from 1995 until the end of 1998. In 1999, the real GDP was 20% higher than in 1989, the highest level of all transition countries. (Balcerowicz, 2000)

De Broeck and Koen list the following principal reasons for such stellar performance, which led to Poland being called 'a soaring eagle': low entry barriers for new firms, entrepreneurial dynamism of the private sector, hard budget constraints on public enterprises and generous debt relief. At the same time, the

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commercialisation and mass privatisation of existing state-owned small and medium enterprises was rapid and relatively successful. (IMF, 2000) The interesting feature of the recovery is that manufacturing grew more rapidly than services, a doubly surprising feat given a generally perceived overindustrialisation of all communist economies.

After hovering around 30% between 1993 and mid-1995, inflation fell rapidly from 28% to 6% between 1995 and the beginning of 1999. Lack of progress in disinflation during 1994-1995 can be explained largely by a relatively high rate of crawl and unsuccessful sterilisation of the rapid accumulation of foreign exchange reserves, which caused money supply to grow much faster than projected. The reserve build-up resulted from a large trade surplus and capital inflows. (OECD, 1997)

The period of high growth came to an end in the 1999-2001 period. While the impact of the Russian crisis was an important factor, the key to an abrupt slowdown lies in structural impediments in the economy. The restucturing of large enterprises was more drawn out than in the other three countries. Sales of state-owned banks began in 1993, but by 1998. half of bank assets were still in state hands. (IMF, 2000, p. 4)

Equally importantly, the privatisation and restructuring of sensitive sectors – mining, agriculture and steel – essentially stalled during the 1993-1997 period. Labour

market flexibility in Poland continued to be low and deteriorated further following new labour legislation. The new government that came to power in the autumn of 1997 tried to speed up structural reforms, but was overwhelmed by its many priorities and by the political sensitivity of key sectors.

As a result, the rapid growth increasingly resembled overheating, with the current account deficit reaching record highs and an actual increase in inflation in 1999. Monetary policy became more restrictive in 1997 and early 1998, but was relaxed later in 1998 and 1999 in response to the Russian crisis. However, the resumption of swift growth and external imbalances in early 1999 led to a very tight policy in late 1999, 2000 and 2001. The restrictive monetary policy was aided by a switch to an inflation targeting framework in September 1998. At the same time, exchange rate flexibility was gradually increased with a band of 10, 12.5 and then 15% around the central parity in 1998 and 1999. Finally the currency was floated in April 2000. Continuing capital inflows, resulting from FDI and high interest rates, significantly strengthened the currency, and that strenghtening was a deliberate part of the disinflation effort.

With real interest rates reaching 10%, the economy quickly slowed down, the real GDP growth collapsed from more than 6% in late 1999 to 1% in late 2001 and unemployment reached the highest level among OECD countries. Inflation and the current account deficit also decreased sharply, leading to repeated cuts in interest rates. However, economic problems contributed to a mounting fiscal deficit and

a smaller drop in the current account deficit than desired by the central bank. Consequently, monetary policy remained highly restrictive, with the policy rate at 11.5% in the 4th quarter of 2001 compared to annualised inflation of 3.6% during the same period.

Table 2.15: Macroeconomic data, Poland, 1993-2001, in%

	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP growth	3.8	5.2	7.0	6.0	6.8	4.8	4.1	4.0	2.6
Average inflation	35.3	32.2	27.8	19.9	15.0	11.8	7.3	10.1	5.9
unemployment	16.4	16.0	14.9	13.2	10.5	10.1	13.0	15.0	17.0
CA deficit/GDP	-	-	-	-1.0	-3.0	-4.3	-7.5	-6.3	-5.5

Source: ING Barings

2.9.2 The monetary policy framework

As in the other three countries, the main task of monetary policy in Poland during the 1993-2001 period was to disinflate from a high initial level. What was idiosyncratic about Poland was the extremely high initial level of price increases – Poland suffered from hyperinflation of more than 1000% in later 1989/early 1990, whereas the highest inflation rates experienced by other Central European countries never reached more than 50% and that only for miniscule periods.

Hyperinflation made disinflation more challenging not only because of a higher initial level, but also because it induced, together with the subsequent difficulty of bringing inflation down, widespread indexation, especially in wages. (OECD, 1997, pp. 28-29)

High inflation in the early 1990s is linked to another Polish idiosyncrasy - an extremely weak fiscal position. As shown in more detail below, the primary cause high inflation was the need to finance extensive fiscal deficits without a developed debt market. The fiscal problem abated in the mid-1990s, but came back with the 2000-2001 recession though by that time financial markets were sufficiently developed and the central bank independent enough to counter monetisation of the deficit.

Finally, as a result of experiences from the 1980s, Poland suffered from the highest level of dollarisation and demonetisation in the sample. Despite impressive reversals in the first half of the 1990s, the level of financial intermediation and the use of the domestic currency have been lower than in Hungary, Czech Republic or Slovakia. Therefore, the transition witnessed higher money growth than in the other three countries not only in nominal, but also in real terms.

In response to these factors, Polish policy-makers chose to start the transition with a strong nominal anchor – a fixed exchange rate linked to the US dollar – aimed at braking the hyperinflation. On January 1, 1990, most trade-related foreign exchange rate transactions were liberalised. The peg lasted until October 1991, with just one devaluation of 16.8% and a gradual shift in the basket towards emphasis on European currencies. In October 1991, Poland introduced a monetary policy

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framework that existed, albeit in a modified form, until September 1998 and carried the economy through much of the transition.

The central bank's strategy was to combine two elements: "The intermediate target was to increase the money supply under conditions of crawling devaluation of the Zloty vis-á-vis the basket of currencies, with limited fluctuations of the real exchange rate within the permitted band". (National Bank of Poland, 1998, p. 8) As the central bank itself admitted, the strategy did not allow it to meet the two intermediate targets in full, "although initially, given the limited links between the Polish economy and the global financial market implying greater monetary policy sovereignty, it allowed for reducing inflation". (ibid.) It was the exchange rate that continued to serve as the nominal anchor.

In the 1993-1995 period, the rate of crawl was substantially below the rate of inflation and the exchange rate band was extremely narrow – 0.5%. This policy of fighting inflation with a relatively strong foreign exchange rate attracted large capital inflows due to a large uncovered interest rate parity. In 1995, the exchange rate band was widened to 2% and later to 7% and the rate of crawl was kept essentially steady despite falling inflation until 1998.

During the whole period, the exchange rate target always prevailed over the monetary target as evidenced by the fact that the monetary targets were overshot each year between 1994 and 1997. This was largely a consequence of the

authorities' inability to fine-tune monetary growth, which was swayed by capital
inflows, especially in the 1994-95 period.

Table 2.16: Monetary Policy Framework in Poland

Year	Operational target	Intermediate Target (actual developments in parentheses)	Final Target (actual end-of-the-year inflation in parentheses)
1993	Short-term interbank interest rates	Crawling peg exchange rate mechanism (2%, later 1.6% monthly devaluation) and complementary target of M2 growth of PLN 15 bln (PLN 14.8 bln)	Target for CPI inflation: 32.2% (37.6%)
1994	Short-term interbank interest rates	Crawling peg exchange rate mechanism (1.5%, later 1.4% monthly devaluation) and complementary target of M2 growth of PLN 15.5–16.9 bln (PLN 21.4 bln)	Target for CPI inflation: 23% (22.5%)
1995	Short-term interbank interest rates	Crawling peg exchange rate mechanism, since May Crawling ER band ±7 % (1.4%, later 1.2% monthly devaluation) and complementary target of M2 growth of PLN 17.1 bln (PLN 26.9 bln)	Target for CPI inflation: 16.9% (21.6%)
1996	Reserve money	Crawling ER band ±7 % (1% monthly devaluation) and complementary target of M2 growth PLN 23 bln (PLN 30.5 bln)	Target for CPI inflation: 17% (18.5%)
1997	Reserve money	Crawling ER band ±7 % (1% monthly devaluation) and complementary target of M2 growth PLN 27.4-28.6 bln (PLN 39.8 bln)	Target for CPI inflation: 15% (13.5%)
1998	Interest rates	Crawling ER band ±7 % extended 10 and finally to 12.5% (1%, later 0.8% and 0.6, finally 0.5% monthly devaluation)	Target for CPI inflation: 9.5 % (8.6 %)
1999	Interest rates	Crawling ER band ±12.5% extended 15% (0.5%, later 0.3% monthly devaluation)	Target for CPI inflation: 8 –8.5% (9.8%)
2000	Interest rates	Crawling ER band ±15% (0.3% monthly devaluation) Since April 2000 fully floating ER mechanism	Target for CPI inflation: 5.4 –6.8% (8.5%)
2001	Interest rates		Target for CPI inflation: 6 -8% (3.6%)

Source: author based on data provided by National Bank of Poland and National Bank of Slovakia

From late 1995, the exchange rate was increasingly unable to provide a precise nominal anchor as the central bank allowed it an increasing flexibility within the 7% band around the central parity. In an environment where inflation was still above 20%, the importance of the issue was limited. However, during 1998, as inflation steadily approached 10% and the band was expanded to 10 and 12.5% and later even to 15%, the central bank decided it was time for a new monetary framework.

Table 2.17: Changes in the rate of crawl of the Polish zloty

Date	Rate of crawl
October 14, 1991	1.8%
September 12, 1994	1.5%
August 27, 1993	1.6%, also devaluation by 7.4%
November 30, 1994	1.4%
February 16, 1995	1.2%
January 8, 1996	1%
February 25, 1998	0.8%
July 16, 1998	0.65%
September 9, 1999	0.5%
March 24, 1999	0.3%
April 12, 2000	End of the crawling peg

Source: National Bank of Poland

Table 2.18: Development of currency basket in Poland, 1990-2000

Period	Composition of the currency basket
January 1990 – April 1991	USD 100%
May 1991 – December 1998	USD 45%. DEM 35%, GBP 10%, FFR 5%, 5% CHF
January 1999 – April 2000	EUR 55%. USD 45%

Source: National Bank of Poland

In 1997 and 1998, monetary policy in Poland underwent substantial institutional transformation related to approval of a new constitution that included all EU

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accession requirements including those for EMU entry. The newly established Monetary Policy Council decided to switch to inflation targeting.

In Poland, inflation targeting meant a more significant change in monetary policy than in the Czech Republic, but even so its impact on actual policy should not be overstated. Exchange rate flexibility was quite high already and the new framework should be seen, to some extent. as a reaction to the loss of a nominal anchor in a tightly regimented exchange rate. The timing of inflation targeting was closer to the mainstream experience than in the Czech case - it was introduced after the bulk of disinflation was achieved, when the inflation was actually decreasing, but the difficult part of disinflating from the 10% level remained to be done. Inflation targeting was accompanied by a gradual change in exchange rate policy – as already noted, exchange rate targeting was increasingly weak to non-existent and was officially terminated by April 2000.

2.9.3 Monetary developments 1993-2001

Monetary developments in the early 1990s were driven by an inherited hyperinflation and continuing fiscal weakness. Since institutions that allowed domestic creditors to absorb government debt were only gradually developing and Poland was not in good standing with foreign creditors, a decreasing, but large portion of the deficit had to be directly monetised via the central bank. There is a consensus in much of the literature that during the 1991-1994 period, this factor

contributed most significantly to continuing high inflation in Poland (see, for example, Chopra, 1994; Van Wijnbergen and Budina, 2001 and Wellisz, 1998). Even in 1994, the financing of the fiscal deficit accounted for 50% of the increase in monetary aggregates (OECD, 1997, p. 30-32) though this rapidly declined to 5% by 1995.

Despite the fiscal weakness, inflation dropped significantly between 1990 and 1993, but then fluctuated wildly on a slightly downward trend between 1993 and early 1995, overshooting inflation targets. (OECD, 1997, pp. 26-27) In addition to fiscal problems, an increasingly important inflationary factor in 1994-1995 was the rapid accumulation of foreign exchange reserves resulting from a large trade surplus and capital inflows. Consequently, the money supply grew much faster than projected. (OECD, 1997, pp. 30-32)

After initial policy confusion in 1993 and much of 1994, a strong policy response gradually emerged in the second half of 1994 and early 1995. It built on the previous decision to sterilise much of the capital inflow, but went further. In 1994, the central bank began a policy of cutting interest rates despite inflation that was not yet falling significantly in order to decrease the interest rate differential. In 1995, the exchange rate band was widened to 2% and later 7% to increase uncertainty for speculative inflows. The rate of crawl was cut from from 1.6% to 1.2% in six months between August 1994 and February 1995, opening an approximately 10% gap between inflation and the rate of depreciation of the central parity.

The policy proved a success in terms of disinflation as Poland experienced four uninterrupted four years of rapid disinflation – from a high of 29% in February 1995 to a low of 6% in June 1999. During the whole period, the M2 growth not only outstripped the nominal GDP growth, but was also highly erratic. The apparently smooth disinflation contains four quite different periods. During the first one, interest rates fell in harmony with falling inflation until the end of 1996. At the same, a dynamic period in bank lending to households and enterprises began (OECD, 1998), together with rapid growth of domestic demand "induced by rapidly growing real wages, extensive lending and a relatively high fiscal deficit". (NBP, 1998, p. 5)

In 1996, the current account deficit grew dramatically and inflation, while declining, overshot the official target. In response, the central bank steadily tightened monetary policy from the last quarter. Most of the restriction took place in 1997 and early 1998, when NBP raised interest rates several times up to 24%. (OECD, 2000, pp. 45 – 46) At the same time, the rate of crawl was kept steady until the decreasing inflation matched it to prevent further real exchange rate appreciation (OECD, 1998)

In response to a continuing brisk decline in inflation and stabilisation in the current account deficit, the policy was relaxed mildly in mid-1998 and then rapidly during late 1998 and early 1999, as the Russian crisis hit the Polish economy through financial market turbulence and a collapse in exports to Russia. The GDP growth

fell dramatically from more than 6% in the spring of 1998 to 1% a year later, but the slowdown was short-lived and the growth rate approached 6% again in the last quarter of 1999.

At the same time, a combination of demand-side and supply-side factors caused a reversal in the path of disinflation. The supply-side factors were similar to those in the other three countries during the period – jumps in oil and food prices. On the demand side, it is worth noting that monetary expansion continued during the whole period, with M2 growth running above 20% during 1999. Lending both to enterprises and households continued to grow swiftly and was a key source of the expansion. (OECD, 2000) The external imbalance deepened as well and, following the Czech and Slovak currency crises, was perceived as the most binding constraint. The central bank originally had an inflation target of 8-8.5% for 1999, which was revised to 6.6-7.8% in early 1999 when the inflation pressures were at their lowest. Instead, the end-of-year increase in the CPI was 9.8%.

All of these factors elicited a robust response from monetary policy. During much of 1999, the tightening was mild as there was a high level of uncertainty concerning future developments – the 3-month interbank interest rate rose from 12.9% in February 1999 to 14.1% in September 1999. In response to dramatic increases in real GDP, inflation and the current account deficit and an unresponsive fiscal policy, interest rates were then raised by more than 5%, with the 3-month interbank rate reaching 19.6% in November 2000.

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The policy of high interest rates was successful in ameliorating key macroeconomic imbalances, but at a high cost. After peaking at 11% in July 2000, inflation dropped to 3.6% in December 2001 and has continued to fall. The current account deficit dropped mildly from its peak in 1999. On the other hand, the real GDP grew by just 0.5% at the end of 2001 and unemployment reached a record high of 17%.

At the same time, the gap between nominal GDP and M2 growth closed during 1999 and 2000, but the paths soon diverged again, confirming instability of the monetary aggregate especially vis-à-vis turning points in the economic cycle. The foreign exchange rate contributed to disinflation by appreciating in nominal terms by about 10% during 1999 and 2000, but this was more than reversed in 2001.

Slowing growth and massive unemployment contributed to a fiscal crisis worsened by the political cycle as the 2001 parliamentary elections delayed a governmental response to the problem. As a result, the current account deficit remained relatively high at more than 5% of GDP.

Between December 2000 and 2001. interest rates were cut again (since mid-2000) in step with the slowing economy and the dramatic decrease in inflation, however, these steps failed to raise growth or decrease unemployment even during early 2002. The real interest rates remained high, with the central bank arguing that further

relaxation is contingent on government resolving the fiscal and structural problems in the Polish economy.

2.10 Key economic and monetary developments in Slovakia: 1993-2001

2.10.1 Introduction

Slovakia is one of the two successor states of Czechoslovakia, the other one being the Czech Republic. After becoming independent in 1993, Slovakia entered a turbulent political path of heightened conflict between nationalists with a strong flavour of crony capitalism and questionable regard for a rule of law and a loose group of more pro-Western parties. After the former won early elections in 1994, Slovakia diverged from its former path of EU and NATO integration and rapid economic reform, which resulted in the exclusion of Slovakia from the first group of NATO entrants and countries negotiating EU accession in 1997 and in a currency crisis in 1998. Following the 1998 parliamentary elections, a pro-Western government with a strong majority was elected, proceeding, despite internal conflicts, with important political and economic reforms. The right-wing part of that government was essentially re-elected in the 2002 elections with a mandate to speed up structural reforms.

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The Slovak economy was hit much harder than its Czech counterpart by the transition recession as its industrialisation during the communist period made it more dependent on CMEA markets and assigned it the position of a processor of raw materials and producer of simpler manufactures. Consequently, the transition recession was more painful in Slovakia than in the Czech Republic, manifesting itself in divergent development of unemployment, which exceeded 10% in Slovakia in 1991 while the Czech unemployment rate hovered between 3 and 5% during the same period.

On January 1, 1993, the independent Slovak Republic was formed. Five weeks later, on February 8, 1993, the Czecho-Slovak monetary union split and Slovakia began implementing a fully independent monetary policy. Due to a loss of fiscal transfers from the Czech Republic and the continuation of the economic downturn caused by the decrease in trade with the Czech Republic, Slovakia underwent a second round of painful adjustment during 1993 and early 1994. (Toth, 2000)

The adjustment paid off in 1994, when the Slovak economy was able to take advantage of recovery in its main export markets of the EU and the Czech Republic and export-led growth climbed to nearly 5% in 1994 and nearly 7% in 1995. At the same time, a lower structural deficit and the recovery led to a small fiscal surplus in 1995. At the same time, the existence of a fixed exchange rate, a long-standing culture of low inflation and a near-freeze in regulated prices contributed to impressive disinflation.

The recovery was based on the ability of many Slovak enterprises to supply intermediate manufacturing inputs and simple goods for OECD markets, which are both highly cyclical. When the growth in Western Europe slowed down in 1996, the impact on the Slovak economy was as strong as the influence of the previous upturn. (OECD, 1999)

The Slovak government then embarked on a policy of growing out of problems via extensive infrastructural investment and real wage increases. The official fiscal balance worsened somewhat, but most of the stimulus was hidden via private and quasi-private borrowing with government guarantees. (OECD, 1999) The current account imbalance, which reached more than 10% in 1996 and remained at that level until 1998, is, in many ways, a better measure of the effect of the stimulus to domestic demand provided by fiscal policy.

At the same time, privatisation continued through the 1994-1997 period with large industrial enterprises, especially those in the chemical, oil and paper industry as well as metallurgy that formed a backbone of the Slovak economy through their export earnings. The process was tinged by massive levels of cronyism and a defective incentive structure that motivated overinvestment or asset-stripping, based on a specific situation in each enterprise. (Beblavy, 2000b)

Monetary policy responded swiftly to fiscal expansion and worsening external imbalance by sharply raising interest rates. Real ex post interest rates remained between 13 and 25% until early 1999, as fiscal policy refused to tighten and contagion from the Asian and the Russian crisis had to be dealt with. At the same time, state-owned banks, burdened with a high level of non-performing loans and political interference, did not provide a reliable channel for monetary policy.

The combination of a very high twin deficit and extremely high real interest rates was not sustainable in the medium-term and ended in a currency crisis similar to the Czech crisis: started by contagion from the Russian crisis, domestic enterprises and households took over in speculating against the fixed exchange rate. After trying to stave off depreciation for several weeks, the central bank capitulated on October 1, 1998, and floated the currency.

After the parliamentary elections of 1998, a new policy of stabilisation and rapid structural reforms began, relieving imbalances at the expense of increased inflation and unemployment as well as slower GDP growth. Many of the enterprises privatised during the 1994-1997 period collapsed in 1998 and 1999 or had to downsize drastically. Regulated prices, particularly of utilities, were repeatedly raised to catch up with cost-recovery levels. Large state-owned banks, technically insolvent by 1998, were consolidated and privatised, together with many utilities. The new owners of the country's industrial base essentially resold it to investors from the OECD countries.   —

A decrease in the fiscal deficit and in household consumption produced a temporary and substantial reduction in the external imbalance during 1999 and 2000, while core inflation remained stable. Growth, which dropped below 2% in 1999, began to recover by the end of that year. However, in 2001 and 2002, as the political cycle turned into its second half, structural reforms stalled, the fiscal deficit grew due to cuts in direct taxes and the current account deficit began to grow substantially though it did not reach the 1996-1998 levels. At the same time, it was financed by FDI rather than by borrowing.

Table 2.19: Macroeconomic data, Slovakia, 1993-2001, in%

	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP growth	-6.9	5.2	6.5	5.8	5.6	4.0	1.3	2.2	3.3
average inflation	23.2	13.5	10.0	5.8	6.1	6.7	10.6	12.0	7.3
Unemployment	12.2	13.7	13.1	11.3	11.8	12.5	16.2	18.6	19.2
CA deficit/GDP	-4.0	5.0	2.7	-9.6	-9.2	-9.0	-4.9	-3.6	-8.6

Source: ING Barings

2.10.2 The monetary policy framework

The situation in Slovakia has been, in many ways, similar to the Czech environment described earlier. While disinflation was the key challenge for monetary policy, Czechoslovakia entered the transition with stable macroeconomic fundamentals, it generally managed to implement prudent fiscal and monetary policies and, consequently, the issues faced by monetary policy during initial years of transition were, in many respects, not as daunting as was the case in Hungary and Poland.

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Independence in 1993 changed the situation dramatically - the low credibility of both fiscal and monetary policy of the new state, the low foreign exchange reserves and a struggle for fiscal adjustment created pressure on macroeconomic policy, which monetary policy managed to withstand while continuing disinflation. In the medium term, though, Slovakia proved susceptible to the disease of twin deficits and external constraints on growth.

The effect of banking on monetary policy was also similar to the Czech Republic – the phenomena of overbanking and uneven budget constraints strengthened the hold of monetary policy over enterprise activity, but in a highly non-linear manner - as long as the budget constraint was soft on many enterprises, the demand was quite inelastic to the interest rate.

At the beginning of the transition period, the Czechoslovak policy-makers had to introduce a monetary policy framework taking advantage of sound macroeconomic fundamentals, but also able to deal with the uncertainties of transition. The policy response was a fixed exchange rate as the intermediate target of monetary policy complemented by a monetary target. Details of the policy framework and its fulfilment are shown in table 2.20.

Independent Slovakia continued in the Czechoslovak monetary policy framework of a fixed exchange rate (including a single 10% devaluation in July 1993). Due to

lower capital inflows as well as less rapid financial innovation, the velocity of money was more stable and Slovak policy-makers were able to adhere to their monetary targets more than the Czech central bank. The basic policy framework was quite stable between 1993 and 1998 and the final inflation targets were generally achieved by the central bank.

Table 2.20: Monetary Policy Framework in Slovakia

Year	Operational target	Intermediate Target (actual developments in parentheses)	Final Target (actual inflation in parentheses)
1993	Not clearly defined	Exchange rate band of 0.5 % and complementary M2 growth 19% (18.5%)	CPI inflation: 30.4% (25.1%)
1994	Not clearly defined	Exchange rate band of 1.5 % and complementary M2 growth 13.2% (18.6%)	CPI inflation: 10-13.2% (11.7%)
1995	Not clearly defined	Exchange rate band of 1.5 % and complementary M2 growth 12.3% (21.2%)	CPI inflation: 8-10% (7.2%)
1996	Short term interest rates	Exchange rate band of 5% together with M2 growth 11.6% (16.6%)	CPI inflation: 6.0-7.2% (5.4%)
1997	Not clearly defined	Exchange rate band of 7% together with M2 growth 10.7 (8.8%)	CPI inflation: 4.9-5.8% (6.4%)
1998	Not clearly defined	Exchange rate band of 7% together with M2 growth 9.4% (2.5%)	CPI inflation: 5.6-5.9% (5.6%)
1999	Not clearly defined	M2 growth 6.0-8.8% (10.7%)	Net inflation (without regulated and food prices): 6.0-7.5 (6.1) CPI 13.5-15.5% (14.2)
2000	Short term interest rates		core inflation (without regulated prices): 4.7-5.8% (4.6) CPI 8.8-9.9 (8.4)
2001	Short term interest rates		core inflation (without regulated prices): 3.6-5.3% (3.2) CPI 6.7-8.2% (6.5)

Source: author based on data provided by National Bank of Slovakia

It also simplified the currency basket and gradually increased the weight of DEM as the currency of the key export markets (directly in Germany, but also indirectly in other ERM member countries). [2]

Table 2.21: Composition of the currency basket in Slovakia, 1991-1998

Period	Composition of the currency basket
January 1991 – December 1991	USD 31.3%, DEM 45.5%, ATS 12.4%, GBP 4.2%, CHF 6.6%
January 1992 –June 1994	USD 49.1%, DEM 36.2%, ATS 8.1%, FRF 2.9%, CHF 3.8%
July 1994 – October 1998	USD 40%, DEM 60%

Source: National Bank of Slovakia

Following the currency crisis, the central bank gradually switched from an exchange-rate-targeting regime to a new one. Its shape has not been altogether clear though. The 1999 Monetary Program stated: "NBS will target net inflation[3] at the level of 5 - 7%, while anticipating a primary effect on the overall consumer price index of about 2 percentage points for every average 10% increase in regulated prices. NBS will only influence secondary effects of price deregulation, in the sense of acting against 'price contagion'". (NBS, 1998, p. 2)

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[2] The Czechoslovak crown was devalued several times in the second half of 1990 in order to reduce the differential between the official and the parallel black market exchange rate, and to create the requisite conditions for the introduction of internal convertibility of the crown on January 1, 1991 (Svejnar, 1993, p. 33). The introduction of internal convertibility meant unrestricted access to foreign currency for all domestic legal entities for commercial purposes and, to a limited degree, also for individuals. The exchange rate regime was gradually liberalised through the abandonment of administrative restrictions. This action preceded the introduction of full current account convertibility on October 1, 1995. The capital account also underwent gradual liberalization.

[3] Net inflation covers non-tradables without regulated prices and tradables without food – 55% of CPI, while core inflation consists non-tradables without regulated prices and all tradables – 82% of CPI.

The monetary program thus contained the expression 'target net inflation'. In the 2000 Monetary program, NBS stated that "development of headline inflation will be a subject of predictions, while the core inflation will gradually become a target of NBS". (NBS, 1999, p. 3) These statements led several authors (Beblavy, 2000a; Dufek and Odor, 2000; Toth, 2000) to assume that the current monetary policy framework in Slovakia is inflation targeting, similar to regimes implemented in the Czech Republic and Poland.

The monetary policy of NBS exhibits several features that point to inflation targeting. NBS does not have any other targets and began to communicate more with the public. On the other hand, there is no increased accountability and NBS has not stated what is the horizon for reaching price stability or at least low inflation. NBS has not begun to publish an inflation report. NBS officials point to the 2000 Monetary program, which states that core inflation will become an explicit target only in a few years. According to these positions, NBS cannot at the moment take responsibility for the development of inflation due to the turbulent and unpredictable environment.

In conclusion, NBS probably has not implemented any of the four major monetary policy frameworks (exchange rate targeting, inflation targeting, monetary targeting and nominal GDP targeting). Its policy can be characterised as implicit inflation targeting with a significant amount of discretion as opposed to the constrained discretion of inflation targeting. ―

At the same time, the central bank continued to pay attention to movements in the exchange rate. In its monetary program for 1999, NBS stated: "NBS expects to intervene on the currency market to decrease the volatility of the foreign exchange rate. The overall trend in foreign exchange rate development though will depend on economic fundamentals and will, therefore, not be directly a concern of NBS intervention". (NBS, 1998) In its monetary program for 2000, NBS stated: "NBS expects appreciation pressures. It is ready to intervene against excessive volatility [of the exchange rate] as in 1999. There is however, no precise level and band for intervention. It is expected that under favourable macroeconomic developments, the intent of NBS will be to stabilise the foreign exchange rate approximately at the current level". (NBS, 1999) In its monetary program for 2001, NBS stated: "[Exchange rate policy] will continue to be focused on eliminating excessive volatility of the exchange rate. while the trend of appreciation should be influenced by expected economic fundamentals." (NBS, 2000)

This approach was motivated not only by a position that the market should be left to find an equilibrium exchange rate. but also by the low foreign exchange reserves after the ultimately unsuccessful defence of the peg in 1998. However, it is very difficult to determine when the central bank is intervening against excessive volatility and when it is intervening against the level of the exchange rate and the statements on exchange rate policy have been progressively more and more vague as the central bank learned that it did not want to commit itself beforehand.   —

The National Bank of Slovakia intervened on the market in May 1999, when it supported the currency, from December 1999 until May 2000 when it sought to weaken the currency, and in May 2000 when it supported the currency again. The interventions in May 1999 and May 2000 can be considered interventions against volatility as there were substantial intra-day movements. However, in this case as well as during the December 1999-May 2000 period, the movements in the exchange rate that prompted the intervention were a consequence of a market sentiment, which was of a more permanent nature. There have also been strong indications of bands, which the central bank sought to defend in both directions, but which shifted over time.

2.10.3 Monetary developments 1993-2001

When looking at monetary policy after the break-up of Czechoslovakia, we have to keep in mind the dilemma faced by NBS in the first years of the existence of the independent Slovak Republic. High inflation, low credibility of both fiscal and monetary policy of the new state, low foreign exchange reserves, relaxed fiscal policy, and the consequent deficit of the current account of the balance of payments triggered pressures for further internal (inflation) and external (devaluation) depreciation of the currency.

It became obvious soon after the dissolution of Czechoslovakia on January 1, 1993 that due to high expectations of devaluation early in 1993 and low foreign exchange reserves, the exchange rate of the crown was unsustainable given the prevalent degree of liberalisation of the foreign exchange market and transactions. NBS responded with a series of administrative measures, mainly involving limits to banks' access to foreign currency funds (NBS, 1994, p. 47) and delaying payments for imports. This approach alone could not achieve success, because it could not increase confidence in the Slovak crown. The low levels of credibility and foreign exchange reserves were not the only problems: the fiscal deficit and external deficits were also an issue. The aforementioned administrative measures amounted to de facto restrictions on internal convertibility, which could only temporarily moderate the effects of these problems, but not resolve them. A purely administrative solution would have led to a further deepening of the imbalance and a gradual backsliding on foreign exchange regime liberalisation.

On the other hand, a pure 'market' solution - a drastic devaluation to the tune of 20 to 40% - presented some major risks. Due to the one-time character of the price level increase in January 1993, inflation was expected to stabilise at the level reached in 1992 - around 10% - relatively rapidly as long as the exchange rate remained unchanged. A major devaluation would have probably resulted in a sharp increase in inflation due to the openness of the Slovak economy. This would have added a more significant inflationary impulse to the one-time impulse from the beginning of the year. The result would probably have been a sharp rise in medium-term inflationary

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expectations with subsequent problems for economic policy along with the erosion of the gains from the sharp devaluation.

Therefore, the combination of instruments chosen in 1993 by the National Bank of Slovakia - administrative tools combined with a 10% devaluation - can be considered a suitable choice, as evidenced by the fact that the crown's exchange rate was sustained and most administrative measures were eliminated as early as in December 1993. This rate was then sustained until October 1998.

The end of 1993 marked a turning point in Slovakia's economic situation. In 1994 and 1995, the economy saw high levels of growth relative to the rest of the region. During this period, NBS did not focus on aggressive disinflation, but instead accommodatingly allowed the economy to grow, concentrated on eliminating some administrative barriers, and accumulated foreign exchange reserves. If we compare the inflation in 1992 with the inflation in the years 1994 and 1995, we can see that after the effect of the aforementioned changes in 1993 subsided, inflation gradually returned to 1992 levels (especially if the inflation is cleansed of volatile food prices, which are to a large extent determined by supply-side factors).

After several years of a transitional recession, NBS saw as one of its targets "a growth-promoting monetary policy set within the framework of anti-inflationary intentions". (NBS, 1996, p. 14) The target was successfully met in 1994 and 1995 when simultaneously with rapid GDP growth, the inflation declined. But monetary

policy affects inflation with a one-year and in some countries even a two-year lag. This raises the question of whether NBS, through its pro-growth policy in 1995, did not sow the seeds of future internal and external imbalances, which had to be dealt with through heavily restrictive policies in the years 1996-1998. The question is also raised by an analysis of real interest rates in Slovakia in 1995 and overall monetary policy in Slovakia during this period. In 1995, inflation in Slovakia was already at fairly low levels, but throughout the year, real interest rates remained negative (the only such period between 1993 and 1999). This implies an even larger decline of nominal rates. This event was of great importance in this period due to the open character of the Slovak economy and a fixed exchange rate. We can thus speak of a significantly expansionary monetary policy.

In 1996, particularly in the second half, fiscal policy became sharply expansionary (see for example Miklos and Zitnansky, 1997 and NBS, 1997). The years 1996 to 1998 in Slovakia then saw a textbook example of a conflict between monetary and fiscal policy. Fiscal policy was heavily expansionary and accompanied by twin deficits (high fiscal deficit and high deficit in the current account of the balance of payments).

During the 1996-1998 period, fiscal policy was significantly expansionary, to which monetary policy responded by strong tightening. However, the imbalance was so significant that the restriction was ultimately not enough. NBS could have theoretically used an even more restrictive monetary policy to resolve the imbalance,

prevent an overheating of the economy and the deepening of internal and external imbalances. However, real interest rates were already extremely high - for instance, at the beginning of April 1997, ex post real interest rates in Slovakia reached 13.1%, while in Czech Republic in the same period they were 5.3% and in Hungary 1.5%.[4] A further rate increase would have particularly affected the credit position of the state, which during the 1996 to 1998 period had drained away most domestic savings. But the state displayed low levels of interest elasticity of demand even in the following period and it was unlikely that an interest rate increase would have altered its behavior.

High interest rates were already causing distortions in the economy through the general phenomenon of adverse selection, when rising interest rates attract applicants with higher-risk or rent-seeking projects. In addition, unevenly distributed access of economic entities to foreign currency credit posed an even more significant distortion. These loans were available primarily to larger entities and to ones with a government guarantee. A stricter monetary policy would have exacerbated this imbalance.

After three years of CPI inflation between 5 and 7%, inflation increased steeply during 1999 and 2000, particularly between July 1999 and July 2000 when it was above 14%. This was caused primarily by high increases in regulated prices, increases in indirect taxes, the reintroduction of an import surcharge and the

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[4] Ex post real interest rates were calculated by deflating nominal interbank interest rates in the period. By year-on-year CPI inflation in the same period.

depreciation of the Slovak crown. However, once the one-time shocks related to these factors disappeared, inflation fell substantially and returned to previous levels. The increase in inflation is related to temporary phenomena and in particular to four increases in regulated prices and indirect taxes – January 1999, July 1999, February 2000 and January and February 2001.

These factors allowed the central bank to significantly loosen monetary policy. A dramatic decrease in government demand for domestic savings and decrease in bank interest in other than risk-free lending activities accompanied economic slowdown. This was caused by a decrease in the general government deficit as well as by the shifting of some of its financing to foreign markets and by bank restructuring. All of this resulted in a steep fall in interest rates without a corresponding steep increase in lending (which was the case in 1995).

These factors began to weaken during the second half of 2000 and the first half of 2001. The real GDP growth began to accelerate during 2000 and 2001 and household consumption and investment began to grow again by the final quarter of 2000 and the first quarter of 2001. At the same time, employment and real wages also began to grow. On the other hand, the fiscal deficit stabilised and then increased, together with renewed sharp growth of the current account deficit. The overall economic rebound limited the potential for further loosening of monetary policy.

2.11 Conclusion

This chapter dealt, both in country studies and in cross-cutting sections, with factors of significant past or present influence on the performance of monetary policy in advanced transition countries. It focused on the factors usually not covered by closed-economy models concerned with developed economies approximately on the same level of development. Four country studies contained introduction to political and economic developments, monetary policy framework and its evolution during transition as well as macroeconomic context of monetary policy-making. Despite different initial conditions, many difficulties and false starts of the transition process, all four countries have been successful and rapid reformers.

We found that the monetary policy in the Czech Republic, Hungary, Poland and Slovakia was most influenced by the small and open nature of these countries as well as their lower level of economic development compared to other OECD countries. With the exception of Poland, they have always been highly open to trade and transition brought a dramatic deepening of the trend. 1990s and early 2000s also witnessed rapid financial integration into the global economy, both in terms of deregulation and actual financial flows.

There were several additional influences, related to but distinct from the direct effects of smallness, openness and underdevelopment – e.g. fragility, shallowness and monopolistic structure of financial markets, imbalances and peculiarities in the

relationship between the real economy and the financial sector, high level of uncertainty about the equilibrium real exchange rate, difficulty in controlling inflation due to idiosyncratic pressures as well as expectations and pressures of future EMU membership.

Chapter 3: Monetary policy transmission mechanism in Central Europe

3.1 Introduction

In order to understand how and why monetary policy was actually conducted in Central Europe between 1993 and 2001, it is necessary to look at the transmission mechanism of monetary policy in the countries concerned. This chapter contains an econometric analysis of the transmission mechanism individually for all four countries concerned based on a technique called vector autoregression (VAR). Its results demonstrate that while policy-makers could count on some robust channels of transmission, many of the channels identified for economically and financially more developed economies have been erratic or difficult to spot at all.

Monetary policy-makers have at their disposal policy instruments – usually a short-term interest rate sometimes complemented by use of (sterilised) foreign exchange-rate interventions. The transmission mechanism of monetary policy refers to the process by which changes in these instruments lead to changes in fundamental macroeconomic variables, particularly in inflation.

Even though there is no universally accepted description of transmission channels, a fairly consensual view recognises four essential channels of transmission of monetary policy in modern financial systems. (e.g. Kamin et al., 1997; Mishkin, 1995 or Bean et al., 2002)

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The first channel works through direct interest rate effects – which affect not only the cost of credit, but also the cash flows of debtors and creditors. As Mishkin (1995) points out, it is the key monetary transmission mechanism in the basic Keynesian textbook. Restrictive monetary policy means a rise in real interest rates, raising the cost of capital and causing a decrease in investment spending including spending on consumer durables by households. While it is one of the oldest and most frequently discussed channels, there is no consensus on its effects even in large, closed economies,[1] not to mention the small open ones.

The second channel covers the impact of monetary policy on the economy through domestic asset prices, primarily bond, stock and real estate prices. (Kamin et al., 1997) As Meltzer (1995) explains, monetarists are particularly fond of this channel, believing that "it is vital to look at how monetary policy affects the universe of relative asset prices and real wealth".

The third channel, particularly salient for small open economies, is the effect of monetary policy on the exchange rate. Monetary policy can cause nominal and/or real appreciation/depreciation of the domestic currency, influencing aggregate demand and the price level. (Taylor, 1995; Obstfeld and Rogoff, 1995) Svensson (1998) shows how the exchange rate can be a very important and rapid channel of monetary policy transmission in a small open economy. For transition and developing countries, the pass-through of changes in the exchange rate is generally higher compared to developed countries. (Calvo and Reinhart, 2000)

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[1] See, e.g., Taylor (1995) and Bernanke and Gertler (1995) for a debate concerning the US.

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Credit availability is the fourth major channel. Asymmetric information and costliness of contract enforcement make for agency problems in financial markets. The most important consequence is the so-called balance-sheet effect, by which a restrictive monetary policy decreases the prices of financial assets and thus leads to a lower net worth of firms and individuals. Lower net worth increases moral hazard and adverse selection, decreasing availability of lending and lowering investment and aggregate demand (Mishkin, 1995; Bernanke and Gertler, 1995).

Overall, the impact of interest rates through various channels is often impeded in transition and developing countries due to the highly interest inelastic lending policies of banks. (Schaechter. Stone and Zelmer, 2000; Cottarelli and Kourelis, 1994)

The body of literature attempting to study the transmission of monetary policy on an empirical basis is too vast to survey even briefly. The focus in this chapter is therefore solely on analysis of time series data, specifically on the vector autoregression (VAR) technique.

A VAR is an "n-equation. n-variable linear model in which each variable is in turn explained by its own lagged values plus current and past values of the remaining n-1 variables". (Stock and Watson, 2001, p. 101) VARs come in three varieties, generally termed reduced form, recursive and structural. While VARs in reduced and recursive forms do not make assumptions about the underlying

structure at the cost of missing nonlinearities, conditional heteroskedasticity and drifts or breaks in parameters. structural VARs use economic theory to determine contemporaneous links among the variables at the cost of imposing an a priori structure on the data. (ibid.)

VARs have become very popular in econometric analysis of the transmission mechanism. They allow a researcher to impose as much structure on the data as she wishes and dares to. While the structural approach is both widespread and has its merits, we choose to follow a large body of literature that relies on VARs in analysis of monetary policy transmission.[2] Bernanke and Blinder (1992), Bernanke and Gertler (1995), Blanchard and Quah (1989) among others used VARs to estimate policy transmission for the US. More recently, with the advent of EMU, VARs were utilised in analysis of the eurozone transmission mechanism – e.g. Kakes and Pattanaik (2000), Monticelli and Tristani (1999) and Peersman and Smets (2001) - as well as in application to small open economies such as Sweden. (see Jacobson et al., 2001)

It is not surprising that VARs have proven to be a popular instrument in analysing the transmission mechanism for transitional and developing economies precisely because they do not require *a priori* assumptions about the economic

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[2] An alternative view prefers structural models of monetary transmission, emphasizing the need to have estimates for the unobservables – e.g. the natural rate and expected inflation. (Andres, 1998; Boyd and Smith, 200; Taylor. 1998) Qin and Vanags (1996) estimate a standard cost-plus model for the Czech Republic, Hungary and Poland from the early 1980s until the mid-1990s, finding that the model can account for long run inflation and concluding that the basis of inflation during both pre-transition and transition period are the same. Golinelli and Rovelli (2001) claim that "a simple open macroeconomic model, with forward-looking inflation and exchange rate expectations, can adequately characterize the relationships between the output gap, inflation, the real interest rate and the exchange rate during the course of transition" in the same three countries. (p. 27) However, their work is based precisely on deriving ex post the unobservables.

structure and, if used with care, can provide valuable insights into what has actually been happening in these economies. Erol (1997), Kim (1999), Papadopoulos and Papanikos (2002), Payne (2002) and Ross (2000) have constructed VAR models for Turkey, Korea, Greece, Croatia and Slovenia respectively. Blangiewicz and Charemza (2001), Gavura (2001), Hanousek and Kocenda (1998), IMF (1999). Izak (1998), Kuijs (2002) and Welfe (2000) have each focused specifically on one of the Central European countries studied in the thesis.

Blangiewicz and Charemza (2001) construct a SVAR model for Poland during the period 1971-1991. Welfe (2000) constructs a structural VAR for Poland for the years 1991-1996, finding a strong relationship between prices and wages and showing that the influences on inflation are not linear. IMF (1999a) constructs a VAR model of Polish inflation, where the exchange rate is shown to have a robust relationship with inflation.

Hanousek and Kocenda (1998) examine Granger-causality relationships between various interest rates in the Czech interbank market during the 1993-1997 period, finding that the relationships differ in time and reflect the idiosyncratic problems faced by banks during the transition. They also find that interest rates had significant influence over the foreign exchange rate. Izak (1998) looks at the credit transmission channel of monetary policy in the Czech Republic using an error-correction model. He concludes that there is a co-integrated relationship between the policy rate, interbank rates and interest rates on actual credit

Alternately, one can use both structural and VAR models – see Angeloni, Kashyap, Mojon and

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extended by banks, but he is unable to identify any influence on credit volume or investment.

IMF (1999b) constructs a VAR model of Hungarian core inflation that includes industrial production, PPI, broad money and the Deutschemark exchange rate. It confirmed that it is the exchange rate and PPI that contain information about future inflation.

Gavura (2001), using Granger-causality tests and bi-variate VARs, finds a strong impact from the nominal exchange rate, a limited effect from money and wages, and no impact from the interest rate on Slovak inflation. Kuijs (2002) utilises a structural VAR, relying on estimated long-run relationships based on economic theory. His paper shows that foreign prices, the exchange rate and wage costs wield influence over inflation, but he cannot find a direct impact of monetary aggregates or interest rates. On the other hand, he observes a statistically significant indirect impact of interest rates on prices via the nominal exchange rate.

3.2 Building the VAR models

A VAR model is particularly well suited for analysing monetary policy in transition countries because it requires less *a priori* knowledge of the workings of the economy. It allows us to look at the basic question facing policy-makers:

Terlizzese (2002) for a comprehensive analysis of the eurozone transmission mechanism.

does the transmission mechanism work and what are its reliable elements? On the other hand, the lack of structure renders VAR modelling vulnerable to misinterpretation and findings idiosyncratic to model specification. Two basic model specifications, applied in other countries, were used and tested for a variety of specifications in order to minimise the problem.

The chapter uses two specific VAR models, building, in the selection of variables as well as in their ordering. on work done by Bernanke and Blinder (1992), Bernanke and Gertler (1995). Kakes and Pattanaik (2000), Peersman and Smets (2001) as well as Erol (1997). Payne (2002) and Ross (2000).

Table 3.1: Survey of VAR models of the monetary transmission mechanism

Model	Economy	Variables and ordering
Bernanke and Gertler (1995)	US	Real GDP, GDP deflator, commodity prices, interest rate
Erol (1997)	Turkey	broad money (M2), nominal exchange rate, short-term interest rate, real GDP and CPI
Ross (2000)	Slovenia	broad money (M2), CPI, wages and nominal exchange rate
Kakes and Pattanaik (2000)	Eurozone	CPI, real GDP, real exchange rate, broad

		money (M3), long-term interest rate and short-term interest rate
Peersman and Smets (2001) – Alt. 1	Eurozone	Real GDP, CPI, domestic nominal short-term interest rate and real exchange rate
Peersman and Smets (2001) – Alt. 2	Eurozone	Real GDP, CPI, M3, domestic nominal short-term interest rate and real exchange rate
Payne (2002)	Croatia	CPI, wages, broad money (M2) and nominal exchange rate

Source: authors

Our first model follows Ross (2000) and Payne (2002) by focusing solely on nominal variables. It contains inflation, the short-term interest rate, broad money (M2) as well as the nominal exchange rate and nominal wage development. Its value lies primarily in modelling how various nominal pressures influence inflation.

The second model contains inflation, broad money and the short-term interest rate, but also two additional real variables: the real exchange rate and real gross domestic product. Building on Bernanke and Gertler (1995), Kakes and Pattanaik (2000), Peersman and Smets (2001) and Erol (1997), it allows a closer look at the

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interaction between monetary policy and the real economy, including the potential stabilisation role of monetary policy.The long-term interest rate, unfortunately, cannot be included as the series are rather short in all countries involved.

The ordering of variables in the VAR can have important consequences for the results if the residuals from the VAR are correlated. Enders (1995) recommends the following rule of thumb – one should consider two series of residuals correlated, if the absolute value of correlation is higher than 0.2. Appendix 3.1 contains detailed correlation tables for all four countries and two possible models. It shows that, with the exception of Slovakia, the residuals tend to be highly correlated. Therefore, the issue of ordering is quite important.

The chapter follows Sims (1980) in imposing a causal ordering. However, even the causal ordering is not always straightforward and, therefore, two orderings are used for each model – based, to some extent, on specifications by Erol (1997), Kakes and Pattanaik (2000) and Ross (2000). We follow this approach even in Slovakia in order to pursue a unified methodology.

For the first model, the orderings are:

- broad money (M2), CPI, wages, nominal exchange rate, short-term nominal interest rate
- CPI, wages, nominal exchange rate, broad money (M2), short-term nominal interest rate

For the second model, the orderings are:

- CPI, real GDP, real exchange rate, broad money (M2), short-term nominal interest rate
- real GDP, CPI, broad money (M2), short-term nominal interest rate, real exchange rate

In both cases, the model is supplemented by exogenous variables. The variables chosen are the world price level (proxied by the German CPI index), world economic activity (proxied by the German GDP index) and the oil price. The reason for their inclusion is that their absence could lead to misspecification (see Sims, 1992).

The period for which the models are estimated, runs from January 1993 to December 2001. Due to its short duration and availability of nearly all data on a monthly basis, the monthly frequency was chosen, which meant converting the GDP data from quarterly into monthly on a linear basis.

Stationarity tests were performed based on the Augmented Dickey-Fuller methodology. The results for individual countries are presented in table 3.2. In the column 'I(0)', we test the hypothesis that the series have order of integration 0, i.e. they are stationary in levels. In the column 'I(1)', we test the hypothesis that the series have order of integration 1, i.e. they are stationary in first differences. Bold values indicate that the hypothesis cannot be rejected at the 10% level (bold values in italics indicate the same at the 5% level).

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Table 3.2: Stationarity tests for two models of monetary policy transmission in Central Europe[3]

	Czech Republic		Hungary		Poland		Slovakia	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
Nominal effective exchange rate	-2.439	*-5.288*	0.762	*-4.242*	-0.485	*-5.716*	-1.832	*-3.979*
Real effective exchange rate	-2.212	*-5.394*	-1.365	*-5.094*	-2.813	*-5.640*	-2.512	*-4.209*
Real GDP	*-3.663*	-	*-3.913*	-	-1.966	*-4.498*	*-3.555*	-
Broad money (M2/M3)	-1.787	*-4.071*	-2.521	*-4.736*	0.861	*-6.271*	-1.684	*-5.887*
Short-term interest rate	-1.503	*-5.630*	-2.787	*-4.908*	-3.368	-	-1.931	*-4.523*
Wages	-1.866	*-4.794*	-3.286	*-4.539*	-1.042	*-7.724*	-3.353	*-9.331*
Core inflation rate[4]	-0.660	*-6.565*	-0.253	*-4.775*	-1.561	*-5.003*	-3.683	-

Source: author

The stationarity tests show that the order of integration is generally 1, with a few series – primarily the real GDP - stationary in levels. In such a case – when some of the series are not stationary in levels - two routes can be taken:

- o a vector error-correction model, i.e. model in first differences extended by cointegrating residuals
- o a VAR in levels, if cointegration is established

We take the second approach since cointegration can be established between the relevant groups of variables (see Appendix 3.2 for test results). As Peersman and Smets (2001) note, analysis in levels allows for an implicit cointegrating relationship in the data in the case when a more explicit analysis is limited by the

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[3] All the variables tested should, from the economic point of view, follow an underlying trend: nominal effective exchange rate, broad money and wages because of relatively high inflation; interest rate and inflation rate because of continuing disinflation and real GDP because of growth trends. Therefore, the table presents test results based on the assumption of a trend. Nonetheless, stationarity tests were conducted also without the presence of a trend, with nearly identical results.

relatively short sample, as it is here. Kakes and Pattanaik (2000) point out that a vector error-correction model would require imposing a long-term structure, such as the one used by Kuijs (2002) in his analysis of Slovakia.

Our approach is shared by Ross (2000) and Payne (2002) in their analysis in other transition countries. In general, Sims (1980) and Enders (1995) recommend against differencing even for non-stationary variables in order not to throw away information as long as this is kept in mind when interpreting the results.

For the same reason, the data are not seasonally adjusted because many changes, particularly in prices, during the transition decade, were not a result of seasonal factors, but of repeated changes in taxes or administered prices in individual months. The short time period and the difficulty of locating structural breaks also led to a decision not to include any dummies in the VARs.

The last issue in setting up the model is determining the lag length of VARs. Ideally, information criteria, such as AIC and BIC, should be used to determine lag length (Enders, 1995). Appendix 3.3 shows results of the two tests for various series. The result diverge significantly even for the same series and range from 2 to 12 - a lag length beyond the scope of our tests and degrees of freedom. Consequently, equal and *ad hoc* lag lengths of three and six months were chosen for all models, based on a short sample and evidence of a rapid transmission of monetary policy in the countries analysed.

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[4] In case of the Czech Republic and Poland, the inflation rate is based on headline inflation.

Inflation data in the model are generally based on core consumer price indices that exclude regulated prices as well as the influence of indirect tax changes (with the exception of Poland, where the data was not available). The short-term interest rate is the interbank rate of 1-3 month maturity based on availability. Nominal and real exchange rates are the effective rates provided by the IMF statistics, based on the structure of transactions with other countries. Broad money, rather than a narrower monetary indicator, was chosen because it was the intermediate target in all four countries at some point, is used and defined in a similar way in all four countries of the sample, has been used by other authors in similar instances and is also more stable than other indices.

3.3 Analysis of VAR results

Once the models were fully specified, impulse response analysis was used to look at monetary transmission mechanisms in the four countries, supplemented by Granger causality tests. Due to a short data period and use of unstructured VARs, a conservative methodology was chosen. We looked at VAR results with both lag lengths and both orderings and only if they were broadly in accord with each other, is the result used. Therefore, the results presented below represent those outcomes that seem to be robust to minor changes in model specification, such as the change of ordering and lag length. All the impulse response charts are shown in Appendix 3.4

The analysis focuses on four areas: —

- what is the influence of variables directly influenced by policy (interest rate, nominal exchange rate) on macroeconomic outcomes (prices, output)?

- what is the influence of other variables that can be influenced by policy albeit in a less straightforward way (wages, real exchange rate, money) on macroeconomic outcomes?

- how do variables directly related to policy react to developments in other variables, i.e. is there any measurable policy reaction?

- is there a mutually reinforcing relationship between inflation and other variables?

In the Czech Republic, nominal exchange rate appreciation lowers prices and an increase in the interest rate causes real exchange rate appreciation, which decreases prices and real GDP. At the same time, an interest rate increase has a direct positive effect on real GDP, making the overall effect of interest changes on the output ambiguous. Wage growth causes nominal exchange rate depreciation and increase in prices, while an increase in prices causes real exchange rate appreciation and increase in real GDP. Overall, the Czech Republic provides indications of the effects of both the interest rate and the nominal exchange rate on inflation, though the impact on output is ambiguous. Wages also seem to play a role in determining inflation.

In Hungary, the only robust effects concern the exchange rate – both nominal and real exchange rate appreciations are shown to have a negative effect on prices.

In Poland, a positive interest rate shock causes nominal exchange rate appreciation, which in turn decreases prices. Wage and broad money growth increase prices while, in the case of broad money, the shock is also followed by a positive influence on real GDP. Policy reacts to nominal and real exchange rate appreciation by decreasing the interest rate, while growth in real GDP is followed by an increase in the interest rate. Poland thus provides a more intricate though conventional array of transmission mechanisms, in which the interest rate has the ability to influence inflation, but primarily through the exchange rate, and policy reacts to both exchange rate (inflation) and output considerations in a countercyclical manner.

Slovakia shares with Hungary the feature that both nominal and real exchange rate appreciation have a negative influence on domestic prices. An increase in wages leads to growth of broad money and prices, and growth in broad money is followed by an increase in real GDP. Interest rates increase in reaction to the growth of wages.

For all four countries, even though the results differ, some similarities emerge as well. The most important one is the robust role of the exchange rate in determining inflation while the interest rate channel remains difficult to detect. Another conclusion is that, with the exception of Poland, there seems to be no explicitly countercyclical policy – monetary policy seems to react to inflation and exchange rate developments, but not to output. At the same time, monetary policy does not show much influence on the development of output. Wages seem to play a fairly important role in determining inflation in Central European

countries, which explains why incomes policies (even though largely unsuccessful) were assigned such an important role by the authorities, especially in the first half of the transition period.

Additionally, two common and quite important factors were not discussed above. First of all, models for Poland and Slovakia involve, despite inclusion of several exogenous variables, a price puzzle. The puzzle emerged when VARs were used to explain monetary policy transmission – an increase in the interest rate led to an increase in prices rather than a decrease. The explanation provided by Sims (1992) was that forward-looking policy-makers reacted to expected exogenous shocks by raising interest rates and, therefore, without their inclusion into a VAR, the effect of these shocks on prices and the effect of the interest rate cannot be disentangled. The models presented here included the most important exogenous supply and demand shocks as exogenous variables - the German CPI and GDP as well as the oil price. The continuing existence of the price puzzle in Poland and Slovakia indicates that not all the sources of relevant exogenous shocks have been found yet.

Another result, shared to some extent by all countries, is a temporary positive effect of inflation on real exchange rate appreciation. Since much of the period studied was dominated by exchange rate pegs, the *prima facie* explanation of the nominal rigidity lies in a combination of a fixed nominal exchange rate and inflation. However, it is interesting to note that the effect was particularly strong in Poland, a country which practiced increasing nominal exchange rate flexibility since 1995 (7, 10, 12.5 and 15% bands, concluding in floating in April 2000) and

in the Czech Republic, a country which floated the currency in May 1997, in the middle of the period studied. Therefore, this points to a conclusion, further elaborated in the chapter on the role of the foreign exchange rate, that even though an increase in official exchange rate flexibility translates into an actual policy shift, such moves should not be overrated.

3.4 Conclusion

The transmission mechanism of monetary policy refers to the process by which changes in the policy instruments lead to changes in fundamental macroeconomic variables, particularly in inflation. In order to understand how and why monetary policy was actually conducted in Central Europe between 1993 and 2001, this chapter examined the transmission mechanism of monetary policy in the countries concerned. It did so by an individual econometric analysis of the transmission mechanism for all four countries concerned based on a technique called vector autoregression (VAR).

The findings confirm both *a priori* assumptions and empirical findings elsewhere that a predictable monetary policy transmission mechanism in advanced transition countries has existed for some time, but that because of specific transition factors and general features of small open economies, the exchange rate channel seems to be dominant, while the more traditional interest rate channel is much less widespread.

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Appendix 3.1: Correlation of VAR residuals in both models of monetary policy transmission in Central Europe

NOMINAL MODEL: SLOVAKIA LOGM2, LOGCORE, LOGWAGES, LOGNEER, IR3M

LEVELS

WITH C LOGOILPRICE LOGGERGDP LOGGERCPI

LAGS 3 | 6

	RESID01	RESID02	RESID03	RESID04	RESID05		RESID06	RESID07	RESID08	RESID09	RESID10
RESID01	-	-0.1385	0.1279	0.0506	-0.0427	RESID06	-	-0.0315	**0.2957**	0.0808	-0.0433
RESID02	-0.1385	-	-0.1048	-0.1207	-0.0915	RESID07	-0.0315	-	-0.1660	-0.1322	-0.1088
RESID03	0.1279	-0.1048	-	-0.0013	0.0234	RESID08	**0.2957**	-0.1660	-	0.0984	0.1401
RESID04	0.0506	-0.1207	-0.0013	-	0.1197	RESID09	0.0808	-0.1322	0.0984	-	-0.1543
RESID05	-0.0427	-0.0915	0.0234	0.1197	-	RESID10	-0.0433	-0.1088	0.1401	-0.1543	-

REAL MODEL: SLOVAKIA LOGCORE, LOGGDP, LOGREER, LOGM2, IR3M

LEVELS

WITH C LOGOILPRICE LOGGERGDP LOGGERCPI

LAGS 3 | 6

	RESID11	RESID12	RESID13	RESID14	RESID15		RESID16	RESID17	RESID18	RESID19	RESID20
RESID11	-	0.0152	**0.2756**	-0.1665	-0.1206	RESID16	-	**-0.2571**	0.1040	0.0402	**-0.2774**
RESID12	0.0152	-	0.1766	0.0110	0.1911	RESID17	**-0.2571**	-	0.0160	0.0730	**0.2365**
RESID13	**0.2756**	0.1766	-	0.1244	0.1139	RESID18	0.1040	0.0160	-	0.1948	-0.0135
RESID14	-0.1665	0.0110	0.1244	-	-0.0866	RESID19	0.0402	0.0730	0.1948	-	-0.0221
RESID15	-0.1206	0.1911	0.1139	-0.0866	-	RESID20	**-0.2774**	**0.2365**	-0.0135	-0.0221	-

NOMINAL MODEL: CZECH REP LOGM2, LOGCORE, LOGWAGES, LOGNEER, IR3M

LEVELS

WITH: C LOGOILPRICE LOGGERGDP LOGGERCPI

LAGS: 3   6

	RESID01	RESID02	RESID03	RESID04	RESID05		RESID06	RESID07	RESID08	RESID09	RESID10
RESID01	-	-0.6595	0.1396	-0.2998	0.0546	RESID06	-	-0.7439	0.3974	0.4116	0.1565
RESID02	-0.6595	-	-0.1220	0.3426	-0.1975	RESID07	-0.7439	-	-0.5290	-0.4827	0.0631
RESID03	0.1396	-0.1220	-	-0.0392	-0.1437	RESID08	0.3974	-0.5290	-	-0.0024	-0.5318
RESID04	-0.2998	0.3426	-0.0392	-	-0.1732	RESID09	0.4116	-0.4827	-0.0024	-	0.3575
RESID05	0.0546	-0.1975	-0.1437	-0.1732	-	RESID10	0.1565	0.0631	-0.5318	0.3575	-

REAL MODEL: CZECH REP LOGCORE, LOGGDP, LOGREER, LOGM2, IR3M

LEVELS

WITH: C LOGOILPRICE LOGGERGDP LOGGERCPI

LAGS: 3   6

	RESID11	RESID12	RESID13	RESID14	RESID15		RESID16	RESID17	RESID18	RESID19	RESID20
RESID11	-	-0.2458	0.4557	-0.6413	-0.2109	RESID16	-	-0.6639	-0.4975	-0.2963	-0.4262
RESID12	-0.2458	-	-0.0501	0.1764	0.1131	RESID17	-0.6639	-	0.4672	-0.2240	0.7479
RESID13	0.4557	-0.0501	-	-0.3739	-0.2572	RESID18	-0.4975	0.4672	-	-0.1055	0.5587
RESID14	-0.6413	0.1764	-0.3739	-	-0.0062	RESID19	-0.2963	-0.2240	-0.1055	-	-0.3418
RESID15	-0.2109	0.1131	-0.2572	-0.0062	-	RESID20	-0.4262	0.7479	0.5587	-0.3418	-

NOMINAL MODEL: HUNGARY LOGM2, LOGCORE, LOGWAGES, LOGNEER, IR3M

LEVELS						
WITH	C LOGOILPRICE LOGGERGDP LOGGERCPI					
LAGS	3					6

	RESID01	RESID02	RESID03	RESID04	RESID05		RESID06	RESID07	RESID08	RESID09	RESID10
RESID01	-	-0.4876	-0.6573	-0.1445	-0.1826	RESID06	-	-0.4903	-0.8531	-0.0499	-0.0541
RESID02	-0.4876	-	0.5258	0.2723	0.1633	RESID07	-0.4903	-	0.5444	0.4175	0.2895
RESID03	-0.6573	0.5258	-	0.2475	-0.0796	RESID08	-0.8531	0.5444	-	0.0989	-0.1386
RESID04	-0.1445	0.2723	0.2475	-	-0.1111	RESID09	-0.0499	0.4175	0.0989	-	-0.1990
RESID05	-0.1826	0.1633	-0.0796	-0.1111	-	RESID10	-0.0541	0.2895	-0.1386	-0.1990	-

REAL MODEL: HUNGARY LOGCORE, LOGGDP, LOGREER, LOGM2, IR3M

LEVELS						
WITH	C LOGOILPRICE LOGGERGDP LOGGERCPI					
LAGS	3					6

	RESID11	RESID12	RESID13	RESID14	RESID15		RESID16	RESID17	RESID18	RESID19	RESID20
RESID11	-	-0.3713	0.4140	-0.5401	0.1965	RESID16	-	-0.5467	0.3183	-0.6502	0.2760
RESID12	-0.3713	-	-0.2461	0.5897	0.2317	RESID17	-0.5467	-	-0.3106	0.4300	0.1277
RESID13	0.4140	-0.2461	-	-0.1564	-0.1090	RESID18	0.3183	-0.3106	-	-0.3226	-0.0956
RESID14	-0.5401	0.5897	-0.1564	-	-0.0113	RESID19	-0.6502	0.4300	-0.3226	-	-0.0473
RESID15	0.1965	0.2317	-0.1090	-0.0113	-	RESID20	0.2760	0.1277	-0.0956	-0.0473	-

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NOMINAL MODEL: POLAND LOGM2, LOGCPI, LOGWAGES, LOGNEER, IR3M

LEVELS

WITH   C LOGOILPRICE LOGGERGDP LOGGERCPI

LAGS   3   6

	RESID01	RESID02	RESID03	RESID04	RESID05		RESID06	RESID07	RESID08	RESID09	RESID10
RESID01	-	-0.1251	0.5820	-0.2807	0.0306	RESID06	-	-0.1128	0.4734	-0.2589	-0.0216
RESID02	-0.1251	-	0.1222	0.0476	-0.0431	RESID07	-0.1128	-	0.2279	0.1336	0.1788
RESID03	0.5820	0.1222	-	-0.1257	0.0364	RESID08	0.4734	0.2279	-	0.0718	0.0142
RESID04	-0.2807	0.0476	-0.1257	-	-0.1622	RESID09	-0.2589	0.1336	0.0718	-	-0.0031
RESID05	0.0306	-0.0431	0.0364	-0.1622	-	RESID10	-0.0216	0.1788	0.0142	-0.0031	-

REAL MODEL: POLAND LOGCPI, LOGGDP, LOGREER, LOGM2, IR3M

LEVELS

WITH   C LOGOILPRICE LOGGERGDP LOGGERCPI

LAGS   3   6

	RESID11	RESID12	RESID13	RESID14	RESID15		RESID16	RESID17	RESID18	RESID19	RESID20
RESID11	-	-0.1136	0.4988	-0.1883	0.1228	RESID16	-	0.1726	0.4068	-0.2642	0.4342
RESID12	-0.1136	-	-0.2492	0.0873	0.2175	RESID17	0.1726	-	0.0404	0.2502	0.3630
RESID13	0.4988	-0.2492	-	-0.3212	-0.1551	RESID18	0.4068	0.0404	-	-0.3633	0.1667
RESID14	-0.1883	0.0873	-0.3212	-	0.2178	RESID19	-0.2642	0.2502	-0.3633	-	0.2241
RESID15	0.1228	0.2175	-0.1551	0.2178	-	RESID20	0.4342	0.3630	0.1667	0.2241	-

Appendix 3.2: Cointegration tests on two models in Central European countries

SVK NOMINAL — LEVELS

Data Trend:	NO EXOGENOUS					WITH EXOGENOUS				
	None	None	Linear	Linear	Quadratic	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend	No Trend	No Trend	No Trend	Trend	Trend
1	Rank = 2	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
2	Rank = 2	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 0	Rank = 1
3	Rank = 2	Rank = 1	Rank = 2	Rank = 2	Rank = 2	Rank = 1	Rank = 1	Rank = 0	Rank = 1	Rank = 1
4	Rank = 2	Rank = 1	Rank = 2	Rank = 2	Rank = 2	Rank = 1	Rank = 1	Rank = 0	Rank = 0	Rank = 1
5	Rank = 2	Rank = 2	Rank = 3	Rank = 3	Rank = 4	Rank = 3	Rank = 2	Rank = 2	Rank = 2	Rank = 2
6	Rank = 1	Rank = 2	Rank = 3	Rank = 3	Rank = 4	Rank = 2	Rank = 1	Rank = 1	Rank = 1	Rank = 1
7	Rank = 2	Rank = 3	Rank = 3	Rank = 3	Rank = 4	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 2
8	Rank = 2	Rank = 3	Rank = 3	Rank = 3	Rank = 4	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 2

SVK NOMINAL — 12 LAGS

Data Trend:	NO EXOGENOUS					WITH EXOGENOUS				
	None	None	Linear	Linear	Quadratic	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend	No Trend	No Trend	No Trend	Trend	Trend
1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
2	Rank = 0	Rank = 0	Rank = 0	Rank = 0	Rank = 0	Rank = 0	Rank = 0	Rank = 0	Rank = 0	Rank = 0
3	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 0	Rank = 0	Rank = 1	Rank = 1	Rank = 1
4	Rank = 1	Rank = 4	Rank = 4	Rank = 4	Rank = 4	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
5	Rank = 3	Rank = 4	Rank = 3	Rank = 3	Rank = 4	Rank = 3	Rank = 2	Rank = 2	Rank = 2	Rank = 4
6	Rank = 3	Rank = 4	Rank = 3	Rank = 3	Rank = 4	Rank = 3	Rank = 3	Rank = 2	Rank = 3	Rank = 4
7	Rank = 3	Rank = 4	Rank = 2	Rank = 2	Rank = 4	Rank = 2	Rank = 2	Rank = 2	Rank = 3	Rank = 4
8	Rank = 1	Rank = 4	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 3	Rank = 4

SVK REAL — NO EXOGENOUS — LEVELS

Data Trend Rank or No. of CEs	None No Intercept No Trend	None Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
1	Rank = 2	Rank = 2	Rank = 3	Rank = 1	Rank = 1
2	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 1
3	Rank = 2	Rank = 2	Rank = 5	Rank = 2	Rank = 2
4	Rank = 2	Rank = 3	Rank = 5	Rank = 2	Rank = 3
5	Rank = 2	Rank = 4	Rank = 5	Rank = 4	Rank = 5
6	Rank = 4	Rank = 4	Rank = 5	Rank = 4	Rank = 5
7	Rank = 4	Rank = 5	Rank = 5	Rank = 5	Rank = 5
8	Rank = 3	Rank = 4	Rank = 4	Rank = 5	Rank = 5

SVK REAL — NO EXOGENOUS — 12 LAGS

Data Trend Rank or No. of CEs	None No Intercept No Trend	None Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
2	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
3	Rank = 5	Rank = 5	Rank = 5	Rank = 2	Rank = 3
4	Rank = 4	Rank = 4	Rank = 5	Rank = 1	Rank = 1
5	Rank = 3	Rank = 3	Rank = 3	Rank = 2	Rank = 2
6	Rank = 4	Rank = 5	Rank = 5	Rank = 3	Rank = 3
7	Rank = 4	Rank = 5	Rank = 5	Rank = 4	Rank = 3
8	Rank = 4	Rank = 5	Rank = 5	Rank = 5	Rank = 5

SVK REAL — WITH EXOGENOUS — LEVELS

Data Trend Rank or No. of CEs	None No Intercept No Trend	None Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
1	Rank = 2	Rank = 2	Rank = 2	Rank = 1	Rank = 2
2	Rank = 3	Rank = 2	Rank = 2	Rank = 1	Rank = 1
3	Rank = 3	Rank = 2	Rank = 2	Rank = 2	Rank = 2
4	Rank = 3	Rank = 2	Rank = 3	Rank = 2	Rank = 2
5	Rank = 4	Rank = 3	Rank = 4	Rank = 3	Rank = 3
6	Rank = 3	Rank = 4	Rank = 4	Rank = 3	Rank = 4
7	Rank = 4	Rank = 4	Rank = 5	Rank = 3	Rank = 5
8	Rank = 4	Rank = 5	Rank = 5	Rank = 4	Rank = 4

SVK REAL — WITH EXOGENOUS — 12 LAGS

Data Trend Rank or No. of CEs	None No Intercept No Trend	None Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 2
2	Rank = 1	Rank = 1	Rank = 0	Rank = 1	Rank = 1
3	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
4	Rank = 2	Rank = 1	Rank = 1	Rank = 2	Rank = 2
5	Rank = 3	Rank = 2	Rank = 2	Rank = 3	Rank = 4
6	Rank = 3	Rank = 3	Rank = 4	Rank = 4	Rank = 3
7	Rank = 5	Rank = 4	Rank = 4	Rank = 4	Rank = 4
8	Rank = 4	Rank = 4	Rank = 4	Rank = 5	Rank = 5

CZK NOMINAL NO EXOGENOUS

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
1	Rank = 2	Rank = 2	Rank = 1	Rank = 1	Rank = 1
2	Rank = 2	Rank = 2	Rank = 2	Rank = 1	Rank = 1
3	Rank = 1	Rank = 1	Rank = 1	Rank = 0	Rank = 0
4	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
5	Rank = 1	Rank = 2	Rank = 1	Rank = 1	Rank = 1
6	Rank = 0	Rank = 1	Rank = 1	Rank = 1	Rank = 1
7	Rank = 3	Rank = 3	Rank = 3	Rank = 3	Rank = 4
8	Rank = 4	Rank = 4	Rank = 4	Rank = 3	Rank = 3

CZK NOMINAL NO EXOGENOUS 12 LAGS

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
1	Rank = 1	Rank = 0	Rank = 1	Rank = 1	Rank = 1
2	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
3	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
4	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
5	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 2
6	Rank = 1	Rank = 1	Rank = 2	Rank = 2	Rank = 2
7	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 2
8	insufficient number of observations				

CZK NOMINAL WITH EXOGENOUS LEVELS

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
1	Rank = 3	Rank = 2	Rank = 2	Rank = 1	Rank = 1
2	Rank = 4	Rank = 3	Rank = 4	Rank = 3	Rank = 1
3	Rank = 3	Rank = 2	Rank = 2	Rank = 1	Rank = 1
4	Rank = 3	Rank = 2	Rank = 3	Rank = 3	Rank = 2
5	Rank = 2	Rank = 2	Rank = 2	Rank = 3	Rank = 3
6	Rank = 3	Rank = 4	Rank = 3	Rank = 3	Rank = 4
7	log of non positive number				
8	Insufficient number of observations				

CZK NOMINAL WITH EXOGENOUS 12 LAGS

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
1	Rank = 2	Rank = 2	Rank = 1	Rank = 1	Rank = 1
2	Rank = 3	Rank = 3	Rank = 2	Rank = 2	Rank = 2
3	Rank = 2	Rank = 2	Rank = 2	Rank = 1	Rank = 1
4	Rank = 1	Rank = 1	Rank = 1	Rank = 2	Rank = 2
5	Rank = 4	Rank = 4	Rank = 4	Rank = 3	Rank = 3
6	Insufficient number of observations				
7	Insufficient number of observations				
8	Insufficient number of observations				

CZK REAL — NO EXOGENOUS — LEVELS

Data Trend	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
1	Rank = 1	Rank = 1	Rank = 0	Rank = 1	Rank = 1
2	Rank = 1	Rank = 2	Rank = 1	Rank = 1	Rank = 1
3	Rank = 1	Rank = 2	Rank = 1	Rank = 1	Rank = 2
4	Rank = 2	Rank = 3	Rank = 3	Rank = 3	Rank = 5
5	Rank = 2	Rank = 3	Rank = 3	Rank = 4	Rank = 4
6	Rank = 5	Rank = 4	Rank = 4	Rank = 3	Rank = 3
7	Rank = 2	Rank = 2	Rank = 2	Rank = 3	Rank = 3
8	Insufficient number of observations				

CZK REAL — NO EXOGENOUS — 12 LAGS

Data Trend	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 2
2	Rank = 0	Rank = 1	Rank = 1	Rank = 1	Rank = 1
3	Rank = 1	Rank = 2	Rank = 2	Rank = 3	Rank = 3
4	Rank = 3	Rank = 3	Rank = 4	Rank = 3	Rank = 2
5	Rank = 2	Rank = 4	Rank = 4	Rank = 3	Rank = 4
6	Insufficient number of observations				
7	Insufficient number of observations				
8	Insufficient number of observations				

CZK REAL — WITH EXOGENOUS — LEVELS

Data Trend	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
1	Rank = 1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
2	Rank = 2	Rank = 2	Rank = 1	Rank = 2	Rank = 2
3	Rank = 2	Rank = 2	Rank = 2	Rank = 3	Rank = 2
4	Rank = 2	Rank = 2	Rank = 2	Rank = 3	Rank = 3
5	Rank = 5	Rank = 3	Rank = 3	Rank = 4	Rank = 5
6	Insufficient number of observations				
7	Insufficient number of observations				
8	Insufficient number of observations				

CZK REAL — WITH EXOGENOUS — 12 LAGS

Data Trend	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
1	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 3
2	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 3
3	Rank = 1	Rank = 1	Rank = 2	Rank = 2	Rank = 2
4	Rank = 3	Rank = 3	Rank = 3	Rank = 4	Rank = 5
5	Rank = 2	Rank = 4	Rank = 4	Rank = 3	Rank = 4
6	Insufficient number of observations				
7	Insufficient number of observations				
8	Insufficient number of observations				

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HUN NOMINAL — WITH EXOGENOUS — LEVELS

Data Trend: Rank or No. of CEs	None No Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
1	Rank = 4	Rank = 2	Rank = 3	Rank = 4
2	Rank = 3	Rank = 2	Rank = 2	Rank = 2
3	Rank = 4	Rank = 2	Rank = 3	Rank = 3
4	Rank = 2	Rank = 3	Rank = 3	Rank = 4
5	Rank = 3	Rank = 3	Rank = 3	Rank = 4
6	Rank = 3	Rank = 3	Rank = 4	Rank = 4
7	Rank = 3	Rank = 3	Rank = 4	Rank = 4
8	Rank = 3	Rank = 3	Rank = 4	Rank = 4

HUN NOMINAL — WITH EXOGENOUS — 12 LAGS

Data Trend: Rank or No. of CEs	None No Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
1	Rank = 3	Rank = 4	Rank = 2	Rank = 2
2	Rank = 3	Rank = 4	Rank = 3	Rank = 1
3	Rank = 2	Rank = 4	Rank = 3	Rank = 3
4	Rank = 3	Rank = 3	Rank = 2	Rank = 2
5	Rank = 3	Rank = 3	Rank = 4	Rank = 4
6	Rank = 3	Rank = 3	Rank = 3	Rank = 2
7	Rank = 3	Rank = 3	Rank = 3	Rank = 4
8	Rank = 3	Rank = 3	Rank = 3	Rank = 4

HUN NOMINAL — NO EXOGENOUS — LEVELS

Data Trend: Rank or No. of CEs	None No Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
1	Rank = 3	Rank = 2	Rank = 3	Rank = 2
2	Rank = 3	Rank = 1	Rank = 1	Rank = 1
3	Rank = 4	Rank = 2	Rank = 2	Rank = 1
4	Rank = 4	Rank = 2	Rank = 2	Rank = 1
5	Rank = 4	Rank = 1	Rank = 1	Rank = 1
6	Rank = 4	Rank = 1	Rank = 1	Rank = 1
7	Rank = 1	Rank = 2	Rank = 2	Rank = 2
8	Rank = 1	Rank = 2	Rank = 2	Rank = 2

HUN NOMINAL — NO EXOGENOUS — 12 LAGS

Data Trend: Rank or No. of CEs	None No Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
1	Rank = 1	Rank = 1	Rank = 1	Rank = 1
2	Rank = 1	Rank = 1	Rank = 0	Rank = 0
3	Rank = 0	Rank = 0	Rank = 0	Rank = 0
4	Rank = 0	Rank = 0	Rank = 0	Rank = 0
5	Rank = 0	Rank = 0	Rank = 0	Rank = 0
6	Rank = 0	Rank = 0	Rank = 1	Rank = 1
7	Rank = 2	Rank = 4	Rank = 2	Rank = 3
8	Rank = 3	Rank = 4	Rank = 4	Rank = 4

HUN REAL — NO EXOGENOUS LEVELS

Data Trend	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend
1	Rank = 3	Rank = 2	Rank = 2	Rank = 3	Rank = 1
2	Rank = 4	Rank = 2	Rank = 1	Rank = 1	Rank = 1
3	Rank = 4	Rank = 3	Rank = 2	Rank = 1	Rank = 1
4	Rank = 3	Rank = 2	Rank = 2	Rank = 3	Rank = 3
5	Rank = 4	Rank = 2	Rank = 2	Rank = 3	Rank = 2
6	Rank = 5	Rank = 3	Rank = 3	Rank = 4	Rank = 3
7	Rank = 5	Rank = 4	Rank = 3	Rank = 4	Rank = 3
8	Rank = 5	Rank = 4	Rank = 3	Rank = 5	Rank = 3

HUN REAL — WITH EXOGENOUS LEVELS

Data Trend	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend
1	Rank = 5	Rank = 4	Rank = 3	Rank = 3	Rank = 3
2	Rank = 4	Rank = 3	Rank = 2	Rank = 3	Rank = 3
3	Rank = 5	Rank = 4	Rank = 2	Rank = 3	Rank = 3
4	Rank = 4	Rank = 3	Rank = 3	Rank = 3	Rank = 3
5	Rank = 5	Rank = 4	Rank = 4	Rank = 4	Rank = 3
6	Rank = 5	Rank = 5	Rank = 5	Rank = 5	Rank = 5
7	Rank = 5	Rank = 5	Rank = 5	Rank = 5	Rank = 4
8	Insufficient number of observations				

HUN REAL — NO EXOGENOUS 12 LAGS

Data Trend	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend
1	Rank = 1	Rank = 1	Rank = 0	Rank = 1	Rank = 1
2	Rank = 2	Rank = 2	Rank = 2	Rank = 3	Rank = 5
3	Rank = 1	Rank = 1	Rank = 1	Rank = 2	Rank = 5
4	Rank = 3	Rank = 3	Rank = 3	Rank = 4	Rank = 5
5	Rank = 3	Rank = 4	Rank = 4	Rank = 4	Rank = 5
6	Rank = 5	Rank = 5	Rank = 4	Rank = 5	Rank = 5
7	Rank = 3	Rank = 4	Rank = 4	Rank = 5	Rank = 5
8	Insufficient number of observations				

HUN REAL — WITH EXOGENOUS 12 LAGS

Data Trend	None	None	Linear	Linear	Quadratic
Rank or	No Intercept	Intercept	Intercept	Intercept	Intercept
No. of CEs	No Trend	No Trend	No Trend	Trend	Trend
1	Rank = 4	Rank = 4	Rank = 5	Rank = 2	Rank = 2
2	Rank = 3	Rank = 4	Rank = 3	Rank = 3	Rank = 2
3	Rank = 4	Rank = 3	Rank = 3	Rank = 3	Rank = 2
4	Rank = 4	Rank = 4	Rank = 3	Rank = 3	Rank = 2
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6	Insufficient number of observations				
7	Insufficient number of observations				
8	Insufficient number of observations				

POL NOMINAL — NO EXOGENOUS — LEVELS

Data Trend Rank or No. of CEs	None No Intercept No Trend	None Intercept No Trend	Linear Intercept No Trend	Linear Intercept Trend	Quadratic Intercept Trend
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2	Rank = 3	Rank = 3	Rank = 4	Rank = 2	Rank = 1
3	Rank = 3	Rank = 3	Rank = 3	Rank = 2	Rank = 1
4	Rank = 3	Rank = 3	Rank = 4	Rank = 3	Rank = 1
5	Rank = 3	Rank = 3	Rank = 4	Rank = 3	Rank = 1
6	Rank = 3	Rank = 3	Rank = 3	Rank = 3	Rank = 2
7	Rank = 3	Rank = 3	Rank = 3	Rank = 3	Rank = 2
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POL NOMINAL — NO EXOGENOUS — 12 LAGS

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4	Rank = 2	Rank = 2	Rank = 1	Rank = 2	Rank = 4
5	Rank = 2	Rank = 2	Rank = 1	Rank = 1	Rank = 4
6	Rank = 4	Rank = 3	Rank = 2	Rank = 2	Rank = 4
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POL NOMINAL — WITH EXOGENOUS — LEVELS

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2	Rank = 2	Rank = 1	Rank = 1	Rank = 1	Rank = 1
3	Rank = 2	Rank = 1	Rank = 1	Rank = 1	Rank = 1
4	Rank = 3	Rank = 3	Rank = 4	Rank = 3	Rank = 1
5	Rank = 2	Rank = 2	Rank = 1	Rank = 1	Rank = 1
6	Rank = 2	Rank = 2	Rank = 1	Rank = 1	Rank = 1
7	Rank = 2	Rank = 2	Rank = 1	Rank = 1	Rank = 2
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POL NOMINAL — WITH EXOGENOUS — 12 LAGS

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4	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 4
5	Rank = 2	Rank = 2	Rank = 2	Rank = 2	Rank = 2
6	Rank = 3	Rank = 4	Rank = 4	Rank = 3	Rank = 2
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POL REAL — NO EXOGENOUS — LEVELS

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5	Rank = 3	Rank = 4	Rank = 5	Rank = 3
6	Rank = 3	Rank = 3	Rank = 4	Rank = 4
7	Rank = 3	Rank = 4	Rank = 5	Rank = 5
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POL REAL — NO EXOGENOUS — 12 LAGS

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5	Rank = 4	Rank = 4	Rank = 5	Rank = 5
6	Rank = 4	Rank = 5	Rank = 5	Rank = 5
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POL REAL — WITH EXOGENOUS — LEVELS

Data Trend / Rank or No. of CEs	None / No Intercept / No Trend	Linear / Intercept / No Trend	Linear / Intercept / Trend	Quadratic / Intercept / Trend
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2	Rank = 1	Rank = 1	Rank = 2	Rank = 2
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5	Rank = 5	Rank = 5	Rank = 5	Rank = 5
6	Rank = 4	Rank = 4	Rank = 4	Rank = 5
7	Rank = 4	Rank = 4	Rank = 4	Rank = 4
8	Rank = 4	Rank = 4	Rank = 4	Rank = 4

POL REAL — WITH EXOGENOUS — 12 LAGS

Data Trend / Rank or No. of CEs	None / No Intercept / No Trend	Linear / Intercept / No Trend	Linear / Intercept / Trend	Quadratic / Intercept / Trend
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2	Rank = 3	Rank = 3	Rank = 4	Rank = 3
3	Rank = 3	Rank = 3	Rank = 4	Rank = 3
4	Rank = 3	Rank = 3	Rank = 4	Rank = 4
5	Rank = 4	Rank = 5	Rank = 5	Rank = 5
6	Rank = 5	Rank = 5	Rank = 5	Rank = 4
7	Insufficient number of observations			
8	Insufficient number of observations			

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Appendix 3.3: Summary of AIC and BIC tests for suggested lag length in VARs modelling monetary policy transmission in Central European countries

	Suggested lag length			
	AIC		BIC	
	With constant	With other exogenous variables (oil, cpi, gdp)	With constant	With other exogenous variables (oil, cpi, gdp)
Czech Republic				
Nominal model	8	6	8	6
Real 1 model	7	5	7	5
Real 2 model	7	5	7	5
Hungary				
Nominal model	Infinity	Infinity	2	Infinity
Real 1 model	9	6	9	6
Real 2 model	9	6	9	6
Poland				
Nominal model	Infinity	Infinity	2	2
Real 1 model	10	7	10	7
Real 2 model	10	7	10	7
Slovakia				
Nominal model	Infinity	Infinity	2	2
Real 1 model	12	11	2	11
Real 2 model	Infinity	11	2	11

Appendix 3.4: Impulse response charts for models of monetary policy transmission in Central Europe

CZK Nominal1 Deseasonalized Lags 3

CZK Nominal1 Deseasonalized Lags 6

NEAR SINGULAR MATRIX

CZK Nominal1 Level Lags 3


CZK Nominal1 Level Lags 6

CZK Nominal2 Deseasonalized Lags 3
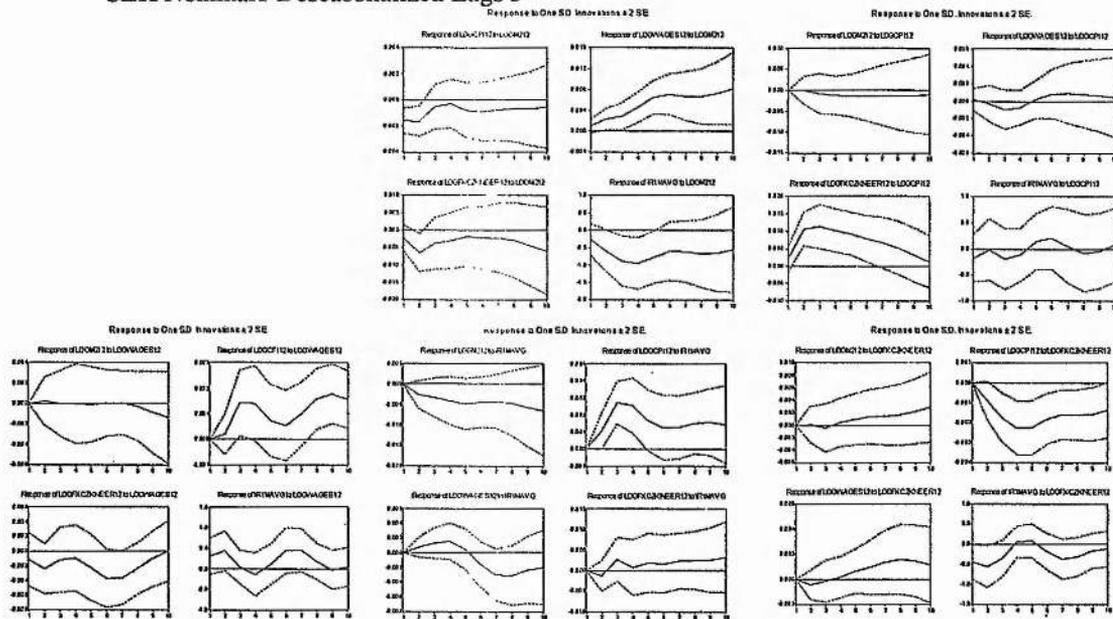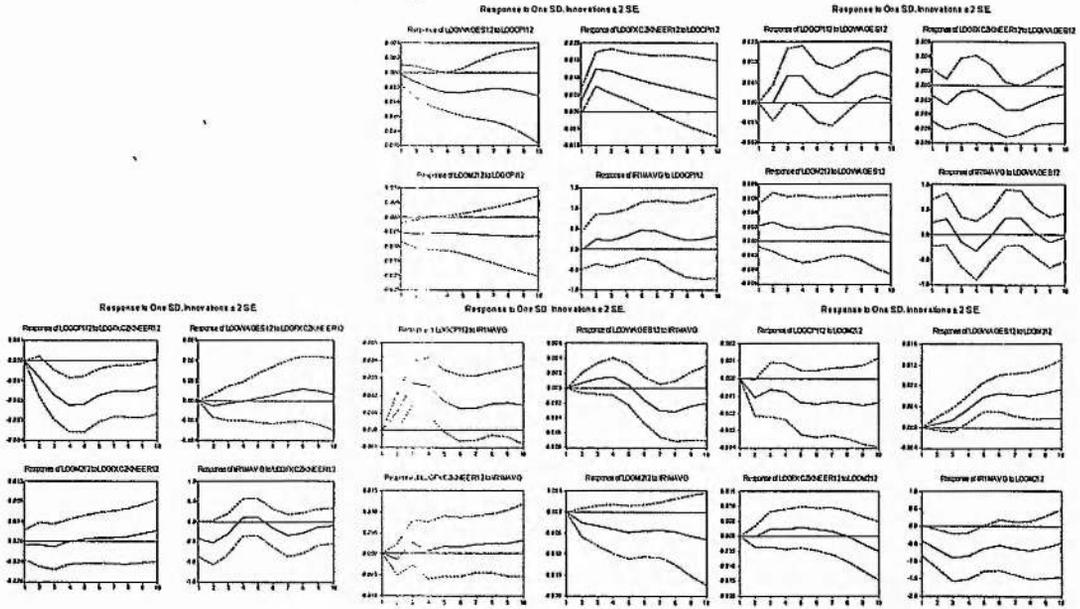
CZK Nominal2 Deseasonalized Lags 6

NEAR SINGULAR MATRIX

CZK Nominal2 Level Lags 3

CZK Nominal2 Level Lags 6

198
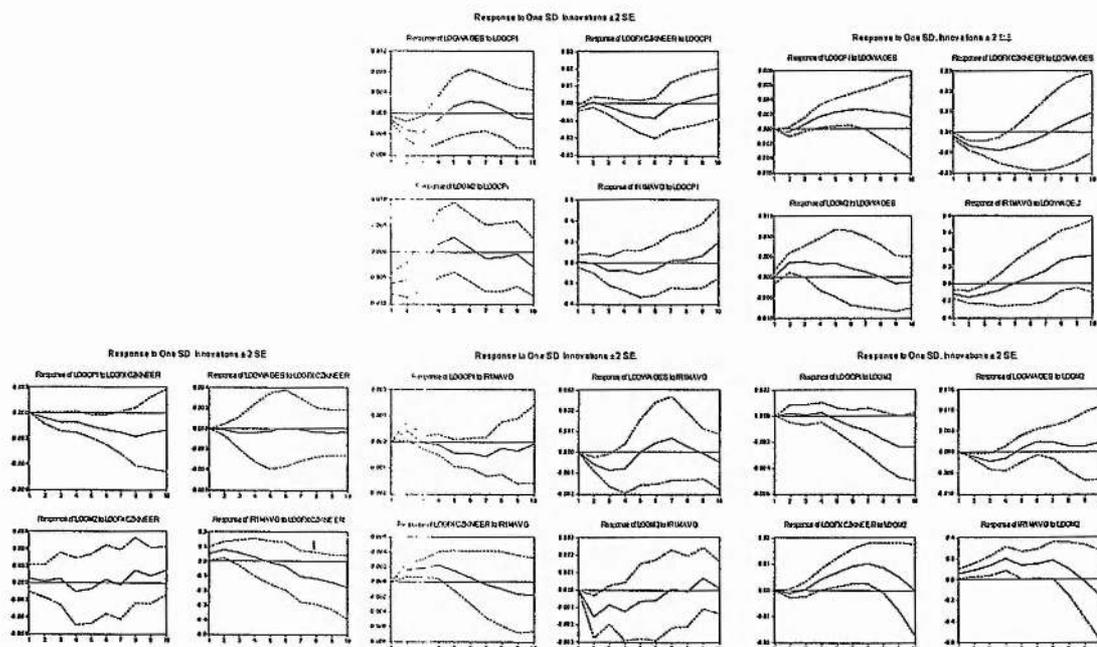
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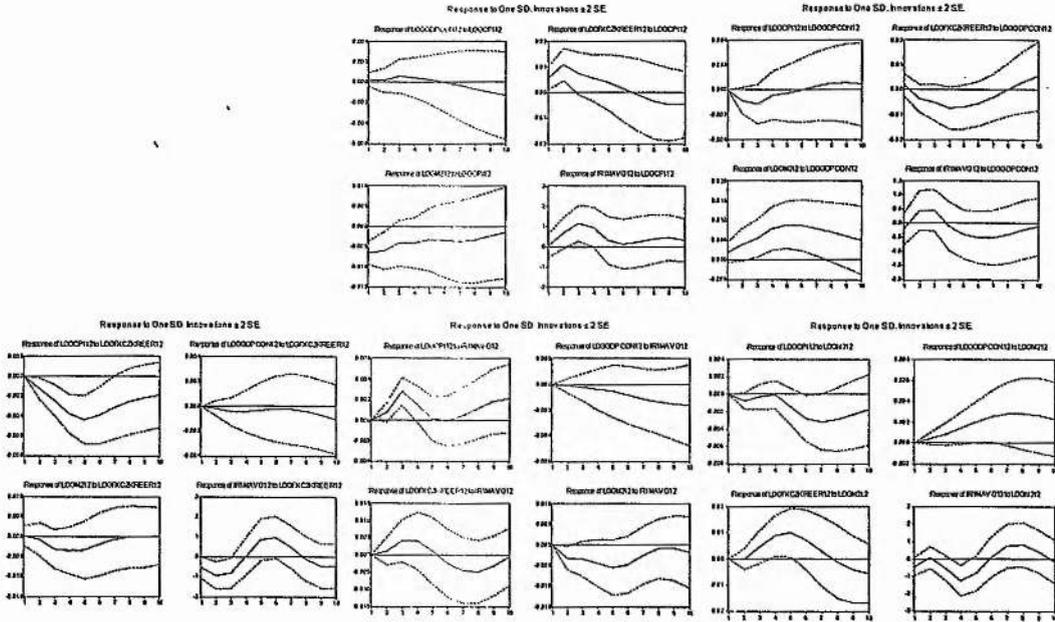
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division by zero

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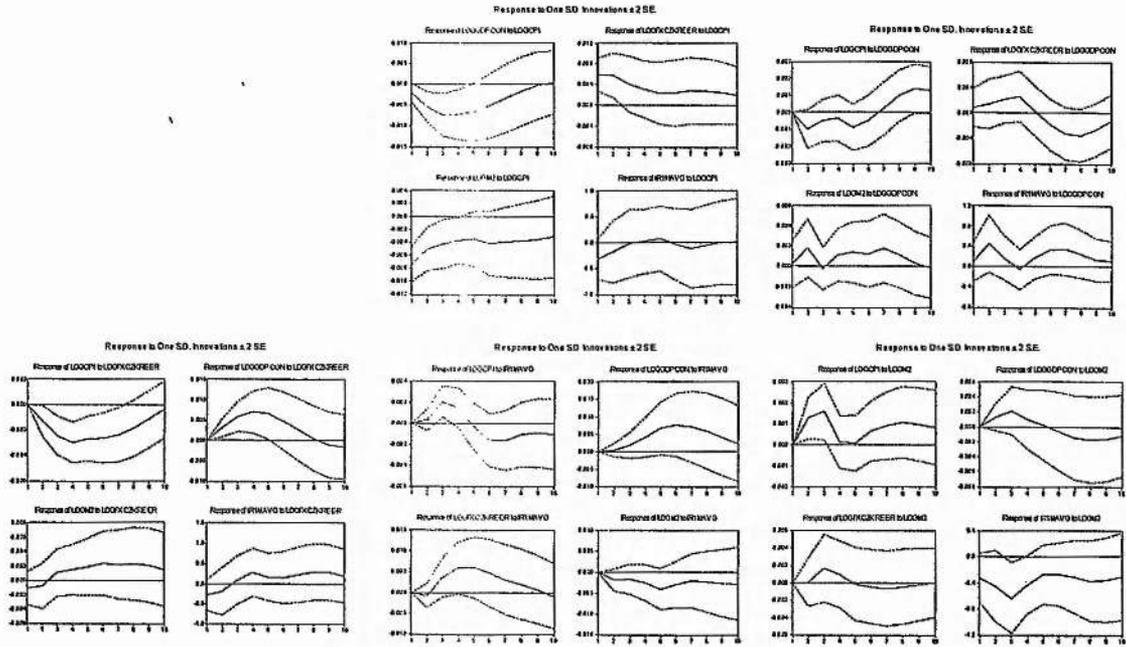
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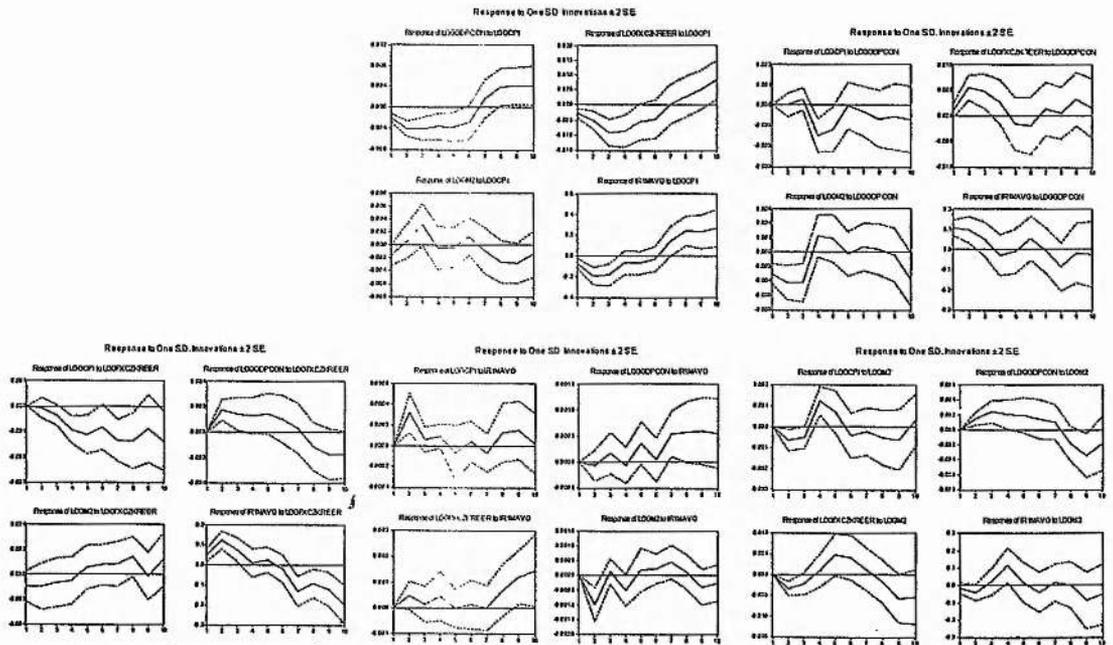
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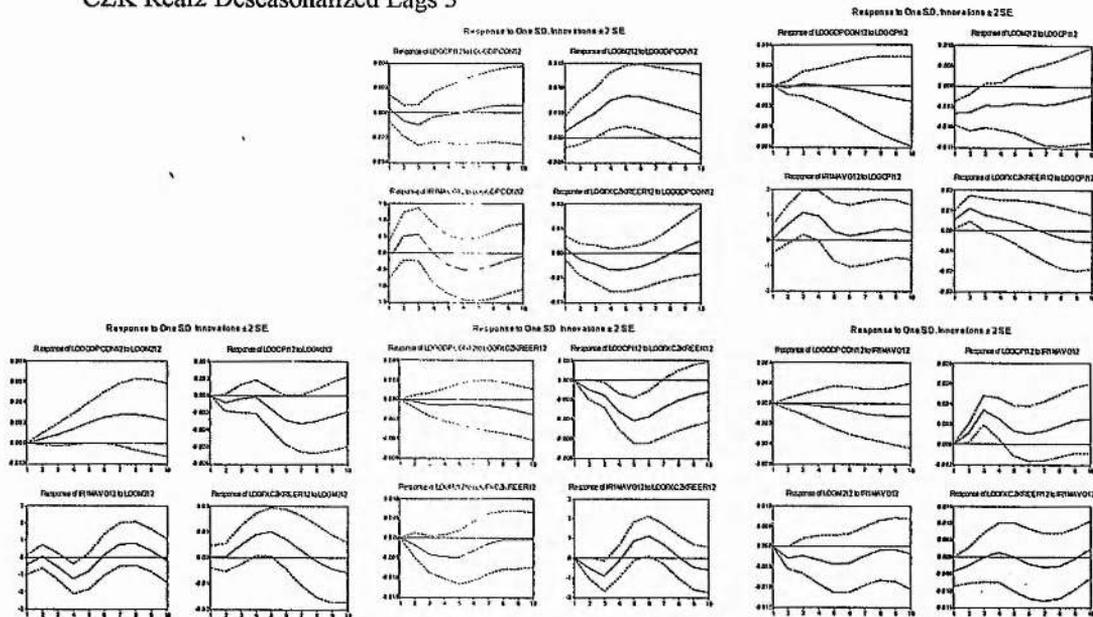
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Division by zero

CZK Real2 Level Lags 3

CZK Real2 Level Lags 6

HUN Nominal1 Deseasonalized Lags 3

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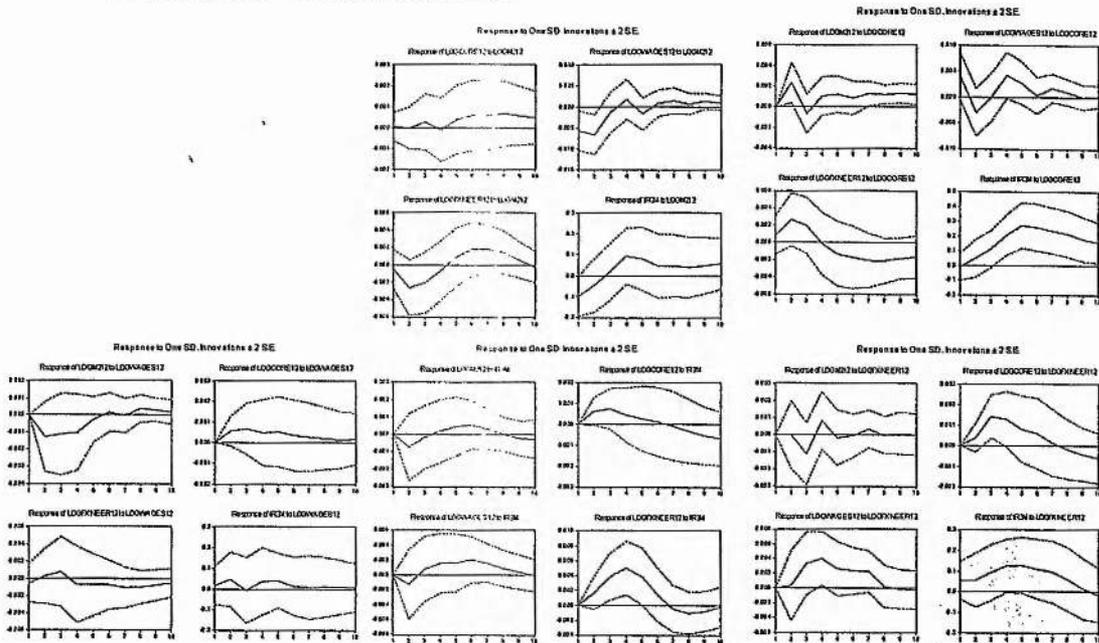
HUN Nominal1 Level Lags 3

HUN Nominal1 Level Lags 6

HUN Nominal2 Deseasonalized Lags 3

HUN Nominal2 Deseasonalized Lags 6

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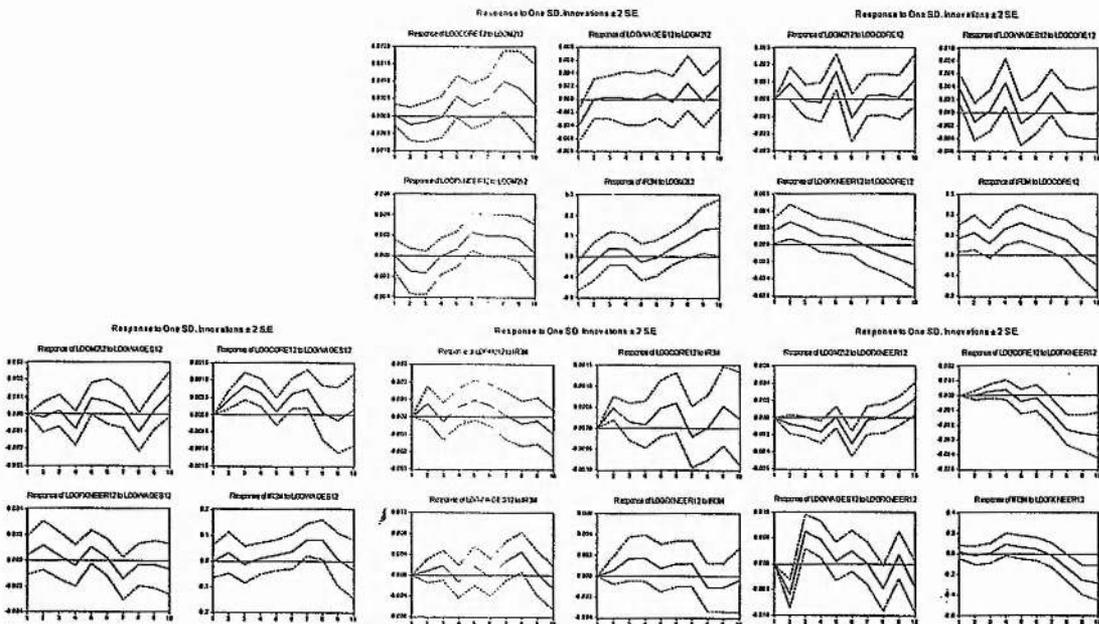
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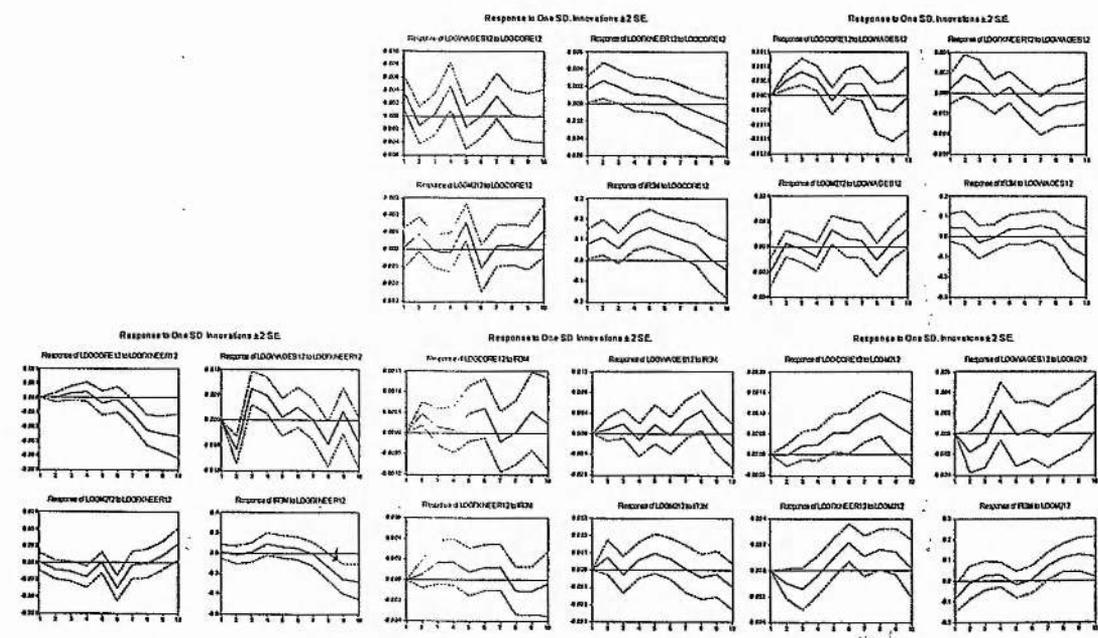
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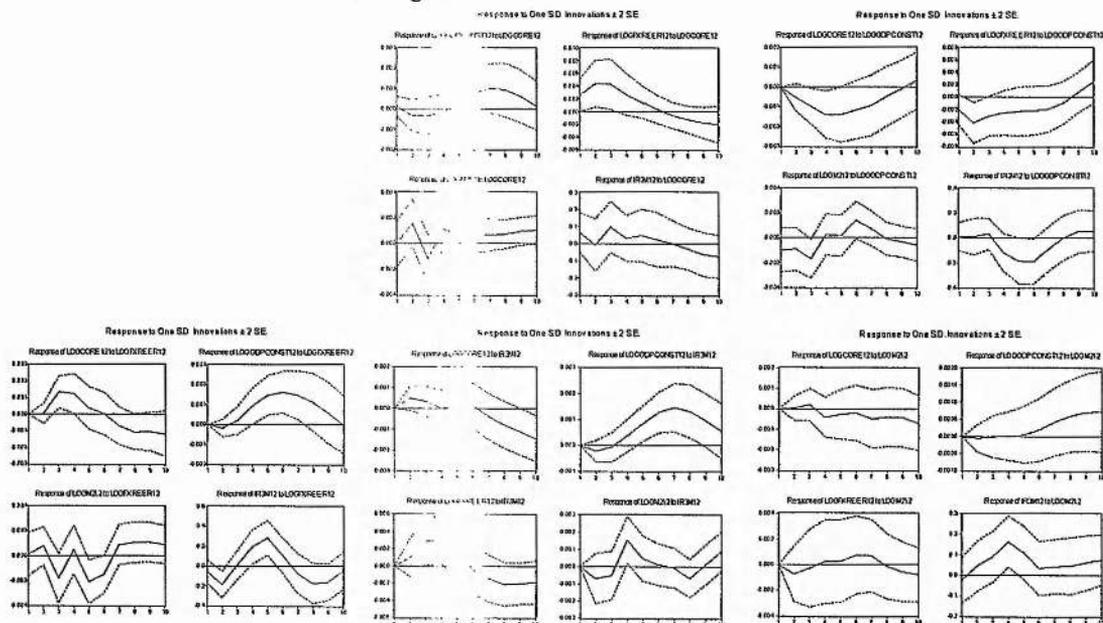
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HUN Real1 Level Lags 6

HUN Real2 Deseasonalized Lags 3

HUN Real2 Deseasonalized Lags 6

209
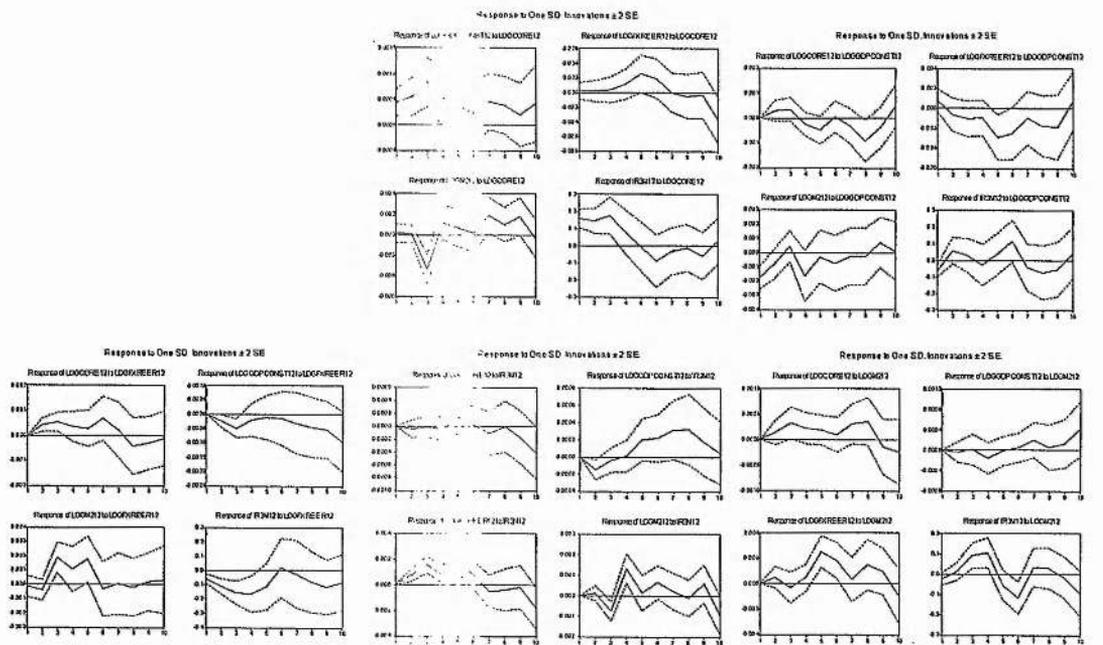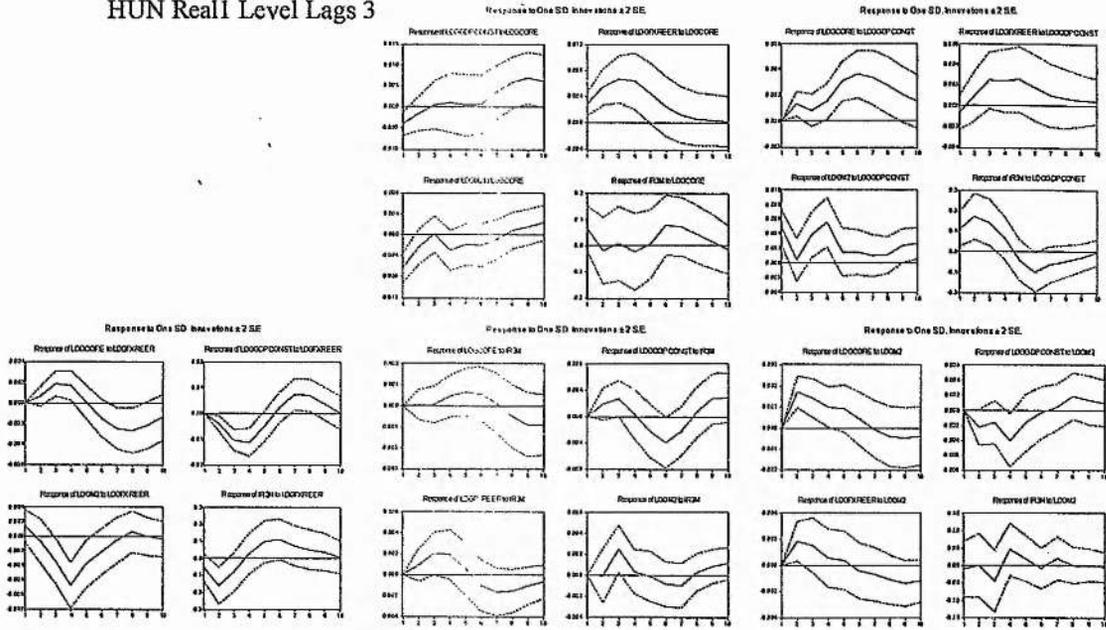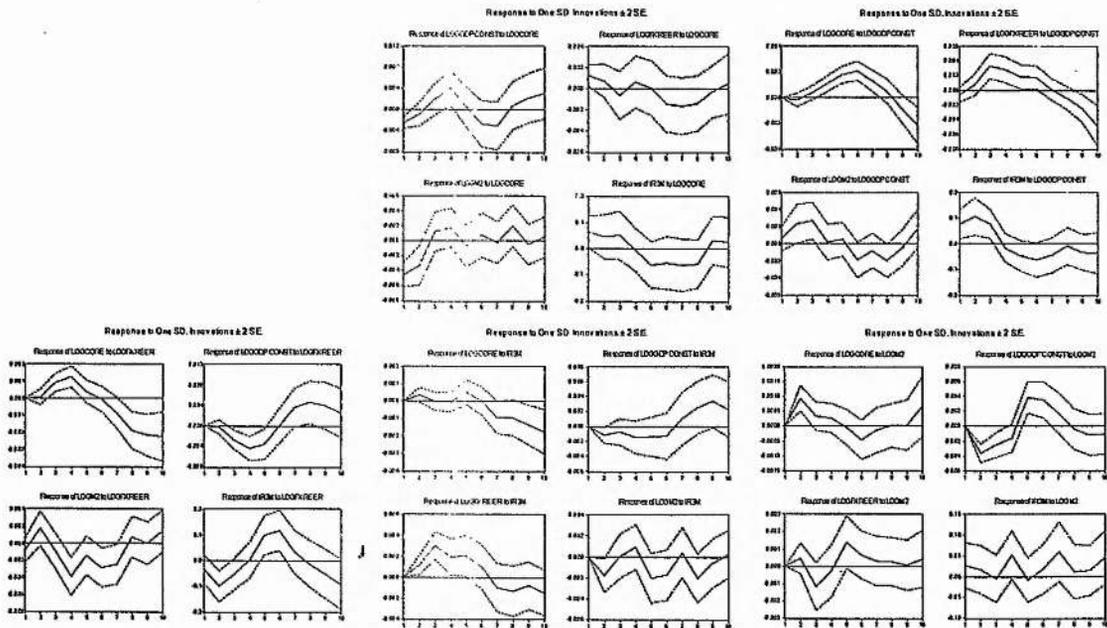
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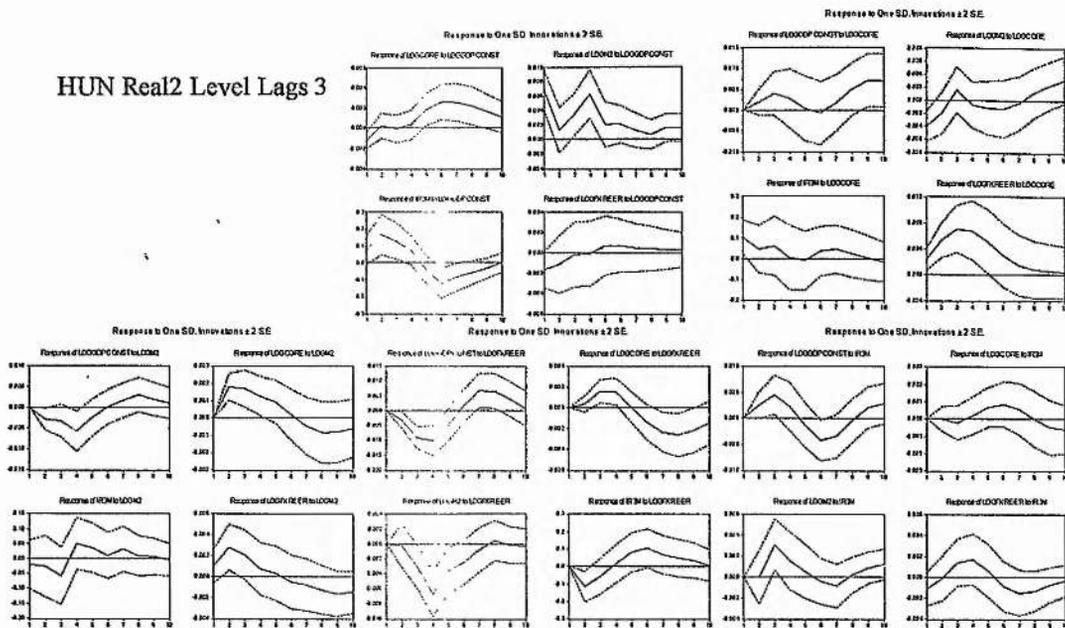
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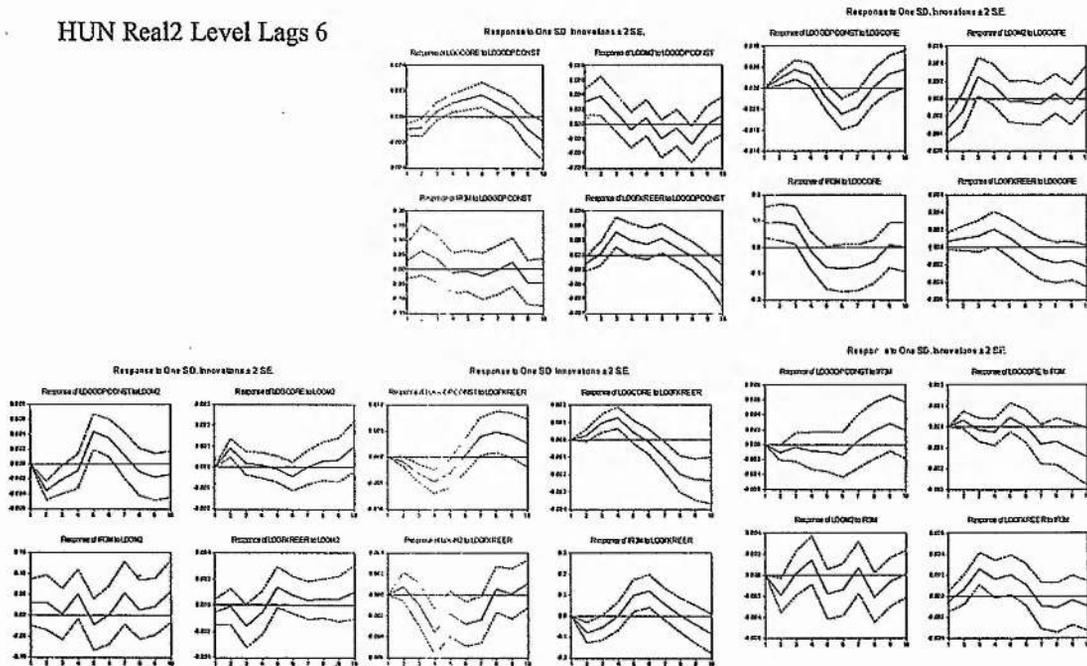
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POL Nominal1 Deseasonalized Lags 6

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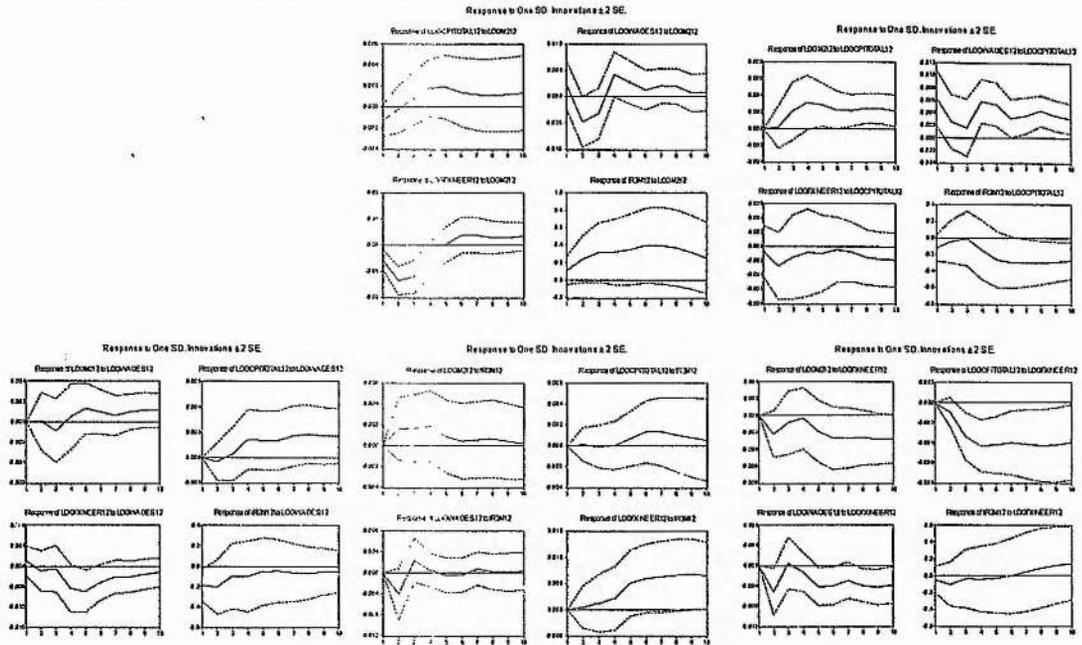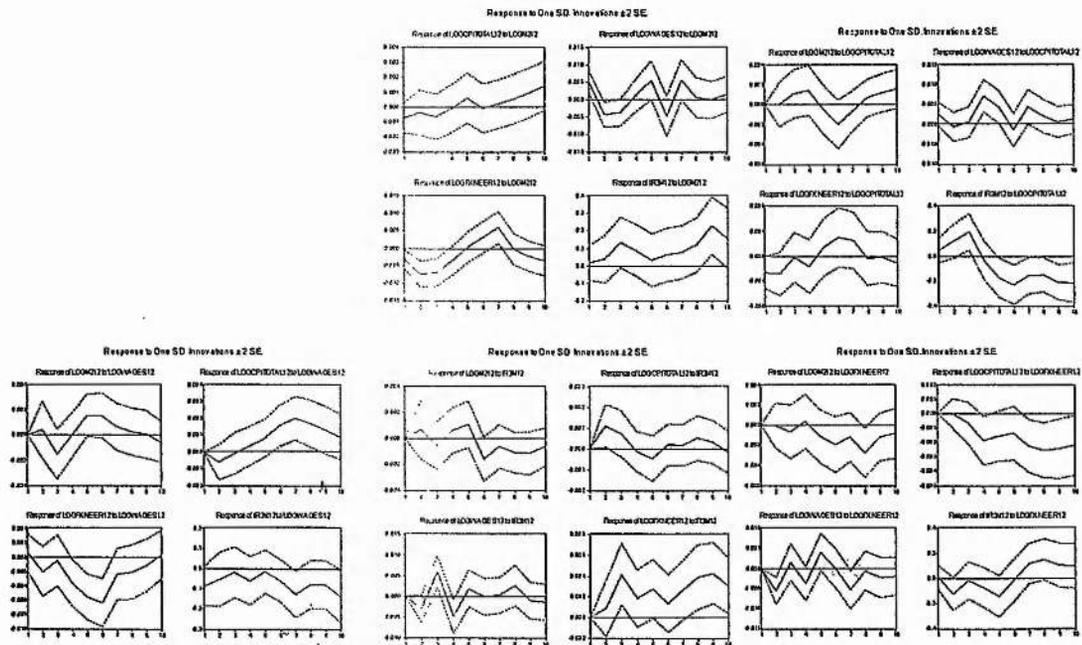
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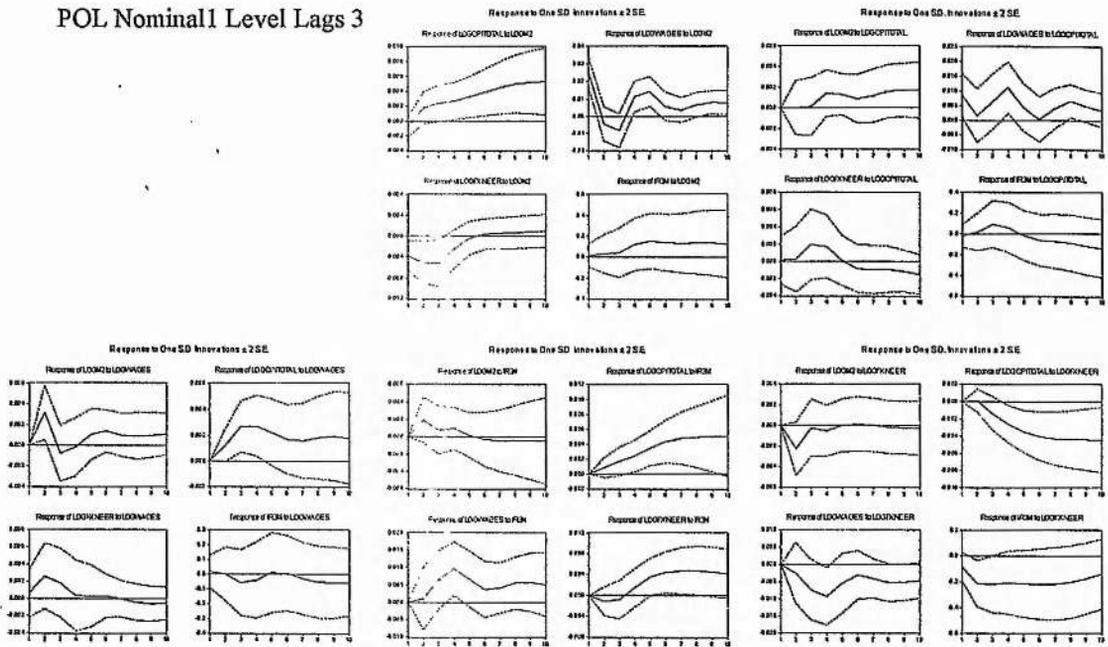
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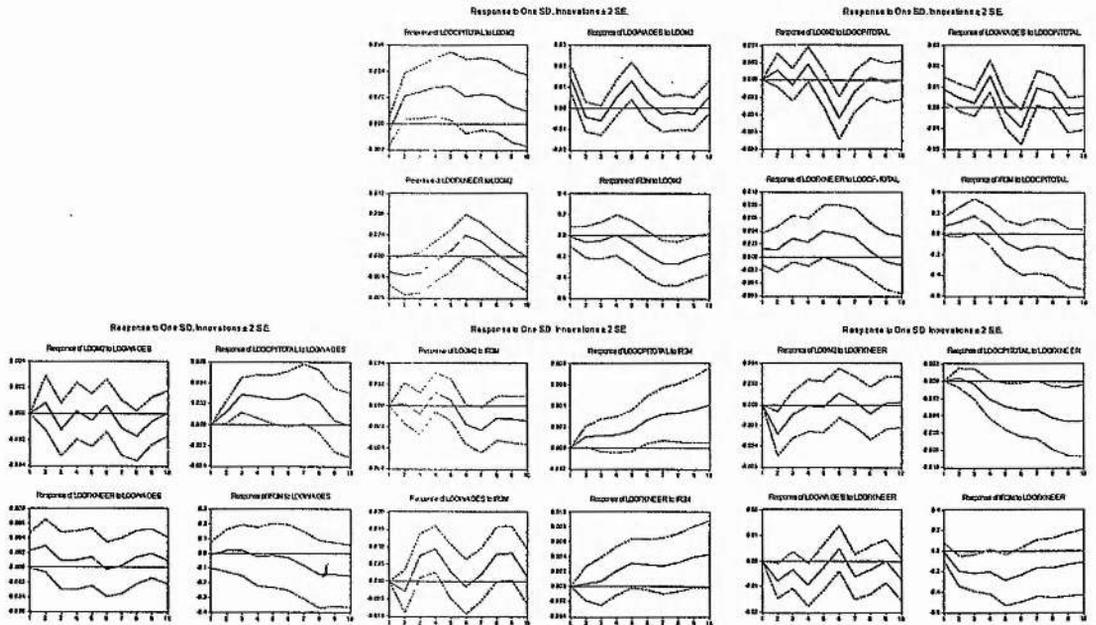
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POL Nominal2 Deseasonalized Lags 6

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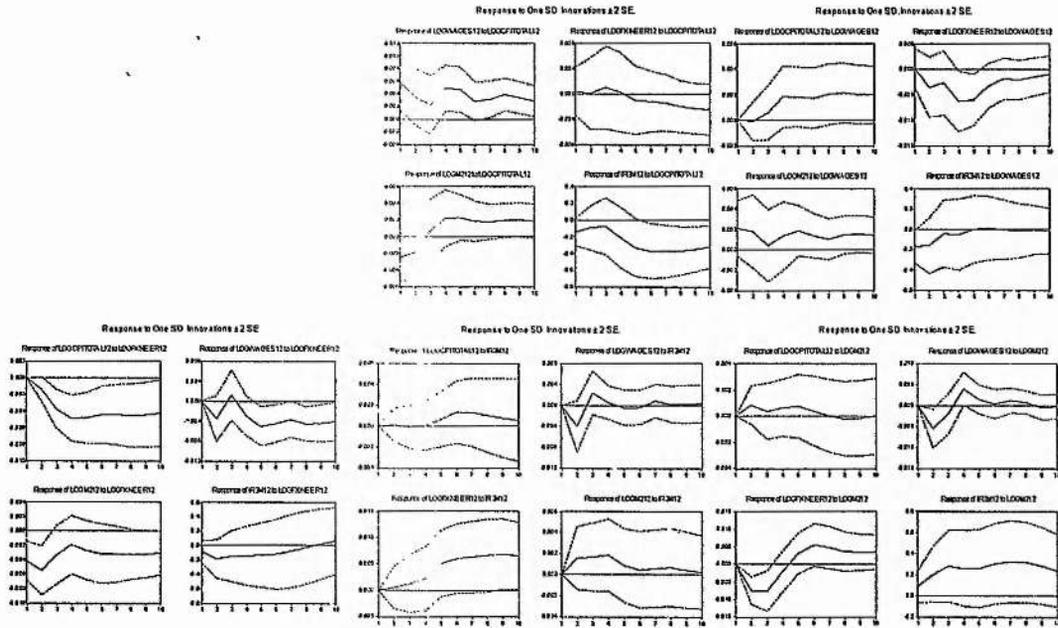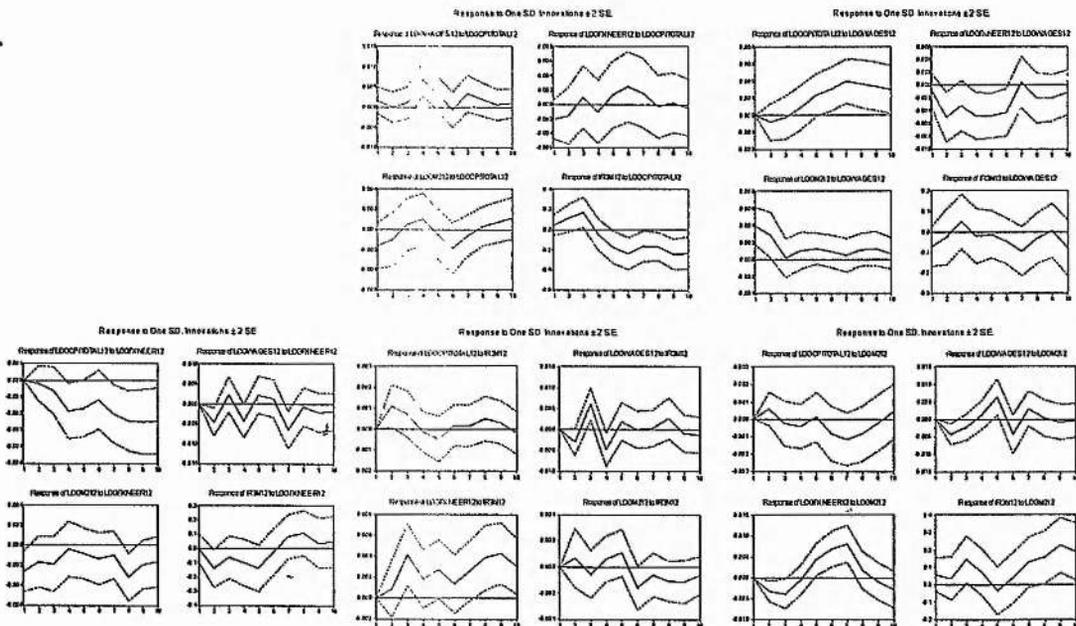
POL Nominal2 Level Lags 3

POL Nominal2 Level Lags 6

214

POL Real1 Deseasonalized Lags 3

POL Real1 Deseasonalized Lags 6

215
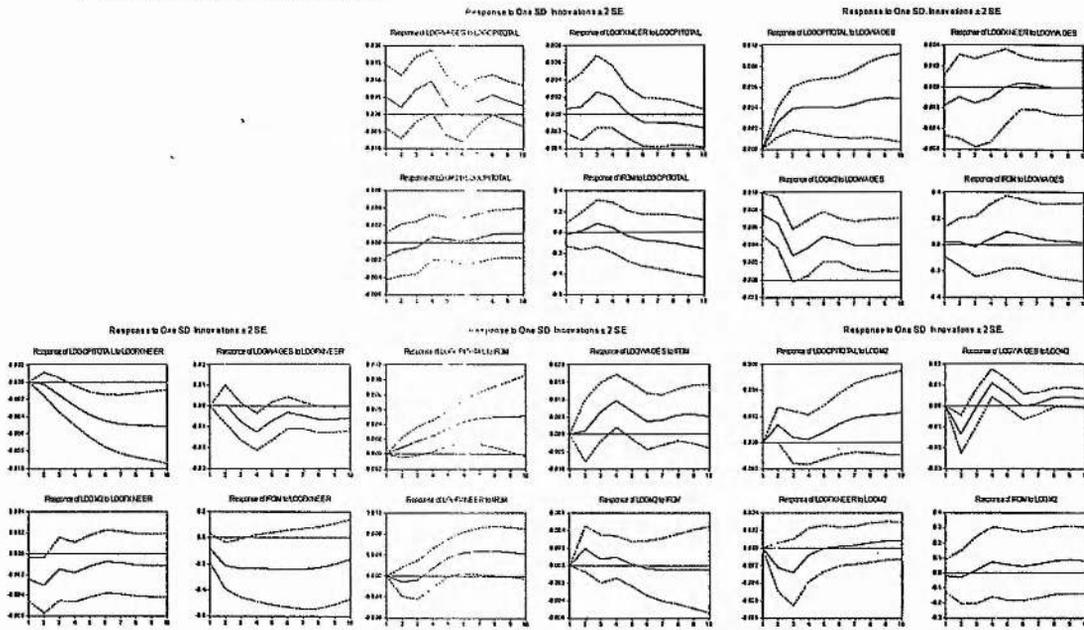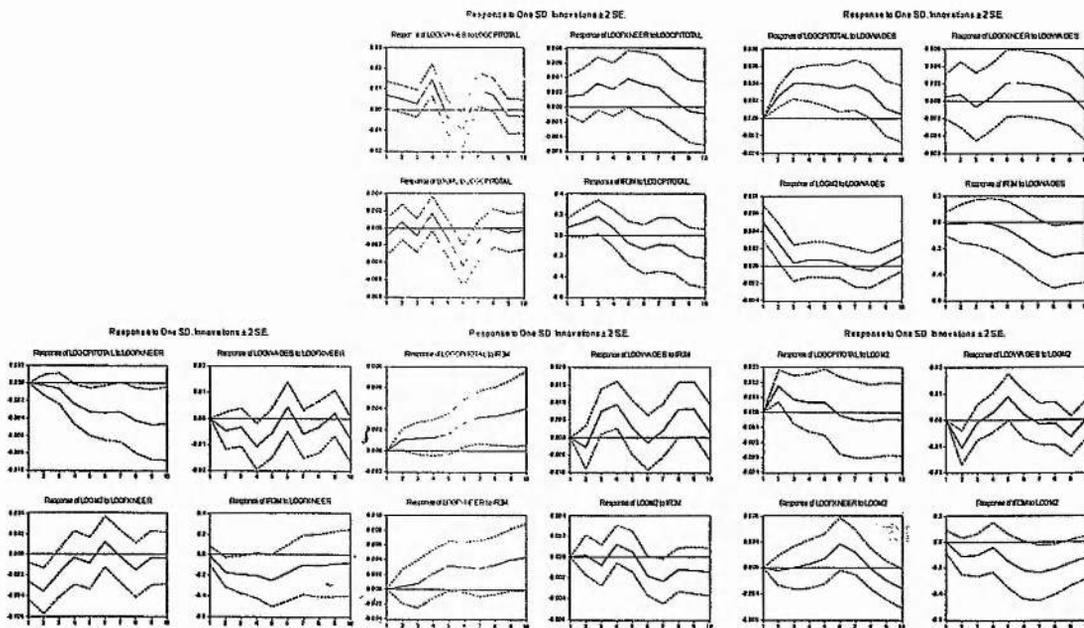
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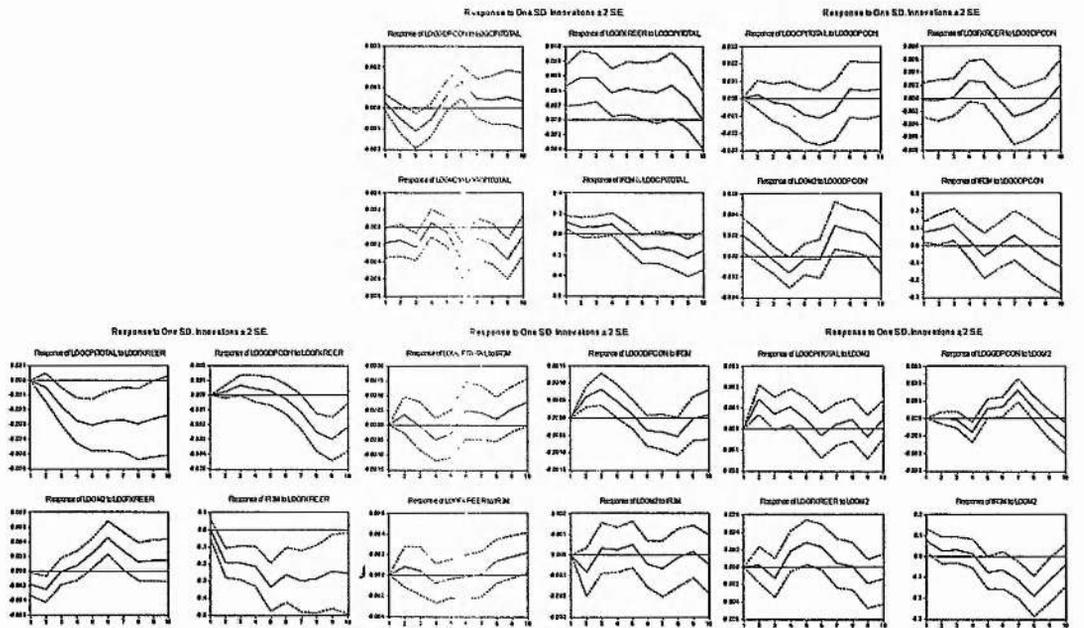
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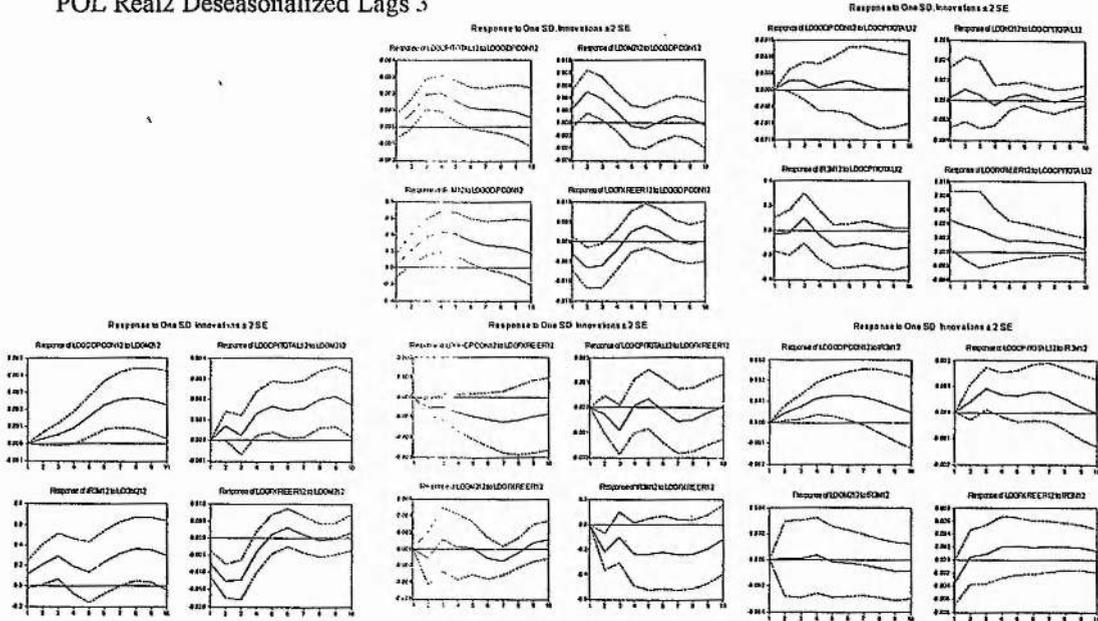
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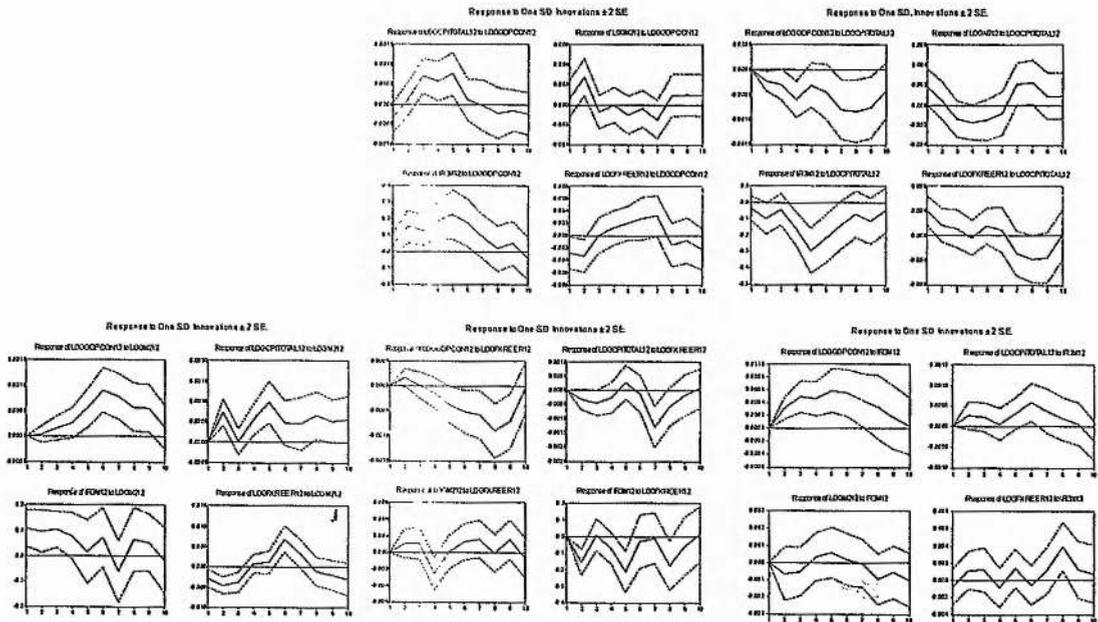
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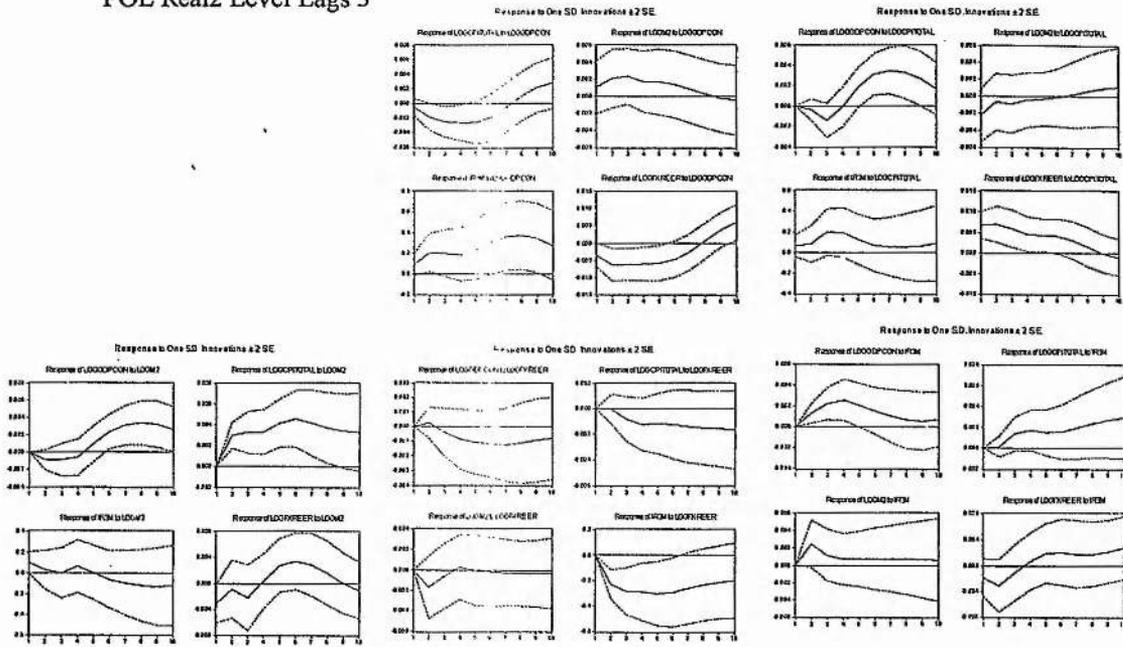
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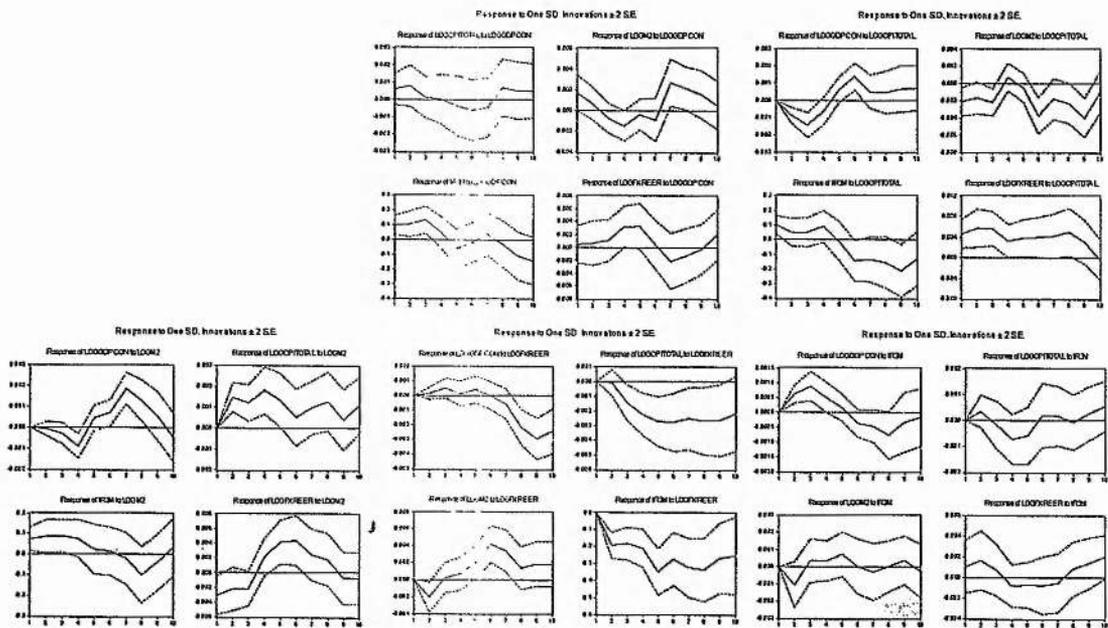
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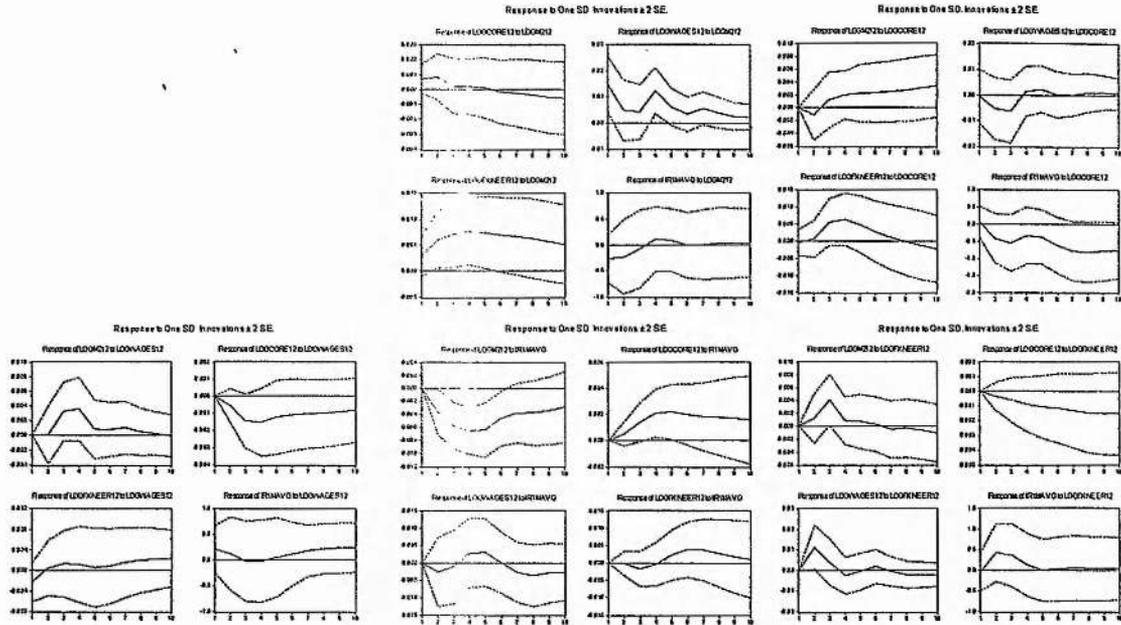
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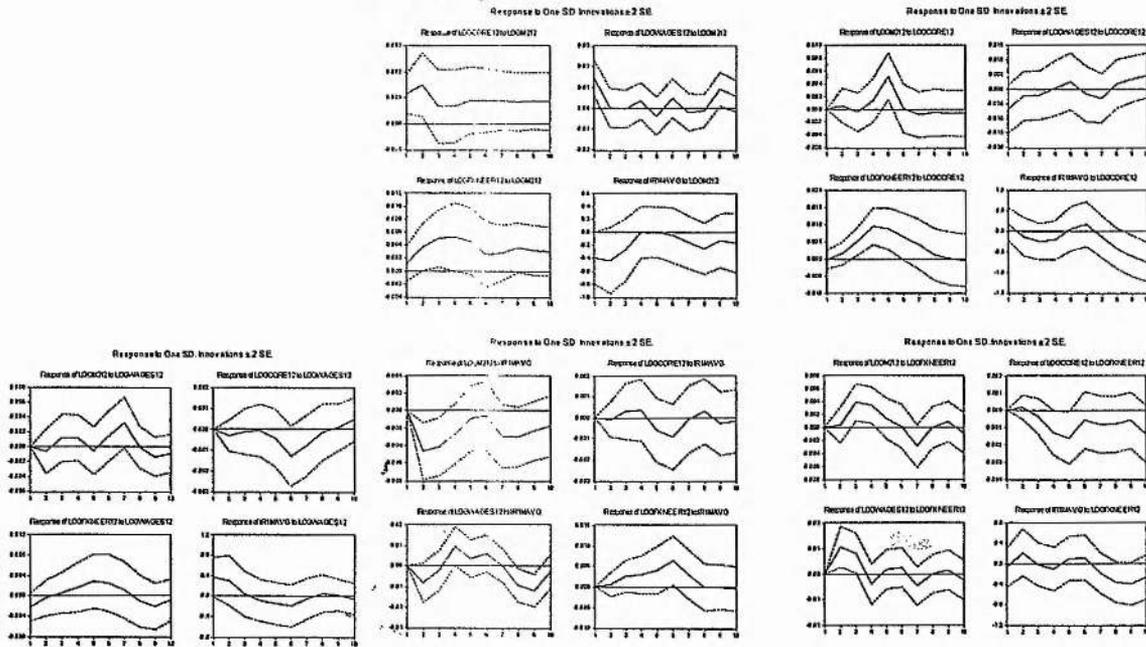
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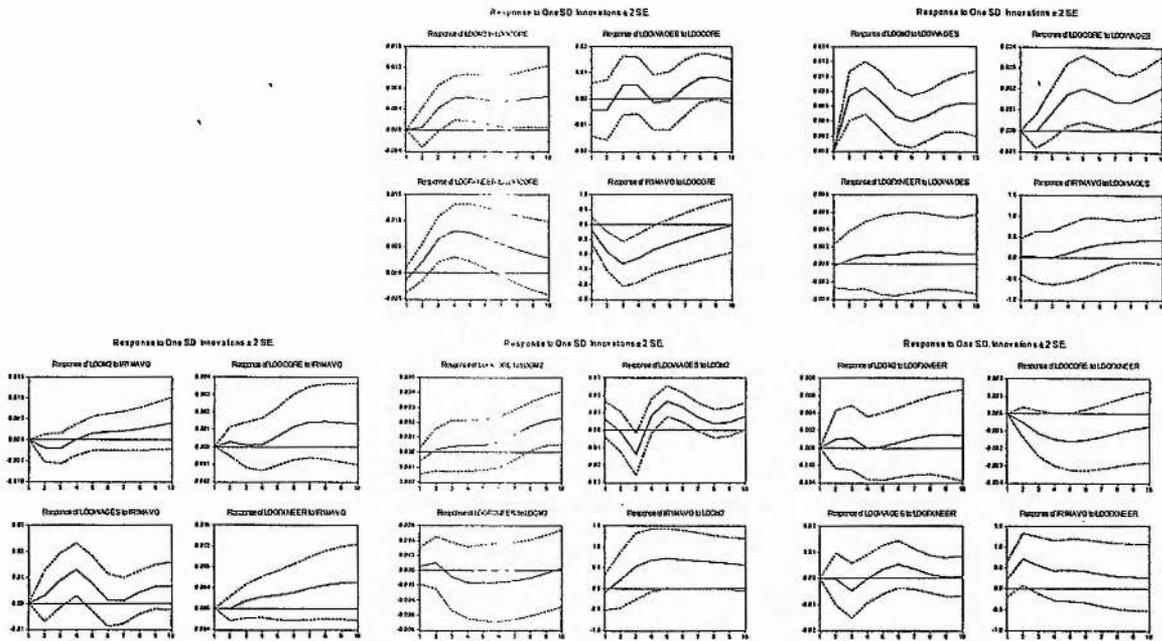
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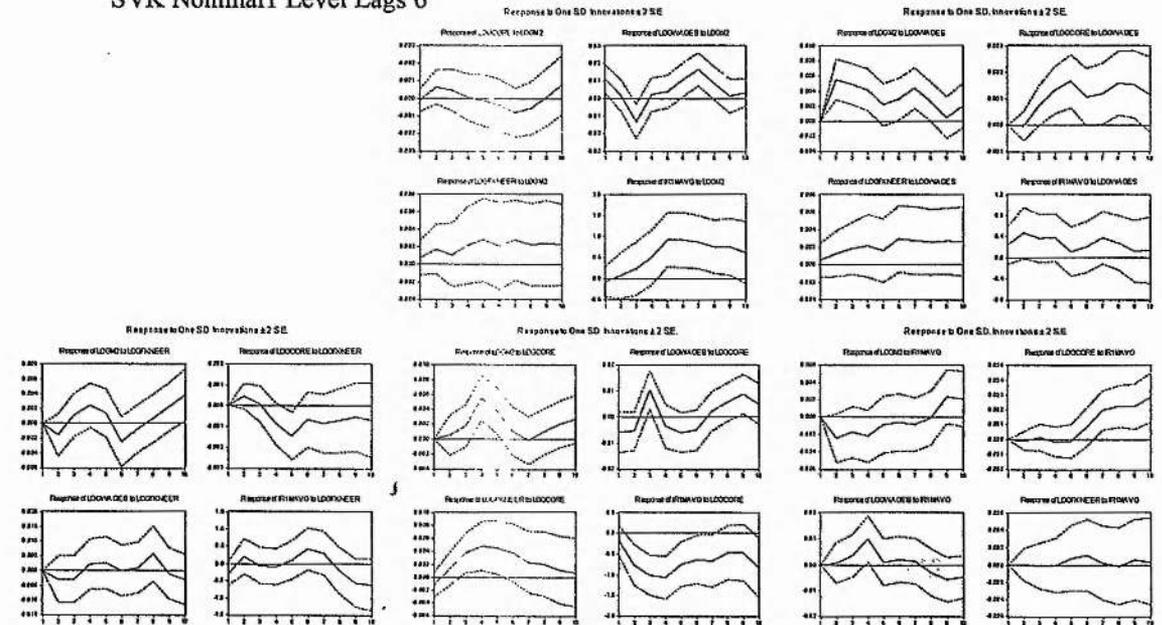
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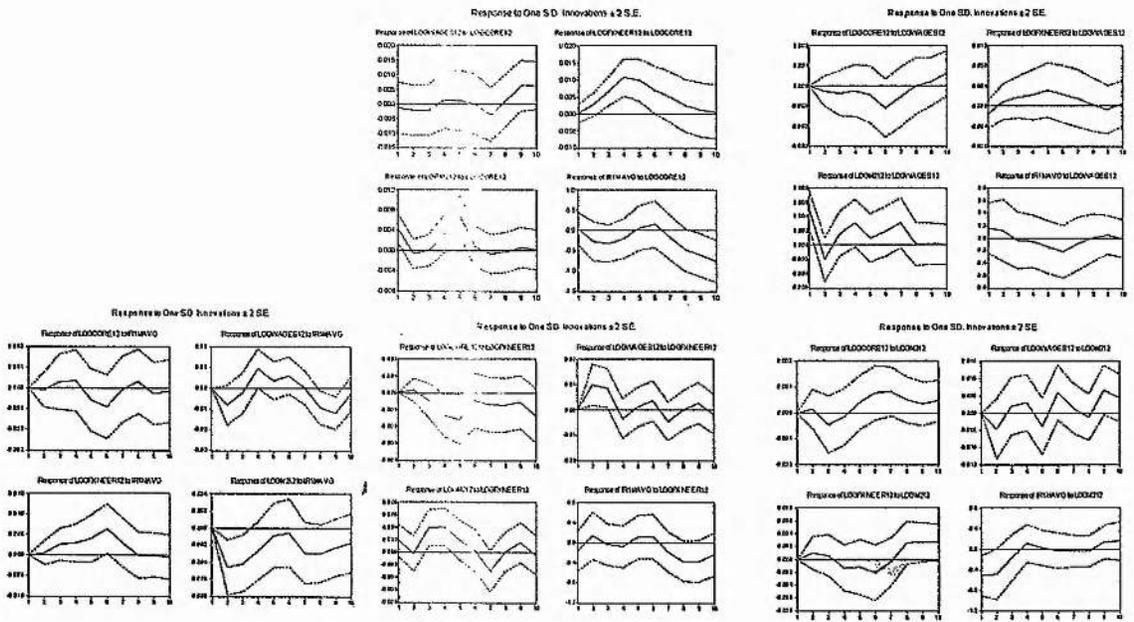
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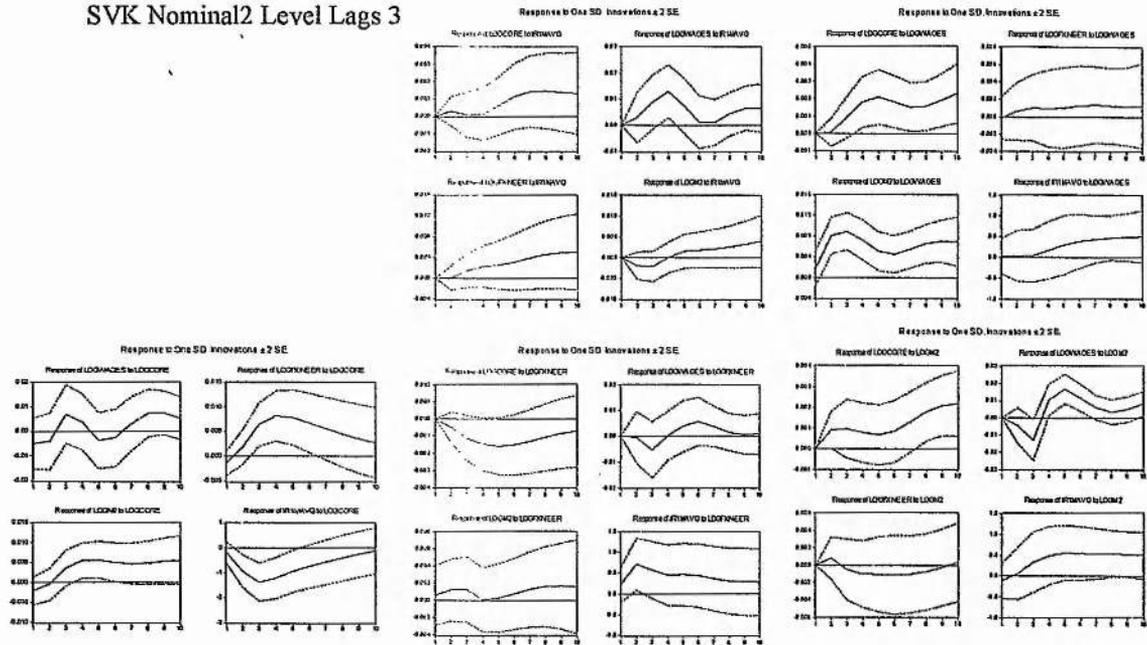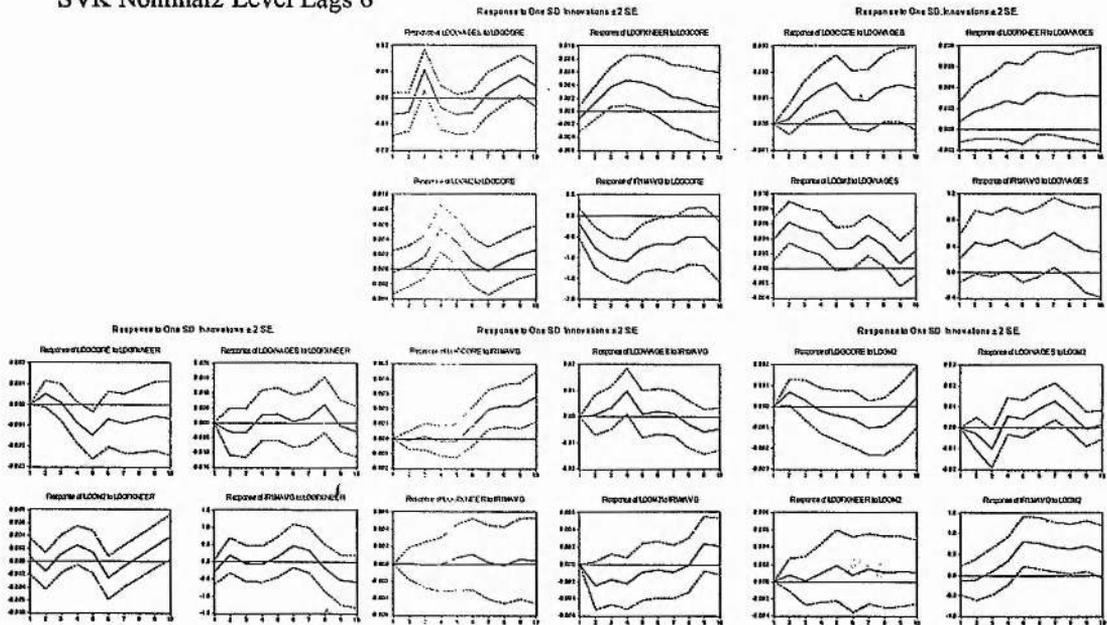
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223

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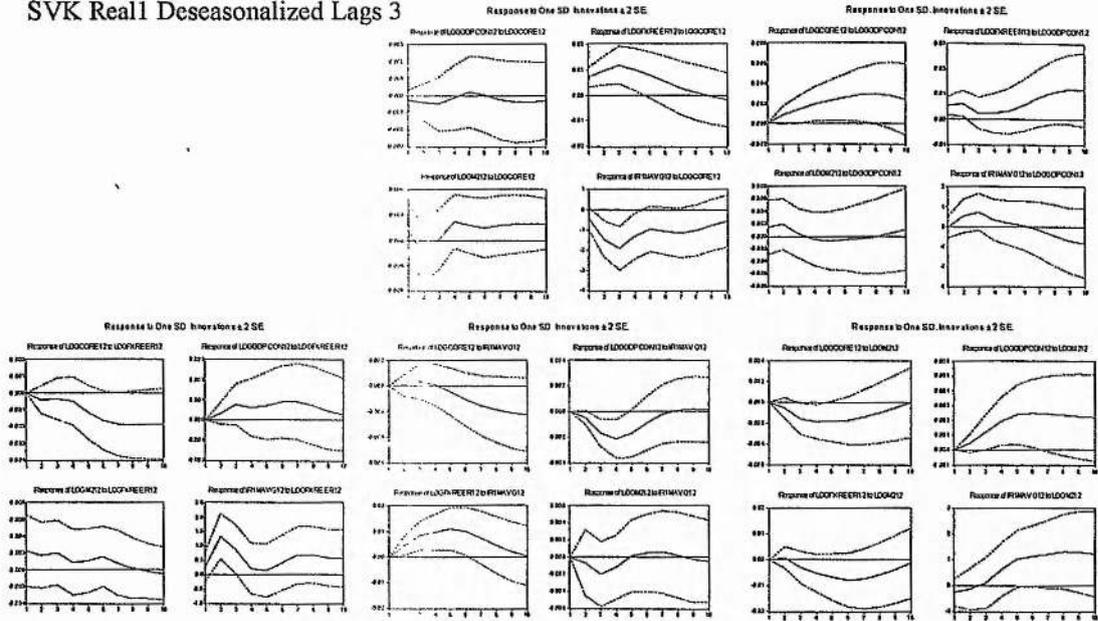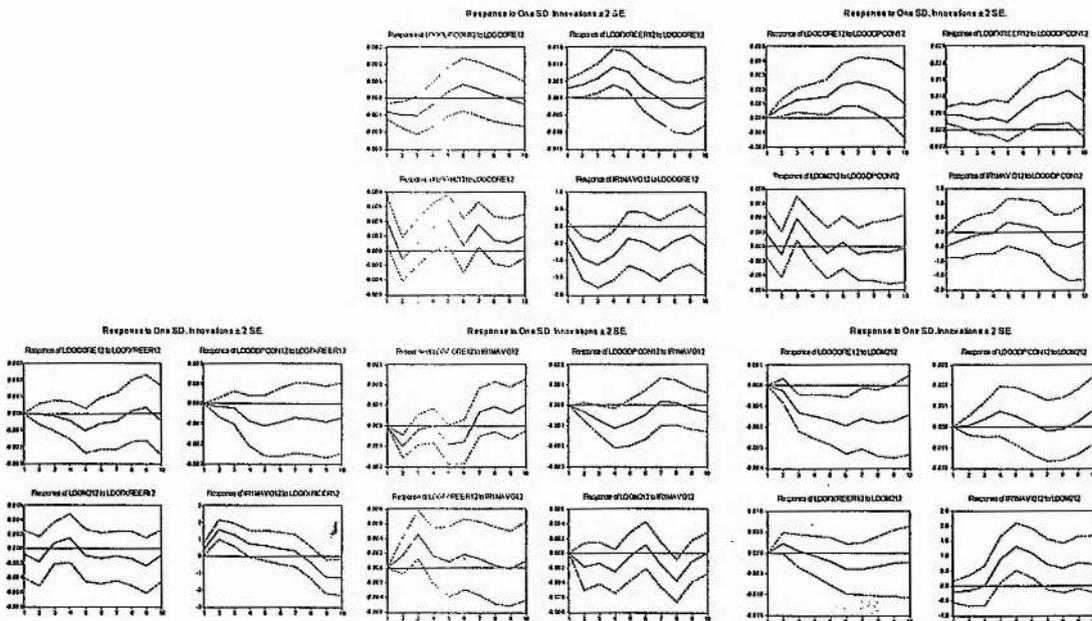
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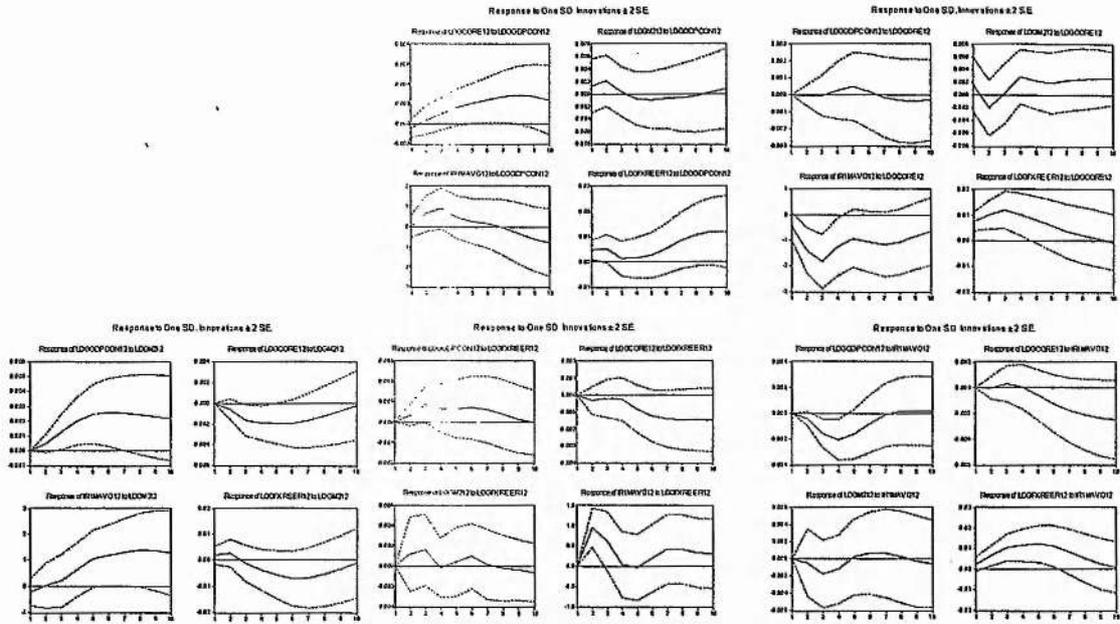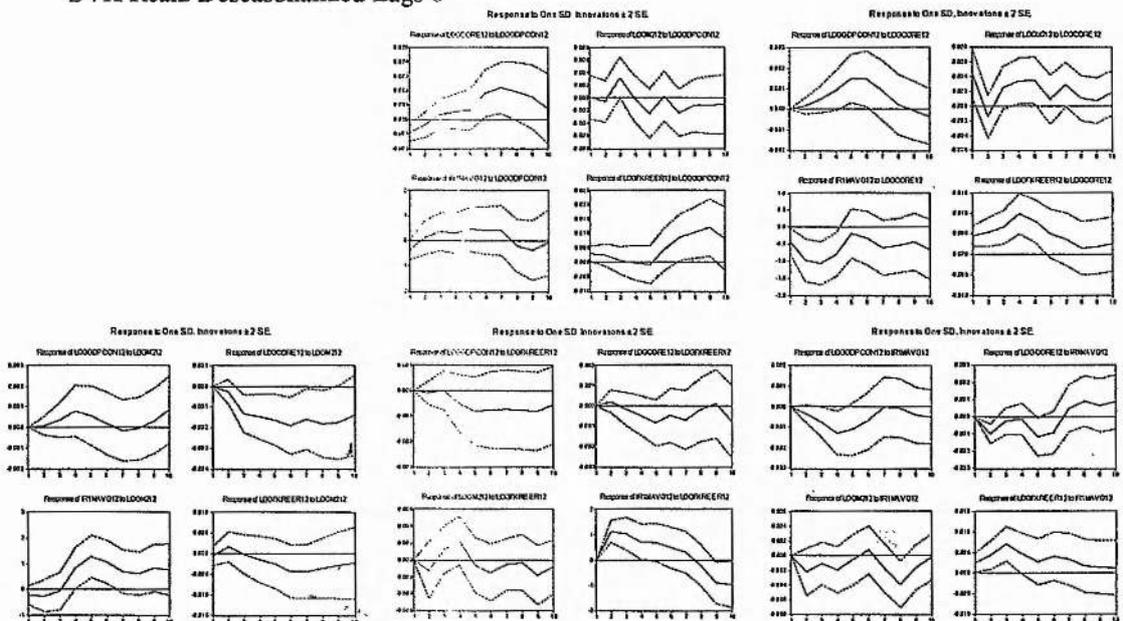
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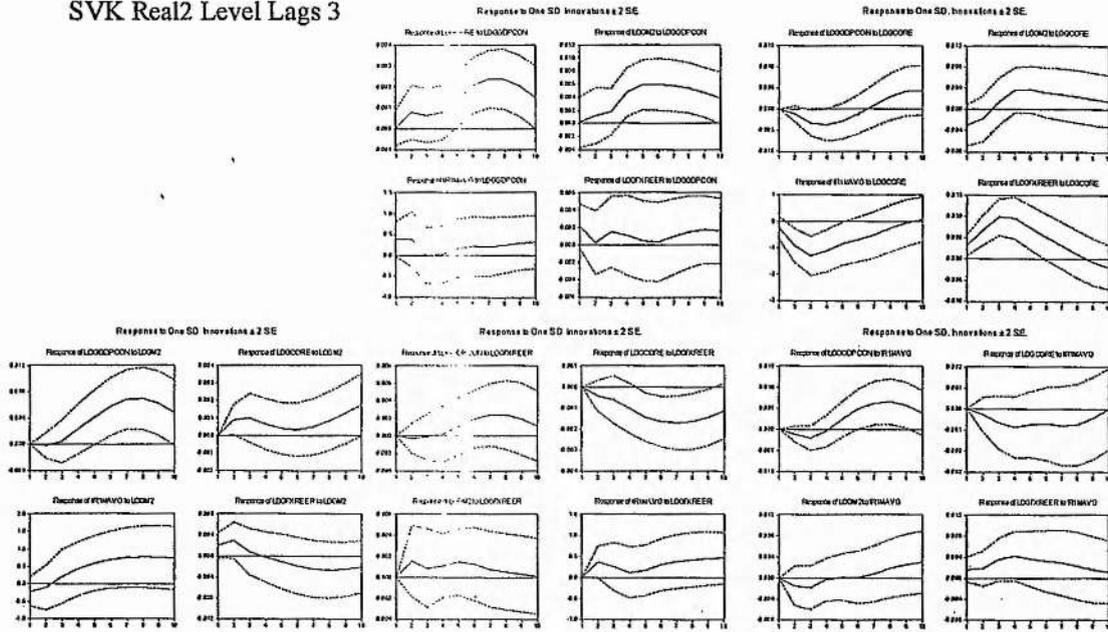
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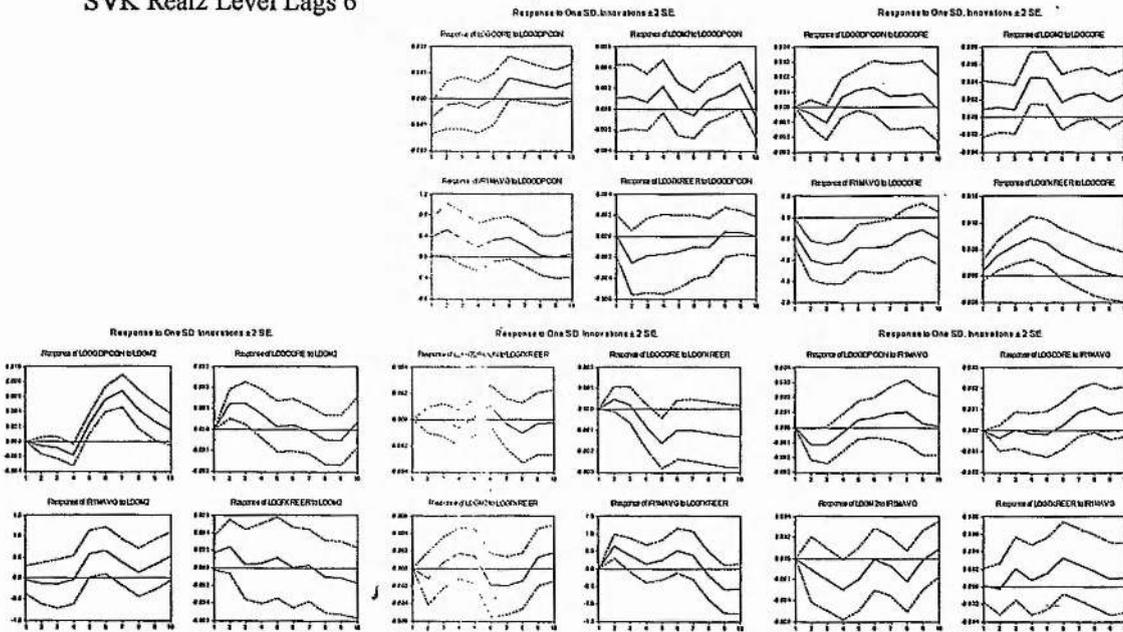
Chapter 4: Institutional constraints on policy discretion - central bank independence

4.1 Introduction

Within the overall framework of the thesis, this chapter aims to conduct an in-depth analysis of central bank independence in four advanced transition countries, but also, following Berger and de Haan (1999), it also aims to use the results of the analysis to evaluate some of the underpinning theories and indices of central bank independence. The decision to utilise a sample of just four countries resulted from scepticism about the value of econometric exercises in this case, not to mention that several such exercises already conducted for transition countries. Even if one believes in the value of such an approach, the transition environment is not suitable for such calculations, as the relevant laws changed frequently and there have been significant changes related to individual fiscal years. Also, the decision to focus on a sample of four countries effectively precludes econometric analysis of the relationship between central bank independence and various macroeconomic indicators.

The most important objection against quantitative analysis though is wider. It is the ambition of the chapter to demonstrate that actual central bank independence in transition is substantially influenced by other factors than those captured by existing legal indices, quite apart from the methodological and practical problems of the indices. It is indicative of a need for a more nuanced understanding of central bank independence that all quantitative measurements of it for transition countries – ranging from Siklos (1999) and Lybek (1999) to

Loungani and Sheets (1997) and Maliszewski (2000) – felt a need either to construct a new index or at least to add significant new dimensions to the existing ones.

Ultimately, an in-depth analysis of central bank independence in a small sample of countries should be able to expand our understanding not only of what happened in the countries concerned, but also what implications this has for the theory in general. In order to achieve this, the chapter explores not only the well-known indices of legal independence of central banks and their deficiencies, but tries to look beyond to other determinants of actual central bank independence. It focuses, in particular, on the following topics reflected in the structure of the chapter:

- legal and constitutional factors affecting independence of central banks
- the rule of law, personal independence and political role of central banks
- central bank autonomy in exchange rate policy
- exogenous factors contributing to effective central bank independence

On the other hand, the chapter leaves aside two issues often discussed together with independence of central banks. One is the effect of centralised wage bargaining and the other transparency and accountability of central bankers. In both cases, the rationale for their absence is based on the overall difficulty of their measurement and lack of reliable data in transition countries.

It also does not deal with wider underpinnings of central bank independence – with theories, such as those of Posen (1995), Maxfield (1995), Hayo (1998) or McNamara (2002) that postulate a need for wider social support and/or support by domestic and foreign investors for prudent monetary policies and low inflation as a precondition for maintenance of central bank independence and low inflation. To test them in the Central European countries would be worthy of a thesis of its own and would require access to political and polling data that the author of the thesis does not have.

4.2 CBI – what do legal indices tell us?

To understand the developments in central bank independence during 1990s and 2000s, it is important to remember that during most of the communist period, central banks in the region existed only in name. State Bank of Czechoslovakia, Hungarian National Bank and National Bank of Poland were the so-called monobanks (de Melo et al., 1997) – they combined central and commercial banking functions.

It was only in the late 1980s that true central banks became established again in Central Europe - Hungary in 1987, Poland in 1989 and Czechoslovakia in 1990. These changes required substantive amendments of the existing laws, so new laws on central banks were written prior to this action. The laws were all passed during the period of one-party rule without democracy or true rule of law. Nonetheless, they established some measure of autonomy for central bankers. Since they were in force only for a brief time and/or during the period of one-

party rule, it is superfluous to analyse them. After the change of the political regime, change to the central bank law was considered vital in all four countries.

In Poland, several substantial amendments of the NBP law occurred in the early 1990s. In Hungary, a new law became effective in December 1991. In Czechoslovakia, the new law came into effect in February 1992. These laws were generally based on the Bundesbank law and the law on the Austrian National Bank. (Siklos, 1994) They were crucial in establishing a relatively high level of independence. Principal features of these laws conducive to independence were the following:

- relatively long terms of office
- well-defined appointment procedures
- definitions of monetary policy objectives, usually in terms of internal and external monetary stability
- general autonomy in the conduct of monetary policy
- limitations on central bank lending to the government.

On the other hand, particularly in Hungary and Poland, there were still some important features limiting autonomy:

- lack of autonomy in exchange rate policy in Hungary and Poland
- short or not well-defined lengths of term of office in Hungary and Poland (later also in Slovakia)
- need for parliamentary approval of monetary policy in Poland.

Under these laws, central banks of the region became powerful political and economic players that played crucial roles in economic reforms and the preservation of macroeconomic stability during the following decade.

During the following period of the early and mid 1990s, the legal position of central banks in all four countries remained largely unchanged. New laws were passed in the Czech Republic and Slovakia following the dissolution of Czechoslovakia, but they largely reflected the Czechoslovak law. In Hungary, minor changes were passed that marginally increased central bank independence.

In the late 1990s and early 2000s, major changes in central bank law were passed in all four countries in order to achieve compliance with the Maastricht Treaty. The Maastricht Treaty requires all states that wish to join EMU to grant considerable central bank independence. Even though central banks in Central Europe had already been quite independent, the following changes were usually required to make them fully compatible with the Maastricht Treaty:

- complete ban on central bank credit to government
- making price stability the only objective of central banks

Therefore, existing central bank statutes had to be modified. Requisite changes took place in 1997 in Poland. in 2000 and 2002 in the Czech Republic, in 2001 in Slovakia and in 2001 in Hungary. However, the need to satisfy the Maastricht

criteria and to amend the central bank acts opened a 'Pandora's box' - an opportunity to change the statutes in other ways. Political players in the Czech Republic, Poland and Slovakia used it to weaken the actual autonomy of the central bank and the autonomy of its career officials from the current governing majority or even attempted to use it to weaken overall central bank independence. (However, proposals included in the latter category were usually defeated eventually as they would contradict the EU accession criteria.) This can be seen as a backlash against central banks, which were perceived as too powerful and too independent. The weakening of central bank autonomy usually meant changes in the make-up of the bank board:

- in Poland, key decision-making powers were switched from a bank board made up of bank officials to a Monetary Policy Council, where the bank president is only one of ten members and the remaining nine are outsiders appointed by three centres of political power in the country.
- in the Czech Republic, the power to appoint the bank board was switched from president to several centres of power (both houses of parliament and the president) though this was later reversed
- in Slovakia, three out of eight members were explicitly designated as external members and the ultimate veto power of the Cabinet over all appointments for the board was preserved
- in Hungary, a similar veto power of the prime minister remained as well

The ultimately unsuccessful attempts to circumscribe central bank independence involved the following amendments of the central bank act, which reached

various levels of approval (by the government, by one house of the parliament etc.):

- in Czech Republic, a proposal that the operating budget of the bank should be approved by the parliament
- in Poland, a proposal that those nominating bank board members should have the power to recall them at their own discretion
- in Slovakia, a proposal that the government should have the power to appoint half of the bank board directly

Indices developed for measurement of legal independence provide a useful shorthand for much of these changes. Tables 4.1-4.3 present the breakdown of values assigned within the framework of Grilli et al. (1991) and Cukierman (1992).[1] During transition, the legal framework for central banking in Czech Republic, Hungary, Poland and Slovakia underwent repeated and significant changes. To provide an accessible picture, the evaluation is limited to major developments where the provision influencing the index changed. Additionally, the laws passed during the communist period splitting the monobanks and creating true central banks were not evaluated, because the rule of law was essentially non-existent during the communist period and with the exception of Poland, they were replaced by new central banking laws in 1991 and 1992. In case of Poland, a completely new law came into effect only in 1998 and the 1989 law, amended substantially, was valid until then. In this case, concurring

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[1] See Chapter 1 for details of both indices and their relevance.

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with the decision made by a Polish economist (see Maliszewski, 2001), the 1992

version was chosen as the representative one.

Table 4.1: Cukierman index – Central European countries 1991-2001

	Czecho slovaki a 1992	Czech Republ ic 1993	Czech Republ ic 2000	Czech Republ ic 2002	Slovak ia 1993	Slovak ia 2001	Hungar y 1991	Hungar y 2001	Poland 1989/9 2 version	Poland 1998
term of office	0.75	0.75	0.75	0.75	0.75	0.5	0.75	0.75	0.75	0.75
appointme nt procedure	0.25	0.5	0.25	0.5	0.5	0.5	0.25	0.25	0.5	0.5
conditions of dismissal	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
incompati bility clause	1	1	1	1	1	1	0	1	1	1
policy autonomy	1	1	0.66	1	1	1	0.66	1	0.66	1
conflict resolution	1	1	1	1	1	1	0.8	1	0.4	1
involveme nt in budget	0	0	0	0	0	0	1	1	1	1
statutory objective	1	1	1	1	1	1	1	1	1	1
limits on advances	1	1	1	1	1	1	1	1	1	1
limits on securities	0.66	0.66	1	1	0.66	1	0.66	1	0.66	1
limits on decision	1	1	1	1	1	1	1	1	1	1
limits on borrowers	1	1	1	1	1	1	1	1	1	1
type of limits on credit	0.33	0.33	1	1	0.33	1	0.33	1	0	1
limits on maturity	1	1	1	1	1	1	1	1	0	1
limits on interest rate	0.25	0.25	1	1	0.25	1	1	1	0.25	1
limits on primary mkt	1	1	1	1	1	1	1	1	1	1
LVAU	0.75	0.77	0.84	0.88	0.77	0.86	0.79	0.93	0.69	0.94
LVAW	0.82	0.84	0.88	0.90	0.84	0.89	0.81	0.94	0.80	0.95

Source: author

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Table 4.2: GMT index (Political criteria) – Central European countries 1991-2001

	Czech oslova kia 1992	Czech Repu blic 1993	Czech Repu blic 2000	Czech Repu blic 2002	Slova kia 1993	Slova kia 2001	Hung ary 1991	Hung ary 2001	Polan d 1989/ 92 versio n	Polan d 1998
1	0	0	0	0	0	0	0	0	0	0
2	1	1	1	1	1	0	1	1	1	1
3	0	0	0	0	0	0	0	0	0	0
4	1	1	1	1	0	0	0	1	0	1
5	1	1	1	1	1	1	1	1	1	1
6	1	1	0	1	1	1	1	1	0	1
7	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	0	1
Sum	6	6	5	6	5	4	5	6	3	6

Source: author
Note: 1: governor not appointed by the government, 2: governor appointed for more then five years, 3: no board member appointed by the government, 4: board appointed for more then five years, 5: no mandatory government representative on the board, 6: government/parliamentary approval of monetary policy is not required, 7: statutory responsibility to pursue monetary stability, 8: presence of legal provision supporting the Bank in conflicts with the government

Table 4.3: GMT index (Economic criteria) – Central European countries 1991-2001

	Czech oslova kia 1992	Czech Repu blic 1993	Czech Repu blic 2000	Czech Repu blic 2002	Slova kia 1993	Slova kia 2001	Hung ary 1991	Hung ary 2001	Polan d 1989/ 92 versio n	Polan d 1998
1	1	1	1	1	1	1	1	1	1	1
2	0	0	1	1	0	1	1	1	0	1
3	1	1	1	1	1	1	1	1	0	1
4	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1
7	0	0	0	0	0	0	2	2	0	1
Sum	5	5	6	6	5	6	8	8	4	7

Source: author
Note: 1: direct credit facility is not automatic, 2: direct credit facility is at the market interest rate, 3: direct credit facility is temporary. 4: direct credit facility is of limited amount, 5: the bank does not participate in the primary market for public dept, 6: the discount rate is set by the central bank, 7: supervision of commercial banks is not entrusted to the central bank (2) or not entrusted to the central bank alone (1)

Values in the indices reflect primarily the following factors:

- relatively long terms of office though with several exceptions reflected in the data
- well-defined appointment and recall procedures, but appointments made everywhere primarily by legislative or executive branch
- definition of monetary policy objective, usually in terms of internal and external monetary stability, later replaced by explicit price stability objective required by the Maastricht Treaty
- instrument independence and arguably goal independence of all central banks in the sample
- limitations on central bank lending to the government, to be completely forbidden later as required by the Maastricht Treaty
- need for parliamentary approval of monetary policy in Poland until 1998

Tables 4.4-4.6 present international comparison of legal central bank independence. The comparison is between values in Central European countries in 1990s and early 2000s and values in developed countries during 1980s. The reason for temporal mismatch is that the data for industrial countries in 1990s are not always available and also reflect changes implemented in the run-up to EMU.

It is clear that the level of legal independence enjoyed by central banks in Central European countries was very high from the very start. In the Cukierman index, all the value for Central European countries are above any value of developed countries during 1980s, including West Germany and Switzerland.

Even though that is not true in the GMT index, the values are still among the

highest.

Table 4.4: International comparison of the unweighted Cukierman index

Poland 1997	0.94
Hungary 2001	0.93
Czech Republic 2002	0.88
Slovakia 2001	0.86
Czech Republic 2000	0.84
Czech Republic 1993	0.77
Hungary 1991	0.77
Slovakia 1993	0.77
Czechoslovakia 1992	0.75
Poland 1989/92 version	0.69
Switzerland	0.68
West Germany	0.66
Austria	0.58
United States	0.51
Denmark	0.47
Canada	0.46
Netherlands	0.42
Ireland	0.39
Luxembourg	0.37
Iceland	0.36
Britain	0.31
Australia	0.31
France	0.28
Sweden	0.27
Finland	0.27
New Zealand	0.27
Italy	0.22
Spain	0.21
Belgium	0.19
Japan	0.16
Norway	0.14

Source: Cukierman (1992) and preceding tables

Table 4.5: International comparison of political independence (GMT index)

6	Germany	Czechoslovakia, 1992
	Netherlands	Czech Republic 1993
		Czech Republic 2002
		Hungary, 2001
		Poland, 938/1997
5	Switzerland	Czech Republic 2000
	USA	Slovakia, 1993
		Hungary, 1991
4	Canada	Slovakia 2001
	Italy	
3	Australia	Poland, 1989/92 version
	Austria	
	Denmark	
	Ireland	
2	France	
	Greece	
	Spain	
1	Belgium	
	Japan	
	Portugal	
	UK	

Source: Grilli et al. (1991) and preceding tables

Charts 4.1 and 4.2 document development of both indices during the 1993-2001 period. They show that, with the exception of Poland, the stylised fact about independence is the high initial level, which was slightly increased at the end of 1990s and beginning of 2000s to comply with the Maastricht criteria. Poland experienced a more dramatic increase in 1997, reflecting both lower base and the decision to change the institutional set-up radically.

Table 4.6: International comparison of economic independence (GMT index)

8		Hungary, 1991
		Hungary, 2001
7	Canada	Poland, 1997
	Germany	
	Switzerland	
	US	
6	Australia	Czech Republic 2000
	Austria	Czech Republic 2002
	Belgium	Slovakia 2001
5	Denmark	Czechoslovakia, 1992
	France	Czech Republic, 1993
	Japan	Slovakia, 1993
	UK	
4	Ireland	Poland, 1989/92 version
	Netherlands	
3	New Zealand	
	Spain	
2	Greece	
	Portugal	

Source: Grilli et al. (1991) and preceding tables

The indices also reveal, if analysed in more detail, that the prospect of EU and EMU was more of a double-edged sword for central bank independence than appears at the first glance. While the EU accession was undoubtedly the driver behind the total ban on central bank credit to government, it also opened the 'Pandora's Box', which, in the Czech Republic and Slovakia in particular, allowed a decrease in CBI measured by legal indices in other areas.

Chart 4.1: CBI in Central Europe as measured by the GMT index – 1993-2001[2]
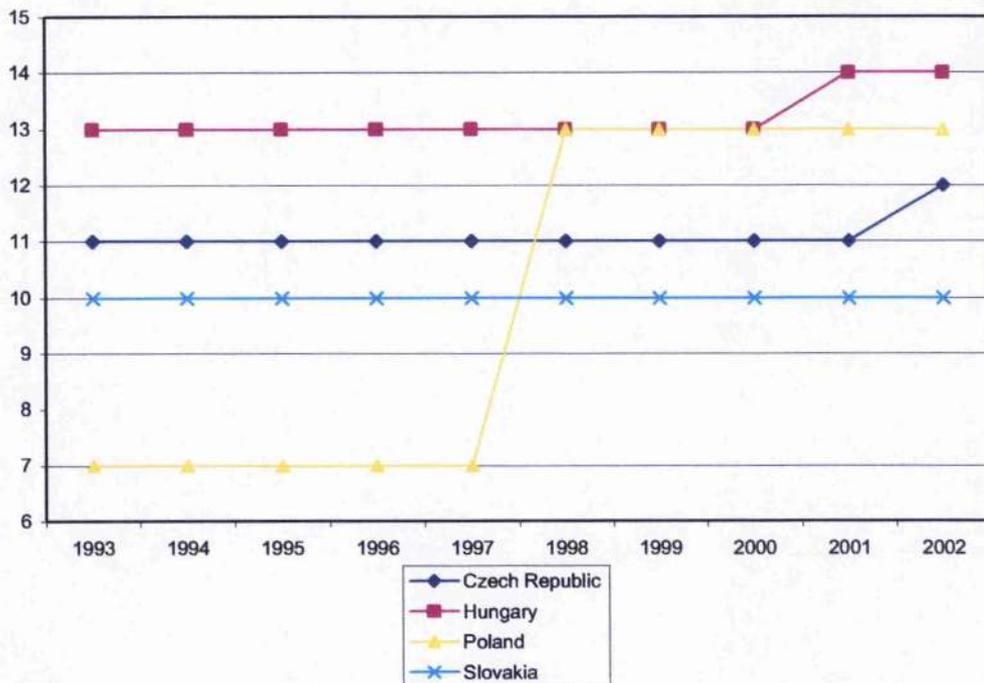
Source: author

Many pages could be devoted to comparing results with other authors who have compiled the indices for the same countries (e.g. Dvorsky, 2000 and Maliszewski, 2000, but also Siklos, 1994 and Radzyner and Riesinger, 1997); however a detailed analysis would add little value to our understanding of the central bank independence in general or specifically in these countries. On the other hand, a brief summary can be useful in pointing to some systematic problems with the indices.

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[2] In order to present a concise summary, the political and economic independence are added together for the purposes of the chart. However, previous tables present disaggregated data.

Chart 4.2: CBI in Central Europe as measured by the Cukierman index – 1993-2001
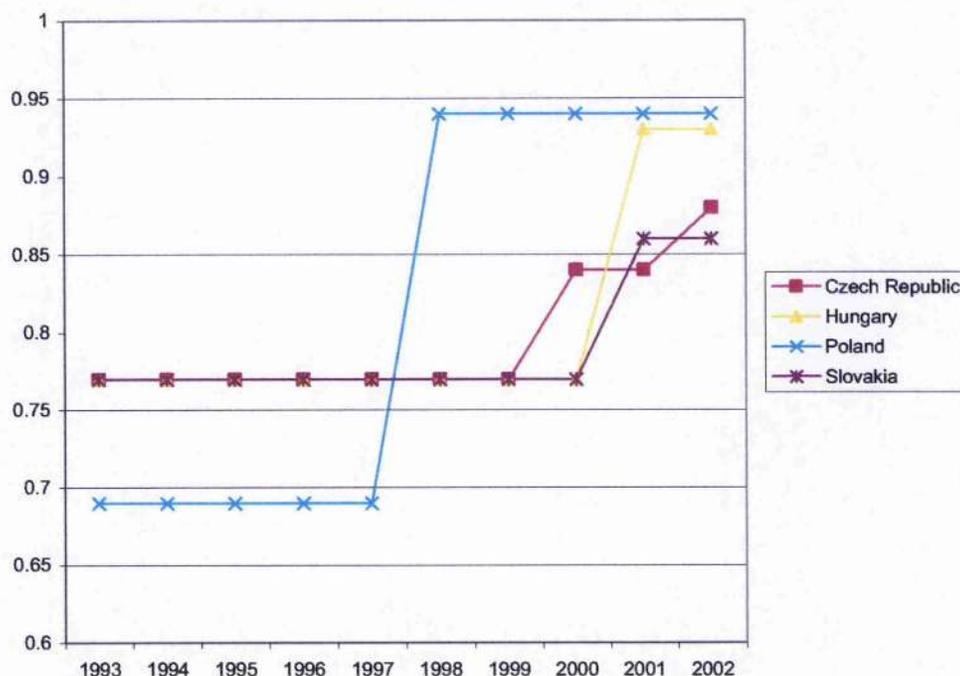
Source: author

Divergence in assessment can reflect either factual mistakes (e.g. when Dvorsky, 2000 or Maliszewski, 2000, claim that Czech or Slovak central banks are not at all or not solely responsible for banking supervision). In many cases though the problem is in the need for interpretation of criteria, betraying the fact that the existing indices were not constructed deductively from a unified and general theoretical framework, but rather sought to generalise structure and differences between central bank laws in the sample at the time when the index was being constructed.

For example, there is no single way to assign values for appointment of the governor in the Cukierman index. The index considers appointment by:

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- central bank board

- council composed of members from executive and legislative branches as well as from central bank board

- legislative branch (Congress, king)

- executive branch (council of ministers)

- one or two members of the executive branch (PM, finance minister)

In Hungary, the governor is proposed by the prime minister and appointed by the president, who is elected by a parliament and is a largely non-partisan and ceremonial position. In Slovakia, the governor is proposed by the council of ministers, elected by the parliament and appointed by the president, who is a directly elected, but generally non-partisan and ceremonial figure. In the Czech Republic, the governor is appointed by the president, who is elected by a parliament and is a largely non-partisan and ceremonial position.

In Poland, the governor is elected by a parliament on the proposal of the president, who is a directly elected, powerful figure, who however has to co-operate with a prime minister and a council of ministers. Dvorsky (2000) takes the position that in the Czech and the Polish case, the score based on the legislative branch coding should be assigned, whereas in Hungary and Slovakia, the coding based on the executive branch should be assigned, with the following reasoning:

"... presidents of state typically are not involved in economic policy and are generally elected for a longer term than governments. Furthermore, appointment by parliament seems to be preferable to government appointment because the opposition parties have to be included in the discussion. Once governments come into play, even if only having the right to propose or recommend a candidate, there are... numerous possibilities to delay or complicate the appointment of central bank officials". (p. 11)

The argument is slightly muddled, reflecting an uncertainty about the theoretical underpinnings of the index that goes back to Cukierman (1992) – for problems in the original index, see. for example, why should a king be coded as a legislative branch?

To come back to Dvorsky - why the inclusion of opposition parties in discussion of appointments or a longer electoral cycle for those who appoint them should improve the independence of a central bank is not obvious. Actually, if one believes in the importance of checks and balances (see below) and if one understands that the same procedures have to be followed (with the exception of Poland) for appointment and removal, then one could hypothesise that a more complicated procedure involving a higher number of mutually independent veto points should increase actual central bank independence, and this would put Slovakia, Poland and Hungary on a par (with two mutually independent veto points) and Czech Republic behind them with one veto point. Alternately, one could argue that even if recall procedures are ignored, a higher number of veto points should mean higher central bank competence and independence by weaning out overly partisan and incompetent candidates, with the same result. Or one could argue the other way around or in a completely different way since there is little indication in Cukierman (1992) of a unified theoretical framework for interpreting the indices.

Additionally, the wording that parliamentary appointment is 'preferable' indicates another muddle – a fusion of positive observations of legal independence with normative views about what makes for better monetary policy, confirming criticism of central bank independence indices by Walsh (1993).

The point of this detailed analysis of one, albeit one of the most problematic, criteria was to show why comparative analysis of evaluations of central bank independence in Central Europe would be lengthy but not very useful, and to demonstrate that because of systemic problems in their construction, the indices constitute a flawed instrument (though a useful one in summarising much of the development in a very concise form).

The results of another element of research presented here can serve to identify more of the problems. The research is inspired by Masciandaro and Spinelli (1994) who asked central bankers from ten industrial countries to assign values to criteria developed by Grilli et. al (1991) according to their real importance for central bank independence. They were asked to assign ten to a criterion of paramount importance for central bank independence and zero for a criterion of no importance.

Table 4.7: Importance of selected criteria of central bankers according to central bankers[3]

Values	Individual values: Central Europe[4]	Mean: Central Europe	Standard deviation Central Europe	Mean: industrialised countries	Difference between the two means
Political independence					
1. central bank governor not appointed directly by government	10,10,6,3	7.25	2	5	2.25
2. central bank governor appointed for more than 5 years	10,8,5,5	7	1.4	6	1
3. rest of the board not appointed directly by the government	10,10,5,3	7	2.1	4	3
4. no govt. representative on the board	8,8,0,0	4	2.7	6	-2
5. no government approval of monetary policy	10,10,10,10	10	0	9	1
6. requirement in the central bank law that central bank pursue monetary stability	10,9,5,0	6	2.6	9	-3
7. provisions in the central bank law on conflict resolution	10,0,0,0	2.5	2.9	7	-4.5
Economic independence					
central bank credit to the govt.					
1. not automatic	10,10,10,10	10	0	7	3
2. market interest rate	10,10,10,5	8.75	1.4	5	3.75
3. limited duration	10,10,10,8	9.5	0.6	6	3.5
4. limited amount	10,10,10,8	9.5	0.6	7	2.5
5. central bank not in the primary govt. debt market	10,10,10,10	1	0	6	4
6. interest rates set by central bank	10,10,10,10	10	0	9	1
7. bank supervision outside central bank	8,5,0,0	3.25	2.3	4	-0.75

Source: author based on questionnaire responses, Masciandaro and Spinelli (1994)

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[3] One of the indicators (length of term of office of board members) introduced by Grilli et al. (1991) was not used by Masciandaro and Spinelli (1994) and we follow their approach to ensure uniformity of methodology.

[4] Values in individual rows are arranged in the descending order, not by respondents.

Here, the research is extended to central banks from Central Europe[5] and both surveys are compared in table 4.7 The first column contains individual values from central bankers in Central Europe. The second column contains the mean of these values and the third the standard deviation. The fourth column contains the mean of the responses of central banks from industrialised countries, and the difference between the mean values for central banks in transition and industrialised countries is in the last column.

Central bankers in Central Europe feel very strongly about four particular elements of central bank independence.[6] Generally, surveyed central bankers from transition countries gave ten to these criteria, suggesting the strength of consensus. Their view is also shared by the central bankers from industrialised countries based on Masciandaro and Spinelli (1994). First of all, no governmental approval of monetary policy should be required. This criterion can be roughly identified with goal independence, the ability of the central bank to set the final goals of monetary policy (see Debelle and Fischer, 1995). Secondly, the central bank should set discount and other major interest rates. This criterion, on the other hand, can be approximately identified with instrument independence (freedom to choose means to achieve a given monetary policy end (ibid.)). Thirdly, there should be restrictions on central bank credit to government. This comprises four criteria of economic independence concerning duration, amount, interest rate and automatic nature of central bank credit to the government. And finally, the central bank should not be active in the primary

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5 Vicegovernors responsible for monetary policy filled in a questionnaire in each of the four countries in 1999 and 2000.

market for government debt. Participation of the central bank in the primary market could serve to circumvent limits on direct credit and also would distort the market.

Based on these results, two pillars of true independence as perceived by central bankers of surveyed transitional and industrial countries can be identified: goal independence with freedom to implement the chosen goal and a well-defined relationship of the central bank and the government concerning credit to the government, which gives the central bank the power to determine the terms of the relationship and limits the extent of central bank assistance to the budget

On the other hand, tree criteria were identified during the survey as badly or imprecisely phrased: that no representative of government be present on the central bank board, a requirement that the central bank pursues monetary stability and a requirement that the term of the central bank governor is longer than five years. All of these criteria show a wide spread in values. A large part of this is because of the imprecise nature of both criteria. In case of the government representative, it is important whether the representative has an advisory position or a vote. For example, a central banker from a transition country stipulated that in the former case, the value should be ten and in the latter zero. Another offered an explanation of why a criterion of extreme importance in industrial countries (it was ranked as first in the political criteria in Masciandaro and Spinelli (1994) was considered not that important in transition countries. It is the criterion of whether the central bank law contains

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[6] The definition of consensus used here is that all or all but one values fall within a range of 2

provision requiring the central bank to pursue monetary stability. A central banker from a transition country rated this criterion 0, but noted that the requirement should be for price stability. Another one noted that while giving this criterion five points, it would receive ten if it were for price stability. Consequently, it can be noted that if the criterion were price stability, it would be among the very important criteria – creating a third pillar of a clearly-defined mandate for a central bank. The insistence on the price stability criterion can be explained by the fact that all four economies are very small and very open and so the external monetary stability (stable exchange rate) and internal monetary stability (low inflation) can easily be conflicting, weakening the central bank's mandate to pursue low inflation.

The same is true to a certain extent for the length of the governor's term. The criterion of term of *more* than five years was originally introduced in this form to measure whether the term of the central bank governor is longer than the electoral cycle, which lasts five years in many countries. (Grilli, Masciandaro and Tabellini, 1991) However, in all four countries in our survey, the length of cycle is four years. Therefore, five years is enough to fulfil the *raison d'être* of this criterion and this is reflected in the relatively low values given to this criterion in its present form.

While the central banks in Masciandaro and Spinelli (1994) considered the 14 criteria to be sufficient, central bankers from transition countries proposed some

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and their mean is at least 9.

additions to the criteria, reflecting their experience of transition. There were five proposed additions, which can be divided into three groups.

The first group reinforces the first pillar of central bank independence that measures goal and instrument independence. There is only one proposal in this category – a criterion measuring specifically whether the central bank can determine exchange rate policy. The second group reinforces the second pillar of central bank independence that restricts central bank financing of the budget. One proposal introduces a criterion of whether there are any (quasi) fiscal measures (subsidies) by the central bank. Another proposes banning direct credit altogether. The third group introduces a new pillar – budget independence. This contains criteria such as who approves the budget (in all four countries, it is the bank board) or whether the law is specific on how central bank profit should be distributed.

If the results of the research are used to evaluate indices by both Grilli et al. (1991) and Cukierman (1992), one finds that they are both robust and deeply flawed in measuring central bank independence.

The most important indicators of robustness of Grilli et al. (1991) and Cukierman (1992) are the focus on goal and instrument independence and the focus on central bank financing of the government. The analysis of their most important shortcomings follows.

The first major shortcoming is a lack of precision in defining certain criteria, particularly concerning the objective of monetary policy, the presence of a government representative on the board and the length of term of the governor and other bank officials (see above). These invalidate the usefulness of these criteria for measurement of central bank independence. Formulation of these criteria should also be based on the rationale for their inclusion in the index.

As far as length of term is concerned, those constructing the index should clarify whether they believe (as Cukierman, 1992 and Grilli et al., 1991 do) that the independence of the central bank increases not in a linear relationship with the length of term of policy-makers in the central bank, but that it is only important for the length of term to be greater than the electoral cycle. In that case, criteria should be constructed accordingly. If they believe there is linear relationship, they should also act accordingly.

In case of a government representative on the board, the criterion should distinguish whether the issue is the physical presence of a government representative in the board meetings or the vote the representative can use to influence actual outcomes. Values should be assigned accordingly.

A similar approach applies to the issue of whether monetary/price stability should be in the central bank law as the final goal. Two factors have to be taken into account when considering this issue. First of all, a goal of monetary/price stability protects the central bank from political or other pressures aimed at using the short-term Phillips curve to increase output and employment above

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their natural rate. This is true for both monetary and price stability. However, in the case of an open economy, only price stability provides a clear goal. Monetary stability does not provide clear guidance as to whether external or internal stability should have priority. Any index should be clear about what is evaluating and why.

The second major problem with the most prestigious indices is omission of some extremely important elements of central bank (in)dependence, namely exchange rate management and budget independence. For a small open economy, the framework for exchange rate management is of great importance for actual central bank independence, but this is not reflected in the indices – a point to which we return in a separate section.

Budget independence for a central bank has two dimensions that can be important for central bank independence. First of all, a large part of the budget of many central banks is spent on the execution of monetary policy, particularly if the bank is sterilising significant financial flows or intervening in the foreign exchange markets. If the budget is determined by the government or parliament, there is a significant scope for influencing the actual execution of monetary policy. The relevance of this issue depends on the particular nature of a given economy and the way its monetary system is set, but it is likely to be relevant across the board. A similar argument can be applied to the personnel budget or budget for running costs – if the government or parliament determine these, there is a significant scope for influencing the bank's officials. On the other hand, there is the issue of democratic delegation, control and accountability. The

central bank uses public resources, in form of budget subsidies or seigniorage revenues. Therefore, a trade-off between independence and accountability is necessary.

Both criteria mentioned above also illustrate, however, another important issue – the different importance of some criteria for various countries. The importance of exchange rate independence for a central bank rises with the openness of the economy and it is, therefore, very difficult to pinpoint accurately. Whether the ECB can determine its exchange rate policy is much less important for its independence than is the case with the National Bank of Slovakia. Budget independence is much more important in countries where a turbulent economic and political climate makes it easier for politicians to politically manipulate the central bank budget without public outcry. Therefore, indices should take into account this factor and consider assigning different weights to these factors in different groups of countries.

Additionally, the traditional indices are difficult to use if the legal framework changes frequently and in a way which is not obvious. The most important example relates to fiscal policy, where all laws applicable since 1992 contain strict limitations or even outright abolition of central bank credit to government. However, in the early years, the Czech and Hungarian laws contained temporary provisions raising the limits. Even that was not enough as the annual budget law in Hungary raised the limit even further in 1994 against protests by the central bank, and a similar situation occurred repeatedly in Poland in early 1990s.

4.3 Legal and constitutional factors affecting independence of central banks

The indices of legal independence ignore several very important elements that influence how legal independence translates into actual independence. As McCallum (1995), Goodman (1991), Posen (1995), Forder (1996) among others noted, what is granted can be taken away. This applies both to statutes and individuals. Therefore, this section focuses on areas not analysed in indices such as Grilli et al. (1991), Alesina and Summers (1993), Parkin and Bade (1978) or Cukierman (1992) that determine the strength and limits of commitment to legally and actually independent central bank.

4.3.1 Checks and balances and constitutional protection of central bank independence

As pointed out by Moser (1999) and Keefer and Stasavage (1999) among others, existence of multiple veto points for passage of legislation is a way of strengthening actual CBI by making it more difficult and less likely that the independence, once granted, will be taken away. They show that existence of checks and balances has a significant influence on both actual and legal independence.

It is difficult to add to the literature based on Central European experience. Checks and balances are quite weak there – lower chambers of parliaments dominate the legislative process. Even though upper chambers (not existent in Slovakia) and presidents can usually return legislation to the lower chamber, the veto can be and frequently is overridden with simple majorities. The only

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exception is Poland, where 60% of present deputies of the lower chamber are needed to override a presidential veto.

In place of checks and balances, Central European countries have adopted a similar mechanism – the constitutional protection of central bank independence. Central bank indices are generally based on the statute-reading methodology, but they ignore a statute that is even more important – the country's constitution. In all but a few countries, constitutions are much harder to change than laws both politically (there is a resistance towards amending them very often) and legally (higher quorum or even more complicated special amendment mechanisms). Therefore, inclusion of some form of central bank independence into a constitution confers a significantly higher degree of protection and, consequently, a significantly higher degree of effective central bank independence. It would, therefore, be understandable, if constitutional protection of central bank independence were a serious factor in empirical analysis. This has not been so.

This section provides an answer to this puzzle by finding that in traditional developed countries (of Europe), on which CBI research has concentrated, there is no constitutional protection of central bank independence whatsoever, so it made no sense for economists to deal with the issue. The section will also document that in the countries of Central and Eastern Europe, particularly in the countries that are the focus of the thesis, the level of constitutional protection is rather high.

Based on available data, valid constitutions for 27 European countries have been analysed[7]. The constitutions analysed are based on documents provided by the International Constitutional Law project, which collects constitutions of the world. These may not be fully up-to-date in some transition countries, so actual constitutional texts for the four Central European countries were obtained separately for cross-checking purposes. To quantify the results, an index of constitutional protection of CBI was constructed, but its purpose was to get results into a digestible format rather than to get numbers that could be used for further statistical analysis.

The index has four parts, which consist of answers to the following questions:

1. Is monetary policy or central bank mentioned in the constitution? (YES=1, NO=0)

2. Is the central bank management appointed purely by parliament (though possibly indirectly) (YES or not mentioned=0, NO=1)

3. Is central bank independence mentioned in the constitution? (YES=1, NO=0)

4. Is price or currency stability mentioned as a principal central bank goal in the constitution? (YES=1, NO=0)

The first question measures the presence of the central bank in the constitution, not independence. It was included to show that in many countries, there is absolutely nothing on the central bank or monetary policy in the constitution.

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[7] Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland.

The other three measure the constitutional protection of CBI. Their logic is the following:

- the second criterion looks at the credibility of the commitment to personal independence and the number of veto players. If a constitution gives an actor independent of the parliament the power to appoint central bank management, then even if the parliament decides to amend the central bank law, it has tied its hands as far as the personal independence of the central bank is concerned unless it can change the constitution. Since councils of ministers, in many cases, depend on parliamentary confidence, they can be seen, in such cases, as extensions of the parliament. On the other hand, presidents elected for a predefined period are independent of the parliament

- if the central bank's independence is mentioned in the constitution, it is a higher order of protection of functional independence

- if the price or currency stability is mentioned as principal goals in the constitution, it is a higher order of protection of goal independence (by prescribing a goal which is consistent with low inflation)

The results of the analysis are robust and unequivocal:

- out of 27 European countries studied, 15 can be classified as developed ones, 12 as transition countries

- out of 15 developed countries, all have index value of 0 or 1. In other words, the highest actual level of constitutional protection of CBI is constitutional presence, which, as already mentioned, is actually no measure of protection

- on the other hand, out of 12 transition countries in the sample, nine have an index value of 2 or more. In other words, ¾ of transition countries have some measure of constitutional protection of CBI

- in the group of nine countries with constitutional protection of CBI, the average value of index is relatively high at 3

The results are summarised in the following tables:

Table 4.8: Countries with constitutional protection of CBI

Index value	Country
4	Czech Republic
	Poland
	Russia
3	Croatia
	Estonia
	Hungary
2	Lithuania
	Slovenia
	Slovakia

Source: constitutions of individual countries, author's calculations

Table 4.9: Aggregate values for index of constitutional protection of CBI

	European countries – 27		Developed countries - 15		Transition countries – 12	
Index criterion	Average value	number of countries	average value	number of countries	average value	Number of countries
1	0.74	20	0.67	10	0.83	10
2	0.22	6	0	0	0.5	6
3	0.22	6	0	0	0.5	6
4	0.22	6	0	0	0.5	6
Average index	1.41		0.67		2.33	

Source: constitutions of individual countries, author's calculations

This analysis shows that while constitutional protection of central bank independence does not exist in the developed countries of Western Europe, it has a relatively strong position in transition economies, being of particular importance in the four countries on which this thesis is focused. Czech Republic and Poland have the highest index value of 4, Hungary has the index value of three and Slovakia has the weakest level of constitutional protection of CBI (index value 2). Without constitutional protection, the government can legislate away central bank independence if it is willing to incur the political and economic costs of such a move (see Goodman, 1991 and Forder, 1996 for analysis).

However, constitutional protection of CBI changes the situation. A constitutional amendment usually require at least a supermajority in the parliament, often a referendum or some other additional confirmation mechanism. Table 4.10 depicts these mechanisms for the four countries examined in this thesis and compares it with the strength of CBI protection in the current constitution.

Table 4.10: Constitutional amendment mechanisms and CBI protection in the current constitution

Country	Lower Chamber	Upper Chamber	Other mechanism deterring amendments	Index of constitutional protection of CBI
Czech Republic	3/5 of all deputies	3 5 of deputies present	No	4
Hungary	2/3 of all deputies	No upper chamber	No	3
Poland	2/3 of deputies present	1'2 of deputies present	At least 30 days between submission and first reading	4
Slovakia	3/5 of all deputies	No upper chamber	No	2

Source: International Constitutional Law project and author's calculations

As table 4.10 shows, the majorities required for such a change are considerably higher than the standard law-passing majorities and this coincides with a high level of CBI protection in the constitution. Very few governments in the postcommunist history of the region had a sufficient majority to amend the constitution.

Therefore, it can be said that particularly Czech Republic and Poland have a much stronger protection of central bank independence than the central bank law itself would indicate. This is important particularly with regard to the objection raised by Forder:

> "The government can, in principle, legislate to change the basis on which the central bank operates... From this follows a serious complication for the statute-reading approach to the measurement of central bank independence. This is that the threat of legislation should be presumed to influence the behaviour of the bank". (Forder, 1996, p. 46)

Forder is concerned with how the different probability in different countries that the independence can be legislated away influences the way central bankers behave. In this case, central bank independence protected by the constitution is a form of pre-commitment that any government can find very difficult or even impossible to break even if it is willing to incur the political cost.

There has been only one attempt to substantially diminish central bank independence since the current constitutions were passed – in the Czech Republic in 2000 and 2001. The constitutional protection showed its importance. Even though the parliament passed changes in the central bank law reducing the

independence of the central bank in several respects (while increasing them in others to satisfy the Maastricht conditions), the Constitutional Court declared several of them unconstitutional. In Poland, a new government which came to power in 2001, has hinted at changing the central bank law, but has not acted, partially in awareness of the constitutional limitations.

4.3.2 Checks and balances in the appointment process: political complexity of central bank appointments and political vulnerability of the central bank board

Another factor that is largely ignored in analyses of central bank law is importance of the actual appointment procedure of governor and other bank board officials. In Grilli et al. (1991), the criterion is based on whether governor and central bank board are „appointed by government". (Grilli et al., 1991, p. 368) Cukierman (1992) aims to be more sophisticated, but he offers five options[8], focusing exclusively on the person of central bank governor, ignoring the rest of the board (see above).

The table 4.11 depicts current appointment procedures for central bank boards in our sample of four countries. with numbers showing number of officials in the given category.

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[8] 1/ CEO appointed by bank board. 2/ CEO appointed by council composed of members from executive and legislative branches as well as from CB board, 3/ CEO appointed by legislative branch (Congress, king), 4/ CEO appointed by executive branch (council of ministers), 5/ CEO appointed through decision of one or two members of executive branch (e.g. PM or minister of finance).

Table 4.11: Appointment procedures for central bank boards in Central Europe

	Governor	Vicegovernors	Executive directors	Other board members
Czech Republic	1 – President	2 - President	4 – President	-
Hungary	1- President on PM's prop.	3 to 5 – President on Governor's proposal and PM approval	-	3 to 5 President on Governor's proposal and PM approval
Poland	1- Lower House on President's proposal	-	-	3 by Lower House, 3 by President, 3 by Upper House
Slovakia	1 – President on Government's proposal and with Parliament's approval	2 – President on Government's proposal and with Parliament's approval	2 - Government on Governor's proposal	3 - Government on Governor's proposal

Source: central bank laws of Czech Republic, Hungary, Poland and Slovakia

It can be seen that the appointment procedures vary together with the number of veto players[9]. The procedures generally involve some of the following – head of state, head of the executive or the executive, one or both legislative chambers and the central bank governor. The number of veto actors ranges from one to three. The following table depicts how many board members in the four central banks have 1, 2 and 3 veto players involved in their appointment.

Table 4.12: Composition of central bank boards in relation to number of veto players in appointment

Type – number of veto players in appointment	Number of board members of such type
1	16
2	7
3	11

Source: own calculations, based on central bank laws of Czech Republic, Hungary, Poland and Slovakia

The table indicates that there is more than one veto player for more than half of the appointments, which indicated the complexity of the appointment process. In

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[9] The number of actors who have the power to make or veto a nomination.

all cases, where there are two or three veto players, at least two are independent of each other, indicating the existence of checks and balances in the appointment process.

As already mentioned, Dvorsky (2000) implies that the absence of governmental involvement and a lower number of veto players are beneficial by reducing the likelihood of gridlock and depoliticising the process. While the latter is doubtful, the former is likely as evidenced by the Central European experience.

Indices of legal independence traditionally include length of term and manner of appointment as important factors though in the case of Cukierman's index, the focus is exclusively on the governor. This is misplaced as the power is usually vested with the bank board as a whole in most countries (and in all four countries in our sample).[10]

The focus on the length of term is based on the belief that it needs to be longer than an electoral cycle, thus giving top central bankers an assurance they will not face reappointment by the same government in the same electoral cycle. This criterion does not take into account the fact that governor/bank board members facing reappointment are still vulnerable to political pressures during the period that they perceive as immediately influencing their chances of reappointment. In several transition countries, such a period was artificially prolonged by the

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[10] A possible explanation is that Cukierman (1992) used the length of governor's term of office as a proxy for length of term of the whole board, but in that case, it is important to note that in several countries at least some members of the board have or had significantly shorter terms than the governor (Hungary, Slovakia).

government, thus greatly increasing the political vulnerability of the central bank. (see Beblavy, 2001 and Dvorsky, 2000).

In Slovakia, the bank board is supposed to have eight members. However, it has not been completely filled from its establishment in 1993 with the exception of a short period in early 2001. This increased its vulnerability and threatened its independence in several ways:

- there were several periods, when the bank did not have one of two vicegovernors (from April 1994 until May 1995, from July 1999 until March 2000, from May 2001 until January 2002). Since vicegovernors are appointed by the president on the proposal of the government after approval by the parliament, such periods presented an opportunity for the government to play a game of carrot and stick with central bank officials

- five positions on the board (apart from governor and vicegovernors) are filled based on the governor's proposal and government's approval. During the 1993-2001 period, only two or three out of these five positions were usually filled. This also gave the government an opportunity to 'play' a game of carrot and stick with central bank officials, particularly as at least two of these positions are defined in the law as positions of executive directors. It also put additional pressure on the central bank as the bank board had, at times, only five out of eight members. This is the minimum quorum necessary and this fact put additional pressure on the bank to accommodate the government in its

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selection of bank board officials. (An additional factor is that, in such a situation, any board member has an effective veto as his/her absence would mean that the board does not constitute a quorum.)

Similar situations also occurred in the Czech Republic, Hungary and Poland though to a somewhat lesser extent. However, only in the Hungarian case are there real similarities. During the conflict between the Orban government and the Hungarian National Bank governor Suranyi (after Viktor Orban became a prime minister in May 1998). a scenario similar to the Slovak experience was replayed. Under the Hungarian central bank statute, the governor proposes the vicegovernors, the PM approves them and the president appoints them. As the terms of individual vicegovernors expired during 1999[11], their positions were left unfilled as the prime minister refused to endorse the governor's nominations.[12]

Since the governor's term was ending in March 2001 while the government's term of office ended in May 2002, the political logic was clear: waiting with appointments until March 2001 would enable the government to appoint a trusted governor (the Finance Minister Jarai was later appointed, as expected) who, in turn, proposed politically acceptable vicegovernors.

The similarity of the Hungarian and the Slovak case is also in the fact that the Hungarian central bank law stipulates the presence of five members as the minimum quorum for the bank board. Between December 1999 and March

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[11] Gyorgy Szapary – September 1999. Almos Kovacs – December 1999

2001, the board had only five members, thus again giving each member an effective veto power and making the central bank much more politically vulnerable.

In the Czech Republic, vacancies were limited to the first two months of Czech independence, [13] with only one position left unfilled for a more extensive period. Another instance was an 8-month period when the CNB Governor Jozef Tosovsky became a caretaker prime minister until early elections. This, however, was not a case of political vulnerability of the central bank, but rather of its politicisation.

In Poland, there was a substantial period of political vulnerability and chaos after a fraud scandal in 1991 that led to the dismissal of top central bank officials including the governor, the arrest of some of them and their subsequent trial.[14] As a result, the NBP was without leadership between August 1991 and March 1992. This, however, was not because of a political attempt to keep the central bank vulnerable, but due to a political stalemate, which led to two rejections of the president's nominee for the governor's position by the lower house of parliament.

It is not accidental that the possibility of gridlock is related to the number of veto players involved in the decision. In the Czech Republic and for most positions in Poland, the bank board appointments are made by a single person or

[12] Reuters, 10/09/99: Hungary PM blocks central bank VP extension
[13] CTK, 18/02/93: President appoints members of CNB Banking Council

institution. On the other hand. Hungary and Slovakia share a higher number of veto players, creating a higher likelihood of gridlock as well as a greater opportunity to influence central bank behaviour.

4.4 Rule of law, personal independence and political role of central banks

Use of central bank laws and other statutes to assess central bank independence is effective only when those statutes are adhered to. In other words, the rule of law is a necessary condition for central bank laws guaranteeing independence to be meaningful. As indicated above, rule of law in this case means not only adherence to the law, but also that the law is the rule-setting mechanism as opposed to other, more informal norms. Accordingly, this section will focus not only on the rule of law in the 'narrow' sense of the word, but also on other, more informal norms as far as they relate to personal independence of the central bank. Since these norms are impossible to gauge from any written document, experience of the postcommunist decade will be used in the evaluation.

The four countries have generally adhered to the rule of law thus defined. The only significant exception is Slovakia in the 1995-1998 period when the government of Vladimir Meciar ignored several rulings of the Constitutional Court, which led the European Commission to state in 1997 that Slovakia did not at the moment fulfil the Copenhagen criteria of democracy based on rule of law. However, even during this period, this was an exception rather than a rule.

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[14] Reuters: 09/08/91: Poland's chief banker suspended amid scandal, Reuters: 21/09/91: Former

A more interesting picture is provided if one looks, based on the experience of the 1990s, on informal norms governing central bank independence, particularly on personal issues. Three principal issues arise:

- reasons for premature departure of top central bank officials
- politicisation of central banks
- turnover of governors

As mentioned above, the rule of law in the narrow sense of the word was not infringed during the 1990s in relation to the central banks. Therefore, premature departures refer to resignation or removal of top officials before the end of their term of office within the existing law. Reasons for premature departures can be divided into the following groups:

1. Premature removal or resignation following a change of political regime. In Czechoslovakia, Hungary and Poland, the central bank governor (and usually other top officials as well) resigned or were removed following the fall of communism and establishment of new governments. None of the governors appointed before the political change began was in an office a year after the first non-communist government was appointed. (In Czechoslovakia, Jozef Tosovsky replaced Svatopluk Potac, in Hungary Gyorgy Suranyi replaced Ferenc Bartha and in Poland Wladyslaw Bakka replaced Grzegorz Wojtowicz).[15]

Polish bank chief arrested in financial scandal
[15] This was generally legal because these governors were appointed under the laws passed during 1980s that did not have fixed terms of office.

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2. Premature removal because of political conflicts, using a passage of a new law. In Hungary, a new central bank law guaranteeing a high level of independence was passed in 1991. Even though the law did not provide in its transitional provisions for new appointments, the government used its passage to remove the central bank governor Gyorgy Suranyi by not reappointing him under the new law. The reason was that the governor had signed a petition critical of the government. (Siklos, 1994) This was a measure on the verge of legality. The same step was explicitly included in the draft amendment to the National Bank of Poland Act prepared by the Ministry of Finance in 1995 during conflicts between the NBP Governor Hanna Gronkiewicz-Waltz and the Finance Minister Grzegorz Kolodko.[16] However, it was never passed.

3. Premature removal or resignation following a financial or other scandal. In 1991, Grzegorz Wojtowicz, governor of the National Bank of Poland, was removed from his office together with several other top bank officials in relation to a large-scale fraud scandal of the Art-B company. In 1994, Marian Tkac, the vicegovernor of the National Bank of Slovakia, was removed from his office for approving a payment of several million USD based on a fraudulent note and also following a disclosure that he had been an agent of the communist secret police. In 1997, Frigyes Harshegyi and Sandor Czirjak, two vicegovernors of the National Bank of Hungary,

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[16]Reuters: 17/5/95, Polish central bank fears it may lose independence

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resigned following a financial scandal related to loss-making foreign exchange options deals.

4. Resignation under political pressure. There have been two cases, which can be clearly identified as resignations of governors under political pressure. The first is the case of governor of the Hungarian National Bank Peter Akos Bod, who resigned midway through his six-year term of office in November 1994 after being appointed in December 1991. Jozef Tosovsky, governor of the State Bank of Czechoslovakia and then of the Czech National Bank, resigned in November 2000, slightly more than two years into his second term as the CNB head. Both were forced to resign *not* because there were substantive disagreements about desirable monetary policy, but rather because of partisan conflict. In case of Bod, it was the perception that he was a political appointee of the previous government that caused the new Horn government to put enormous public and private pressure on Bod to resign. In case of Tosovsky, the reason was the perception by the heads of the two main parties in the Czech Republic, Prime Minister Milos Zeman and Chairman of the Lower House Vaclav Klaus, that the CNB under Tosovsky was allied with their political opponents – the President Vaclav Havel and the smaller political parties. In both cases, governors at first resisted public criticism and calls for their resignation by government figures and resigned only when it became clear that their autonomy would be circumscribed in a relatively short period or that they would have to face a permanent conflict. In the case of Bod, several seats on the central bank board were soon to be vacant, so that either government appointees would take a majority of seats

on the board or the governor would have to wage a protracted battle with the prime minister. In case of Tosovsky, he resigned when it became clear that an amendment to the central bank law would significantly limit its autonomy.

Therefore, there were several premature departures at the top of Central European central banks during the late 1980s, 1990s and early 2000s. However, in no case can these departures be traced to conflicts about the monetary policy. In a minority of cases, the departure was related to scandals of a financial nature in which the top central bank officials were involved. It is worth noting though that in no case was the accusation of personal enrichment by the officials proven.

In the majority of cases, the changes were related to political conflict after a change of regime or government. Due to the manner of their appointment or due to their actions, many heads of central banks were perceived as partisan appointees subject to partisan conflict. Therefore, we now turn to the politicisation of central banks during transition.

In the political science and political economy literature, a reason for policy-makers to agree on central bank independence is to remove monetary policy from the political arena because there is a substantial degree of consensus on how it should be generally conducted. Consequently, policy-makers can agree not to make it a subject of partisan struggle (see Cukierman, 1994).

However, to protect the legitimacy of their independent status, central banks should not be perceived by policy-makers or the electorate as being involved in partisan conflict. This was often not true in Central Europe during the postcommunist decade, partially due to path dependence, but also due to the actions of central bankers themselves. As a result, central banks were politicised usually not because monetary policy was a matter of public controversy (though it sometimes was), but because top bank officials (or the bank as a whole) were perceived as partisan actors by other partisan actors.

In Hungary, Gyorgy Suranyi was removed from his position as governor in December 1991 after he signed, together with a large number of other prominent intellectuals and professionals, a document called 'Democratic Charter'. The charter was a public protest in response to a strategy paper by the then senior government party - Hungarian Democratic Forum – headed by the then Prime Minister Jozsef Antall. This strategy document, leaked to the media, called for the governing party to consolidate its grip on power by taking control of key institutions, including state radio and television.[17]

Suranyi's successor was Peter Akos Bod, minister for trade and industry in the Antall government and an Antall loyalist, who was perceived due to the manner of his appointment and the conduct of monetary policy as a partisan appointee. Therefore, when the opposition won the parliamentary elections in 1994, he was perceived as a partisan figure, which the government had a 'right' to remove.[18]

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[17] Reuters, 3/12/91, Hungary's PM defends removal of central bank chief

After Bod resigned in November 1994, Suranyi became the governor again. He also reinforced the perception by partisan actors that he was a participant in the partisan conflict. During the 1998 campaign before parliamentary elections, the central bank analysed the economic program of the FIDESZ opposition party of the future Prime Minister Viktor Orban and sent the results to the then Prime minister, Gyula Horn. who had proposed Suranyi's appointment. As a consequence, Orban stated in 1999 that while the monetary policy of the Hungarian National Bank "was in line with government expectations... he sought the civilised departure of Suranyi".[19] A protracted dispute between the government and the central bank took place during late 1998, 1999 and 2000.

In Poland, Hanna Gronkiewicz-Waltz was appointed the governor of the National Bank of Poland in 1992 at the proposal of Lech Walesa, Polish President from the anticommunist Solidarity Movement. After the 1993 parliamentary elections and the 1995 presidential elections were won by the postcommunist party and its coalition partners, she was perceived by others and herself as someone closely associated with the previous anticommunist government, as evidenced by her own statement in early 1996: "It's a strange feeling to realise that one is the only person remaining from the previous Solidarity team".[20]

Gronkiewicz-Waltz herself strengthened the perception of herself as a partisan actor by becoming a candidate for presidential elections in 1995 – a decision for

[18] Euromoney, 30/09/94, p. 185. Bod's battle for the bank
[19] Interfax, 12/10/99, Orban seeks Suranyi's civilised departure
[20] Reuters: 29/02/96, Isolated Polish central banker plans to stay on

which she was criticised by both sides of the political spectrum. In the end, she was reappointed to her office by president Alexander Kwasniewski from the postcommunist SLD, against whom she ran. The reasons for the reappointment were primarily related to her very high credibility with the markets and also with the need of Kwasniewski to find a compromise candidate that would be confirmed by the Lower House, dominated again by the right wing parties after the parliamentary elections of 1997.

In the Czech Republic, Jozef Tosovsky was a consensual apolitical central bank governor until 1997 when he agreed to become a caretaker prime minister after the collapse of the Klaus government. He has been since perceived by the two major parties – Social Democrats and Civic Democrats - as the prime minister of President Vaclav Havel and the smaller political parties. In other words, he was not a consensual caretaker prime minister, but one who was perceived in a sharply partisan fashion. After he returned to the Czech National Bank following early elections of June 1998, both major parties, which gained a large parliamentary majority in this election, sought to curb what they perceived as the power of central bank. The issue was also politically salient because of political conflict over who and what was responsible for the recession of 1998 and 1999 – whether the tight monetary policy of the central bank or the stalled reforms of the previous Klaus government. Only in Slovakia was there no clear case of central bank politicisation.

During the postcommunist decade, central bankers were often perceived as partisan actors by other political actors. This created the perception that it was

legitimate to involve them in partisan conflict and also to seek their removal (by legal means). Two principal reasons led to this situation.

One factor was political actions by central bankers themselves. By these actions they involved themselves in partisan conflict that went substantially beyond anything related to monetary policy and thus central bankers themselves became a 'fair' target of partisan conflict.

The second factor was path dependency. Once central bankers became involved in partisan conflict (and were sometimes removed because of it), their opponents and/or successors were also perceived as partisan and something called "the cycle of revenge politics" by a Hungarian banker was instituted.[21] As a part of it, each incoming government would see it as its legitimate right to seek removal of central bank top officials it perceived to be on the other side of the partisan divide.

To quantify these thoughts, the methodology created and utilised by Cukierman (1992) and Cukierman and Webb (1995) is used to calculate the average length of actual terms of office of central bank governors as well as changes of governor after a political transition for a different view on how to determine central bank independence. This view is based on the fact that the rule of law is not well-established in many countries and/or that many countries frequently undergo political upheavals which have significant influence on appointments and policy-making positions. They found that in developing countries, the

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[21] Euromoney, 30/09/94, p. 185. Bod's battle for the bank

turnover of governors has a stronger relationship with actual inflation outcomes than central bank independence measures based on the reading of statutes.

The following table presents the turnover of governors in transitional countries for the period 1992-1999. The period was chosen because of data availability – Lybek (1999) contains data on the number of central bank governors in countries of the former Soviet Union between joining the IMF (during 1992 for nearly all republics) and 1998. Since the Czech Republic and Slovakia became independent and members of IMF only on January 1, 1993, the period chosen for Central European countries is slightly shifted from the beginning of 1993 until the end of 1999, but is of the same length to allow comparability.

The Czech Republic presents a special case, where Jozef Tosovsky was the CNB governor during the whole period except for the time when he was a caretaker prime minister for eight months at the end of 1997 and in 1998. After this period, he returned to his position in the Czech National Bank. Pavel Kysilka was an interim governor of the CNB during that period, but he was never formally appointed a governor. Therefore, it is not clear whether this should be counted as one governor or three governors. Accordingly, the table shows a spread of one to three for the Czech Republic.

Table 4.13: Number of governors and their turnover in transitional countries, 1992-1999

Country	Number of governors	Turnover of governors (per annum)
Czech Republic	1-3	0.14-0.43
Hungary	2	0.29
Poland	1	0.14
Slovakia	2	0.29
Average of Central European countries	1.5-2	0.21-0.29
Average of Baltic countries	2.3	0.33
Average of Former Soviet Union, except for Baltic countries	2.7	0.38

Source: own calculations based on Lybek (1999) and publications of central banks in Czech Republic, Hungary, Poland and Slovakia.

It is clear from the data that the turnover of governors in countries of Central Europe is rather low compared to other transitional countries, even if the Czech Republic is considered to have three governors during this period instead of one. This is true even if Central Europe is compared to another group of advanced transitional countries – the Baltic countries. Therefore, the preliminary conclusion is that even if one looks at statistical indicators of central bank stability, the Central European countries as a group achieve the most stable results among the transitional countries.

It is more difficult to compare Central Europe with developed countries. Cukierman (1992) shows the turnover indicators for most developed countries, but they concern the period 1950-1989. Therefore, they are likely to be much lower than the indicators for a period of just seven years even if the actual turnover was the same. Overall, however, these results should be taken as illustrative and viewed with caution, due to the short period for which they were calculated.

4.5 Central bank autonomy in exchange rate policy

For a small open economy, the framework for exchange rate management is of great importance for actual central bank independence, but this is not reflected in any of the indices developed in the 1980s and early 1990s. One can find an explanation in Mas's statement that in no country has the "exchange rate policy been turned over entirely to the central bank", (Mas, 1994, p. 16) due to its political sensitivity and importance for overall economic policy. Even though this statement is not true, it is true for OECD countries on which research of central bank independence has concentrated. Since central bank independence in exchange rate policy is extremely rare or non-existent among these countries, creators of central bank independence indices did not include it into indices as it would have little explanatory power.

In the group of countries that the thesis is concerned with, complete central bank autonomy in determining exchange rate policy is not rare and inclusion of the foreign exchange rate in some form in measurements of CBI in transition countries is also frequent.

In Hungary and Poland, it is the government that determines the exchange rate regime. The central bank's power is in the fact that, by law, it has to agree with the policy and in the fact that it carries out the every day foreign exchange decisions based on the policy (see Article 13 of the National Bank of Hungary Act and Article 24 of the National Bank of Poland Act).

On the other hand, central bank statutes in the Czech Republic and Slovakia stated until recently (based on the previous State Bank of Czechoslovakia Act) and without any caveats that the central bank "shall... state the exchange rate of the Czech/Slovak crown in relation to foreign currencies" (see Article 28 of National Bank of Slovakia Act and Article 35 of the Czech National Bank Act).

In the Czech Republic, these provisions were changed in the recent amendments aimed at making central banks laws conform with the Maastricht criteria. The central bank sets „after discussion with the government, foreign exchange rate regime, which cannot however threaten price stability". Such wording indicates that the central bank keeps the final word.

This difference in legal provisions would not be important if informal rules were the same. Due to the political importance of foreign exchange decisions, there might be an unwritten convention that requires at least the approval of the government. Even if no such convention exists, it can be preferable for central banks to occasionally seek political cover for such decisions even if they have the authority to do so. The reason is that changes in the exchange rate regime can be associated with a foreign exchange crisis and wider economic and political turmoil. In that case, joint decision is a way of protecting the central bank from subsequent government criticism.

A good example is the behaviour of the Czech National Bank during the foreign exchange crisis of May and June 1997. When the decision was finally made to float the Czech crown, it was announced jointly by the central bank governor

and prime minister. It was one of the very few times that the central bank sought government approval for central bank policy in the area of foreign exchange policy.

However, despite this exception. Czech and Slovak central banks repeatedly set exchange rate policy autonomously, occasionally despite government resistance. Their decisions can be divided into the following groups:

1. decisions to preserve a fixed exchange rate and to use foreign exchange rate interventions to preserve it. Both countries inherited the fixed exchange rate from Czechoslovakia, but in neither case did the governments of the successor states ever make decisions concerning its preservation. On the other hand, both central banks had to intervene to preserve the fixed exchange rate, very heavily in Czech Republic in May 1997 and in Slovakia in the spring of 1997 and summer of 1998. In 1993, the National Bank of Slovakia even resorted to administrative measures that partially restricted the convertibility of the currency to defend the fixed exchange rate.

2. decisions to alter the fixed exchange rate and to float the currency. Both central banks took decisions that in crucial ways altered the fixed exchange rate regime and, in the end, took the decisions to abolish it. In neither case (with the exception of the floating of the currency in the Czech Republic) was formal government approval sought; on the contrary, there are instances in both countries where senior government figures publicly stated their opposition. In July 1993, the NBS devalued the crown by 10% despite

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statements by the then Finance Minister Julius Toth that "the banking council cannot make a decision about the devaluation of the currency without consulting the Slovak government".[22] In February 1996, the Czech National Bank widened the band of the Czech currency peg from 1% to 15 %, despite the public opposition of the then Prime Minister Vaclav Klaus.[23] There were other crucial decisions where there was no government opposition, but government approval was not formally sought – e.g. the repeated widening of the band in the Slovak case during mid-1990s or the Slovak decision to float the currency in October 1998.

3. decisions to intervene in the foreign exchange market after the currency was floated. Since the currency float (June 1997 in the Czech case, October 1998 in the Slovak case), both central banks have infrequently, but repeatedly intervened openly in the foreign exchange market against the currency, but also in its support. In addition to that, they used covert intervention in the form of the direct purchase of foreign or domestic currencies from commercial banks. Again, in no case was formal approval or agreement of the government sought in either of the two countries.

The previous paragraphs have demonstrated that central bank autonomy in foreign exchange policy or its lack mattered in the four countries of our sample in the sense that Czech and Slovak central banks took decisions that were significant and in several cases openly opposed by the government. In Hungary and Poland, this could not have happened by definition. Such differences should

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[22] CTK, 15/02/93 - Opinions differ on potential devaluation of Slovak currency

be taken into account when assessing the level of actual central bank independence. Unfortunately, the literature has little so far to say about this topic.

4.6 Conclusion

This chapter examined institutional constraints on policy discretion in the form of central bank independence. It conducted an in-depth analysis of central bank independence in the four transition countries of our sample and used the results of the analysis to evaluate some of the underpinnings of theories on central bank independence. It proceeded in several steps.

First of all, it applied the two most frequently used indices of central bank independence, based on the statute-reading approach, to Czech Republic, Hungary, Poland and Slovakia. Results made it clear that the level of legal independence enjoyed by central banks in Central European countries has been very high from the very start of transition. The indices showed that from early on during the transition period, central banks of the region became powerful political and economic players an played crucial roles in economic reforms and the preservation of macroeconomic stability during the following decade. The high level of legal independence was based on relatively long terms of office for its representatives, well-defined appointment procedures, definitions of monetary policy objectives, usually in terms of internal and external monetary

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[23] Institutional Investor, 31/5/96, p. 97: Tosovsky's daring decision

stability, general autonomy in the conduct of monetary policy and limitations on central bank lending to the government.

In the late 1990s and early 2000s, major changes in central bank law were passed in all four countries in order to achieve compliance with the Maastricht Treaty. However, the need to satisfy the Maastricht criteria and to substantially amend the central bank acts opened a 'Pandora's box' in the form of an opportunity to change the statutes also in other ways. Political players in the Czech Republic, Poland and Slovakia used it to weaken the actual autonomy of the central bank and the autonomy of its career officials from the current governing majority or even attempted to use it to weaken overall central bank independence.

In the next stage, the findings were evaluated in the light of interviews with central bankers from both industrial and Central European countries. The interviews identified as the key legal criteria of central bank independence precisely those that the central banks in our sample generally enjoyed from the beginning, confirming the high level of legal independence. The following parts of the analysis made for a picture that is much less clear-cut both in terms of central bank independence in Central Europe and its overall theory.

The third stage, based on interviews and analysis, showed why legal indices of the variety utilised in the previous analysis are an insufficient and imprecise tool for measurement of actual central bank independence. It pointed to factual mistakes in calculation of individual country scores by other authors, badly or

imprecisely phrased criteria without clear interpretation, a fusion of positive observations of legal independence with normative views about what makes for better monetary policy and difficulty of the use of indices if the legal framework changes frequently and in a way which is not obvious. All of these should make one wary of placing too much trust in the indices of legal independence and their validity. Rather than an authoritative evaluation of actual independence, they should be seen as a useful way of succinctly summarising main elements of the central bank legal framework in terms of its autonomy.

In the next stage, the chapter demonstrated that actual central bank independence in transition was substantially influenced by many other factors than those captured by existing legal indices, quite apart from the methodological and practical problems of the indices. It also attempted to expand our understanding not only of what happened in the countries concerned, but also what implications this has for the theory in general.

In order to achieve this, it first built on the theory of checks and balances in the theory of central bank independence, which is based on the view that existence of multiple veto points for passage of legislation is a way of strengthening actual CBI by making it more difficult and less likely that the independence, once granted, will be taken away. The chapter expanded the theory by adding a similar mechanism adopted in many transition countries – the constitutional protection of central bank independence. Central bank indices are generally based on the statute-reading methodology, but they ignore the statute that is even more important – the country's constitution. In all but a few countries,

constitutions are much harder to change than laws both politically (there is a resistance towards amending them very often) and legally (higher quorum or even more complicated special amendment mechanisms). Therefore, inclusion of some form of central bank independence into a constitution confers a significantly higher degree of protection and, consequently, a significantly higher degree of effective central bank independence.

This analysis showed that while constitutional protection of central bank independence does not exist in the developed countries of Western Europe, it has a relatively strong position in transition economies, being of particular importance in the four countries on which this thesis is focused.

The fifth stage of the analysis concentrated on another measure of central bank independence – how frequently have governors of central banks changed during transition. According to a theory, in countries with weaker rule of law, actual appointments are a better indicator of independence (and government control of monetary policy) than analysis of the legal framework.

Application of the methodology to Central European central banks showed that the situation can be much more complicated than that. While there were several premature departures at the top of Central European central banks during the late 1980s, 1990s and early 2000s, these departures cannot be traced to conflicts about the monetary policy. In a minority of cases, the departure was related to scandals of a financial nature in which the top central bank officials were

involved. In the majority of cases, the changes were related to political conflict after a change of regime or government.

In the political science and political economy literature, a reason for policy-makers to agree on central bank independence is to remove monetary policy from the political arena because there is a substantial degree of consensus on how it should be generally conducted. Consequently, policy-makers can agree not to make it a subject of partisan struggle. However, to protect the legitimacy of their independent status. central banks should not be perceived by policy-makers or the electorate as being involved in partisan conflict. This was often not true in Central Europe during the postcommunist decade, partially due to path dependence, but also due to the actions of central bankers themselves.

As a result, central banks were politicised usually not because monetary policy was a matter of public controversy (though it sometimes was), but because top bank officials (or the bank as a whole) were perceived as partisan actors by other partisan actors. Therefore. partisan conflict between governments and central bankers and consequent changes among top central bankers have had no discernible impact on conduct of monetary policy.

The final element of the analysis focused on another factor of great importance for actual central bank independence in a small open economy, but not reflected in any of the indices - the framework for exchange rate management. The chapter argued that the reason is a universal absence of central bank autonomy in these matters across industrialised countries. In this respect, Central European

countries provide an interesting laboratory as two of them – Czech Republic and Slovakia – have central banks with high level of both legal and actual autonomy in determining the exchange rate regime. This laboratory shows that such autonomy can be significant for overall independence of the central bank.

Chapter 5: The role of the exchange rate in monetary policy

5.1 Introduction

Foreign exchange rate policy in the so-called emerging markets, i.e. in more advanced and integrated transition and developing economies, and its place within the overall framework for monetary policy have been the subject of increasing interest and scrutiny during recent years, prompted by repeated and serious economic problems in many of these countries that were in some way related to currency issues. (Flood and Marion, 1998; Goldfajn and Valdes, 1996; Liargovas, 1999; Mishkin. 1999; Obstfeld and Rogoff, 1995; Mussa et al., 2000)

This chapter contains analysis of developments of nominal and real exchange rates and their role in monetary policy of the Czech Republic, Hungary, Poland and Slovakia. It brings together various empirical results to form a unified explanation of the role of the exchange rate in monetary policy, with emphasis on actual behaviour of monetary authorities.

5.2 Framework for analysis of exchange rate strategies

This section sets the analytical stage for the following empirical sections in order to propose a framework for analysis of exchange rate choices and a resulting classification of exchange rate strategies in Central Europe with a view to application to other small open economies.

The proposed framework for analysis of exchange rate choices is based on three considerations relevant for Central European countries: low inflation, predictability of nominal exchange rate and prevention of a real exchange rate misalignment.

The medium-term aims of monetary policy in accession countries during the 1990s and in the 2000s can be simplified to:[1]

- low inflation, implying disinflation to a level fulfilling the Maastricht criteria and then consolidation of this achievement
- prevention of a major real exchange rate misalignment that would lead the economy into a currency crisis or require painful adjustment to avoid an outright crisis

The choice of a currency regime and a foreign exchange rate strategy in these countries, both in positive and normative terms, has been and will continue to be largely determined by answers to the following questions that influence the achievement of the objectives stated above:

- What is the speed of disinflation chosen to achieve the low inflation fulfilling the Maastricht criteria?
- What is the weight placed on the nominal exchange rate in the process of disinflation and then in consolidation of low inflation?

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1 See NBP (1998), CNB (1999).

- How risk-averse have policy-makers been about the prevention of real exchange rate misalignment, i.e. what levels do they consider dangerous and how prompt is the corrective action? (The issue is also related to management of capital inflows with regard both to disinflation and external imbalance.)

Therefore, any exchange rate strategy chosen within the sample of countries studied can be fitted into a triangle of the following preferences of policy-makers with regard to the exchange rate:

- low inflation
- nominal predictability
- prevention of real exchange rate misalignment

Diagram 5.1: The triangle of priorities for an exchange rate strategy

nominal predictability

low inflation

prevention of real
exchange rate
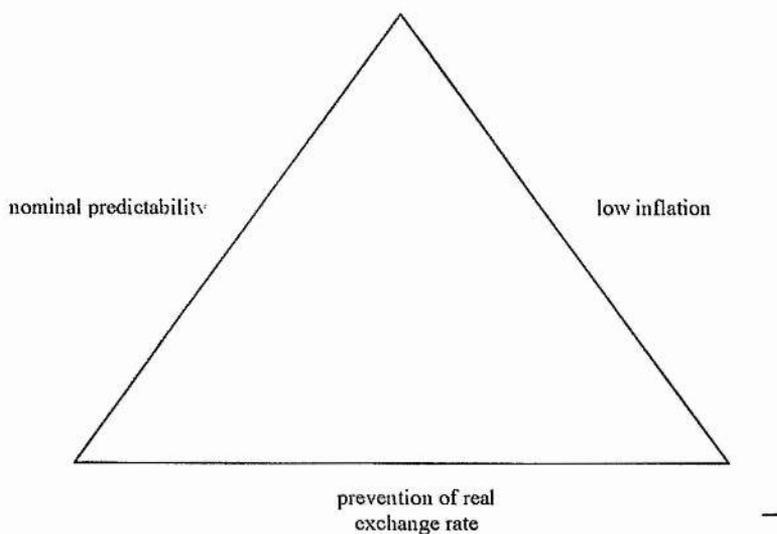
Preferences for low inflation and nominal predictability tend to be entwined. When analysing the use of the foreign exchange rate channel in achieving low inflation in small open economies, what is usually meant is nominal exchange rate stability and predictability in the form of a fixed exchange rate (see De Grauwe, 1997 for textbook exposition). In such a case, a successful exchange-rate based disinflation strategy is inextricably linked, indeed fused, with the use of the fixed exchange rate as a nominal anchor.

It is, therefore, important to explain and emphasise why this has not necessarily been so in Central Europe. Autonomous price movements (particularly changes in relative prices[2] and in administered prices) have tended to cause domestic inflation to be higher than that of the anchor country under a fixed exchange rate. There are examples both in the Czech and the Slovak case, where even medium-term nominal exchange rate stability and relatively high interest rates were not enough to bring inflation down to German/US levels.

Therefore, emphasis on use of the exchange rate channel in the process of disinflation in advanced transition countries should not be automatically identified with a fixed nominal exchange rate. To bring inflation down to EMU levels, nominal exchange rate appreciation might be necessary. The speed of nominal appreciation tolerated or even encouraged by policy-makers depends on the desired speed of disinflation and also on the weight they put on the exchange rate in the disinflation process.

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Even though nominal appreciation is technically possible with a fixed exchange rate through revaluation, it is unlikely, particularly in countries with higher rates of inflation. For all countries but Hungary, a trend appreciation in the real exchange rate can be demonstrated for the 1993-2001 period, but the trend was extremely uneven during individual subperiods and the size of the trend differed significantly between countries. As there is a high level of uncertainty as to the sources as well as the size of the trend, it has been very difficult for policy-makers to accurately estimate an equilibrium real exchange rate. This has made them be reluctant to institute an official revaluation and prefer a more gradual mechanism afforded by a floating currency. Therefore, nominal appreciation was allowed by the authorities only under the floating regimes.[3] On the other hand, it should be noted that the nominal exchange rate can be and has been used as a tool of disinflation even when it was depreciating, but depreciating more slowly than the inflation differential would suggest.

Therefore, priority ascribed to low inflation and to the role of the exchange rate in achieving it has been the first consideration of policy-makers in Central Europe in determining the exchange rate strategy. For a hypothetical strategy based solely on this consideration, achievement of low inflation primarily by

[2] See the menu cost effect and other asymmetric consequences of changes in relative prices (Ball and Mankiw, 1994; Fischer, 1981; for application to transition see Wozniak, 1998).
[3] Throughout the chapter, whenever appropriate, authorities are described as 'allowing', 'tolerating' or 'encouraging' nominal appreciation. The terms are used in recognition that: a) authorities in countries with liberalised financial markets cannot fully control the path of the nominal exchange rate unless they are willing to sacrifice everything else, but b) their control of interest rates and other policy instruments beyond exchange rate interventions gives them a measure of control.

stability or even appreciation of the nominal exchange rate would be the exclusive priority.

The second aspect of the exchange rate strategy is the priority placed on the achievement of nominal predictability, if not always stability, via exchange rate policy. If the exchange rate is to play the role of the nominal anchor, then it must be, to a large degree, stable and predictable, with a limited flexibility. If potential exchange rate fluctuations are significant in comparison with the inflation rate, economic agents can no longer rely on the nominal exchange rate as the anchor for their expectations of price developments. On the other hand, an irrevocably fixed exchange rate with no flexibility (e.g. dollarisation) makes for a very strong nominal anchor. Exchange rate strategies have to place themselves on a continuum between the two extremes.

For purposes of the analysis presented here, currency regimes are divided into three groups based on the extent to which the authorities actually allow their currency to fluctuate together with their use of the exchange rate as a nominal anchor. The category of *no flexibility* contains hard pegs (currency boards and unions together with dollarised regimes) as well as soft, fixed or crawling, pegs with narrow bands of less than 2.5%. The category of *limited flexibility* contains fixed or crawling pegs with intermediate bands of 2.5% to 7.5% or tightly managed floating currencies. The category of *managed flexibility* contains pegs with wide bands of more than 7.5%, target zones, managed and more or less

independent floats.[4] This classification is in line with much of recent literature, e.g. Bofinger and Wollmershacuser (2001), Yeyati and Sturzenegger (1999) and Reinhart and Rogoff (2002). that stresses *de facto* rather than *de iure* aspects of the exchange rate management.

Concern about vulnerability of the economy to a real exchange rate misalignment and its consequences has been the third consideration. Substantial misalignment, manifested in particular in unsustainable developments of the current account of the balance of payments, can lead the economy into a currency crisis or require painful adjustment to avoid a crisis.

However, unsustainability is only clear *ex post* as a period of time can pass without major problems. Risk-averse policy-makers take steps to avoid entering the danger zone or remaining in it for an extended period of time. The extent to which the real exchange rate is seen as the key to the issue and whether nominal exchange rate depreciation is targeted in order to achieve real exchange rate stability (or even depreciation) depends on the overall monetary policy strategy. However, since the flexibility of the only other available major policy tool (fiscal policy) is quite limited, the foreign exchange rate has to be a significant part of the policy approach.[5]

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[4] A fourth category – unlimited flexibility – could be added, but the experience of even the largest, closed economies shows that monetary policy authorities attempt to steer the exchange rate path once fluctuations begin to impinge on domestic intermediate and final monetary policy objectives. For small, open economies. this is even stronger and precludes benign neglect of the exchange rate.

[5] On the other hand, it should be noted that even a financial crisis might not necessarily demonstrate that exchange rate policy in particular or macroeconomic policy in general should have been different. Vincze (2001) argues that "if risks are real and cannot be done away with by fiat, then is it not reasonable to assume that somebody must suffer sometimes, and that financial sector problems may indeed be part of the scheme of distributing risks (near) optimally?" (p. 6)

At the same time, the issue of vulnerability is also linked to the effect of the exchange rate regime on capital inflows, particularly with regard to the encouragement for inflows provided by fixed exchange rates and the non-linear relationship between such flows and the perception of vulnerability.

Table 5.1 presents a matrix of potential exchange rate strategies. Strategies A-G combine a particular approach to nominal exchange rate flexibility with the attitude of the authorities towards the actual trend change in the nominal exchange rate. Strategies are based on actual policy choices in Central Europe, where nominal appreciation was limited to currency regimes of managed flexibility, so two strategies combining no or limited flexibility with nominal appreciation are not included (these absent strategies were used, for example, by Western Germany during the Bretton-Woods era). Hard pegs are included in enumeration of options for Strategy A for completeness even though they have not been used in Central Europe.

He attempts to define a 'bad' crisis by one or more of the following conditions: real shocks are amplified, shocks responsible for the crisis have nothing to do with fundamentals, losses are not shared. He argues that crises experienced by Central European countries were not 'bad' crises: "Despite the fact that the financial systems were obviously not robust or efficient in these countries, the financial crises were definitely adjunct to the very real troubles that plagued these economies. There seems to be no evidence that the financial sphere made things definitely worse". (p. 15) What reinforces these views is the fact that it is very difficult to distinguish radically different paths in terms of changes in unemployment, inflation or real wages as between countries, which had to float currencies under speculative pressure, (such as the Czech Republic in 1997 and Slovakia in 1998), countries, which had to change their macroeconomic policy, but continued to rely on a fixed exchange rate (such as Hungary in 1995) and countries such as Poland in 1999 and 2000. (which were proactive). In all the cases, if the fundamentals, evidenced usually by very high current account deficits, slowing growth and/or stubborn inflation, were shaky, adjustment had to follow and its costs did not differ fundamentally.

Table 5.1: Matrix of potential exchange rate strategies, based on currency regimes and developments in the nominal exchange rate trend

	Nominal appreciation	nominal stability	Nominal depreciation
no flexibility		Hard pegs (currency boards and unions together with dollarised regimes) as well as fixed soft pegs with narrow bands of less than 2.5% (Strategy A)	crawling pegs with narrow bands of less than 2.5% (Strategy B)
Limited flexibility		fixed pegs with intermediate bands of 2.5% to 7.5% or tightly managed floating currencies (Strategy C)	crawling pegs with intermediate bands of 2.5% to 7.5% (Strategy D)
managed flexibility	Pegs with wide bands of more than 7.5%, target zones, managed and more or less independent floats (Strategy E-G)		

To make this analytical framework useful, exchange rate strategies utilised by individual countries at various points in time need to be placed into the triangle of priorities. This has been done by drawing a series of lines running parallel to sides of the triangle. One series of lines represents nominal appreciation, stability or depreciation and runs parallel to the side of the triangle that represents preference for low inflation. The other group of lines denotes no flexibility, limited flexibility or managed flexibility and runs parallel to the side of the triangle representing nominal predictability.

Individual strategies are placed at the intersection of lines. Distance of the intersections from the three sides of the triangle indicates priority placed on each of the three considerations by a given strategy. The further from a particular side, the less emphasis a strategy places on the priority. Therefore, the ordering of individual lines within a group was based on their relationship to the third priority – real exchange rate misalignment. For example, nominal stability places more emphasis on prevention of real exchange rate misalignment than nominal appreciation and the same applies to the relationship between nominal stability

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and nominal depreciation. Similarly, managed flexibility places more emphasis on prevention of real exchange rate misalignment than limited flexibility and this is also true of limited flexibility vis-à-vis no flexibility. Consequently, Strategy G of the two outlying lines - managed flexibility and nominal depreciation - is placed at their intersection. It is the closest one to the side of prevention of real exchange rate misalignment and makes for the least chance of it.

Diagram 5.2: Exchange rate strategies and policy priorities

prevention of REER
misalignment
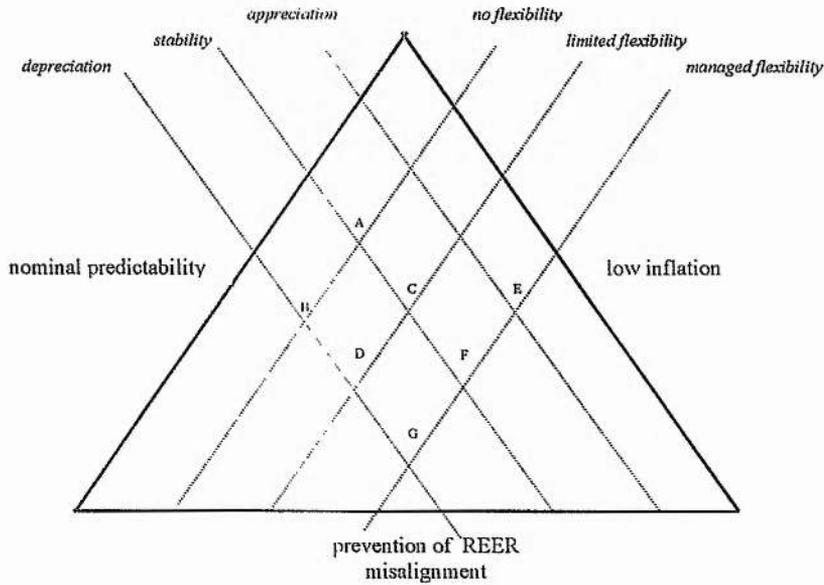
The following two sections present empirical findings on the behaviour of the nominal and the real exchange rates in Central European countries during 1990s and early 2000s. Some of the findings were already used in this section to set up the framework, but most will be used in the final sections. There, the empirical findings will be translated into analysis of the experiences of individual countries

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with exchange rate strategies and a summary of the causes and consequences of the strategies themselves.

5.3 Nominal exchange rate

This section focuses on the role of the nominal exchange rate in monetary policy and inflation. Based on developments in the sample of four countries, it makes the following argument:

- even emerging market economies can successfully constrain discretion over monetary policy without resorting to hard pegs
- historically, soft pegs proved to be a successful nominal anchor for disinflation during early transition where there was no credible alternative
- while formal fixed-but-adjustable pegs are probably unsustainable in small, open economies that experience rapid integration into world financial markets. this does not mean that a true exchange rate flexibility for small open economies is practiced or advisable
- while official floating of the currency entails a change in the behaviour towards less management of the exchange rate, small open economies in our sample are clearly concerned about the exchange rate and try to manage its development regardless of the formal regime

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In 1990 and 1991, all four countries began the transition with a fixed exchange rate - an adjustable peg with a very narrow band (0.3 to 0.5%), reflecting the need for a strong nominal anchor.[6]. With the exception of Poland, this arrangement lasted unchanged in all countries until 1994-1995.

As the economy stabilised after the initial transition depression (1991-1993), pegs with very narrow bands. high interest rates and gradually liberalised capital accounts induced increasing capital inflows beginning in 1994. This forced the countries to gradually allow the exchange rate some flexibility to deter at least some groups of speculators. This was done not by floating the currency, but via widening the fluctuation band. The chart 5.1 is a visual representation of the band during the 1993-2001 period. It shows that, with the exception of Hungary, bands increased significantly during the period before eventual floating.

All countries widened the band to at least 2.25% between February 1994 and February 1996. Indeed, between May 1995 and January 1997, all countries with the exception of Hungary widened the band to 7.5%. However, due to a need to preserve external balance and competitiveness, not only were bands widened, but changes of parities and regimes were also undertaken. Both fixed-but-adjustable and crawling pegs were used before eventual floating.

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[6] The principal objective was not only to decrease actual inflation – which was very high only in Poland – but to minimise the impact of repressed and potential inflation after price liberalisation and the initial devaluation.

Chart 5.1: Band width for pegs, in% around the central parity, 1993-2001
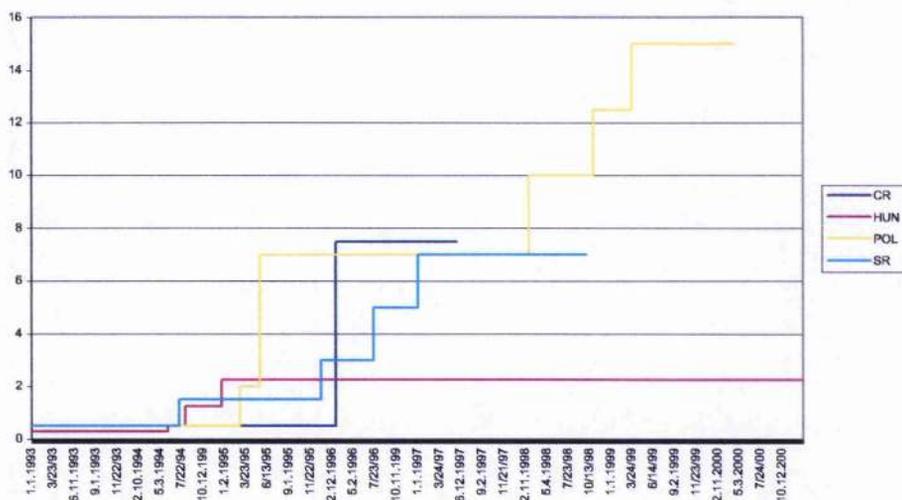
Source: Central bank data

To understand these changes in policies, one needs to look again at the inflation
record. Based on the previous experience in the 1970s and 1980s, higher initial
inflation rates and deeper macroeconomic imbalances at the beginning of
transition, Hungarian and Polish policy-makers thought it much more important
than the Czech and Slovak policy-makers to stabilise the real exchange rate.
(OECD, 1997, p. 30) This was done in the early transition period by ad-hoc
devaluations of the adjustable peg parity. However, this approach significantly
diminished the credibility of the peg and its effectiveness in being a nominal
anchor. Therefore, both countries decided to switch to a crawling peg. In the case
of Poland, this was done in late 1991. In the Hungarian case, the switch was part
of a wider reform package in early 1995. The reduction in the rate of the
crawling peg then progressed in line with the progress of disinflation (see chart
5.2). Poland gradually widened the band to 15% until it officially floated the

currency in April 2000. Hungary preserved its narrow band of 2.25% until May 2001, when it was widened to 15%.

Chart 5.2: Rate of crawl in crawling peg vs. inflation
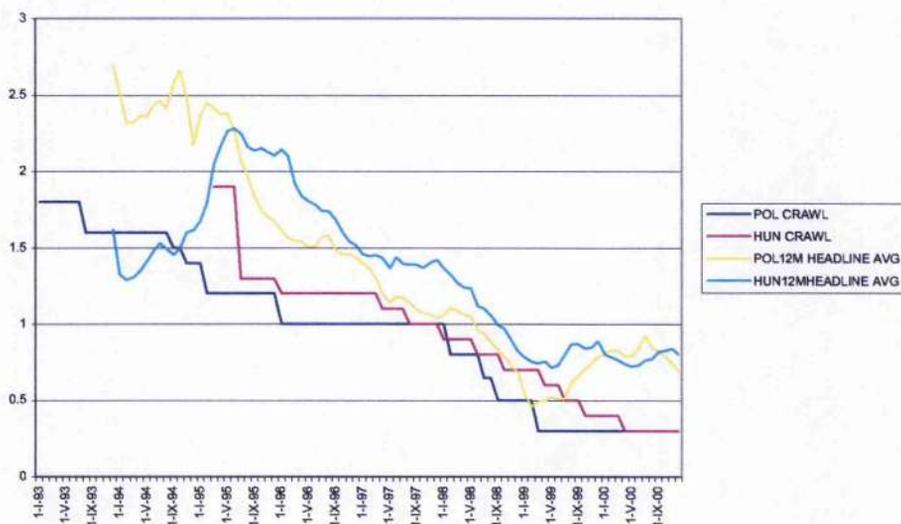
Source: Central bank data

The Czech Republic and Slovakia pursued a policy of rapid disinflation accompanied by a fixed parity exchange rate. This policy was successful at first. However, as the disinflation stalled from late 1995 until 1997, the fixed exchange rate entailed an ultimately unsustainable real appreciation and the currencies were floated in 1997 and 1998. Central banks in both countries, however, continued to occasionally influence the exchange rate directly through intervention.

For all four countries, though, the extent of the actual interference of the authorities in the movement of the foreign exchange rate cannot be measured by

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market interventions, nor can it be inferred from the official exchange rate regime. Changes in the interest rate – the primary policy instrument in developed countries and in the sample studied here – could be and often were made with the exchange rate in mind and complement interventions in the foreign exchange market.

The 'fear-of-floating' argument by Calvo and Reinhart (2000), based on their empirical research, indicates significant difference between words and deeds, particularly in small open economies - many officially floating currencies exhibit behaviour much closer to pegged exchange rates than to 'true' floaters such as the US, Japan or the eurozone (and Germany before that).

To investigate the actual behaviour of the authorities in Central Europe, we use methodologies developed by Calvo and Reinhardt (2000) and by Bofinger and Wollmershaeuser (2001a).[7] The methodology is based on evaluation of the volatility of foreign exchange rates, foreign exchange rate reserves and interest rates. The analysis is based on the assumption that, under truly floating foreign exchange rate regimes, the variance of the exchange rate should be relatively high, while the variance of foreign exchange reserves and interest rates should be relatively low. The opposite should be true under foreign exchange rate regimes that overtly or covertly attempt to stabilise the foreign exchange rate.

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[7] The methodology developed by Reinhardt and Rogoff (2002), focusing on parallel market exchange rates, is not used here because for the sample and the period studied, data from parallel markets are inferior to the information gained from regular currency markets due to the thinness of parallel markets for Central European currencies and the high level of currency liberalization in the countries concerned. Additionally, Reinhardt and Rogoff (2002) contains a number of

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Since it is very difficult to develop absolute benchmarks for comparisons, the results are compared with those countries widely considered to be free floaters – the US and Japan. The results are also compared with countries identified in the literature as 'fearful' floaters. countries which, despite formally floating their currencies, conduct policies aimed at active stabilisation of the foreign exchange rate.

The results are shown in table 5.2. The results for Central European countries are divided into period according to their currency regimes. In the case of Czech Republic and Slovakia, there is a clear defining moment of transition from a peg to a floating currency – May 1997 for the Czech Republic and October 1998 for Slovakia. For Hungary, the period until April 2001 is one of a fixed exchange rate with a relatively narrow band. Since the period from May until December 2001 is too short for any meaningful analysis, results for Hungary include only one period from January 1993 until April 2001. In the case of Poland, the changes in the currency regime were quite gradual and the official moment of floating (April 2000) was not really the turning point. Therefore, the point of transition between a fixed and a floating regime was set for February 1998, when the band was widened to 10%.

The first set of columns analyses the developments of the exchange rate vis-à-vis the Deutschemark (Euro since January 1, 1999) and the US Dollar. Numbers in columns show the percentages of monthly changes in the exchange rate that fall within 1% and 2.5% bands. In other words, 57% of monthly movements of the

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assessments in their description of official currency regimes in the countries concerned that seem

Hungarian exchange rate vis-à-vis the Deutschemark during the 1993-2001 period was of less than 1%.

Table 5.2: Fear of floating – true floaters, fearful floaters and Central European countries

		FX RATES		FX RESERVES		INTEREST RATES	
		1%	2.50%	1%	2.50%	0.25%	0.50%
Czech Republic FIX	DEM	61.54	94.23	17.31	32.69	35.3	51
	USD	40.38	75				
Czech Republic FLOAT	DEM	56.36	92.73	10.91	41.82	58.2	76.4
	USD	18.18	63.64				
Hungary	DEM	57.14	90.82	9.18	22.45	40.2	63.2
	USD	35.71	78.57				
Poland FIX	DEM	31.15	85.25	18.03	31.15	39.34	60.66
	USD	36.07	83.61				
Poland FLOAT	DEM	21.74	58.7	19.57	50	36.96	47.83
	USD	26.09	71.74				
Slovakia FIX	DEM	55.88	92.65	7.35	23.53	14.3	25.4
	USD	36.77	83.82				
Slovakia FLOAT	DEM	56.41	92.31	11.11	30.56	48.7	64.1
	USD	30.77	58.97				
Canada		68.2	93.6	15.9	36.6	36.1	61.8
India		82.2	93.2	21.6	50	6.4	15.9
Bolivia		72.8	95.9	8.1	19.6	16.3	25.9
Mexico		34.6	63.5	13.2	28.3	5.7	9.4
Japan		33.8	61.2	44.8	74.3	67.9	86.4
USA		26.8	58.7	28.6	62.2	59.7	80.7

Source: Reinhart (2000), own calculations based on central bank data and Datastream
Note: 1993 – 2001 period and its subperiods for Central European countries, selected periods of officially floating exchange rates for other countries

The second set of columns analyses developments of the foreign exchange reserves and the second one developments in interest rates. For the foreign exchange reserves, columns show the percentages of monthly changes that fall within 1% and 2.5% bands. In other words, 8.1% of monthly changes in the Bolivian foreign exchange reserves were of less than 1%, as opposed to 28.6% in the case of US foreign exchange reserves. For the interest rate, columns show the percentages of monthly changes that fall within the band of 0.25 and 0.5

at odds with other literature.

percentage points. During the 1993-2001 period, 40.2% of months saw change in the Hungarian interest rate smaller or equal to 0.25%.

The results show that since they floated their currencies in 1997 and 1998, the Czech Republic, Poland and Slovakia have exhibited a much smaller degree of fear of floating than the truly fearful floaters identified in the literature, but more fear of floating than Japan and the US. Therefore, their floating regimes are much more than just pegs in disguise though they cannot be classified as free floats.

Floating was, in the Czech Republic, Poland and Slovakia, accompanied by a measurable change in the behaviour of the authorities towards less intervention in the management of the foreign exchange rate. The Czech Republic exhibits significantly smaller number of changes in interest rates (a difference of 23-25 percentage points), higher count of changes in foreign exchange rates (differences of 2 to 5 percentage points vis-à-vis the Deutschemark and 12 to 22 points vis-à-vis the US Dollar) and an ambiguous development regarding foreign exchange reserves (changes of approximately 7 percentage points in both directions). Poland exhibits counterintuitive *higher* number of changes in interest rates (a difference of 3 to 13 percentage points), but a significantly higher number of changes in foreign exchange rates (differences of 10 to 28 percentage points vis-à-vis the Deutschemark and 10 to 12 points vis-à-vis the US Dollar) and a lower number of changes in foreign exchange reserves (a difference of 1 to 19 percentage points). Slovakia exhibits significantly smaller number of changes in interest rates (a difference of 34 to 39 percentage points), slightly higher

number of changes in foreign exchange rates (very small change vis-à-vis the Deutschemark and six to 24 points vis-à-vis the US Dollar) and a decrease in number of changes in foreign exchange reserves (a difference of 4 to 7 percentage points).Hungary, on the other hand, shows the least flexibility as could be expected from a foreign exchange rate regime with a fixed rate and a 2.25% band.

Consequently, while changes in official regimes seem to have actual consequences, the distinctions are much less clear than the official definitions would suggest. The level of authorities' intervention in the foreign exchange market usually differs with a different foreign exchange rate regime in the same country, but comparisons of regimes between countries can be misleading.

The analysis of exchange rate developments can be usefully extended by rudimentary statistical analysis of very-short-term and short-term developments in the nominal exchange rate via daily and monthly change in foreign exchange rate values. The following charts and tables present the results.

Chart 5.3 shows the mean daily change in the foreign exchange rate vis-à-vis the DEM/EUR. Chart 5.4 shows the mean daily change in the foreign exchange rate vis-à-vis the USD. Chart 5.5 shows the standard deviation of the daily changes in the foreign exchange rate vis-à-vis the DEM/EUR.

Chart 5.3: Mean daily change of foreign exchange rate vis-à-vis DEM/EUR, in%
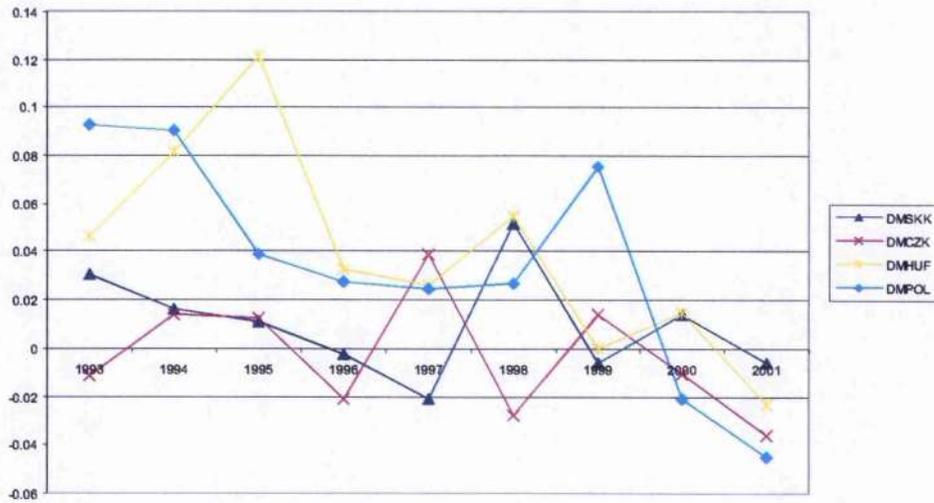
Source: Central bank data

Chart 5.4: Mean daily change of foreign exchange rate vis-à-vis USD, in%
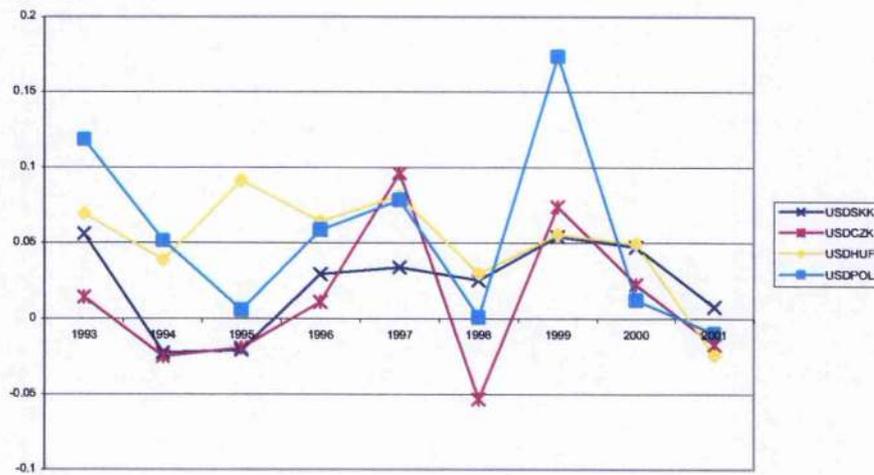
Source: Central bank data

Chart 5.6 shows the standard deviation of changes in the foreign exchange rate vis-à-vis the USD.

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Chart 5.5: Standard deviation of daily changes in foreign exchange rate vis-à-vis DEM/EUR, in%
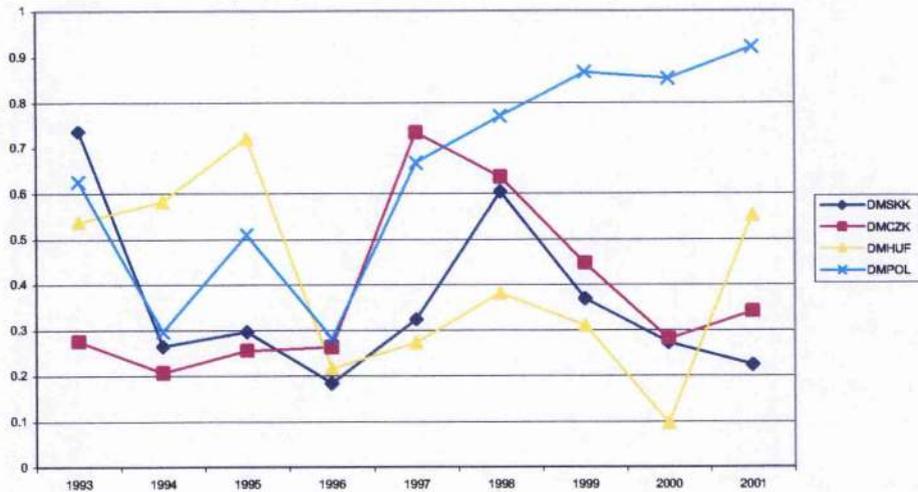
Source: Central bank data

Chart 5.6: Standard deviation of daily changes in foreign exchange rate vis-à-vis USD, in%
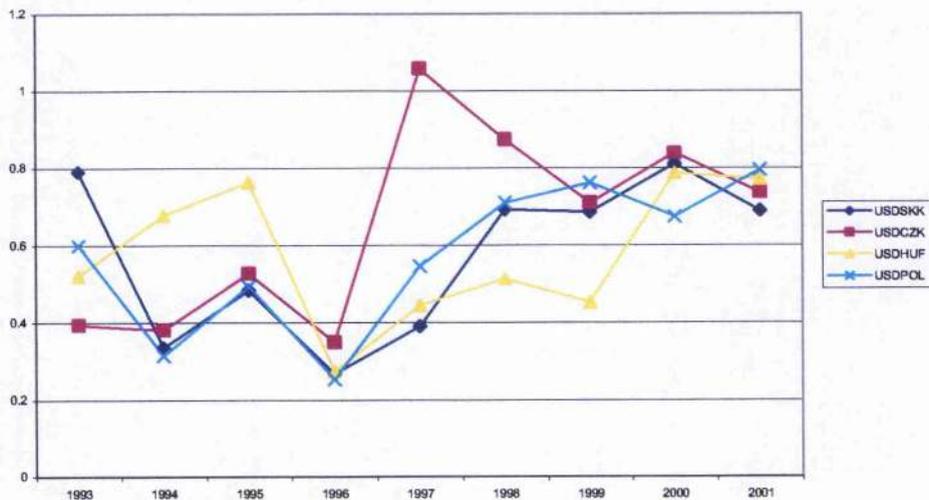
Source: Central bank data

Tables 5.3 and 5.4 contain statistical properties of the monthly foreign exchange rate series in our sample of countries.

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Table 5.3: **Statistical properties of monthly foreign exchange rate series, 1993-2001, USD rate**

	Czech Republic			Hungary	Poland			Slovakia		
	January 1993 – February 1996	February 1996 – May 1997	May 1997 – December 2001	January 1993 – April 2001	January 1993 – April 1995	May 1995 – February 1998	February 1998 – December 2001	January 1993 – December 1995	January 1996 – September 1998	October 1998 – December 2001
Mean	-0.17%	0.93%	0.34%	1.31%	1.53%	1.20%	0.31%	0.10%	0.49%	0.87%
Median	0.03%	0.76%	0.93%	1.40%	1.39%	1.30%	-0.25%	-0.14%	0.51%	0.98%
Max	2.61%	3.89%	9.59%	6.53%	6.49%	4.94%	7.37%	10.09%	2.98%	7.68%
Min	-4.31%	-2.52%	-5.64%	-4.46%	-2.05%	-1.67%	-5.48%	-3.98%	-2.14%	-5.01%
Range	6.92%	6.40%	15.23%	10.99%	8.54%	6.61%	12.85%	14.07%	5.13%	12.69%
St.Dev.	1.56%	1.86%	2.95%	1.88%	1.63%	1.35%	2.66%	2.24%	1.29%	2.76%

Source: Central bank data and Datastream, calculation by author

Table 5.4: **Statistical properties of monthly foreign exchange rate series, 1993-2001, DEM/EUR rate**

	Czech Republic			Hungary	Poland			Slovakia		
	January 1993 – February 1996	February 1996 – May 1997	May 1997 – December 2001	January 1993 – April 2001	January 1993 – April 1995	May 1995 – February 1998	February 1998 – December 2001	January 1993 – December 1995	January 1996 – September 1998	October 1998 – December 2001
Mean	0.09%	-0.07%	-0.15%	1.00%	2.15%	0.36%	-0.20%	0.42%	-0.02%	0.21%
Median	0.00%	-0.05%	-0.31%	0.65%	1.89%	0.00%	-0.53%	0.10%	-0.20%	-0.14%
Max	2.14%	4.23%	5.82%	11.27%	11.01%	3.59%	6.34%	5.70%	3.65%	7.39%
Min	-1.47%	-2.44%	-4.46%	-1.88%	-0.81%	-2.02%	-5.58%	-1.87%	-2.53%	-2.01%
Range	3.61%	6.67%	10.28%	13.14%	11.82%	5.61%	11.93%	7.58%	6.19%	9.40%
St. Dev.	0.86%	1.73%	1.55%	1.71%	2.15%	1.47%	2.84%	1.48%	1.09%	1.70%

Source: central bank data and Datastream, calculation by author

Charts and tables show quite similar developments in all countries both in *level* and *volatility* of USD and DEM/EUR foreign exchange rates.

The most surprising result is the ambiguous impact of different foreign exchange rate regimes on measures of volatility (range, standard deviation) in individual countries, pointing to the fact that despite expectations of higher volatility under more flexible regimes, the evidence is that this factor is of relatively small significance compared to other factors at play.

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Unsurprising, but quite helpful in interpretation of exchange rate developments, is 'realignment' of the Czech. Hungarian and Slovak currencies from USD to DEM/EUR, confirmed both in daily and monthly data, as shown by decreasing/steady standard deviation of DEM/EUR rates and increasing/steady standard deviation of USD rates.

5.4 Real exchange rate and its role

This section explores developments in the real exchange rate in the Czech Republic, Hungary, Poland and Slovakia. Real exchange rate developments, particularly its equilibrium appreciation and actual appreciation during the transition process, play a key role in foreign exchange rate policy and its position within the overall framework for monetary policy and disinflation. (Halpern and Wyplosz, 1997; Liargovas. 1999; Orlowski, 2000) The chapter on the monetary policy transmission mechanism also demonstrated the importance of both nominal and real exchange rates for inflation developments in countries in the sample. The section shows that for real exchange rates in the sample of Central European countries:

- a trend appreciation can be demonstrated for the 1993-2001 period
- the trend was extremely uneven during individual subperiods
- there is a high level of uncertainty as to the causes as well as the size of the trend

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- consequently, it has been very difficult for policy-makers to accurately estimate an equilibrium exchange rate and adjust their behaviour accordingly

Chart 5.7 shows the development of the effective real exchange rate in the four countries concerned.[8] It shows that while there have been major reversals, there is an overall tendency towards appreciation in all four countries.

Chart 5.7: Real exchange rate in Czech Republic, Hungary, Poland and Slovakia
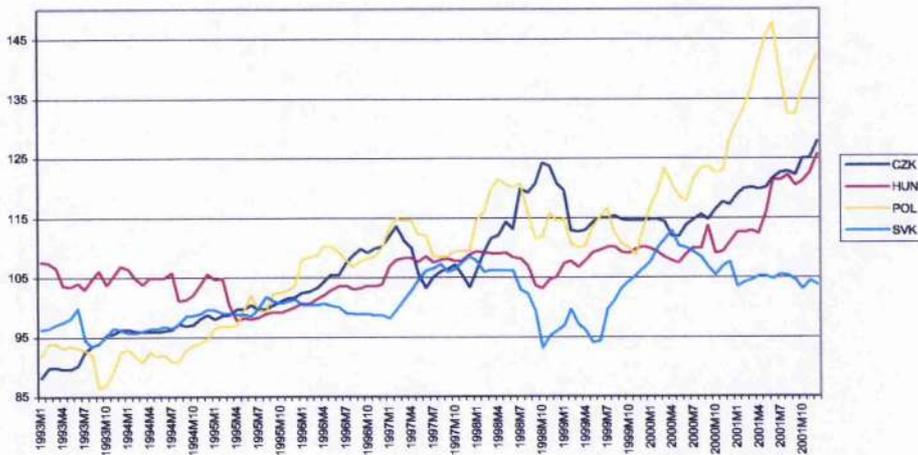
Source: IFS

Visual inspection is insufficient though to find answers to two important issues: whether there has been a trend in the development of the real exchange rate and what have been the developments in the volatility of the real exchange rate. To achieve this, the nature of the series needs to be determined.

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[8] The time series is trade-weighted and deflated by consumer price index. CPI-deflated real exchange rate is the only one available across the sample of countries for the entire period.

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Unit root testing shows that all real exchange rate series are non-stationary during the 1993-2001 period as a whole. In other words, real exchange rate behaviour cannot be characterised as stable – i.e. mean-reverting with a random white noise influencing actual outcomes in individual periods. The question that logically follows is: what *is* the nature of the real exchange rate series in these countries?

Table 5.5: Stationarity of real exchange rate series, 1993-2001: test statistics of unit root tests[9]

Country	Test value
Czech Republic	-0.942525
Poland	-0.136832
Hungary	0.640900
Slovak Republic	-1.844409
1% Critical Value	-3.4934
5% Critical Value	-2.8889
10% Critical Value	-2.5812

Source: IFS, calculation by author

Two principal options should be considered:

o the equilibrium real exchange rate has been appreciating and the actual real exchange rate has been fluctuating in a well-behaved fashion around the trend. This would correspond to a stationary series with a time trend. If this is so, then the time trend should be a significant variable and the detrended series should be stationary.

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[9] Tests were also done for shorter periods, with identical non-stationarity results. The only exception is Hungary during the regime of discrete devaluations between 1993 and early 1995, when the real exchange rate was stationary at a 10% level (on the verge of significance on 5% level) – in line with the official policy of stable real exchange rate.

- the equilibrium real exchange rate has not been appreciating during the transition and irregularities in the real exchange rate have been caused by random elements. This would correspond to a non-stationary series following a random walk without drift. If this is so, then the series should not be stationary and should be a random walk without drift.

The third, more complicated option is a combination of the first two:
- the equilibrium real exchange rate has been appreciating during the transition and the actual real exchange rate has been fluctuating in a random-walk fashion around the trend. This would correspond to a random walk series with a drift.

Testing shows that for the whole period, all the real exchange rate time series (with the exception of the Hungarian real exchange rate) are stationary at a 10% level of significance after detrending,[10] all the coefficients are positive and the explanatory power of the trend is relatively high (see table 5.6 for data). This confirms the first option - the equilibrium real exchange rate has been appreciating during the transition and the actual real exchange rate has been fluctuating in a well-behaved fashion around the trend.

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[10] Unit root test of residuals after regression on a constant and a time trend.

Table 5.6: Stationarity of detrended real exchange rate series, 1993-2001: test statistics of unit root test

Country	Unit root test statistics
Czech Republic	*-3.188084*
Poland	**-2.722903**
Hungary	-1.404814
Slovak Republic	**-2.842205**
1% Critical Value	-3.4934
5% Critical Value	-2.8889
10% Critical Value	-2.5812

Source: IFS, calculation by author
Note: bold type signifies stationarity at a 10% level of significance, bold italics type signifies stationarity at a 5% level of significance

Analysis of residuals shows the influence of the crisis years 1997-1998 and in particular of the Russian crisis on real exchange rates in all countries, where, based on nominal depreciation, there was also real exchange rate depreciation. The conclusions are broadly in line with the results of Liargovas (1999) and Orlowski (2000).

The literature offers several explanations for the trend appreciation (see Liargovas (1999) for a survey), but two rationales seem to dominate. One is related to initial undervaluation in all countries (Richards and Tersmann, 1995; Halpern and Wyplosz, 1997), where the appreciation is seen as a return to equilibrium. The other is based on underlying structural changes in the economy. Halpern and Wyplosz (1997) formulate it most broadly: "The equilibrium appreciation is explained by rapid gains in efficiency once markets drive prices and allocation of resources". (p. 458) Even though this movement in the equilibrium rate is often associated with the Balassa-Samuelson effect, there are other factors at play, such as the 'brand improvement' effect (increases in international prices of domestically produced tradables due to gradual

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establishment of reputation and penetration of western markets) and capital accumulation in the tradables sector. (Lipschitz and McDonald, 1990)

The Balassa-Samuelson (BS) effect, present in fast-growing countries, increases the equilibrium real foreign exchange rate due to differing productivity growth in the traded and the non-traded sector. The Balassa-Samuelson effect has received most attention in the discussion of real exchange rate appreciation.(e.g. Szapary, 2000). Thanks to a recent excellent survey on the topic in Central Europe by Kovacs (2002), there is a comprehensive review available.

For the Czech Republic, Bencs and Klima (2002) find that most of the real appreciation since 1994 stems from the development of the relative price of tradables and the benchmark estimate for the BS effect over the 1994-2001 period amounts to about 1.6 percent per annum. In Hungary, Kovacs (2002) finds a BS effect around 1.9% per annum.

Borowski et al. (2002) review an extensive body of work on the Balassa-Samuelson effect in Poland, which reaches disparate results for different period during 1990s - Sinn-Reutter estimates the effect as 4.2% per annum, Jankowiak et al. (2001) puts it at 3.7% per annum. The highest value is found by Schardax (2001) at 9.4% per annum, while Dudek (2001) and Cipriani (2000) come with the lowest ones: 1.2% and 1.5% respectively.

For Slovakia, Hajnovic (2002) produces what he calls a 'guesstimate' of 1-2% annually. Egert (2002) is even more skeptical, concluding that the Balassa-

Samuelson effect should account for 0% of the equilibrium real exchange rate appreciation for the Czech and Slovak Republics and for 1-3% annual equilibrium real exchange rate appreciation for Hungary and Poland.

Liargovas (1999) demonstrates that the underlying reason for real exchange rate appreciation is crucial for assessing whether the appreciation is an equilibrium one. However, since it is very difficult to estimate the level of initial undervaluation as well as to accurately conclude what is the size of the Balassa-Samuelson effect, it is very difficult ex post and it was even more difficult at the time for policy-makers to know with any reasonable certainty to what extent movements in the real exchange rate (appreciation) represented changes in the equilibrium. As shown in the literature review, it has also been rather difficult to infer the equilibrium level from the balance of payments.

5.5 Experience of individual countries with exchange rate strategies

In section 5.2, we identified seven potential exchange rate strategies relevant for policy-makers in Central European countries during 1990s and early 2000s. Sections 5.3 and 5.4 looked at actual developments in nominal and real exchange rates in Central Europe. In this section, the use of the strategies by individual countries will be examined on the basis of all three previous sections.

The section shows that use of Strategies A through D, associated with no flexibility or limited flexibility, occurred in discrete, clearly identifiable periods.

This is not so with Strategies E through G. While it is obvious when a country entered the policy space of managed flexibility associated with Strategies E through G, there is no precise criterion to use in differentiating between managed flexibility aimed at nominal stability and managed flexibility that tolerated nominal appreciation as an element of the disinflation strategy.

Therefore, when dealing with managed flexibility, the analysis of individual country experience looks at policy range rather than at individual strategies. It generally finds that, for managed flexibility, monetary policy strategies in Central Europe favoured nominal stability or appreciation. The policy-makers allowed sustained depreciation only when the exchange rates were finding equilibrium after the float.

In case of *the Czech Republic*, from the beginning of transition until February 1996, it used the strategy of nominal stability and no flexibility (Strategy A) in the form of a stable soft peg with a very narrow 0.5% band. The strategy placed a heavy emphasis on the disinflationary aspect of the exchange rate policy by providing a very predictable (narrow band) and a very stable (no change in the central parity) environment. In February 1996, the band was widened to 7.5%, switching to the strategy of nominal stability and limited flexibility (Strategy C). The wider band was supposed to preserve the stable environment, but make it less predictable and thus discourage speculative capital inflows. The impact of the shift was limited as the interest rate differential vis-à-vis the anchor currencies (DEM and USD) remained high compared to the band width and the central bank was reluctant to utilise the band fully.

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In the end, both strategies cumulatively entailed excessive real exchange rate appreciation, leading to the currency crisis of May 1997, which resulted in the floating of the Czech currency in June 1997. As mentioned above, managed flexibility involves shifts within a continuous range of exchange rate strategies rather than a stable, clear-cut, once-and-for-all choice. Based on the analysis of detailed minutes of the Bank Board of the Czech National Bank, two stages can be discerned. [11]

During the first one, which lasted from the aftermath of the crisis in June 1997 until early 1999, the central bank left the market largely on its own to find a new equilibrium rate after the shock of the crisis. The process involved sharp appreciations and depreciations both in the nominal and in the real exchange rate and utilised the full spectrum of options. During this stage, the relationship between the exchange rate and the new inflation target was not at the forefront of policymakers' agenda.

From early 1999 on, the central bank became much more actively involved in the exchange rate management. Its policy was based on the (valid) expectation of renewed capital inflows and the consequent pressures for appreciation. The central bank incorporated these expectations into its overall inflation targeting framework and acted against the appreciation only when it was too sharp or involved the threat of undershooting the inflation target. Therefore, the actual

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[11] The Bank Board of the CNB is the top policy-making body of the Czech central bank and it began publishing detailed minutes of its sessions simultaneously with its shift to inflation targeting in December 1997.

strategy in this period is in the space between Strategies E and F (managed flexibility + nominal stability or appreciation).

Hungary, despite occasional changes in the exchange rate regime, persevered with one exchange rate strategy – Strategy B of nominal depreciation and no flexibility - from the beginning of transition until May 2001. The strategy was implemented at first via a fixed exchange rate with frequent minidevaluations, but was changed, in 1995, to a more predictable crawling peg. The approach reflected the Hungarian preference for real exchange rate stability and freedom of manoeuvre at the expense of a strong disinflationary role for the exchange rate.

At the end of the 1990s, the strategy reached its limits in terms of disinflation and, in 2001, the exchange rate band was widened to 15% and the crawl was stopped. At the same time, an ambitious inflation target was set for the years 2001-2003. Hungary is probably the most clear-cut example, in our sample, of a country switching to managed flexibility in order to allow nominal appreciation – Strategy E. Between May 2001, when the band was widened, and December 2001, the end of our reference period, the nominal effective exchange rate appreciated by 8% (compared to depreciation of 2% during the same period in 2000).

Poland, due to initial conditions similar to Hungary, also followed the Strategy B of nominal depreciation and no flexibility at the beginning of the transition. However, it felt the need to increase the band width to 7% already in May 1995

to deter speculators. The Strategy D of nominal depreciation and limited flexibility lasted from May 1995 until February 1998. Due to a relatively high level of inflation in the mid-1990s, even the looser peg provided a good nominal anchor.

In February 1998, the band was widened to 10% (later extended to 12.5% and 15% and finally abandoned in April 2000) and Poland thus entered the period of managed flexibility. At the time, the crawling peg was still in use and Poland implemented Strategy G of nominal depreciation and managed flexibility though with a decreasing rate of depreciation. The inflation reached single digits during 1998 and the central bank introduced a new policy framework – inflation targeting – with the aim to push inflation below 4% by 2003. All of this provided a new role for the exchange rate in monetary policy.

After the disinflation stalled during 1999 and 2000, monetary policy was severely tightened and the subsequent nominal appreciation in 2000 and 2001 became one of the principal tools of disinflation. Therefore, the policy space between Strategies E and F was used with emphasis on Strategy E – nominal appreciation within managed flexibility.

Slovakia is a rather similar case to the Czech Republic. From the beginning of transition until December 1995, it used the strategy of nominal stability and no flexibility (Strategy A) in the form of a stable soft peg with a very narrow 0.5% band. The monetary separation from the Czech Republic in February 1993 led to

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one devaluation in July 1993 (10%), but otherwise the developments were nearly identical.

Slovakia shifted to Strategy C (nominal stability and limited flexibility) in December 1995 – several months prior to the Czech Republic and as in the neighbouring country, the impact of the shift was limited. The size of the interest rate differential vis-à-vis the anchor currencies (DEM and USD) remained significant in comparison to the width of the band and, with the exception of the last few months of the peg. the central bank was reluctant to utilise the band fully. The strategy lasted a year longer than in the Czech Republic, until it was also ended because of a currency crisis in October 1998.

After the Slovak currency was floated in October 1998, the first year witnessed dramatic exchange rate changes. Beginning in late 1999, the central bank focused unambiguously on nominal stability. Therefore, the monetary policy was strongly dominated by Strategy F (managed flexibility and nominal stability) though the bank allowed nominal appreciation to help disinflation when it believed the external balance was not threatened. Compared to the other three Central European countries. Slovakia seemed to be most concerned about nominal appreciation.

Diagram 5.3: Development of exchange rate strategies in Central Europe
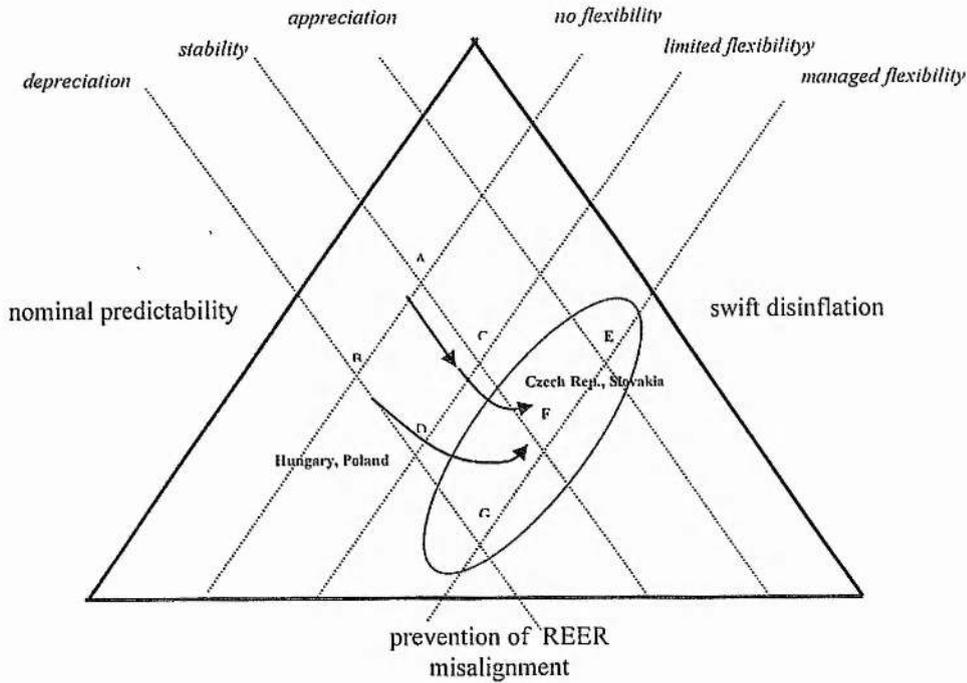
Diagram 5.3 visually summarises paths taken by the four Central European countries. Starting from different initial conditions, they gradually converged towards managed flexibility and nominal stability/appreciation.

5.6 Evaluation of Central European exchange rate strategies

This section presents evaluation of all individual strategies from A to G in alphabetical order. It looks, in detail, at both advantages and risks of each one and ties in country experience.

Strategy A - nominal stability + no flexibility: this exchange rate strategy is very strong on the nominal anchor function and provides a substantial contribution to

disinflation, but makes the economy quite vulnerable. A soft peg with a fixed parity usually requires higher nominal interest rates than in anchor currencies for successful disinflation[12] and so encourages capital inflows. A possible strategy with a fixed exchange rate is to attempt a rapid decrease in inflation with high interest rates and temporarily neutralise, via sterilised intervention, the capital inflows such a policy might attract. If disinflation progresses relatively quickly, interest rates can decrease and capital inflows sensitive to the interest rate differential will abate. The real exchange rate will appreciate to the extent of the temporary inflation differential.

This strategy was used by the Czech Republic and Slovakia until 1997/1998, resulting in an ultimate failure. The reason was limited success in bringing down inflation due to autonomous factors. This caused simultaneous appreciation of the real exchange rate, continuing capital inflows and high costs and limited effectiveness of sterilised intervention. In the end, this led to a currency crisis and an involuntary exit from the peg. In the environment of significant uncertainty about the equilibrium real exchange rate and risk aversion towards sustained external imbalance, the fixed exchange rate makes it difficult to adjust the nominal exchange rate and makes fiscal policy bear the whole brunt of adjustment and crisis prevention when the external imbalance is considered risky. Consequently, the strategy can be recommended for periods of relatively high inflation and limited financial integration with the world economy.

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[12] To achieve positive real interest rates.

Strategy B - nominal depreciation + no flexibility: exchange rate strategies based on a combination of nominal depreciation and no flexibility are strong on the nominal anchor function and make it easier to address vulnerability than for nominal stability, but they are weak on the disinflation front. There are two ways in which they can be implemented. The first one was attempted by Hungary during the 1991-1995 period. when it used frequent small devaluations to stabilise the real exchange rate and use the peg as a nominal anchor. Unsurprisingly, it was not successful with regard to the latter – on the contrary, expectations of future devaluations added to inflationary expectations. The second option is to use a crawling peg. This approach is similar to the fixed-but-adjustable exchange rate. but shifts the emphasis of foreign exchange rate policy from disinflation to crisis prevention by stabilisation of the real exchange rate (or at least a decrease in the speed of appreciation). Appreciation of the real exchange rate, such as there is, takes place through nominal exchange rate depreciation and a higher inflation differential. This strategy allows much more fine-tuning and gradualism in approaching disinflation. If disinflation is the principal policy target. it also requires higher nominal interest rates to balance the effects of nominal depreciation on price developments, thus leading to problems with capital inflows similar to those with the fixed-but-adjustable peg. This strategy was used by Hungary between 1995 and 2001 and by Poland between 1991 and 1995. It was very successful in preventing significant external imbalance and in very gradual disinflation to single-digit levels. The crawling peg makes the fiscal policy bear less of a burden of adjustment and crisis prevention when the external imbalance is considered risky than the fixed-but-adjustable peg. It also makes it unlikely that it will have to be abandoned under

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pressure as the fixed-but-adjustable regime. It should be noted that this strategy is, by nature, transitory. As the rate of crawl/mini devaluations slows down together with the decreasing inflation, it leads to Strategy A or to a floating currency.

Strategy C - nominal stability · limited flexibility and Strategy D - nominal depreciation + limited flexibility: these exchange rate strategies share the characteristics of analogous strategies with no flexibility, primarily because the only difference (increase in band width) was generally insufficient to change the underlying strategy. Exchange rate strategies in this category still utilise the exchange rate as the nominal anchor and most comments on the previous category apply, but the wider band is applied to introduce more uncertainty, deter speculators and thus deal with capital inflows. Ultimately, this approach proved to be transitory and largely ineffective. Such bands are generally too narrow to deter speculators if authorities are afraid to allow the actual rate to get too close to the edge of the band. If authorities make full use of the band, they can introduce a dangerous element of self-fulfiling prophecy of a currency crisis as the Czech and Slovak cases attest. The principal difference between the two strategies – C and D – is the emphasis placed by the latter on preventing real exchange rate misalignment.

Strategy E - nominal appreciation + managed flexibility: this strategy makes for a strong role of the nominal exchange rate in disinflation. The exchange rate flexibility prevents excessive vulnerability, but creates potential for fluid, but sharp reversals in the nominal exchange rate. Under this scenario, the exchange

rate lacks the role of a nominal anchor. A possible strategy is to let the nominal exchange rate appreciate and use the appreciation to reduce inflation. If this strategy is successful, the real exchange rate appreciates only to an extent that does not create dangerous external imbalances. Under this approach, appreciation of the real exchange rate takes place through nominal exchange rate appreciation and rapid elimination of the inflation differential. Such a policy has been intermittently used with relative success in all four countries.

On the other hand, this strategy is the one most strongly associated with the possibility that the foreign exchange rate becomes a source of disturbance beyond the authorities' intentions as this strategy can easily lead to significant real exchange rate appreciation if inflation does not fall rapidly enough or if the nominal appreciation is very high. The strategy can be recommended if there is a strong Balassa-Samuelson effect and/or high FDI inflows so that the equilibrium real exchange rate either appreciates substantially or the risk of a currency crisis is lowered.

Strategy F - nominal stability · managed flexibility: even though this strategy aims at de facto stability of the nominal exchange rate, the lack of commitment makes it difficult for the exchange rate to serve as a nominal anchor. The exchange rate flexibility prevents excessive vulnerability so it can be seen as a less risky version of a soft peg with a narrow band, but one with an equal emphasis on the role of the nominal exchange rate in the disinflation. This is a strategy of rough stabilisation of the exchange rate to prevent major disruption to external balance and disinflation.

Strategy G - nominal depreciation + managed flexibility: this strategy concentrates heavily on the prevention of vulnerability and leaves out the role of the exchange rate as a nominal anchor. With this strategy, the exchange rate can still play some role in disinflation, if its rate of depreciation is lower than the inflation differential. The focus of the foreign exchange rate strategy is to neutralise the impact of the foreign exchange rate on inflation developments by its stabilisation within an informal corridor to prevent major disruption to external balance and inflation. Such a strategy is associated with lower nominal interest rates than the previous one and is most appropriate when the level of capital inflows is relatively low. Its principal problem is that it provides no clear strategy for disinflation. As already noted, Strategies E through G, rather than being discrete, clear-cut approaches, form a policy continuum.

5.7 Conclusion

This chapter analysed the role of nominal and real exchange rates in monetary policy of Central European countries, bringing together various empirical results to form a unified explanation of the role of the exchange rate in monetary policy in small, open transition economies.

Experience of the Czech Republic, Hungary, Poland and Slovakia confirms that soft pegs can be a successful nominal anchor during a period of limited integration with world financial markets and there is probably no credible

alternative for a nominal anchor for such countries short of a hard peg. On the other hand, it also shows that fixed-but-adjustable pegs are probably unsustainable in small, open economies once their integration into world financial markets gets underway.

This being said, the experience of four Central European countries does not confirm the 'hollowing-out' hypothesis, according to which the overall movement in foreign exchange rate regimes is towards corner solutions of nearly absolute flexibility or rigidity in the foreign exchange rate. The Czech Republic, Hungary, Poland and Slovakia consistently avoided corner solutions and pursued intermediate foreign exchange rate regimes despite currency crises and periods of painful adjustment.

The range of regimes chosen by these countries is a continuum ranging from an officially floating foreign exchange rate where the interference of the authorities is achieved chiefly via interest rate movements (Poland since 2000) through official floats with exchange rate management via interest rate movements and limited exchange rate intervention (Czech Republic since 1998) and official floats with extensive foreign exchange market intervention (Slovakia since 1999), official pegs with wide band and limited involvements in the foreign exchange market (Poland between 1998 and 2000, Hungary since 2001) and official pegs with wide band and extensive interference in the foreign exchange market (Czech Republic between 1996 and 1997, Slovakia between 1996 and 1998) to narrow pegs with explicit and actual commitment to high levels of foreign exchange rate stability (Hungary, Poland, Slovakia and Czech Republic

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between 1993 and 1996). In this respect, there is no actual dichotomy between fixed and flexible regimes, but a continuous range of options.[13]

While formal floating of the currency entails a change in the behaviour towards less extensive management of the exchange rate, the small open economies in our sample have clearly been concerned about the exchange rate and tried to manage its development regardless of the formal regime. Distinctions in actual behaviour are much less significant than the official distinctions between various regimes would suggest. The level of the authorities' management of the foreign exchange rate usually differs with a different foreign exchange regime in the same country, but comparisons of official regimes between countries can be misleading. True exchange rate flexibility for small open economies is neither practised, nor advisable. Additionally, various foreign exchange regimes have had ambiguous influence on nominal volatility, not confirming the disrupting role of flexible exchange rates in the short-term.

Regarding the real exchange rate, the chapter demonstrated a trend appreciation for the 1993-2001 period in the four countries, but with an extremely uneven trend and a high level of uncertainty as to the causes as well as the size of the trend. This showed the difficulty faced by policy-makers in accurately estimating an equilibrium exchange rate and adjusting their behaviour accordingly.

Based on the empirical findings, the chapter proposed a framework for analysis of exchange rate choices and a resulting classification of exchange rate strategies

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[13] For more background on specific countries and periods, see individual country sketches in

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in Central Europe with a view to application to other small open economies. The proposed framework was based on three key considerations relevant for Central European countries, namely the emphasis on low inflation, preference for predictability of the nominal exchange rate embodied in the choice of the exchange rate as a nominal anchor and prevention of the real exchange rate misalignment.

The priority to be ascribed to low inflation and the role of the exchange rate in this process have been the first consideration of policy-makers in Central Europe in determining the exchange rate strategy. The second consideration is the choice of the nominal anchor and the subsequent achievement of nominal predictability, if not always stability. These two issues tend to be seen as one in small open economies - when analysing the use of the foreign exchange rate channel in achieving low inflation, what is usually meant is nominal exchange rate stability in the form a fixed exchange rate. The chapter shows why this is not so in transition countries and why these two priorities need to be considered separately and can even sometimes be at odds. Concern about the real exchange rate misalignment and prevention of currency crises is the third factor.

Therefore, any exchange rate strategy chosen within the sample of countries studied can be fitted into a triangle of the following priorities for the exchange rate: swift disinflation, predictability of nominal exchange rate and prevention of real exchange rate misalignment. Nominal stability combined with no or limited flexibility are strategies strong on the nominal anchor function and provide

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substantial contribution to disinflation, but make the economy quite vulnerable (unless the hard peg option is chosen as it was not in Central Europe). Nominal depreciation combined with no or limited flexibility are strategies strong on the nominal anchor function and make it easier to address vulnerability than for nominal stability, but they are weak on the disinflation front. Nominal appreciation combined with managed flexibility makes for a strong role of the nominal exchange rate in disinflation. The exchange rate flexibility prevents excessive vulnerability, but creates potential for fluid, but sharp reversals in the nominal exchange rate. Under this scenario, the exchange rate lacks the role of a nominal anchor. Nominal stability combined with managed flexibility can be seen as a less risky version of a soft peg with a narrow band, but one with an equal emphasis on the role of the nominal exchange rate in the disinflation. Nominal depreciation combined with managed flexibility concentrates heavily on the prevention of vulnerability, with limited emphasis on disinflation, and leaves out the role of the exchange rate as a nominal anchor.

Chapter 6: Domestic targets and their role in monetary policy

6.1 Introduction

Domestic targets – targets for monetary policy expressed in terms of domestic monetary variables such as growth of monetary or price aggregates – are an ubiquitous element of monetary policy frameworks. This chapter analyses their role in the monetary policy of Central European countries. It is divided into two parts – one section deals with targeting money, the subsequent group series of sections focuses on targeting inflation. That distinction is, however, to some extent, in the eye of the beholder. Nonetheless, it is conceptually useful and conforms to the standard classification of the various mechanisms for constraining the discretion of the authorities in monetary policy.

6.2 Monetary targeting

Monetary targeting assumes a predictable relationship between the growth of a chosen monetary aggregate and the growth of the price level as well as the ability of monetary policy to control the development of the monetary target chosen as the intermediate target of monetary policy. However, after initial enthusiasm in the 1970s, monetary targeting proved to be unsatisfactory and has essentially been abandoned. Since Chapter 1 contains a more detailed analysis, the problems are only briefly summarised here.

The relationship between money and prices proved to be highly unstable. Targeting money seems to be. more than other regimes, subject to Goodhart's law – any observed statistical relationship in monetary policy breaks down once that relationship is used as a transmission/targeting mechanism. It also proved to be much more difficult than expected for central banks to control the chosen monetary aggregates.

Despite these problems. which were well known by the early 1990s, all Central European countries used monetary targeting to some extent during the transition. The Czech Republic and Poland used monetary targeting in the form of M2 targets in the 1993-1997 period and Slovakia used it between 1993 and 1999. In Hungary, M3 targets were used during the 1993-2001 period, but explicit target values were not officially announced.[1]

This section argues that despite both unpredictability in the development of the targeted variable (broad money) and the authorities' frequent disregard for the monetary targets, the targets were useful for a variety of reasons during fixed exchange rate regimes. They were abandoned only after a completely new framework combining an inflation target and exchange rate flexibility was introduced.

The first part of the section looks *ex post* at suitability of the four countries for monetary targeting. To assess this, the magnitude of velocity shocks and their

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1 Since the Hungarian M3 aggregate was quite similar to M2 aggregates in the other three countries, they will be referred to as 'broad money' throughout the chapter.

predictability need to be analysed, together with the role of monetary aggregates in the transmission mechanism.

Table 6.1 contains rudimentary data on the magnitude of change in velocity of broad money in individual countries. Their visual representation is in charts 6.1 through 6.4

Table 6.1: Change in velocity of the broad money aggregate in Central European countries, 1993-2001

Country	Average quarterly change	Difference between minimum and maximum value
Czech Republic	0.008848	0.057519
Hungary	0.012799	0.048412
Poland	0.016954	0.314465
Slovakia	0.008536	0.069072

Source: IFS, central bank data
Note: 1995-2001 for Hungary and Poland

Czech Republic and Slovakia have experienced only limited movements and a modest overall shift in the velocity. On the other hand, Poland witnessed rapid decreases in velocity that accumulated into a radical and sustained change – in seven years, the velocity nearly halved. In Hungary, jumps in both directions did not translate into a sustained movement in either one of them.

Chart 6.1: Trend in broad money velocity in the Czech Republic, 1993-2001

Source: Czech National Bank data

Chart 6.2: Trend in broad money velocity in Hungary, 1995-2001[2]
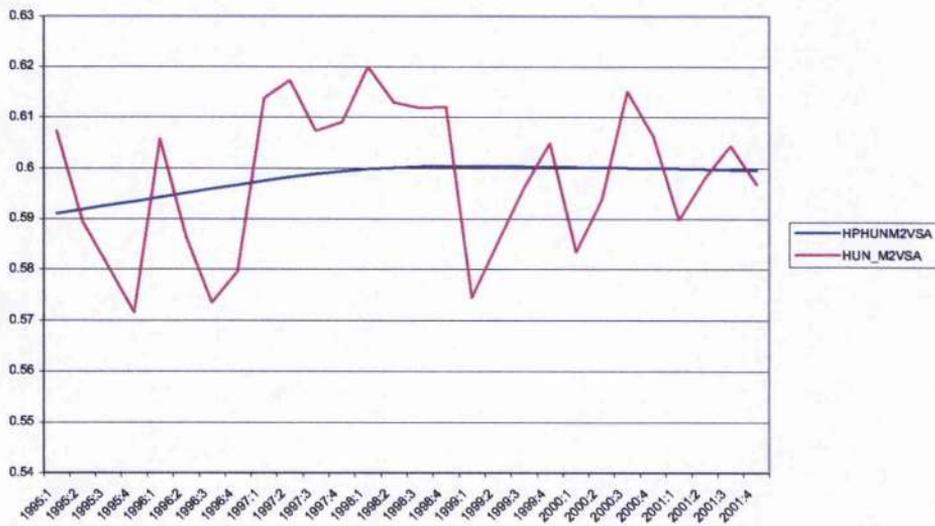
Source: National Bank of Hungary data

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[2] For Hungary and Poland, velocity is estimated beginning in 1995 due to unavailability of reliable quarterly GDP data in 1993 and 1994.

Chart 6.3: Trend in broad money velocity in Poland, 1995-2001
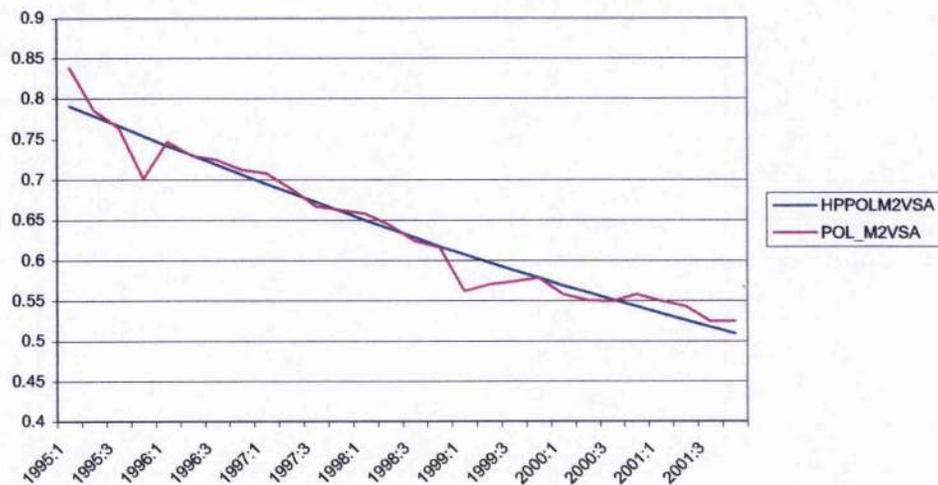
Source: National Bank of Poland data

Chart 6.4: Trend in broad money velocity in Slovakia, 1993-2001

Source: National Bank of Slovakia data

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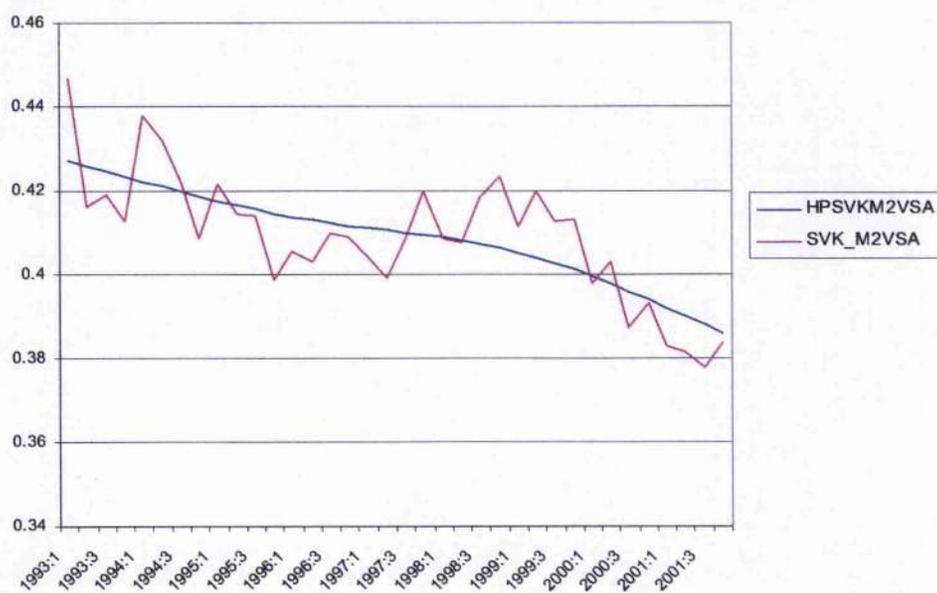
In order to determine whether it was possible for policy-makers to predict these velocity shocks, the analysis focuses on the underlying trend of change in velocity, which should give a rough indication of the environment in which the policy-makers had to work.

Charts show trends in velocity in all four countries between 1993 and 2001. The velocity data were seasonally adjusted and trends were estimated using a Hodrick-Prescott filter.[3] With the exception of Poland, the trend velocity was quite stable, particularly during the period of fixed exchange rates. Chart 6.5 confirms this point in an international comparison of six small open economies. Czech Republic, Hungary and Slovakia experienced smaller changes in trend velocity[4] than Denmark, Korea, Mexico or Israel during the same period. In Poland, on the other hand, the change in the trend was quite dramatic.

Table 6.2 looks at the issue of how much of the change in velocity can be explained by changes in the underlying trend. This is measured as r-squared of the equation that regresses velocity of money on the Hodrick-Prescott trend. (Other trends – linear or quadratic - produce similar results for each country.) The answer differs from a country to country. In Hungary, the trend was very weak, in Czech Republic and Slovakia, it was quite important, while in Poland it was exceptionally powerful.

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[3] The smoothing parameter used in filtering was 1600, based on standard recommendation of the software (Eviews).

[4] Measured as standard deviation of the trend series divided by the average value of the trend series.

Chart 6.5: Change in trend velocity of broad money in eight small open economies between 1993-2001
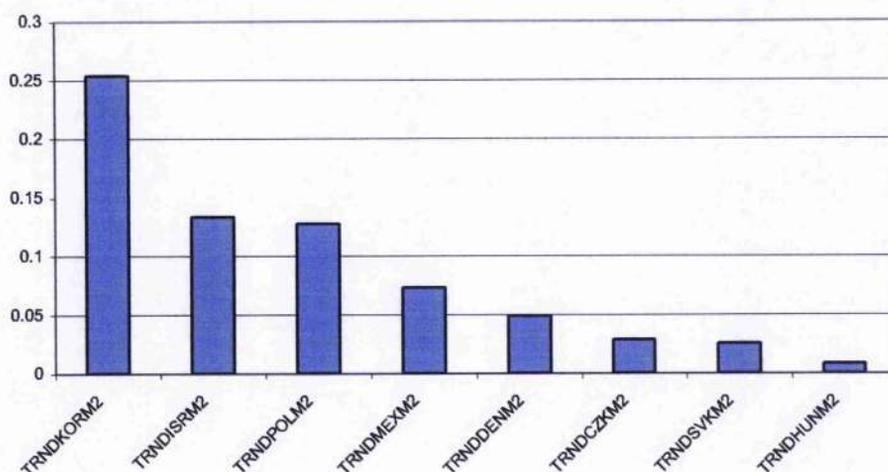
Table 6.2: Explanatory power of velocity trends in Central Europe

Country	R-squared
Czech Republic	0.536523
Hungary	0.101674
Poland	0.951582
Slovakia	0.608849

Source: author

Taken together, the magnitude of velocity change and the explanatory power of the trend show that: in Poland the level of unpredictability in velocity of money was quite low; the opposite was true for Hungary; with Czech Republic and Slovakia being in the middle. To assess the role of money in the transmission mechanism of monetary policy, we refer to the econometric review contained in Chapter 3. In Hungary and in the Czech Republic, broad money is neither influenced by nor does it influence other key monetary policy variables such as inflation and interest rates. In Slovakia, the role of broad money is limited to its

impact on real GDP – hardly a basis for the use of monetary targeting. Only in Poland does broad money growth lead to increases both in prices and real GDP.

These findings come together in the evaluation of suitability of individual countries for monetary targeting shown in table 6.3. The overall result is that for Czech Republic, Hungary and Slovakia, velocity of money did not change dramatically, but the changes were difficult to predict and were associated with a loose relationship between broad money and inflation. In Poland, the actual and trend velocity of money both declined dramatically, but in a linear and predictable manner. Together with an important role for money in the transmission mechanism of monetary policy, this made Poland more suitable for money targeting.

Table 6.3: Suitability of Central European countries for monetary targeting

Country	Unpredictability of the monetary aggregate	Role of money in transmission mechanism	Suitability for monetary targeting
Czech Republic	Medium	None	Very low
Hungary	High	None	Very low
Poland	Low	Strong	High
Slovakia	Medium	Weak	Low

Source: author

The second part of the section looks at actual behaviour of the authorities – to what extent they actually achieved the targets they set for themselves. Table 6.4 demonstrates that targets were repeatedly overshot as well as undershot, particularly in years of capital inflows of unexpected magnitude.

Table 6.4: Monetary targets in Central Europe and their fulfilment

| | Czech Republic | | Poland | | Slovakia | |
| | M2 growth in % | | M2 growth in bn of PLN | | M2 growth in % | |
	Target	Actual outcome	Target	Actual outcome	Target	Actual outcome
1993	19	20.5	15	14.8	19	18.5
1994	12–15	21.5	15.5–16.9	21.4	13.2	18.6
1995	14–17	19.6	17.1	26.9	12.3	21.2
1996	11-17	18	23	30.5	11.6	16.6
1997	7-11	10.1	27.4-28.6	39.8	10.7	8.8
1998					9.4	2.5
1999					6.0-8.8	10.7

Source: central bank data

As we can see, the targets were not adhered to most of the time. In practice, they were always overridden in the interest of the exchange rate target (see below). They also did not serve as a nominal anchor for the expectations of economic agents because they did not constitute a reliable source of information on inflation developments.

Central European countries announced, from the very start of transition, some sort of annual inflation 'target' even though its precise nature and standing was not quite clear until the introduction of formal inflation targeting in the late 1990s/early 2000s. In some countries and in some periods, it was more of an inflation prediction; at other times, it leaned towards a target. Table 6.5 demonstrates that countries were more successful in achieving their inflation 'targets' than their monetary targets. Monetary targets were rarely achieved, while the inflation 'targets' were achieved most of the time.

Table 6.5: Inflation 'targets' in Central Europe and their fulfilment

	Czech Republic		Poland		Slovakia	
	Inflation growth in %		Inflation growth in %		Inflation growth in %	
	Target	Actual outcome	Target	Actual outcome	Target	Actual outcome
1993	18	20.8	32.2	37.6	30.4	25.1
1994	10-12	10.2	23	22.5	10-13.2	11.7
1995	9-11	9.1	16.0	21.6	8-10	7.2
1996	decline	8.8	17	18.5	6-7.2	5.4
1997	decline	8.5	15	13.5	4.9-5.8	6.4
1998					5.6-5.9	5.6
1999					6.0-7.5	6.1

Source: central bank data

Comparison of monetary and inflation 'targets' also shows that success in achieving monetary and inflation 'targets' diverged in most years. As table 6.6 shows, only in five instances out of 17 were the outcomes in the same direction.

Table 6.6: Comparison of monetary and inflation 'targets' in Central Europe

	Czech Republic		Poland		Slovakia	
	'targets'		'targets'		'targets'	
	M2	CPI	M2	CPI	M2	CPI
1993	overshot	Overshot	undershot	overshot	Undershot	undershot
1994	overshot	on target	overshot	undershot	Overshot	on target
1995	overshot	on target	overshot	overshot	Overshot	on target
1996	overshot	on target	overshot	overshot	Overshot	undershot
1997	on target	on target	overshot	undershot	Undershot	Overshot
1998					Undershot	on target
1999					Overshot	on target

Source: central bank data

Consequently, the picture that emerges is one where monetary targets were neither adhered to, nor terribly useful in achieving inflation outcomes desired by policymakers. Where did their usefulness lie?

The answer is linked to the importance of fiscal considerations and the lack of other indicators of the true stance of monetary policy. In the environment of incomplete privatisation of enterprises and banks as well unclear financial relationships between the central bank and the government, monetary aggregates provided a better measure of fiscal and quasi-fiscal expansion than conventional fiscal statistics.

Whenever monetary targets were used in Central Europe, they stood alongside exchange rate targeting in the form of a fixed exchange rate. (The only exceptions are short periods in the Czech Republic and Slovakia following the demise of their pegs.) The monetary targets were also important for central banks in their decision-making. While fixed exchange rates provided nominal anchors for outsiders, they provided little guidance for policymakers themselves on how to set policy instruments to make the exchange rate sustainable or to achieve a targeted level of inflation. In this sense, monetary targets can be seen as a true intermediate target – a variable influencing inflation that the central bank could control. However, this proved to be the case only with high inflation and low capital inflows. Once inflation dipped below 20% and net capital flows became important in comparison with the overall money supply, monetary targeting became a blunt instrument indeed.

On a similar note, a rapid capital outflow had a substantial dampening effect on monetary growth often without a corresponding effect on inflation as inflation was more influenced by currency depreciation and increased inflation

expectations (as evidenced by the Czech and Slovak experience in 1997 and 1998).

After the exchange rate targeting was terminated either voluntarily or following a crisis, all four countries gradually shifted towards inflation targeting. In such an environment, setting and announcing monetary targets became much less relevant and the practice was discontinued.

6.3 Inflation targeting - introduction

Inflation targeting dispenses with a formal intermediate target and attempts to target inflation directly. The boundary between inflation targeting and other monetary policy frameworks (such as money targeting and discretionary policy with an implicit anchor) is highly uncertain and frequently in the eye of the beholder. (Mishkin and Savastano, 2001)

After several developed economies – e.g. Canada, New Zealand, United Kingdom, Sweden, Spain, Finland and Australia - adopted inflation targeting in the early to mid-1990s and early evaluations indicated the relative merits of the new framework (see Almeida and Goodhart, 1998; Brunila and Lahdenpera, 1995 and Leiderman and Svensson, 1995), it was rapidly instituted by many developing and transitional economies, which either voluntarily or under duress gave up their fixed exchange rate. Brazil, the Czech Republic, Hungary, Israel, Mexico and Poland are among developing or transitional economies that recently

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switched to inflation targeting. (e.g. Bogdanski et al., 1999; Carstens and Werner, 1999; Leiderman and Bar-Or, 2000; ICEG, 2002)

Green (1996), Bernanke and Mishkin (1997) and Bernanke et al. (1999), assert that, in order to establish a distinct framework, the switch to inflation targets should contain more than just a straightforward announcement of the precommitment to achieving a given quantitative target for inflation. Even though the experiences of individual countries differ significantly, the introduction of inflation targeting usually means:

- the announcement of an explicit, quantitative target for inflation. Such a target specifies the price index, the target level, the tolerance interval, the time frame and situations under which the target might not be adhered to. (Almeida and Goodhart, 1998; Leiderman and Svensson, 1995)

- the absence of other monetary policy targets or, at least, if there is a conflict, the clear subordination of other targets to achieving inflation aims (ibid.)

- an institutional commitment to price stability as the primary, long-term goal of monetary policy and increased communication with the public about the plans and objectives of policymakers (Bernanke and Mishkin, 1997, p. 97)

- increased transparency of monetary policy (Bernanke et al., 1999, pp. 297-8)

- increased discipline of monetary policymakers and their accountability for achieving inflation objectives. (Bernanke et al., 1999, pp. 24-5, 296-7)

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If these conditions are met, announced inflation targets can become credible nominal anchors and stabilise the inflation expectations of agents. The remaining problem is the missing intermediate target and the ability of policy-makers to achieve the direct inflation targets. Since the monetary policy lag is substantial and estimated to last usually between one and two years, this is usually resolved by setting targets for the horizon which is believed to be most influenced by current policy decisions. Additionally, many countries produce formal inflation forecasts for this horizon and by changing policy instruments to hit the target within the forecast framework effectively made the inflation forecast an intermediate target.

6.4 Introduction of inflation targeting in Central Europe

Almeida and Goodhart (1998) find that, in developed countries, inflation targeting has usually been implemented after the collapse of a fixed exchange rate regime or after a period of discretionary policy with unsatisfactory results. Even though introduction of inflation targeting in Central Europe could be formally explained in these terms, they do not really fit the circumstances. Inflation targeting in Central Europe can be better explained as a reaction to the loss of a nominal anchor and to institutional change resulting from EU and EMU preparations. The Czech central bank became the first transition central bank to introduce, in December 1997, an inflation targeting framework, to be followed by Poland, Hungary and, arguably, Slovakia.

In May 1997, speculative pressures forced the Czech crown off its peg and the currency was floated. There was no explicit monetary policy framework for the following six months. In December 1997, a new regime called inflation targeting was introduced by the Czech National Bank.

In Poland, the exchange rate was increasingly unable to provide a precise nominal anchor since 1995 when the central bank allowed its increasing flexibility within the 7% band around the central parity. During 1998, as the declining inflation approached 10% and the exchange rate band was expanded to 10 and 12.5% around the parity and later even to 15%, the central bank decided it was time for a new monetary framework. At the same, a new constitution and a new central bank law mandated a shift to price stability as the overriding objective of monetary policy as well as a new, more independent central bank board.

In Hungary, inflation targeting was introduced simultaneously with the loosening of the exchange rate band to 15% and with a new central bank law that reinforced central bank independence and established price stability instead of internal and external currency stability as the central bank goal.

It is hard to determine precisely when the Slovak central bank switched to inflation targeting. In October 1998, the Slovak crown was floated after the National Bank of Slovakia (NBS) could no longer sustain a speculative attack against the peg. All through the rest of 1998 and 1999 until January 2000, M2

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was still officially used as the intermediate target, but the band for the growth of this monetary aggregate was not achieved in either of these two years (Dufek and Odor, 2000, p. 30). On the other hand, during the same period, NBS also announced as its provisional target a target concentrating on the measure of net inflation (55% of CPI with regulated and food prices excluded) and later specified also a headline inflation target. (see NBS, 1998) These targets were achieved in 1999.

The Slovak central bank finally unveiled a new monetary policy framework starting from January 1, 2000, which used a different concept of core inflation and can be classified as 'proper' inflation targeting since it fulfils all the criteria mentioned above. M2 became only a monetary policy indicator and the only target is now the core inflation index. The framework in place during 1999 can be named 'hybrid inflation targeting', a term used for the German and Swiss monetary policy framework by Bernanke and Mishkin (1997) and Bernanke et al. (1999).

In all four countries, therefore, inflation targeting was introduced simultaneously with the retreat of the previous nominal anchor – the exchange rate. However, the disappearance of the exchange rate as the nominal anchor was not necessarily abrupt, or related to an exchange rate 'collapse', allowing even temporary overlaps, such as in Poland.

The institutional changes which increased central bank independence and set price stability as the overriding policy objective took place in all four countries

between 1997 and 2001 and were related to the introduction of inflation targeting only in Hungary and Poland. A possible explanation is that while in these two countries inflation targeting was introduced at the time chosen by policy-makers, in the Czech Republic and Slovakia currency crises and the collapse of the exchange rate demanded new nominal anchors regardless of the timing of wider institutional changes.

6.5 Inflation targeting – design and implementation issues

The following table contains a brief overview of the current inflation-targeting framework in place in these three countries. These frameworks are then described and analysed in more detail.

Table 6.7: Overview of inflation-targeting frameworks in the Czech Republic, Hungary, Poland and Slovakia

Country	Medium-term target	One-year target	Price index used	Inflation report	Well-defined exceptions
Czech Republic	Yes – 2 % in 2005	Yes	CPI, but regulated prices temporarily excluded	Yes, quarterly	Yes
Hungary	Yes – 2 % in the long-term and below 3.5 % in December 2003	Yes	CPI	Yes, quarterly	No
Poland	Yes – below 4 % in 2003	Yes	CPI	Yes, quarterly	Yes, but not well-defined
Slovakia	No	Yes	CPI, but regulated prices excluded	No	No

Source: CNB, MNB, NBP, NBS

6.5.1 Choice of price index for inflation targeting

In developed countries, the target used in inflation targeting is often not the headline inflation, but some sort of core index measuring underlying inflation. Three groups of prices are often excluded from any core inflation index – energy prices, food prices and interest paid (see table 6.8). The first two are considered too volatile and supply-driven to be included in the index measuring underlying inflation in the economy. The last is sometimes excluded because its inclusion could give a wrong signal about inflation – if interest rates were increased, the inflation could also rise.

Table 6.8: Items excluded from CPI for inflation targeting

Country	Index excludes
Canada	Food and energy and indirect taxes
New Zealand	Significant change in export and import prices, interest payments, indirect taxes
United Kingdom	Mortgage interest payments
Sweden	Nothing
Spain	Nothing
Finland	Taxes, subsidies and capital costs related to housing
Australia	Interest payments, fruit and vegetables, oil, public sector prices and other volatile price items

Source: Brunila and Lahdenpera (1995), p. 129 and Almeida and Goodhart (1998), p. 64

When introducing inflation targeting, central bankers in transition countries had to face the following problem – how to define a core inflation measure that is still relevant for economic agents, but can be effectively influenced by a central bank? As seen above, such a problem is faced and resolved, to a smaller degree, by central banks in developed countries. However, the scope of the problem is quite different in transition countries.

Due to lower income per capita, food and energy are responsible for a much higher share of consumer expenditure in transition economies than in their developed counterparts. In transition economies, there was also another significant group – regulated prices (usually utility prices) that were at some point significantly below the cost-recovery level and needed to be rapidly increased to catch up with the rest of the price level. If food, energy and regulated prices (the two latter groups overlap) were all excluded from the core inflation index, the meaning of such measures for most economic agents would disappear as such an index would cover less than half of the overall CPI (see table 6.9). Its relevance in guiding inflation expectations would be much diminished if not obliterated.

Table 6.9: CPI composition in Central European countries, 1999,%

Group of prices	Czech Republic	Hungary	Poland	Slovakia
Food, alcoholic beverages, tobacco	32.7	30.2	35.8	31.2
Energy and/or regulated prices	23.2	25.2	15.7	20.5
Core prices	44.1	44.6	48.5	48.3
Total	100	100	100	100

Source: CNB, Hungarian Statistical Office, NBS, Polish Main Statistical Office

Summarising, as Wynne (1999), Cogley (1998) and Johnson (1998) note, a core inflation indicator should fulfil three criteria, of which two are important for the discussion here: that it be a good indicator of current and future trends in inflation and, at the same time, a viable target for monetary policy.

There are three principal ways of dealing with the dilemma: use of headline inflation; exclusion of regulated and energy prices, but inclusion of food prices; use of a trimmed measure of inflation, in which a fixed percentage of the most volatile price changes is excluded from the core index (see Bakhshi and Yates, 1999 and Bryan, Cecchetti and Wright, 1997 for general analysis).

The first option available to central bankers is to use headline inflation, disregarding the problems of controllability for the sake of its greater transparency and understandability, and the high value placed on it by economic agents. The National Bank of Poland chose this measure, but in a rather vague explanation in its medium-term monetary policy strategy effectively reserved a right not to stick to the target if it contravened the core inflation development (see section on other issues). The problems with use of headline inflation were documented already in its first year in 1999, when the target was overshot precisely because some of the non-core prices, particularly food and energy, behaved unexpectedly. (NBP. 1999, p. 4)

The second option is a compromise between controllability and meaningfulness - food prices are included, but regulated prices are excluded. This creates a meaningful index from the public's point of view, but still excludes those prices which are driven purely by political or regulatory decision. The Czech and Slovak central bankers chose this option. Its obvious risk is that due to the importance of food prices for the core inflation index (they account for 38% and 40% of the core inflation index in, respectively, Czech Republic and Slovakia), any significant unexpected swings of these prices can render the target effectively meaningless. A good example is the Czech Republic in 1999, when the low food inflation accounted for 64% of the undershooting of the inflation target. (CNB, 2000a, p. 1)

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Interestingly enough, no central bank chose the path of trimmed indices, even though research indicates that such an index would well capture the inflationary pressures in the Hungarian and Polish economy. (IMF, 1999a, p. 85 and IMF, 1999b, p. 22) The reasoning is that technically complex measures would not be credible in the eyes of the population. (ibid. and Dufek and Odor, 2000, p. 30)

6.5.2 Other target issues - the target level, the tolerance interval, the time frame, exceptions

Since the monetary policy lag is substantial and estimated to last usually between one and two years, the issue in setting inflation targets is how far into the future should they be aimed. Two cases need to be distinguished. If disinflation to the desired level has already been accomplished, then only a permanent corridor, which should provide boundaries for future inflation, needs to be set up.

If further disinflation is still to be achieved, separate medium- and short-term targets should be set to provide guidance for inflation expectations. A medium-term target (three-five years) acknowledges the monetary policy lag and anchors important medium- and long-term inflation expectations. However, to make the whole framework more specific and immediate, short-term targets (less than two years) should also be established, especially in case where wage contracts are negotiated annually (as they generally are in Central Europe).

The Czech, Hungarian and Polish inflation targeting arrangements include both of these aspects and are well-defined. The problem is with the Slovak framework, where the medium-term horizon is missing (NBS announces only

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one-year targets in the December of the previous year).

In every framework, it is important not only to define the rules, but also the exceptions. Well-defined exceptions can actually increase the credibility of an inflation-targeting framework, if they are transparent and limited to truly exceptional situations. This is partially the Czech case, where four classes of exceptions are defined:

a. substantial shocks to world prices of raw materials, energy and commodities

b. substantial exchange rate shocks unrelated to fundamentals and monetary policy

c. substantial agricultural shocks with resulting shocks to agricultural prices

d. emergencies and natural disasters with resulting supply and demand shocks

However, it can be argued that even though these exceptions are well defined, they are too broad and too likely to happen for them to be truly exceptional (e.g. in 1998 and 1999 at least (a) and (c) were fulfilled with a jump in the oil price and a fall in food prices).

The second-best solution is probably to specify no exceptions, which on one hand allows no room for manoeuvre, but by the very absence of exceptions makes it more likely that the promises made within the framework will be broken. This is the Slovak and the Hungarian case, where both central banks count on tolerance bands to take care of unexpected swings.

Unclear reservations are the worst, since they diminish the transparency and

accountability of the framework. The Polish inflation-targeting framework fits into this category, with the formulation in the medium-term monetary policy that: "despite the choice of CPI (as target), the impact of external factors not affecting core inflation will be commented upon in detail. The comments will be presented when specific policy decisions seem to be inconsistent, at first sight, with the direction of the discrepancy between the inflation target and the observed and/or forecast CPI level". (NBP, 1998, pp. 10-11)

6.5.3 Multiplicity of targets

The essence of inflation targeting is that the central bank processes all available information that might be related to future inflation and bases its policy on a complex estimate of what inflation is going to be. Since this is a rather complex operation, the policy framework has to be as simple and transparent as possible to ensure that the framework is credible for economic agents. Therefore, for inflation targeting to be credible, two conditions should be, broadly speaking, fulfilled:

- the central bank might take into account many indicators of future economic developments, but in the end there is only one that matters: expected inflation (headline inflation or a chosen core measure)
- economic agents must be clear about what it is that the central bank is taking responsibility for and under what conditions it might deviate from its objectives

In this respect, both the Slovak and the Polish inflation-targeting framework are flawed. In Slovakia, the central bank now announces headline inflation for the following year in terms of 'prediction', while core inflation is "gradually becoming the target". (NBS. 1999, p. 3) There are two problems with this framework and its lack of clearness and transparency. First of all, it is not clear what is really the target at any given moment. There is also an issue of confusion. When the central bank publishes its 'prediction' for headline inflation and 'target' for core inflation. many agents are unable and/or unlikely to understand the difference and will very likely focus on the 'prediction' of headline inflation as a more understandable measure of future inflation. If this 'prediction' is not achieved or is updated too often (in Slovakia, the 2000 prediction was updated a month after its publication in December 1999 due to unexpectedly high changes in regulated prices), it might discredit the whole inflation-targeting framework. (For an example of confusion even among sophisticated market participants, see Toth, 2000, p. 5) This follows the problem with multiple targets in 1999, when M2 was still used as an intermediate target but, based on the central bank's monetary program and its statements, many analysts thought the central bank was actually pursuing direct inflation targeting. (Dufek and Odor, 2000, p. 30 and Toth, 1999)

In the Polish case, the goal is clear – headline inflation. However, it is not clear whether this is really the target or whether there are multiple targets. The Polish central bank inserted in its medium-term policy program a rather cryptic note (see above) which effectively means that if the headline inflation is not in step

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with the target but core inflation is (or is heading in the other direction) the bank might not follow the headline inflation and will try to explain why.

In all three cases, there is an additional issue of multiple targets related to the exchange rate. All three economies are very open (the Czech Republic and Slovakia extremely so) and all three are used to some sort of exchange rate stability (fixed exchange rate for the Czech Republic until 1997 and for Slovakia until 1998, crawling peg for Poland until now).

6.6 Evaluation of inflation targets

The following table presents inflation targets for the Czech Republic, Poland and Slovakia and actual inflation developments. In Hungary, there is only one year of inflation targeting to evaluate. in Poland and Slovakia, there are three and in the Czech Republic, there are four. The sample presents strikingly different pictures of the apparent success of inflation targeting. In Slovakia and Hungary, all targets were achieved, though that means only one in the case of Hungary. In the Czech Republic, all but one of the four targets were undershot, while Poland missed its three inflation targets. with two overshot and one undershot.

Table 6.10: Inflation targets and actual inflation in Central Europe

Country	Year	Inflation measure	Actual inflation	Inflation target
Czech Republic	1998	Without regulated prices	1.7	5.5–6.5
	1999	Without regulated prices	1.5	4.0–5.0
	2000	Without regulated prices	3.0	3.5–5.5
	2001	Without regulated prices	2.5	2–4
Hungary	2001	Headline inflation	7.5	6–8
Poland	1999	Headline inflation	9.8	8–8.5
	2000	Headline inflation	8.3	5.4–6.8
	2001	Headline inflation	3.6	6–8
Slovakia	1999	Without regulated and food prices	10.8	9.1–12.7
	2000	Without regulated prices	4.6	4.5–5.8
	2001	Without regulated prices	3.2	3.2–5.3

Source: CNB, MNB, NBP, NBS

A more thorough view would note that the two less successful countries – Czech Republic and Poland – differ substantially in their performance. In the Czech case, every year brought a smaller disparity between the target and the actual inflation and both 2000 and 2001 results can be judged as satisfactory. Additionally, Czech inflation was consistently lower than the target, thus not casting doubt on the central bank's anti-inflationary credibility. Overall, the actual experience and the perception were of monetary policy settling down gradually to a new regime. In Poland, the difference between actual inflation and the mid-point of the inflation target has not grown smaller. It was 2.6% in 1999, 2.2% in 2000 and 2.4% in 2001. In the first two years, inflation was higher than the target, a situation that changed dramatically in 2001. These factors reinforced an impression of erratic policy and difficulty in controlling inflation.

Was it appropriate for these countries to introduce inflation targeting *at this stage* of the disinflation process? As Bernanke et al. (1999) note, "most inflation-targeting countries have chosen to adopt the new regime only *after* having had

some initial success in lowering inflation from previously high levels". (Bernanke et al., 1999, p. 288) The reason is that inflation targets are usually credible only if monetary policy had previously gained some credibility by lowering inflation.

This general scenario is true for all three inflation-targeting countries analysed in this paper – after one or two initial peaks of inflation in the early 1990s, inflation was falling or stagnating between 1993 and 1997 in all three countries. However, this similarity is deceptive and hides important differences. The disinflation process was quite different in Poland and Hungary than in the Czech Republic and Slovakia.

In the cases of Poland and Hungary, the point of introduction of inflation targeting seems to have been relatively well chosen from the disinflationary point of view. After a sustained period of inflation decreasing by 4 to 7 percentage points every year, inflation targeting was introduced in 1998 and 2001 respectively to lock in existing gains and facilitate further disinflation so that inflation below 4% or 3.5% could be achieved by 2003. Since the rapid increases in regulated prices had largely already taken place in previous years, this ambition of monetary policy-makers could have been thwarted only by large external shocks. This contrasts sharply with the situation in the other two inflation targeting countries.

Inflation targeting was introduced in the Czech Republic and Slovakia at the time when regulated prices not only constituted close to 20% of CPI, but at the time

when they were being rapidly increased by governments from a very low base. For example, in December 1999, year-on-year headline inflation reached 14.2% in Slovakia, with core inflation of only 7%, but inflation of regulated prices of 38.2%. The same is true for the Czech Republic in both 1998 and 1999 - the average net inflation in the period from January 1998 to December 1999 was 2.8%, while regulated prices increased by an average of nearly 23%. In such an environment, inflation targeting focusing on underlying inflation risks becoming irrelevant for economic agents and the whole policy-framework can be discredited.

On the other hand, it can be argued that such a situation can serve precisely as a support for the introduction of inflation targeting. In Canada, it was the introduction of a new tax (a VAT-type GST) in 1991 that prompted the central bank to introduce inflation targets that would persuade the public that the one-time increase in prices due to this step would be nothing more than that. (Freedman, 1995, p. 21) If a central bank enjoys high credibility, as both the Czech and Slovak central banks undoubtedly did at the time of the introduction of inflation targeting (see OECD, 1998, p. 31 and OECD, 1999, p. 63), inflation targeting at the time of significant price hikes can prevent one-time changes from spilling into permanent inflation expectations.

This argument, however, is not fully applicable in this case because increases in regulated prices to a cost-recovery level in the Czech Republic and Slovakia were not one-time events. They have occurred repeatedly over the course of five-six years between end of 1997 and early 2003.

Discussion of disinflation and inflation targeting focusing on the role of regulated prices, however, captures only one of two important issues related to disinflation in Central Europe. The other is the persistence of moderately high single-digit inflation. The Czech Republic and Slovakia swiftly achieved single-digit growth in consumer prices by the end of 1994 and early 1995. However, further progress to a low level was much more difficult (the apparent success of Slovakia in achieving 5-6% inflation in 1996 and 1997 was primarily due to a politically-motivated freeze on increases in regulated prices). Indeed, after achieving their lowest level in 1995 and 1996, prices began to rise gradually in 1996, 1997 and 1998 in the Czech Republic and Slovakia. As analysts of the Czech National Bank noted, inflation expectations were stuck at this moderate-but-not-low level and particularly after the currency pegs were broken, the resurgence of inflation was a real threat. (CNB, 1999, p. 1)

It was in this environment that both central banks of the former Czechoslovakia decided to introduce inflation targeting. Therefore, it can be said that while there was a relatively ambitious long-term target of price stability in the Czech case, the true motivation in both countries was to lock in existing inflation gains threatened by overheating of the economy, depreciation of the currency and increases in regulated prices.

Therefore, it seems that both central banks took a high risk in adopting their inflation targeting frameworks. However, the risk paid off in both countries, because repeated substantial increases in regulated prices did not translate into

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increases in underlying inflation and both countries experienced disinflation in the underlying price indices simultaneously with high inflation of administered prices. Indeed, "one of the most important benefits of the inflation targeting has been the increasingly efficient formation of expectations, which has reduced the costs of disinflation". (Hrncir and Smidkova, 2000, p. 532)

The use of inflation targeting is questionable at a time when there are significant structural changes going on in the economy and when the working of the monetary transmission mechanism is still relatively unclear. One of the principal advantages of inflation targeting is that it creates a more transparent policy framework and improves communication between policy-makers and economic agents. A single inflation target makes for a clear commitment by the central bank and allows it (if it enjoys high credibility) to anchor public expectations. However, for inflation targeting to be successful and credible, there needs to be a clear link between the monetary policy pursued by central bankers and resulting inflation. In other words, the central bank must be able to control and be perceived as controlling the underlying inflation process.

These conditions were not fully met in Central Europe at the end of the 1990s and, as the chapter on the monetary policy transmission mechanism indicates, the channels of policy transmission are often blocked or weakened. Therefore, the introduction of inflation targeting was, in many ways, premature.

However, such an evaluation ignores the fact that monetary policy has to operate daily and if central bankers do not wish to pursue a fully discretionary policy,

they have to institute some framework for monetary policy. The rest of the thesis shows that neither money nor the exchange rate could continue to function as nominal anchors in the medium-term, so the choice was between inflation targets and discretionary policy. The choice has not been a sharply delineated dichotomy as some sorts of inflation targets were announced even before and Slovakia has practised inflation proto-targeting. In such a continuum, a 'proper' inflation targeting strategy is more suitable because if monetary policy is not perceived as successful, then inflation targets will be discredited anyway, while in case of success, the credibility gains are lower.

6.7 Inflation targeting - influencing the behaviour of the central bank

When assessing the effects of the introduction of inflation targeting, it would be wrong to ignore the influence of the new monetary policy framework on policy-makers themselves. As noted by Almeida and Goodhart (1998), the introduction of the inflation targeting framework often has important consequences for the central bank itself. Three groups of changes in the central bank that often go hand-in-hand with inflation targeting can be distinguished:

- changes in the transparency and execution of monetary policy
- changes in the accountability of the central bank.

This section looks at whether such an effect was at work in Central Europe and what were the results. As far as transparency of monetary policy is concerned, all three inflation-targeting central banks have made great improvements in this

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respect during the relevant period. Even before, they had already been legally required to inform the public and the parliament about monetary policy, but inflation targeting resulted in improved openness of policy-making in the following areas:

1. Inflation targeting meant the introduction of inflation reports in Poland and the Czech Republic, but not in Slovakia. In Hungary, such reports were introduced prior to the introduction of inflation targeting.

2. It also meant that central banks opened up their deliberation procedures more and all the central banks began to publish detailed minutes of board meetings. The National Bank of Poland went even further and began to publish how individual board members voted.

3. The introduction of core indices themselves increased the transparency of the monetary policy stance, especially at a time of great changes in regulated prices and great volatility in prices that are driven by supply side factors.

Introduction of formal inflation forecasts as focal points of the decision-making has significantly enhanced both policy-making and its transparency. Table 6.11 contains a brief summary of inflation forecasting systems in individual countries. It shows that in the Czech Republic and Hungary, the central banks started to publish inflation forecasts on a quarterly basis, which they had not before the inflation targeting was introduced.

Table 6.11: Main features of inflation forecasting systems in Central European central banks

	Transparency	Procedure	Output	Horizon, frequency	Models	Conditionality
Czech Republic	Quarterly publication of comprehensive forecasts	Discrete involvement of policy makers	Point estimate and range	6-8 quarters, quarterly	Structural models, partial equations, expert info	Both conditional and unconditional
Hungary	Quarterly publication of comprehensive forecasts	Iterative. stepwise involvement of policy makers	Point estimate and fanchart	6-8 quarters, quarterly	Partial equations, expert info, simulation models	Conditional
Poland	Quarterly publication of backward looking analysis	No involvement of policy makers	Point estimate and scenarios	4-6 quarters, monthly	Structural model, partial equations, expert info	Both conditional and unconditional
Slovakia	Annual publication, monthly updates	Iterative. stepwise involvement of policy makers	Range	4 quarters, monthly	No models, mostly expert judgement	n/a

Source: Hornok and Jakab (2002)

The introduction of inflation targeting thus provided a stimulus to increase the transparency of monetary policy and communication with the public. The shift has been particularly significant in the Czech Republic and Hungary, to a lesser degree in Poland and least pronounced in Slovakia, which has not formally introduced inflation targeting. This parallels the finding by Almeida and Goodhart (1998), where they find that though the "trend towards more open communication has been worldwide... such greater openness has gone further, faster in [inflation targeting] countries". (Almeida and Goodhart, 1998, p. 114) The other aspect of changes in the communication and position of central banks due to the introduction of inflation targeting is accountability. Accountability means not only that:

1. a central bank has to explain its actions to the public and those with a democratic mandate to govern. Inflation targeting generally allows for increased accountability of this kind by putting emphasis on the final goal – inflation

2. but also that those entrusted to execute monetary policy can be penalised if they do not succeed in achieving their targets.

In this respect, it is important to distinguish two kinds of independence – goal and instrument independence. The former means that a central bank is free to set its targets, while the latter involves targets set outside the central bank (with the central bank free to achieve these goals by any means it sees as fit).

Inflation targeting does not presuppose goal independence as the target can be decided by the government. However, inflation targeting requires instrument independence – otherwise, the bank cannot be held accountable for the results of monetary policy. For example. central banks in New Zealand and the Bank of England (since 1997) have been independent in their instruments, but their goals have been set by the government. However, the Bank of Spain became goal independent at the same time that it began to pursue inflation targeting.

Goal independence is usually associated with low accountability because if the central bank is free to set its own targets, it makes little sense to punish it for not achieving them. The Czech. Hungarian, Polish and Slovak central banks are highly goal independent.

There are no provisions for overriding the decisions made by the central bank. Board members can be recalled only for a criminal act or other serious misconduct unrelated to monetary policy and boards approve the budgets of their respective central banks, so there is no effective mechanism to punish poor performance, except to change the law. In Poland and the Czech Republic, the high constitutional protection of central bank independence means that even this would be very difficult to achieve.

Therefore, the accountability of central bankers in Central Europe is relatively low and the introduction of inflation targeting has not changed the situation. In this respect, the situation is very similar to that of the German and Austrian central banks before EMU, on which all four banks were consciously modelled. (Siklos, 1994) However, as pointed out in BIS (2000), this is a rule rather than an exception in most industrialised countries, even those that practise inflation targeting. The only exception is New Zealand, where the governor of the central bank can be punished for not achieving the target. (BIS, 2000, p. 4)

6.8 Conclusion

This chapter analysed the role of domestic targets in the monetary policy of Central European countries in order to complete the set of chapters focusing on how policy-makers in Central Europe constrained their discretion in designing and implementing monetary policy.

It found that, in practical policy-making, it is difficult to delineate the real meaning of monetary or inflation targets into several, easily distinguishable categories. The role and understanding of monetary targets changed dramatically in a given country, depending on whether they were used in conjunction with fixed exchange rates, inflation targets, both or neither. At the same time, central banks in the region have long been in the habit of announcing quantitative targets for inflation, but the perception of targets changed dramatically when they became the only or the dominant form of publicly announced commitment by the monetary authority. This gradual development of inflation targets from a 'targetish' indicator to a true target is well documented for Chile (see Mishkin, 2000) and several developed countries (see Bernanke et al., 1999).

With regard to monetary targets, the chapter attempted to explain a paradox - targets that were announced for many years, but that were not very useful in achieving inflation outcomes and frequently disregarded by the very policymakers who set them. The answer lies in the fact that monetary targets were used in Central Europe together with exchange rate targeting. Fixed exchange rates provided nominal anchors for outsiders, but they provided only limited guidance for policymakers themselves on how to set policy instruments to make the exchange rate sustainable or to achieve a targeted level of inflation. In this sense, monetary targets can be seen as a true intermediate target – a variable influencing inflation that the central bank could control. However, this proved to be the case only with high inflation and low capital inflows.

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After the exchange rate targeting was terminated either voluntarily or following a crisis, all four countries gradually shifted towards inflation targeting. In such an environment, setting and announcing monetary targets became much less relevant and the practice was discontinued. In all four countries, therefore, inflation targeting was introduced simultaneously with retreat of the previous nominal anchor – the exchange rate. The use of inflation targeting is questionable at a time when there are significant structural changes going on in the economy and when the working of the monetary transmission mechanism is still relatively unclear. One of the principal advantages of inflation targeting is that it creates a more transparent policy framework and improves communication between policy-makers and economic agents. A single inflation target makes for a clear commitment by the central bank and allows it (if it enjoys high credibility) to anchor public expectations. However, for inflation targeting to be successful and credible, there needs to be a clear link between the monetary policy pursued by central bankers and resulting inflation. In other words, the central bank must be able to control and be perceived as controlling the underlying inflation process.

These conditions were not fully met in Central Europe at the end of the 1990s and the introduction of inflation targeting was, in many ways, premature. However, such an evaluation ignores the fact that if central bankers do not wish to pursue a fully discretionary policy, they have to institute some framework for monetary policy. Neither money nor the exchange rate could continue to function as nominal anchors in the medium-term, so the choice was between inflation targets and discretionary policy. The choice has not been a sharply delineated

dichotomy as some sorts of inflation targets were announced even before and Slovakia has practised inflation proto-targeting. Inflation targeting can become a lesser evil, preferable to discretionary policy or other, discredited frameworks. Technical difficulties understandable for countries undergoing rapid structural change and with a limited predictability of transmission of policy impulses made for a long period of 'practice shooting' in Czech Republic and Poland, before the new framework became credible. Experience of Central Europe shows that it particularly difficult to fine-tune inflation targets when the economy is facing a dramatic cyclical reversal. resulting in massive undershooting or overshooting of targets. The experience also shows that central banks tend to construct their inflation models, after introduction of inflation targeting, in an asymmetric way that puts more emphasis on the upside risk of higher-than-targeted inflation.

Chapter 7: Conclusion

7.1 Introduction

In the concluding chapter, the two strands of the thesis are brought back together. The first one deals with findings explaining monetary policy and its underpinnings in four Central European countries. The second section uses these findings to evaluate several existing hypotheses and some new ones concerning monetary policy in middle-income economies that are highly open and financially integrated. In the final section, these conclusions are used to look ahead towards challenges in the run-up to the EU and EMU entry.

7.2 Explaining monetary policy in Central Europe

For monetary policy, the general goal was to secure macroeconomic stability as a basic precondition for successful transition to a market economy and, in its more advanced stage, to achieve disinflation and overall nominal convergence with the EU/EMU countries, taking into account need for sustainable growth. In this section, we look at factors underpinning monetary policy, consequences for policy-makers and their reactions.

7.2.1 Factors influencing monetary policy in Central Europe during transition

Different initial conditions and expectations in individual countries

Even though Czechoslovakia, Hungary and Poland officially started transition at the same time in the 1989-1990 period, their initial macroeconomic and microeconomic conditions differed substantially, which had important effect on future developments.

The heritage of Czechoslovakia was overall macroeconomic stability. The country had been a bulwark of fiscal and monetary prudence during communism and the early transition policies confirmed this trend. Restrictive monetary and fiscal policies accompanied the start of reforms, ensuring that inflation fell rapidly after the initial one-time jump caused by price liberalisation. On the other hand, the private sector and private economic activity were much less developed compared to Hungary and Poland.

In Hungary, economic reforms introduced before the end of communism included price liberalisation, which had taken place in a very gradual manner since the 1960s. In 1989 and 1990, Hungary introduced a modern tax system. On the other hand, the overriding policy objective of the 1970s and 1980s was to placate the population by increases in the standard of living, which were not necessarily based on productivity or output growth, and that led to a rapid accumulation of debt and intermittent financial problems.

In Poland, the beginning of a transition meant a half-dismantled command system and an economy on the verge of hyperinflation. The imbalances in the economy,

particularly on the fiscal and quasi-fiscal side, were enormous. Poland had a very high debt, which it was not able to fully service. Due to high inflation, the economy suffered from extensive dollarisation and demonetisation. On the positive side, Poland had the most developed private sector from all Central European countries.

Ability to achieve overall rapid structural adjustment and successful transition

Despite wildly varying initial macroeconomic conditions, all four countries have been generally able to implement rapid reforms and achieve successful structural adjustment. Transition has been a period of relative political stability, beginning with a regime change in the late 1980s, when political change was negotiated without major setbacks or conflicts.

Stability persisted thereafter in most countries, with governments serving one or two 4-year terms and with early elections or major changes in governing coalitions an exception rather than a rule. The Czech Republic was governed essentially by the same centre-right coalition from 1992 until 1998, when it was replaced by a minority left-wing government, which was confirmed in power by the parliamentary elections in June 2002, but chose to include two smaller centrist parties in order to gain a majority status. After the first free elections in 1990, Hungary had a conservative right-wing government, which was then replaced, in 1994, by the government of the postcommunist party. The government changed again towards the right wing in 1998 and again back to the postcommunists in 2002. Poland, despite several personal reshuffles, changed government coalitions only following elections – from a right-wing one between 1989 and 1993 to a left-wing one in the 1993-1997 period, back to the right wing between 1997 and 2001, followed again by the left-wing government

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since 2001. Slovakia experienced a turbulent period after its independence leading to early elections in 1994, which was followed by four years of a nationalist government and a mixed pro-Western coalition during the 1998-2002 period, which largely remained after the 2002 elections. Even the break-up of Czechoslovakia in 1992 took place based on negotiations and necessary constitutional approval without the political, economic, not to mention military, tumult accompanying such steps elsewhere

A strong factor in favour of political stability and rapid structural reforms has been the pull of potential membership in multilateral institutions – the European Union, NATO and OECD. Czech Republic, Hungary and Poland became OECD members in 1995-6, with Slovakia joining in 2000. Czech Republic, Hungary and Poland became NATO members in 1999, with Slovakia signing the accession agreement in 2002. All four countries became EU members in the first wave of eastwards expansion in 2004, after starting the negotiations in 1997 and 1999. The European Union in particular exerted influence over both institutions and policies.

Expectations and pressures of future EU/EMU membership
The uncertain, but ever-present expectation of EU and EMU membership influenced monetary policy in the countries studied during the whole transition – specifically since the Maastricht Treaty was signed in 1991. The expectation of EU and EMU membership has thus presented a clear exit strategy for monetary policy-makers.

These requirements were important in influencing institutions of monetary policy. Medium-term policy frameworks adopted in Central European countries since 1998

strongly reflected these needs and largely defined medium-term inflation targets in line with expected EU entry in the 2003-2004 period and the EMU entry two-three years later. Central bank laws were all changed between 1997 and 2002 to fit the requirements though the changes did not have major impact on the level of legal or actual independence.

EMU membership is also linked to fulfiling specific performance criteria, that largely determined monetary and fiscal policy targets in acceding countries during late transition, such as 1.5% maximum inflation differential and 2% maximum long-term interest rate differential vis-à-vis the EMU countries as well as 3% of GDP maximum fiscal deficit and 60% of GDP maximum level of debt, not to mention a 2-year waiting period in the ERM-2 system.

High level of trade and financial openness together with limited instruments of adjustment

High and increasing level of economic openness has been one of the key factors underpinning monetary policy in Central European economies. While in case of trade, transition period built on already significant trade flows inherited from the communist period, financial flows started from a very limiting regulatory environment and correspondingly low base and increased rapidly. In terms of regulatory environment, the countries studied covered the same path to liberalisation in 12 years that the developed countries took 50 post-war years to achieve.

Except for Poland, all four economies could be characterised, in terms of trade, as small open economies even prior to the beginning of transition. Transition brought

both reorientation of trade from former CMEA markets to EU markets and significant growth in trade volume.

In terms of financial flows, early 1990s were a period of limited financial integration with the global economy, which enabled these countries to run, to a certain extent, a distinct foreign-exchange and interest-rate policy. However, as the transition progressed, the level of autonomy and possible divergence between these two policies quickly declined as evidenced both by the capital inflows and the currency crises experienced.

In mid-1990s, several factors induced capital inflows beyond what could be easily or profitably absorbed. As these economies stabilised after the initial transition depression, had credible fixed exchange rates, high interest rates and gradually liberalised capital account, they faced enormous and increasing capital inflows. This was accompanied by current account deficits as the inflows financed increase in imports both for investment and consumption purposes.

Such developments increasingly created conflicts between the goal of price stability and the existence of a fixed exchange rate anchor and also made for problems in external balance. Domestic and foreign shocks could and did lead to substantial outflows and a foreign exchange crisis, particularly if accompanied by the perception that the situation was unsustainable. This was the case in Hungary in 1995, Czech Republic in 1997 and Slovakia in 1998.

Even though floating currencies adopted in Central Europe between 1997 and 2001 relieved the problem to a certain extent, capital inflows persisted. The ability of policymakers to counter the effect of capital flows was stymied by the limited scope for fiscal adjustment.

All four countries started the period of transition with a very high ratio of government expenditure to GDP. The level of government revenue differed, with Czechoslovakia running a more conservative fiscal policy, resulting in higher taxes compared to Hungary and Poland which used seigniorage to finance the fiscal deficit quite extensively in the early 1990s. These very different initial conditions converged during the 1990s and early 2000s into a rather similar pattern of moderate to high fiscal deficits due to the following reasons:

- the priority attached to lowering of the tax burden from its very high initial level
- the need to finance the costs of transition
- the limitations placed on the fiscal deficit by the emergence of twin deficits and prospective Maastricht criteria

In this respect, it is necessary to point out that official fiscal data were, for a long time, practically useless in gauging the fiscal stance due to extensive use of state-owned banks, off-budget funds, and government guarantees. Some of these operations, albeit not included in fiscal accounting by governments, were roughly calculated by the IMF in its estimates, but much of the expenditure (especially by state-owned banks) was left off-budget in any estimate. The problems were resolved

only in the early 2000s by the privatisation or abolition of many off-budget institutions and the consolidation of the rest into fiscal data in preparation for the application of Eurostat ESA 95 criteria for measuring the fiscal deficit. Therefore, any fiscal data need to be treated with utmost caution and cannot be used meaningfully for econometric analysis.

Dysfunctional structure of the financial sector and peculiarities in relationship between the real economy and the financial sector

During most of the communist period, central banks and commercial banks in the region existed only in name and had no effective role in credit allocation. Despite rapid institutional changes, the financial sector has lacked the maturity and depth to ensure smooth transmission of monetary policy impulses. The problem was not necessarily in the formal level of intermediation though it was low in Poland and, to some extent, in Hungary, but in insolvency of individual banks and the banking system as a whole. Consequently, impact of interest rates on credit was limited due to highly interest-inelastic lending policies of banks burdened by nonperforming loans and the certainty about future bailouts. The solvency challenge was exacerbated by structural liquidity problems.

Delayed privatisation of banks as well as political unwillingness to impose a hard budget constraint on certain groups of enterprises combined to create a situation where lending was often driven by political considerations and the group of corporate borrowers were highly differentiated in terms of both liquidity and solvency. At the same time, households in all four countries were not dependent on bank financing as lending to households continued to develop quite gradually in all four countries. With

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the exception of Hungary, only very late 1990s and early 2000s brought about a change in these problems by bank restructuring and privatisation. In Hungary, the whole process took place several years earlier.

Inflationary pressures unrelated to monetary and fiscal policies as such

A rather idiosyncratic factor influencing monetary policy in Central Europe during the transition period was an uncommonly large role of factors influencing price developments that have been unrelated to monetary or fiscal policies as such. Both regulated prices and supply-determined prices, such as food and commodities have had a much higher share of the consumer basket than in developed economies, making much of the price development directly unresponsive to monetary policy.

The four countries started transition with a combination of structural deficiencies in the economy and price regulation that led to imbalances in relative prices and, especially in former Czechoslovakia. to prices that did not clear the market and led to demand-supply mismatch. The result was a low price level and a burst of inflation upon price liberalisation that continued to reverberate for much of transition. Shifts in relative prices accompanying the adjustment process created an upward and persistent pressure on inflation in transition countries above and beyond the direct influence. This does not mean that monetary policy was powerless to counter these pressures, rather that it could not counter them directly.

7.2.2 Consequences for the monetary policy-making environment

High level of openness to trade and to financial flows, together with frequent lack of fiscal discipline led, in all four countries, to vulnerability and a need for periodic adjustment to dangerous fiscal and external imbalances. The adjustment took place either through a financial/currency crisis or an austerity package prior to a potential crisis, with outcomes that are often difficult to distinguish.

It is rather difficult to distinguish radically different paths in terms of changes in unemployment, inflation or real wages for countries, such as the Czech Republic in 1997 and Slovakia in 1998, which had to float currencies under speculative pressure; countries such as Hungary in 1995. which had to change their macroeconomic policy, but continued to rely on a fixed exchange rate; and countries such as Poland in 1999 and 2000, which were proactive in crisis prevention and increased the exchange rate flexibility on their own. In all the cases, if the fundamentals, evidenced by very high current account deficit, slowing growth and/or stubborn inflation, were shaky, adjustment had to follow and its costs did not differ fundamentally.

Initial conditions, inflationary pressures unrelated to monetary and fiscal policies and fiscal looseness in some countries led to a high initial and often continuing level of inflation, while the Maastricht criteria and medium-term policy frameworks adopted by the countries required achievement of low inflation. Due to high levels of financial openness and other factors, monetary policy in these countries faced a paradox not unusual in small, open economies – while the overall objective has been related to disinflation, the actual policy has been driven primarily by considerations of external

(im)balance. The reason is that imbalances between aggregate supply and aggregate demand tended to lead to the deterioration of the current account. Inflationary impact was felt only later when measures taken to address the current account problems caused increased inflation. In economies with a longer history of such problems (in particular Hungary, to some extent Poland), awareness of the issue caused a spill-over of external imbalance directly into heightened inflation expectations.

In the environment of substantial capital inflows, changes in the interest rate were not always available as an effective instrument to combat the problem as they raised fiscal debt service and/or accelerated capital inflows, thus often worsening rather than improving the problem. At the same time, experience of Czech Republic and Slovakia show that domestic confidence was the key to a currency crisis. While the crises in both countries were set off by speculative attacks from non-residents, these were successfully seen off. It was the second-round pressures caused by the domestic corporate sector and households, which became too strong and forced the currency into a managed float.

Overall, inflationary pressures not directly related to monetary or fiscal policy and uneven impact of monetary policy on real economy led to a rather scrambled transmission mechanism, which had to rely largely on manipulation of exchange rate and wages to manage inflation. The general statement contains differences between individual countries as well as between periods.

The Czech Republic provides indications of the effects of both the interest rate and the nominal exchange rate on inflation, though the impact on output is ambiguous. In

Hungary and Slovakia, both nominal and real exchange rate shocks have a negative effect on prices. In Poland, a positive interest rate shock causes nominal exchange rate appreciation, which in turn decreases prices. In Czech Republic, Poland and Slovakia, wage increases lead to price increases.

Usefulness of monetary aggregates in policy-making requires both existence of a relationship between the aggregate as the intermediate target and the final target – inflation - and predictability in how that relationship develops. For the Czech Republic, Hungary and Slovakia. velocity of money did not change dramatically, but the changes were difficult to predict and were associated with a loose relationship between broad money and inflation. In Poland, the actual and trend velocity of money both declined dramatically, but in a linear and predictable manner.

Consequently, predictable monetary policy transmission mechanism in Central European countries has existed for some time, but because of specific transition factors and general features of small open economies, the exchange rate channel seems to be dominant, while the more traditional interest rate channel is much less widespread. Wages seem to play a fairly important role in determining inflation in Central European countries, which explains why incomes policies (even though largely unsuccessful) were assigned such an important role by the authorities, especially in the first half of the transition period. As transition progressed, monetary policy began to relate more and more on interest rates as the key policy instrument. Policy-making in the monetary area was accompanied by an unusually high levels of uncertainty regarding both the parameters of the economic model and actual values of variables in the model.

Due to reasons explained above. policy-makers found it difficult to accurately measure fiscal stance and its potential impact on inflation. Due to the unique character of the transition recession and subsequent structural change, output gaps were very difficult to estimate and, in all likelihood, developed quite dynamically. One point of uncertainty was particularly salient for monetary policy. Even though it was clear that, in all countries, substantial appreciation of the real exchange rate took place, there was considerable uncertainty about the equilibrium real exchange rate. While a likely trend appreciation can be demonstrated for the 1993-2001 period for the countries in the sample, there is a high level of uncertainty as to causes as well as to the size of the trend, which made it very difficult for policy-makers to accurately estimate an equilibrium exchange rate and adjust their behaviour accordingly.

7.2.3 Reaction by monetary policymakers

Reaction of policy-makers in Czech Republic, Hungary, Poland and Slovakia to the environment described in the previous sections can be very roughly subsumed under the heading 'discretion constrained by a strong nominal anchor and real exchange rate considerations'. Constrained discretion, a term originally used by Bernanke et al. (1999) to describe inflation targeting, is redefined here more broadly to delineate flexible monetary policy strategies that, however, impose limitations by use of an explicit and visible nominal anchor both to manage expectations and to constrain discretion of policy-makers and, at the same time, take into consideration the real exchange rate. In the countries studied, such an approach was used to balance the imperative of disinflation with external constraint on monetary policy.

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Approach of Central European countries was consistently based on high levels of central bank independence and avoidance of hard pegs. At the same time, they have not practiced true exchange rate flexibility. This policy strategy largely worked and shows, as further analysed in the following section, that even emerging market economies can successfully constrain discretion over monetary policy without resorting to hard pegs. Countercyclical policy was not a part of the package (with the exception of Poland). Monetary policy seems to have reacted to inflation and exchange rate developments, but not to output. It also does not show much influence on the development of output.

Implementation of this broad strategy has had different forms over time and in each of the countries. Nonetheless, solutions chosen were remarkably consistent in answers to two basic questions: what anchor? how to achieve credibility?

Direct instruments of monetary policy coupled with tight regulation used during early transition were soon replaced by gradual liberalisation and reliance on soft peg as the key policy instrument, which proved to be a successful nominal anchor for disinflation during early and mid-1990s when there was no credible alternative. Since fixed exchange rates, especially with narrow bands, do not provide much guidance for every-day policy in the environment of gradual financial liberalisation and integration with external financial markets, monetary aggregates were used as a supplementary tool to guide policy.

During the second half of 1990s and early 2000s, reliance on soft pegs as nominal anchors was replaced by gradual shift to management by interest rates and switch to inflation targets as the nominal anchor. During this process, exchange rate bands were progressively widened and finally abandoned (with the exception of the very wide Hungarian band).

In this context, inflation targeting can be seen principally as a policy packaging that made it possible to achieve disinflation required by the Maastricht criteria using high interest rates and tolerance for nominal exchange rate stability/appreciation as one of the principal tools of disinflation. At the same time, while official floating of currencies contained a measurable change in the behaviour of authorities towards less management of the exchange rate and tolerance for larger exchange rate movements, concern about excessive fluctuations in nominal and real exchange rates has remained and continued to influence policy actions.

In addition to approaches shared by all four countries, there were important differences related primarily to different macroeconomic conditions and resulting in a divergent approach to real exchange rate management. Even though a trend appreciation in the real exchange rate can be demonstrated for the 1993-2001 period in all four countries, the size of the trend differs dramatically. Therefore, Hungary and Poland, two countries with worse initial conditions and a history of recurring external constraint, used the crawling peg and minidevaluations during the period of fixed exchange rates to decrease the speed of appreciation and micromanage it, while Czech Republic and Slovakia relied on their ability to lower inflation dramatically to make the real exchange rate appreciation less threatening. The latter brought about currency

crises, but without significant measurable costs for the economy compared to the preventive approach of the other two countries.

7.3 Lessons for theory of monetary policy in highly open middle-income economies

This part of the concluding chapter focuses on the second aim of the thesis – to shed light on underdeveloped economic theory on monetary policy in less developed, but highly open and financially integrated market economies. Experience of Central European countries provides some answers to the question of how to constrain discretion in monetary policy pursued in such economies, about the role of the external constraint in policy-making and about the relevance of domestic policy co-ordination and credibility. The findings can be divided into three areas, each of which deals with one aspect of monetary policy in a highly open and financially integrated middle-income economy:

- constraining discretion in policy-making
- role of publicly announced targets and of the external constraint
- importance of domestic policy co-ordination and credibility

7.3.1 Constraining discretion in policy-making

Mishkin and Savastano (2001), in their analysis of monetary policy strategies in Latin American countries during 1990s, come to the conclusion that the debate about monetary policy and monetary policy frameworks in emerging market countries

"should be over what is the best way to constrain discretion over monetary policy". (p. 45) In their opinion, some countries, e.g. Chile, have a sufficiently robust set of political and economic institutions to be able to constrain discretion on their own, without irrevocable commitment that effectively takes away policy autonomy from domestic authorities. Unfortunately, this is not the case for all emerging market economies and if domestic institutions cannot successfully constrain discretion, then dollarisation or hard pegs are probably the only possible solution according to this view.

Kuttner and Posen (2001) provide, to a certain extent, an empirical answer to the question arising from Mishkin and Savastano (2001): under what conditions can discretion be constrained? They argue that a combination of domestic targets and central bank independence can bring about, in terms of inflation and output stability, similar results as a very hard peg.

Analytical framework presented by Mishkin and Savastano (2001) and Kuttner and Posen (2001) is particularly valuable in two respects:

- it shows that the various elements of a commitment by monetary authorities are not duplicatory or contradictory, but interdependent in contributing to the goal of constraining discretion
- it provides an instrument for analysis of effectiveness of various combinations by making their objective – constraining discretion – explicit and showing that various combinations can achieve similar results

The summary of Central European experience can be divided into three areas:

- the combination of institutions aimed at constraining discretion is not a simple, two-dimensional, discrete matrix of a given level of central bank independence and publicly announced targets
- our understanding and evaluation of both central bank independence and targets would greatly benefit from more sophistication based on in-depth analysis of individual country experiences rather than quantitative panel studies
- a set of feasible combinations develops largely in line with development of financial and factor markets and their integration with global markets

The combination of institutions aimed at constraining discretion is not a simple, discrete matrix with two dimensions of a given level of central bank independence and targets. First of all, any such matrix would need to be multidimensional to account separately for exchange rate, monetary and inflation targets. More importantly, any attempt to divide either category into discrete pieces is likely to be more misleading than helpful.

For example, the Central European experience shows that the current taxonomy of exchange rate regimes is simplistic, discrete and misleading. The exchange-rate reality is a fluid continuum of differing words and deeds. The difference between a soft peg with a wide band and a highly managed float is minuscule – indeed, during the second half of 2001, Slovakia with an officially floating rate was much more active in its management than Hungary with a 15% band around fixed exchange rate.

At the same time, there are many examples of changes too small to require a change in any category, but with important policy consequences, such as Polish gradual expansion of its exchange rate band from 7 to 12.5% during the second half of 1990s.

Official regimes can be particularly misleading because of the 'fear of floating' phenomenon, where countries with regimes that are ostensibly flexible are in fact highly managed through foreign exchange market intervention or interest rate policy. In Central Europe, we find that fear of floating exists in the sense that analysis of interest rate, exchange rate and international reserve movements indicates actual behaviour under ostensibly flexible regimes that is akin to monetary policy under fixed exchange rate regimes. On the other hand, we find that words do matter to some extent – a clear change of regime from fixed to flexible entailed a shift in behaviour to less fear of floating.

The real meaning of money or inflation targets is also difficult to pin down into several, easily distinguishable categories. The role and understanding of monetary targets changed dramatically in a given country, depending on whether they were used in a conjunction with fixed exchange rates, inflation targets, both or neither. Central banks in the region have long been in the habit of announcing quantitative targets for inflation, but perception of targets changed dramatically when they became the only or the dominant form of publicly announced commitment by the monetary authority. This gradual development of inflation targets from a 'targetish' indicator to a true target is well documented for Chile (see Mishkin, 2000) or several developed countries (see Bernanke et al., 1999).

A detailed analysis of central bank independence in Central Europe shows that traditional indices of legal independence often do not capture several important features that crucially determine the actual independence, ranging from technicalities through exchange rate independence and constitutional status to political actions of central bankers themselves. Secondly, it is clear from the previous discussion that our understanding and evaluation of both central bank independence and targets would greatly benefit from more sophistication, based on in-depth analysis of individual country experiences rather than quantitative panel studies. Findings of the thesis point to the following conclusions.

Experience of Central Europe validates both Mishkin and Savastano (2001) and Kuttner and Posen (2001) in their principal argument. All four countries in the sample were able to disinflate and to grow without resorting to hard pegs because they were able to develop institutions that effectively constrain discretion over monetary policy through development of highly independent, technically capable central banks and their combination with a variety of publicly announced targets. As the experience of 1990s and early 2000s indicates, there is no inherent weakness in Central Europe that would prevent these countries from successfully running their own monetary policy.

Experience of Central Europe also disproves a need for long-term build-up of central bank credibility among economic agents. Despite numerous huge internal and external shocks, the Czech Republic and Slovakia were able to disinflate rapidly below 10% by 1994, using an exchange-rate-based stabilisation. Gradual disinflation pursued by Hungary and Poland was mandated by initial conditions and weak fiscal position rather than high sacrifice ratios per se.

At the same time, all countries. with the possible exception of Slovakia during the 1999-2001 period, relied on a combination of independent central banks *and* publicly announced targets to anchor expectations of agents. Even in Slovakia during this period, where the central bank refused to officially commit itself to a framework, it put emphasis on inflation targets it announced and was successful in achieving. In other words, monetary policy authority that, via portfolio of promises, delivers a clear and understandable nominal anchor that it is independent enough to deliver, is sufficient to generate credible monetary policy even in emerging market economies.

Thirdly, a set of feasible combinations develops in line with development of financial and factor markets and their integration with global markets. The general experience of Central Europe is that, until 1994, integration with global financial markets was low and it was not only possible. but to some extent even necessary to combine high and increasing central bank independence with two intermediate targets/nominal anchors for monetary policy - exchange rate and monetary targets. In this respect, monetary targets were more of an intermediate goal and the exchange rate fitted more into a definition as a nominal anchor. Beginning in 1994, financial integration and resulting mounting capital flows made the bifurcation of monetary policy progressively untenable. In countries with initial fiscal difficulties, i.e. Hungary and Poland, absence and/or slow development of financial markets put pressure on central banks to monetise much of the deficit in early 1990s despite high legal independence.

7.3.2 Role of publicly announced targets and of the external constraint

Monetary policy in small open economies has traditionally been concerned with both external and internal macroeconomic balance. In case of transition economies, concern focused on the relationship between the speed of disinflation and the vulnerability to a financial/currency crisis.

Macroeconomic imbalances manifested themselves primarily through external imbalance rather than increased inflation, which arrived later as external imbalances were resolved via currency devaluation/depreciation or other policy actions. At the same time, interaction between exchange rate and inflation in Central Europe confirms the hypothesis of a short-term inverse relationship between real exchange rate and inflation developments under both fixed and flexible exchange rate regimes.

Therefore, real exchange rate appreciation served the overall objective of disinflation, but if it went too far, it led to currency depreciation and the opposite effect. These problems, together with political costs of a crisis, can explain why high current account deficits and potential/actual currency crises dominated monetary policy in all four countries. The actual importance and damage of crises that came with overly long pegs can be overstated though. It is difficult to trace any significant medium-term economic costs from the limited currency crises experienced by the Czech Republic (1997-1999) and Slovakia (1998-1999) compared to more orderly responses by Hungary (1995-1996) and Poland (1999-2001). Crises served as manifestation of existing risk and triggers for further restructuring of the real economy. Therefore, it can be argued that the cost of pegging for too long is probably low.

Within such a framework, it is much easier to understand changes in targets publicly announced and pursued by policy-makers in Central Europe. The two key overall developments were the gradual shift of emphasis from exchange rate targets to domestic targets and (within domestic targets) a shift from monetary targets to inflation targets. Starting from an early combination of exchange rate targeting supplemented by monetary targets, monetary targets were increasingly ignored until they were officially abandoned in late 1990s. Exchange rate targeting encountered difficulties in achieving disinflation below 10% and has been, at first, supplemented and then replaced by inflation targeting combined with a more or less managed float. What generalisations can one make from these developments?

If one evaluates a foreign exchange regime based on its overall performance, fixed-but-adjustable pegs with narrow bands served their purpose in early to mid-1990s and should not be ignored by countries that are not yet highly financially integrated. On the other hand, for small open, financially integrated economies, fixing the exchange rate officially or by tight management facilitates capital inflows and high deficit of the current account. Additionally, fixed exchange rates can allow governments to combine, for 2-3 years, expansionary fiscal policy and stable currency/inflation.

Secondly, even though Central European experience confirms that soft pegs with narrow bands are no longer a viable option for countries that are highly financially integrated, this by no means confirms the hollowing-out/bipolar hypothesis that only free floats or very hard pegs are sustainable for small open economies.

Since soft pegs with narrow bands are not sustainable and benign neglect is not an option for these countries, the policy choice was between a variety of hard peg (dollarisation, currency board) or incomplete flexibility arrangements. Even a more flexible exchange rate does not always fulfil expectations of its advocates that it provides an immediate reaction to changes in fundamentals and, especially, to an unsustainable fiscal policy. (Mishkin. 1999)

Regarding monetary targets - they are likely to be problematic in an environment of rapid financial innovation and structural change due to unexpected changes in velocity or low influence on inflation development. Experience of Central Europe is that they can be effectively used in conjunction with a fixed exchange rate, serving more as an internal guide of sustainability of monetary policy and the fixed exchange rate than a policy target *per se*. After all four countries were forced off or chose to abandon the soft peg, they gradually abandoned monetary targets and switched to inflation targeting.

Inflation targeting can become a lesser evil, preferable to discretionary policy or other, discredited frameworks. Technical difficulties understandable for countries undergoing rapid structural change and with a limited predictability of transmission of policy impulses made for a long period of 'practice shooting' in Czech Republic and Poland, before the new framework became credible. Experience of Central Europe shows that it particularly difficult to fine-tune inflation targets when the economy is facing a dramatic cyclical reversal, resulting in massive undershooting or overshooting of targets. The experience also shows that central banks tend to construct their inflation models. after introduction of inflation targeting, in an

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asymmetric way that puts more emphasis on the upside risk of higher-than-targeted inflation.

Despite these limitations, inflation targeting became the dominant policy framework and its gradual success improved its credibility. Still, it provides a cautionary example to consider when introducing inflation targeting in countries where energy, food and regulated prices are a major part of consumer prices.

Central European experience belies findings by Gerlach (1999) that inflation targeting tends to be adopted in countries with low central bank independence and/or not with open economies. This view contains an implicit assumption that inflation targeting replaces missing independence or nominal anchor provided through management of the nominal exchange rate.

7.3.3 Co-ordination of monetary and fiscal policies

Findings from the Central European experience concerning co-ordination of macroeconomic policies suggest a number of hypotheses, some of them in accordance with conventional wisdom, other quite counterintuitive and some just largely left unexplored so far in the literature.

The Central European sample demonstrates the well-known fact that certain factors wholly or partially beyond the power of central bank – especially fiscal policy – are crucial to actual medium-term success of a given monetary framework and to low inflation.

On the other hand, the sample of Central European countries does not confirm the hypothesis put forward by Worrell (2000) that policy-makers in small open economies, especially the developing ones, frantically try to avoid overt conflict in the fear of undermining confidence. Slovakia during the 1996-98 period as well as during the year 2002 and Poland in the 2001-02 period experienced a rather public conflict between fiscal and monetary authorities and we were unable to detect any distinct effect of the conflict as such rather than sustainability/unsustainability of policies on expectations or macroeconomic developments.

The second counterintuitive findings is that the importance of contagion and external factors in currency crises should not be overestimated. While contagion from the Asian and Russian crisis seems to be the triggering event for local crises in Czech Republic and Slovakia, it was the decision by domestic agents to speculate against the currency that made the floating and subsequent depreciation inevitable. At the same time, expectation of devaluations in Hungary in early to mid-1990s by domestic agents became the key in increasing inflation expectations Therefore, a hypothesis worth exploring is that while external events can act as triggers for crises and pressure on the currency, it is the domestic credibility which matters in the end for countries where an overwhelming majority of financial assets is held by domestic institutions.

Even though monetisation of fiscal deficit early in transition as a major factor in inflation performance seems quite conventional, experience of transition provides a slightly more nuanced conclusion. In addition to fiscal consolidation, it is the development of deep and liquid financial markets that co-determines the ability of

central bank to achieve low inflation. Without them, even a modest deficit can cause problems and vice versa.

Another unexplored area is that official fiscal data often provide a distorted picture due to differing methodologies and off-balance-sheet items. Additionally, fiscal policy in itself can be quite conservative and still contribute to problems during a period of capital inflows, especially if the dynamics are expansionary. It needs to be said that the real policy issue is not whether fiscal policy is too loose, but how tight does need it to be to support overall policy objectives and whether the required tightening is feasible.

7.4 Concluding remarks – relevance of the thesis for policy challenges on the road to single currency

The thesis examined monetary policy in Central Europe during the period spanning years 1993 through 2001. Two years have passed and the year of its submission - 2004 – is also the year when all four countries enter the European Union. Membership in the EU will bring new challenges for policymakers in all areas, but particularly so in the area of monetary policy. All new member states, unlike the UK or Denmark, have taken on the obligation to fulfil the Maastricht criteria and join the single currency (i.e. there is no opt-out). At the same time, there seems to be a strong internal desire to adopt euro, both by central banks and governments. Does the thesis contain findings relevant to monetary policy of EU member states on the road to single currency?

Factors unique to the transition have significantly influenced conduct of monetary policy during 1990s and early 2000s. but are now largely spent. Inflationary pressures unrelated to monetary or fiscal policy, a dysfunctional financial sector and other transitional distortions in the monetary policy transmission mechanism have been weakening progressively and can be now seen as the thing of the past. Lessons based on these idiosyncrasies are not necessarily relevant anymore and can be even misleading. Emphasis on implementation of monetary policy primarily through interest rates and continuing development of technical capacity have become dominant.

On the other hand, strong and independent central banks combined with a domestic target or a soft peg have shown themselves to be a good way of constraining policymakers' discretion in the Central Europe and a good basis for future convergence with the eurozone. Inflation targeting will in all likelihood continue to be the target that complements central bank independence within this established framework. This conjecture is based not so much on its (now universal) adoption by the four countries, but on the fact that the logic that led to its adoption will be even stronger after the accession. The Maastricht criteria require convergence of inflation and long-term interest rates to the eurozone levels and inflation targeting is the most direct instrument for policy-makers to fulfil the criteria.

There are, however, two other factors that complicate the picture. One is fiscal policy. Its importance for achievement of monetary policy goals can hardly be overstated and was a subject of much debate in the thesis, which however confirmed that the penalty for profligate governments is often long in coming, especially under fixed exchange

rate regimes. The EU membership and the ambition to join the eurozone should alleviate some of the problems experienced by monetary policymakers. First of all, measurement of the fiscal position has now become much more transparent and will continue to be calculated by Eurostat within the framework of the economicy policy co-ordination. More importantly. one of the Maastricht criteria is that, for those with the ambition to join the EMU, fiscal deficit should not exceed the 3% of GDP limit. This has already become a key goal in fiscal strategies of Central European governments. It is not clear what impact the recent fiscal transgressions of *existing* members of the eurozone (Germany and France) will have on credibility and application of the criterion to applicants, but there is no indication that the pressure on fiscal consolidation will slack.

The finding of the thesis that is most disquieting for monetary policymakers on their road to the EMU is that procedures for entry into the monetary union might require a potentially inconsistent combination of fixed nominal exchange rates, disinflation and sustainable real exchange rate. Prior to adoption of the euro, currency of a member state must spend at least two years without devaluation in ERM-2, the second version of the European Exchange Rate Mechanism. After the 1992 crisis, the ERM-2 band was widened to 15%, but that might still prove to be insufficient, especially when even a much smaller divergence from the central parity than the band allows stimulates speculation about how central banks would resolve conflicts between inflation targets and imperatives of the band. The fact that three out of four Central European countries, have adopted and kept a formally floating currency even in expectation of the EU and ERM-2 membership is a testimony to their aversion to soft pegs (even very soft ones). Their experience tells them that inconsistencies introduced

into the policy framework by ERM-2 will be not only potential, but can easily have serious consequences. Unlike other lessons, this one becomes more relevant as transition-specific factors weaken.

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