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# To Devaluate or not to Devalue? How East European Countries Responded to the Outflow of Capital in 1997-99 and in 2008-09

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# TO DEVALUE OR NOT TO DEVALUE?

## How East European countries responded to the outflow of capital in 1997-99 and in 2008-09

**Vladimir Popov**[1]

ABSTRACT

If there is a negative terms of trade or financial shock leading to the deterioration in the balance of payments, there are two basic options for a country that has limited foreign exchange reserves. First, a country can maintain a fixed exchange rate (or even a currency board) and wait until the reduction of foreign exchange reserves leads to the reduction of money supply: this will drive domestic prices down and stimulate exports, raise interest rates and stimulate the inflow of capital, and finally will correct the balance of payments. Second, the country can allow the devaluation of national currency – flexible exchange rate will automatically bring the balance of payments back into the equilibrium. Because national prices are less flexible than exchange rates, the first type of adjustment is associated with the greater reduction of output.

The empirical evidence on East European countries and other transition economies for 1998-99 period (outflow of capital after the 1997 Asian and 1998 Russian currency crises and slowdown of output growth rates) suggests that the second type of policy response (devaluation) was associated with smaller loss of output than the first type (monetary contraction). 2008-09 developments provide additional evidence for this hypothesis.

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## The problem

In late 2008 Latvia, a small Baltic state (former Soviet republic) with less than 2.5 million people, a member of the EU since 2004, like many other developing and transition economies, faced the outflow of capital. Unlike many other countries, however, Latvia had a *de facto* (although not formal) currency board arrangement (its currency was pegged to the SDR since 1994 and to euro since 2004) and a huge current account deficit – over 20% of GDP in 2006-07 – financed by the inflow of capital. The slowdown of the capital inflows in 2008 led to the reduction of foreign exchange reserves from $6.6 billion in May to $3.4 billion in November; money supply contracted by over 10% in 2008, GDP growth rates fell from 11-12% in 2006-07 to -10% in the fourth quarter 2008, unemployment grew.

On Dec. 15, 2008 Paul Krugman, the recent Nobel Prize laureate, in an Op-Ed in New York Times compared Latvia to Argentina and later made a strong argument for the devaluation[2]. "This looks like events repeating themselves, – he wrote, – the first time as tragedy, the second time as another tragedy"[3]. It was G.F.W. Hegel who argued that history repeats itself twice, whereas Karl Marx added: "the first time as tragedy, the second time as farce."[4]

Why Latvia is compared to Argentina? Because Argentina also had a currency board that operated seemingly successfully (allowing to bring down hyperinflation) for a decade – from 1991 to 2002, but then collapsed: in 2002 Argentinean peso, previously pegged to a $US at a ratio of 1:1, devalued to 3:1 in a matter of months. Currency board in Argentina proved to be good for fighting inflation (fig. 1), but not so good for economic growth (fig. 2). When in the late 1990s Argentina experienced the outflow of capital, the government and the central bank were sticking to the currency board arrangement, hoping that the automatic mechanism would finally work: foreign exchange reserves would decrease, money supply would shrink, leading to lower domestic prices and higher interest rates that would finally improve the deteriorating balance of payments. The mechanism was working, but

[2] Sometimes distinction is being made between devaluation (the decision of the central bank to go from one hard peg to another, a lower one) and depreciation (fall in the exchange rate under floating regime). In this paper these terms are used interchangeably to denote the decline of the exchange rate, whatever the reasons of this decline.

[3] Krugman, P. "Latvia is the new Argentina (slightly wonkish)". NYT, December 23, 2008, *5:33 pm* http://krugman.blogs.nytimes.com/2008/12/23/latvia-is-the-new-argentina-slightly-wonkish/

[4] "Hegel remarks somewhere that all great world-historic facts and personages appear, so to speak, twice. He forgot to add: the first time as tragedy, the second time as farce." Marx, K. *18th Brumaire of Louis Bonapatre*, Chapter 1.

too slowly and with too high costs – the reduction of money supply was bringing down not only inflation, but also output, which contracted by 5% in 1999, 1% in 2000, and another 5% in 2001 (fig.2). At this point, it was either the government or the peso that were supposed to fall, and finally both fell in 2002.

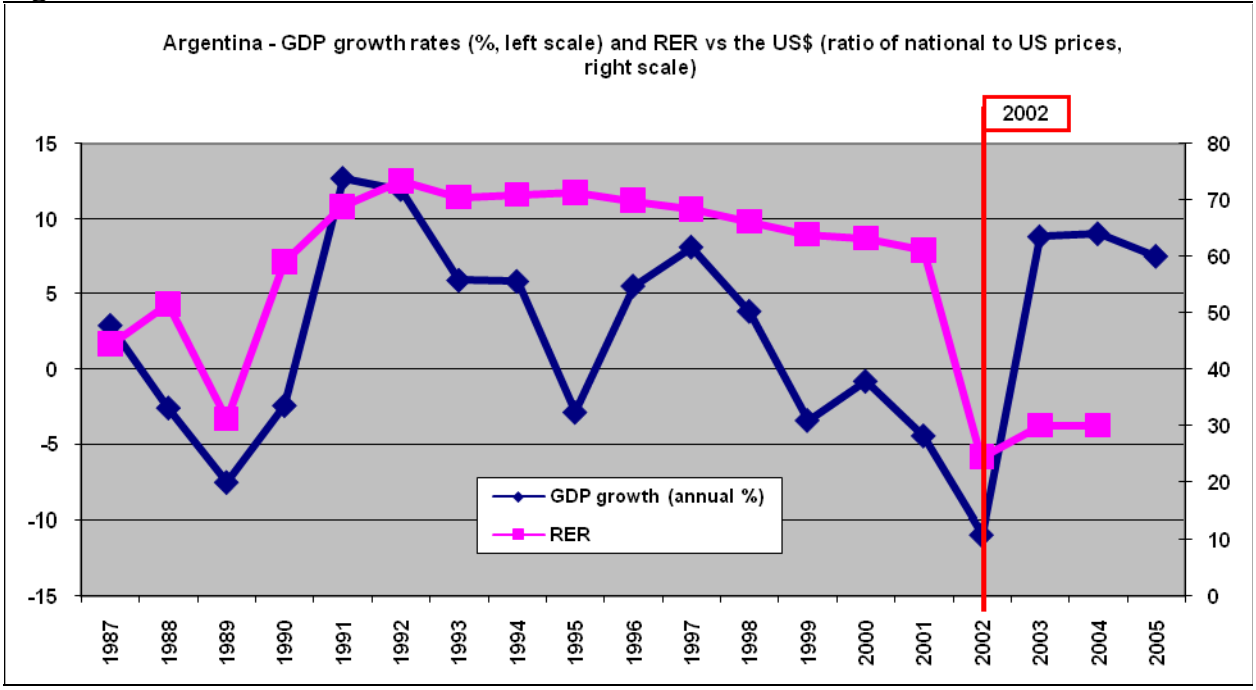
**Figure 1**

Source: World Development Indicators.

Latvian developments resembled very much what happened in Argentina in 1999-2002 and it appears that everyone who is anyone has a strong opinion on the issue. Simon Johnson, former IMF chief economist, argued that Latvia too small to fail[5], whereas Anders Aslund also believed that small open economies with sound economic policies should be bailed out[6]. Latvian real effective exchange rate increased nearly twofold since 1994 and to regain competitiveness without devaluation Latvia should have experienced a severe deflation – major cuts in prices and wages. The problem is that prices and wages are not that flexible even in "small open economies with good policies", so the price of deflation is a deep recession – a major reduction of output. Is the game worth a candle?

[5] Johnson, S. Too Small to Fail. – Europe EconoMonitor, Dec. 26, 2008 (http://www.rgemonitor.com/euro-monitor/254870/too_small_to_fail).
[6] Aslund, A. Why Latvia Should Not Devalue. – Dec. 9, 2008 (http://www.petersoninstitute.org/realtime/?p=311).

**Figure 2**



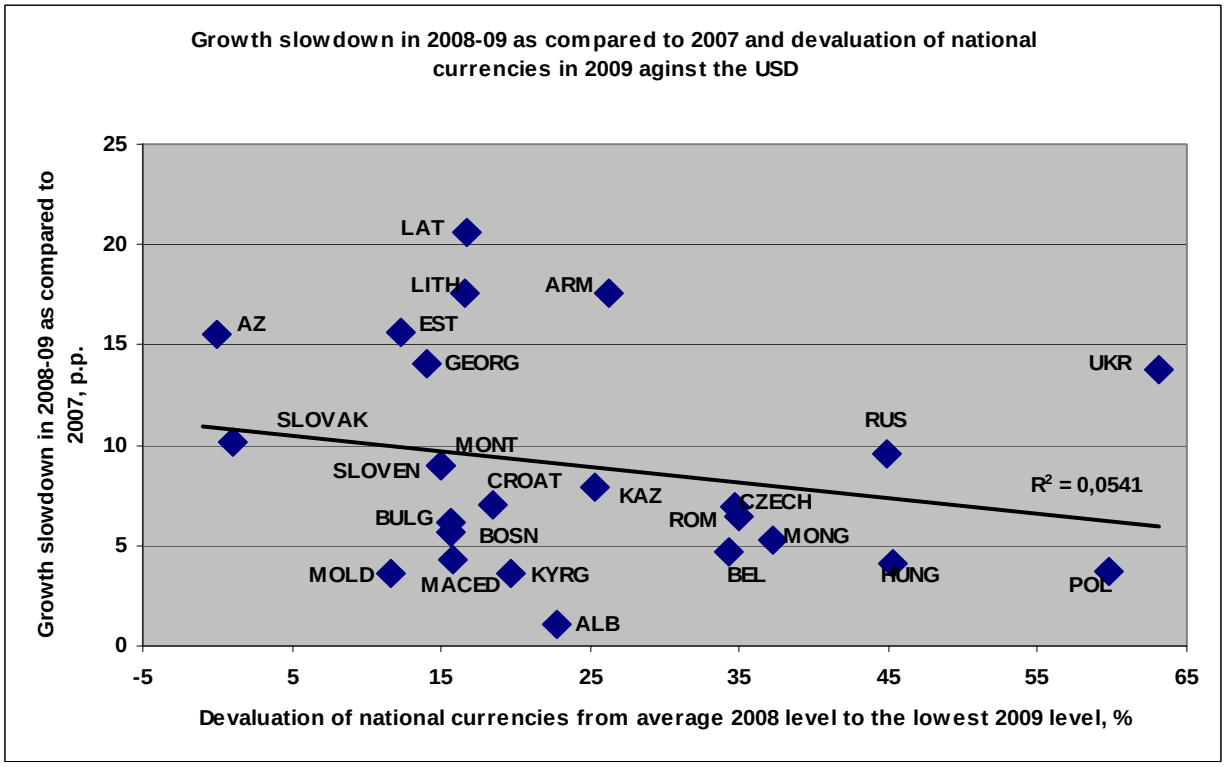

Source: World Development Indicators.

In December 2008 the IMF agreed to issue Latvia a $2.35 billion credit – unprecedented amount equal to 1200% of the Latvian quota in the Fund and to 9% of the country's GDP (the whole package included credits from the EU and from Nordic countries and totalled $10 billion, a good 40% of GDP). In February 2009, Latvian government resigned, but new government maintained the fixed exchange rate. Estonia, Lithuania, Bulgaria and Bosnia that maintain currency boards experienced similar difficulties. Three Baltic states, however, experienced the greatest reduction of output in Eastern Europe and in the world: their GDP in 2009 was 12 to 22% lower than in 2007 (EBRD, 2010).

On the contrary, countries that devalued their currencies significantly (Poland, Hungary, Romania, Czech Republic) experienced less pronounced decline in output. China did not devalue, but stopped gradual revaluation of yuan (that has started in 2005) in summer 2008 and resumed it only well after the recession was over, in mid 2010.

Overall, there seems to be a negative relationship between the slowdown in growth in 2008-09 (2007 GDP growth rates minus average 2008-09 growth) and the magnitude of devaluation (from the average 2008 level to the lowest 2009 level) – fig. 3.

**Figure 3**



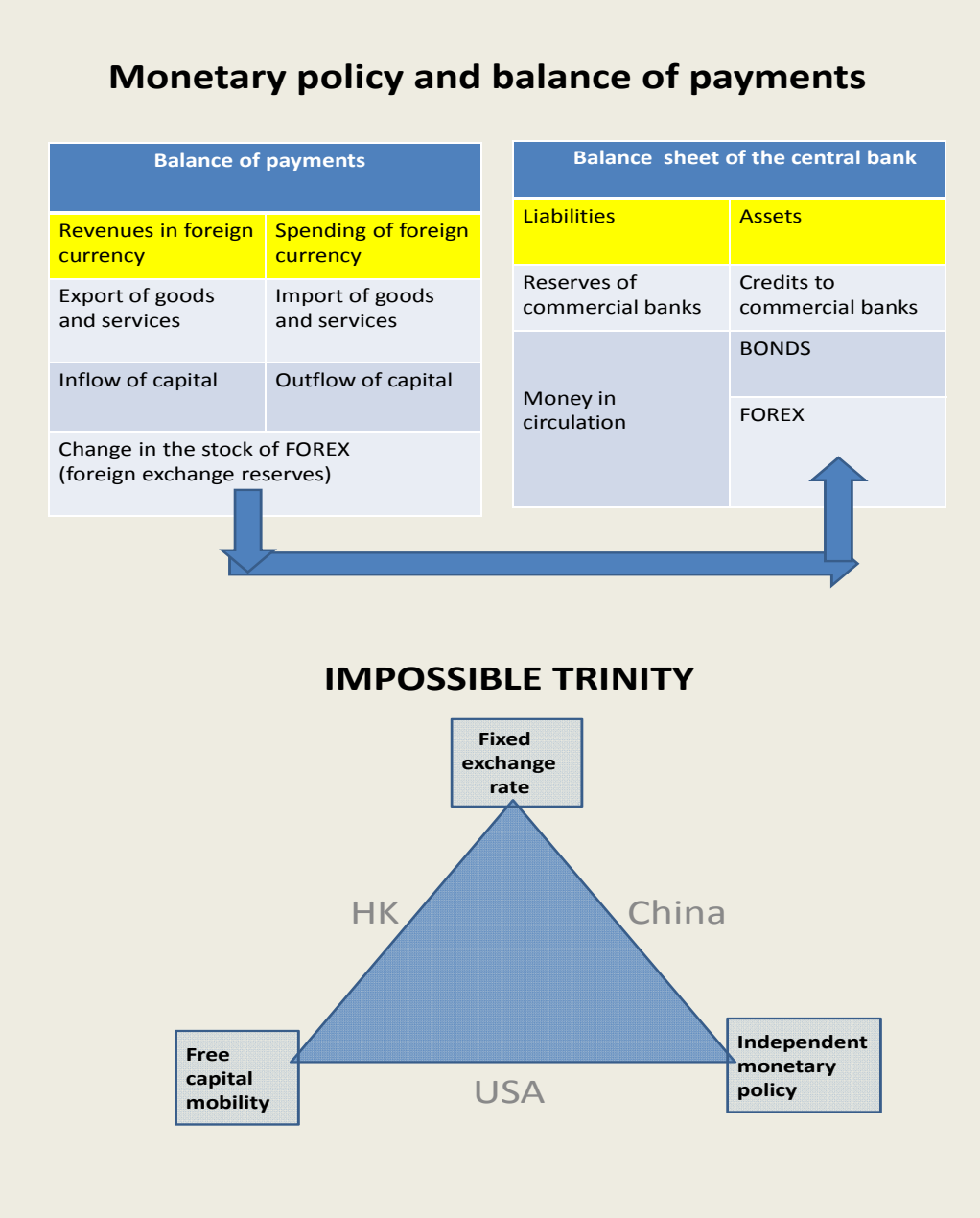

Source: World development Indicators; International Financial Statisttics.

## The literature review and the hypotheses

The debate on Latvia is part of at least century old debate on the advantages and costs of floating and fixed exchange rates and currency boards. The macro textbook theory is based on the Mundell-Fleming model. One of its conclusions is that independent monetary policy is impossible under perfect capital mobility and fixed exchange rate because changes in domestic interest rate take the balance of payment out of the equilibrium with the resulting change in foreign exchange reserves (fig. 4): monetary expansion (LM curve shifts to the right), for instance, results in lower interest rates and outflow of capital, which in turn leads to the lower level of foreign exchange reserves and contraction of the money supply (LM curve shifts back to the left). On the contrary, with the flexible exchange rate

the monetary policy is 100% efficient – when monetary expansion leads to the decline in interest rates interest rate and outflow of capital, exchange rate of the national currency falls and this leads to the increase in income (IS curve moves right), so the new equilibrium is established at a point of higher income and the same level (world level) of interest rates.

**Figure 4. Central bank balance sheet, balance of payments and impossible trinity**



Under the fixed exchange rate the adjustment to the external shock (say, to a fall in prices for exported goods or to an outflow of capital) occurs through changes in the money supply:

- Trade balance (or capital account balance) deteriorates => FOREX fall => M falls => Domestic prices fall => Real exchange rate [RER = Domestic prices/Foreign prices)*Nominal exchange rate] falls => Trade balance improves (export increases, import shrinks).

- Besides, tight monetary policy (M falls) leads to higher real interest rates, so there is an inflow of capital and an improvement of the capital account that also contributes to the restoration of balance of payment equilibrium.

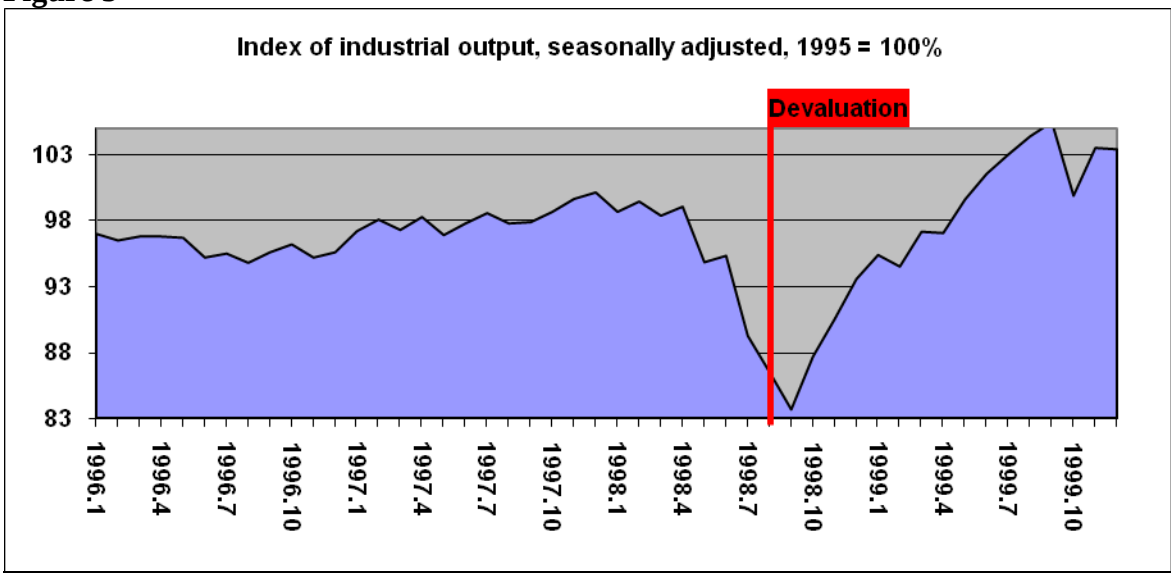
The problem with this type of adjustment is that monetary contraction, if prices are sticky, affects not only prices, but also output: the reduction of money supply leads to a slow down of inflation only with a lag and during this lag output (or growth rates of output) falls, so the cost of bringing the RER back to the competitive level is a recession, like it happened in Russia in 1997-98 (fig. 5) and Argentina in 1999-2002(fig. 3-4).

Under fully flexible exchange rates the adjustment to the external shock (say, to a fall in prices for exported goods or to an outflow of capital) occurs without changes in FOREX and money supply, but through the exchange rate itself:

- Trade balance (or capital account balance) deteriorates=> Nominal exchange rate falls (depreciates) => =>Real exchange rate [RER = Domestic prices/Foreign prices)*Nominal exchange rate] falls =>Trade balance improves (export increases, import shrinks).

- Besides, domestic assets after devaluation become cheaper, so there could be a capital inflow (slowdown in capital outflow).

**Figure 5**




Source: Russian Economic Trends.

This type of adjustment is also painful in a sense that it leads to the decline in consumption (net imports declines after devaluation), but domestic prices do not fall (actually, after some time they start to increase, eating up the pro-competitive effect of devaluation), so there is no depressive effect on output. The goal of this paper is to examine which type of adjustment is associated with greater reduction (slowdown of growth) of output – through money supply and slowdown of inflation or through devaluation. I look at the experience of former communist countries, especially countries of Eastern Europe (which had very different exchange rate regimes), that were affected by the outflow of capital in 1997-99, after the Asian (1997) and Russian (1998) currency crises. To the best of my knowledge, there are no papers examining this particular issue, but of course there is a large literature on the advantages and disadvantages of different exchange rate regime.

Elimination of the currency risk is believed to be the most important advantage of a fixed exchange rate regime (this is even truer for currency boards and dollarization – in the latter case currency exchange transaction costs are also eliminated). The effects of common currencies on the volume of international trade were analyzed in Rose (2000), Engel and Rose (2002), Frankel and Rose (2002) and Glick, Reuven and Rose (2002). This research based on the application of the gravity model produced

surprisingly high estimates – international trade in the currency unions is three times more intensive than among similar countries that do not have a common currency. Attempts to capture this effect in the euro area, however failed. Numerous papers (see Frankel, 2008 for a survey) came up with an estimate which is lower by at least an order of magnitude – 10-15% increase in international trade in the first few years after the creation of the monetary union.

Hanke (2003), a strong proponent of currency board, points out that according to Eichengreen (2001) the evidence on the relationship between monetary regimes and growth is inconclusive, and does not support the claim that dollarization – or any exchange rate regime, for that matter – is an important determinant of growth. However, Edwards and Magendzo (2003) distinguish between independent currency unions (like the euro zone today) and dollarized economies (that do not have a say in monetary policy formulation, like Panama or Ecuador). They find that dollarized economies and currency unions have lower inflation than countries with a domestic currency. But dollarized countries have lower growth and higher volatility than countries with a domestic currency. Currency unions, on the other hand, have higher growth and higher volatility than countries with a currency of their own.

The strongest argument against fixed exchange rates is that they force to abandon the independent monetary policy, whereas one-size-fits-all monetary policy obviously does not work. The reduction of output during the Great Depression, as Eichengreen and Sachs (1985) and Eichengreen and Irwing (2009) show was greater in countries that stuck to the gold standard, whereas countries that devalued their currencies (China, Japan, Denmark, Sweden) were able to limit the depth of the recession and to avoid sliding into protectionism.

Among the opponents of the currency boards are Roubini (1998) and Krugman (2003). The latter notes that “a currency board fitted a conservative ideology: by eliminating any discretionary monetary policy, it moved us back toward a pre-Keynesian world. That's why Forbes and the WSJ editorial page sang Argentina's praises; and Wall Street economists swallowed the whole thing”.

This issue is also discussed in terms pluses and minuses of *exchange rate based stabilization* (pegging national currency to a stable currency and using the peg as the nominal anchor) versus the *money based stabilization* – the policy of setting targets for monetary aggregates (gradually lowering these targets) while keeping the nominal rate flexible. The advantage of former is that it usually is believed to be credible (although there are a lot of cases of spectacular failures – from Russia in 1998 to Argentina in 2002). *Money based stabilization* allows more flexibility for monetary policy (one size does not fit all argument). For instance, if prices are sticky, so that 10% inflation is needed to avoid the depressing effect on output, then a 10% annual devaluation (provided there is zero inflation elsewhere) can ensure the stability of RER. The disadvantage of this policy is that there is no automatic mechanism to bring down inflation – everything depends on how strictly the CB will observe the targets.

With regards to the medium- short-term, there is another argument – asymmetric shocks. These latter occur, for instance, when prices of commodities increase. Consider the case of the country that is an oil exporter and another country, which is an oil importer. The increase in oil prices will create a positive trade shock for the exporter and a negative shock for the importer. If both countries have fixed nominal exchange rates, in the former country FOREX would increase, in the latter – decrease. This latter country (oil importer) at the end of the day would not be able to sterilize the decline in FOREX (if the trade shock is significant enough), so the money supply would decrease, prices would fall, and RER would fall as well. Even if prices are perfectly flexible, there would be a need to move resources – labor and capital – from oil sector to other sectors of the economy. And when oil prices will grow again, there would be a need to move resources in the opposite direction (from other sectors to oil). Because oil prices fluctuate a lot, it would be unreasonable to move resources back and forth every time there is a trade shock. With fixed exchange rate the room for maneuver to adjust to these temporary shocks is limited.

With fixed exchange rates, or, even more so - with currency board arrangements, effectively forcing countries to abandon their independent monetary policy, they are doomed to adjust to the trade shocks and inflows and outflows of capital through real indicators: when the exchange rate is pegged and prices are not completely flexible, changes in the money supply (caused by the fluctuation of reserves)

may affect output rather than prices. And as the recent experience of East Asian and transition economies showed, this kind of real sector adjustment is quite costly. To put it in the simplest form, under fixed exchange rate regime, neither changes in foreign exchange reserves, nor domestic price changes in response to money supply fluctuations provide enough room for maneuver for handling terms of trade shocks and international capital flows.

Most developing and transition economies, with the exception of the smallest ones, like Hong Kong, Singapore and perhaps Baltic states) are large enough to remain not completely exposed to the world market competition and hence to retain some inflexibility of domestic prices with respect to the world market prices. Nevertheless, they are not large enough to create an appropriate cushion in the form of foreign exchange reserves, bringing down the vulnerability resulting from the international capital flows to reasonable levels. In most emerging markets (with the possible exception of China) foreign exchange reserves are normally enough to withstand several weeks, if not days of the attack on the currency. More than that, because the major international banks, investment and hedge funds operate with the pools of money comparable with or even exceeding the value of reserves in most countries, the fluctuations of the exchange rate remain the only reliable and efficient safety valve providing protection from external shocks.

The consensus today, if any, could be probably summarized as follows: whereas exchange rate based stabilization may work at the initial stages of transition for fighting inflation, there is growing evidence that at later stages it becomes an obstacle for economic growth and creates the potential of the currency crisis by allowing the real exchange rate to appreciate.

### The story: 1997-99 currency crises in EE and FSU countries

In EE and FSU countries we find a variety of exchange rate regimes (table 1) and different patterns of adjustment to external shocks in 1998-99 (and in 2008-09). Slovenia (from 2007) and Slovakia (from 2009) entered the Eurozone; Lithuania (since 1994), Estonia (since 1992), Bosnia and Herzegovina[7]

[7] "At its inception, the convertible *marka* was pegged to the Deutsch mark at parity. The peg was converted to the euro, when the latter came into being, keeping the original exchange rate which amounts to approximately 2 KM per 1 euro" (Kamhi and Dehejia, 2005, p. 4).

and Bulgaria (since 1997) maintained formal currency board arrangements, and Latvia had a *de facto* currency board since 1994; Kosovo and Montenegro used German mark and then euro without any formal arrangements allowing them to influence the policy of the ECB in Frankfurt. All other countries maintained managed floats, although most of them initially had experimented with the fixed exchange rate. Three Baltic States became members of ERM – exchange rate mechanism that allows fluctuations of their domestic currencies to euro within the +15 – -15% corridor – but only in 2004-05. In order to join the Euro zone candidate countries must stay in ERM and demonstrate that they comply with the Maastricht criteria established for the budget deficit, government debt to GDP ratio, inflation and interest rates (fig. 6).

In 1999 growth rate fell as a result of capital outflow after Asian (1997) and Russian (1998) currency crises (fig. 7) and there was obviously a slowdown in the growth of money supply (fig. 8) and nominal and real devaluations of national currencies (fig. 9).

Most countries experienced a devaluation of nominal exchange rates in 1997-2000. In 1998-99 Hungary, Poland, Romania, Slovak Republic, Slovenia devalued most, whereas Bulgaria, Czech Republic, and three Baltic states tried to support the value of their currencies (fig. 10). Finally Czech Republic in 1997 and Poland in 1998 abandoned fixed exchange rates and moved to managed float.

It is also clear from comparing figs. 11 and 12 that the rates of decline in M2 growth rates was much more pronounced in countries that tried to maintain fixed exchange rate than in countries that accepted devaluation of their currencies.

**Table. 1. Exchange rate regimes as of February 2009**

| Countries and territories | Exchange rate regime | Period | Currency | Comments |
|---|---|---|---|---|
| Slovenia | Euro zone | Since 2007 | Euro | |
| Slovakia | Euro zone | Since 2009 | Euro | |
| Kosovo | Using euro (before – German mark 1999) | Since 2002 | Euro | |
| Montenegro | Using euro (before – German mark, since 1998) | Since 2002 | Euro | |
| Estonia | Currency board (pegged to German mark, then – to euro) | From 1992 | Estonian kroon | Member of ERM since 2004, joined Eurozone in 2011 |
| Lithuania | Currency board (pegged to the US$, then to euro) | From 1994 | Lithuanian litas | Member of ERM since 2004 |
| Bulgaria | Currency board (pegged to German mark, then euro) | From 1997 | Bulgarian lev | |
| Bosnia | Currency board (pegged to German mark, then – to euro) | From 1997 | Convertible marka | |
| Latvia | Fixed rate (since 1994 – to SDR, since 2005 – to euro) | From 1993 | Latvian lats | De facto currency board, member of ERM since 2005 |
| Albania | Managed float | From 1992 | Albanian lek | |
| Macedonia | Managed float | From 1994 | Macedonian denar | |
| Croatia | Managed float | From 1993 | Croatian kuna | Preceded by Croatian dinar |
| Serbia | Managed float | From 2000 | Serbian dinar | Preceded Yugoslav dinar |
| Romania | Managed float | From 1992 | Romanian leu | |
| Hungary | Managed float | From 2001 (crawling peg in 1995-2001) | Hungarian forint | |
| Poland | Managed float | From 1998 | Polish zloty | |
| Czech Republic | Managed float | From 1997 | Czech koruna | |

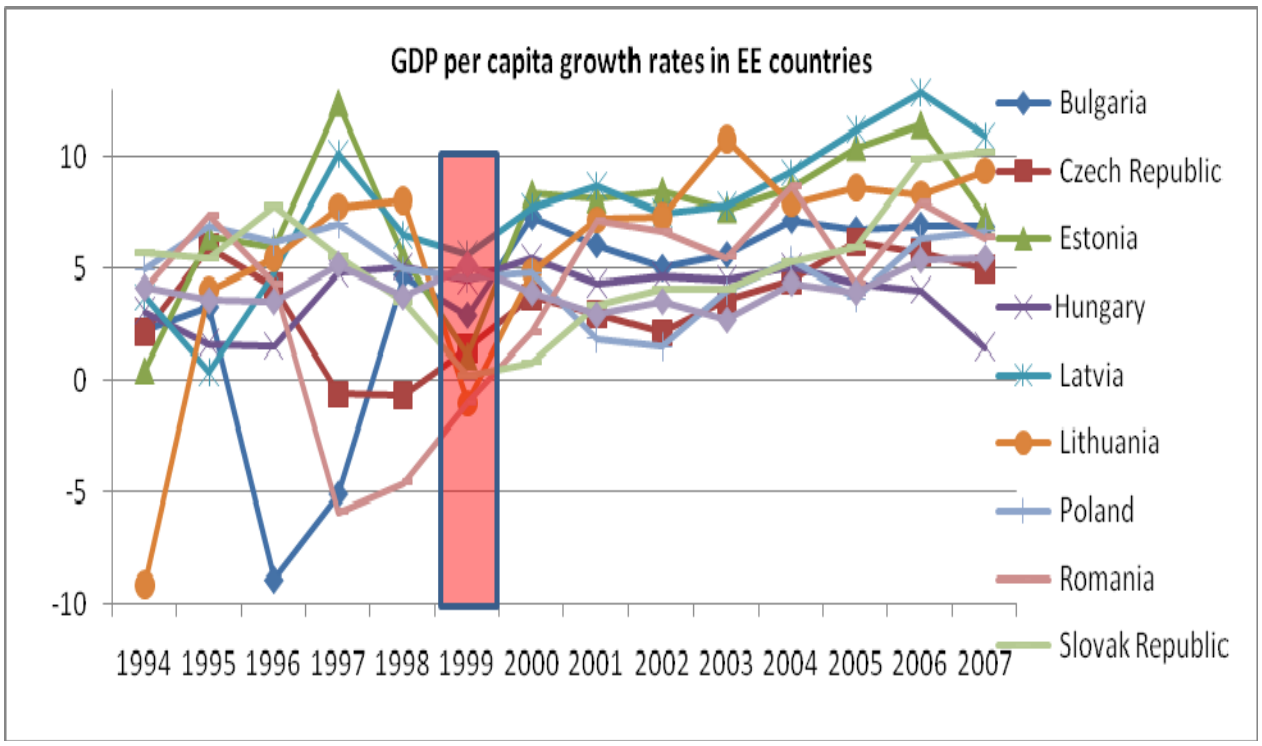
Source: Wikipedia; Websites of ECB and national central banks.

**Fig. 6**

## Maastricht criteria:

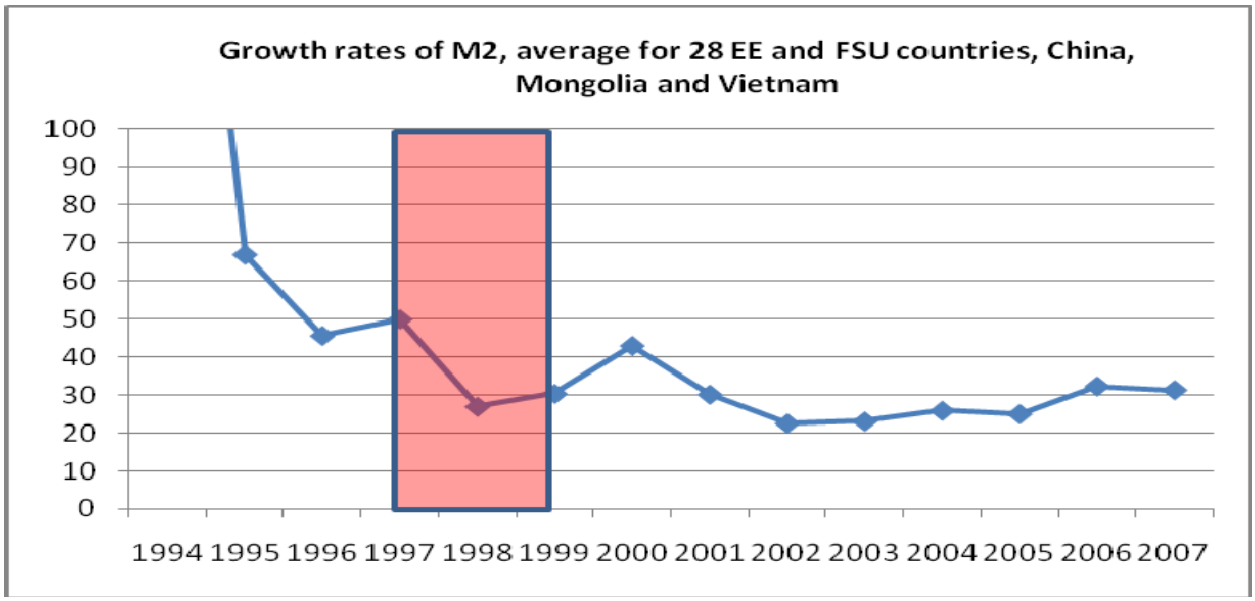
- ERM
  - Prior to adopting the euro, a member state has to have its currency in the European Exchange Rate Mechanism (ERM II) for two years.
  - Denmark, Estonia, Latvia, and Lithuania are the current participants in the exchange rate mechanism.
  - Exchange rate (+15% – -15%)
- Budget deficit: <3%
- Government debt to GDP: <60%
- Interest rates: The nominal long-term interest rate must not be more than two percentage points higher than in the three lowest inflation member states.
- Inflation: No more than 1.5 percentage points higher than the three lowest inflation member states of the EU

**Fig. 7**



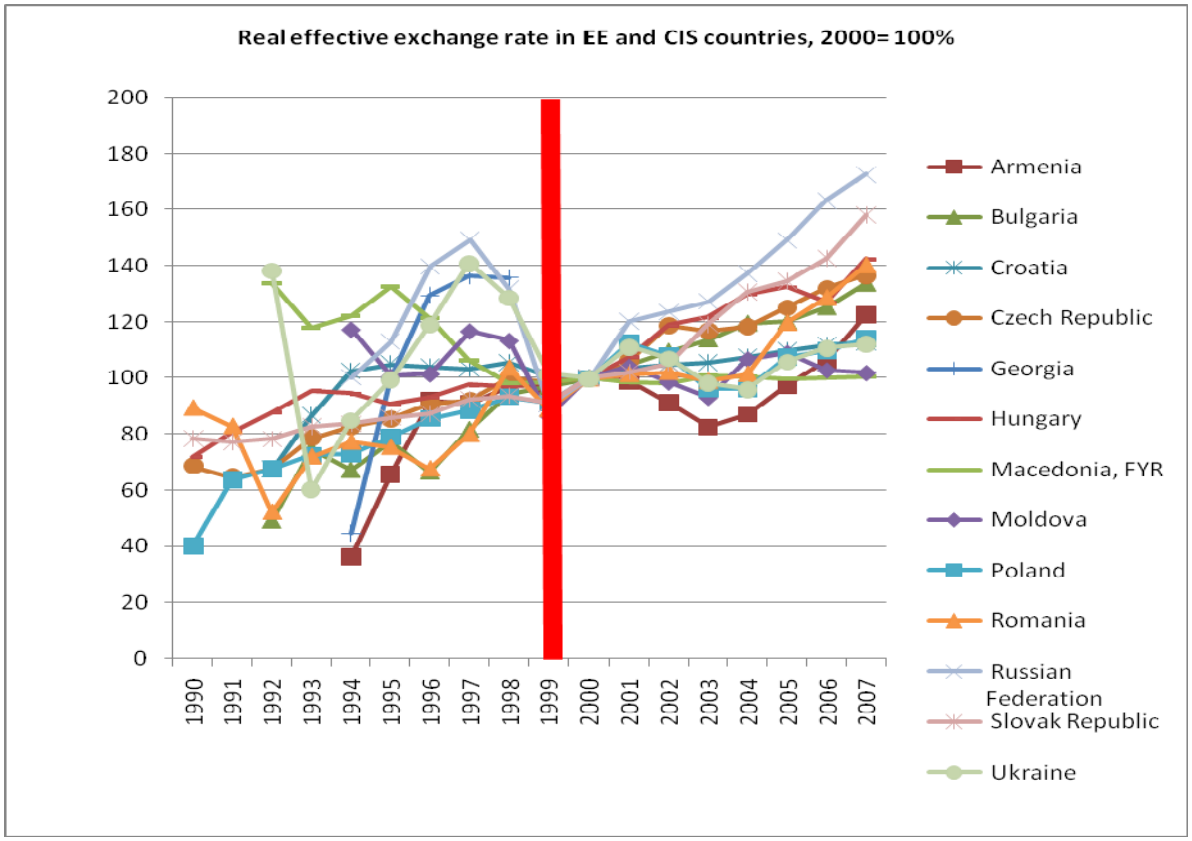

Source: World Development Indicators.

**Fig. 8**



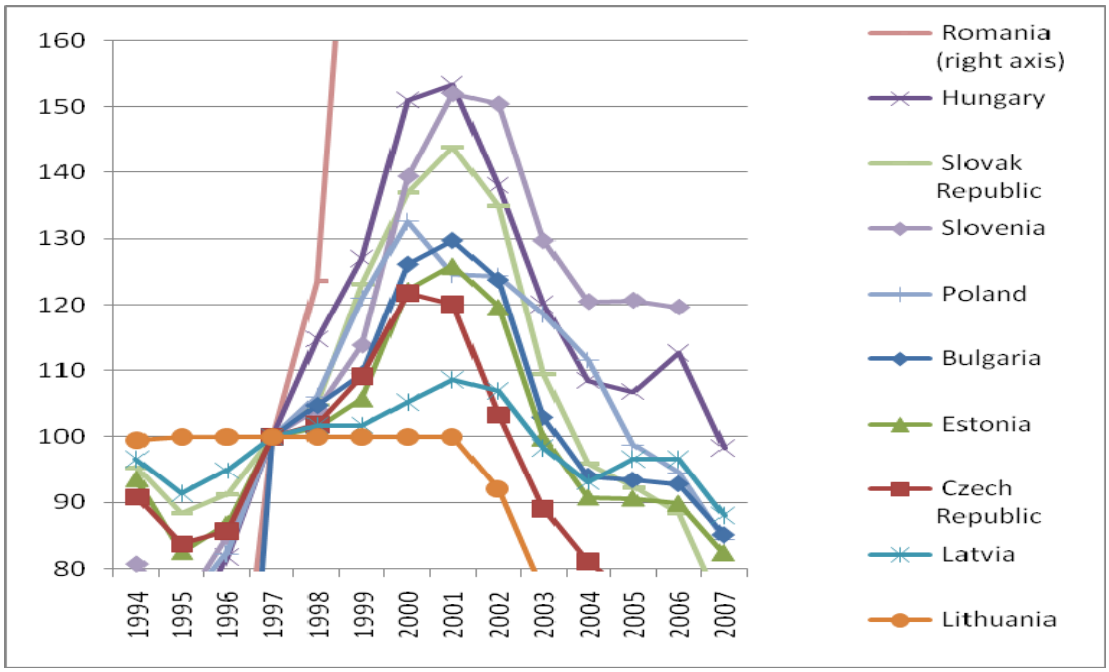

Source: World Development Indicators.

**Fig. 9**



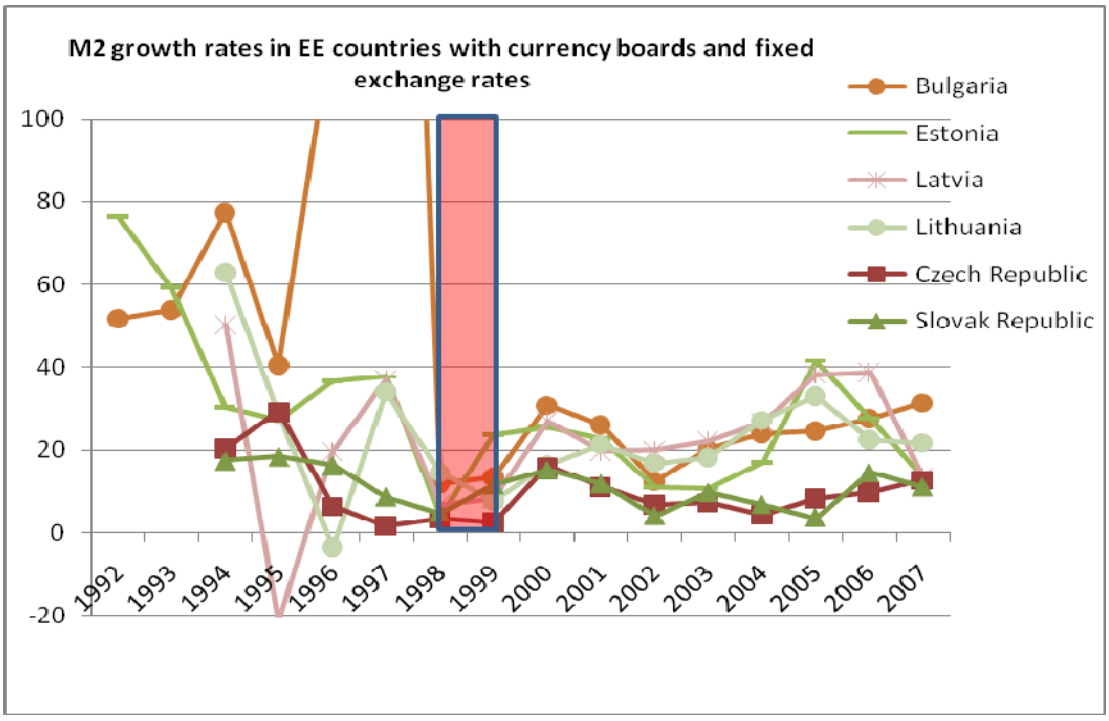

Source: World Development Indicators.

**Fig. 10. Nominal exchange rate of East European currencies, 1997=100% (increase = devaluation)**



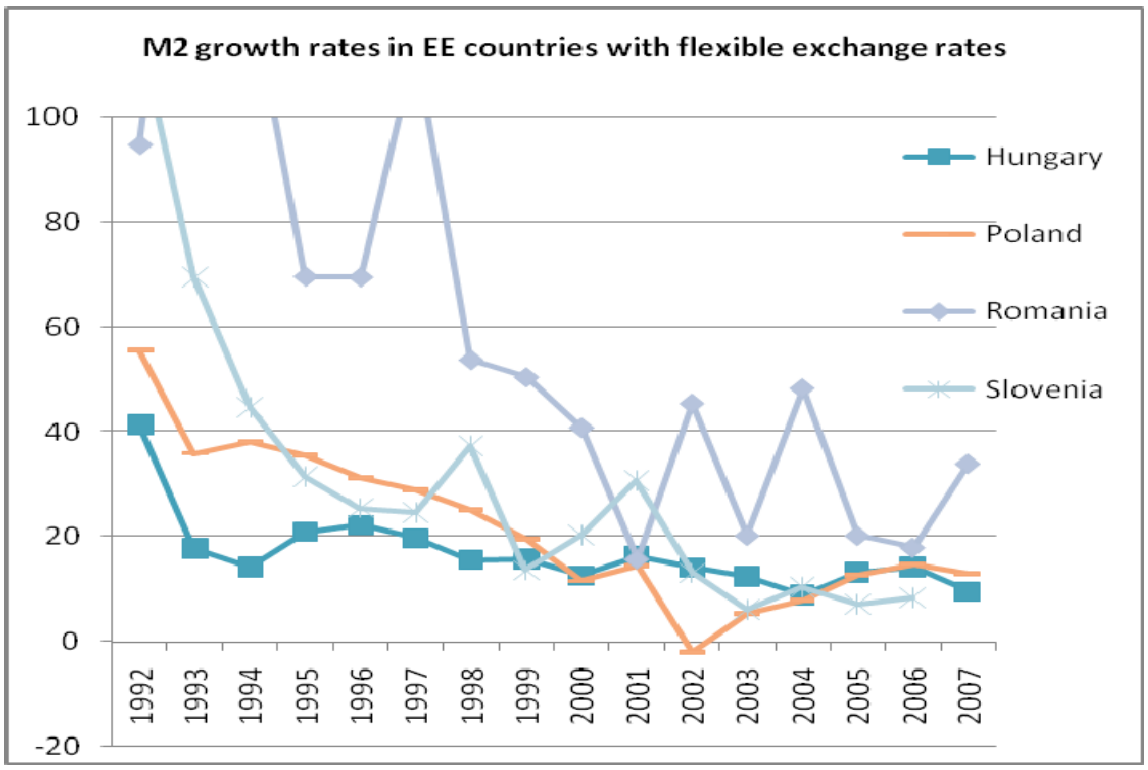

Source: International Financial Statistics.

**Fig. 11**




Source: World Development Indicators.

**Fig. 12**




Source: World Development Indicators.

**Analysis – output fall and devaluation**

Testing econometrically whether the slowdown in growth was more pronounced in countries that experienced greater reduction of money supply and smaller devaluation seems to be a straightforward exercise. There is a complication though: if money supply growth and inflation are brought down from several hundred (or even thousands) percent a year to 20-40%, this has a positive effect on growth rates. But if money supply and inflation growth rates are reduced further, the effect on growth rates is negative.

It was shown, that 20-40% a year inflation is sort of a threshold: there is no evidence that inflation of 20 to 40% annually is ruinous for growth, while there is even some evidence that inflation below 20% a year may be even beneficial (Bruno and Easterly, 1995; Bruno, 1995; Stiglitz, 1998). Other studies found different thresholds (Polterovich, 2006), but the principle holds. It may be even argued that the

threshold for transition economies is actually higher than for other emerging markets because of the numerous structural rigidities. In most successfully performing transition economies inflation was by no means insignificant: it never fell below 20% a year in the first 5 years of transition in Poland and Uzbekistan, while in China, though it was low most of the time, there were outbursts of inflation in 1988-89 and in 1993-95, when it increased to about 20%.

Theoretically, the relationship between inflation and growth (Phillips curve) is different during high and low inflation. When inflation is low, the increase in money supply causes increase in output and increase in prices (because the AS curve is positively sloped). Normally, in the first 18 months there is an increase in output and prices, afterwards – only the increase in prices, output returns to the equilibrium level, because LRAS curve is vertical (all the steam goes into the whistle). This is demand pull inflation – caused by movements of AD curve.

If inflation rises to above 20-40% a year, the relationship between growth and inflation is different. High inflation and hyperinflation leads to the reduction of the demand for real cash balances, so there is a demonetization, destruction of financial markets and uncertainty for investors. Hence supply curve moves to the left and upwards and the economy experiences the adverse supply shock – output growth rates fall. This is a negative relationship between growth and inflation; it is caused by the structural demonetization factors that lead to the adverse shift in AS curve.

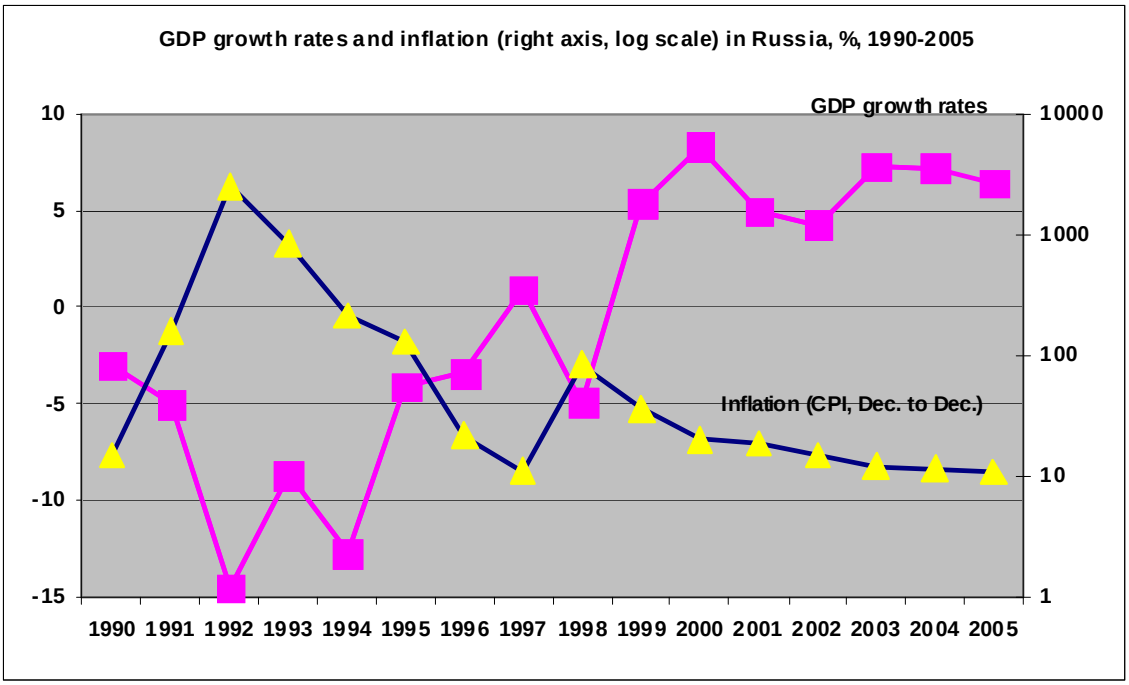
As fig. 13 suggests, Russia obviously had a negative relationship between growth and inflation in the 1990s, when inflation was mostly over 40% a year: every time inflation was brought down (in 1995-97 and from 1999 onwards), growth accelerated.

The same result holds for cross-country comparisons: countries with low inflation exhibited higher growth rates than those with high inflation over the period 1975-95 (countries with inflation above 40% a year actually had negative growth rates).

But if inflation rates are moderate, then attempts to reduce inflation may negatively affect the economy

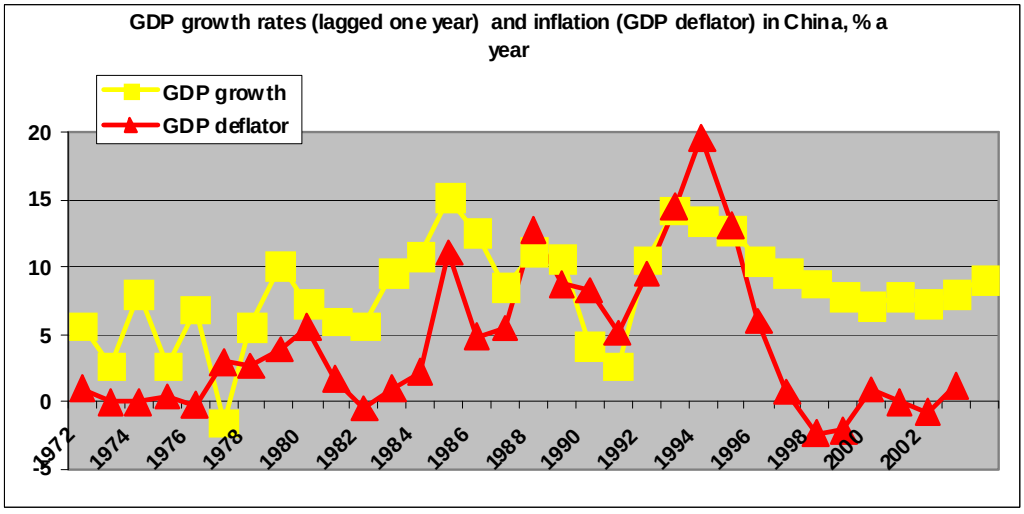
So, there is a positive relationship between growth and inflation in the short-term for relatively low inflation (below 20-40% a year), as is the case in China, for example (fig. 14).

**Fig. 13**




Source: Goskomstat.

**Fig. 14**




Source: World Development Indicators.

To summarize, the link between inflation and growth is different under high and low inflation. If inflation rises to over 20-40% a year, there is a demonetization of the economy due to the reduction of demand for money; this leads to the unfavorable supply shock – movement of the AS curve to the left and upwards. If inflation is relatively low (less than 20% a year) the AS curve stays put and relationship between inflation and growth is determined by the movements of AD curve, i.e. there is a regular Phillips curve relationship in the short run (positive), and no relationship in the long run.

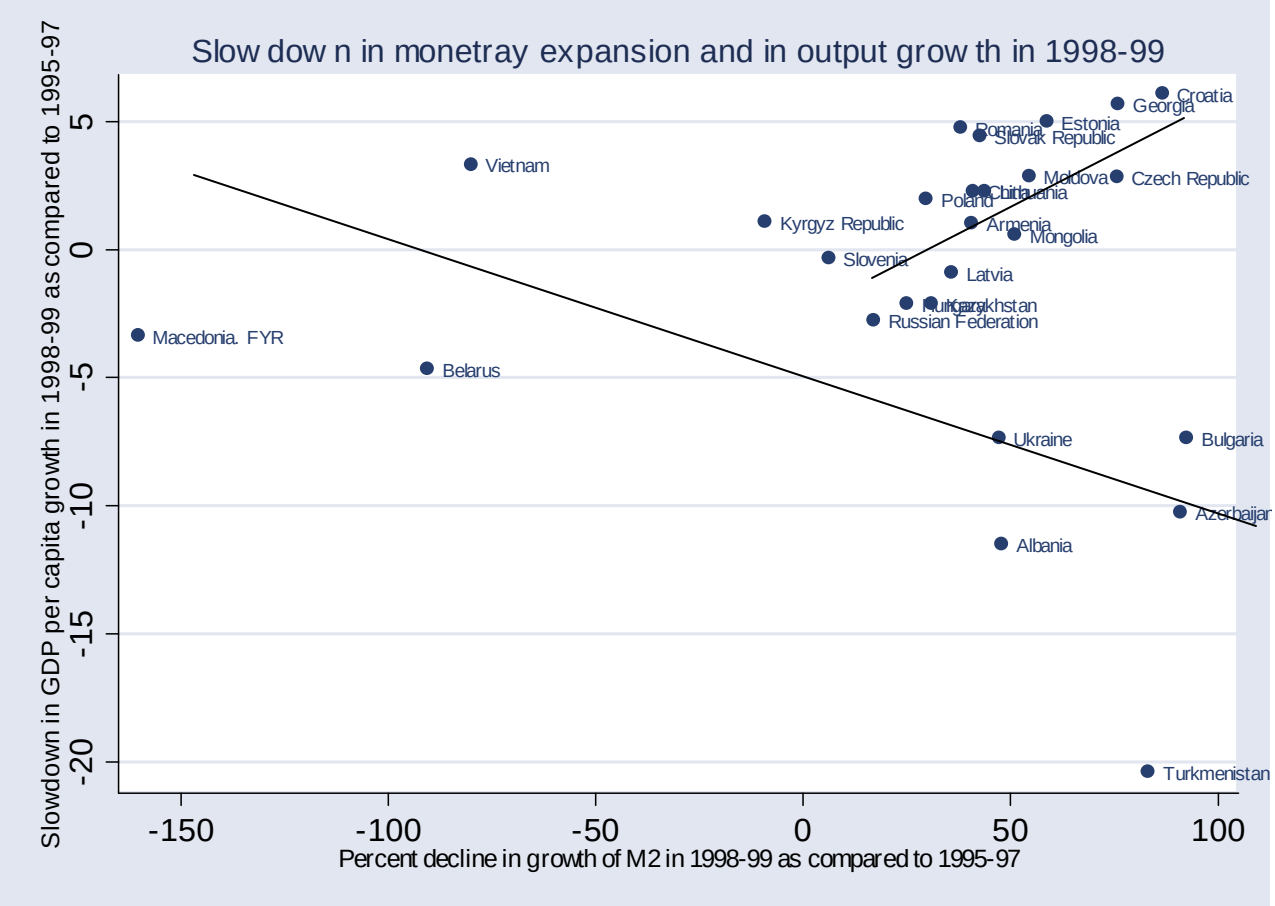
High inflation of the early 1990s in former Soviet republics and in many EE countries had an adverse impact on output. Bringing this inflation down from hundreds (and even thousands) percent a year to 20% had a positive impact on growth, but too much of the monetary tightening, like in Russia in 1998 (year on year inflation in July 1998 was 6% only), caused a wave of non-payments and led to a new reduction of output.

Such a non-linear relationship between inflation and growth creates a complication for the econometric analysis of the effects of devaluation on performance during the period of outflow of capital from transition economies in 1997-98. We have to consider several effects: devaluation has a stimulative effect on output; reduction of money supply growth rates has a repressive effect on output; very high inflation and increases of inflation, when it is high already have repressive effect on output as well. For countries with relatively low inflation in 1995-97 the slowdown of growth of M2 (monetary contraction) was associated with greater decline in output; but for countries with high inflation and expansionary monetary policy monetary contraction was associated with smaller slowdown in growth (fig. 15).

Regressions are reported in table 2.

Third equation from the table 2: Output loss is always proportionate to $M_2$ slowdown, but the higher is devaluation as compared to $M_2$ growth rates, the smaller is output loss (control variables in red):

**Fig. 15. Slowdown in monetary expansion and in output growth in 1998-99 as compared to 1995-97**




Source: World Development Indicators.

Slowdown in output growth in 1998-99 =

$=0.56 + M_2\text{loss}*(0.0015M_2\text{growth95-97}–9.1*10^{-6}*\text{DEV}) – 0.00035*\text{Infl95-97}*\text{INFLslowdown}=$

$=0.56 + 0.0015M_2\text{loss}*(M_2\text{growth95-97}–0.0061\text{DEV}) – 0.00035*\text{Infl95- 97}*\text{INFLslowdown},$

Where:

- M2 slowdown in 1998-99 as compared to 1995-97, p.p.,
- Devaluation in 1997-99, %,
- M2 growth rates in 1995-97, annual average, %,
- Annual average inflation in 1995-97, %,

- Inflation slowdown in 1998-99 as compared to 1995-97, p.p.

**Table 2. Relationship between output loss in 1998-99, devaluation and slowdown of M2 growth – regression results, robust estimates (T-statistics in brackets, ***- 1% significance, ** - 5% significance, * - 10% significance)**

**Dependent variable – Difference between annual average growth rates of GDP per capita in 1995-97 and 1998-99, p.p.**

| Equation/ Variable | 1, N=26 | 2, N=26 | 3, N=26 |
|---|---|---|---|
| M2 slowdown in 1998-99 as compared to 1995-97, p.p. | | 0.038** (2.28) | |
| (Devaluation in 1997-99, %)*($M_2$ slowdown, p.p.) | | | $-9.1*10^{-6}$ *** (-4.39) |
| (M2 growth rates in 1995-97)* ($M_2$ slowdown, p.p.) | | | 0.0015*** (4.97) |
| Annual average inflation in 1995-97, % | -0.04*** (-5.64) | | |
| (Inflation in 1995-97, %)* (Inflation slowdown in 1998-99 as compared to 1995-97, p.p.) | | -.00008*** (-5.92) | -0.00035*** 5.70) |
| Constant | 3.47* (1.78) | -0.09 (-0.10) | 0.56 (0.66) |
| Adjusted $R^2$, % | 36 | 55 | 68 |

Other things being equal, the slowdown in growth rates in 1998-99 was lower, if preceding inflation was high and the reduction of this inflation rate was also high (these two indicators are correlated, of course – countries that substantially reduced inflation were exactly the ones that had high inflation before). Controlling for this impact of high inflation and transition to low inflation, the relationship between the slowdown in output on the one hand and slowdown of monetary expansion and

devaluation looks pretty straightforward. Expression in brackets – the difference between money supply growth and devaluation – characterizes *de facto* real exchange rate: if money supply grows fast, prices grow fast as well, and nominal devaluation may not be enough to ensure real devaluation, so there is a real appreciation and the higher it is, the greater the suppressing effect of monetary contraction on output.

Expression in brackets is always positive, there is no threshold, but this type of non-linear relationship fits the data better. This expression in brackets is the elasticity of output slowdown on $M_2$ slowdown, i.e. the magnitude of the impact of monetary contraction depends on the difference between money growth and devaluation. If devaluation in 1997-99 was small, whereas growth rates of money supply in 1995-97 were high, then the decrease in the growth rates of money supply in 1998-99 as compared to 1995-97 led to a very substantial decrease in output in 1998-99. To put it differently, monetary contraction was extremely detrimental to performance, if carried out without devaluation.

**Outflow of capital in 2008-09**

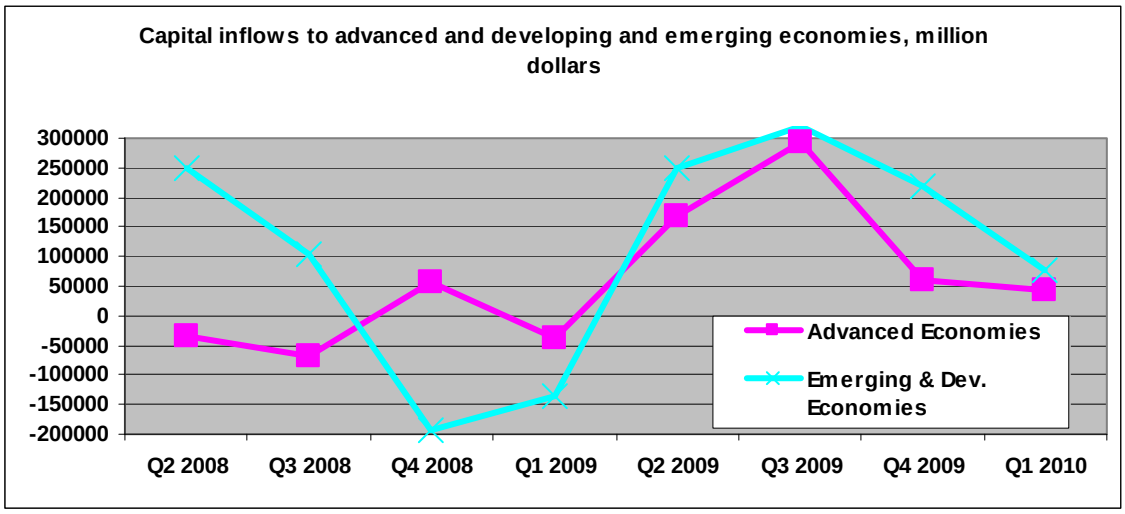
Capital flows[8] to developed and developing countries changed dramatically during recent economic recession. In particular, emerging and developing economies experienced a decline in international financing – from an inflow of $250 bill. in the second quarter of 2008, before the crisis, to an outflow of 200 billion in the fourth quarter of 2009. In the second and third quarters of 2009 capital inflows to developing countries returned to pre-crisis level, although later they declined to about $50 billion in the first quarter 2010 (see chart). Advanced economies did not experience a decline in capital inflows in the beginning of the crisis, and there was an increase in inflows in the second and third quarters of 2009 with subsequent decline of inflows in late 2009 – early 2010 (fig. 16).

It is usually believed that the reduction of the capital inflows contributes to the decline in output (recession), but this was not actually the case in 2008-09. The performance of developing countries that were most affected by the reduction of the capital inflows was actually better than the performance of developed countries. There was no correlation between shocks to the capital account (change in the

[8] Capital inflows are defined as the sum of financial account, capital account and errors and omissions in the balance of payments data in International Financial Statistics (IMF). They are equal to the difference between the increase in foreign exchange reserves, including gold, and current account balance. Because balance of payments statistics is published with a delay, we proxy capital inflows with the difference between increase in reserves and the trade balance. For most countries, as past data show, this is a very reasonable approximation.

inflow of capital) and economic performance as measured by the change in GDP in 2007-09 or in 2009 alone. China and India experienced the decline in capital inflows from Q2 2008 to Q3-4 2008 and Q1 2009 of the same magnitude (several percentage points of GDP) as Baltic states and Ukraine, but in the former countries 2009 GDP was 14 to 18% higher than in 2007, whereas in the latter – 10 to 22% lower (fig. 17).

**Fig. 16**




Source: International Financial Statistics.

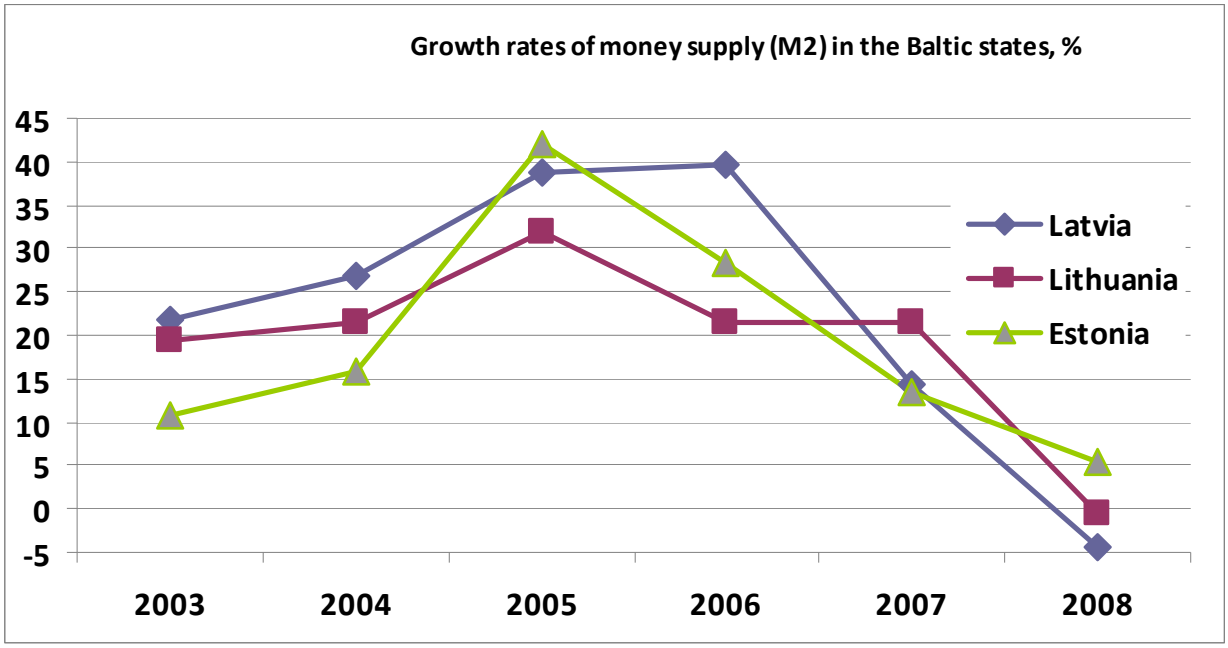
To be sure, GDP growth rates depend not only external shocks, such as changes in capital inflows, but also on domestic economic developments. However, if domestic conditions are unchanged, there may be several factors that explain the lack of correlation between changes in capital flows and the depth of the recent recession. The crucial one is how countries handled the deterioration of the balance of payments – by running down foreign exchange reserves (with possible impact on the domestic money supply in the absence of sterilization) or by devaluation of national currencies. *Ceteris paribus*, devaluation of the national currency in response to the negative trade or capital account shocks, provides stimuli to the national economy by making the production of tradables more profitable. So capital outflow (as well as negative trade shock) should not necessarily cause a recession.

**Fig. 17. Increase in net capital inflows in 2008-09 and change in GDP in 2007-09, %**

Source: World Development Indicators; International Financial Statistics.

It is widely believed, for instance, that Baltic countries (Estonia, Latvia and Lithuania) experienced the greatest reduction of output in 2007-09 (from 12 to 22%) not because of trade and capital account shocks (that were not that large – 2 % of GDP), but mostly due to the policy to maintain the exchange rates of their currencies (Estonia and Lithuania run formal currency boards and Latvia has a *de facto* currency board). Outflow of capital of about 4% of GDP (partially counterweighted by the improvement of the trade balance of about 2% of GDP) led to the reduction of foreign exchange reserves, which under the regime of a currency board automatically translated into the decline of the money supply (fig. 18), very much like the outflow of capital from Argentina in 2000-2002 (that also had a currency board at a time) caused a recession.

**Fig. 18**




Source: World Development Indicators.

On the other hand, the expansionary effect of devaluation is limited, of course. If the negative trade and capital account shocks are too large, devaluation cannot mitigate these shocks completely, but only triggers inflation. Countries like Russia and Bulgaria experienced a combined trade and capital account shock of the magnitude of 7% of GDP (deterioration of the trade and capital account balance from Q2 2008 to average of subsequent 3 quarters – Q3-4 2008 and Q1 2009). Even though these countries did not finance these shocks completely by running down the reserves (they fell only by about 3% of GDP per quarter), but also devalued their national currencies, they were not able to avoid the reduction of output that became one of the largest in the world.

The regression equation that best explains the decline in output in 2007-09 (or in 2009 alone) is as follows[9] ( T-statistics in brackets):

***Yincr07_09*** **=** 1.8 – 1.3***CAPinflQ2*** **-** 2.1***TRbalINCRQ2*** **+** 1.9***FORincrQ3***

(2.38) (-3.36) (-4.55) (3.93)

Number of obs. = 92, R-squared = 0.1788, robust standard errors,

where:

***Yincr07_09*** – GDP change in 2007-09,

***CAPinflQ2*** – increase in capital inflow from Q2 2008 to average for Q3- 4 2008 and Q1 2009, % of 2008 GDP,

***TRbalINCRQ2*** **–** increase in trade balance from Q2 2008 to average for Q3-4 2008 and Q1 2009, % of 2008 GDP,

***FORincrQ3***– average quarterly increase in foreign exchange reserves in Q3-4 2008 and Q1 2009, % of 2008 GDP[10].

It implies that the negative shocks to the capital account (as well as to the trade account) do not lead to the decline in GDP growth rates, if foreign exchange reserves do not decline proportionately, i.e. if the shock is absorbed by devaluation, not by running down the reserves.

[9] This and other equations work, if changes in GDP are measured by 2009 growth rate alone (not 2007-09), and also if changes in capital and trade shocks are measured as the difference between average values for Q2-3 29008 and Q4 2008 – Q1 2009, whereas changes in reserves are computed as average quarterly change for the period Q4 2008 – Q1 2009.

[10] Note that the sum of ***CAPinflQ2*** and ***TRbalINCRQ2*** is **NOT** equal to the increase in the foreign exchange reserves in any particular quarter. Changes in trade balance and capital flows are measured as second differences (increase from Q2 2008 to the average quarterly level of Q3-4 2008 and Q1 2009), whereas increase in reserves over the same period is measured as the first difference (average increase from the beginning of the quarter to an end of the quarter) .

To summarize, fluctuations in capital flows had a serious impact on performance during the recent recession of 2007-09. The rule of thumb was that large outflows of capital, especially coupled with negative trade shocks, suppressed economic activity. But if the shocks were relatively small (up to 3% of GDP change in trade and capital account from Q2 2008 to an average of subsequent 3 quarters), it was possible to mitigate them through devaluation (not allowing foreign exchange reserves to drop by the same amount). If the shocks were large, even devaluation did not allow to avoid output fall.

## Conclusions

Countries that responded to external financial shocks – outflow of capital – by devaluating their currencies experienced a smaller slowdown in growth than countries that did not devalue and allowed their money supply to contract. Because national prices are less flexible than exchange rates, the first type of adjustment (devaluation) was associated with the smaller reduction of output. Except for countries with very high inflation, it seems like external (trade and financial) shocks were less ruinous for the national economy, if they were not met with substantial devaluation.

However, even though adjustment to external shocks is more costly under fixed exchange rates, it does not necessarily mean that flexible rates are better. It may well be that long-term gains (increase in international trade resulting from the elimination of currency risk) outweigh short-term pains (reduction of output in response to external shocks)

There may also be political economy reasons for the fixed exchange rate – currency board arrangements. Currency boards ("outsourcing" of monetary policy) are usually supported by the conservatives (rightists). Besides, fixed exchange rate is good for **international** business, i.e. companies and individuals involved in international trade and capital movement.

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