

Doctoral (Ph.D.) Dissertation Summary for Pre-Defense

**THE EFFECTS OF GLOBALIZATION AND COMMON CURRENCY ON THE
MONETARY TRANSMISSION MECHANISM**

Bálint HERCZEG

Supervisor: Prof. Julius HORVATH



UNIVERSITY OF DEBRECEN
Doctoral School of Economics
PhD program 'Competitiveness, Globalization and Regionalism'

Debrecen, 2010

„Setting a single interest rate for 12 countries has been hard enough, even with low inflation. Choosing one for a much more mixed bag of 20-odd may be impossible” The Economist [2003] p. 16.¹

1. Introduction and research history

In 2003, I was reading The Economist in the library and found an article in the editorials about the challenges the freshly appointed president of the European Central Bank would face. The sentence cited above made me curious: how would the central bank set its interest rate for so many different countries? It didn't take much reading to find the answer: the ECB defined the Harmonized Index of Consumer Prices (HICP) and sets its interest rate in accordance with the inflation measured using this price index. But an interest rate set by monetary policy relying on an average change in prices can't guarantee price stability in all the member countries. If the member countries are different than they should respond differently to the same monetary shock. Thus the problem still puzzled me. As a consequence I wrote my master thesis about the differences between the Hungarian households' balance sheet and the balance sheet of households in the euro area. In my thesis I tried to describe, how these differences would affect the transmission of the monetary policy. In 2005, by the time I had to choose a theme for my dissertation, I already knew what I would be interested in: differences in the monetary transmission channels.

If one reads about the European Monetary Union it wouldn't take much time to encounter the optimal currency area literature (the fact that my supervisor previously researched this theme definitely accelerated this process). In the optimal currency area literature the possibility of endogeneity struck me. This made my research topic of differences in the monetary transmission mechanism even more interesting. Thus not only could there be differences in the transmission mechanism, but these differences would react to the introduction of the common currency, got changed and shaped by it. Originally the effect of globalisation on monetary policy transmission was a separate research project. However, later it developed to serve as a probable alternative explanation for the changes found in the transmission mechanisms.

The research of the changes in the transmission mechanism due to the accumulation of the foreign exchange denominated debt is a direct descendant from my master thesis. It also started as separate project and I spent the summer in 2008 at the Magyar Nemzeti

¹ This was the way of editors of The Economist wished good luck to the new president of the European Central Bank, Jean-Claude Trichet at fall of 2003.

Bank as a visitor researcher to develop the idea. Later this paper also found its place in the dissertation as a case study for the effects of globalisation.

All these ideas and subsequent researches conducted, I described above, have one thing in common, i.e. the research question of this dissertation:

How do major changes in the policy environment change the transmission of the monetary policy?

There are several reasons why this research question might be an interesting one. First, the transmission of the monetary policy lies at the hearth of monetary macroeconomics. The questions arising from the investigation of the transmission are the most important questions of this discipline: the interaction between nominal and real variables; the frictions causing the monetary policy having real effects; the overwhelming role of expectations; the causes of business cycle movements etc. Second, the monetary transmission process is a very complex system, as I try show later, the transmission comprises of several steps, more than dozen different channels, all in interaction with each other. In addition, many structural variables, institutional arrangements, historical events influence the transmission mechanism. The transmission mechanism is always hit by different shocks, it is always changing, developing. So to find out how changes in the policy environment would affect separate channels or the whole mechanism, is not only an intellectual challenge, but also a methodological one. The third motivation could be the practical consequences of this research. The better knowledge of the transmission of monetary policy is welcomed by the policymakers, as it might help to calculate the consequences of their decisions.

2. Transmission of monetary policy and methodology used in the dissertation

Chapter 2 is dedicated to theoretical and methodological questions. First the transmission mechanism is introduced. Selective review is given about the most important questions of monetary decision making, covering themes as: credibility, accountability, nominal anchor, communication etc. In the next step a small model is shown to explain the basic mechanism behind interest rate pass-through, the connection between the short term interest rate used as policy instrument and the credit rates set by the banks. Next, different channels of transmission are introduced, all transmitting the shock from the financial sector towards the inflation rate.

The transmission of a monetary policy decision could be summarized as follows:

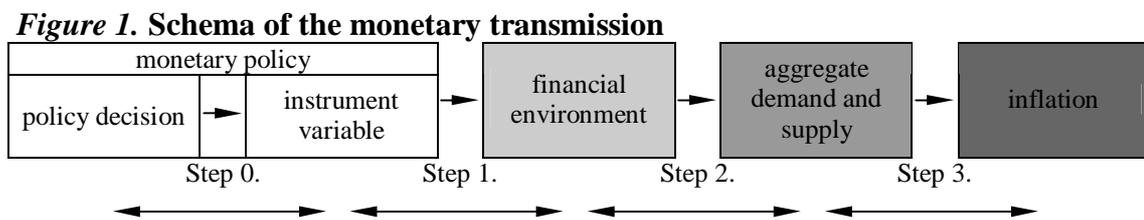
Step 0. The decision making body sets the value of the instrument according to its aim. In an inflation targeting framework this would mean that if the forecasted inflation is higher than the aim, the board would increase the interest rate.

Step 1. The instrument variable is changing the prices and liquidity of the other assets in the financial system (partially through direct channels and partially through effecting expectations of the economic agents).

Step 2. The changes in the financial environment influence the decisions and choices of the household and the business sector – so it influences aggregate demand and supply.

Step 3. The altered aggregate demand and supply affects the inflation dynamics

The schema describing these relationships is shown in *Figure 1*:



The second part of Chapter 2 is devoted to methodological questions. As already mentioned pinning down the consequence of a change in the policy environment given a complex system, is not an easy task. Two types of empirical investigation are used in this dissertation. The first is a comparative approach, relying on the structural variables that should describe the strength of the different channels and steps of the monetary transmission mechanism. The assumption is that a difference in the structural variable shows a difference in the underlying transmission mechanism. Changes in the transmission could be identified by changes in these variables, granted that nothing else changed (i.e. the connection between the structural variable and the transmission mechanism). The second approach uses vector autoregressive models. In this case several possibilities are at hand to explain changes in the transmission. The methods used in the dissertation are: split samples, simple non-linear and logistic smooth transition vector autoregressive models.

3. Results

To answer the research question, two major changes in the policy environment were chosen. The first is the globalisation, the second the introduction of the common currency in the member countries of the European Monetary Union. This complicates

the matters at hand because the two events happened almost at the same time and some of their effects coincide.

3.1 Effects of globalisation

The aim of Chapter 3 is to show how globalisation influences the monetary policy's ability to affect the economy when pursuing the goal of price stability. Globalisation denotes here the process of new technological changes, as for example the spread of the internet and decreased communication costs as a consequence of which, markets are becoming increasingly integrated globally.

Detailed literature survey is used to form a hypothesis about the effects of the globalisation on the monetary policy. This hypothesis is tested in two case studies. The first is the case of the United Kingdom. The second case study tries to measure if the foreign currency denominated debt accumulated by the Hungarian household changes the Hungarian monetary policy's main transmission channel, the exchange rate channel.

3.1.1. Did the overall monetary transmission change due to globalisation?

The integration of financial markets, affects to a large extent the scheme of monetary transmission, and introduces an element of unpredictability into the transmission process. For example, the interest rate pass-through, in other words, the reaction of the financial sector to changes in the monetary policy instrument variable, suffers from the possibility of money substitution, either in electronic form or in the sense of foreign national currencies. However, according to *Sukudhew et al.* [2008] and *Gudmundsson* [2008] the pass-through should be stronger (the reaction of market interest rates is more immediate and proportionally greater) in financially developed countries, with greater competitiveness in the financial system (see also *Moyon* [2000]) and deeper intermediation. However as *Gudmundsson* [2008] documents, in small open economies the long-term interest rate is more determined by global factors, and even in the USA the long-term interest rate does not react to changes in the short-term interest rate in the same way as it used to.² The response of aggregate demand to changes in the financial environment (changes in interest rates, stock prices and credit availability) is altered mainly by the changes in the financial portfolios of households. On the one hand financial integration made possible increased household indebtedness; on the other hand

² The phenomenon known as 'conundrum' named by former Federal Reserve Chairman Alan Greenspan (see *Boivin and Giannoni* [2008])

it also causes more volatile asset prices (*Wagner and Berger [2003], Rogoff [2006]*). The combined effect results in an uncertain reaction on the part of households - a reaction which depends to an extent on how the volatility of asset prices is perceived by the households. Finally, there is an ongoing debate about the causes of changes in the relation of inflation to the domestic output gap. There is some evidence that the flatter Phillips curve might be caused by globalisation (as shown by *Borio and Filardo [2007], Chmielewski and Kot [2006], and IMF [2006]*), an assertion disputed by others (*Yellen [2006], Kohn [2006], Ihrig et al. [2007]*).

<p>1. thesis Globalisation made the transmission mechanism even more unpredictable then before.</p>
--

3.1.2. What channels were affected by the globalisation?

Through the interest rate channel monetary policy can influence the opportunity cost as well as the user cost of capital and thus investments and consumption. The interest rate channel should be strengthened by liberalisation and especially by interest rate deregulation. This encourages the banks to move from quantity to price determination, making clients react to prices. Disintermediation could also strengthen the reaction of aggregate demand, if the non-financial agents hold more interest-sensitive assets on their balance sheets (*Sukudhew et al. [2008]*).

According to *Mylonas et al. [2000]* and *Sukudhew et al. [2008]* the increase in financial assets caused by financial integration will strengthen the agents' reaction to a revaluation of assets, so increasing the weight of the wealth channels. However, this might make the reaction slower as well, because the revaluation of some wealth items (especially housing) takes a longer time and lengthens the response of households.

The consolidation of the financial system increased the size of the average bank, and financial innovations made it possible to lend without having assets on the books, so the importance of the common bank lending channel decreased. The development and integration of the capital markets makes alternative funding for companies available. In addition the technical developments made, to a certain extent, asymmetric information problems easier to solve, which according to the explanation provided by *Mishkin and Strahan [1999]* makes the collateral less important and the balance sheet channel

weaker. Both of these components weakened the significance of the whole credit channel and also the financial acceleration should decline.

The exchange rate is one of the economy’s most important relative prices and tools of adjustment which connects an economy with other countries. A deeper global integration of different economies and markets should make this tool more important, and thus also the importance of the exchange rate channel might be expected to increase. Despite this effect the working of the exchange rate channel is not clear, because integration also makes it possible for companies and households to hold liabilities denominated in foreign exchange, which makes the wealth and income effect of the monetary policy weaker or in extreme cases even reverses it.

The expectation channel is partly endogenous because beyond a credible commitment to price stability, the ability of monetary policy to influence the economy, output and inflation is essential for forming expectations, so it depends on the other channels as well. A consequence of the flatter Phillips curve is that the inflation rate reacts less intensely to the shocks of demand (or policy errors), but at the same time this also means that policy makers cannot influence the price dynamics easily through demand channels. This makes credibility and the anchoring of expectations a more important channel (*Bundesbank [2006], Yellen [2006], Kohn [2006]*).

Table 1. How the expected changes in the channels of transmission might influence the speed and strength of the whole monetary transmission process

changes of different channels make the MTM's		speed	
		faster	slower
strength	stronger	- interest rate channel (<i>Sukudhew et al. [2008]</i>)	- wealth channels (<i>Mylonas et al. [2000]</i>)
	weaker	- bank lending channel (<i>Bernanke [2007]</i>)	

Looking at the channels of monetary transmission one can group the hypothetical effects based on whether they made the transmission of monetary policy stronger or weaker, or whether the variables react more quickly or need more time (*Table 1*).

2. thesis Globalisation affected the channels of monetary policy differently, some of them were weakened (credit channels), others strengthened (interest channel and wealth channel).

3.1.3. Did the globalisation affect the monetary transmission in the United Kingdom?

The purpose of the case study in section 3.2 was to empirically evaluate the different results found in the literature review and presented in section 3.1. Various methods (structural variables, rolling window and logistic smooth transition vector autoregression) were used to test if the changes in the UK monetary policy's transmission mechanism could be brought in connection with broad measure of global integration of markets (increased trade and financial openness). Some slight changes were found (stronger reaction of prices, weaker reaction of production) using rolling window vector autoregression method. However, these effects couldn't be brought in connection with the change in the openness when using logistic smooth transition vector autoregression. Thus, increasing credibility of the central bank could also be used as an alternative explanation.

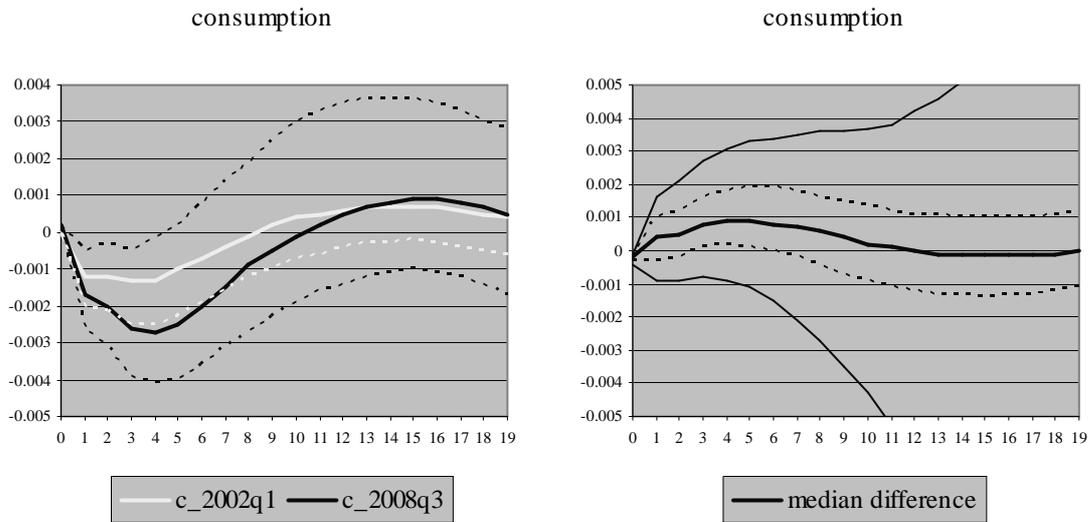
3. thesis No hard evidence was found that increased openness has changed the monetary transmission in the United Kingdom.

3.1.4. Did the globalisation affect the monetary transmission in the Hungary?

Section 3.3 deals with a possible special effect of the globalisation in context of the Hungarian economy. This effect is the possibility for households to accumulate debt in foreign currency. As the rapid foreign currency debt accumulation made households' consumption more sensitive to exchange rate depreciation, the hypothesis was that the exchange rate channel of monetary policy should be weakened or even inverted.

To be able to compare the transmission of monetary policy in case of low and high amount of foreign currency denominated debt, a small non-linear VAR model was used to make the resulting impulse response functions conditional on the accumulated debt, which made it possible to compare the reaction of the economy in two scenarios. In the first case the initial values of the impulse response functions were from 2002q1, when household foreign currency debt was still negligible, in the second case they were from 2008q3 where the ratio of household debt denominated in foreign currency reached 64% of households' liabilities. A further advantage of these two dates is that neither the exchange rate nor monetary policy regime changed significantly between these two points in time, keeping regime changes to the minimum.

Figure 2. Reactions of consumption to a monetary policy shock and the difference of the reaction (2002q1 minus 2008q3)



Source: own calculation

Note: continuous bold lines represent impulse response functions (left side panel) or difference of the median reactions (right side panel), thin continuous lines represent 90%, dashed lines represent 60% confidence intervals from 10000 Monte Carlo simulations, based on Hamilton [1994] p. 337. as shown in Appendix 2A. The figures above are result from vector autoregression with exchange rate included, and additional exchange rate shocks to constrain the two exchange rate impulse responses to be the same.

The results show significant differences of the reaction of consumption in the presence of more foreign currency denominated debt in every scenario, although only on a low level of significance (one of them is shown in *Figure 2*). However, several counterintuitive movements were found in case of other variables, which make the results less solid. Though, robustness checks showed that the result was not caused by specification problems and is robust across specifications.

4. thesis Accumulation of foreign currency debt did influence the exchange rate channel of the monetary policy in Hungary

5. thesis In the absence of extreme changes as the debt accumulation of the Hungarian households, the effect of globalisation on the monetary transmission is hard to tackle econometrically (see also *Kohn* [2006] and *Boivin and Giannoni* [2008]).

3.2. Effects of common currency

In Chapter 4, I tackle the idea of endogeneity, as the goal is to investigate the effect of common monetary policy on the transmission of monetary policy. The basic hypothesis was that the common monetary policy should change the financial environment and, through this make the effect of monetary policy more homogeneous among the member countries. As a first step the optimum currency area literature was reviewed, to serve as a framework for the investigation. The question is whether the common monetary policy could be a source of asymmetric shock? The advantage of phrasing the problem within the optimum area literature would be that the concept of endogeneity could be introduced in relation to the interaction between the common monetary policy and the differences in the transmission process. The next step is to state whether there were differences in the effects of national monetary policies before the third stage of EMU. And if there were differences, what happened to them after the introduction of the euro? The common shock made the financial markets more integrated; there is plenty of evidence for this in the literature. What happened to the other part of the transmission process? Both methodologies described above are used to answer this question. The research was done in three steps, phrased in the following three propositions.

3.2.1. Do the differences in the monetary transmission act in the same way as the other criteria in the optimal currency area literature?

In section 4.1 I reasoned that the common monetary policy can be seen as a source of asymmetric shocks, if the monetary transmission mechanism differs in the member countries. If this was the case then the differences in transmission should be treated

within the OCA literature. Relying to this result, the OCA literature was selected to serve as a framework for the investigation of endogeneity of the transmission process.

6. thesis Monetary shocks can be seen as a source of asymmetric shock, if the monetary transmission differs in the member countries. As such the differences in the monetary transmission mechanism should be treated within the optimal currency area literature framework.

3.2.2. Were there differences in the monetary transmission mechanism among the members of the EMU?

As has been shown in subsection 4.2.1 there were structural differences before 1998 that could have caused the different channels of monetary policy transmission to pass on different impulses in different countries. *Guiso et al.* [2000] draw the conclusion that the experiments that are nearest to the ideal one (investigate the effect of a common shock across the member countries while holding the exchange rate fixed among them) show the same result as the key variables method and point to noticeable differences in the transmission mechanism. According to *Dornbusch et al.* [1998] small models are often subject to misspecification, and big macro models are not easily comparable. They also state that central bank models can incorporate local knowledge of the economy, and this proves to be helpful.

The most probable conclusion is that there were differences between the countries that introduced the common currency, differences which affected the monetary transmission mechanism as well. The different methodologies are not always adapted to show these differences: the results of indicators are frequently in accordance with the big macro models, but lack the capacity to show overall effects; it is problematic to separate the effect of the modelling technique from structural differences in the results of large-scale macro models, the high level of aggregation in the case of small macro models tends to hide the differences and in the case of VARs, much depends on the specification.

7. thesis There were differences in the monetary transmission mechanism at the beginning of the third stage of the EMU.

3.2.3. Are the differences from the beginning of the EMU fading away due to endogeneity?

To answer the question of whether there is an 'euro effect' in monetary transmission I studied the different steps of the transmission in section 4.3. What has changed since the monetary shock has become common across countries?

Results of the literature show that financial integration was accelerated by the introduction of the euro, increasing competition and making reactions of interest rates and other asset prices more homogenous across countries. But I found no evidence that the strength of the different transmission channels, which link the financial sector with the aggregate demand, became more similar. It seems that the integration of financial markets did not affect the different channels of monetary transmission. It is interesting enough that there is some evidence in the literature that in the last stage of the transmission price and wage flexibility should have increased in all countries (except for Spain), but there is very little sign that the price reaction also became more homogenous across the countries.

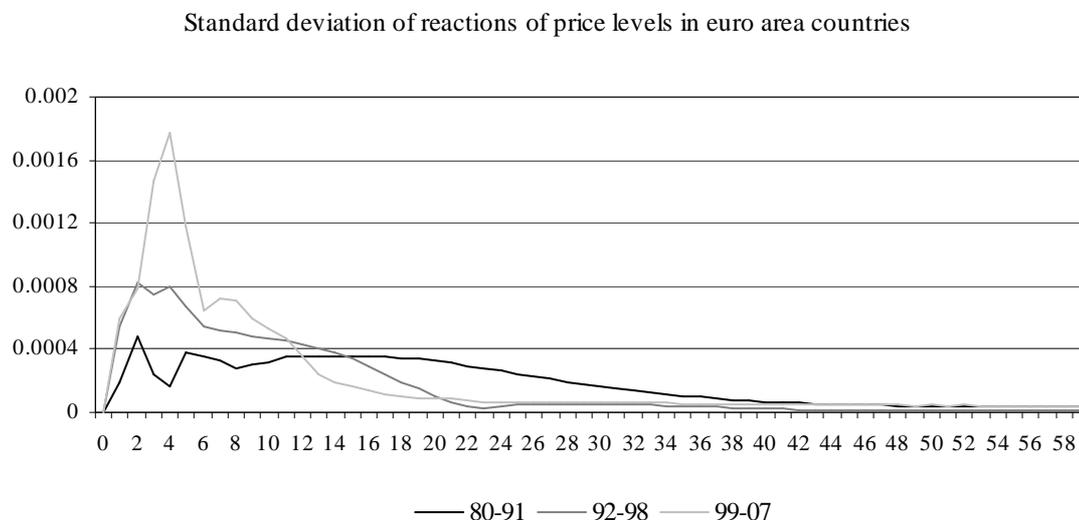
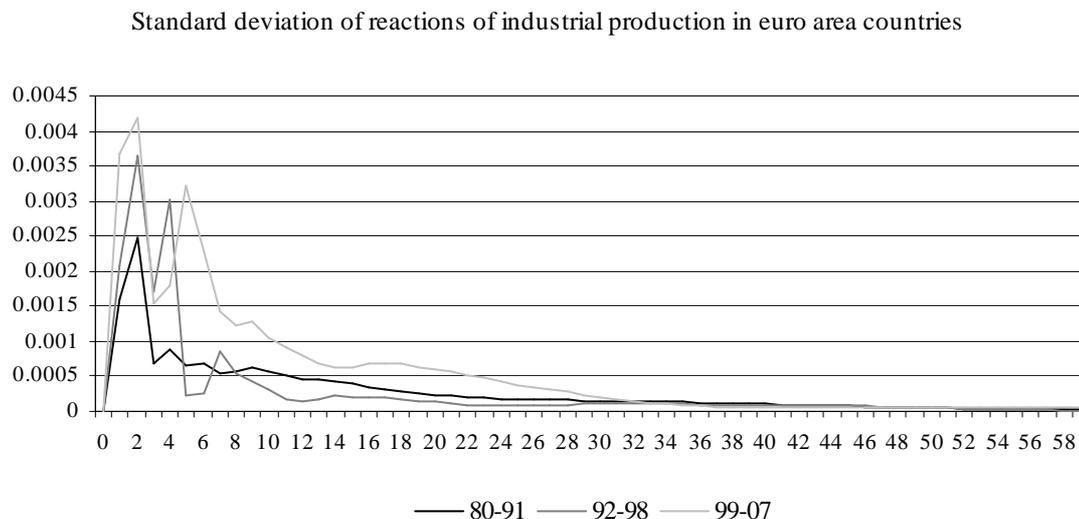
In section 4.4 I also tried to test empirically on the sample of France, Germany, Italy and Spain (and using the United Kingdom as control group) the hypothesis whether the European Monetary Union or the preparation for the third stage EMU endogenously changed the transmission of monetary policy in the participating countries. Using a vector autoregression methodology, I tried to simulate the environment of the EMU in the previous samples. So in the pre-Maastricht (1980-1991) and the pre-EMU (1992-1998) samples, the German monetary shock was used as a common policy shock, the exchange rate and interest rate impulse responses of the countries are constrained to follow the impulse response of the leading 'country' (Germany in the first two samples and EMU in the last), and there are also spill over effects (from Germany in sub-sample 1980-1991 and 1992-1998, and from the euro area in sub-sample 1999-2007). After estimating models for each country, the standard deviation of the impulse response functions was used as a measure for heterogeneity in the reaction to the given shock. Some of the results are shown in *Figure 3*. For the industrial production the standard deviation is higher in the latest sample, and even converges slower to zero in the post-EMU sample. In case of price level there is however one small indicator pointing in the direction of convergence. Despite the fact that there is greater heterogeneity between the impulse responses in the post-EMU sample for the first year than in either of the other

samples, the standard deviation of IRFs in this group converge faster to zero than the other two. So relying on standard deviation of impulse responses I did not find any trace of convergence in the reaction of industrial production or price level. In neither of the cases did the inclusion of the UK impulse-responses make any difference either, so there is no sign of 'euro effect'. This means that the introduction of euro does not seem to have eliminated endogenously the differences in the monetary transmission mechanism. It may be that more time will have to elapse for this effect to become apparent.

My results here are in accordance with the result of *Ciccarelli and Rebucci* [2006], who found no change in the monetary transmission in the run-up to the EMU. On the other hand *Boivin et al.* [2008] finds greater homogeneity of the transmission mechanism among countries of the euro area and also finds that the monetary policy of the ECB has played a key role in this change.

8. thesis I found no evidence that the common monetary shock and the integrated financial system made the transmission of the monetary policy more homogenous across countries. So on the time-span investigated the monetary transmission mechanism is not an endogenous criterion of the optimal currency area.

Figure 3. Convergence in the reactions of industrial production and price levels



Source: own calculation

Note: the figures above show the standard deviation of the impulse response functions of France, Germany, Italy and Spain in different samples. To simulate the environment of the EMU (common shocks, integrated markets, fixed exchange rates) in the pre-Maastricht (1980-91) and the pre-EMU samples (1992-98), the German monetary shock is used as a common policy shock, the exchange rate and interest rate impulse responses of the countries are constrained to follow the impulse response of the leading 'country' (Germany in the first two samples, and EMU in the last), and there are also spill over effects (from Germany in sub-sample 1980-91 and 1992-98, and from the EA in sub-sample 1999-2007).

4. References

- BERNANKE, BEN S. [2007]: Financial Accelerator and the Credit Channel. *talk delivered at The Credit Channel of Monetary Policy in the Twenty-first Century Conference, Federal Reserve Bank of Atlanta, Atlanta, (June 15, 2007.)*, download: <http://www.bis.org/review/r070621a.pdf>
- BOIVIN, JEAN – GIANNONI, MARC [2008]: Global forces and monetary policy effectiveness. National Bureau of Economic Research, NBER Working Paper Series, WP No. 13736., (January, 2008).
- BOIVIN, JEAN – GIANNONI, MARC P. – MOJON, BENOIT [2008]: Macroeconomic Dynamics in the Euro Area. Federal Reserve Bank of New York, New York Area Workshop on Monetary Policy (2nd May, 2008) downloaded: 9th October 2009. 8.29 am. from http://www.newyorkfed.org/research/conference/2008/monetary_policy/boivin_giannoni_mojon.pdf
- BORIO, CLAUDIO – FILARDO, ANDREW [2007]: Globalisation and inflation: new cross-country evidence on the global determinants of domestic inflation. Bank of International Settlements, Monetary and Economic Department, BIS Working Paper Series, WP No. 227., (May, 2007).
- BUNDESBANK [2007]: Globalisation and monetary policy. Deutsche Bundesbank, Monthly Report (October, 2007), pp. 15-33.
- CHMIELEWSKI, TOMASZ – KOT, ADAM [2006]: Impact of globalisation? Changes in the MTM in Poland. Munich Personal RePec Archive, MPRA Paper No. 8386., (September 2006).
- CICCARELLI, MATTEO – REBUCCI, ALESSANDRO [2006]: Has the transmission mechanism of European monetary policy changed in the run-up to EMU? *European Economic Review*, Vol. 50, No. 3, (April, 2006), pp. 737-776.
- DORNBUSCH, RUDIGER – FAVERO, CARLO A. – GIAVAZZI, FRANCESCO [1998]: The Immediate Challenges for the European Central Bank. National Bureau of Economic Research, Working Paper Series, WP No. 6369., (January, 1998).
- GUDMUNDSSON, MÁR [2008]: Financial globalization: key trends and implications for the transmission mechanism of monetary policy. *in BIS [2008]: Financial market developments and their implications for monetary policy. Bank of International Settlements, BIS Papers No. 39. (April 2008), Proceedings of a joint conference organised by the BIS and Bank Negara Malaysia in Kuala Lumpur on 13 August 2007. pp. 7-29.*
- GUISSO, L. – KASHYAP, A. K. – PANETTE, F. – TERLIZZESE, D. [2000]: Will a Common European Monetary Policy Have Asymmetric Effects? Banca d'Italia, Temi di discussione del Servizio Studi, No. 384., (October, 2000).
- HAMILTON, JAMES D. [1994] *Time Series Analysis*. Princeton University Press, Princeton, New Jersey.
- IHRIG, JANE – KAMIN, STEVEN B. – LINDNER, DEBORAH – MARQUEZ, JAIME [2007]: Some Simple Tests of the Globalisation and Inflation Hypothesis. Board of Governors of the Federal Reserve System, International Finance Discussion Papers, No. 891., (April 2007).
- IMF [2006]: How has globalisation affected inflation? *International Monetary Fund, World Economic Outlook, Chapter III. (April 2006) pp. 97-134. download: <http://www.imf.org/external/pubs/ft/weo/2006/01/>*
- KOHN, DONALD L. [2006]: The effects of globalisation in inflation and their implications for monetary policy. speech held at the Federal Reserve Bank of Boston's 51st Economic Conference, Chatham, Massachusetts, 16th June 2006, download: <http://www.bis.org/review/r060627g.pdf>
- MISHKIN, FREDERIC S. – STRAHAN, PHILIP E. [1999]: What will technology do to financial structure? National Bureau of Economic Research, NBER Working Paper Series, WP No. 6892., (January 1999).
- MOJON, BENOIT [2000]: Financial structure and the interest rate channel of ECB monetary policy. European Central Bank, Working Paper Series, WP No. 40, (November 2000).
- MYLONAS, PAUL – STICH, SEBASTIAN – WEHINGER, GERT [2000]: Monetary Policy in a Changing Financial Environment. Organisation of Economic Co-operation and Development, Economics Department, Working Paper Series, ECO-WKP No. 243., (18th May 2000).

- ROGOFF, KENNETH S. [2006]: Impact of Globalisation on Monetary Policy. *talk delivered at The New Economic Geography: Effects and Policy implications, sponsored by Federal Reserve Bank of Kansas City (24th-26th August 2006)*, download: <http://www.kc.frb.org>
- SUKUDHEW, SINGH – ROZI, AHMAD – ENDUT NORHANA – RAMLEE, HELMI [2008]: Impact of financial developments on the monetary transmission mechanism. *in BIS [2008]: Financial market developments and their implications for monetary policy. Bank of International Settlements, BIS Papers No. 39. (April 2008), Proceedings of a joint conference organised by the BIS and Bank Negara Malaysia in Kuala Lumpur on 13 August 2007.* pp. 49-99.
- THE ECONOMIST [2003]: Bonne chance Mr Trichet. *The Economist*, 1st November 2003. p. 16.
- WAGNER, HELMUT – BERGER, WOLFRAM [2003]: Financial Globalisation and Monetary Policy. *De Nederlandsche Bank, DNB Staff Reports No. 95/2003.*
- YELLEN, JANET L. [2006]: Monetary Policy in a Global Environment. *Federal Reserve Bank of San Francisco, Economic Letter, No. 2006-12-13., (June 2006).*

5. The author's publications and presentation in the matter of the thesis

Journal article:

- HERCZEG, BÁLINT [2008]: The effect of globalisation on the transmission of monetary policy. *Competitio*, Vol. 7., No. 2., (December, 2008), pp. 161-177, *in Hungarian*
- HERCZEG, BÁLINT [2006]: The different effect of monetary policy in the USA and the Eurozone – thoughts on the output respond composition puzzle. *Competitio*, Vol. 5., No. 2., (June, 2006), pp. 113-132, *in Hungarian*

Book reviews:

- HERCZEG, BÁLINT [2007]: Effect of monetary policy in Hungary. *Review on VONNÁK, BALÁZS (ed.) [2006]: Monetary transmission in Hungary. Magyar Nemzeti Bank. Közgazdasági Szemle*, Vol. 54., (July-August, 2007), pp. 746-749.

Conference presentation:

The effect of globalisation on the transmission mechanism of the monetary policy: the case of the United Kingdom. *presented at Quantitative Methods in Economics 2010, 12th-13th November 2010. Cluj Napoca, Romania*

How does the Presence of Households' Foreign Currency Denominated Debt Influence the Transmission of Monetary Policy? *presented at 14th International Conference on Macroeconomic Analysis and International Finance, 27th-29th May 2010, Crete, Greece*

The Effect of the Households' Foreign Exchange Debt on the Monetary Transmission Mechanism in Hungary *presented at 1st Annual Conference of the MKE 19th-20th December 2007. Budapest, Hungary*

Notes:

