Financial integration and business cycle similarity in the new member states

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1. Introduction

As countries become more economically integrated, understanding the costs and benefits of globalization has becoming increasingly important. The effect globalization has on business cycle synchronization is of specific interest to the European Monetary Union (EMU). The EMU is in the process of expanding to include many of the countries in Central and Eastern Europe who have recently become members of the EU (the new member states (NMS)). The success of this expansion depends partly on the similarity of business cycles across the NMS. Optimal currency area criteria states that members of a monetary union should have similar business cycles in order for monetary policy to be effective in managing economic fluctuations.

Studies indicate that greater trade integration leads to greater business cycle synchronization (Frankel and Rose, 1998). There is less agreement, however, on how financial integration affects business cycles. Theory allows for either more or less output synchronization as a result of financial integration. This is partially driven by differences in predicted consumption and investment similarities as a result of greater financial integration. In addition, the extent of synchronization can be influenced by a set of countries' stage of economic development as well as the type of financial integration undertaken (credit market vs. capital market integration).

In this study we estimate the effects of financial integration among the NMS on business cycle similarity. Following the empirical techniques used by Kalemli-Ozcan, Papaioannou, and Peydro (2009) we use a panel and control for world specific shocks, omitted variable bias, trade effects, and possible reverse causality. We find evidence to suggest that greater financial integration leads to less business cycle similarity. These results seem to be driven by greater dissimilarity in consumption as opposed to investment.

Section two of the paper reviews the literature on integration and synchronization in general and for Europe in particular. Section 3 presents the data and method used to test the

relationship between financial integration and business cycle similarity. Section 4 presents the results and Section 5 concludes.

2. Integration and convergence

The issue of what effect trade integration has on business cycle synchronization has been debated thoroughly in the literature (European Commission, 1990; Krugman, 1993; Frankel and Rose, 1998; Fidrmuc 2004 to name a few). The small open economies of the NMS are highly integrated with one another and the EMU in terms of trade. As a result, there have been a number of studies that look at how synchronized these countries are one with another and with the EMU as a result of increased trade. Most empirical studies find that greater trade integration leads to higher business cycle correlation, though the level of synchronization is not consistent across the NMS (Kocenda, 2001; Korhonen, 2003; Fidrmuc and Korhonen, 2003; de Haan, Inklaar, and Jong-a-Pin, 2005). Other studies have found that the level of synchronization that does occur as a result of trade depends on the type of shock that hit the economy. This is consistent with theory that suggests gains from spillover effects and policy coordination, but losses in synchronization due to specialization (Babetskii, 2005; Babetskii, Boone, and Maurel, 2004; Horvath and Ratfai, 2004). Fidrmuc and Korhonen (2004) summarize much of the literature on the similarity of business cycles in the NMS with the Euro Area. They find sufficient EU business cycle correlation in Hungary, Poland, and Slovenia. This correlation is similar to the correlation among the core participants of the EMU. The Czech Republic is synchronized with the overall Euro Area about as well as the peripheral EMU members are. They also find that the Balkan and Baltic countries (with the exception of Estonia) have the lowest level of synchronization.

The NMS are highly integrated in terms of trade but globalization, along with the anticipation of eventually joining the EMU, has also led to increased financial integration. The effect financial integration has on business cycle synchronization in the NMS has received less attention. Real business cycle models predict that greater financial integration should lead to greater risk sharing and thus less volatility and greater synchronization in consumption. At the same time they predict that investment across countries will become less synchronized as financial integration allows capital to flow to countries with a higher marginal return (in response to a productivity shock for example). Overall the models predict that output movement should become less synchronized as a result of financial integration (Buckus, Keho, and Kydland 1992;

Baxter, Marianna & Mario Crucini 1995; Islamaj 2009). In the spirit of the trade literature, financial integration could also lead to specialization, allowing the country to be exposed to more industry or country-specific shocks, and thus become less synchronized.

There are ways in which financial integration can lead to greater synchronization. One possible channel is through demand side effects. If consumers have wealth tied in foreign stock markets (an indication of financial integration) then a fall in the value in a foreign stock market lowers domestic wealth and thus demand. There could also be contagion effects that cause spillover across the international financial market (Allen and Gale, 2000). For example, if there is a financial crisis in a foreign country foreign bank bonds fall in value, causing bank assets to fall in the home country. The bank passes this loss onto the consumer through higher interest rates, thus restricting output growth. In this way the two economies' business cycles have become more similar (Scott, 2009).

The authors of the real business cycle models note that empirical correlation in financially integrated countries are opposite of what their theory would predict. The greater correlation in output than in consumption was termed the "quantity puzzle". Subsequent cross-sectional empirical estimations have also found the quantity puzzle (Imbs 2004; Imbs 2006; Kose, Prasad, and Terrones, 2003; Ott, Voss, and Willard 2001). Kalemli-Ozcan, Papaioannou, and Peydro (2009) estimate a panel data series with fixed effects to control for world (or common) shocks and omitted variable bias. They also estimate the model using a two stage instrumental variable to address possible reverse causation. Their estimation shows that financial integration does in fact lead to less synchronization.

Scott (2009) suggests that the differences in empirical results could be due to the type of financial integration. He splits financial market integration into capital market integration (equity and FDI) and credit market integration (debt). He suggests that capital market integration leads to negative output correlation as a result of capital's move to the highest marginal return as predicted in the real business cycle models. Credit market integration, however, can have positive effects on synchronization through spillovers just as a contagion model would predict. In his empirical estimation, he indeed finds that capital market integration has negative effects on cyclical correlation (measured in terms of GDP), while credit market integration has positive effects.

There has been very little work done to measure the effects of financial integration in the NMS (to my knowledge). There has been some literature however that suggests the effects of financial integration are not consistent across countries at different levels of development. Kose, Otok, and Presad (2008) separate countries into different groups; industrialized, emerging, and developed. They find the there is a convergence of business cycle fluctuations among industrialized countries and among emerging countries, but that the two groups themselves are experiencing less similar business cycles. When looking at consumption they find that highly integrated countries have been able to smooth consumption, where as less integrated economies (emerging markets) have not. When the authors look at investment however, they also see greater co movement in the more integrated economies. Kose, Prasad, and Torrones (2007) suggest that industrialized countries have a high level of financial integration and can effectively share risk. Emerging countries on the other hand with medium levels of financial integration have not been able to increase risk sharing. Kose, Presad, and Terrones (2009) explore further the role financial integration has had on risk sharing. They find that industrial countries have been able to improve risk sharing as a result of globalization, but emerging and developing countries have not been able to. They suggest that portfolio debt, which dominates external liabilities in these countries, is not conducive to risk sharing. Because of data limitations, none of these studies included the NMS.

Studying the effects of financial integration in the NMS specifically is important because of their eventual adoption into the EMU. In order for a central monetary authority to be effective the NMS need to have similar business cycles. De Grauwe and Mongelli (2005) show that becoming a member of a monetary union has led to greater financial integration among members of the EMU. In as much as financial integration leads to greater synchronization this should help NMS meet the OCA. If however financial integration leads to less synchronization, the process of unification itself will lead to greater difficulties in the conduct of one monetary policy for the region.

3. Data and method

In order to test the effect financial integration with the Euro Area has had on business cycle similarity in the NMS we follow the basic estimation technique of Kalemi-Ozcan et al (2009). We set up an unbalanced panel estimation with fixed country-pair and time effects

$$SYNCH_{ij,t} = \alpha + \delta_E FINT_{ij,t} + \delta_S SPEC_{ij,t} + \delta_T TRADE_{ij,t} + \sum_{s=ij}^{IJ} B_s I_s + \sum_{y=2002}^{2008} \gamma_y I_y + \varepsilon_{ij,t} \quad (1)$$

$SYNCH_{ij,t}$ is a measure of business cycle similarity and $FINT_{ij,t}$ is a measure of financial integration; both of which will be explained further below. $SPEC_{ij,t}$ represents an index of industrial specialization by summing the differences in the percentage of two country's industrial share over different industries. This follows Kalemi-Ozcan et al. (2009) so that a larger number implies a more varied industrial assortment between countries. $TRADE_{ij,t}$ is the natural log of the total trade between countries *i* and *j* divided by the combined GDP of the two countries.

The use of country-pair and time fixed effects address many of the problems associated with the cross-sectional studies of financial convergence and business cycle similarity. The time effects take into account global trends which could attribute synchronization to world-wide business cycle movements that may not be directly associated with financial integration. The country-pair effect will take into account culture, information, political, geographical, and policy aspects across country pairs that could influence the business cycle similarity beyond financial integration.

This relationship will be estimated under two distinct circumstances. First it will be estimated to test the relationship between the NMS and the Euro Area specifically. In this case country i will be the Euro Area and country j will be a NMS. Data availability has limited the NMS that are to be included to Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia, and Slovakia. The second estimation will measure how financial integration with the Euro Area has affected business cycle similarity among the NMS. In this case each country pair, excluding the Euro Area, will be represented in the estimation. The estimation will cover 2002 quarter 1 to 2008 quarter 4.[1]

We use two different measures of business cycle similarity, as in Kalemi-Ozcan et al. (2009), but for our estimation we measure more than just output synchronization. We also include and estimate consumption and investment synchronization. We do this in order to test the

[1] SPEC, TRADE, and the time dummies are estimated at a yearly frequency due to data limitation and to increase the degrees of freedom available for estimation.

channel though with output is being influenced as a result of financial integration. Theory predicts both consumption smoothing and possible investment divergence. The following two measures of business cycle similarity are used:

$$SYNCH1_{ij,t} = -\left|\ln\left(\frac{X_{i,t}}{X_{i,t-1}}\right) - \ln\left(\frac{X_{j,t}}{X_{j,t-1}}\right)\right| \quad (2)$$

$$SYNCH2_{ij,t} = -\left|v_{i,t} - v_{j,t}\right| \quad (3)$$

SYNCH2 is created following the procedure from Morgan, Rime, and Strahan (2004) where $v_{i,t}$ represents the residuals from a regression of X on country fixed-effects and year fixed-effects.

$$X_{i,t} = \phi_i + \theta_t + v_{i,t} \qquad \forall_i$$

X is either quarterly seasonally adjusted real GDP (Y), real gross fixed capital formation (I), or real consumption (C). Each is taken from the national accounts as recorded in Eurostat, the statistical collection unit of the European Commission.[2]

Financial integration is difficult to measure, and a number of different proxies have been used. Imbs (2004) uses both restrictions to capital flows as a proxy for financial integration as well as a measure of risk sharing. Other studies rely on capital flow data. Kalemli-Ozcan et. al. (2009) use BIS International Locational Banking Statistics which record asset and liability holdings of mainly industrialized countries. Davis (2009) uses the IMF Coordinated Portfolio Investment Survey with both debt and equity portfolio assets. As we are looking for integration from the NMS to the Euro Area these different sources do not provide the need coverage. We therefore introduce an alternative measure of financial integration.

The European Central Bank collects information on loans and deposits for each of its members and for the NMS. In their national bank survey they record the amount of deposits and loans in each NMS that are denominated in a foreign currency. The ECB provides justification for using this measure as a proxy for financial integration. If citizens of one country have more access to EU banks in competition with domestic banks then depositors may be more likely to denominate their savings or take on loans denominated in euros. According to ECB (2007,66) "(h)ouseholds account – on average – for most of the foreign currency deposits held in the

[2] The summary statistics for these measures can be found in Table 1 and 2 of the appendix.

banks…around four-fifths of foreign currency deposits are short-term." Usage of the euro in the NMS may then represent financial integration on a household level. ECB (2007,70) states that "the widespread use of foreign currency lending and deposits, in particular euro-denominated loans and deposits, may for the most part reflect the process of financial integration between the region and the euro area."

There does remain some question however on what the deposits data tell us in terms of direction. The ECB (2007, 71) finds that though access to foreign funds increases the number of foreign currency denominated loans, it could decrease the number of foreign currency denominated deposits. The reason put forth is that because bank funds are currently concentrated in foreign currency, banks find it optimal to attract foreign currency denominated loans, but not necessarily foreign currency denominated savings. Thus the results for the deposit data should be interpreted with caution.

For the purpose of this paper we will use the fraction of all foreign currency denominated deposits or loans that are denominated in the euro. This represents how financially integrated the NMS are with the Euro Area. The data are monthly and is averaged to obtain quarterly frequency to be used in the estimation. The time series of these variables are presented in Figures 1 and 2.

INSERT FIGURE 1

INSERT FIGURE 2

As these figures indicate the level of euro denominated deposits as a fraction of foreign currency denominated deposits has steadily increased over the sample. The level of euro denominated loans as a fraction of total foreign currency denominated loans, however has more variation. Most striking is the fall in Hungary and Poland, due mainly to a shift in preference toward Swiss franc denominated loans. For our purpose, this demonstrates a shift of financial integration away from the Euro Area.

When we are estimating equation (1) for the relationship between the NMS and the Euro Area we use the fraction of foreign currency denominated loans/deposits that are denominated in Euros for *FINT*. When we are estimating (1) across the NMS the country-pair average fraction of foreign currency denominated loans/deposits that are denominated in Euros is used for *FINT*.

One remaining empirical concern is that of reverse causality. Could it be that greater business cycle similarity or dissimilarity is driving greater financial integration? Portfolio theory suggests that risk-adverse actors might respond to greater dissimilarity in business cycles by increasing deposit holding or lending denominated in foreign currency. In order to account for this possibility we also conduct a two-stage least squares instrumental variable estimation. We follow the procedure given in Kalemi-Ozcan (2009). In the first stage we estimate the euro deposit differential using the independent variables included in equation (1) as well as an instrumental variable: the sum of the flexibility of each country's exchange rate based on "fine" regime classification of Reinhart and Rogoff (2004). The results of the two-stage regression are also be presented.[3]

4. Results

We first look at the effect NMS financial integration with the euro zone has had on business cycle similarity between the NMS and the euro zone. The measure for financial integration in this case is the fraction of foreign currency denominated loans (deposits) that are denominated in the euro for each NMS.

NMS relation to the Euro Area

Loans

Table 1 presents the data from estimating equation (1) using the fraction of loans denominated in a foreign currency that are in euro as our measure of financial integration.

INSERT TABLE 1

We can see that for output, consumption, and investment the sign is negative. This indicates that greater financial integration has led to less business cycle similarity. The response is significant for output and consumption using our first synchronization measure, but only for consumption using the second measure of synchronization (though output is just above a 10% level of

[3] The results of the first stage estimation are presented in the appendix.

significance). The results for output support the real business cycle model prediction, however there is not enough evidence to suggest this is working through the investment channel as the model would predict. In is important to point out that our measure of financial convergence is dominated by household decisions, which may or may not have a strong impact on investment (depending on how influential the role of housing plays in each country).

The results do indicate that the NMS have not been able to capture the gains associated with globalization through consumption smoothing. This result is consistent with Kose, Prasad, and Torrones (2007) who found this to be the case for many emerging and developing countries.

Table 2 presents the results for the instrumental variable estimation, using the fraction of loans denominated in a foreign currency that are in euro as our measure of financial integration[4].

INSERT TABLE 2

The negative sign for output, consumption, and investment is maintained. Using the first measure of business cycle similarity both output and consumption remain significant. These results also suggest that greater financial integration leads to less similar business cycle fluctuations though not through the investment channel. It is dissimilarity in consumption cycles that seem to be driving this result. The significance of consumption using the second measure of business cycle similarity is not maintained using the two stage regression.

Deposits

As was discussed above, choosing to keep deposits denominated in foreign currency could possibly result from either greater or less financial integration. This ambiguity is apparent in our estimations of the effect holding deposits in Euros have on business cycle similarity. Table 3 presents the data using the fraction of all deposits denominated in a foreign currency that are in euro as a measure of financial integration.

INSERT TABLE 3

[4] The first stage regressions of all instrumental variable estimations are provided in the appendix.

There is no consistent direction across the different measures of business cycle similarity and the only significant result is a positive coefficient in consumption using the first measure of business cycle similarity. There are significant changes to the results when using instrumental variables to account for possible reverse causation. This estimation is particularly important in the case of deposits because of the ECB's report that the decision to hold deposits in a foreign currency may be driven by limited financial integration.

INSERT TABLE 4

The coefficient on the first measure of business cycle similarity for output is negative and significant. This provides evidence that those countries whose citizens decide to hold a greater share of foreign deposits in euro will have less business cycle similarity. This result is not significant in the second measure of business cycle similarity for output. The sign on investment in both cases is positive however not significant. A positive sign indicates there is greater business cycle synchronization and would be consistent with the real business cycle models (Buckus, Keho, and Kydland 1992; Baxter, Marianna & Mario Crucini 1995; Islamaj 2009)
These results, though not particularly robust, indicate that the NMS who are more financially integrated with the euro area have experienced less business cycle similarity as a result. Consumption divergence seems to play a role, though it is not significant enough to be certain. These results indicate that there is no significant response in investment, so the theoretical channel remains unproven.

NMS in relation to the NMS

We now take the information to look at the effect NMS financial integration with the euro zone has had on business cycle similarity among the NMS. Again we use the fraction of foreign currency denominated loans (deposits) that are denominated in the euro for each NMS as measure for financial integration with the euro area. We are using country pairing for this estimation so the financial integration variable is the average fraction of euro denominated

loan/deposits of all foreign currency denominated loans/deposits for the country pair. Those with a higher average represent a country pair that is more integrated with the euro area.[5]

Loans

The results for loan data are presented in Table 5.

INSERT TABLE 5

The coefficients again are mostly negative. The coefficient on consumption is significant and negative for both measures of business cycle similarity. The coefficient on output is negative and significant in the second measure of business cycle similarity. This indicates that those NMS pairs that are highly integrated with the euro are not only experiencing less business cycle similarity with the euro area but also with one another. There again however is no evidence to support that this is happening through the investment channel.

The regression again is run using the instrumental variable approach and presented in Table 6

INSERT TABLE 6

The coefficients on consumption are highly sensitive to the instrumental variable regression and are no longer significant. The coefficient for the second measure of business cycle similarity for output however does maintain is significance and is negative. This again provides evidence that there are adverse business cycle similarity effects across the NMS as a result of financial integration with the euro area.

Deposits

The estimation using deposits as a measure of financial integration with the euro area provide little information. The results from the initial estimation and the instrumental variable regression are presented in Table 7 and 8.

[5] This estimation was also run using the sum of the fraction of foreign currency denominated loans/deposits denominated in the euro with similar results.

INSERT TABLE 7

INSERT TABLE 8

In the first regression we find the first significant positive coefficient which indicates that greater financial integration in terms of deposits with the euro area has increased consumption cycle similarities among the NMS. However just as above, consumption seems to be sensitive to the two stage estimation, and the consumption patterns are no longer significant (though they still are positive). All other measure of business cycle similarity are insignificant.

Looking at how financial integration with the euro area effects business cycle similarity among the NMS provides similar conclusions. There are costs to financial integration in terms of business cycle similarity, this however does not appear to be driven by dissimilarity in investment as the real business cycle model would predict.

5. Conclusions

Understanding the effects of financial integration with the Euro Area on business cycles similarity for the NMS is important for the process of gaining entrance into and becoming members of the EMU. Theory does not provide a definitive answer as to what effect financial integration has on business cycle similarity. We use a new measure of financial integration that captures access to foreign financial institutions as a particular example of how the NMS have become more or less integrated with the Euro Area. Using a panel estimation with fixed country-pair and time effects we find that greater financial integration, particularly measured in terms of loans denominate in the euro as a fraction of all foreign currency denominated loans, has a negative effect on financial integration with the Euro Area for the NMS. The negative effect still shows up when we measure the effect financial integration with the Euro Area has on business cycle similarity among the NMS.

The NMS do not appear to have been able to capitalize on the benefits that come from financial integration in terms of consumption smoothing as consumption patterns become less synchronized with the Euro Area as a result of greater financial integration. There does not appear to be any evidence that suggests that financial integration effects investment

synchronization. This may be due to the fact that our particular measure of financial integration is dominated by household and thus would be expected to have less of an effect on investment.

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Figures and tables from the text

Figure 1: Percentage of foreign currency denominated loans denominated in euro

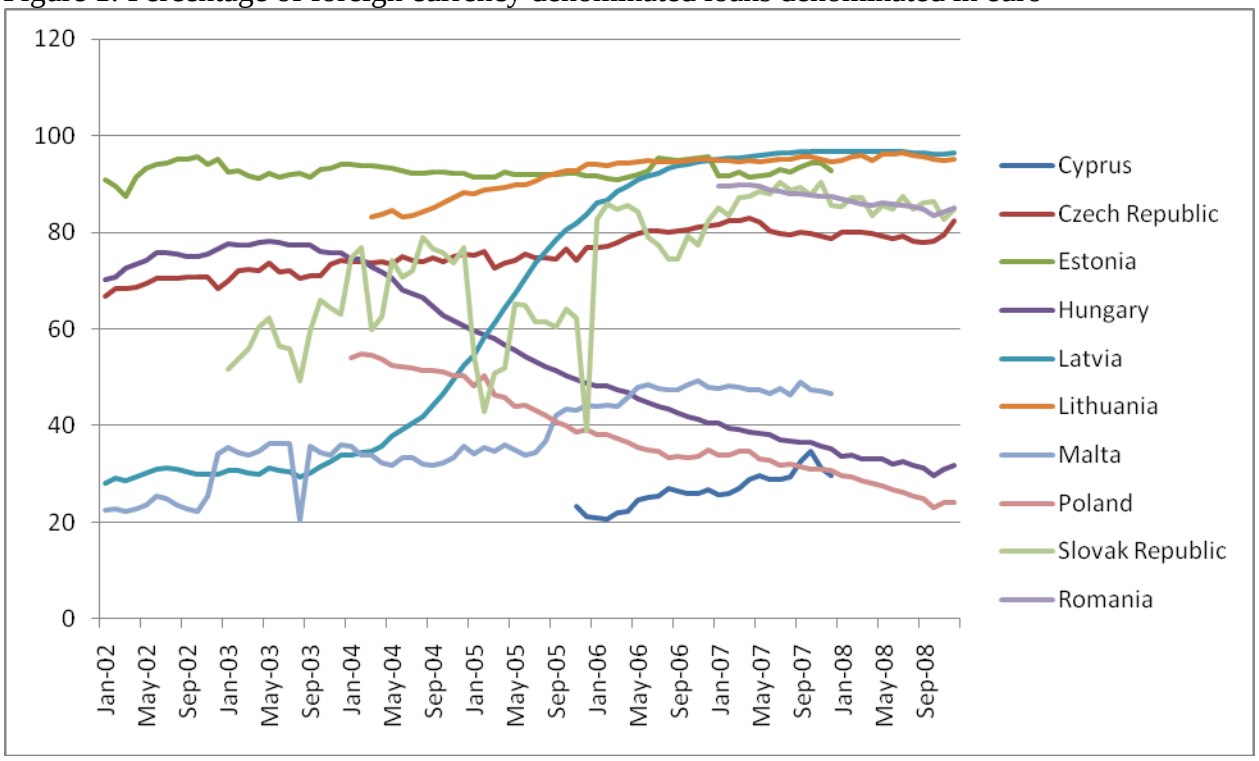

Figure 2: Percentage of foreign currency denominated deposits denominated in euro

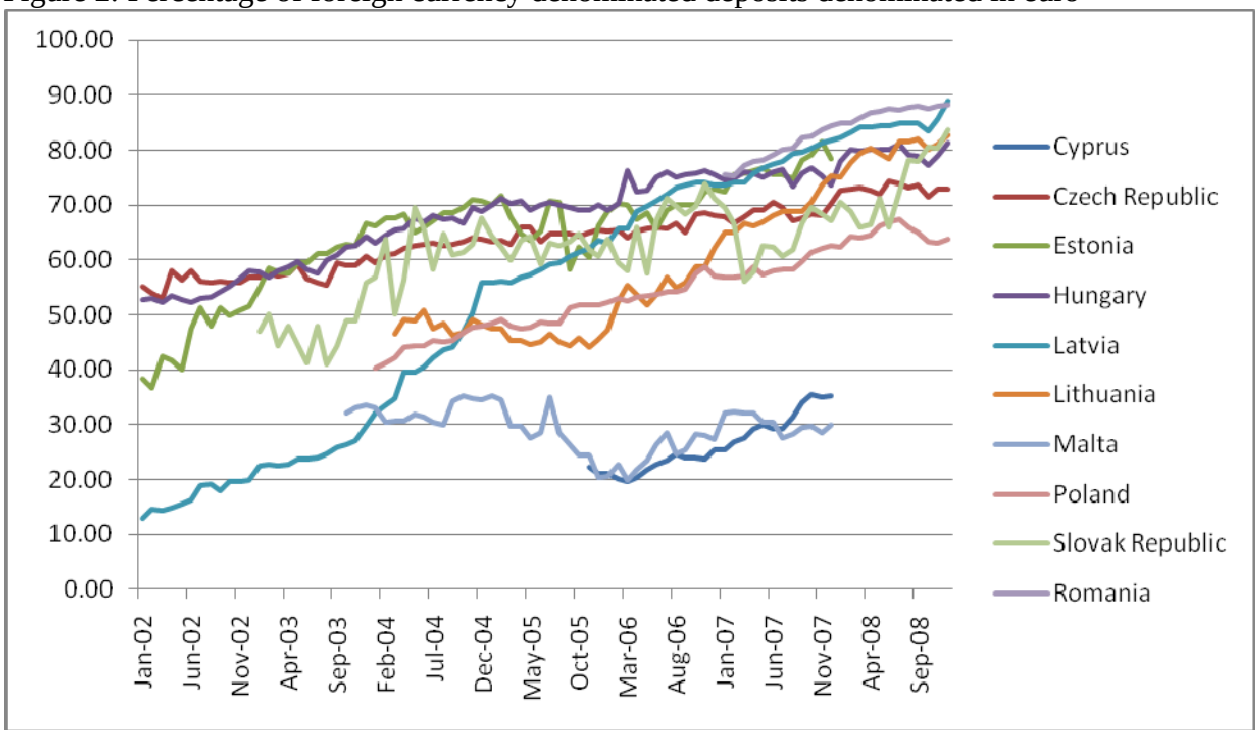

Table 1: Business cycle similarity (1 and 2) of Y, C, and I for the NMS and the Euro Area

VARIABLES	(1) Synch1 Y	(2) Synch1 C	(3) Synch1 I	(4) Synch2 Y	(5) Synch2 C	(6) Synch2 I
FINT - Loan	-0.00846**	-0.0172**	-0.0142	-0.00498	-0.0121**	-0.0123
	(0.00426)	(0.00858)	(0.0234)	(0.00320)	(0.00610)	(0.0196)
spec	-0.126**	-0.107	-0.128	-0.0197	0.0535	-0.166
	(0.0607)	(0.113)	(0.326)	(0.0409)	(0.0770)	(0.282)
trade	-0.00300	-0.0178	-0.00551	-0.00849	-0.0191	-0.00576
	(0.00901)	(0.0178)	(0.0655)	(0.00566)	(0.0125)	(0.0534)
Constant	0.0289	-0.0721	-0.0146	-0.0400	-0.140	0.0170
	(0.0658)	(0.135)	(0.392)	(0.0407)	(0.0903)	(0.306)
Observations	213	213	213	213	213	213
R-squared	0.302	0.191	0.326	0.256	0.212	0.309

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2: IV regression of business cycle similarity (1 and 2) of Y, C, and I for the NMS and the Euro Area

VARIABLES	(1) Synch1 Y	(2) Synch1 C	(3) Synch1 I	(4) Synch2 Y	(5) Synch2 C	(6) Synch2 I
FINT – Loan	-0.0663**	-0.0712**	-0.0330	-0.0195	-0.0201	-0.0621
	(0.0261)	(0.0353)	(0.213)	(0.0221)	(0.0277)	(0.197)
spec	-0.210***	-0.164	-0.130	-0.0343	0.0665	-0.227
	(0.0803)	(0.131)	(0.638)	(0.0623)	(0.0949)	(0.575)
trade	0.0163	-0.00242	-0.00240	-0.00445	-0.0195	0.00947
	(0.0123)	(0.0230)	(0.0804)	(0.00879)	(0.0170)	(0.0686)
Constant	0.217*	0.0801	0.0179	-6.78e-05	-0.141	0.166
	(0.111)	(0.190)	(0.803)	(0.0853)	(0.141)	(0.712)
Observations	213	213	213	213	213	213
R-squared	0.312	0.181	0.325	0.249	0.196	0.309

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Business cycle similarity (1 and 2) of Y, C, and I for the NMS and the Euro Area

VARIABLES	(1) Synch1 Y	(2) Synch1 C	(3) Synch1 I	(4) Synch2 Y	(5) Synch2 C	(6) Synch2 I
FINT - Deposits	0.00321	0.0369*	0.0621	-0.00758	0.00665	0.0713
	(0.0140)	(0.0223)	(0.0831)	(0.00816)	(0.0164)	(0.0698)
spec	0.00400	-0.0326	0.0347	0.00937	0.0143	0.00495
	(0.0256)	(0.0571)	(0.132)	(0.0150)	(0.0402)	(0.103)
trade	-0.0112	-0.0137	0.0204	-0.0127**	-0.0139	0.0112
	(0.00767)	(0.0116)	(0.0662)	(0.00530)	(0.00874)	(0.0588)
Constant	-0.0758*	-0.102	0.0305	-0.0770***	-0.105*	0.0111
	(0.0423)	(0.0758)	(0.340)	(0.0287)	(0.0570)	(0.297)
Observations	257	257	257	257	257	257
R-squared	0.253	0.195	0.353	0.226	0.226	0.336

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1\

Table 4: IV regression of business cycle similarity (1 and 2) of Y, C, and I for the NMS and the Euro Area

VARIABLES	(1) Synch1 Y	(2) Synch1 C	(3) Synch1 I	(4) Synch2 Y	(5) Synch2 C	(6) Synch2 I
FINT - Deposits	-0.0893**	-0.0453	0.150	-0.0278	-0.0273	0.121
	(0.0348)	(0.0505)	(0.211)	(0.0220)	(0.0377)	(0.153)
spec	0.0208	-0.00892	0.0355	0.0109	0.0219	0.0147
	(0.0260)	(0.0564)	(0.122)	(0.0148)	(0.0399)	(0.0889)
trade	-0.0170**	-0.0204	0.0227	-0.0136**	-0.0163*	0.0108
	(0.00771)	(0.0125)	(0.0712)	(0.00548)	(0.00934)	(0.0629)
Constant	-0.0802*	-0.118	0.0107	-0.0749***	-0.109*	-0.0134
	(0.0410)	(0.0788)	(0.342)	(0.0280)	(0.0580)	(0.299)
Observations	257	257	257	257	257	257
R-squared	0.269	0.188	0.353	0.227	0.227	0.333

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Business cycle similarity (1 and 2) of Y, C, and I for the NMS on NMS

VARIABLES	(1) Synch1 Y	(2) Synch1 C	(3) Synch1 I	(4) Synch2 Y	(5) Synch2 C	(6) Synch2 I
FINT - Loan	-0.00574	-0.0387***	-0.0106	-0.0102***	-0.0230***	0.00492
	(0.00466)	(0.00964)	(0.0280)	(0.00314)	(0.00667)	(0.0214)
spec	-0.00902	0.0128	0.00595	0.00749	0.0123	-0.0412
	(0.0186)	(0.0364)	(0.104)	(0.0131)	(0.0242)	(0.0753)
trade	-0.00104*	-0.000759	0.00139	-0.000538	-0.000882	0.00165
	(0.000598)	(0.000971)	(0.00326)	(0.000460)	(0.000676)	(0.00257)
Constant	-0.00934	-0.0197	-0.119**	-0.00864	-0.0184	-0.0865**
	(0.00916)	(0.0175)	(0.0593)	(0.00654)	(0.0130)	(0.0423)
Observations	740	740	740	740	740	740
R-squared	0.275	0.181	0.257	0.233	0.131	0.275

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: IV regression of business cycle similarity (1 and 2) of Y, C, and I for the NMS on the NMS

VARIABLES	(1) Synch1 Y	(2) Synch1 C	(3) Synch1 I	(4) Synch2 Y	(5) Synch2 C	(6) Synch2 I
FINT -Loan	-0.0394	0.0302	-0.262	-0.0639*	-0.0209	-0.233
	(0.0376)	(0.0636)	(0.462)	(0.0329)	(0.0371)	(0.332)
spec	0.00665	-0.0252	0.127	0.0324	0.00862	0.0747
	(0.0269)	(0.0470)	(0.230)	(0.0202)	(0.0300)	(0.167)
trade	-0.00110*	-0.000968	0.00120	-0.000626	-0.00102	0.00157
	(0.000604)	(0.000998)	(0.00346)	(0.000470)	(0.000698)	(0.00271)
Constant	0.00221	-0.0431	-0.0329	0.00977	-0.0191	-0.00523
	(0.0148)	(0.0274)	(0.157)	(0.0123)	(0.0182)	(0.117)
Observations	740	740	740	740	740	740
R-squared	0.275	0.158	0.259	0.231	0.113	0.278

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Business cycle similarity (1 and 2) of Y, C, and I for the NMS on NMS

VARIABLES	(1) Synch1 Y	(2) Synch1 C	(3) Synch1 I	(4) Synch2 Y	(5) Synch2 C	(6) Synch2 I
FINT - Deposit	-0.00310	0.0522**	0.0764	-0.00618	0.0561***	0.0668
	(0.0131)	(0.0232)	(0.0888)	(0.00900)	(0.0151)	(0.0726)
spec	0.00757	-0.0351	0.104	0.00539	-0.0283**	0.0738
	(0.0116)	(0.0224)	(0.0781)	(0.00878)	(0.0144)	(0.0682)
trade	-0.000655	-0.000951	0.00214	-0.000432	-0.000608	0.00189
	(0.000551)	(0.000906)	(0.00296)	(0.000399)	(0.000618)	(0.00241)
Constant	-0.0221***	-0.0372**	-0.0958**	-0.0153***	-0.0252***	-0.0541
	(0.00789)	(0.0148)	(0.0480)	(0.00561)	(0.00936)	(0.0371)
Observations	1057	1057	1057	1057	1057	1057
R-squared	0.195	0.151	0.281	0.153	0.118	0.270

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: IV regression of business cycle similarity (1 and 2) of Y, C, and I for the NMS on the NMS

VARIABLES	(1) Synch1 Y	(2) Synch1 C	(3) Synch1 I	(4) Synch2 Y	(5) Synch2 C	(6) Synch2 I
FINT - Deposit	-0.0359	0.0486	0.144	-0.0218	0.0403	0.134
	(0.0358)	(0.0626)	(0.279)	(0.0294)	(0.0349)	(0.251)
spec	0.0190	-0.0314	0.0840	0.0106	-0.0200	0.0533
	(0.0158)	(0.0306)	(0.128)	(0.0132)	(0.0171)	(0.117)
trade	-0.000768	-0.000953	0.00238	-0.000486	-0.000650	0.00213
	(0.000562)	(0.000922)	(0.00315)	(0.000413)	(0.000625)	(0.00261)
Constant	-0.0159	-0.0371**	-0.109*	-0.0123	-0.0229**	-0.0675
	(0.0103)	(0.0183)	(0.0653)	(0.00765)	(0.0113)	(0.0533)
Observations	1057	1057	1057	1057	1057	1057
R-squared	0.196	0.147	0.281	0.153	0.107	0.270

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix

Table 1: Summary statistics for first estimation - NMS synchronization with the Euro Area

	SYNCH1 Y	SYNCH1 C	SYNCH1 I	SYNCH2 Y	SYNCH2 C	SYNCH2 I
MEAN	-0.01098	0.01585	-0.04319	-0.00466	-0.01003	-0.03087
MEDIAN	-0.00926	0.01208	-0.02767	-0.00298	-0.00596	-0.0187
STD DEV	0.008688	0.01477	0.051697	0.005517	0.010938	0.043542

Table 2: Summary statistics for second estimation - NMS synchronization with the Euro Area

	SYNCH1 Y	SYNCH1 C	SYNCH1 I	SYNCH2 Y	SYNCH2 C	SYNCH2 I
MEAN	-0.01111	-0.02104	-0.05967	-0.00596	-0.01283	-0.03739
MEDIAN	-0.00875	-0.01686	-0.04365	-0.00422	-0.00956	-0.02383
STD DEV	0.009414	0.018146	0.061315	0.006391	0.012184	0.045388

First stage of IV for estimation of NMS on Euro Area – Loans and deposits

VARIABLES	(1) FINT - Loan	(2) FINT - Deposit
Ersum	-0.447**	-0.0775***
	(0.194)	(0.0148)
Spec	-1.879***	0.433***
	(0.447)	(0.117)
Trade	0.316***	-0.0340
	(0.0894)	(0.0342)
Constant	4.352***	0.199
	(0.756)	(0.201)
Observations	285	337
R-squared	0.828	0.928

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

First stage of IV for estimation of NMS on NMS – Loan and deposits

VARIABLES	(1) FINT - Loan	(2) FINT - Deposit
Ersum	-0.254***	-0.0360***
	(0.0562)	(0.00364)
Spec	0.520***	0.379***
	(0.0937)	(0.0223)
Trade	-0.00390	-0.00366**
	(0.00499)	(0.00147)
Observations	1379	1868
R-squared	0.862	0.938

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1