Cross-border banking in the expanded EU

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ABSTRACT: This paper explores how becoming a member of the EU and eventually the EMU influences cross-border banking from the original members of the EU. We compare the experience of the original members of the EMU to the new member states (NMS) of the EU. The traditional channels through which the creation of the euro led to increased cross-border banking among the original members of the EMU help but do not fully explain the increased flow from the EMU to the NMS. This indicates that for the NMS, joining the EU and eventually the EMU changes the perceptions of EMU banks regarding the benefits of expanding, leading to a windfall gain in cross-border banking to the expanded EU.

KEY WORDS: cross-border banking, currency union, NMS

From 1998 to 2008 the percentage of domestic banks majority owned by foreign institutions in Central and Eastern Europe (CEE) increased from 29 percent to 74 percent (Ryan and Horsewood, 2009). There are important costs and benefits of having such a large concentration of foreign banks. In an extensive study, Allen et al. (2011) find that these countries have benefited from the large presence of foreign banks. They find that even during the financial crisis, where a housing bubble originating in the United States quickly spread to the rest of the world through cross-border banking channels, the reversal of capital flows to the CEE countries was less severe than for other emerging markets because of the presence of foreign banks.

Circumstances necessitate the study of the implications of cross-border banking in Europe, but there is a continued need to study the driving forces behind this expansion. This paper explores how policies designed to increase economic integration influence cross-border banking in Europe. Particular attention is paid to how cross-border banking from the original members of the EU to the new member states (NMS) of the EU has been influenced by the expansion of the EU and the potential and actual adoption of the euro. Though many have studied the causes of the banking expansion from the EMU to the NMS, this is the first to our knowledge that explores the specific role of membership in the EU and EMU.

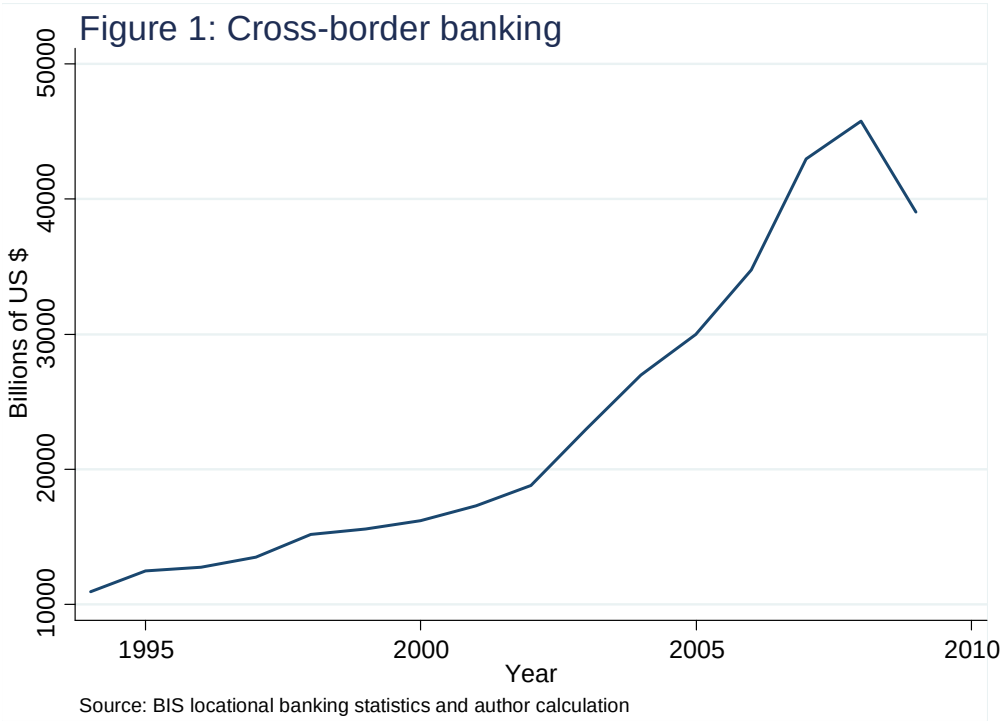
Through the estimation strategy employed in this paper, we find that the EU and the EMU play an important role in explaining the expansion of cross-border banking. The adoption of the euro increases cross-border banking among EMU members. This is true for both the original and new members of the EMU. The NMS also experience greater cross-border banking from the original members of the EMU once they join the EU. The traditional channels through which the euro or entrance into the EU could lead to greater cross-border banking are then explored. Changes in trade relationships, exchange rate régimes, economic growth, financial depth, and regulatory changes that come with joining the EU and the creation of the monetary union explain the euro effect among the original members of the EMU. These same channels, however, do not fully explain either the EU or the euro effect for the NMS. These results suggest that joining the EU and eventually the EMU alters the perception of risk for these countries. The improved perception of risk leads to almost an immediate expansion of banking from the EMU. The effect is even stronger once the NMS join the EMU. We also explore how the potential for joining the euro explains the EU effect. We compare cross-border banking from the EMU into those NMS that participate in ERM-II to those who do not. Cross-border flows are stronger into

those countries that participate in ERM-II suggesting the euro does play an important role in the observed EU effect as well.

The rest of the paper will proceed as follows. The next section reviews the data and existing literature that motivate this paper. The following section presents the empirical model and the data used in the analysis. After the model and data are explained, the results are presented and discussed. The final section concludes.

Motivation and literature review

In one sense cross-border banking in Europe follows a greater trend in the world. The Bank of International Settlements (BIS) has compiled detailed information on cross-border banking activity which illustrates the growth in global cross-border banking. Figure 1 shows the inflation adjusted sum of bilateral international claims and assets of the banks in seventeen reporting nations with the rest of the world.



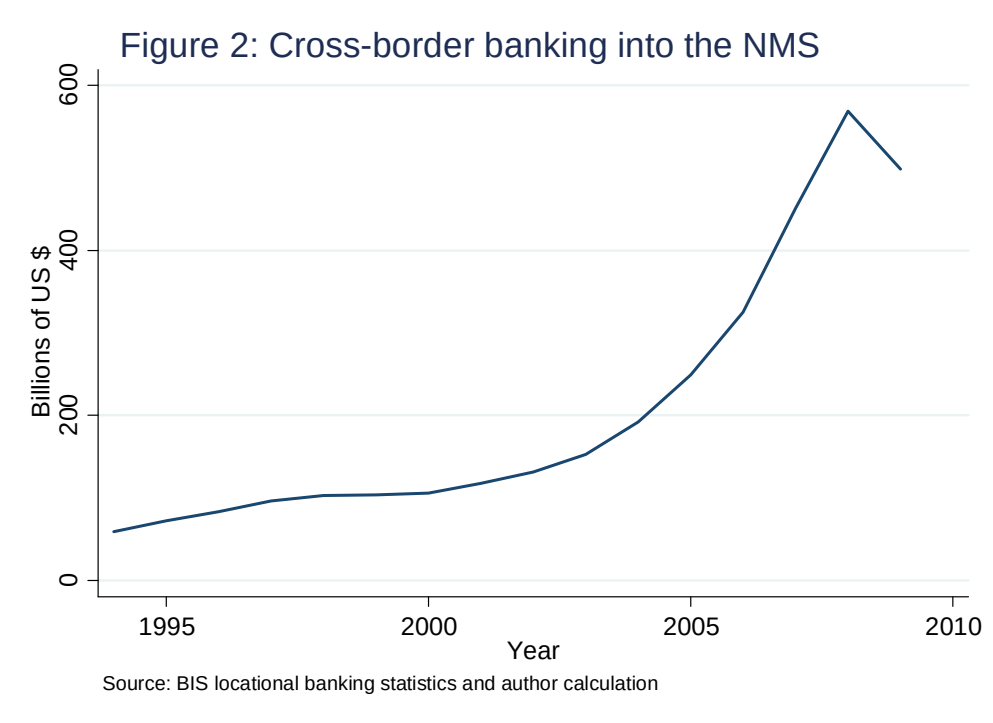
Source: BIS locational banking statistics and author calculation

Global cross-border banking activity accelerated in the years leading up to the financial crisis. The financial crisis brought about a sharp reduction in cross-border banking. The drop, however, was not as large as the drop in overall banking activity. BIS data shows that the proportion of all assets and liabilities in the world held by domestic banks that are external increased from 0.4 in the 1980s to 0.45 in 2009. This proportion continued on a general upward trend even during the crisis of the late 2000s.

The causes of the observed increase in cross-border banking in specific and financial integration in general have received much attention (Buch and DeLong, 2004; Baele et al., 2004; and Lane and Milesi-Ferretti, 2008). De Haan et al. (2009 p. 109-112) identify three drivers of financial integration; market forces, collective action, and public action. Market forces, such as economies of scale and technological advances which reduce the transaction costs on international banking, continue to drive banks to grow and expand internationally. This expansion is limited in as much as there are regulatory or economic structures that restrict it. Collective and public action can reduce those restrictions and encourage more cross-border banking.

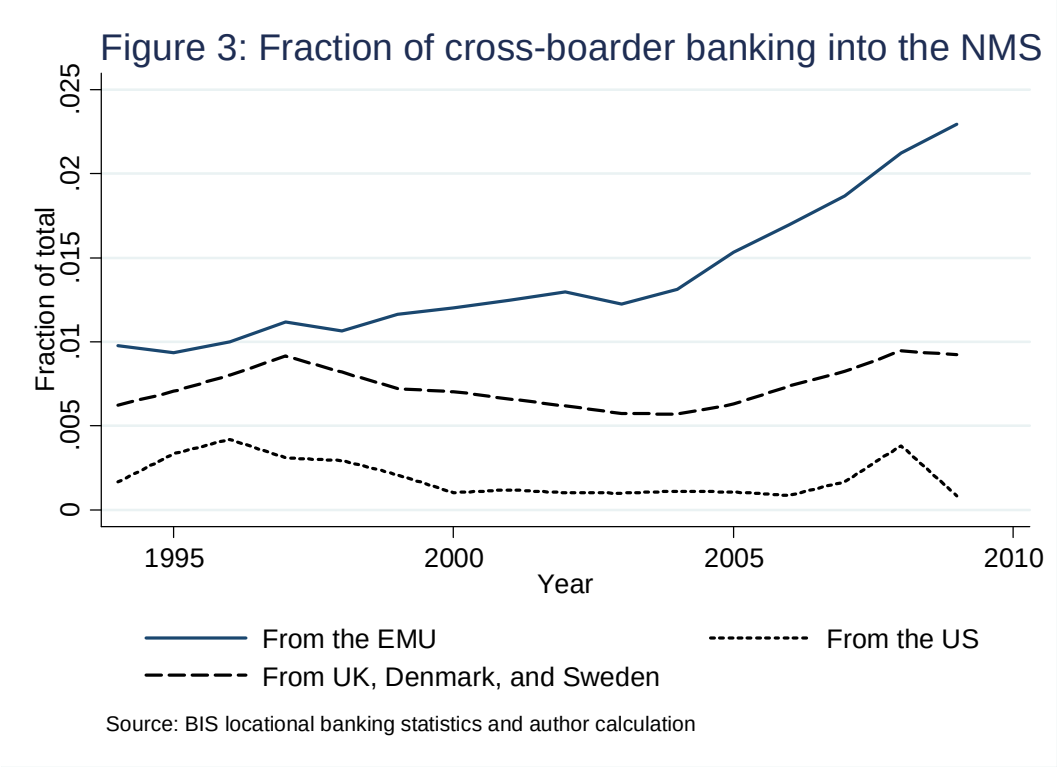
Europe has been at the forefront of removing barriers to economic integration in general and banking in specific through public action with the creation of the EU and the EMU. The EU was designed to foster economic cooperation and integration by reducing the barriers to international economic activity. Integration within the EU has been further enhanced by the creation of the monetary union. A common currency removes barriers to cross-border economic transactions by reducing transaction costs associated with separate currencies. The expansion of the EU and the EMU into many of the CEE countries provides a natural experiment of how policies designed to foster greater integration actually influence cross-border economic activity.

Figure 2 presents the inflation adjusted sum of bilateral international claims and assets of the banks in the same seventeen reporting nations going to the NMS.



Cross-border banking into the NMS accelerated in the early 2000s peaking in 2008 just before the financial crisis followed by a sharp contraction. It is generally recognized that much of the early cross-border banking came as a result of privatization of the banking sector after the break-up of the Soviet Union. Most privatization, however, was completed by 2004 (Naaborg, 2007). As this chart illustrates, the acceleration of cross-border banking into the NMS begins in 2004. This acceleration is later than the acceleration observed in the rest of the world and coincides with expansion of the EU into the NMS. The timing suggests that the fundamental change in the rules and relationship with Europe could play a major role in explaining the observed cross-border banking.

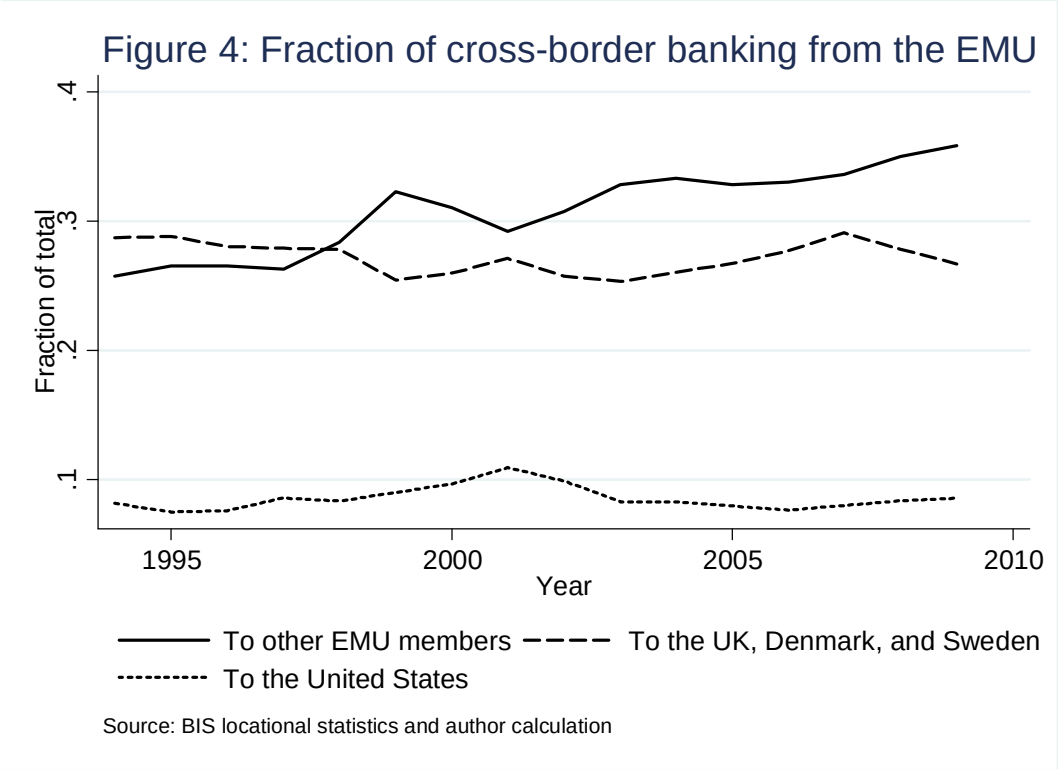
A closer examination of the sources and timing of this inflow of cross-border banking into the NMS supports the idea that the EU played an important role, but also highlights the potential role of the euro. Figure 3 illustrates the fraction of all cross-border banking activity that originated from the member states of the EMU, from the original EU members who have not joined the EMU, and from the United States going to the NMS.



The EU effect is again evident as banks in EU countries (whether they are a part of the monetary union or not) expand into the NMS after they enter the EU in 2004. This adjustment in preference is not observed from the United States. The preference toward NMS accelerates much quicker for the members of the EMU relative to those countries that are a part of the EU but not the EMU. In terms of policy and structure dictating economic action in Europe, the only difference between these countries is the common currency. Yet even though most of the NMS have not joined the EMU, it is those that share the common currency that lead the expansion into

the NMS. The fact that the NMS are contractually obligated to eventually join the monetary union suggests that the euro or at least the potential of the euro could help explain the expansion into the NMS.

Evidence already exists that the creation of the euro has the potential of influencing cross-border banking. Figure 4 presents the fraction of cross-border banking activity from the original members of the EMU going to other EMU countries, the original EU members who have not joined the EMU, and the United States.



A shift in international portfolios toward other members of the EMU is evident around the run up to and creation of the EMU in 1999. The establishment of a common currency promotes deeper and more liquid financial markets, reduces transaction costs, and eliminates exchange rate risk within the monetary union (Lane, 2008). The euro effect for the original members of the EMU has been found to be important when studying cross-border banking in the EMU and provides

justification for further exploring the role the euro plays in cross-border banking into the NMS. We compare the euro effect among the original members of the EMU with those in the NMS. We also look at how the euro plays a role in cross-border banking once the NMS join the EU in the run up to joining the EMU, as an important part of the EU effect on cross-border banking.

Data, Methodology, and Channels

In order to explore how collective and public action to reduce economic barriers in Europe influence cross-border banking, variations of the following basic model are estimated:

$$CBB_{s,d,t} = c + \alpha_t + \alpha_s + \alpha_d + \alpha_{s,d} + \beta_1 EMU_{s,t} \times EMUorig_{d,t} + \beta_2 EMU_{s,t} \times NMSemu_{d,t} + \\ + \beta_3 EMU_{s,t} \times NMSeu_{d,t} + \beta_X X_{s,d,t} + \varepsilon_{s,d,t} \quad (1)$$

In this representation, cross-border banking (CBB) between the source country (s) and the destination country (d) at time (t) is a function of time, country, and country-pair fixed effects (α_t, α_s, α_d, $\alpha_{s,d}$); euro and EU effects; and the possible channels (X) through which the euro and EU effect could influence cross-border banking.

The BIS provides a measure of cross-border banking activity in its restricted Locational Banking Statistics database. The database contains the bilateral international claims and liabilities of all banks resident in the reporting (source) country vis-à-vis a destination country (BIS, 2006). Asset and liability information is combined into one measure using the log of the sum of the assets and liabilities to GDP ratio from the source country (s) to the destination country (d) at time (t). Because we are primarily interested in the NMS, the estimation is completed using data from 1994 to 2009, when data become available for most NMS. The BIS only collects bilateral banking statistics from the larger industrial nations. As a result, this analysis is only able to capture the behavior of financial flows initiated from the reporting

countries to the destination countries and not vice versa. Each reporting country provides their cross-border banking activity with most other nations in the world.

The source countries used in the estimation are Austria, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States. This includes all of the original members of the EMU other than Belgium, Greece, and Luxembourg who did not provide the necessary data to be included in the study. Including non-EMU source countries provides important comparisons in measuring the monetary union effects. The United States stands as a proxy for world trends in cross-border banking. Denmark, Sweden, and the UK are members of the EU but have opted out of joining the EMU. Switzerland, though not a member of either the EMU or the EU has important financial ties to the rest of Europe. Each source country reports their total domestic banking assets and liabilities located in over fifty foreign countries. These countries that serve as a destination for cross-border banking activity include members of the EMU, EU, the NMS, other countries in Central and Eastern Europe, Turkey, Russia, and the United States. A full list of the destination countries is included in the Appendix.

The BIS data measure banking integration across both time and country pairs. Such panel data provides a particular advantage when studying the NMS. The limited availability of reliable time series data poses a challenge for country specific studies, while the relatively small number of NMS leads to degree of freedom problems in cross-sectional estimation. The availability of bilateral measures of cross-border banking activity, overcomes the degree of freedom problem.

The effects of increasing economic integration by adopting the euro or entering the EU are captured with a series of interaction dummy variables. The coefficient on these variables demonstrates how cross-border banking has evolved between the EMU and each of these regions

over time and circumstances relative to the other regions and the rest of the world. Because we are interested in explaining the observed changes in cross-border banking originating from the EMU relative to other source countries, each circumstance and country group of interest is interacted with $EMU_{s,t.}$ $EMU_{s,t}$ takes on a value of one if the source country (s) is a member of the EMU at time (t).

In the first interaction term of interest, $EMU_{s,t}$ is interacted with $EMUorig_{d,t.}$ $EMUorig_{d,t}$ takes on a value of one if the destination country (d) is one of the original members of the EMU (including Greece) and a member at time (t). The interaction term, therefore, takes on a value of one if the source country is an original member of the EMU and the destination country is an original member of the EMU at time (t). As a result, the coefficient on this interaction variable measures the original euro effect already identified by other authors (Lane and Milesi-Ferretti, 2008; Bekaert et al., 2010; and Kalami-Ozcan et al., 2010).

The second interaction variable uses the variable $NMSemu_{d,t}$ which takes a value of one if the destination country (d) is a NMS (joined the EU after 1995) that has adopted the euro at time (t). This includes Cyprus (2008 forward), Malta (2008 forward), Slovenia (2007 forward), and Slovakia (2009 forward). The interaction, therefore, takes on a value of one if the source country is an original member of the EMU and the destination country is a new member of the EMU at time (t). As a result, the coefficient on this interaction variable measures the size of the euro effect for the NMS once they join the EMU. This new euro effect can then be compared to the original euro effect.

The final interaction term uses the indicator variable $NMSeu_{d,t}$ which takes on the value of one if the destination country (d) is a NMS (joined the EU after 1995), but has not yet joined the EMU at time (t). The countries in this category are Bulgaria (2007 forward), Cyprus (2004-

2007), Czech Republic (2004 forward), Estonia (2004 forward), Hungary (2004 forward), Latvia (2004 forward), Lithuania (2004 forward), Malta (2004 – 2007), Poland (2004 forward), Romania (2007 forward), Slovenia (2004-2006), and Slovakia (2004 – 2008). The interaction term, therefore, takes on a value of one if the source country is an original member of the EMU and the destination country is a NMS that has joined the EU but not the EMU at time (t). This coefficient measures the EU effect: how banking behavior from the EMU changes as a result of the NMS entering the EU with a commitment to eventually join the monetary union.

Using the indicator variables will illustrate the relative change in cross-border banking activity from the EMU to the NMS as a result of entering the EU or EMU. It does not necessarily mean that the EU or EMU are responsible for these observed changes. If not properly accounted for, the indicator variables alone could capture global trends or shocks; individual country characteristics; or country-pair characteristics truly driving cross-border banking. Martin and Rey (2004) show how a gravity model, relying on distance, economic size, and borders, can be used to explain financial integration in general. Portes and Rey (2005) find that larger countries (in economic terms) provide greater opportunities to diversify and are able to attract more financial flows. Buch, Driscoll, and Ostergaard (2010) demonstrate that relative country relationships, such as a common culture, can also affect the cross-country flow of financial activity. These country and country-pair effects must be accounted for when measuring the EU and euro effect.

Time fixed effects are included to control for global trends and shocks to cross-border banking. Country-specific fixed effects are included to account for country characteristics that remain constant over time but account for their ability to extend or attract cross-border banking. This includes the countries size, culture, legal structure, overall level of economic development,

and history of capital account restrictions. Country-pair fixed effects are included to account for distance, cultural or language similarities, and political ties that do not change over time but could influence the cross-border banking decisions between source and destination countries.

In order to understand how joining the EU and EMU influence cross-border banking, we explore the channels through which joining could influence the market decisions of individual banks to expand. There are also characteristics specific to the NMS in their structure that have been found to influence cross-border banking that need to be controlled for. In as much as these explanatory variables reduce the size and significance of the indicator variables, the channels and causes of the effects can be explained.

There are three general categories identified as reasons for expanding internationally: following the customer, increasing profitability, and the institutional context of the host market (De Haan et al., 2009 p. 246-247). As domestic firms expand internationally, those domestic banks that work with these firms gain access to markets, enjoy reduced risks, and have access to improved information flows as they follow their customer into foreign markets (Aviat and Coeurdacier, 2007). Becoming a member of the EU automatically leads to a reduction in trade barriers. Joining a monetary union has also been shown to increase trade among its members (Frankel and Rose, 2002). The resultant increase in trade as a result of joining the EU or EMU could account for the increase in cross-border banking as domestic banks follow their customers. To account for this channel, trade is included in the estimation of equation one. Data on bilateral trade are extracted from the IMF's *Direction of Trade Database*. Trade between countries is measured as the natural log of the bilateral sum of real exports and imports as a fraction of GDP for each country pair.

In search of increased profitability, banks are likely to expand to countries were the returns are expected to be high. Thus countries with high expected growth rates should attract cross-border banking. The ECB (2005) identifies the relatively strong economic performance of the NMS in the early 2000s as a factor in attracting foreign banks. Growth in GDP per capita for each country (source and destination) obtained from the World Bank's *World Development Indicators* is used to capture the increased profitability channel through which cross-border banking is conducted. In as much as joining the EU and EMU influence growth and thus cross-border banking, this variable should explain these effects.

The final category to take into account is the institutional context of both the source and destination country. The obvious institutional change that comes as a result of creation of the euro is the elimination of the exchange rate. A more fixed exchange rate reduces currency risk associated with cross-border banking if fixed to the local currency. Kalemli-Ozcan et al. (2010) show how the elimination of currency risk among the original EMU members accounts for much of the observed euro effect among the original members. This channel could also account for the flow of banking assets and liabilities to the NMS. Many of the NMS adopt a fixed exchange rate while in the EU in preparation for joining the EMU. Theory of international financial integration also identifies risk diversification as an important driver of international expansion (Kose et al., 2006). Banks could move into countries who do not fix their exchange rate to their own currency or who have a more flexible exchange rate to diversify their risk. In either case the exchange rate régime should play an important role.

To control for the exchange rate régime, an updated version of the Reinhart and Rogoff index is used (Ilzetzki, Reinhart, and Rogoff, 2008). The index ranges from one (most ridged exchange rate régime) to fifteen (least rigid exchange rate régime). This *de facto* measure is

preferred as often a country's declared exchange rate régime does not coincide with the way the exchange rate actually operates.

Financial development, or depth, has been found to be another institutional factor that explains cross-border financial flows (Lane and Milesi-Ferretti, 2008). Countries with more mature financial systems are often better regulated, have consumers that are familiar with and trust the financial system, and have a trained work force to draw from (Körner and Schnabel, 2011). Private credit as a percentage of GDP is a common measure of financial depth and is available from the World Bank's *World Development Indicators* for each of the countries in our sample (Rousseau and Wachtel, 2009). In as much as the EU or euro play a role in increasing financial depth in a country this variable should explain their effect.

Other institutional factors found in the literature that can explain international banking involve the role governments play in the financial market. Official restrictions governments place on capital flows and cross-border banking influence the access foreign banks have to a domestic market. Becoming a member of the EU leads to a reduction in the restrictions on financial flows (Bekaert et al., 2010). We must take into account the ongoing reduction in barriers to financial access in the EU when evaluating its effect.

Many governments in Europe own and run domestic banks. The role of state-ownership is of particular importance in the NMS. Much of the expansion in foreign ownership of banks in the NMS can be tied to privatization in the 1990s and early 2000s (De Haan et al. 2009, p. 248). Privatization was for the most part completed by the time most NMS entered the EU, but it must be taken into account when explaining cross-border banking.

To control for the role of government in explaining cross-border banking we use the Heritage Foundation's *Financial Freedom Index* for source and destination countries. In

compiling this index, the Foundation factors in the extent of government regulation of financial services, government restrictions on the allocation of credit, and the degree of state direct or indirect ownership of domestic banks and other financial firms. The higher the index the less regulation, restrictions, and intervention. In as much as the EU or the euro changes the government's role in the financial system, this index should explain their effect.

Entering the EU and the EMU are themselves important institutional factors that could explain cross-border banking. Even when taking into account the trade, exchange rate, and regulatory effect joining has on the NMS, participation in these arrangements could significantly alter the way these countries are perceived in the market. Joining the EU, the EMU, or preparing to join the EMU increases the confidence of banks interested in expanding if joining is perceived to bring greater stability to the country of interest. What remains of the EU and euro effect after all other channels are accounted for could reflect the credibility gained as a result of participation.

Results:

To illustrate how financial flows are moving from the EMU to the other regions, equation one is estimated excluding fixed effects and the possible predictors of cross-border banking. This basic estimation (column 1) illustrates the flow of banking assets and liabilities from the EMU to the regions of interest.

Table 1: Determinates of financial integration

	(1)	(2)
Original euro effect	1.2275***	0.1502***
	(0.0688)	(0.0497)

NMS euro effect	1.7277***	0.5257***
	(0.2637)	(0.0909)
NMS EU effect	0.2323**	0.3237***
	(0.0949)	(0.0384)
Fixed Effect	None	Time, Country, Country-pair
Observations	6,545	6,545
R-squared	0.0509	0.9248

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

This fairly naïve representation illustrates what was observe in the data. The original members of the EMU expand cross-border banking with one another after the formation of the monetary union relative to the other possible destinations of cross-border banking. The original members also expand cross-border banking into the few NMS after they joined the EMU relative to the other possible destinations of cross-border banking. This shows the euro effect was not specific to the original members of the EMU, but applies to the new members as well. There was also an increase in cross-border banking from the EMU into the NMS after they join the EU relative to other possible banking destinations, though the size of the effect is much smaller.

This exercise provides a good description of the data, but as the low R-squared indicates it does little to explain the variation in cross-border banking observed. The estimation is then expanded to include time, country, and country-pair fixed effects (column 2 of Table 1). Adding these fixed effects causes the magnitude of the original and NMS euro effect to drop significantly. Much of the large euro effects of the baseline regression reflected the role of global financial trends and shocks, size, proximity to the EMU, longstanding financial or cultural ties, or other country specific effects. When taking into account these factors, the NMS euro effect is much stronger than for the original members. The NMS EU effect, on the other hand, increases

in magnitude after including fixed effects. Cross-border banking activity between the EMU and the NMS before they join the EMU compared to the rest of the world and different circumstances over time (i.e. not being a member of the EU) increased by 38 percent (exp (0.3237) = 1.3822), even when taking into account time trends and country specific factors.

In an attempt to explain how the euro and EU increase cross-border banking, the possible channels are sequentially added to the regression. If, as a result of adding a channel, any of the effects becomes insignificant the effect (EU or euro) influenced cross-border banking through the included channel. Those results are presented in Table 2. The first five columns present the results when individual predictive factors of cross-border banking are included in the estimation of equation one (including the fixed effects).

Table 2: Determinates of cross-border banking

	(1)	(2)	(3)	(4)	(5)	(6)
Original euro effect	0.1699***	0.0959*	0.1145**	0.1158**	0.1570***	0.0356
	(0.0497)	(0.0496)	(0.0521)	(0.0493)	(0.0497)	(0.0518)
NMS euro effect	0.4903***	0.5268***	0.5524***	0.5155***	0.5345***	0.4600***
	(0.0909)	(0.0901)	(0.0930)	(0.0898)	(0.0907)	(0.0911)
NMS EU effect	0.2890***	0.2979***	0.2933***	0.3577***	0.3127***	0.2468***
	(0.0388)	(0.0381)	(0.0389)	(0.0380)	(0.0384)	(0.0389)
Trade (relative to GDP)	0.1836***					0.2776***
	(0.0330)					(0.0333)
GDP per capita growth - Source		-0.0632***				-0.0548***
		(0.0062)				(0.0066)
GDP per capita growth - Destination		-0.0113***				-0.0115***
		(0.0026)				(0.0027)
Exchange rate regime - Source			-0.0289***			-0.0344***
			(0.0056)			(0.0056)
Exchange rate regime - Destination			0.0084*			0.0014
			(0.0044)			(0.0027)
Financial depth - Source				0.0031***		0.0015***
				(0.0004)		(0.0004)
Financial depth - Destination				0.0035***		0.0035***
				(0.0004)		(0.0004)
Financial freedom – Source					0.0031***	0.0022**
					(0.0010)	(0.0010)
Financial freedom – Destination					0.0033***	0.0018**
					(0.0008)	(0.0008)
R-squared	0.9252	0.9263	0.9252	0.9266	0.9251	0.9287

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Each of the identified channels helps explain cross-border banking in general. Most of the signs are in line with what one would expect. Stronger trade ties lead to expanded cross-border banking, though its inclusion by itself does not change the significance of the structural effects of the euro and the EU. Greater exchange rate flexibility in the destination countries leads to expanded cross-border banking, though this channel is not significant when all factors are included. For source countries more rigid exchange rate régimes lead to greater cross-border banking. This result reflects the fact that most of the source countries are original members of the EMU, thus over this time period they were either moving toward a more fixed exchange rate in preparation for eventual adoption of the euro, or had already adopted the euro. The negative coefficient captures the expansion of EMU banks as a result of moving toward a currency union with its implicit gains. The positive coefficient on the destination exchange rate régime could reflect a banks desire to capitalize on exchange rate fluctuations for profit seeking or risk diversification. The inclusion of the exchange rate régime does help explain some of the original euro effect. It does little, however, to explain the NMS euro effect as well as the NMS EU effect.

Greater financial depth in the source and destination country lead to more cross-border banking as predicted. Financial depth contributes to the explanation of the original EMU effect, but does not change the results for the NMS. The estimated results for financial freedom are similar. When there is less government involvement through ownership of banks and regulation (a higher freedom value), there is more cross-border banking. Freedom, however, does not explain either of the estimated NMS effects. GDP growth is significant, but the sign is not as expected. The negative sign for the source countries could be explained by the fact that these countries are the industrialized countries, where at such a relatively high level of development growth is less of an important factor. The significant negative coefficient for the destination

countries is different than earlier studies of cross-border banking into the NMS. Further testing (available on request) reveals that for the NMS, the negative sign is primarily driven by the relationship after 2003. This evidence suggests that previous results are specific to the time period explored.

When all of the channels are taken into account, the original euro effect becomes insignificant. This matches the results of Kalemli-Ozcan et al. (2010) and indicates the increase in observed cross-border banking within the EMU after the formation of the euro came through the euro's effect on trade, the exchange rate, financial depth, macroeconomic structure, or regulatory environment of these countries. These same channels, however, are not sufficient to explain the observed increases for cross-border banking from the EMU to the NMS once they join either the EU or the EMU. Even after controlling for the channels which explain the original euro effect, joining the EMU as a NMS increases cross-border banking by 58 percent. Joining the EU increases cross-border banking from the EMU by 30 percent.

For the NMS, adopting the euro alone plays an important role in explaining cross-border banking. More expansion is experienced than the channels would predict. The outcome is not specific to the adoption of the euro either. Those states that join the EU in anticipation of eventually joining the EMU experience a significant increase in cross-border banking from the original EMU members relative to when they were not members and other countries that have not joined the EU. This expansion is more than the traditional channels (the same channels that explain cross-border banking among the original EMU members after joining the union) would predict. For those countries in Central and Eastern Europe, the common currency in both its adoption and potential adoption alone explain much of the observed cross-border banking for the original members of the EMU. These results suggest that joining the EU and eventually the EMU

alters EMU bank's perceptions of risk and profitability regarding expansion into the NMS. As a result the NMS experience a windfall gain in cross-border banking.

Though entrance into the EU explains much of the observed cross-border banking, it is possible that some of the EU effect is driven by the potential of adopting the euro. Banks recognizing the gains associated with banking in a country with a common currency could expand early to gain a foothold in those countries that will eventually join the union. An established presence when the currency is adopted could provide a greater opportunity to take advantage of the common currency. Moving early does present risks. If the euro does play a role, one would expect those countries closer or more committed to joining the union would be the target of expansion.

The level of commitment to the monetary union varies across NMS. Some have joined soon after becoming members of the EU, while for others, entry could be years away. We can differentiate between those NMS that are or have actively pursued membership in the EMU and those that have not. Each member must join the Exchange Rate Mechanism (ERM-II) and keep their exchange rate within a15 percent band of the euro before entering the monetary union. They do, however, have flexibility in deciding when to enter ERM-II and thus the EMU. Those countries that enter ERM-II demonstrate their commitment to enter the monetary union in a timely manner.

To test the role the euro plays in the EU effect, we differentiate between those countries that are a part of ERM-II at time (t) and those that are not. Estonia, Lithuania, Slovakia, and Slovenia entered ERM-II in 2004, while Cyprus, Latvia, and Malta entered in 2005. Of these countries, only Latvia and Lithuania had yet to join the EMU by 2012. The estimation results are presented in the first column of Table 3.

Table 3. Determinates of cross-border banking

	(1)	(2)
Original euro effect	0.0355	0.0634
	(0.0517)	(0.0512)
New euro effect	0.4621***	0.3336
	(0.0910)	(0.2136)
NMS not in ERM-II	0.1878***	0.1142***
	(0.0555)	(0.0643)
NMS in ERM-II	0.3090***	0.2512***
	(0.0495)	(0.0515)
Trade	0.2796***	0.2888***
	(0.0334)	(0.0353)
GDP per capita growth - Source	-0.0550***	-0.0856***
	(0.0066)	(0.0090)
GDP per capita growth – Destination	-0.1143***	-0.0073**
	(0.0027)	(0.0031)
Exchange Rate – Source	-0.0345***	-0.0360***
	(0.0056)	(0.0055)
Exchange Rate - Destination	0.0015	0.0093**
	(0.0044)	(0.0045)
Financial depth – Source	0.0015***	0.0015***
	(0.0004)	(0.0005)
Financial depth - Destination	0.0035***	0.0036***
	(0.0004)	(0.0004)
Financial freedom – Source	0.0022**	0.0026**
	(0.0010)	(0.0011)
Financial freedom – Destination	0.0016**	0.0017**
	(0.0008)	(0.0008)
Observations	6,545	5,881
R-squared	0.9288	0.9333

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1
Column (2) excludes 2008 and 2009.

Those countries that participate in ERM-II experience an average increase in cross-border banking from the EMU of 36 percent compared to when they are not a part of ERM-II relative to

the other countries in the sample. This is higher than those NMS that do not participate in ERM-II. This is after controlling for the exchange rate régime, and thus the ERM-II effect is not wholly a result of the fixed exchange rate. The difference in flows to the NMS that are a part of ERM-II indicates that the potential to join the euro does play an important role in explaining the EU effect in the NMS. It does not, however, completely explain the EU effect, leaving an important role for the change in perceptions that comes purely as a result of joining the EU.

The disruption of the financial system as a result of the financial crisis which originated in the United States had a direct effect on credit market conditions in the NMS. Althammer and Haselmann (2011) present a model where unfavorable market conditions in emerging markets can lead to greater foreign bank intervention. In order to insure that these results are not overly influenced by this extraordinary event, equation one is estimated excluding 2008 and 2009. The second column of Table 3 contains these results.

The results are similar to those found when using the whole sample. The EU effect still remains and is larger for those that have entered ERM-II. The NMS euro effect has become insignificant, but these results should be views with caution. By the end of 2007 the only NMS that had joined the EMU was Slovenia and they did so in 2007. Thus the overall conclusions are not overly influenced by including the crisis years.

Conclusions:

Cross-border banking into the NMS has grown substantially in the last ten years. Theory suggests that the volume of cross-border banking is driven by market forces, collective action, and public action (De Haan et al., 2009). We explore how public action through membership in the EU and eventually the EMU influences cross-border banking into the NMS. Particular

attention is paid to the role of joining or potentially joining the EMU. Exploring the effect of the euro is justified by the fact that is euro has already been identified as an important factor in expanding cross-border banking among the original members of the EMU (Bekaert et al., 2010; Kalami-Ozcan et al., 2010; and Lane and Milesi-Ferretti, 2008).

We find that adopting the euro both for the original members of the EMU and the NMS increases cross-border banking. There is also a strong EU effect for the NMS once they join the EU. We explore the channels through which this change in policy and relationship between members affects cross-border banking. Trade, growth, exchange rate régime, financial depth, and less government intervention play an important role in explaining cross-border banking. These factors explain how the adoption of the euro led to increased cross-border banking among the original members of the EMU, but they do not fully explain the euro or EU effect on increased cross-border banking into the NMS from the EMU.

For these countries, adopting the euro alone explains much of the observed cross-border banking for the original members of the EMU. The adoption of the euro bolsters confidence in these NMS and provides a strong signal to EMU banks to expand into the NMS. This is also true, though at a lower magnitude, for the NMS once they enter the EU. The act of becoming a member of the EU influences EMU bank's confidence in the profitability of expanding into the NMS, beyond what the reduction in barriers and trade benefits of EU membership would justify. To measure what role the potential adoption of the euro plays in the EU effect, we split the NMS into those that have entered ERM-II and those that have not. The flows to the NMS that are a part of ERM-II are stronger than those that are not. This indicates that the potential to join the euro and the confidence it engenders plays an important role in explaining the EU effect in the NMS.

Though the results are specific to the NMS, they do seem to suggest that emerging markets or developing countries joining or preparing to join a currency union are perceived differently in the eyes of banks currently in the monetary union. It is still an open question as to whether being the recipient of more cross-border banking provides tangible benefits for the host country. Much of the current research, however, suggests that the current expansion in cross-border banking benefited the NMS, not only in mitigating some of the effects of the financial crisis, but in increased credit access, and the financial development of these countries (Allen et. al. 2011).

Notes:

1. The reporting countries are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

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Appendix

Table 1: Destination countries used in estimation

Country	Year EU	Year EMU	Country	Year EU	Year EMU
Albania			Lithuania	2004	
Austria	1995	1999	Macedonia		
Belgium	1993	1999	Malta	2004	2008
Belarus			Moldova		
Bosnia/Herzegovina			Netherlands	1993	1999
Bulgaria	2007		Norway		
Croatia			Poland	2004	
Cyprus	2004	2008	Portugal	1993	1999
Czech Republic	2004		Romania	2007	
Denmark	1993		Russia		
Estonia	2004	2011	Slovakia	2004	2009
Finland	1995	1999	Slovenia	2004	2007
France	1993	1999	Spain	1993	1999
Germany	1993	1999	Sweden	1995	
Greece	1993	2001	Switzerland		
Hungary	2004		Turkey		
Iceland			Ukraine		
Ireland	1993	1999	United Kingdom	1993	
Italy	1993	1999	United States		
Latvia	2004				
Luxembourg	1993	1999			