Monetary and Financial Integration:

Evidence from the EMU

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ABSTRACT

This paper examines the impact of European Monetary Union (EMU) accession on bilateral international commercial bank lending patterns. Using a difference-in-differences methodology, I demonstrate that accession to the EMU was accompanied by a change in Portuguese and Greek borrowing in favor of borrowing from their EMU partner nations. This extends the evidence in the literature that overall international borrowing is facilitated by the creation of a monetary union, and raises the possibility of financial diversion.

J.E.L. Classification Number: F15, F33

Keywords: Monetary union, financial integration, difference-in-differences

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1. Introduction

It is widely believed that monetary integration can lead to both enhanced trade and financial integration. Rose (2000) demonstrates a robust relationship between monetary integration and bilateral trade volumes. Considering financial integration, Blanchard and Giavazzi (2002) show that increases in the 1990s of the correlations between current account positions and per capita incomes of future European Monetary Union (EMU) countries exceeded those of non-EMU European Union (EU) countries, and further exceeded those of non-EU OECD countries, suggesting that monetary integration enhanced financial integration. Lane (2006a,b) finds evidence of a euro-area bias in international bond portfolio movements.

There are a number of reasons why monetary integration might enhance financial integration: First, monetary integration reduces currency risk in international lending between partner countries. Second, membership in a monetary union increases the penalty for default on lending [e.g. Gourinchas and Jeanne (2006)].

Europe's monetary integration took place at a time where goods and financial markets were also being liberalized. Blanchard and Giavazzi (2002) note that since the early 1990s the European Union has harmonized its safety requirements and enhanced its distribution networks. This has led goods produced in the EU to become closer substitutes, implying that borrowing EU nations would face smaller declines in their terms of trade if they needed to generate current account surpluses to service their debt obligations. Holding all else equal, this should enhance their borrowing capacity. Financial liberalization was also taking place within the EU, due to the elimination of capital controls and the adoption of new regulations which allowed European banks to

operate branches in foreign nations subject to their home-country laws [European Central Bank (1999)].

To examine the reasons why increased financial integration appears to follow increased monetary integration, it is useful to distinguish between source-neutral and source-specific increases in borrowing and lending opportunities. For example, the impact of increased goods market integration on potential adverse terms of trade effects would appear to make EMU nations safer borrowers from any nation, rather than just their EMU partners. Similarly, if sovereign defaults occur on all creditor nations simultaneously, as appears to have been the case historically, then the creditworthiness arguments stressed by Gourinchas and Jeanne (2006) would also appear to be source-neutral.[1] In contrast, if entering into a monetary union facilitates borrowing by reducing currency risk, then we should not only see increased overall borrowing, but also a relative increase in borrowing from the monetary union partner nations.

It follows that bilateral information on the pattern of increased borrowing and lending by EMU member nations could help to identify the channels by which monetary and financial integration are linked. In this paper, I move in this direction by examining the impact of accession to the European Monetary Union on bilateral commercial bank lending. I look for evidence that accession to the EMU increased the relative bilateral financial integration with the rest of the EMU, in addition to the impact on the overall financial integration identified in the literature. The analysis therefore extends the aggregate evidence on financial integration in Blanchard and Giavazzi (2002) and Lane and Milesi-Ferretti (2003).

[1] Of course, if default were selective, then the Gourinchas and Jeanne (2002) effect could also increase the relative amount of financial integration with EMU partner nations.

Consolidated data on bilateral foreign claims of reporting banks for twenty creditor countries and a large number of borrowing countries is available from the Bank for International Settlements (BIS) semi-annually from 1985.[2] Unfortunately, data on bilateral borrowing by the twenty creditor countries themselves was not released by the BIS prior to 1999. As the initial EMU partner nations tend to include prominent creditor countries, bilateral data is largely unavailable for these nations. For example, one cannot obtain commercial bank claims by the United Kingdom on France prior to the year 1999. As we are interested in assessing the impact of accession to the EMU on bilateral borrowing in that very year, this would appear to pose an insurmountable problem.

However, there are two exceptions. Portugal and Greece are not BIS creditor countries, so bilateral claims on lending to those countries from all twenty creditor nations are available semi-annually both before and after the launch of the EMU and Greece's subsequent accession. Disparities in lending to Portugal and Greece by EMU and non-EMU creditor countries before and after their accession to the union can therefore provide an indicator of the impact of the monetary union on financial integration within the regime.[3]

There is evidence in the literature that both Portugal and Greece became more financially integrated with the rest of the world in the 1990s. Blanchard and Giavazzi (2002) note that Portugal reached a current account deficit in the year 2000 equal to about

[2] The inclusion of conditioning variables reduces the sample of creditor countries to sixteen. The consolidated BIS figures may induce errors in measurement of cross-border obligations from a number of sources: First, the use of consolidated data may not correctly assign the risk of banks' foreign-branches. Second, "outward risk transfers" are sometimes used to transfer risks to residents of other countries, and this data set would not pick these up. Still, as these errors fall in the regressand of the specification they only make the effect of EMU accession harder to find and do not appear to introduce any bias issues.

[3] This paper updates an earlier version [Spiegel (2004)], which concentrated primarily on integration from Portugal, as Greece's accession was relatively recent.

10 percent of its GDP, while Greece reached a similar deficit between 6 and 7 percent of GDP in that year. These deficits had increased for these new and soon-to-be European Monetary Union (EMU) members from 2-3 and 1-2 percent respectively at the start of the decade. Lane and Milesi-Feretti (2003) report that external liabilities as a share of GDP grew 51.3 percent for Portugal from end 1996 through end-2000.

Blanchard and Giavazzi characterize their findings as an extension of Rose (2000), arguing that they suggest that monetary union also facilitates inter-temporal trade by allowing nations to run larger positive or negative current account balances. They describe the large increase in borrowing by new partner nations as a "natural" outcome of increased international integration, as capital flows more freely as a result of the integration from rich to poor countries.[4]

In this paper, I investigate the impact of the launch of EMU on bilateral borrowing patterns using a difference-in-differences specification. I compare the changes in bilateral commercial bank borrowing by Portugal and Greece from EMU-partner nations and non-EMU partner nations before and after their respective EMU accession in 1999 and 2001.[5]

The difference-in-differences methodology has been used in a variety of applications to examine the impact of a policy intervention by establishing a control group to compare with the observed changes in the "treatment" group. In an international context, the difference-in-differences methodology has commonly been applied to compare a set of countries adopting some policy change with a control group that did not

[4] Blanchard and Giavazzi also emphasize the role of domestic financial integration in the explosion in Portugal's current account deficit, but it is unclear that this channel would play a role in skewing the mix of international borrowing toward the EMU-partner creditor countries.

[5] For an overview of the difference-in-differences methodology, see Blundell and Macurdy (2000).

adopt the policy change. For example, Slaughter (2001) examines the impact of the adoption of trade liberalization policies by nations on income convergence in a difference-in-differences specification.

There might be some concern that our EMU borrowing nations may not be representative, particularly during the time of Europe's monetary integration. At the time of the EMU formation, Portugal was a relatively new member of the European Union, having only entered in 1986. Moreover, in 1984 the nation had embarked on an extensive financial reform program, authorizing new private entry into the banking system, and eventually privatizing 11 of the 12 state-owned banks that had previously dominated the banking system [Canhoto and Dermine (2003)]. However, it is unclear why this financial liberalization would act in favor of borrowing from EMU partner-nation banks at the expense of non-EU and EU-non-EMU banks. If anything, one would think that regulatory forces that might encourage borrowing from EMU partner nation banks would be mitigated by financial reforms.

In the case of Greece, on might be concerned that the country's increased borrowing capacity may stem from the substantial macroeconomic reforms in efforts it achieved to meet the Maastricht criteria for admission to the Union during the 1990s. Alternatively, there might be some concern that the increase observed in borrowing from EMU members might reflect a reduction in borrowing capacity during the period of disinflation prior to EMU accession. However, as in the Portuguese case, these factors

appear relevant to overall borrowing capacity, rather than the relative volume of borrowing from EMU.[6]

The relatively small size of these economies may also be advantageous from an econometric point of view. A common misgiving with difference-in-differences tests is that the membership in the group experiencing the intervention is dependent on the anticipated benefits of the intervention [e.g. Besley and Case (2000)]. In this case, the analysis would be distorted if the decision by EMU creditor countries to join the monetary union was affected by anticipated increased integration with Portugal and Greece. However, since the quantity of international borrowing by these countries is small relative to lending by most of the euro-area creditor nations, that concern does not seem to be relevant here.

The results below demonstrate a statistically significant positive relationship between EMU integration and bilateral lending within the monetary union. Moreover, our estimates also appear to be significant economically, as the point estimate on EMU integration indicates that being in a monetary union with Portugal or Greece almost triples the expected level of bilateral lending to those countries, holding all else equal. These results are robust to a number of sensitivity tests, including instrumenting for the possible endogeneity of bilateral trade, choosing earlier dates for the timing of "monetary integration," treating pre and post integration observations as single observations to account for possible serial correlation in the data, and dividing the data into Portuguese and Greek sub-samples.

[6] Moreover, the disinflation from 1994 to the end of the decade was not accompanied by a decline in economic activity. Real GDP growth increased to 2.8 percent from 1994 through 1999, up from 1 percent during the 1991-1994 period [Papaspyrou (2004)]

The remainder of this paper is organized into six sections. Section 2 provides some background on the events surrounding Portuguese and Greek accession to the EMU. Section 3 discusses the empirical specification and the data used in the study. Section 4 discusses our initial results. Section 5 conducts some robustness tests. Section 6 concludes.

2. Portugal and Greece's Accession to the EMU

The major events surrounding the creation on the EMU are listed in Table 1. These events are well-known and have been summarized by the European Central Bank as taking place in three stages: The first stage stretched from the confirmation of the Delors report in 1989 calling for economic and monetary union, through the ratification of the Maastricht Treaty at the end of 1993. The second stage formally began with the establishment of the European Monetary Institute in 1994. Important developments in this stage included the determination of the January 1999 starting date in December 1995, the adoption of the Stability and Growth Pact in June 1997, and the announcement that the 11 original member countries were qualified for initial entry into the EMU in 1999. Of course, Stage three began in January 1999 with the EMU's launch. For our purposes here, it is important to note that the long process leading up to the EMU implied that Portugal's entry into the union was widely anticipated, and likely led to a response in lending patterns long before the formal union launch date.

Portugal was a relatively late entrant into the European Community in 1986. This accession was accompanied by extensive liberalization of the nation's financial markets, which moved the country quickly from a completely-nationalized banking system to one

with almost exclusive privatized banking [Canhoto and Dermine (2003)]. At the time when private banking was authorized in 1984, the banking sector consisted of 12 state-owned institutions, one domestic savings bank and three foreign banks. Moreover, the Portuguese government was using the distorted banking sector as an important revenue source to finance its large fiscal deficit.[7] By 1996, all of the state-owned banks except one had been nationalized and the domestic banking sector included thirteen foreign banks and seven new chartered private banks.

Portugal's accession to the EU also required the elimination of its capital controls and allowed banks from EU creditor nations to open branches within its borders subject to their home-country regulations. This increased competition across banks in the European Union [e.g. European Central Bank (1999)] and eased terms faced by Portuguese borrowers. Subsequent to Portugal's entry into the EMU, Portuguese banks also enjoyed access to the liquid euro inter-bank loan market, where the common currency implied that neither lenders nor borrowers faced the currency risk commonly associated with international lending. The net indebtedness of Portuguese banks in 2000, 10.7 percent of GDP, exceeded its large current account deficit in that year.

Turning to the Greek experience, Greek inflation stood at 11% in 1994, when it began tightening monetary policy. In 1995, the Bank of Greece adopted a "hard drachma" policy, adopting specific exchange rate targets to achieve convergence. The depreciation in the exchange rate against the European Currency Unit was limited to 3%, and Greece joined the ERM in 1998. By 1999, Greece had satisfied the Maastricht

[7] The taxation of the banking sector took place through a scheme whereby banks were forced to hold excess reserves at terms extremely favorable to the government. See Borges (1990) for details.

convergence criterion for inflation. In June 2000 the European council announced that Greece had fulfilled the conditions for joining the Union, which it did in January 2001. For both of these countries. Events leading up to their accession to the monetary union could have made them more attractive borrowers and may independently account for part of the increase in overall Portuguese and Greek borrowing subsequent to accession. However, as discussed above, it is unclear why these developments would tilt the pattern of borrowing towards their monetary union partners.

3. Empirics

3.1 Difference-in-differences specification

I begin with a standard difference-in-differences specification. Our sample consists of a group of N creditor nations, indexed by $i = 1,...,N$, observed over T periods, $t = 1,...,T$ and 2 debtor countries, Portugal and Greece, indexed by $j = 1,2$. Let EMU_{ijt} be our "policy indicator" variable. $EMU_{ijt} = 1$ if creditor country i and debtor country j were in the monetary union at time t.[8] Let L_{ijt} represent the log of country j borrowing from country *i* at time *t.*

Following Rose and Spiegel (2004), I embed a difference-in-differences specification in a gravity specification for cross-country lending. The specification satisfies

$$L_{ijt} = c + \phi_t + \theta_i + \gamma_j + \beta_1 EMU_{ijt} + \beta_2 X_{ijt} + \varepsilon_{ijt} \qquad (1)$$

[8] Below, we conduct some sensitivity analysis tests concerning whether the impact of the creation of the monetary union may have occurred earlier than 1999. In these cases, $EMU_{ijt} = 1$ if nations i and j are EMU partner nations and t is greater than or equal to our posited earlier dates of regime change.

where ϕ_t, θ_i, and γ_j represent fixed time and creditor country effects, X_{ijt} is a vector of conditioning variables, discussed below, and ε_{ijt} is an i.i.d. disturbance term.

The difference-in-differences methodology has been used in a wide variety of studies examining the impact of a policy change. The intuition for this specification is that the control group included in the sample provides information on how the experimental group would perform in the absence of the policy intervention.

One concern commonly associated with difference-in-differences exercises [e.g. Besley and Case (2000)] is that the identities of the policy and control groups are endogenous to the anticipated impacts of the policy change. This is particularly true for cross-country studies. However, as discussed above, this does not appear to be a particular concern in our study because of the limited sizes of Portugal and Greece relative to the rest of the EMU nations. Nevertheless, difference-in-differences exercises have received a high degree of scrutiny because of the restrictive assumptions implicit in specifications such as that in (1). I therefore conduct a number of robustness checks to address a variety of potential econometric concerns with this specification below.

3.2 Data

I use consolidated BIS data on foreign claims of reporting banks for sixteen creditor countries on Portugal from the second quarter of 1985 through the fourth quarter of 2006. The creditor countries in the sample include Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Norway, Spain, Sweden,

[9] The specifications were also run with random country effects with similar results. These are available on request.

Switzerland, United Kingdom, and the United States.[10] The data is available semi-annually.[11] All data is converted to 2000 real U.S. dollars, deflated by the consumer price index.

The dependent variable is L_{ijt}, the log of country j borrowing from creditor country *i* at time *t*. Many of the bilateral claims are reported to be zero. This leaves the log transformation potentially influential and questionable. I therefore examine the robustness of the results to avoiding this transformation below.

Our conditioning variables include $DIST_{ij}$, the log of distance between creditor country *i* and the debtor country; $GREECE_j$, a dummy variable that takes value 1 if debtor country j is Greece and 0 otherwise; EC_i, a dummy variable that takes value 1 if creditor country *i* is a European Community member, and value zero otherwise; GDP_{it}, the log of total real gross domestic product of creditor *i* at time *t;* GDP_{jt} the log of total real gross domestic product of debtor j at time *t;* GDP/POP_{jt}, the log of real gross domestic product per capita of debtor j at time *t;*, $LOANS_{it}$ the log of total foreign commercial bank claims of creditor *i* at time *t;* $TRADE_{ijt}$ the log of total real bilateral trade between creditor country *i* and debtor country j at time *t;* $BORDER_{ij}$ a dummy variable that takes value 1 if countries *i* and j share a border, and 0 otherwise, $LANDLOCKED_i$, a dummy variable that takes value 1 if creditor country *i* is landlocked,

[10] Missing observations in the data are treated as missing in the sample. Creditor countries with missing observations include Canada 1999 Q2; Denmark 1999 Q2, 2000 Q2, 2000 Q4; Italy 2001 Q4; and Norway 1999 Q2. Norway also had missing data from 1985 Q4 to 1993 Q4.

[11] Data are for second and fourth quarters. Data is available quarterly beginning in 1999, but cannot be used for a difference-in-differences exercise at that frequency as the intervention also occurred in 1999.
[12] The only landlocked nations in our sample are Austria and Switzerland.

and 0 otherwise; $ISLAND_i$, a dummy variable that takes value 1 if creditor country *i* is an island, and 0 otherwise; $AREA_i$, the log of the land area of creditor country i; and $COMMONLAW_i$ and $FRENCHLAW_i$, dummy variables that take value 1 if creditor country i has a common law-based legal system or one based on French law, respectively, and 0 otherwise.

Concerning the conditioning variables, data for $DIST_i$, $BORDER_{ij}$, $LANDLOCKED_i$, $ISLAND_i$, $AREA_i$, $COMMONLAW_i$, and $FRENCHLAW_i$ came from Rose (2005). Data for GDP_{it} and GDP/POP_{it} came primarily from the World Development Indicators 2006; these series were extended using data from the International Monetary Fund's *International Financial Statistics.* $TRADE_{ijt}$ is the total value of exports and imports in 2000 US dollars between country *j* and country *i* at time *t* using export and import data from the International Monetary Fund's *Direction of Trade Statistics.*[13]

Shares of bilateral borrowing by Greece and Portugal from their EMU partners is depicted in Figure 1, with summary statistics shown in Table 2. Bilateral lending patterns reveal a movement away from non-EC nations and towards the EMU partner nations in our sample. Borrowing from non-EC countries comprised 61.2% of Portuguese borrowing during the 1985-1991 period and 60.0% of Greek borrowing during the 1985-1991 period. Subsequent to accession to the EMU, that share fell to 8.3% for Portugal

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[13] Trade data were missing for Belgium from 1985 to 1996 while total trade between Belgium and country *j* equaled zero in 1997 and 1998. This means that Belgium was listed as missing total trade data in logs for the period 1985Q2 to 1998Q4.

[14] Trade data was missing for Belgium from 1985 to 1996 while total trade between Belgium and Portugal equaled zero in 1997 and 1998. This means Belgium was listed as missing total trade data in logs for the period 1985 Q4-1998 Q4.

and 31.6% for Greece. In contrast, the share of borrowing from the EMU-partner nations in the sample more than doubled for both countries, increasing from 21.1% of overall borrowing in the initial period to 70.7% of overall borrowing for Portugal after 1999, and from 21.9% in the initial period to 53.1% after 2001 for Greece. The impact of EMU accession on the share of borrowing from non-EMU EC countries was mixed. Shares of borrowing from non-EC countries rose from 17.7% of overall borrowing in the initial period to 21.0% subsequent to EMU accession in the case of Portugal, but fell from 18.1% to 15.3% in the case of Greece.

These figures suggest that the brunt of the increased EMU-partner market share came at the expense of non-EC competitors, which could be considered a form of "financial diversion," analogous to the diversion of trade away from outsiders subsequent to the formation of trade unions.[15] However, the data show that while non-EMU EC countries lost market share, their stock of outstanding loans dramatically increased, six-fold for Portugal and nine-fold for Greece.[16] These increases corresponded to the huge current account deficits run by both of these countries subsequent to EMU accession documented in Blanchard and Giavazzi (2002), and suggest that the increased borrowing ability of Portugal and Greece after accession more than compensated non-EC creditors for their lost market share.

As mentioned above, the long process leading up to the EMU was likely to lead to a response in lending patterns long before the formal union launch date. Looking at the

[15] The relatively strong performance of the non-EMU EC group was primarily driven by lending from the United Kingdom. The share of lending from the United Kingdom to Portugal grew from 34.5% in the initial period to 42.1% after accession, while the share of U.K. lending to Greece fell modestly, from 34.5% to 33.7%. In contrast, share of lending from remaining non-EMU EC members fell from 3.0% to 0.8% and from 3.4% to 0.9% for Portugal and Greece respectively over the same periods.

[16] Couerdacier and Martin (2006) find similar results for Sweden, as the introduction of the euro induced more trade in bonds between Sweden and the euro area at the expense of the other Nordic countries.

changes in market share in the various periods in our sample in Figure 1, it is clear that lending patterns from prospective EMU-partner countries changed dramatically long before the EMU's formal launch.

The reasons behind this anticipatory effect are beyond the scope of this paper. It may reflect an effort by EMU member-country banks to establish market share at the expense of other EMU member-country banks under the expectation (which proved correct) that the pattern of member-country borrowing would shift towards EMU-partner nations subsequent to the launch of the monetary union. Alternatively, it may imply that the relative riskiness of borrowing from member states to other potential creditors had changed prior to formal EMU launch. In particular, currency risk exposure associated with borrowing in other EMU member currencies were probably reduced along to the path to Maastricht convergence. For our purposes, it reveals that we must careful about timing the date of the EMU policy intervention. Below, we establish that our results are robust to the designation of alternative earlier events in the history of accession to the EMU as the timing of the policy change.

An additional possibility is that the increased borrowing from monetary union partners resulted from the increased trade within the union subsequent to accession, as in Rose (2000). We condition for the impact of trade volumes below, even instrumenting for the likely endogeneity of trade volumes to country characteristics. However, Table 2 provides an indication that the effect of trade is unlikely to be the driving force behind our results. While the EMU-partner countries did gain market share on overall trade with Portugal and Greece subsequent to those countries' accessions, the increases were nowhere near the size of the increased market share in borrowing. The share of EMU

partner countries in total trade grew from 68.2% in our initial period to 80.6% subsequent to EMU accession. The increase in the market share of EMU-member trade with Greece was particularly modest, only rising from 73.0% to 74.0%.

Bilateral lending to Portugal and Greece from the individual EMU-partner nations is shown in Table 3. Growth in lending across the EMU partner nations in the sample were quite heterogeneous. The gains in bilateral lending to Portugal were primarily enjoyed by banks originating in Germany, Italy, the Netherlands, and Spain. Combined, the share of borrowing by Portugal from these four nations increased from 17.6 percent for the pre-1991 period to 69.4 percent for the post-1999 period. Spain in particular experienced an increase from a 4.9 percent lending share to Portugal to a 33.9 percent share.[17] EMU-member Countries with significant increases in Greek exposure include Germany and the Netherlands again, as well as Belgium. Italy actually lost market share.

4. Results

Results are shown in Table 4. Estimation is by ordinary least squares with heteroskedasticity correction and clustering of errors by creditor country. All models include the $DIST_{ij}$ and EC_i variables and the $GREECE_j$ dummy. In addition to those, Model 1 reports the results with the EMU_{ijt} variable alone. Model 2 adds the time-varying creditor country conditioning variables, GDP_{it}, GDP_{jt}, GDP/POP_{jt}, $LOANS_{it}$, and $TRADE_{ijt}$, while Model 3 adds the other time-invariant conditioning variables, $BORDER_{ij}$, $LANDLOCKED_i$, $ISLAND_i$, $AREA_i$, $COMMONLAW_i$, and

[17] The Spain experience is interesting, because any geographic advantages enjoyed by Spain clearly existed prior to monetary integration. The results therefore suggest that integration may reinforce the importance of distance advantages.

$FRENCHLAW_i$. Models 4 and 5 repeat Models 2 and 3 respectively with the likely endogenous $TRADE_{ijt}$ variable removed. As such, these specifications can be considered "reduced form" specifications, while we pursue an explicit instrumental variables exercise below. Finally, Model 6 repeats the full specification with the dependent variable measured in levels. All specifications include creditor and time dummies.

The primary result is that our variable of interest, EMU_{ijt} enters robustly at a positive and statistically significant level in all of our specifications. Moreover, the estimated coefficient value for the specification in logs suggests economic significance, as the parameter estimate ranges from a low level of 0.92 in Model 2 to a high of 1.08 in Model 1. To interpret the magnitude of that coefficient, consider that in our sample period the average level of Greek borrowing from an individual creditor country was approximately 20.7 in logs. An increase of 1.00 in logs (which approximates the midpoint of our estimated coefficient values) would correspond to a predicted increase in borrowing from a random creditor country from 977 million dollars to 2.7 billion dollars, almost triple the initial average value. Similarly, predicted Portuguese borrowing from a single creditor country given and increase in logs of 1.00 would increase from approximately 723 million dollars to 1.97 billion dollars. Finally, the results in Model 6 demonstrate that the positive and significant result for this variable is robust to measurement in levels rather than logs.

Concerning the conditioning variables, the $DIST_{ij}$ variable is consistently negative and statistically significant, as would be expected. The lone exception is model 4, in which distance enters close to a 10% significance level. Moreover, when the $TRADE_{ijt}$ variable, which is likely to be collinear with distance, is dropped in Model 6,

the $DIST_{ij}$ variable is significant at a 5% confidence level. In contrast, the EC_i variable is surprisingly non-robust, switching from positive to negative values depending on the specification. However, one must remember that these specifications include country fixed effects, leaving the interpretation of the EC_i variable difficult in light of the fact that the status of all countries with respect to the European Union remained unchanged for the course of the sample.

For the time-varying conditioning variables, the GDP_{it} variable tends to enter positively, as would be expected, but is always insignificant. The GDP_{jt} variable is negative, and statistically significant at a 10% confidence level when the $TRADE_{ijt}$ variable is excluded. This result would be consistent with borrowing motivated by the desire to smooth consumption. However the GDP/POP_{jt} variable tends to be positive.[18] The $LOANS_{it}$ variable also enters robustly positively, suggesting that countries borrow more from creditor countries that are engaging in more lending generally. Finally, the $TRADE_{ijt}$ variable is positive and statistically significant, confirming the results of Rose and Spiegel (2004) that countries tend to borrow more from the creditor countries with whom they have more trade.

Turning to the time-invariant conditioning variables, the $BORDER_{ij}$ variable enters positive and significantly. The coefficient estimate on the border variable is even larger that the one we obtain for monetary union membership. The remaining time-

[18] The correlation coefficient between these two variables in our sample is only 0.19, which suggests that collinearity between these two variables is not driving this relationship.

invariant conditioning variables, $LANDLOCKED_i$, $ISLAND_i$, $AREA_i$, $COMMONLAW_i$, and $FRENCHLAW_i$ are insignificant.

In summary, our results identify a statistically significant and economically important role for monetary union. The data also clearly reveal a role for geography in the determination of financial flows, confirming earlier findings, but our result concerning monetary union is robust for conditioning for these geographic characteristics.

5. Robustness Checks

5.1 Earlier Intervention Dates

As mentioned above, our borrowing nations' entries into the EMU were anything but surprises, as both the movement of the partner nations towards EMU and the progress of Greece towards joining the Union were closely followed by both policy makers and the media. This would be a problem for our difference-in-differences specification if lending patterns changed in anticipation of the EMU accessions of our borrowing countries prior to the dates where actual accession took place. To investigate this possibility, I repeat the specification in models 1 and 3 for earlier break dates.

I examine four alternative earlier intervention dates: The first two dates correspond to changes five and three years before EMU accession respectively. $EMU9496_{ijt}$ is an intervention dummy that equals one if the borrower country is Portugal, the creditor country is an EMU partner nation, and the time period is after the beginning of 1994, or if the borrower country is Greece, the creditor country is an EMU partner nation, and the time period is after the beginning of 1996, and 0 otherwise.

$EMU9698_{ijt}$ is similar, equaling one for pairs of EMU partner creditors and Portugal after 1996 and Greece after 1998, and 0 otherwise. Using the specifications from Models 1 and 3 in Table 4, these correspond to Models 1 through 4 in Table 5.

The second two dates correspond to five and three years prior to the launch of the EMU in 1999. $EMU94_{ijt}$ equals 1 for EMU creditor countries beginning in 1994, and 0 otherwise, while $EMU96_{ijt}$ equals 1 for EMU creditor countries beginning in 1996, and 0 otherwise.

The results with these alternative intervention dates are shown in Table 5. It can be seen that the intervention variable is again positive and significant for all of the specifications. Moreover, the estimated coefficient value is of comparable magnitude, suggesting an economically significant impact of the anticipated EMU accession.

The performances of the conditioning variables are also similar. The geography variables, $DIST_{ij}$ and $BORDER_{ij}$, again enter significantly with their predicted negative and positive signs respectively. We again obtain significant negative coefficients on GDP_{jt} and significant positive coefficient estimates on GDP/POP_{jt}, as well as a positive and significant coefficient on $LOANS_{it}$. The remaining conditioning variables enter insignificantly for most specifications.

5.2 Instrumental Variables

It is possible that a creditor country's bilateral trade with a nation is influenced by its intensity of lending to that nation for a number of reasons: First, countries with credit relationships are likely to enjoy information advantages that may spill over to trade

interactions, giving exporters from creditor countries with more lending a competitive edge over those from nations with less financial contact. Second, it is likely that banks with experience extending credit to a country would be better placed to underwrite loans to other exporters from that country, potentially encouraging bilateral trade.

These issues raise the possibility of endogeneity in the $TRADE_{ijt}$ regressor. To address this endogeneity I use four of the geographic variables, $BORDER_{ij}$, $LANDLOCKED_i$, $ISLAND_i$, and $AREA_i$, as instrumental variables for bilateral trade. I do not use the $DIST_{ij}$ variable as an instrument, as that variable has been shown to influence financial flows as well [e.g. Portes and Rey (2005)]. I drop these variables from the second stage equation, leaving the remaining variables as controls. I then repeat the instrumental variables estimation for earlier intervention dates. Finally, as a robustness check concerning the instruments used, I also used lagged values of the time-varying conditioning variables, including GDP_{it}, GDP/POP_{jt}, $LOANS_{it}$, and $TRADE_{ijt}$, with and without including the time-invariant conditioning variables in the specification.

The results for instrumental variables estimation are shown in Table 6. Model 1 displays both the first and second stage estimation results for the default specification.[19] Among the instrumental variables, it can be seen that the $BORDER_{ij}$ variable is statistically significant, with its expected positive sign. Other statistically significant variables include creditor GDP and the $GREECE_j$ dummy.

Turning to the second stage results, it can be seen that the EMU variable enters positively and significantly in all of our specification, with coefficient values similar in

[19] First stage results for the other specifications are available on request.

magnitude to those above. This includes the results for earlier intervention dates, as well as those using the alternative lagged values of the time-varying conditioning variables as instruments. Other results are similar, with the only variable robustly entering at statistically significant levels with its expected sign being the $LOANS_{it}$ measure.

5.3 Serial correlation

Finally, there is the issue of serial correlation in conventional difference-in-differences applications discussed by Bertrand et al (2004). As Bertrand et al demonstrate, the high degree of serial correlation in both the dependent and policy variables commonly used in panel difference-in-differences exercises typically leads to an overstatement of the number of independent observations in one's sample.

A simple robustness check advocated by Bertrand, et al to deal with this issue is to remove the time dimension in the sample by aggregating the data into two time periods. This approach can only work for applications where the treatment is supplied simultaneously, which is uncommon in the literature examining, for example, passage of minimum wage laws across states. Nevertheless, this condition is clearly met in the case of accession to EMU, at least for the creditor countries in our sample. All of the nations in our sample entered the EMU on the same date or failed to enter at all.

The results with observations collapsed into one before and after for each creditor country are shown in Table 7 using both OLS estimation and instrumental variables. As before, we report the IV estimation with and without the inclusion of the time-invariant conditioning variables in the second stage.

It can be seen that the number of observations is rather small (63), but the intervention variable again enters significantly positive using both estimation methods with similar coefficient estimates. This suggests that our primary result is robust to accounting for the possibility of serial correlation in the data.

5.4 Pooling across countries

One potential problem unique to our specification is that the EMU accession took place in Portugal and Greece on different dates. This violates the commonly held restriction [e.g. Blundell and MaCurdy (2000)] that the composition of the treatment and control groups remain stable over the sample period, as the treatment group only includes bilateral lending to Portugal from 1999 through 2001, but then includes bilateral lending to both Portugal and Greece afterwards.

One easy way to address this concern, as well as other issues that could arise with pooling across debtor countries, is to split the sample by debtor country. This is done is Table 8. Because we only have lending to one debtor country at a time, and we include time dummies, we drop the debtor GDP variables. We report both OLS and IV results, again using the time invariant creditor characteristic dummies as instruments.[20]

Our results are shown in Table 8. It can be seen that the intervention variable continues to enter positively at standard significance level, although the intervention variable is only significant at a 10% confidence level for Greece is our OLS estimation.

[20] We also drop the $BORDER_{ij}$ variable for the two sub-sample, as none of our creditor countries share a border with Greece, and only Spain shares a border with Portugal.

[21] The Greek results were also robust to the specification of earlier intervention dates, including the beginning of 1999, the launch of the EMU, and 1996, the announcement of the 1999 launch date. These results are available from the author on request.

6. Conclusion

This paper provides evidence from bilateral borrowing patterns of Portugal and Greece before and after their accession to the EMU. Our results indicate that accession led to skewing their borrowing towards their EMU-partner nations and away from non-partner nations. This extends the literature that demonstrated that overall borrowing increased dramatically as a result of Portuguese accession to the European Monetary Union.

The results therefore strongly suggest that monetary integration facilitates financial integration. Moreover, these results suggest that the enhanced borrowing opportunities are not "source-neutral," such as the impact of joining the EMU on overall borrower safety, but rather are skewed towards enhanced borrowing opportunities from monetary union partner nations. As discussed in the introduction, these might include enhanced default penalties from monetary union partners or the reduced currency risk associated with lending to monetary union partners.

The potentially dark side of these enhanced borrowing opportunities is the financial diversion away from non-partner creditor countries. The evidence of financial diversion in this study suggests that one should be cautious in concluding that the enhanced financial integration resulting from the monetary unions was unambiguously welfare enhancing. Just as in the case of trade diversion, the possibility of diversion in the provision of financial services implies some chance of welfare reduction for these nations. Non-EMU commercial banks appear to have suffered some losses from their reduced market share in lending to these countries.

It seems more likely, however, that the financial diversion effect is the result of true cost reductions in borrowing from monetary union partner nations, such as those that would emerge from a reduction in currency risk associated with international borrowing. If this were the case, it would be likely that the "global welfare" from monetary integration would be increased by considering the impact on financial integration.

It should also be noted that the large change in the pattern of lending observed in this paper does not necessarily imply large welfare gains. A representative Portuguese or Greek borrower could have been almost indifferent between borrowing from an EMU partner nation and someone outside the EMU prior to accession, but the reduced currency risk subsequent to accession could tip the loan to the EMU-partner creditor. In this case, the dramatic change in the pattern of lending observed above may not imply a significant welfare gain. However, the large increase in the overall current account deficits experienced by both Portugal and Greece subsequent to accession suggests that accession did convey a significant increase in overall borrowing capacity. Consequently, one would expect that the enhanced borrowing opportunities afforded by accession conferred non-trivial welfare gains.

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Table 1: Events Surrounding European Monetary Integration

6/89	European Council Confirms Delors Report Outlining Steps for Achieving Monetary Union
6/90	Restrictions on capital movements between member states abolished
12/91	Maastricht Treaty on European Union Announced
11/93	Treaty Ratified; Protocol of European System of Central Banks and European Monetary Institute Established
1/94	European Monetary Institute Established
12/95	Launch Date for Establishment of Euro Established
12/97	Adoption of Stability and Growth Pact
5/98	Euro-11 Countries Announced
1/99	European Monetary Union Launched
6/00	EU Council Decides Greece Qualified for EMU Admission
1/01	Greece Enters EMU
1/02	Introduction of euro notes and coins

Table 2: Summary Statistics

1. Commercial Bank Exposure				2. Trade		
	Pre-EMU		Post-EMU	Pre-EMU		Post-EMU
Portugal						
	1985-1991	*1992-1998*	*1999-2006*	*1985-1991*	*1992-1998*	*1999-2006*
Non-EC Countries	1,743 (61.2%)	965 (21.8%)	1,216 (8.3%)	924 (16.9%)	1,035 (13.2%)	1,058 (11.4%)
Non-EMU EC Countries	505 (17.7%)	675 (15.3%)	3,089 (21.0%)	1,829 (33.5%)	2,278 (29.0%)	2,144 (23.1%)
EMU Countries	601 (21.1%)	2,782 (62.9%)	10,406 (70.7%)	2,709 (49.6%)	4,537 (57.8%)	6,071 (65.5%)
Total	2,849	4,423	14,711	5,463	7,851	9,272
Greece						
	1985-1991	*1992-2000*	*2001-2006*	*1985-1991*	*1992-2000*	*2001-2006*
Non-EC Countries	2,610 (60.0%)	2,239 (35.9%)	5,215 (31.6%)	684 (19.5%)	739 (16.8%)	909 (17.8%)
Non-EMU EC Countries	788 (18.1%)	1,747 (28.0%)	2,526 (15.3%)	833 (23.7%)	1,177 (26.7%)	1,254 (24.5%)
EMU Countries	953 (21.9%)	2,255 (36.1%)	8,779 (53.1%)	1,997 (56.8%)	2,486 (56.5%)	2,955 (57.7%)
Total	4,352	6,241	16,521	3,513	4,403	5,118

Notes: Source: Bank for International Settlements (BIS). Annual averages of millions of 2000 U.S. dollars. EMU creditor countries in the sample include Austria, Belgium, Finland, France, Germany, Italy, Netherlands, and Spain. Non-EMU EU creditor countries include Denmark, Sweden, and the United Kingdom. Non-EU creditor countries include Canada, Japan, Norway, Switzerland, and the United States.

Table 3: Bilateral Lending to Portugal and Greece by EMU-partner Countries

	Portugal			Greece		
EMU Countries	**1985-1991**	**1992-1998**	**1999-2006**	**1985-1991**	**1992-2000**	**2001-2006**
Austria	156 (1.2%)	352 (1.2%)	733 (0.8%)	769 (3.8%)	711 (2.1%)	1,907 (2.0%)
Belgium	652 (4.9%)	1,667 (5.8%)	5,307 (5.4%)	391 (1.9%)	936 (2.8%)	7,763 (8.3%)
Finland	56 (0.4%)	15 (0.1%)	72 (0.1%)	197 (1.0%)	96 (0.3%)	120 (0.1%)
France	1,596 (12.0%)	3,487 (12.1%)	9,342 (9.6%)	2,803 (13.7%)	5,003 (14.9%)	14,057 (15.0%)
Germany	1,132 (8.5%)	6,347 (22.0%)	21,879 (22.4%)	2,157 (10.6%)	6,538 (19.5%)	27,106 (28.8%)
Italy	336 (2.5%)	1,103 (3.8%)	6,974 (7.1%)	590 (2.9%)	1,704 (5.1%)	1,781 (1.9%)
Netherlands	225 (1.7%)	1,022 (3.5%)	5,825 (6.0%)	526 (2.6%)	2,084 (6.2%)	10,499 (11.2%)
Spain	652 (4.9%)	8,267 (28.7%)	33,118 (33.9%)	194 (0.9%)	967 (2.9%)	1,169 (1.2%)

Note: Source: BIS. Annual averages of millions of 2000 U.S. dollars. Terms in parentheses represent average share of total borrowing by debtor nation from reporting creditor nation.

Table 4: OLS Results

Dependent Variable: L_{ijt}

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	34.80***	95.76	90.74	77.80	69.00	-6.71e+08
	(2.95)	(65.58)	(63.10)	(64.13)	(62.22)	(2.89e+09)
EMU_{ijt}	1.08***	0.92**	0.95**	0.93**	0.95**	3.29e+09***
	(0.35)	(0.33)	(0.33)	(0.32)	(0.32)	(1.00e+09)
$DIST_{ij}$	-1.61***	-1.24***	-0.75	-1.61***	-0.92**	1,727,765
	(0.34)	(0.30)	(0.43)	(0.34)	(0.43)	(2,191,088)
EC_i	-5.50***	2.49	0.49	-1.14	-4.02	4.83e+08
	(0.76)	(5.60)	(0.57)	(0.65)	(3.76)	(5.70e+08)
$GREECE_j$	0.85***	1.35***	1.22***	1.18***	1.07***	1.02e+09
	(0.13)	(0.31)	(0.32)	(0.31)	(0.31)	(7.85e+08)
GDP_{it}		1.20	1.46	1.86	1.90	-0.00*
		(1.48)	(1.47)	(1.45)	(1.46)	(0.00)
GDP_{jt}		-7.40*	-7.41*	-6.74	-6.54	0.13*
		(3.99)	(3.98)	(4.10)	(4.04)	(0.07)
GDP/POP_{jt}		6.62*	6.68*	6.20	6.01	-1,381,193*
		(3.56)	(3.54)	(3.65)	(3.59)	(691,602)
$LOANS_{it}$		0.75***	0.76***	0.78***	0.78***	0.01***
		(0.18)	(0.18)	(0.17)	(0.17)	(0.00)
$TRADE_{ijt}$		0.35*	0.22			2.40**
		(0.17)	(0.16)			(1.07)
$BORDER_{ij}$			1.28**		1.42**	3.18e+09
			(0.58)		(0.55)	(4.95e+09)
$LANDLOCKED_i$			-0.92		3.30	-1.38e+08
			(1.14)		(3.19)	(1.61e+09)
$ISLAND_i$			-3.76		-4.75	-7.89e+09
			(5.06)		(4.99)	(8.94e+09)
$AREA_i$			-0.00		-0.00	-878.52
			(0.00)		(0.00)	(1,384.00)
$COMMONLAW_i$			0.35		5.28	4.62e+09
			(1.46)		(5.31)	(9.16e+09)
$FRENCHLAW_i$			-3.92		3.81	-2.59e+09
			(3.50)		(2.90)	(1.66e+09)
Observations	1331	1237	1237	1293	1293	1293
R-squared	0.82	0.86	0.86	0.85	0.86	0.78

Note: Estimation by ordinary least squares with White's heteroskedasticity correction and clustering by creditor. Coefficients for these variables are in levels for model specification (6). Specifications include creditor country and time dummies, which are suppressed and are available on request. Variables measured in dollars reported in logs in Models 1-5 and in levels in Model 6. ** indicates statistical significance at 5 percent confidence level. * indicates statistical significance at 10 percent confidence level.

Table 5: Results for Earlier Break Dates

Dependent Variable: L_{ijt}

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	109.33 (69.13)	104.91 (66.60)	102.65 (66.26)	98.07 (64.04)	119.42 (72.64)	115.23 (69.96)	118.64 (69.66)	114.45 (67.27)
$EMU9496_{ijt}$	0.84** (0.33)	0.87** (0.34)	--	--	--	--	--	--
$EMU9698_{ijt}$	--	--	0.85** (0.34)	0.88** (0.34)	--	--	--	--
$EMU94_i$	--	--	--	--	0.91** (0.38)	0.94** (0.38)	--	--
$EMU96_i$	--	--	--	--	--	--	0.94** (0.36)	0.97** (0.37)
$DIST_{ij}$	-1.27*** (0.30)	-0.78* (0.43)	-1.25*** (0.30)	-0.77* (0.44)	-1.35*** (0.30)	-0.85* (0.41)	-1.34*** (0.29)	-0.85* (0.41)
EC_i	2.45 (6.06)	0.29 (0.67)	2.36 (5.77)	0.37 (0.62)	2.30 (6.37)	0.20 (0.73)	2.38 (5.95)	0.29 (0.64)
$GREECE_j$	1.36*** (0.31)	1.24*** (0.32)	1.35*** (0.31)	1.23*** (0.32)	1.35*** (0.31)	1.22*** (0.31)	1.35*** (0.31)	1.22*** (0.31)
GDP_{it}	1.26 (1.59)	1.53 (1.59)	1.20 (1.52)	1.46 (1.51)	1.30 (1.66)	1.56 (1.65)	1.29 (1.57)	1.55 (1.56)
GDP_{jt}	-8.32* (4.01)	-8.36* (4.03)	-7.82* (4.00)	-7.85* (4.00)	-8.97** (4.12)	-9.03** (4.16)	-8.94** (4.12)	-9.00** (4.15)
GDP/POP_{jt}	7.62* (3.60)	7.71** (3.61)	7.09* (3.58)	7.17* (3.58)	8.37** (3.73)	8.48** (3.77)	8.34** (3.73)	8.45** (3.77)
$LOANS_{it}$	0.73*** (0.19)	0.74*** (0.19)	0.74*** (0.18)	0.75*** (0.18)	0.73*** (0.19)	0.74*** (0.20)	0.74*** (0.18)	0.75*** (0.18)
$TRADE_{ijt}$	0.32* (0.18)	0.19 (0.17)	0.34* (0.17)	0.21 (0.17)	0.29 (0.18)	0.15 (0.18)	0.30 (0.18)	0.16 (0.17)
$BORDER_{ij}$	--	1.29** (0.60)	--	1.25* (0.60)	--	1.31** (0.56)	--	1.30** (0.56)
$LANDLOCKED_i$	--	-1.00 (1.28)	--	-0.95 (1.19)	--	-1.07 (1.33)	--	-1.06 (1.20)
$ISLAND_i$	--	-3.93 (5.59)	--	-3.71 (5.24)	--	-3.93 (5.85)	--	-3.92 (5.37)
$AREA_i$	--	-0.00 (0.00)	--	-0.00 (0.00)	--	-0.00 (0.00)	--	-0.00 (0.00)
$COMMONLAW_i$	--	0.61 (1.57)	--	0.43 (1.50)	--	0.67 (1.57)	--	0.57 (1.50)
$FRENCHLAW_i$	--	-4.07 (3.85)	--	-3.95 (3.62)	--	-4.15 (4.04)	--	-4.15 (3.71)
Observations	1237	1237	1237	1237	1237	1237	1237	1237
R-squared	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86

Note: Estimation by ordinary least squares with White's heteroskedasticity correction and clustering by creditor. Coefficients for these variables are in levels for model specification (6). Specifications include creditor country and time dummies, which are suppressed and are available on request. *** indicates statistical significance at 1 percent confidence level. * * 5%; * 10%.

Table 6: IV Results

Dependent variables: First Stage: $TRADE_{ijt}$ **Second Stage:** L_{ijt}

	(1)		(2)	(3)	(4)	(5)
	Stage 1	Stage 2	Stage 2	Stage 2	Stage 2	Stage 2
Dependent Var:	$TRADE_{ijt}$	L_{ijt}	L_{ijt}	L_{ijt}	L_{ijt}	L_{ijt}
Constant	-27.99 (41.67)	110.20 (67.93)	122.99* (69.17)	116.47 (67.78)	96.24 (74.56)	79.86 (112.81)
EMU_{ijt}	0.15* (0.08)	0.86** (0.34)	--	--	0.79** (0.27)	0.84** (0.38)
$EMU9496_{ijt}$	--	--	0.75** (0.34)	--	--	--
$EMU9698_{ijt}$	--	--	--	0.78** (0.36)	--	--
$DIST_{ij}$	-0.08 (0.47)	-0.66 (0.76)	-0.69 (0.76)	-0.69 (0.76)	-0.70 (0.86)	-0.85 (0.95)
EC_i	-1.26 (1.91)	-0.22 (4.78)	-0.26 (5.07)	-0.30 (4.89)	-1.89 (3.64)	0.45 (0.92)
$GREECE_j$	-0.39** (0.17)	1.49*** (0.32)	1.51*** (0.31)	1.49*** (0.32)	1.43*** (0.31)	1.25 (1.09)
GDP_{it}	1.65** (0.70)	0.13 (1.64)	0.21 (1.68)	0.17 (1.67)	-0.41 (1.29)	0.73 (6.09)
GDP_{jt}	-0.09 (2.32)	-7.12 (4.40)	-8.01* (4.34)	-7.54 (4.39)	-5.57 (3.90)	-5.84 (3.64)
GDP/POP_{jt}	0.60 (2.35)	6.07 (4.17)	7.03 (4.11)	6.53 (4.16)	4.83 (3.63)	5.24 (3.59)
$LOANS_{it}$	0.09 (0.05)	0.69*** (0.17)	0.67*** (0.19)	0.68*** (0.18)	0.75*** (0.19)	0.80** (0.36)
$TRADE_{ijt}$	--	0.95* (0.53)	0.93 (0.53)	0.93 (0.53)	0.99 (0.60)	0.36 (3.34)
$COMMONLAW_i$	4.19 (2.76)	-1.23 (3.02)	0.75 (3.10)	-1.13 (3.10)	-0.51 (2.29)	-0.74 (9.08)
$FRENCHLAW_i$	1.86 (1.37)	-2.25 (2.71)	-2.35 (2.82)	-2.28 (2.76)	-1.44 (2.03)	-2.86 (6.56)
$BORDER_{ij}$	1.80** (0.64)	--	--	--	--	0.99 (5.28)
$LANDLOCKED_i$	0.95 (1.60)	--	--	--	--	-0.71 (2.91)
$ISLAND_i$	-4.55 (2.61)	--	--	--	--	-1.32 (17.37)
$AREA_i$	-0.00* (0.00)	--	--	--	--	0.00 (0.00)
Observations	1260	1237	1237	1237	829	829
R-squared	0.94	0.85	0.85	0.85	0.87	0.89

Note: Estimation by 2SLS. Models 1-5 use $BORDER_{ij}$, $LANDLOCKED_i$, $ISLAND_i$, and $AREA_i$, as instruments, Model 6 uses lagged GDP_{it}, GDP_{jt}, GDP/POP_{jt}, and $LOANS_{it}$. Specifications include creditor country and time dummies. *** indicates statistical significance at 1 percent confidence level; ** 5%; * 10%.

Table 7: Two Observations per Creditor Country

Dependent variables: First Stage: $TRADE_{ijt}$ **Second Stage:** L_{ijt}

	(1)	(2)	(3)		(4)	
	OLS	OLS	Two Stage Least Squares		Two Stage Least Squares	
			Stage 1	Stage 2	Stage 1	Stage 2
Constant	23.29***	-18,371.34	28.51***	-6.43	-73,434.06**	-14,108.51
	(2.71)	(56,992.55)	(1.77)	(5.71)	(36,264.05)	(26,240.43)
EMU_{ijt}	1.73***	0.96***	0.60**	1.12***	0.22	0.96***
	(0.55)	(0.31)	(0.24)	(0.34)	(0.14)	(0.29)
$DIST_{ij}$	-0.41	-0.17	-1.20***	0.04	-0.10	-0.51**
	(0.35)	(0.30)	(0.23)	(0.24)	(0.17)	(0.21)
EC_i	-0.61	-0.33	0.05	-1.33***	0.13	-0.54**
	(0.66)	(0.23)	(0.38)	(0.42)	(0.23)	(0.27)
$GREECE_j$	0.43	-30.55	-0.14	0.96***	-126.90**	-23.15
	(0.46)	(98.34)	(0.24)	(0.30)	(62.56)	(45.28)
GDP_{it}	--	0.09	--	--	0.72***	0.06
		(0.20)			(0.07)	(0.20)
GDP_{jt}	--	1,233.30	--	--	4,924.66**	947.78
		(3,820.12)			(2,431.98)	(1,760.15)
GDP/POP_{jt}	--	-1,401.79	--	--	-5,585.69**	-1,078.27
		(4,332.33)			(2,757.17)	(1,995.50)
$LOANS_{it}$	--	0.76***	--	--	0.22***	0.81***
		(0.12)			(0.07)	(0.09)
$TRADE_{ijt}$	--	0.41*	--	1.33***	--	0.39*
		(0.23)		(0.23)		(0.20)
$BORDER_{ij}$	--	1.18*	-0.04	--	1.31***	--
		(0.61)	(0.38)		(0.34)	
$LANDLOCKED_i$	--	0.56*	-1.40***	--	-0.64***	--
		(0.33)	(0.35)		(0.18)	
$ISLAND_i$	--	-0.00	1.61***	--	-2.16***	--
		(0.84)	(0.29)		(0.41)	
$AREA_i$	--	-0.00	0.00*	--	-0.00***	--
		(0.00)	(0.00)		(0.00)	
$COMMONLAW_i$	--	0.47	--	--	1.76***	0.29
		(0.75)			(0.41)	(0.20)
$FRENCHLAW_i$	--	0.17	--	--	0.15	-0.02
		(0.22)			(0.14)	(0.19)
Observations	64	63	63	63	63	63
R-squared	0.19	0.92	0.55	0.71	0.94	0.91

Note: Estimation by ordinary least squares and 2SLS with White's heteroskedasticity correction and clustering by creditor. Sample includes one observation before and after intervention date for each creditor-borrower pair representing average values over full sample for that period. *** indicates statistical significance at 1 percent confidence level. * * 5% confidence level; * 10% confidence level.

Table 8: Portuguese and Greek Sub-Samples

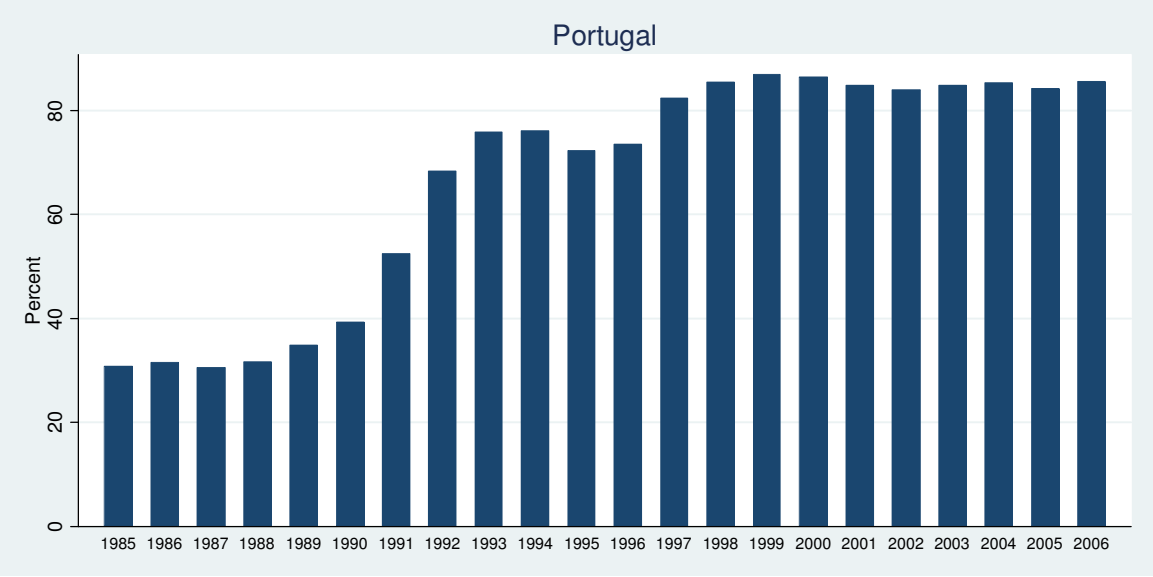
Dependent variables: First Stage: $TRADE_{ijt}$ **Second Stage:** L_{ijt}

	Portugal			Greece		
	(1)	(2)	(3)	(1)	(2)	(3)
	OLS	1st stage	2nd Stage	OLS	1st Stage	2nd Stage
Constant	-75.10 (49.18)	-14.66*** (5.49)	-33.39*** (6.24)	1.82 (13.22)	-3.71*** (1.35)	3.23 (6.74)
EMU_{ijt}	0.81* (0.40)	0.33*** (0.03)	0.31 (0.22)	0.92* (0.48)	0.08** (0.03)	0.99*** (0.13)
$DIST_{ij}$	-0.24 (1.30)	-2.00*** (0.12)	0.46*** (0.14)	1.93 (5.64)	-2.54*** (0.65)	-0.89*** (0.13)
EC_i	0.93 (1.01)	0.25** (0.10)	0.90*** (0.28)	0.63 (0.77)	-0.27*** (0.07)	0.26 (0.17)
GDP_{it}	2.27 (2.34)	1.84*** (0.25)	-0.55*** (0.13)	-0.59 (2.28)	1.47*** (0.23)	0.70*** (0.17)
$LOANS_{it}$	0.67*** (0.19)	0.06*** (0.02)	0.57*** (0.08)	0.81*** (0.19)	0.12*** (0.02)	0.91*** (0.10)
$TRADE_{ijt}$	1.17*** (0.35)	--	2.70*** (0.46)	-0.06 (0.32)	--	-0.92 (0.61)
$BORDER_{ij}$	1.63 (1.27)	-2.64*** (0.38)	--	dropped	dropped	--
$LANDLOCKED_i$	-0.51 (2.68)	-3.16*** (0.27)	--	1.93 (3.90)	-1.03** (0.52)	--
$ISLAND_i$	-6.84 (6.49)	-3.42*** (0.69)	--	dropped	dropped	--
$AREA_i$	-0.00 (0.00)	-0.00*** (0.00)	--	-0.00 (0.00)	0.00 (0.00)	--
$COMMONLAW_i$	dropped	dropped	1.01** (0.43)	1.98 (4.50)	-0.91 (0.57)	-0.91 (0.91)
$FRENCHLAW_i$	-6.12 (7.07)	-1.42*** (0.30)	-3.37*** (0.71)	3.49 (9.37)	-1.90* (1.12)	0.55 (1.28)
Observations	634	640	634	623	640	623
R-squared	0.89	0.97	0.87	0.88	0.97	0.87

Estimation by OLS with robust standard errors and clustering by creditor and 2SLS with $BORDER_{ij}$, $LANDLOCKED_i$, $ISLAND_i$, and $AREA_i$ as instruments. Portugal and Greek sub-samples estimated separately. * significant at 10% coinfidence level; ** significant at 5% confidence level; *** significant at 1% confidence level.

Figure 1

Share of Commercial Bank Loans to Portugal and Greece Originating in EMU Partner Nations (1985-2006)



Notes: Commercial bank lending to Portugal from EMU creditor nations as a share of total lending. EMU creditor nations include Austria, Belgium, Finland, France, Germany, Italy Netherlands, and Spain.