Chapter 11

Monetary Integration and Trade: What Do We Know?[1]

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11.1 Entrée

What is the effect of monetary integration on international trade? About a decade ago, an informed answer to this question would have been: presumably positive, but negligibly small in magnitude. While exchange rate fluctuations were widely viewed (both in policy circles and among business people) as a major business risk that may seriously inhibit cross-border transactions, econometric evidence that exchange rate stability enhances trade remained surprisingly weak. Figure 11.1 provides an (admittedly rough) illustration of this (non-) result at a very aggregate level. As shown, there is essentially no visible relationship between the volatility of the average real effective exchange rate and the evolution of world trade. While the overall level of currency volatility has varied considerably over time (almost tripling in magnitude until the end of the 1980s and then trending downwards again), world trade has increased rather steadily at a fairly smooth pace over the sample period.[2] Clark, Tamirisa and Wei (2004) provide an excellent survey of the literature on exchange rate variability and trade.

[Figure 11.1 about here]

In a now classic paper, however, Andrew Rose (2000) has revolutionised economic thinking about this issue. Examining the trade patterns of countries inside and outside of currency unions, he finds that *full* monetary integration is very strongly associated with bilateral trade intensity. In particular, Rose finds that countries sharing a common currency trade significantly more with each other than countries using separate currencies, an effect that would go far beyond simply eliminating bilateral exchange rate volatility (although the estimated magnitude of the effect appears to be highly sensitive to the exact econometric specification of the estimation equation). Since these results are of major policy relevance and are in stark contrast to the existing literature, Jeffrey Frankel (2005, p. 1) considers Rose's work "to be the most influential international economics paper of the last ten years".

The finding that the benefits of a common currency may be substantially larger than initially thought has further strengthened interest in regional monetary integration, not least among policymakers. For most of the post-war period, countries strongly preferred to have their own monies, except for some small and geographically remote territories. In contrast,

[2] The sample period ends in 2004, thereby missing the collapse in global trade in 2008/2009. In line with previous evidence, however, it is interesting to note that, for this episode of a dramatic fall in world trade, exchange rate fluctuations were remarkably moderate.

more than two thirds of the sovereign countries in the world are at present either considering abandoning their national money or have already done so.

In this chapter, I briefly review the recent literature on the link between monetary integration and trade. Given the two strongly contradictory findings in the literature, I will particularly focus on potential shortcomings and pitfalls in the analysis and propose some – in my view promising – lines for future research. I will also discuss the applicability and relevance of Rose's results for monetary integration in Europe.

11.2 Easy

Any estimate of the effects of monetary integration on trade requires a benchmark for the amount of trade expected without monetary integration. In the empirical trade literature, this "expected" bilateral trade is typically obtained using a gravity model. More specifically, trade is expected to increase with the (economic) size of the partners and is likely to fall with the distance between them. Since this approach is basically a simple analogy derived from the gravity equation in physics, the gravity equation for trade was widely thought to be an empirical regularity that lacks economic foundations. In recent years, however, it has been shown that a standard gravity equation can be derived from a variety of different structural assumptions. As a result, the gravity model has both an excellent empirical fit and firm theoretical foundations.

To provide some background, the gravity equation can be written, in a very general form, as:

(1) $$T_{ij} = G\, X_i\, M_j\, \phi_{ij}$$

where T_{ij} denotes exports from country i to country j; X_i and M_j capture all exporter-specific and importer-specific characteristics, respectively; ϕ_{ij} represents bilateral trade costs; and G is a constant (that might vary over time). Borrowing from the gravity analogy, then, country-specific attributes are typically proxied by a country's GDP (i.e., $X_i = Y_i^{\beta 1}$ and $X_j = Y_j^{\beta 2}$). Similarly, geographic distance (D_{ij}) is broadly construed to include all factors that might create trade resistance. Finally, the framework is extended to account for other factors. For instance, exporter-specific and importer-specific fixed effects, s_i and s_j, are frequently added to control for multilateral resistance, as suggested by Anderson and van Wincoop (2003). More importantly (for our purposes), the gravity equation is easily augmented to account for

the resistance created by exchange rate variability, ERV_{ij}, so that (1) becomes:

(2) $$T_{ij} = \alpha Y_i^{\beta 1} Y_j^{\beta 2} D_{ij}^{\beta 3} \exp(\beta_4 s_i + \beta_5 s_j + \gamma ERV_{ij})$$

where α, the β's and γ are parameters to be estimated. Finally, taking logs yields a regression equation that is linear in the parameters:

(3) $$\ln(T_{ij}) = \ln(\alpha) + \beta_1 \ln(Y_i) + \beta_2 \ln(Y_j) + \beta_3 \ln(D_{ij}) + \beta_4 s_i + \beta_5 s_j + \gamma ERV_{ij} + \varepsilon_{ij}.$$

The parameter of interest is γ; this coefficient captures the extent to which fluctuations in exchange rates affect the volume of bilateral trade. Interestingly, estimates of γ differ strongly according to the measure of exchange rate variability that is used. On the one hand, for risk measures based on the standard deviation of the level (or the percentage change) of the exchange rate, the point estimate of γ is typically insignificantly different from zero. Not surprisingly, there is some variation in the results, given the wide range of analyzed country samples, time periods, and estimation techniques. For instance, studies at sectoral level appear to be somewhat more supportive for the hypothesis that exchange rate variability reduces trade. Also, analyses of selected bilateral trade relationships (instead of a pooled panel framework) tend to produce stronger results. Still, the overall evidence is weak that exchange rate fluctuations are associated with lower trade volumes. A recent example is Tenreyro (2007); Coté (1994) and Clark, Tamirisa and Wei (2004) provide comprehensive surveys.

On the other hand, estimates of γ are positive, economically large and statistically significant when risk measures based on (bivariate) indicators of a fixed exchange rate are used. That is, in contrast to the previous finding, eliminating exchange rate variability *completely* appears to strongly benefit trade. Since Rose's (2000) initial finding of this effect was based on a dummy variable for common membership in a currency union, it was possible to rationalise this result by arguing that sharing a common currency is a particularly strong form of monetary integration. Typically, if two (or more) monies circulate in the union, there is a 1:1 exchange rate. Also, a currency union linkage cannot be easily dissolved such that the exchange rate risk is zero over a longer period of time. Recently, however, Klein and Shambaugh (2006) have changed this view, reporting coefficient estimates of similar magnitudes for less restrictive exchange rate regimes. In particular, they find that reducing exchange rate volatility to (almost) zero significantly increases bilateral trade, especially for countries that have linked their currency to a base country (while effects are smaller for indirect pegs).[3]

[3] Klein and Shambaugh (2006) note: "A particular country is judged to have a direct peg with a certain base country in a given year if their bilateral exchange rate stays within a +/- 2 percent band. In addition, if a country maintains a perfectly flat peg to the currency of a base country for 11 out of 12 months within a year, but then has a single change in its bilateral exchange rate, this "single change" observation is also coded as a direct peg."

In sum, there is strong evidence of a non-linear effect of exchange rate volatility on trade. While exchange rate variability has generally little effect on trade, fixed exchange rates are convincingly associated with greater bilateral trade intensity.

11.3 Econometrics

Rose's empirical findings have (not surprisingly) generated a huge response. Critics were especially unconvinced by Rose's initial estimates that a common currency might even triple trade between member countries and listed a number of potential econometric problems in the estimation. Many of these points are nicely summarised and discussed in Baldwin (2006).

While there are certainly various qualifications on Rose's estimates of importance, I would like to emphasise two conceptual issues which I view as particularly relevant for countries which consider closer monetary integration. A first issue deals with causality. While it may be worthwhile analysing the general association between currency regimes and international trade, the main point of interest is the direction of causality between the two. Does money follow trade, as the literature on optimum currency areas suggests? Or does trade follow money, as Rose and also Frankel and Rose (1998, 2002) appear to imply? Unfortunately, Rose's empirical approach can provide only limited insights on this issue.

The main empirical strategy that is used in Rose (2000) is to estimate variants of (3) in cross-section fashion using ordinary least-squares (OLS). However, since it seems reasonable to assume that the formation of a currency union is endogenous to trade (with highly integrated countries being more likely to form a currency union), OLS estimates of γ possibly reflect reverse causality.[4] As a solution to this identification problem in (3), Glick and Rose (2002) apply a fixed effects estimator in a panel setting. The idea is that a full set of country pair fixed effects then captures all (potentially unobserved) country pair characteristics that affect bilateral values of trade. As a result, the estimate of γ no longer shows the correlation between currency union membership and trade, but measures the effect of a change in currency union membership on trade.

This identification strategy, however, is not without problems. For one thing, the fixed effects fully exhaust the time-invariant characteristics of a bilateral trade relationship, including joint membership in a currency union; that is, γ is exclusively determined by

[4] For example, Ritschl and Wolf (2003) find that existing trade linkages had a strong effect on the sorting of countries into different currency blocs in the inter-war period.

episodes in which currency union membership has changed over the sample period. These events, however, are rare over the post-war period. They are almost always currency union dissolutions; and these currency union exits were often accompanied by other disturbances which have possibly (negatively) affected bilateral trade. Another difficulty of the fixed effects approach is that (time-invariant) fixed effects simply average out the bilateral value of trade for a country pair over the sample period, thereby providing an incomplete description of panel dynamics.

Berger and Nitsch (2008) illustrate the importance of these issues in a European context. They show that there had already been a considerable degree of trade integration between the twelve countries that are now members of the Economic and Monetary Union (EMU) in Europe before the formation of EMU. Performing yearly cross-section regressions of (3) since 1948, they find that the estimated γ coefficient already becomes significantly different from zero in the early 1980s, even if the sample is restricted to include only European countries. Furthermore, the time-invariant country pair fixed effects estimator can only partly take account of this above-average trade intensity (at the end of the sample period). In particular, it is shown that simply conditioning for the average intensity of bilateral trade over the sample period misses important changes in bilateral trade patterns over time. Specifically, it turns out that trade intensity among EMU member countries has continuously increased since the end of World War II. As a result, they argue that the further increase in trade intensity that is observed after the introduction of the euro is perhaps best viewed as a continuation of the trend in integration in the pre-euro period instead of an independent euro effect on trade.[5]

A second issue that might be of relevance for a discussion of the trade effects of regional monetary integration is heterogeneity. For a given econometric approach, the estimates of γ appear to differ enormously across regions and currencies. For instance, Levy-Yeyati (2003) finds a much stronger link between a common currency and bilateral trade for unilaterally dollarised countries than for members of a multilateral currency union.[6] But even among the group of dollarised countries, there appear to be sizable differences in bilateral trade intensities. For instance, Klein (2005) finds relatively small effects for Western Hemisphere countries that have adopted the US dollar, while Nitsch (2002) reports particularly large estimates for South Pacific islands using the Australian dollar as national currency. Reporting on these findings, Frankel (2005) argues that the variation in the

[5] Nitsch and Pisu (2008) show that there is no euro effect identifiable when the regression includes time-variant country specific fixed effects.
[6] Levy-Yeyati's (2003) sample of multilateral currency unions does not include EMU.

estimated coefficients is of generally little interest; he dismisses the decomposition approach by noting that Rose's findings only managed to come up significantly when the data were pooled. Still, heterogeneity appears to be an interesting feature of the data that is clearly of importance when the potential effects of monetary integration on a regional level are discussed.

11.4 Europe

Given these general uncertainties about the trade effects of monetary integration, then, what trade effects can be reasonably expected for monetary integration in Europe? Are there any features that possibly distinguish Europe from other regions in the world? In the following, I will argue that there are good reasons for assuming that the trade effects of monetary integration should, if anything, be particularly strong in Europe. In particular, I will emphasise the role of trade intensities, geography and production fragmentation.

A good starting point for judging the effects of monetary integration appears to be an analysis of existing trade patterns. Alesina and Barro (2002) develop a model in which the adoption of a common currency represents a reduction of "iceberg" transaction costs between two countries. Accordingly, they argue that countries that trade more with each other also benefit more from adopting the same currency. Put simply, the larger the share of a country's external trade that is freed from the risk of exchange rate fluctuations, the larger the savings in trading costs will be.[7]

To make this argument operational, Alesina, Barro, and Tenreyro (2003) compute for each country in the world (with a population of more than 500,000) the average trade-to-GDP ratio of the country's trade with three potential anchors: the US, the euro area and Japan. The aim is to identify countries that might benefit most strongly from adopting another country's currency as well as the preferred anchor currency. Reviewing their results, Mauritania is at the top of the list, trading about 34.8 percent of its GDP with the euro area, followed by Trinidad and Tobago with an average share of its US trade in GDP of 29.6 percent. The strongest trade

[7] Frankel and Rose (2002) argue along similar lines. They note (p. 461): "Currency unions seem to provide a significant stimulus to trade, and thereby to economic performance. But it matters with whom one enters a currency union. Much of the literature on exchange rate regimes focuses on the requirements that currency union partner(s) have a stable currency and be subjected to shocks correlated with those of the domestic country. While we do not disagree with these ideas, our results also suggest that the currency should belong to a country (or set of countries) that is a natural trading partner, by virtue of size, proximity, or other linkages."

linkages to Japan are reported for Oman (16.0 percent) and the United Arab Emirates (15.7 percent), followed interestingly by Panama (14.1 percent), which is a dollarised country.

For our purposes, however, a simple listing of countries whose trade is least diversified geographically appears to be insufficient. The main shortcoming of this approach is probably its one-directional view; some countries may be heavily dependent on trade with a particular partner, while this bilateral trade relationship is of little importance for the partner country. Thus, even though Alesina, Barro, and Tenreyro's approach may provide a useful indication for the benefits of unilateral dollarisation, it is of little help when assessing the potential gains from multilateral monetary integration.

Therefore, a more fruitful approach may be to examine regional intensities of trade. To illustrate the regional patterns of trade, Table 11.1 reports the current values and shares of intra-regional and inter-regional merchandise trade. As it turns out, Europe is not only the region with the (by far) largest value of intra-regional cross-border trade, European countries also do the largest share (almost three-fourth) of their external trade with regional neighbours. Since intra-regional trade is of such exceptional importance in Europe, European countries appear to benefit most strongly from regional monetary integration.

[Table 11.1 about here]

There are, however, (at least) two qualifications to this reasoning. First, the argument heavily depends on the Rose hypothesis that the adoption of a common currency has much larger effects (on trade) than merely eliminating exchange rate volatility. For instance, it could be argued that European countries already trade much with each other because of relatively low exchange rate volatility. As a result, not much would be gained in terms of additional trade by adopting a common currency.[8] So, an important issue is whether there is indeed a difference between a fixed exchange rate and membership in a currency union in their effect on trade. As noted above, Klein and Shambaugh (2006) interestingly find trade effects of similar magnitude for the two exchange rate regimes. Still, there appear to be good reasons for assuming that currency unions exhibit some particular features that go beyond fixing the exchange rate, including the arguments that there is no longer a need to exchange currencies (and thus full capital mobility), there is an easy cross-country comparison of prices (given the 1:1 fix) and a high credibility of the exchange rate link.

[8] This has apparently been the position of the European Commission when calculating the potential benefits of EMU.

Second, the saving-on-trading-costs argument may be correct on average but not necessarily on the margin. If trade between two countries is low, a possible reason is that bilateral trade costs are particularly high. A fall in transaction costs (e.g., induced by the formation of a currency union) may therefore have a sizable positive marginal effect on trade. Generally, however, it seems rather unlikely that a change in the exchange rate regime (alone) will induce a change in transaction costs that is large enough to affect a country's overall pattern of trade (such that previous non-suppliers would suddenly emerge as major trading partners).

Nonetheless, to partly deal with these (potential) issues, it may be useful to examine other factors that are not directly based on trade, but affect the extent to which European countries can be reasonably expected to trade with each other. For instance, Alesina, Barro, and Tenreyro (2003) note that "some geographical variables may have an effect on the attractiveness of currency unions beyond those operating through the trade channel"; they focus on factors such as locational proximity and weather patterns which may influence the co-movements of output and prices. Here, I am interested in a geography-related measure that captures the potential importance of regional trade for a country's overall trade. A useful proxy in this respect appears to be a country's remoteness. This measure gives a country's average trade distance to the rest of the world; it is typically defined as the (log) distance-weighted (log) GDP of the rest of the world (that is, $\Sigma_j(Y_j/D_{ij})$) and has been recently used widely in the literature.

Table 11.2 reports the 25 territories with the lowest and the highest values of remoteness (of 223 countries and territories for which data is available). As shown, the least remote countries in the world are all European; the first non-European country on the list is Tunisia which is ranked 30th.[9] At the other end of the table, the most remote countries are, not surprisingly, all located in the southern hemisphere, most notably in the South Pacific. So, what are the implications of this for the effects of monetary integration? In the gravity literature, remoteness is often introduced to control for the fact that remote countries tend to trade a disproportionately large amount with each other, simply because they are far away from other markets. In fact, some of the most remote territories on the list do very little trade with countries outside the region and have therefore adopted the currency of the dominant power in the region, the Australian dollar. On the other hand, remoteness measures a

[9] The data are taken from Rose and Spiegel (2006) and are generously made available by Andrew Rose at his website. It seems somewhat surprising that it is not one of the small central European countries, located in the triangle between France, Germany and the UK (e.g., Luxembourg), that is on top of the list. However, I suppose that the exact result is quite sensitive to the definition of the centre of a country and the resulting distance calculation.

country's average trade distance and therefore proxies for the average trade costs faced by this country when trading with the rest of the world. As a result, less remote countries should be inclined to share substantial amounts of trade with each other, thereby potentially gaining strongly from the use of a common currency.

[Table 11.2 about here]

Indirect evidence for this hypothesis is provided by Bravo-Ortega and di Giovanni (2005). They argue that remote countries will have a greater range of non-tradable goods (because of high external trading costs), thereby resulting in higher real exchange rate volatility; see Bravo-Ortega and di Giovanni (2005) for a graphical illustration of the positive relationship between remoteness and real exchange rate variability.

Finally, it seems worth emphasising another channel that might be of relevance when assessing the potential trade effects of monetary integration in Europe. A rapidly growing literature has recently documented the importance of cross-border trade in intermediate goods. Hummels, Ishii, and Yi (2001), for instance, estimate that today growth in vertical specialisation accounts for about 30 percent of the growth in industrialised countries' exports. One implication of this finding is, however, that even small changes in transaction costs may then generate large trade effects. As firms split up the production chain geographically and move goods-in-process back and forth across international borders, the effect of border barriers magnifies. As a result, some further production sequencing may only become profitable (and cross-border trade may increase) after a further moderation of (perhaps already low) trading costs.

Kei-Mu Yi (2005) applies this idea to explain the surprisingly large magnitude of observed border effects (i.e., the finding that even for highly integrated economies such as the US and Canada domestic trade appears to exceed international trade by a substantial amount, holding constant for the standard determinants of trade). In fact, there is evidence that vertical specialisation is (not surprisingly) more prevalent within countries than between countries. Frankel (2005) refers to the border effects literature to put the magnitude of Rose's empirical estimates into perspective.

If national borders matter and the use of different currencies are indeed part of the story, however, monetary integration can be expected to have particularly strong effects on trade in Europe. Hummels, Ishii and Yi (2001) show that European countries (along with Canada) display a relatively high degree of vertical specialisation; that is, the production

structure of these countries obviously allows fragmentation.[10] The results also indicate that a large share of European trade in components is with other industrialised (that is, most likely European) countries. Hence, even a moderate fall in trading costs may have large aggregate effects.

11.5 EMU

Having argued that regional monetary integration should, if anything, be particularly beneficial for European countries, it may be worth examining (preliminary) evidence on the trade effects of EMU. That is, did the introduction of the euro measurably affect intra-European trade patterns? Given the (by know) well-known problems of parametric estimation using the gravity approach, I briefly discuss some non-parametric results.

As a first crude check to identify a possible redirection in EU trade, I analyse the relative importance of trade with EMU member countries over time. If EMU has lowered trade costs, shipments towards EMU member countries should have become relatively easier, especially for the members themselves. Figure 11.2 plots for each of the 15 EU member countries (before the latest round of EU enlargement) the evolution of the share of exports to EMU in total exports, scaled to be 1 in 1999. Apparently, there is no evidence that the introduction of the euro has measurably changed the pattern of European trade. Most notably, for countries outside the euro the relative importance of exports to the EMU is basically unchanged over the sample period; non-EMU countries are at the centre of this fan chart.

[Figure 11.2 about here]

Other suggestive evidence is provided by an analysis of the evolution of the number of products that are traded between different groups of countries. If trade costs have fallen with the adoption of a common currency, EMU member countries can be expected to trade in a greater variety of products. To analyse this issue, I examine trade data at the most detailed level of disaggregation, the 8-digit Combined Nomenclature (CN) level with 13,882 product categories.

[10] According to Hummels, Ishii and Yi's estimates, the share of vertical specialisation exports in total merchandise exports ranges for European countries from about 20 percent for Germany to 37 percent for the Netherlands, compared to about 10 to 12 percent for Australia, Japan and the US.

Figure 11.3 plots the number of positive trade observations as a fraction of the total number of possible trade observations for four different types of pair-wise trade relationships within the European Union: intra-EMU shipments; shipments from EMU countries to non-EMU countries; shipments from non-EMU countries to EMU countries; and shipments from non-EMU countries to non-EMU countries. Four observations appear particularly noteworthy. First, there seems to be only a small set of products (if any) that are traded between all European countries. Within the European Union, about two-thirds to three-fourths of the possible trade relations at the 8-digits level are zero. Second, EMU countries trade on average in more varieties than non-EMU countries. This finding, however, is not surprising, given the (economic) size of these countries. Third, there is a gradual increase in the extensive margin over time. The share of zero observations is decreasing for all country groups in the sample. Finally, and most importantly, there is no visible evidence that the euro has affected the extensive margin of European trade. There is neither a sizable increase in the extensive margin over time for EMU countries (that goes beyond the linear yearly change) nor an increase in the extensive margin relative to trade among non-EMU countries, as shown in the lower graph of Figure 11.3.

[Figure 11.3 about here]

In sum, I find little conclusive evidence that the introduction of the euro has measurably affected patterns of trade in Europe. In view of the above reasoning that trade effects can be expected to be particularly strong in Europe, this finding is not particularly encouraging concerning potential trade effects of regional monetary integration.

11.5 End

In this chapter, I discuss the potential effects of monetary integration on trade from a European perspective. I briefly review the recent literature on the trade effects of monetary unions and then discuss reasons why the trade effects of monetary integration might differ across regions. In particular, I outline three arguments in favour of potentially large trade effects in Europe: the large importance of regional trade; low trade costs; and the already existing extent of geographic fragmentation of production. Finally, I present some new evidence on the trade effects of the euro. Since a rough exploration of the pattern and

dynamics of European trade provides little evidence that the introduction of the euro has measurably affected trade, it is argued that the (isolated) trade effects of monetary integration appear to be small. For policymakers in other regions (outside of Europe) who are currently contemplating the merits of monetary integration, these findings imply that there is little reason to expect that these policies will have automatically large trade-creating effects; other policies of trade facilitation (such as an improvement of the regional transport infrastructure) might have much larger effects on regional trade.

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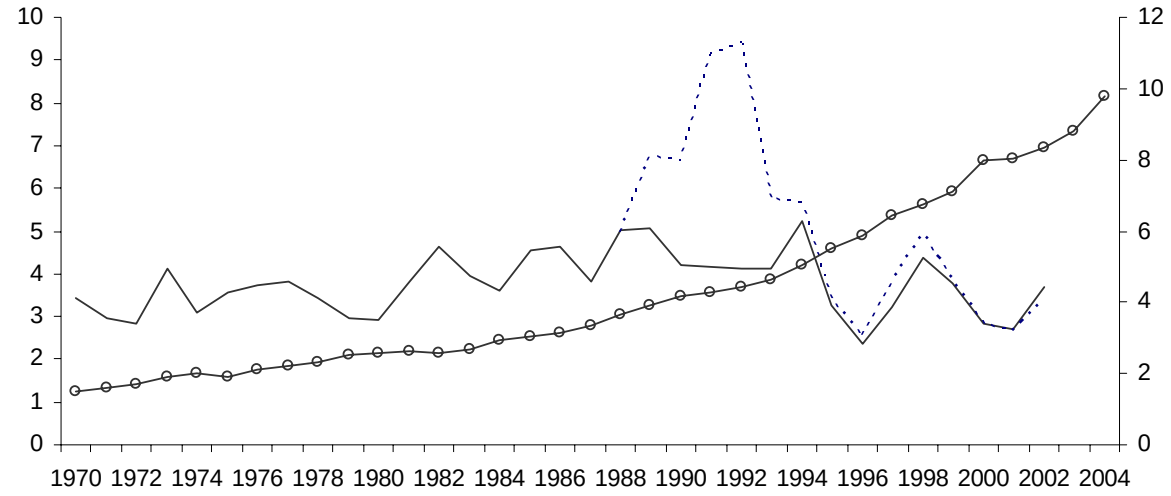
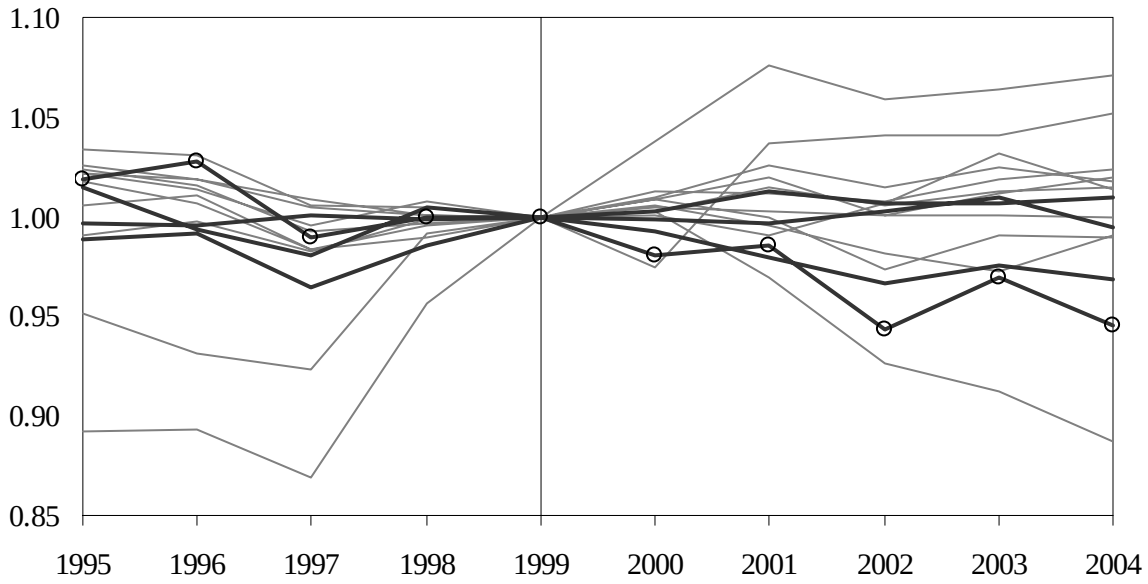
Figure 11.1: Exchange rate volatility and trade



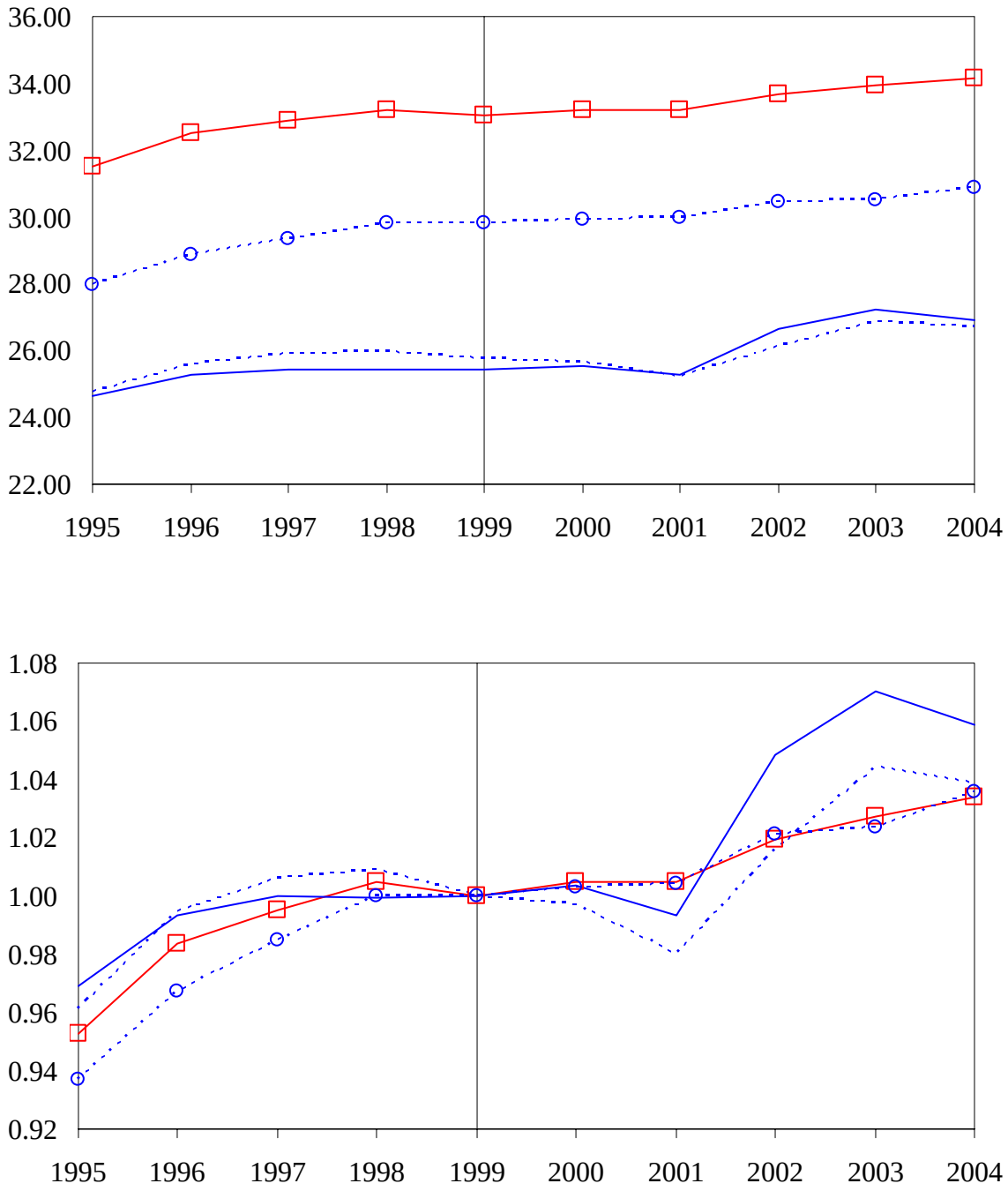
Note: World trade (circled line) is measured as the average of the volume of world exports and imports in trillions of 2000 US dollars (right) scale. Volatility is measured as the unweighted average of the volatility of the real exchange rate of the countries in the Clark, Tamirisa and Wei (2004) sample. The dashed line includes the volatility of the transition economies starting in 1988.
Source: adapted from Clark, Tamirisa and Wei (2004).

Figure 11.2: Share of trade with EMU11 countries in total EU trade by country (1999=100)



Notes: Non-EMU member countries are plotted as thick line. Greece is the circled line.
Source: Own computation based on data from Eurostat.

Figure 11.3: Non-zero trade observations at 8-digits CN level



Notes: The figures show the number of trade observations with positive trade as a share of all possible trade observations. The upper figure plots the shares in percent. The lower figure plots shares normalised to 1 in 1999. Solid lines show shipments originating from EMU11 countries; marked lines show shipments destined to EMU11 countries. The sample is adjusted for the fact that there is no trade data available for Luxembourg before 1999.
Source: Own computation based on data from Eurostat.

Table 11.1: Intra- and Interregional Merchandise Trade, 2006

Origin \ Destination	North America	South and Central America	**Europe**	C'wealth of Indep't St's (CIS)	Africa	Middle East	Asia	World
Value (Billion US dollars)								
North America	905	107	279	8	22	42	314	1678
South and Central America	135	111	86	6	11	8	62	430
Europe	430	67	**3651**	142	120	129	366	4963
Commonwealth of Independ't States (CIS)	24	8	246	80	6	13	46	426
Africa	80	11	148	1	33	6	73	363
Middle East	72	4	103	3	21	72	340	645
Asia	708	69	604	50	70	111	1638	3278
World	2355	378	5118	290	283	381	2839	11783
Share of inter-regional trade flows in each region's total merchandise exports (in percent)								
North America	53.9	6.4	16.6	0.5	1.3	2.5	18.7	100.0
South and Central America	31.4	25.9	20.1	1.4	2.6	1.8	14.4	100.0
Europe	8.7	1.3	**73.6**	2.9	2.4	2.6	7.4	100.0
Commonwealth of Independ't States (CIS)	5.7	1.8	57.9	18.9	1.3	3.1	10.7	100.0
Africa	22.0	3.1	40.8	0.4	9.0	1.7	20.0	100.0
Middle East	11.2	0.7	15.9	0.5	3.2	11.1	52.6	100.0
Asia	21.6	2.1	18.4	1.5	2.1	3.4	50.0	100.0
World	20.0	3.2	43.4	2.5	2.4	3.2	24.1	100.0
Share of regional trade flows in world merchandise exports (in percent)								
North America	7.7	0.9	2.4	0.1	0.2	0.4	2.7	14.2
South and Central America	1.1	0.9	0.7	0.1	0.1	0.1	0.5	3.6
Europe	3.7	0.6	**31.0**	1.2	1.0	1.1	3.1	42.1
Commonwealth of Independ't States (CIS)	0.2	0.1	2.1	0.7	0.0	0.1	0.4	3.6
Africa	0.7	0.1	1.3	0.0	0.3	0.1	0.6	3.1
Middle East	0.6	0.0	0.9	0.0	0.2	0.6	2.9	5.5
Asia	6.0	0.6	5.1	0.4	0.6	0.9	13.9	27.8
World	20.0	3.2	43.4	2.5	2.4	3.2	24.1	100.0

Source: http://www.wto.org/english/res_e/statis_e/its2007_e/section1_e/i04.xls

Table 11.2: Average Trade Distances

Least remote countries		Most remote countries	
1	Croatia	199	Argentina
2	Slovenia	200	Chile
3	Italy	201	Indonesia
4	Austria	202	Guam
5	Bosnia and Herzegovina	203	Palau
6	Hungary	204	Northern Mariana Islands
7	Serbia/Ex-Yugoslavia	205	Tuvalu
8	Switzerland	206	Falkland Islands
9	Czech Rep	207	Papua New Guinea
10	Slovakia	208	Micronesia
11	Macedonia (FYR)	209	Australia
12	San Marino	210	Marshall Islands
13	Germany, West	211	Solomon Islands
14	Albania	212	Nauru
15	Romania	213	Kiribati
16	Bulgaria	214	Vanuatu
17	Liechtenstein	215	New Caledonia
18	Greece	216	Fiji
19	Luxembourg	217	Western Samoa
20	Poland	218	American Samoa
21	France	219	Tonga
22	Belgium	220	French Polynesia
23	Monaco	221	Niue
24	Netherlands	222	New Zealand
25	Moldova	223	Cook Islands

Source: Rose and Spiegel (2006).