EUROPAINSTITUT
WIRTSCHAFTSUNIVERSITÄT WIEN

EUROPAINSTITUT
UNIVERSITY OF ECONOMICS AND
BUSINESS ADMINISTRATION VIENNA

Working Papers

EI Working Paper No. 77

HARALD BADINGER / FRITZ BREUSS

Trade Effects of the Euro:

Small Countries, Large Gains!

July 2007

Althanstraße 39 - 45, A - 1090 Wien / Vienna
Österreich / Austria
Tel.: ++43 / 1 / 31336 / 4135, 4134, 4133
Fax.: ++43 / 1 / 31336 / 758, 756
e-mail: europafragen@wu-wien.ac.at
http://www.wu-wien.ac.at/europainstitut

Impressum:
Die EI Working Papers sind Diskussionspapiere von MitarbeiterInnen
und Gästen des Europainstitutes an der Wirtschaftsuniversität Wien, die dazu dienen
sollen, neue Forschungsergebnisse im Fachkreis zur Diskussion zu stellen. Die
Working Papers geben nicht notwendigerweise die offizielle Meinung des Instituts
wieder. Sie sind gegen einen Unkostenbeitrag von € 7,20 am Institut erhältlich.
Kommentare sind an die jeweiligen AutorInnen zu richten.

Medieninhaber, Eigentümer Herausgeber und Verleger: Europainstitut der Wirtschaftsuniversität

Wien, Althanstraße 39—45, A—1090 Wien;

Für den Inhalt verantwortlich: Univ.-Prof. Dr. Stefan Griller,

Althanstraße 39—45, A—1090 Wien

Trade Effects of the Euro:

Small Countries, Large Gains!

Harald Badinger, Fritz Breuss
Europainstitut, Department of Economics
Althanstrasse 39-45, A-1090 Vienna
Wirtschaftsuniversität Wien

July 2007

Abstract: Several studies suggest that the introduction of the Euro has triggered sizeable increases in intra-Euro area trade. In this paper we test whether these gains are distributed asymmetrically among Euro area countries with respect to country size. This hypothesis is motivated by Casella (1996), who postulates that small countries of a trade bloc gain more from its enlargement. We argue that the implications of this model do also apply to the introduction of a common currency and test for a small country bonus using aggregate trade data and disaggregated trade data at the SITC1, SITC2, and SITC3 level. The results suggest that there is indeed strong evidence for a small country bonus with respect to the gains from trade after the introduction of the Euro. On average, the Euro triggered a reallocation of intra-Euro area exports to small countries by some 6 percent .

JEL No: C33, F12, F15

Keywords: Country Size, Trade, Euro

Contents

I. Introduction

There is wide agreement that the introduction of the Euro has led to an increase in trade of the Euro area member states, though the magnitude of the estimates varies considerable across studies. In his comprehensive survey, Baldwin finds that the effect is likely to lie "somewhere between 5% and 15%, with 9% being the best estimate" (Baldwin, 2006a, p. 1).

This paper does not attempt to provide another estimate of the Euro's overall trade effects. Instead we take it as given that the Euro has led to an increase in intra-Euro area trade and investigate, whether small Euro area countries gained relatively more. There is comparably little evidence on country-specific gains. The few studies, which consider trade effects by country suggest that the largest winners – in descending order – were Spain, the Netherlands, Germany, Austria, Italy, Belgium, France and Ireland, while Portugal and Finland appear to have lost trade as a result of the Euro (see Baldwin, 2006a, p. 59). Overall, results are inconclusive and – judged by the standard errors of the estimates – it remains an open issue whether there are statistically significant differences in the country-specific effects.

This paper takes a more direct approach to test for asymmetric gains from trade with respect to country size. Our empirical analysis is motivated theoretically by Casella (1996), who considers the distribution of the gains from enlarging a trade block among its member states in a model with monopolistic competition and increasing returns, where the size of the domestic market is an important determinant of competitiveness. Enlarging a trade bloc increases the size of the market to which all countries have easy access; this increase will be more significant for firms located in small countries, whose own domestic market is small. As a consequence, the increase in competitiveness is relatively larger for (firms in) small countries, such that the entry of new members in a trade bloc will favor small countries.

In this model, enlarging a trade bloc means nothing else but a reduction in trade costs vis-à-vis the new trading partners. As we will argue in more detail below, the introduction of the Euro has also led to a reduction in trade costs vis-à-vis the other Euro area countries. Hence, it can be interpreted as "enlargement" of the market that can be reached with relative ease and the implications of the model by Casella (1996) do also apply to the creation of a common currency. In addition, for several reasons outlined below the introduction of the Euro offers a particularly valuable source for testing for a small country bonus.

We use a panel data approach to test for a small country bonus with respect to the trade effects of the Euro, considering a relative gravity equation where the dependent variable is the ratio of the large to the small country's exports with other Euro area countries over the period 1994 to 2005. The model is estimated using both aggregate trade and disaggregated trade data at the SITC1, SITC2, and SITC3 level.

As expected, a small country bonus does not show up always and everywhere. But overall, our results are supportive to the theoretical predictions by Casella (1996). At the industry level, in a majority of the SITC groups considered, we find that small countries gained more on average. This is confirmed if we aggregate the industry-specific results and also if we estimate the model for aggregate exports. On average over all models, we find that the Euro has led to a 'reallocation' of intra-Euro area exports to small countries by some 6 percent. Moreover, there is also evidence that the relative gains of the small countries are larger, the larger the size difference to the large country.

The remainder of the paper is organized as follows. Section II reviews the theoretical background why small countries should gain more from the Euro and sets up the empirical model. Section III presents the estimation results. Section IV concludes.

II. Theoretical Background and Empirical Model

1. Why small countries should gain more from the Euro

Before turning to the empirical model, we briefly review the theoretical reference model by Casella (1996). The world consists of N countries, part of them belonging to the trade bloc. Markets are characterized by monopolistic competition and increasing returns, allowing firms with a larger domestic market to produce at lower costs. Obstacles to trade are equal to zero at the domestic market, take a positive value within the trade bloc, and are highest for trade with countries outside the trade bloc. Two factors are employed in the production of K different goods: (immobile) skilled labor and (mobile) unskilled labor. The presence of fixed costs implies that each firm specializes in the production of one variety. An equilibrium of this model specifies the prices of all goods, the distribution of low-skilled workers among the countries within the trade bloc, wages and profits such that all markets clear, consumers maximize their utility, firms maximize profits, and no low-skilled workers can benefit from migration within the trade bloc.

What happens, if one ore more countries enter the trade bloc? Technically, in the model the changes in equilibrium are triggered by the possibility of migration and changes in consumer prices. But as Casella argues the main lessons of the model can be read more broadly: Enlarging a trade bloc increases the size of the market that a firm can reach with relative ease. This increase will be more significant for firms located in small countries, whose own domestic market is small. This means that the increases in competitiveness are relatively larger for (firms in) small countries, such that the entry of new members in a trade bloc will favor particularly small countries. This conclusion is reached by Casella both analytically (p. 405, proposition 4) and in a number of numerical simulations. In fact, the message of this model is very intuitive and general. If country size matters and favors large countries over small countries with respect to export performance, any "enlargement of domestic market size" will allow the small country to partially offset its initial disadvantage over large countries, such that – at the margin – small countries gain more.

This theoretical result lends itself directly to empirical testing by the study of the development of relative sales volumes. Badinger and Breuss (2006) consider the enlargements of the European Community (EC) by Denmark, Ireland, and the United Kingdom in 1973 and Greece in 1981, as well as the free trade agreements between the EC and the members of the European Free Trade Association (EFTA) in the 1970s. The results are largely inconclusive; the authors stress that the mechanism favouring small countries appears to exist, but that for the sample considered, it is partially offset or even dominated by other forces favouring large countries (such as more group ties, higher market power and related terms-of-trade effects, larger absolute endowments with human capital, and a larger product variety).

We will now consider how the theoretical arguments by Casella (1996) apply to the introduction of the Euro. Notice, that in the model, joining a trade bloc means nothing else but a reduction of the acceding country's trade costs vis-à-vis all "old" members of the trade bloc, and simultaneously, a joint reduction of these old members' trade costs vis-à-vis the joining country. Exactly the same reasoning applies to the introduction of the Euro. The introduction of the Euro increases the size of the market (by all other Euro area countries) that a firm can reach with relative ease. This increase will be more significant for firms located in small Euro area countries. Therefore, the introduction of the Euro should particularly favor small countries.

Generally speaking, the introduction of the Euro makes access to other Euro area countries easier by reducing trade costs. This reduction in trade costs is due to two effects: the first and most obvious effect is a reduction in transaction costs from abolishing the need to exchange currencies and to hedge against exchange rate changes for example.

A second mechanism, potentially more important as argued by Baldwin (2006a), is the reduction in fixed costs of introducing new goods into Euro area markets. These market entry costs are not explicitly considered in Casella (1996), where trade costs are modelled as „iceberg“ transportation costs. In this respect, the role of country size in determining the gains in trade are ambiguous. On the one hand, the fixed costs to introduce a new variety in an export market are independent from market size; hence, small countries with smaller trade volumes are disproportionately favoured. In other words: the "break even" level of trade required to make foreign market entry favourable is reduced, which is probably less important for large countries that tend to exceed this threshold anyway. On the other hand, this mechanisms could potentially also favour large countries; on average they tend to produce a larger variety of goods, such that they have a larger change of market entry with new products (though it is unclear whether this would result in a *relative* gain of the large country, since large countries have already exported more product varieties before the Euro).

The introduction of the Euro allows not only a reassessment whether a small country bonus postulated by Casella (1996) exists; it is a particularly suitable case to test for asymmetries in the gains in exports with respect to country size for several reasons:

i) The size of enlargement (of the trading partner against which a reduction trade costs takes place) is important for the small country bonus to show up in the data. The introduction of the Euro constitutes a sizeable "trade bloc enlargement", actually larger than any enlargement before, given that intra-Euro area trade makes up some 60 percent of total trade.

ii) In the model by Casella (1996), the central mechanism is that the enlargement of the market is *relatively* larger for small countries. This is clearly the case here as well. In addition, also the *absolute* size of the enlargement is greater for small countries, bearing in mind that the "new" market (to which access has become easier) is the total Euro area excluding the respective domestic market (which is smaller for the small country).

iii) As opposed to previous enlargements, there is a relatively large sample of member countries within the Euro area with significant differences in size. This increases the number of observations, on which the model can be tested.

iv) Finally, the Euro was introduced at a time period, for which comprehensive, high quality data is available. In particular, we will be able to test for a small country bonus using not only aggregate but also disaggregated trade data at the SITC1, SITC2, and SITC3 level. This is potentially important, to account for the intra-industry trade setup of the model by Casella (1996).

Summing up, if the mechanism described in the model by Casella (1996) has any empirical relevance, a small country bonus should have emerged after the introduction of the Euro. In other words, if it does not show up in the data, it is likely to be of negligible relevance.

It is worth emphasizing, that an assumption underlying our empirical test is that the size of the domestic market matters. Hence, our empirical analysis is in some way also an indirect test of the relevance of market size, which has been called into question by Rose (2007). Moreover, a further important assumption is that the EU (Euro area) countries are not fully integrated: If there were a true Single Market in the EU, all countries would have the same “domestic” market. In that case, the reasoning of the model by Casella (1996) would not apply any more. But the EU is still far away from a true Single Market. Apart from legal barriers, which still exist in many industries, particularly service industries (see, for example, European Commission, 2002), there are also cultural and language barriers (hindering migration in particular). This is also supported by the results of Chen (2004), who shows that there are still significant border effects on trade flows within the EU. This suggests that there are still sizeable trade costs within the Euro area, part of which have been eliminated by introducing the Euro.

2. The empirical model

Our basic specification follows Casella (1996) and Badinger and Breuss (2006). It is based on a simple gravity approach in ratios, relating relative exports (*X*) of the large and small country to relative GDP, the relative real effective exchange rate (*ER*) and a Euro-Dummy ($D^{€}$):

$$\ln \frac{X^{€}_{L,t}}{X^{€}_{S,t}} = \alpha + \beta_1 \ln \frac{GDP_{L,t}}{GDP_{S,t}} + \beta_2 \ln \frac{ER_{L,t}}{ER_{S,t}} + \gamma D^{€}_t + u_t \,, \qquad (1)$$

where $X^{€}_{L,t}$ are exports from the large country *L* to other Euro area countries (excluding the small country *S*), $X^{€}_{S,t}$ are exports from the small country *S* to other Euro area countries (excluding the large country *L*); $GDP_{L,t}$ ($GDP_{S,t}$) is real GDP of the large country *L* (small country *S*); $ER_{L,t}$ ($ER_{S,t}$) is the real exchange rate of large (small) country *L (S)* against the Euro area, and $D^{€}_t$ is a Euro-Dummy, taking a value of zero before the introduction of the Euro and 1 afterwards). Finally, *t* is the time index and u_t is a standard error term.

Our sample comprises 10 Euro area countries (Belgium and Luxembourg are treated as aggregate) and covers the period 1994 to 2005. Data on trade flows are from the UN COMTRADE database and were downloaded from the database of the Austrian Institute of Economic Research (WIFO). Data on real GDP (2000 prices and 2000 PPPs) are taken from the OECD Economic Outlook Database. Data on real effective exchange rates against Euro area are from the European Commission (2007) and based on unit labor costs.

Notice that equation (1) in ratios is consistent with simple versions of the gravity equation where time invariant determinants common in gravity equations (such as distance, common border, and common language) are captured by the constant. The parameter γ measures the relative performance of the large country as a result of the Euro; according to the theoretical model we expect a negative value, indicating that the small country gained relatively more in trade with other Euro area countries than the large country.

Several comments are in order here: As far as the dependent variable (exports to Euro area) is concerned, we have to exclude export flows, where the large or the small countries are the trading partners. Otherwise, the numerator and the denominator would not be directly comparable: the small country's exports to the Euro area would include trade with the large country; the large country's exports to the Euro area would include trade with the small country. Hence to ensure comparability, i.e. that the destination market is the same in the numerator (for the large country) and in the denominator (for the small country), we consider only exports to Euro area countries other than the respective large and small country. Notice that this destination market differs across ratios for obvious reasons. Moreover, it differs due to missing data; for example, if exports from the small country to Euro area country *j* are not available, it has to be excluded from the exports of the large country as well to ensure comparability.[1] From a theoretical perspective, this not a problem, since the implications of the model by Casella (1996) could in principle be tested for relative exports of the large and small country to a single third country, though the empirical testing strategy is more promising if the largest possible destination market is used, that is the aggregate Euro area with the aforementioned adjustments.[2]

The GDP ratio is included to captures changes in country size, and the relative real effective exchange rate is included to control for other variations in the competitiveness of the

[1] At the aggregate and at the SITC1 level, this is not a problem; at the SITC2 level some bilateral trade flows are missing, but there are several 'holes' in the bilateral trade data at the SITC3 level.

[2] As argued in Badinger and Breuss (2006), an important motivation for choosing relative trade with all new member states is that building up new business relationships may also be interpreted as imposing a fixed component on trade costs. This would imply that when the enlargement occurs, firms would rather concentrate on one or a subset of all markets.

small and large country. In contrast to Casella (1996) and Badinger and Breuss (2006), who use only the overall real exchange rate of the large country, we include the relative real effective exchange rate of the large and small country against the Euro area. This appears to be more appropriate, given the destination market and the interpretation as gravity model in ratios. Our data for the real effective exchange rate is from the quarterly report on price and cost competitiveness of the European Commission (2007); of the various price indices available we opt for unit labor costs, but his choice is not crucial for the results of our main interest (i.e. the coefficient of the Euro-Dummy). Notice, that an increase in the real exchange rate is associated with a real appreciation vis-à-vis the other Euro area countries.

At the time of the introduction of the Euro, the Euro area was made up by 11 countries, four of which would be typically considered as large (Germany, France, Italy, Spain). What is more relevant in our context is not the absolute, but the relative size of the countries, which we simply measure in terms of relative GDP, or alternatively, relative employment. We argue that a country is relatively large to another country if it is of double size in terms of GDP or employment; this appears to be a reasonable threshold, though any choice remains arbitrary to some extent. Since Belgium and Luxembourg have to be treated as aggregate due to data availability, we are left with 10 countries. Calculating all ratios of large to small countries, there are 32 of total 45 ratios, whose GDP or employment ratio exceeds the threshold of 2 (see Appendix A2).

We go on to set up a panel by pooling equation (1) for all 32 ratios of large to small countries. To simplify notation, we denote relative variables (large to small countries) with superscript ^{REL}, yielding

$$\ln X_{i,t}^{REL} = \alpha_i + \beta_1 \ln GDP_{i,t}^{REL} + \beta_2 \ln ER_{i,t}^{REL} + \gamma_1 D_t^{€} + u_{i,t} \qquad (2)$$

The cross-section dimension i is spanned by the 32 ratios of large to small countries summarized in Table A1 in the Appendix ($i = 1, \ldots, 32$). Regarding the time dimension, we opt for a two period panel with averages over the period 1994-1998 (“Before”) and 2001-2005 (“After”). This helps to smooth out short run shocks and is more appropriate with a view to our goal of estimating medium- to long-run equilibrium effects. Another advantage of this choice is that possible non-stationarity of the time series[3] is not of concern, given the equivalence of fixed effects estimation (in levels) and the first differenced estimator in a two period panel.

The effects of the Euro have not materialized immediately. We assume that the main transition took place in the years 1999 and 2000. This is a conservative choice; Baldwin (2006a) argues that the break happened very quickly, appearing in 1999. By excluding the years 1999 and 2000, we ensure that the estimated effects are not diluted by mixing up the period after the break with the transition period.

Since we are interested in the average effect of the Euro on relative export performance of large to small countries, the parameter γ, which measures the relative gain of the large country, is restricted to be equal across countries.[4] The same is true for the parameters of relative GDP and the relative real exchange rate as usual in gravity equations. Time invariant variables such as

---

3 Time series and panel unit root tests are inconclusive, but this uncertainty would shed some doubt on the results if longer time series were used.

4 Technically, cross-section specific parameters for $D^{€}$ are not estimable in this setup since they would be perfectly collinear with the fixed-effects.

distance, common border, common language, etc. are cross-section (i.e. ratio) specific and thus modeled using fixed effects, i.e. through cross-section specific intercepts. In this two period setting, the Euro-Dummy, taking a value of zero "before" (1994-1998) and a value of one "after" (2001-2005) has actually become a time specific-effect, which is not untypical for the variable measuring the structural break in intervention analyses.

Equation (2) is our baseline model. In a next step, we will refine this empirical model and consider another implication that follows from the theoretical model by Casella (1996), i.e. that the magnitude of the small country bonus depends on the size difference between the large and the small country. This can be tested by interacting the Euro-Dummy with relative GDP:

$$\ln X_{i,t}^{REL} = \alpha_i + \beta_1 \ln GDP_{i,t}^{REL} + \beta_2 \ln ER_{i,t}^{REL} + \gamma_1 D_t^{€} + \gamma_2 D_t^{€} \ln GDP_{i,t}^{REL} + u_{i,t}\,. \qquad (3)$$

The relative gain of the large country is now given by $\gamma_1 + \gamma_2 \ln GDP^{REL}$; this is an interesting extension of the testing strategy in Badinger and Breuss (2006). It is not only a refined model test, but may also help to identify thresholds of the size difference required to induce a small country bonus that dominates over other effects that may favor large countries (such as market power, network effects and group ties, for example).

Finally, two assumptions underlying the theoretical model should be borne in mind. There are increasing returns to scale and trade is of intra-industry type. While intra-Euro area trade may largely be viewed to be of intra-industry type, the existence if increasing returns cannot be taken as granted at the aggregate level. Therefore, we will not only estimate equation (1) at the aggregate level, but also at the industry level, in particular for trade disaggregated at the SITC1, SITC2 and SITC3 level.

One the one hand this is a desirable move towards intra-industry trade; on the other hand increasing returns are likely to be prevalent in many of the industries considered. We use the most comprehensive approach, using data from the UN COM trade Database. This yields 10 separate panels at the STIC1 level, 62 at the SITC2 level, and 246 at the SITC3 level. In terms of equation (2) or (3), only the dependent variable changes; the controls remain the same as before. On the one hand there is no data on value added and real exchange rates at the detailed SITC level used here. On the other hand, using aggregate data can be justified by the fact that for industries delivering intermediates to other industries, it is not only the size of the own sector that matters. Since cycles are not synchronized across industries, however, its coefficient becomes difficult to interpret and is of little interest in itself.

Finally, moving down to an industry-specific equation has a further advantage. At a disaggregated level, in particular at the SITC3 level, where one single industry contributes only marginally to total value added, trade in this industry has a negligible GDP effect at best, mitigating the possible endogeneity problem, which is likely to exist as a result of reverse causality in the specification using aggregate trade flows. Hence, checking the consistency of the results from the disaggregated data with that of aggregate trade provides an important robustness check in our analysis, given the absence of strong and convincing instruments for the GDP ratio.

III. Estimation Results

1. Results for Aggregate Trade

a) Basic model

Table 1 presents the estimation results for equations (2) and (3). Notice that in our two period panel the fixed effects (FE) estimator is equivalent to the first differenced (FD) estimator, both with respect to estimation and inference. That is, our estimates can be obtained by a pooled regression of $\Delta \ln X_{i,t}^{REL}$ on $\Delta \ln GDP_{i,t}^{REL}$, $\Delta \ln ER_{i,t}^{REL}$, and $\Delta D_t^{€}$ (a constant).

Table 1. *LS and FGLS Estimates of Equations (2) and (3), Aggregate Trade*

Dependent variables is ln X^{REL}					
	Equation (2)			Equation (3)	
	LS	LS^{HC}	FGLS	LS^{HC}	FGLS
lnGDP^{REL}	0.765***	0.765***	0.764***	0.753***	0.803***
	(0.156)	(0.116)	(0.026)	(0.101)	(0.043)
lnER^{REL}	-0.143	-0.143	-0.073	-0.229*	-0.159**
	(0.232)	(0.111)	(0.063)	(0.119)	(0.068)
$D^{€}$	-2.653	-2.653	-3.231***	7.104	4.793*
	(2.978)	(1.837)	(0.528)	(4.357)	(2.499)
lnGDP^{REL}×$D^{€}$				-6.111**	-5.303***
				(2.569)	(1.403)
Adj. R^2	0.417	0.417	0.413	0.455	0.439
SE	0.134	0.134	0.134	0.129	0.131
N	32	32	32	32	32
T	2	2	2	2	2
obs	64	64	64	64	64

Notes: LS ... Least squares estimates, LS^{HC} .. Fixed effects estimates using asymptotic heteroscedasticity robust standard errors, FGLS ... Feasible generalized least squares estimates, using cross-section weights. To ensure comparability, the standard error of estimation and the adjusted R^2 always refers to first differences differenced models and are based on unweighted residuals. The Euro-Dummy is divided by 100, such that the coefficient is to be interpreted in percent.

The first column shows the least squares (LS) estimates. The relative GDP is positive as expected with an elasticity around three quarters and highly significant; the real effective exchange rate shows the right sign but is insignificant. The same holds true for the coefficient of the Euro-Dummy: it is negative, pointing to a small country bonus, but not significant at conventional levels.

Notably, there are large differences in the squared standard errors over the cross-sections, ranging from 0.01 to 0.2. As can be confirmed by more formal tests, this points to the presence of heteroscedasticity, which has to be addressed for valid inference. While in a two period panel, FE- and FD-estimation produce identical estimates and *standard* inference, this is not true for the robust covariance estimator.[5] Hence, one has to decide which estimator (FD or FE) is the proper one, in order to use the right covariance correction. This choice hinges on the properties of the error term *u* in equation (2); if it is white noise, FE is the efficient estimator; if it is a random walk, FD is efficient. In practice, the truth will lie somewhere in between, such that the strength of the serial correlation is typically used as guide. In a two period panel, testing for serial correlation does not appear to be very promising, and theoretical reasoning does not help along. For comparison, column two shows the results, when the corrected covariance, based on the FE estimates, is used. The standard errors remain fairly large, in particular of the Euro-Dummy, which is the variable of our primary interest.[6]

To improve the efficiency of our estimates, we move on with a weighted least squares approach. This "is a natural route to follow if the robust standard errors of the fixed effects estimator are too large to be useful." (Wooldridge, 2002, p. 276). In the present context, cross-section weights are the obvious choice: The resulting weighted fixed effects and first differences estimation produce identical estimates and inference; this has the further advantage that it dispenses us from making a choice between (inference based on) FD or FE estimation.

The weighted or feasible generalized least squares (FGLS) estimates of equation (2), using cross section weights are given in column three of Table 1. It is reassuring that the parameter estimates do not differ dramatically from the least squares approach. At the same time the standard errors of the coefficients shrink considerably, with the consequence that the coefficient

---

5 Compare the corrected covariances for the FE estimator (Wooldridge, 2002, p. 275) and for the FD estimator (Wooldridge, 2002, p. 282).

6 If the correction is based on the FD residuals, results are similar: p-values become smaller as well, though slightly less

of the Euro-Dummy becomes significant at the one percent level. The real effective exchange rate remains insignificant, however.

The goodness of fit hardly differs between the two estimates and is satisfactory with an R^2 around 40 percent. In order to ensure comparability, all R^2s and standard errors (SE) reported refer to the original model in first differences and are based on unweighted residuals. Since there is no precise counterpart to the R^2 in the generalized regression model, the values for the GLS estimates should be regarded as purely descriptive.[7]

We can now turn to an assessment of the economic significance of the estimates; since the Euro-Dummy is scaled by a factor of 1/100, its effect on relative exports can be read off directly from its coefficient in percent. The estimate points to an average small country bonus of some 3 percent; while this is no dramatic reallocation, of course, it is nevertheless significant in economic terms as well, given that this amounts to roughly one percent of GDP. Moreover, it should be borne in mind that this figure represents the net effect. As argued in Badinger and Breuss (2006), there may also be forces favoring large countries. What our results suggest is that the small country bonus dominates; the ceteris paribus effect depicted in the model by Casella (1996) could even be higher. Moreover, we cannot expect the small country bonus to show up always and everywhere (i.e. for any product at the disaggregated level and any ratio of countries). Nevertheless, our results suggest that small countries gained more on average and that this also shows up at the aggregate level.

---

7 Since the GLS estimator minimizes the sum of squared residuals, its R^2 cannot be compared directly to the unweighted estimates. As expected, the adjusted R^2 of the weighted models is much higher (and its standard error slightly smaller) than that of the unweighted models. But the weighted model to which the generalized R^2 refers to is just a computational device, not the model of primary interest. Moreover, neither the R^2 based on the weighted nor that based on the unweighted model are bounded by the unit interval (see Greene, 2003, p. 209).

A final qualification to the results shall be discussed. It could be that endogeneity as a result of reverse causality from relative exports to relative GDP biases our estimates. In this case the coefficient of the GDP ratio (i.e. the slope) would be upward biased, the coefficient of the Euro-Dummy (i.e. the constant) would be downward biased. Unfortunately, in the present context there are no convincing, high quality instruments available; any variable affecting GDP is likely to affect trade as well.

Hence, an important robustness check will be to see whether the results hold up at a more disaggregated level, where endogeneity is of less concern. Comparing the weighted with the unweighted least squares estimates allows a preliminary assessment. In the absence of endogeneity, they are both unbiased and should be similar. If endogeneity is present, both estimates are biased but the bias is different for the two estimators; hence pronounced endogeneity would drive a large wedge between the unweighted and weighted estimates, in particular for the estimate of the parameter of relative GDP. This is not the case here: judged by their standard errors, the weighted and unweighted parameter estimates are fairly similar.

b) Extended model

We go on to test model (3), which postulates that the relative gains in exports are a function of relative size. Column (4) shows the fixed effects estimates with corrected standard errors, column (5) the FGLS results. Including the interaction of relative GDP with the Euro-Dummy, the fit of the model improves slightly. The parameter estimates for relative GDP and the real exchange rate remain essential unchanged, but the latter becomes significant now as well. In the unweighted regression, the p-value of the Euro-Dummy ($D^{€}$) improves to 0.110; the interaction term is significant at the 5 percent level. In the weighted regression both variables are significant at the

10 and 1 percent level, respectively. They are also jointly significant in both the unweighted regression (p-value: 0.026) and the weighted regression (p-value: 0.001).

In the weighted model, the magnitude of the average effect, evaluated at the mean of the GDP ratio is -4.242 percent, which is in line with the results for the basic model (2). Depending on the size difference, the overall effect ranges from -11.232 to 1.748. The threshold of the size difference in terms of relative GDP, as of which the small country gains more (i.e. the small country bonus starts to dominate) is 2.5 (in levels). Only five of the 32 size ratios of our sample are below this threshold (AT-IE, BE-FI, NL-AT, NL-PT, PT-IE). For all other ratios, the size difference between the large and small country is sufficiently large to yield a negative overall effect.

Summing up, the estimates for aggregate trade suggest that there appears to be a small country bonus; there is also evidence that the relative gain of the small over the large country increases with the size difference. A limitation of the results is that they are not perfectly robust across all models and estimation methods. This might be due to the fact that effects differ under the surface of aggregate trade, which implies much 'averaging'. We will thus turn to the disaggregated analysis in a next step.

2. Results for Disaggregated Trade Data

a) Basic model

Using disaggregated data is an important refinement of the empirical testing strategy: In the model by Casella (1996) trade is of intra-industry type; moreover, for the small country bonus to exist, there must be increasing returns. Notice that, as already mentioned above, only the dependent variable (i.e. the export ratio) is replaced by industry data in equations (2) and (3), whereas the control variables (relative GDP and real exchange rate) remain the same as before.

Table 2 summarizes the results of the unweighted and weighted estimates of the basic model (2) form a bird eye's perspective (Detailed results are given in the Appendix). It shows the shares of the positive, negative, and insignificant parameter estimates for the three levels of aggregation. Of course, we cannot expect the small country bonus to dominate always and everywhere. But it is reassuring that for all three levels of aggregation and for both the unweighted and weighted estimates, a negatively significant parameter estimate (suggesting a small country bonus) is the most frequent result. This is particularly pronounced at the SITC1 level, but it also holds up at the SITC2 and SITC3 level.

Table 2. FG*LS and LS Estimates of Model (2) for Disaggregated Data, Overview of Results*

a) weighted estimates

		Shares[2)]			Average (all)[3)]		Average (sign.)[3)]	
	Total[1)]	–	+	0	μ	σ	μ	σ
SITC1	10	50.00	10.00	40.00	-7.297	0.498	-6.699	0.349
SITC2	62	59.68	20.97	19.35	-9.156	0.365	-9.183	0.350
SITC3	246	47.15	32.52	20.33	-5.228	0.304	-5.387	0.293

b) unweighted estimates

	Total[1)]	–	+	0	μ	σ	μ	σ
SITC1	10	40.00	0.00	60.00	-6.516	1.302	-6.452	0.778
SITC2	62	33.87	14.52	51.61	-9.602	1.360	-8.813	1.182
SITC3	246	31.71	19.51	48.78	-4.863	0.814	-3.979	0.606

Notes: [1)] Total number of estimates at the respective SITC levels. [2)] share of cases where coefficient of D^{ϵ} is negatively significant, positively significant, and insignificant respectively; significance level: 5 percent. [3)] Trade share weighted averages of all (significant) coefficients; standard deviation calculated assuming that the industry-specific coefficients are independent.

In a next step we check whether the industry specific results are in line with the aggregate estimates, by summing up the SITC-level specific estimates using the respective trade share in total trade as weights. The implied effects generally exceed those from the estimates for total trade: We arrive at an average aggregate effect of some 7 percent at the SITC1 level, 9 percent at the STIC2 level, and some 5 percent at the SITC3 level.

b) Extended model

Both the aggregate estimates and the disaggregated estimates of model (2) point to a small country bonus on average; the aggregate estimates of the extended model (3) also suggest that the magnitude of the size difference is important: the estimates suggest that the small country bonus starts to dominate as of a size ratio of 2.5. We now consider this extended equation (3) from a more disaggregated perspective.

We proceed as follows: Model (3) is estimated at the SITC1, SITC2, SITC3 level. We start by showing in how many of the cases the coefficients of the Euro-Dummy and the interaction of the Euro-Dummy with the GDP ratio are jointly significant. Only then, the effect of the Euro on trade can be reasonably regarded to be a function of relative market size. (A more stringent test would require both variables to be significant separately as well).

For the cases, where the joint p-value (of γ_1 and γ_2 in equation (3)) points to a significant effect, there are four possible outcomes. Both coefficients can be negative or positive: then there is an unambiguous small or large country bonus. Table 3 shows the respective shares of estimates at the different levels of aggregation; the shares of the cases with a joint negative effect range from 20 to 33 percent, which is clearly larger than the share of cases where bith coefficients are positive.

Table 3. *FGLS and LS Estimates of Model (3) for Disaggregated Data, Overview of Results*

a) weighted estimates

	Total[1)]	Share of significant [2)]	Distribution of coefficients [3)]				Total [4)]	
			– –	+ +	+ –	– +	– –	+ +
SITC1	10	60.00	33.33	0.00	66.67	0.00	100.00	0.00
SITC2	62	88.71	27.27	10.91	41.82	20.00	69.09	30.91
SITC3	246	84.96	20.10	11.00	45.93	22.97	66.03	33.97

b) unweighted estimates

	Total[1)]	Share of significant [2)]	Distribution of coefficients [3)]				Total [4)]	
			– –	+ +	+ –	– +	– –	+ +
SITC1	10	40.00	75.00	0.00	25.00	0.00	100.00	0.00
SITC2	62	53.23	27.27	9.09	51.52	12.12	78.79	21.21
SITC3	246	56.91	20.00	14.29	42.86	22.86	62.86	37.14

Notes: [1)] Total number of estimates at the respective SITC levels. [2)] share of cases where coefficient of $D^{€}$ and $GDP^{REL}D^{€}$ are jointly significant; significance level: 5 percent. [3)] Distribution of coefficients among possible outcomes; the first sign refers to coefficients of $D^{€}$, second sign to that of the interaction term. [4)] Total distribution, where the potentially ambiguous cases (+ – and – +), which are unambiguous for our given of GDP ratios, were assigned to the cases – – and + +.

Alternatively, the coefficients could have the opposite sign; then the effect is ambiguous, depending on relative country size. Table 3 shows the respective shares of the cases where the two coefficients take the opposite sign. For each of these cases, we calculate the threshold for the size ratio, as of which the direction of the effect changes. Fortunately, we find that in no single industry, the threshold is of relevance for our sample: it is always clearly below 2, the smallest size ratio in our sample. In several cases, the threshold is even below one which is actually ruled in the given specification of ratios from „large to small“. Hence we can sharpen the results by adding the shares with a potentially ambiguous but actually unambiguous effect to the shares where both coefficients show the same sign. The last two columns in Table 3 show the corresponding shares. The results are even strengthened: In two third of the cases where the relative gains depend on relative size, small countries gained relatively more.

IV. Conclusions

This paper tests for asymmetries in the trade effects of the Euro with respect to country size. Our empirical model is motivated by the new-trade theory model by Casella (1996), which investigates the distributions of the gains from trade bloc enlargement among its member states. We argue that the implications of this model hold up for the introduction of a common currency as well: The intuition is that if country size matters – e.g. if larger countries are more competitive since a large domestic market allows them to produce at lower costs – large countries have a starting advantage. But this also means that any regime shift that induces an increase in the market size (or the size of the market that can be reached with relative ease) triggers a catching up effect of the small country, since its relative market expansion is larger. As a consequence, the induced increase in competitiveness is relatively larger for the small country, such that it should be able to improve its export performance relative to the large country.

We use a gravity model in ratios, relating relative exports (of the large and small country to the Euro area) to relative GDP and the relative real exchange rate and test for a small country bonus as a result of the Euro, using 32 ratios of large to small countries over two time periods: "before" (1994-1998) and "after" (2001-2005) the introduction of the Euro. The estimation is carried out both for aggregate exports and also at the SITC1, SITC2, and SITC3 industry level.

While a small country bonus does not show up always and everywhere, the overall results are supportive to the theoretical predictions by Casella (1996). This is true both at the aggregate level and at the industry level, where we find that small countries gained more on average in a majority of the SITC groups considered. On average over all models, we find that the Euro has led to a 'reallocation' of intra-Euro area exports to small countries by some 6 percent. In addition, we also find that the magnitude of the relative gain often depends on the size difference between the large and the small country.

A broader reading of the results suggest that country size is an important mechanism shaping economic performance, but that it operates at subtle levels. The model by Casella (1996) and the supporting evidence in this paper make a convincing case that there exists a small country bonus, but the particular transmission channel considered is certainly not the only one if increasing returns to scale are assumed, and other mechanisms favouring large countries (such as group ties and network effects) are conceivable as well. A more complete and integrated theoretical framework, which depicts the channels through which country size matters, remains to be developed in future research. This would also allow to impose more structure on the empirical testing strategy and help to identify not only the net effect of enlarging a trade bloc or introducing a common currency, but also to identify the various mechanisms at work and to assess their empirical relevance.

Appendix Tables

Table A2.1 *Size Relationships: Large to Small Countries*

Relatively large country *i*	Relatively small country *j*	Relative EMPL (*i* to *j*)	Relative GDP (*i* to *j*)
AT	IE	2.5	2.2
BE	FI	1.8	2.1
	IE	2.5	2.6
DE	AT	9.4	9.1
	BE	9.5	7.7
	ES	2.6	2.5
	FI	16.8	15.8
	IE	23.8	20.2
	NL	4.8	4.6
	PT	7.9	11.2
ES	AT	3.6	3.6
	BE	3.6	3.1
	FI	6.5	6.3
	IE	9.2	8.1
	PT	3.0	4.5
FR	AT	5.8	6.8
	BE	5.8	5.8
	FI	10.3	11.8
	IE	14.5	15.1
	NL	3.0	3.5
	PT	4.8	8.4
IT	AT	5.0	6.3
	BE	5.0	5.4
	FI	9.0	11.1
	IE	12.7	14.2
	NL	2.6	3.2
	PT	4.2	7.9
NL	AT	1.9	2.0
	FI	3.5	3.4
	IE	4.9	4.4
	PT	1.6	2.4
PT	IE	3.0	1.8

Notes: Data on Employment and GDP in 1999 (in PPPs) taken from OECD Economic Outlook Database.

Table A2.2 *Estimation Results for Equation (2) at SITC1 and SITC2 Level for Parameter of* $D^{\text{€}}$

	Coefficient of $D^{\text{€}}$		SITC2	Coefficient of $D^{\text{€}}$			Coefficient of $D^{\text{€}}$	
SITC1	LS	FGLS	SITC2	LS	FGLS	SITC2	LS	FGLS
X0	-23.55***	-25.75***	X01	-9.94	-14.11***	X56	-67.60***	-65.37***
X1	-15.95*	-13.87***	X02	-18.31*	-18.36***	X57	-4.52	-3.04***
X2	1.76	-0.08	X03	11.76	11.58***	X58	-12.05*	-12.75***
X3	-45.65***	-45.93***	X04	-27.91***	-29.31***	X59	10.09**	11.89***
X4	-25.35***	-26.19***	X05	-28.79***	-27.11***	X61	-4.94	-4.47
X5	0.19	0.39	X06	-34.71***	-34.32***	X62	-13.98*	-11.73***
X6	-3.09	-3.81*	X07	6.17	7.29***	X63	1.18	-1.89
X7	-7.43***	-8.28***	X08	-4.96	-9.67***	X64	19.24***	19.11***
X8	4.85	3.75**	X09	-48.81***	-46.45***	X65	-8.45*	-8.17***
X9	1.50	0.76	X11	-14.31**	-13.32***	X66	-5.54	-7.77***
			X12	-43.36	-39.44***	X67	-25.35**	-24.03***
			X21	-9.96	-12.65***	X68	-39.59***	-33.25***
			X22	-52.31***	-51.48***	X69	-4.32	-3.71*
			X23	-51.37***	-49.98***	X71	2.51	4.73*
			X24	-4.73	-11.95***	X72	-13.41***	-13.32***
			X25	39.80***	37.30***	X73	-4.41	-1.90
			X26	-73.57***	-75.27***	X74	-18.20***	-18.41***
			X27	11.97*	4.50	X75	-48.95**	-51.54***
			X28	14.86***	12.52***	X76	19.68***	21.79***
			X29	-2.60	-3.32***	X77	-4.40	-4.45***
			X32	57.43***	58.15***	X78	-16.16***	-15.47***
			X33	-13.43	-13.14***	X79	14.67	14.39***
			X34	-113.15**	-108.62***	X81	-6.17	-4.98***
			X41	-4.96	-5.06**	X82	-17.67***	-19.67***
			X42	-52.77***	-59.99***	X83	23.93***	22.83***
			X43	-11.88	7.25	X84	26.94***	22.45***
			X51	-30.49***	-28.03***	X85	-27.52***	-27.75***
			X52	16.28**	5.39*	X87	5.47*	4.52***
			X53	-51.13***	-52.27***	X88	-5.12	-3.56
			X54	22.04*	30.09***	X89	-1.54	-0.25
			X55	3.40	4.42*	X97	-18.50	-12.64

Notes: ***, **, * denote significance at the 1, 5, and 10 percent level, respectively.

Table A2.3 *Estimation Results for Equation (2) at SITC3 Level for Parameter of* $D^{€}$

	Coefficient of $D^{€}$			Coefficient of $D^{€}$			Coefficient of $D^{€}$	
SITC3	LS	FGLS	SITC3	LS	FGLS	SITC3	LS	FGLS
X011	7.99	6.30	X514	-44.62***	-40.96***	X711	-54.58***	-51.04***
X012	-17.61	-14.80***	X515	-54.88***	-54.61***	X712	57.41	42.05
X016	14.57	15.06***	X516	-6.23	-7.46***	X713	-6.54	-5.93
X017	10.67	13.85***	X522	22.29**	4.97	X714	51.69***	48.88***
X022	2.56	2.91***	X523	-16.52*	-18.10***	X716	-1.12	-0.22
X023	-49.06***	-45.28***	X524	8.77	2.39	X718	-48.33***	-35.49***
X024	16.02	11.21*	X525	38.25**	36.76***	X721	-14.59**	-12.17***
X025	59.93**	68.49***	X531	-63.62***	-58.11***	X722	13.52	18.34***
X034	-18.32**	-18.30***	X532	-58.20***	-52.46***	X723	-40.71***	-43.09***
X035	-34.41**	-48.28***	X533	-40.82***	-41.12***	X724	-21.47***	-20.40***
X036	-29.70***	-27.17***	X541	11.38	11.82***	X725	0.38	2.54*
X037	84.63***	83.61***	X542	27.09**	28.26***	X726	-15.87	-17.25***
X041	-20.14	-22.69***	X551	21.71***	21.99***	X727	6.94	6.92***
X042	25.36**	22.68***	X553	13.12**	15.58***	X728	-16.75**	-14.69***
X043	10.59	13.85***	X554	-16.31**	-18.91***	X731	-18.38***	-18.38***
X044	8.51	4.18	X562	-67.60***	-65.37***	X733	12.37	11.69***
X045	-43.10**	-38.84***	X571	-4.18	-8.19***	X735	-4.85	-6.78***
X046	-22.53*	-7.18	X572	-6.46	-8.48***	X737	-19.50**	-27.79***
X047	28.57	36.98***	X573	-8.91	-8.78***	X741	-11.23**	-9.89***
X048	-15.37**	-14.68***	X574	12.99	6.79***	X742	-28.94***	-28.95***
X054	-40.76***	-25.72***	X575	-28.46***	-26.39***	X743	-42.15***	-40.48***
X056	-1.20	-4.23	X579	6.19	2.52	X744	-6.94**	-7.09***
X057	-32.46***	-35.11***	X581	18.87***	22.58***	X745	-5.46	-5.18***
X058	-75.97***	-74.00***	X582	-12.16*	-11.05***	X746	5.42	3.67
X059	-14.19*	-18.67***	X583	-24.83***	-26.36***	X747	-26.75**	-29.60***
X061	-40.66***	-40.61***	X591	30.64***	27.65***	X748	4.39	2.56
X062	-6.59	-6.53***	X592	6.24	7.81***	X749	-36.71***	-35.39***
X071	4.43	4.63	X593	-60.21***	-56.64***	X751	-26.89*	-20.76***
X072	-158.04***	-169.92***	X597	93.79***	78.52***	X752	-24.40	-52.04***
X073	3.87	8.07***	X598	7.40	3.16	X759	-63.42***	-49.36***
X074	-33.25	-26.65*	X611	12.51*	12.03***	X761	45.08**	48.34***
X075	-6.39	-7.02**	X612	-6.60	-6.42	X762	5.62	8.23**
X081	-4.96	-9.67***	X613	-2.40	-2.08	X763	97.21***	94.26***
X091	-16.55	-16.12	X621	-18.78*	-21.38***	X764	25.77***	26.26***
X098	-44.30***	-42.92***	X625	-17.95	-16.01***	X771	17.95**	15.74***
X111	-11.71	-10.36***	X629	-27.62***	-25.21***	X772	-2.87	-3.06**
X112	-1.59	-1.73	X633	-15.42	-14.01*	X773	13.27***	13.88***
X121	-36.94*	-30.92***	X634	9.39*	7.57***	X774	0.18	-2.32
X122	-47.06*	-40.80***	X635	-3.05	-2.93*	X775	-6.65	-9.20***
X211	3.49	5.30	X641	23.32***	24.52***	X776	3.60	7.66***
X212	57.61	71.42***	X642	39.31***	38.74***	X778	-18.44***	-19.36***
X222	-63.45***	-67.09***	X651	0.17	0.07	X781	-12.77**	-12.87***
X223	-42.05***	-47.76***	X652	-11.14	-9.18**	X782	5.58	4.17*
X231	41.41	61.59**	X653	-8.99	-11.24**	X783	-13.02	-12.28***

Table A2.3 (continued) *Estimation Results for Equation (2) at SITC3 Level for Parameter of $D^{€}$*

	Coefficient of $D^{€}$			Coefficient of $D^{€}$			Coefficient of $D^{€}$	
SITC3	LS	FGLS	SITC3	LS	FGLS	SITC3	LS	FGLS
X232	-48.99***	-51.50***	X654	-21.92***	-21.48***	X784	-18.51***	-17.45***
X244	145.11	114.14*	X655	31.99**	21.59***	X785	-32.58***	-31.70***
X245	-88.67***	-99.89***	X656	24.87***	26.25***	X786	-29.96***	-27.56***
X246	8.90	4.83	X657	-17.13**	-15.56***	X791	30.46**	22.55**
X247	17.92**	18.58***	X658	-9.60***	-9.20***	X792	4.27	1.05
X248	15.99	12.13***	X659	-19.07**	-20.09***	X793	47.57**	47.12***
X251	39.80***	37.30***	X661	-16.14**	-20.94***	X811	44.92***	39.60***
X263	-62.31***	-57.38***	X662	31.81***	33.27***	X812	-4.50	-3.74
X265	46.11***	33.66***	X663	-20.39***	-19.74***	X813	-7.59**	-9.02***
X266	-29.18***	-28.10***	X664	-11.66**	-10.16***	X821	-17.67***	-19.67***
X267	-85.83***	-89.12***	X665	-14.93**	-11.64***	X831	23.93***	22.83***
X268	-22.61	-17.21***	X666	9.28	8.26***	X841	46.94***	46.81***
X269	-37.72***	-40.16***	X667	50.17***	61.39***	X842	39.65***	36.36***
X272	-63.63***	-58.22***	X671	19.70	19.81***	X843	33.82***	31.48***
X273	-1.59	-0.45	X672	-3.32	-14.62*	X844	33.84***	34.22***
X274	-69.47***	-56.98***	X673	18.50*	20.37***	X845	6.18	3.75
X277	0.25	-31.82	X674	-6.83	-7.39***	X846	25.90***	26.86***
X278	-19.91***	-23.49***	X675	23.84*	23.29***	X848	7.48	12.85*
X282	4.79	2.53	X676	-26.88*	-22.56***	X851	-27.52***	-27.75***
X285	135.21**	150.34***	X677	105.54***	99.39***	X871	43.43***	40.45***
X287	0.50	-9.58	X678	6.47	11.00***	X872	4.40	4.55***
X288	0.56	1.89*	X679	-12.57	-11.25***	X873	11.25*	14.27***
X289	129.09***	122.29***	X681	33.31	21.44*	X874	7.57***	6.03***
X291	7.59	8.81***	X682	-27.81***	-20.98***	X881	26.36**	26.68***
X292	-8.61	-8.40***	X683	-66.68***	-71.35***	X882	35.24***	35.17***
X321	-302.33***	-286.95***	X684	-36.89***	-35.71***	X883	-31.11*	-26.79
X322	-0.88	1.40	X685	-112.29***	-113.15***	X884	-25.36***	-28.15***
X334	-21.15**	-21.41***	X686	-41.18**	-44.75***	X885	4.93	3.00
X335	15.66***	16.91***	X687	-18.31	2.66	X891	18.45	23.84**
X342	72.19***	73.50***	X689	108.55***	109.40***	X892	12.82***	10.15***
X344	-150.22**	-108.34***	X691	-31.31**	-35.97***	X893	-8.02	-7.56***
X411	-4.96	-5.06**	X692	7.53	8.95*	X894	-0.12	2.68*
X421	-55.57***	-57.41***	X693	3.19	0.52	X895	-2.34	-2.69***
X422	-21.54*	-19.56**	X694	-32.15***	-29.67***	X896	8.96	10.89***
X431	-11.88	7.25	X695	-24.91***	-22.32***	X897	5.98	7.89*
X511	8.83	9.15***	X696	3.04	7.40**	X898	-16.10*	-12.71***
X512	11.08	17.14**	X697	4.25	3.18**	X899	32.53**	25.94***
X513	44.57***	43.07***	X699	-5.39	-6.43***	X971	-18.50	-12.64

Notes: ***, **, * denote significance at the 1, 5, and 10 percent level, respectively.

V. References

Badinger, H. and Breuss, F. (2006). Country size and the gains from trade bloc enlargement: an empirical assessment for the European Community, *Review of International Economics*, 14(4), 2006, 615- 631.

Baldwin, R. (2006a). *In or Out: Does It Make a Difference? An Evidence Based Analysis of the Trade Effects of the Euro*. London: Center for Economic Policy Research.

Baldwin, R. (2006b). The Euro's trade effects. *ECB Working Paper*, No. 594.

Casella, A. (1996). Large countries, small countries and the enlargement of trade blocs. *European Economic Review*, 40(2), 389-415.

Chen, N. (2004). Intra-national versus international trade in the European Union: Why do national borders matter? *Journal of International Economics* 63(1), 93-118.

European Commission (2007). Price and Cost Competitiveness, data as of 31 March 2007. http://ec.europa.eu/economy_finance/publications/priceandcostcompetiteveness_en.htm

European Commission (2002). The State of the Internal Market for Services. Report from the Commission to the Council and the European Parliament. COM(2002) 441 final, Brussels.

Greene, W. (2003). *Econometric Analysis*, 5. ed., U.S. River, N.J.: Prentice Hall.

Rose, A.K. (2007). Size really doesn't matter: in search of a national scale effect. *Journal of Japanese and International Economics*, forthcoming.

Wooldridge, J.M. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Mass.: MIT Press.

.

VI. EI Working Papers

1 Gerhard Fink, A Schedule of Hope for the New Europe, Oktober 1993.

2 Gerhard Fink, Jutta Gumpold, Österreichische Beihilfen im europäischen Wirtschaftsraum (EWR), Oktober 1993.

3 Gerhard Fink, Microeconomic Issues of Integration, November 1993.

4 Fritz Breuss, Herausforderungen für die österreichische Wirtschaftspolitik und die Sozialpartnerschaft in der Wirtschafts- und Währungsunion, November 1993.

5 Gerhard Fink, Alexander Petsche, Central European Economic Policy Issues, July 1994.

6 Gerhard Fink, Alexander Petsche, Antidumping in Österreich vor und nach der Ostöffnung, November 1994.

7 Fritz Breuss, Karl Steininger, Reducing the Greenhouse Effect in Austria: A General Equilibrium Evaluation of CO2-Policy-Options, March 1995.

8 Franz-Lothar Altmann, Wladimir Andreff, Gerhard Fink, Future Expansion of the European Union in Central Europe, April 1995.

9 Gabriele Tondl, Can EU's Cohesion Policy Achieve Convergence?, April 1995.

10 Jutta Gumpold, Nationale bzw. gesamtwirtschaftliche Effekte von Beihilfen - insbesondere Exportbeihilfen, April 1995.

11 Gerhard Fink, Martin Oppitz, Kostensenkungspotentiale der Wiener Wirtschaft - Skalenerträge und Kostendruck, August 1995.

12 Alexander Petsche, Die Verfassung Ungarns im Lichte eines EU-Beitritts, September 1995.

13 Michael Sikora, Die Europäische Union im Internet, September 1995.

14 Fritz Breuss, Jean Tesche, A General Equilibrium Analysis of East-West Migration: The Case of Austria-Hungary, January 1996.

15 Alexander Petsche, Integrationsentwicklung und Europaabkommen EU - Ungarn, Juli 1996.

16 Jutta Gumpold, Die Ausfuhrförderung in der EU, Juni 1996.

17 Jutta Gumpold, Internationale Rahmenregelungen zur Ausfuhrförderung, Juni 1996.

18 Fritz Breuss, Austria's Approach towards the European Union, April 1996.

19 Gabriele Tondl, Neue Impulse für die österreichische Regionalpolitik durch die EU-Strukturfonds, Mai 1996.

20 Griller, Droutsas, Falkner, Forgó, Klatzer, Mayer, Nentwich, Regierungskonferenz 1996: Ausgangspositionen, Juni 1996.

21 Stefan Griller, Ein Staat ohne Volk? Zur Zukunft der Europäischen Union, Oktober 1996.

22 Michael Sikora, Der „EU-Info-Broker“ – ein datenbankgestütztes Europa-informationssystem im World Wide Web über die KMU-Förderprogramme der Europäischen Kommission, November 1996.

23 Katrin Forgó, Differenzierte Integration, November 1996.

24 Alexander Petsche, Die Kosten eines Beitritts Ungarns zur Europäischen Union, Januar 1997.

25 Stefan Griller, Dimitri Droutsas, Gerda Falkner, Katrin Forgó, Michael Nentwich, Regierungskonferenz 1996: Der Vertragsentwurf der irischen Präsidentschaft, Januar 1997.

26 Dimitri Droutsas, Die Gemeinsame Außen- und Sicherheitspolitik der Europäischen Union. Unter besonderer Berücksichtigung der Neutralität Österreichs, Juli 1997.

27 Griller, Droutsas, Falkner, Forgó, Nentwich, Regierungskonferenz 1996: Der Vertrag von Amsterdam in der Fassung des Gipfels vom Juni 1997, Juli 1997.

28 Michael Nentwich, Gerda Falkner, The Treaty of Amsterdam. Towards a New Institutional Balance, September 1997.

29 Fritz Breuss, Sustainability of the Fiscal Criteria in Stage III of the EMU, August 1998.

30 Gabriele Tondl, What determined the uneven growth of Europe´s Southern regions? An empirical study with panel data, März 1999.

31 Gerhard Fink, New Protectionism in Central Europe - Exchange Rate Adjustment, Customs Tariffs and Non-Tariff Measures, Mai 1999.

32 Gerhard Fink, Peter Haiss, Central European Financial Markets from an EU Perspective. Review of the Commission (1998) Progress Report on Enlargement, Juni 1999.

33 Fritz Breuss, Costs and Benefits of EU Enlargement in Model Simulations, Juni 1999.

34 Gerhard Fink, Peter R. Haiss, Central European Financial Markets from an EU Perspective. Theoretical aspects and statistical analyses, August 1999.

35 Fritz Breuss, Mikulas Luptacik, Bernhard Mahlberg, How far away are the CEECs from the EU economic standards? A Data Envelopement Analysis of the economic performance of the CEECs, Oktober 2000.

36 Katrin Forgó, Die Internationale Energieagentur. Grundlagen und aktuelle Fragen, Dezember 2000

37 Harald Badinger, The Demand for International Reserves in the Eurosystem, Implications of the Changeover to the Third Stage of EMU, Dezember 2000.

38 Harald Badinger, Fritz Breuss, Bernhard Mahlberg, Welfare Implications of the EU's Common Organsiation of the Market in Bananas for EU Member States, April 2001

39 Fritz Breuss, WTO Dispute Settlement from an Economic Perspective – More Failure than Success, Oktober 2001.

40 Harald Badinger, Growth Effects of Economic Integration – The Case of the EU Member States, Dezember 2001.

41 Gerhard Fink, Wolfgang Koller, Die Kreditwürdigkeit von Unternehmen im Hinblick auf die Wirtschafts- und Währungsunion - Wien im österreichischen Vergleich, Dezember 2001.

42 Harald Badinger, Gabriele Tondl, Trade, Human Capital and Innovation: The Engines of European Regional Growth in the 1990s, Januar 2002.

43 David Blum, Klaus Federmair, Gerhard Fink, Peter Haiss, The Financial-Real Sector Nexus: Theory and Empirical Evidence, September 2002.

44 Harald Badinger, Barbara Dutzler, Excess Reserves in the Eurosystem: An Economic and Legal Analysis, September 2002.

45 Gerhard Fink, Nigel Holden, Collective Culture Shock: Constrastive Reactions to Radical Systemic Change, Oktober 2002.

46 Harald Badinger, Fritz Breuss, Do small countries of a trade bloc gain more of its enlargement? An empirical test of the Casella effect for the case of the European Community, Oktober 2002.

47 Harald Badinger, Werner Müller, Gabriele Tondl, Regional convergence in the European Union (1985-1999). A spatial dynamic panel analysis, Oktober 2002.

48 Harald Badinger, Fritz Breuss, What Has Determined the Rapid Post-War Growth of Intra-EU Trade?, February 2003.

49 Gerhard Fink, Peter Haiss, Sirma Hristoforova, Bonds Market and Economic Growth, April 2003.

50 Fritz Breuss, Markus Eller, Efficiency and Federalism in the European Union, The Optimal Assignment of Policy Tasks to Different Levels of Government, May 2003.

51 Gabriele Tondl, Goran Vuksic, What makes regions in Eastern Europe catching up? The role of foreign investment, human resources and geography, May 2003.

52 Fritz Breuss, Balassa-Samuelson Effects in the CEEC: Are they Obstacles for Joining the EMU?, May 2003.

53 Angelika Hable, Handlungsformen und Kompetenzen in der Europäischen Verfassungsdebatte, September 2003.

54 Heinrich Schneider, „Kerneuropa" Ein aktuelles Schlagwort und seine Bedeutung, Februar 2004.

55 Harald Badinger, Do we really know that the EU's Single Market Programme has fostered competition? Testing for a decrease in markup ratios in EU industries, February 2004.

56 Michaela Seifert, Die Rechtlichen Grundlagen des Bologna-Prozesses und der Lissabon-Strategie – europaweite Vereinheitlichung der Studienstrukturen und Maßnahmen zur Erleichterung der Anerkennung von Diplomen, März 2004.

57 Heinrich Schneider, Liquidiert Präsident Bush das Völkerrecht? Macht, Recht und Europa in der heutigen Weltordnungspolitik, April 2004.

58 Gerhard Fink, Peter Haiss, Goran Vukšić, Changing Importance of Financial Sectors for Growth from Transition to Cohesion and European Integration, July 2004.

59 Gabriele Tondl, EU Regional Policy. Experiences and Future Concerns, July 2004.

60 Gerhard Fink, Anne-Katrin Neyer, Marcus Kölling, Sylvia Meierewert, An Integrative Model of Multinational Team Performance, November 2004.

61 Kathrin Blanck, Flexible Integration in the Common Foreign and Security Policy, December 2004.

62 Gerhard Fink, Marcus Kölling, Anne-Katrin Neyer, The Cultural Standard Method, January 2005.

63 Peter Haiss, Stefan Marin, Options for Developing Bond Markets – Lessons from Asia for Central and Eastern Europe, January 2005.

64 Gerhard Fink, Peter Haiss, Hans Christian Mantler, The Finance-Growth Nexus: Market Economies vs. Transition Countries, February 2005

65 Fritz Breuss, Austria, Finland and Sweden after 10 Years in the EU: Expected and Achieved Integration Effects, March 2005.

66 Harald Badinger, Fritz Breuss, Trade and Productivity: An Industry Perspective, March 2005.

67 Angelika Hable, The European Constitution: Changes in the Reform of Competences with a Particular Focus on the External Dimension, March 2005.

68 Gerhard Fink, Peter Haiss, Herwig Kirchner, Ulrike Thorwartl, Financing trough Bond Issues and the Nexus with Economic Growth, September 2005.

69 Markus Eller, Peter Haiss, Katharina Steiner, Foreign Direct Investment in the Financial Sector: The Engine of Growth for Central and Eastern Europe?, December 2005.

70 Gerhard Fink, Peter Haiss, Sirma Hristoforova, Credit, Bonds, Stocks and Growth in Seven Large Economies, January 2006

71 Gabriele Tondl, Iulia Traistaru-Siedschlag, Regional Growth Cycle Convergence in the European Union, June 2006

72 Michaela Seifert: Die Durchführung des Gemeinschaftsrechts durch die Europäische Kommission als Teil europäischer "Gesetzgebungstätigkeit" – aktuelle Rechtslage und Modell der Europäischen Verfassung, Juli 2006

73 Peter Haiss, Gerhard Fink, The Finance-Growth-Nexus Revisited: New Evidence and the Need for Broadening the Approach, August 2006

74 Dagmar Inzinger / Peter Haiss, Integration of European Stock Markets: A Review and Extension of Quantity-Based Measures, November 2006

75 Fritz Breuss, A Common Election Day for Euro Zone Member States?, January 2007

76 Fritz Breuss, A Prototype Model of EU´s 2007 Enlargement, May 2007

VII. Europe Institute Publication Series

(available via bookstores)

1 Österreichisches Wirtschaftsrecht und das Recht der EG. Hrsg von *Karl Korinek/Heinz Peter Rill*. Wien 1990, Verlag Orac. XXIV und 416 Seiten. (öS 1.290,-)

2 Österreichisches Arbeitsrecht und das Recht der EG. Hrsg von *Ulrich Runggaldier*. Wien 1990, Verlag Orac. XIII und 492 Seiten. (öS 1.290,-)

3 Europäische Integration aus österreichischer Sicht. Wirtschafts-, sozial und rechtswissenschaftliche Aspekte. Hrsg von *Stefan Griller/Eva Lavric/Reinhard Neck*. Wien 1991, Verlag Orac. XXIX und 477 Seiten. (öS 796,-)

4 Europäischer Binnenmarkt und österreichisches Wirtschaftsverwaltungsrecht. Hrsg von *Heinz Peter Rill/Stefan Griller*. Wien 1991, Verlag Orac. XXIX und 455 Seiten. (öS 760,)

5 Binnenmarkteffekte. Stand und Defizite der österreichischen Integrations-forschung. Von *Stefan Griller/Alexander Egger/Martina Huber/Gabriele Tondl*. Wien 1991, Verlag Orac. XXII und 477 Seiten. (öS 796,-)

6 Nationale Vermarktungsregelungen und freier Warenverkehr. Untersuchung der Art. 30, 36 EWG-Vertrag mit einem Vergleich zu den Art. 13, 20 Freihandelsabkommen EWG - Österreich. Von *Florian Gibitz*. Wien 1991, Verlag Orac. XIV und 333 Seiten. (öS 550,)

7 Banken im Binnenmarkt. Hrsg von *Stefan Griller*. Wien 1992, Service Fachverlag. XLII und 1634 Seiten. (öS 1.680,-)

8 Auf dem Weg zur europäischen Wirtschafts- und Währungsunion? Das Für und Wider der Vereinbarungen von Maastricht. Hrsg von *Stefan Griller*. Wien 1993, Service Fachverlag. XVII und 269 Seiten. (öS 440,-)

9 Die Kulturpolitik der EG. Welche Spielräume bleiben für die nationale, insbesondere die österreichische Kulturpolitik? Von *Stefan Griller*. Wien 1995, Service Fachverlag.

10 Das Lebensmittelrecht der Europäischen Union. Entstehung, Rechtsprechung, Sekundärrecht, nationale Handlungsspielräume. Von *Michael Nentwich*. Wien 1994, Service Fachverlag. XII und 403 Seiten. (öS 593,-)

11 Privatrechtsverhältnisse und EU-Recht. Die horizontale Wirkung nicht umgesetzten EU-Rechts. Von *Andreas Zahradnik.* Wien 1995, Service Fachverlag. (öS 345,-)

12 The World Economy after the Uruguay Round. Hrsg von *Fritz Breuss*. Wien 1995, Service Fachverlag. XVII und 415 Seiten. (öS 540,-)

13 European Union: Democratic Perspectives after 1996. Von *Gerda Falkner/ Michael Nentwich*. Wien 1995, Service Fachverlag. XII und 153 Seiten. (öS 385,-)

14 Rechtsfragen der Wirtschafts- und Währungsunion. Hrsg von *Heinz Peter Rill* und *Stefan Griller*. Wien 1997, Springer Verlag Wien/New York, 197 Seiten.

15 The Treaty of Amsterdam – Facts Analysis, Prospects. Von *Stefan Griller*, *Dimitri P. Droutsas*, *Gerda Falkner*, *Katrin Forgó*, *Michael Nentwich*. Wien 2000, Springer Verlag Wien/New York, 643 Seiten.

16 Europäisches Umweltzeichen und Welthandel. Grundlagen, Entscheidungs-prozesse, rechtliche Fragen. Von *Katrin Forgó*. Wien 1999, Springer Verlag Wien/New York 1999, 312 Seiten.

17 Interkulturelles Management. Österreichische Perspektiven. Von *Gerhard Fink*, *Sylvia Meierewert* (Hrsg.), Springer Verlag Wien/New York, 2001, 346 Seiten

18 Staatshaftung wegen Gemeinschaftsrechtsverletzung: Anspruchsgrundlage und materielle Voraussetzungen. Zugleich ein Beitrag zur Gemeinschaftshaftung, Von *Birgit Schoißwohl*, Springer Verlag Wien/New York, 2002, 512 Seiten.

19 The Banana Dispute: An Economic and Legal Analysis. Von *Fritz Breuss, Stefan Griller, Erich Vranes* (Hrsg.), ca 400 Seiten (2003).

20 External Economic Relations and Foreign Policy in the European Union, Von *Stefan Griller, Birgit Weidel* (Hrsg.), Springer Verlag Wien/New York, 2002, 500 Seiten.

21 Wachstumseffekte der Europäischen Integration, Von *Harald Badinger*, Springer Verlag Wien / New York 2003, 235 Seiten.

22 The European System of Central Banks: An Autonomous Actor? The Quest for an Institutional Balance in EMU, *Barbara Dutzler*, Vienna / New York (Springer) 2003, 293 pages.

23 Institutional, Legal and Economic Aspects of the EMU, Von *Fritz Breuss, Gerhard Fink, Stefan Griller* (Hrsg.), Springer Verlag Wien / New York 2003, 346 Seiten.

24 Russia – Continuity and Change, *Hans-Georg Heinrich, Gerald Hinteregger* (Hrsg.), Springer Verlag Wien / New York 2004, IV and 549 pages.

25 Access to Affordable Medicines. Developing Responses under the TRIPS Agreement and EC Law, *Katharina Gamharter*, Wien / New York (Springer) 2004, X and 303 pages.

26 Die Europäische Sicherheits- und Verteidigungspolitik im Rahmen der europäischen Sicherheitsarchitektur, *Kathrin Blanck*, Wien / New York (Springer) 2005, XI und 390 Seiten.