

Spain: Selected Issues

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SPAIN

Selected Issues

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Approved by the European Department

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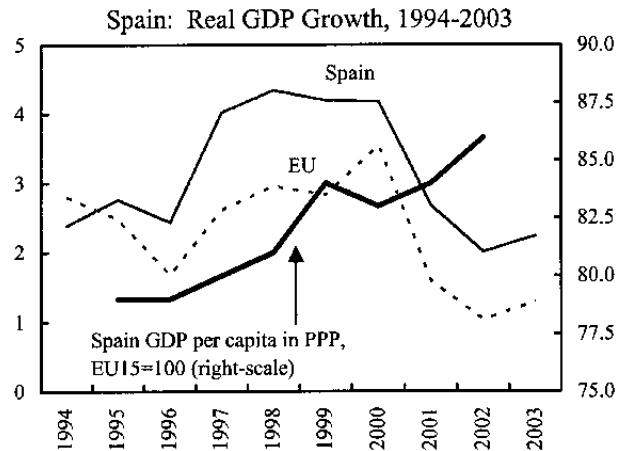
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EU ENLARGEMENT AND SPAIN: MORE OPPORTUNITIES THAN CHALLENGES

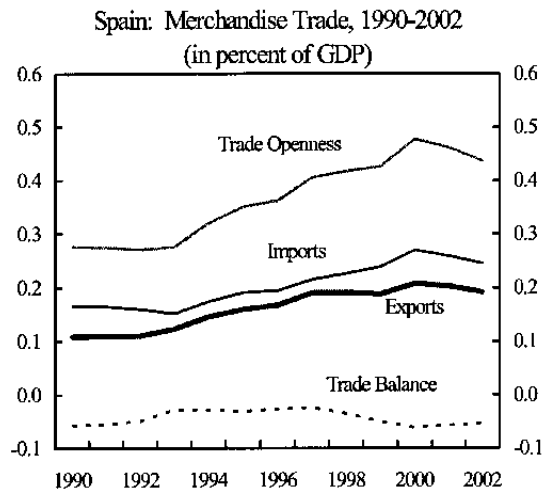
A. Introduction

1. Since the mid 1990s, Spain has experienced a continuous narrowing of the per capita income differential vis-à-vis the EU. Spain's per capita income exceeded 85 percent of the EU average in 2002, roughly 10 percentage points higher than a decade ago, and increased further in 2003. Robust growth was spurred by prudent macroeconomic policies: the large fiscal deficits of the early 1990s gave way to sustained gains in fiscal consolidation that, by allowing real interests to fall and securing early EMU participation, crowded-in private investment.¹ At the same time, expenditure control allowed needed reductions on the tax burden. This was complemented by reforms in labor and product markets, resulting in significant pay-offs in employment, particularly evident during the recent slowdown of economic activity when private consumption remained strong. In addition, domestic demand was buoyed by public infrastructure and booming construction activity in this period.



Sources: Eurostat; and Fund staff estimates.

2. Output growth was accompanied by increasing trade. Openness—the sum of exports and imports as a share of GDP—advanced dramatically in the past decade averaging about 45 percent in recent years, roughly 15 percentage points higher than a decade ago. The ratcheting up of exports mirrors inroads in Spain's share of EU imports, by far the most important market accounting for over two-thirds of Spanish exports (Figure 1).



Source: IMF, *World Economic Outlook*.

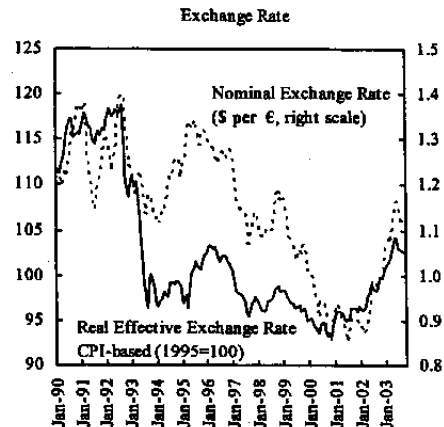
¹ For a description of the Spanish fiscal consolidation process, see Molero and Pujol (2002); a brief discussion can be found in Box 3 of the Staff Report for the 2003 Article IV Consultation (2/4/04).

3. Spain's ability to preserve these gains, however, is unclear: higher price and cost inflation has been eroding competitiveness and productivity growth has been disappointing. Inflation has outstripped the euro area by a cumulative 6 percentage points since 1997. The real effective exchange rate has appreciated steadily over the past years, in part reflecting the strengthening of the euro against the dollar. In an economy that is catching-up some of the appreciation could be the natural by-product of a convergence process and the Balassa-Samuelson effect, but Spain's productivity data does not provide much solace in this regard. Moreover, with strong increases in unit labor costs, export profit margins have been narrowing consistently in the past three years. A continuation of these trends could hinder the economy's ability to continue coping with an environment that promises intensified competition as EU enlargement proceeds.

Export Margins		2001		2002		2003		
(Year-on-year rate of change)						Q1	Q2	Q3
Export margin		-0.7	-3.1	-3.9	-4.4	-4.5		
Exports deflator		2.7	0.2	-0.3	-1.1	-1.3		
Unit labor cost		3.4	3.3	3.6	3.3	3.2		
Relative profitability of exports 1/		-1.5	-4.4	-4.7	-5.2	-5.2		
Exports deflator		2.7	0.0	-0.3	-1.1	-1.3		
GDP deflator		4.2	4.4	4.4	4.1	3.9		

Source: Bank of Spain.

1/ Assumes a common unit labor cost for the economy.

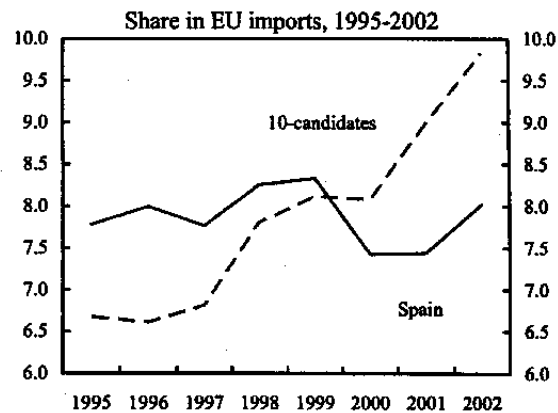


4. EU enlargement could hasten Spain's loss of competitiveness. Not only are wages sharply lower in accession countries, but these countries also benefit from a highly skilled workforce. Accession countries' share of the EU imports has increased rapidly and these countries have been a magnet for foreign direct investment (FDI). FDI from the EU has almost doubled in the past five years, and on average has exceeded FDI in Spain by significant margins. As enlargement proceeds these developments are suggestive of the potential for trade (and FDI) diversion from Spain and to accession countries. Even though the bulk of trade barriers with the accession countries has already been lowered, the continued harmonization of legislation and regulations afford the potential for new trading opportunities for these countries.

	Wages and Schooling	
	Wage (EU=100)	Schooling (years)
Spain	73.7	8.1
European Union	100.0	9.5
Czech Republic	12.4	10.7
Hungary	12.4	9.5
Poland	17.2	10.5

Note: Data refers to the manufacturing sector; wage and schooling data are respectively for 2000 and 1999.

Sources: ILO, Eurostat, and the European Economy Group.



Source: IMF, Direction of Trade.

5. In addition, Spain is likely to face a substantial decline in European Structural Funds (ESF) in the medium term. Enlargement will reduce the EU average per capita income by more than 10 percent. Spain's per capita income (as a percentage of the enlarged EU average) will rise above the 90 percent threshold for Cohesion Funds (CF). Thus, from being one of the largest recipients of ESF, Spain would no longer qualify under the guidelines for CF once the current allocation expires at end-2005. Moreover, 12 of its 17 regions would not be eligible for Objective 1 funds—as their per capita income is projected to exceed the 75 percent threshold. By 2005, and assuming that accession countries continue to converge, Spain's per capita income is expected to remain above 90 percent of the enlarged EU average, and only three regions would be eligible for Objective 1 funds.²

EU Enlargement: Per Capita Income 1/		
	EU-15	EU-25
<i>GDP per capita average</i>	22,603	19,661
<i>Maximum (country)</i>	Luxembourg	Luxembourg
<i>Per capita income</i>	44,144	42,330
<i>Minimum (country)</i>	Greece	Latvia
<i>Per capita income</i>	15,302	6,685
<i>Range (maximum minus minimum)</i>	28,841	35,645
<i>Coefficient of Variation</i>	0.39	0.43

Source: European Commission, 2003.

1/ Income correspond to estimates for 2003 in 2000 PPP euros.

6. This paper centers on four channels through which EU enlargement can affect Spain:

- **International trade.** Enlargement offers the potential for new trade opportunities and, judging by the experience of previous enlargements, trade creation is likely to result. Still, this does not rule out the potential for Spain's exports to the EU to be displaced by the increased competition from the accession countries.
- **FDI.** The low-wage high-skilled labor force of the accession countries would appear to make them attractive locations for foreign investment. As in trade, the opportunities for "FDI creation" are likely to dominate "FDI diversion." Nonetheless, eastward relocation of production plants is possible, and to some

² These estimates are based on the Autumn 2003 Economic Forecast of the EC, and assume that per capita income growth in Objective 1 regions exceed those of Spain by 2 percentage points.

extent this process has already begun in the run up to accession, affecting most notably automobile production plants.

- **European Structural Funds.** Spain will continue benefiting from the infrastructure built with the help of past ESF, but under current guidelines eligibility for further funds is in question. With the future of ESF under discussion, quantifying potential adverse effects is somewhat premature and still subject to the particular modifications to eligibility rules and EU budget allocation decisions.
- **Migration.** Although citizens of new member countries have the right to reside in any member state upon accession, the EC has signed agreements with these countries delaying free access to EU labor markets for up to seven years. For Spain even in the absence of restrictions, it is unlikely that flows will be of a magnitude as to have a macroeconomic effect, given the distance and lack of cultural ties, including the lack of an established beach head of immigrants from these countries.

Agriculture is an important area that will be affected by EU enlargement, but assessing its impact on Spain lies beyond the scope of this paper, also because of uncertainties regarding the future of the Common Agricultural Policy.

B. Stylized Facts of Spanish Exports and FDI

Before turning to the potential effects of EU enlargement, this section characterizes the geography and structure of Spain's exports and FDI.³

Spanish exports

7. The pattern of Spanish exports is dominated by its off-center location in the Southern part of the EU:

- Spain trades primarily with the EU-15, and trade with accession countries remains small, although it has more than doubled in the past decade (Table 1). These trading patterns are consistent with fundamental factors underlying Spain's trade. Spain trades significantly more with France than Germany, driven in part by the fact that France is geographically closer; sharing a common border acts to boost trade. Despite being closer to Italy and the United Kingdom, exports to these countries are comparable to those to Germany reflecting the smaller economic "mass"—population and output—of the former countries. For its part, trade with AC-10 countries is small both because the average distance is more than 1,000

³ Readers familiar with these patterns may choose to skip this section without loss of continuity.

kilometers greater than the average for the other EU countries, and their mass (measured by GDP) is substantially less.

- The share of Spain's exports to accession countries is similar to that of France or the United Kingdom, but significantly smaller than that of Italy and Germany (Table 2).

8. Spanish exports are concentrated in elaborated goods:

- Defined as the sum of Divisions 6 through 8 (Table 3), these goods represent about 60 percent of Spain's exports. It is noteworthy that Division 7 (machinery and transport equipment) constitutes more than half of exports, of which Division 78 (road vehicles) is the most important single item.
- This concentration makes Spain potentially vulnerable to competition from AC-10 countries that have a similar export structure (Table 4). On average, the share of AC-10 countries' exports in elaborated goods has exceeded 60 percent during the past five years. But this may not be the complete story: a closer look at Division 7 suggests that AC-10 countries' exports are more diversified and are not concentrated in road vehicles.

FDI in Spain

9. Geographical location also plays a central role determining the origin of FDI flows to Spain (Table 5):

- About two-thirds of FDI in Spain originates in the EU; the United Kingdom appears as the single most important investor. The peculiarities of bilateral FDI reporting, however, probably underlie the anomaly that FDI from Belgium-Luxembourg exceeds that from Germany and France combined. The bulk of FDI in Spain has been in the services sector, of which "real estate and business activities" is the main beneficiary, far exceeding "hotels and restaurants" and "transports and communication."
- As with exports, Spain will potentially compete for EU FDI as AC-10 countries also receive a large share of their FDI from the EU. Their relative proximity to Germany is likely to underlie the large share of FDI from that country. While the United Kingdom is a major investor in both the AC-10 and Spain, France is a relatively small player in Spain despite its geographical proximity. Although the bulk of FDI in AC-10 countries is also in the services sector, these flows are concentrated in financial intermediation reflecting the stage of development of financial markets. Also, the high-skilled low-wage workforce may account for the relatively large share of investment in manufacturing.

C. The Gravity Model

10. The gravity model is commonly used as a framework to study bilateral trade, with numerous empirical applications dating back to the early 1960s (Frankel and others, 1997; Helliwell, 1998; and references therein). Recent studies have addressed the question of whether the level of trade between two countries is unusual in the sense of being substantially different from what is predicted by the gravity model. For instance, the gravity model has been used in examining the trading patterns of the EC and EFTA (Bayoumi and Eichengreen, 1995), and the extent to which regional trading blocks lead to trade diversion as opposed to trade creation. The model has also been used to explain FDI flows (Di Mauro, 2000; and references therein).

11. In its original form, the gravity model relates some measure of bilateral trade to the economic mass of the trading partners and the distance between them:

$$TRADE_{ijt} = (Y_i \cdot Y_j)^\alpha D_{ij}^\beta e^{\mu_{ijt}}$$

where $TRADE_{ijt}$ is bilateral trade—either nominal exports ($EXPORTS_{ijt}$) or imports ($IMPORTS_{ijt}$), or their sum—from country i to country j ; Y_k is nominal GDP in country $k=i, j$; D_{ij} is the distance between the capital cities of countries i and j ; and t is a time subscript.⁴ The model posits that trade increases with economic mass ($\alpha > 0$), and decreases with distance ($\beta < 0$). μ_{ijt} is:

$$\mu_{ijt} = \gamma_i + \varphi_j + \delta_t + \varepsilon_{ijt}$$

where γ_i and φ_j are fixed effects respectively for countries i and j , δ_t are common time effects, and ε_{ijt} are well behaved error terms.

12. The model has been extended to include additional fundamental factors—such as cultural ties, common borders, access to sea, and membership in preferential trade arrangement (PTA)—to characterize fully bilateral trade flows. Most of these factors are fixed in time and hence have the characteristic of being a “dummy” variable, taking on the value of one when the specific characteristic holds, or zero otherwise. These variables are included in the regression models to pick-up the effect on trade of sharing cultural ties, a common border, and so on.

⁴ Recently, Stein and Daude (2001) has stressed the importance of longitudinal distance (time zone differences) in determining FDI, an issue not explored here. Also, the product of the trading partners' populations ($P_i P_j$), or the product of per capita incomes is often included in gravity models.

13. Of particular interest for this study are PTA dummy variables to measure the impact of EU membership.⁵ Consider the following extension of the gravity model:

$$TRADE_{ijt} = (Y_i \cdot Y_j)^\alpha \cdot D_{ij}^\beta \cdot BOTH_{ijt}^\phi \cdot ONE_{ijt}^\gamma \cdot e^{\mu_{ijt}}$$

where $BOTH_{ijt}$ and ONE_{ijt} are dummy variables that equal one respectively when both (i and j) or only one of the trading partners (i or j) are EU members at time t .⁶ Thus, the coefficient ϕ captures the extra trade between EU members once other fundamental factors determining trade flows are accounted for. Similarly, the coefficient γ captures the effect on trade of not belonging to the EU. To examine whether there are country-specific effects on trade of non-EU membership, the model is extended to include the interaction of ONE_{ijt} with individual country dummies. Finally, a crude measure of the speed at which “undertrading” vanishes following accession can be gleaned by including a “trend” variable for the countries of interest that counts the number of years since accession; it is zero before accession and for nonaccession countries.⁷

Estimation results⁸

Exports

14. Gravity models explain a large share of the bilateral trade flows among EU countries in the past 20 years (Table 6). Fixed-effects estimates suggest that the bilateral export elasticity with respect to the economic mass of the trading partners is about three-

⁵ The sample used encompasses the EU accession and subsequent euro adoption, thus the estimates below reflect both the effect of the common market and currency. For estimates of the common currency see Faruqee (2004); and Micco, Stein, and Ordoñez (2003).

⁶ These dummy variables were defined in a way that they reflect the changing EU membership over time. Thus, once a country joins the EU its trade with the existing EU countries is considered to be between EU countries. In contrast, when examining the Southern EU and the AC-10 enlargement below, PTA dummies were defined by holding the EU membership constant; these variables are denoted respectively as D^{EUAC3} and D^{EUAC10} .

⁷ A disadvantage of this specification is that it does not capture potential nonlinear adjustment toward equilibrium trade levels. Hence, a literal interpretation of the results would imply either a continuously increasing (or decreasing) trend in trade following accession.

⁸ This paper does not delve into estimation issues related to potential unit roots in the panel data regressions. A related study (Faruqee, 2004) finds that gravity models provide a useful long-run framework to examine trade flows in the EU, that is, these models cointegrate. In this case, the estimates reported here would be super-consistent but potentially suffer from small sample bias; the bias, however, does not appear to be large (Table A1). See Appendix for precise definitions of the variables and countries included in the regressions.

fourths. This implies that trade increases more than proportionally with respect to the size of the economies—when both trading partners grow by one percent, their trade increases by about 1½ percent; this estimate is robust to different specifications (see columns 1–7). Distance between trading partners reduces trade roughly one-to-one, although this effect is smaller when the model controls for a common border (columns 5 and 7); sharing a common border boosts trade by about 75 percent.⁹ Trade is lower if one or both of the trading partners is land-locked.

15. **This framework suggests that EU enlargements in the past 20 years—Greece in 1981, Spain and Portugal in 1986, and Austria, Finland, and Sweden in 1995—have led to trade creation among EU members (Table 7).**¹⁰ This is seen from the regression estimates of the model when PTA dummies (*BOTH* and *ONE*) are included. Specifically, when both trading partners are EU members their trade is about 20 percent higher than otherwise justified by fundamental trade factors (column 2). This favorable EU trade effect doubles when the model accounts for differences in trade when only one trading partner is in the EU (column 3). In sum, the experience of previous enlargements suggests that trade creation more than offset trade diversion effects, by roughly some 40 percent between EU members.

16. **The “Southern” enlargement (Greece, Spain, and Portugal) is of particular interest to this study (Table 8).** These countries share the off-center location and lower than average income levels that characterize the current group of accession countries. The results for Southern enlargement suggest that trade was about 11 percent lower than expected once the fundamentals are taken into account (column 1). Moreover, the results suggest that the degree of undertrading of the Southern members was gradually erased in about seven to eight years.¹¹ This enlargement, however, differs from the current one in that significant trade barriers were in place when these three countries joined the EU.

17. **Turning to the AC-10 enlargement, the models suggest that exports are significantly lower than justified by fundamental factors, but not consistently across countries (Table 9).** The sample of countries was extended to include the current group of 10 accession countries set to join the EU in 2004. This allows the model to characterize trade

⁹ Consistent with other studies, the effect of a dummy variable on trade is computed using the following formula: $(\exp(\hat{\beta}) - 1) \cdot 100$. Thus, the impact of sharing a common border is calculated as: $(\exp(0.56) - 1) \cdot 100$, or about 75 percent.

¹⁰ Accession and EU enlargement could involve a structural change affecting the gravity model's coefficients. Establishing that these results are robust to potential changes in the estimated coefficients is beyond the scope of this study.

¹¹ Taken literally these results would suggest that Spain and Portugal, that joined almost 20 years ago would now be significantly overtrading with the EU.

with these countries, but shortens the data sample to the ten years ending in 2002.¹² As accession has yet to take place, the results focus on the PTA dummy (D^{EUAC}) that is one when only one trading partner is an EU member. The estimated coefficients suggest that trade between the EU-15 and AC-10 is about 30 percent lower than justified by fundamentals (column 3). Moreover, the degree of “undertrading” varies substantially across countries, from above average undertrading for Spain and virtually no significant undertrading for Germany and France, to overtrading for the United Kingdom. Results for Division 7 exports (column 5) are qualitatively similar, with the exception of the United Kingdom that appears not to overtrade with AC-10.

FDI

18. Gravity models were used to conduct an analogous study of FDI flows, with the following results:

- The bilateral FDI elasticity with respect to the economic size (mass) implies that flows increase more than proportionally with respect to the size of the economies (Table 10). Distance between countries reduces FDI, less so when accounting for a common border (columns 5 and 6); sharing a common border boosts FDI by about 50 percent. FDI is lower if either the country of origin or destination is land-locked.
- EU enlargements in the past 20 years led to FDI creation among EU members (Table 11); when both countries are EU members their FDI is about 45 percent higher than otherwise justified by fundamental factors (column 2); this doubles when both PTA dummies are included in the model (column 3).
- The “Southern” enlargement suggests that FDI flows were about 35 percent lower than expected (Table 12); results for the speed at which under-FDI reversed to long-run values are puzzling, but may be interpreted as the reversal of an initial overshooting of FDI flows that followed accession.
- FDI between the EU-15 and AC-10 is as much as about 70 percent lower than justified by fundamentals (Table 13, columns 3 and 4); the degree of “under-FDI” varies substantially across EU countries, and is significantly greater for Germany and the United Kingdom.

¹² Shortening the sample, however, does not change the qualitative results obtained before (compare column 1, with column 7 in Table 6), but it does cut in half the bilateral export elasticity with respect to the economic size, and renders insignificant the impact of population; the model continues to explain a large share of the variation of trade. Adding the AC-10 countries restores the size of the bilateral export elasticity, and re-establishes the significance of population (column 2). Interestingly, the results suggest that distance has a larger effect when considering exports of EU-25 even when the model accounts for the degree of undertrading between EU-15 and AC-10 countries.

With the additional information required to construct the bilateral flows exasperating the well-known problems in recording FDI flows, caution is needed when interpreting these results.

D. Third Market Effects

19. To explore directly the challenges that Spain's exports may face in the EU market from accession countries a dynamic reduced-form model is examined. These (VAR) models have been used to analyze the dynamic effects of shocks in many contexts, and are particularly well suited to summarize the dynamic correlations in the data. In this connection, the following model can be used to gauge the potential challenges:

$$\begin{bmatrix} M^{SPA} \\ M^{AC-10} \\ M^{Rest} \end{bmatrix} = \begin{bmatrix} a_{10} \\ a_{20} \\ a_{30} \end{bmatrix} + \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \begin{bmatrix} M_{t-1}^{SPA} \\ M_{t-1}^{AC-10} \\ M_{t-1}^{Rest} \end{bmatrix} + \begin{bmatrix} \mu^{SPA} \\ \mu^{AC-10} \\ \mu^{Rest} \end{bmatrix}$$

where M^x is the (log of) EU (excluding Spain) imports from Spain, the combined AC-10 countries, and the rest of the world; μ^x corresponds to the (reduced-form) shock of EU imports from these three markets.¹³ Interest centers in characterizing how EU imports (M^x) evolve following an unexpected increase in imports from AC-10; impulse response functions are used to this effect. The model is also used to explore the impact of a permanent increase in imports from AC-10, that could be associated with a "normalization" of the level of imports as the degree of undertrading—measured in the gravity models above—is reabsorbed after accession. This effect is described by step response functions.

20. Spain's exports to the EU are likely not to suffer overall, but their composition is likely to change. Two models were estimated in a panel VAR context¹⁴—one using total imports, the other limited to Division 7 imports—consisting of individual "EU-14" countries' imports from Spain, AC-10, and rest of world, and used to compute impulse and step

¹³ Also of interest is an extended model adding an exogenous variable, X , specifically: $B(L) \cdot X_t$, where $B(L)$ is a lag polynomial vector (3×1).

¹⁴ The series for individual EU countries were stacked, and the model was estimated as a fixed-effects panel VAR model, that is allowing constants to differ across countries. The results are based on the available data for the "EU-14" (United Kingdom, Belgium, Greece, Luxembourg, and Portugal are missing) and "AC-10" countries (Czech Republic, Hungary, and Poland). The model includes one lag, and results are qualitatively robust to fewer than four lags; higher lags lead to dynamic instability in the model estimates.

response functions associated with an increase in imports from AC-10 countries (Figure 2).¹⁵ The estimates suggest that:

- *Impulse responses.* Following a historical shock (roughly 9 percent, panels in the left column) in total imports from AC-10 countries, imports from Spain are roughly unchanged on impact, and a very small positive response follows; imports from the rest of the world increase slightly.¹⁶ An analogous shock (roughly 15 percent) in Division 7 imports from AC-10 countries is associated with a small “crowding-out” of imports from Spain of some 2 percent on impact, and the adverse effect appears to persist for several years; virtually no response is observed in EU imports from the rest of the world.
- *Step responses.* As in previous enlargement experiences accession is likely, however, to lead to a permanent increase in imports from AC-10. If estimates from the gravity models are accurate, the potential permanent increase is just under two times the typical shock (about 30 percent), and reduced-form models suggest that this would lead to a substantial decline in EU imports from Spain (about 5 percent), and a negligible decline in imports from the rest of the world (right column).

21. **Turning to FDI, the results suggest that flows to Spain are likely to increase in step with flows to AC-10 countries, albeit less than proportionately (Figure 3).** A reduced-form model analogous to those used above was estimated using FDI flows to Spain, AC-10, and the rest of the world originating in the EU (excluding Spain). The typical shock to FDI flows to AC-10 countries (about 80 percent) is associated with an increase of FDI flows to Spain (between 10 and 15 percent in the next four years). A sustained doubling in FDI flows to AC-10 countries is associated with a substantial increase in FDI flows to Spain (about 45 percent) and to the rest of the world (about 55 percent); these results should be taken with a grain of salt.

¹⁵ These responses can be interpreted as generalized-impulse response functions (Pesaran and Shin, 1998) that are a historical characterization of all of the correlations contained in the data without an identification of “structural shocks.” These responses have been shown to be equivalent to Choleski decomposition-based responses when the shock of interest is placed first in the ordering, as it is here. In any event, there is very little contemporaneous correlation in the reduced form residual so that alternative orderings have very little effect on the resulting impulse responses.

¹⁶ It is possible that the shock in imports from AC-10 countries reflects a favorable “economic activity” shock in the EU, and thus may not be shedding light on trade creation. This interpretation would seem consistent with the observed increase in imports from the rest of the world (and to a lesser extent from Spain). In an attempt to isolate the economic activity shock, the VAR models were reestimated including a vector of GDP as an exogenous variable (see footnote 14). The results from this extended model were qualitatively unchanged from those presented here.

E. European Structural Funds

22. **Spain is the largest recipient of European Structural Funds (ESF).** These funds were established to reduce the economic differences across Europe (Box 1). Spain has received an increasing share of ESF, projected to exceed 25 percent of the total in the current five year period (Figure 4). Of these funds, Objective 1 funds—aimed at assisting a country's lagging regions develop basic infrastructure and foster private investment—account for the bulk of the funds destined to Spain (Greece and Portugal have been larger recipients of ESF as a share of GDP or EU population). Moreover, Spain enjoys the highest cofinancing rate, averaging about 65 percent compared with less than about 40 percent on average.

23. **Objective 1 regions have benefited from the ESF, but with few expectations convergence in these regions has been less than the overall convergence for Spain as a whole.** Covering about three-fourths of the Spanish territory, and home to almost 60 percent of the population, Objective 1 regions receive about 70 percent of Spain's share of ESF.¹⁷ Per capita income in these regions has increased on average 8 percentage points relative to the EU average since 1986. This is less than the overall increase in Spain, and only two

Per Capita Income Convergence: Objective 1 Regions and Spain
(EU15=100)

	1986 (1)	2000 (2)	Change (1)-(2)
Spain	70.7	82.2	11.5
Total Objective 1	61.0	69.0	8.0
Andalucía	53.5	61.2	7.7
Asturias	71.3	70.9	-0.4
Canarias	70.2	77.5	7.3
Cantabria	67.8	80.3	12.5
Castilla-León	65.8	75.9	10.1
Castilla-La Mancha	55.2	66.8	11.6
Valencia	71.7	79.2	7.5
Extremadura	44.8	53.0	8.2
Galicia	55.7	64.7	9.0
Murcia	68.1	68.7	0.6
Ceuta y Melilla	64.4	68.1	3.7

Sources: Spanish Representation at the EC (2002); Martin and others (2002); and EC (2002b) and (2003).

1/ For 2000-06 Financial Perspectives, the eligibility for Objective 1 regions was determined using the average per capital income for 1994-96.

¹⁷ In addition, Objective 2 (3) regions (projects) represent about 5 (4) percent of total structural assistance received by Spain; Objective 2 regions—Aragón, Baleares, Cataluña, Madrid, Navarra, País Vasco and La Rioja—account for 22 percent of the population.

Objective 1 regions have converged faster than Spain, namely Cantabria and Castilla-La Mancha.¹⁸ Indeed, the former graduated from the program, and its funds are to be phased out by 2006.

Box 1. European Structural Funds

The EU Cohesion Policy is carried out through four European Structural Funds (ESF). Specifically: (i) the *European Regional Development Fund* covering infrastructure, job-creating investment, local development, and aid to small firms; (ii) the *European Social Fund* pertaining to training and recruitment aid for unemployed and handicapped workers; (iii) the *"Guidance" Section of the European Agricultural Guidance and Guarantee Fund* contributing to structural reform of the agricultural sector and the development of rural areas; and (iv) the *Financial Instrument for Fisheries Guidance* dealing with fishing industry restructuring. The *Cohesion Fund* finances major projects in environment and transport in countries with per capita income below 90 percent of the EU average (Spain, Portugal, Greece, and Ireland).

The ESF provide partial funding (cofinancing) for regional development plans, with 94 percent concentrated in well-defined territories or populations, according to three objectives:

Objective 1 Provides lagging regions with basic infrastructure. Eligible regions must have GDP per capita at or below 75 percent of the EU average; there are 50 Objective 1 regions in the EU-15 (comprising about 22 percent of EU population and 70 percent of ESF and Cohesion Fund; financed with all four ESF).

Objective 2 Aims at supporting economic and social restructuring in industrial, rural, urban or fisheries-dependent areas facing structural difficulties. Eligible areas are determined jointly by the European Commission and the national authorities according to labor market and socio-demographic indicators (18 percent of EU population and 11.5 percent of funds; financed with items i and ii above).

Objective 3 Focuses on training and promoting employment systems. All EU regions, except Objective 1, can be defined as Objective 3, within the limit of the available resources (12.3 percent of funds; financed with item ii).

¹⁸ Two recent studies provide suggestive results about the impact of ESF in Castilla-La Mancha and Canarias. Castilla-La Mancha's location (close to Madrid and the fast growing regions of the Mediterranean) was instrumental for its quicker convergence; it also received significantly more funds, roughly about 1.7 percent of its GDP well above the national average of about 1 percent of GDP (Sosvilla-Rivero and others, 2003). Canarias, in contrast, is an archipelago devoted almost exclusively to tourism, and thus faces more limited opportunities to diversify its economy and increase productivity; it received less funds, roughly 1.2 percent of its GDP (Sosvilla-Rivero, 2003).

24. **The available empirical evidence, nonetheless, suggests a positive impact of Objective 1 funds.** The European Commission (2001a) estimates—using the Spanish Finance Ministry’s MOISEES model—that GDP is expected to be about 0.9 percent higher than otherwise by 2006; employment creation is projected to be greater by about 120 thousand annually. The EC (2002a) also finds a comparable effect when using a dynamic input-output model. Moreover, they estimate that if all Objective 1 activities (EU, Spanish, and private sector) were phased out in 2006, and not substituted by other expenditures, the level of GDP would decline by 1¼ percent, reflecting the impact of reduced investment (3.2 percent of total investment), 210 thousand fewer jobs, and lower labor productivity (about 1 percent annually) and Spanish imports from the EU.

25. **Recent research suggests that the impact of Objective 1 funds may have been smaller, and could have been greater had efficiency considerations received more emphasis.** Based on regional production functions and employment equations, De la Fuente (2003) concludes that the 1994–99 regional development plan for Objective 1 regions added around 0.5 percentage points per year to GDP growth and 0.3 percent points per year to employment growth (or 27 thousand new jobs). The part of the regional development plan financed by ESF—excluding national cofinancing—accounts for 15 percent of growth from 1993 to 2000 and helped to reduce by 20 percentage points the initial gap in income per capita between the Objective 1 regions and the rest of Spain. This study also estimates that the average social return of the total public spending (infrastructure spending) included in the regional development plan for Objective 1 regions was 30 (50) percent. However, since the richer an Objective 1 region is, the higher the estimated social return on public spending. De la Fuente (2003) argues that the overall impact of EU aid could have been higher, and Spain’s income convergence faster, if efficiency considerations had been given greater weight in the allocation of the ESF.

Empirical Evidence of the Effect of Structural Funds in Spain

	Output 1/	Convergence 2/		Employment
	(In percent)			(thousand)
Community Support Framework 1994-99				
Production and Investment Functions, De la Fuente (2003)				
Effect of Objective 1 3/	15.0	20.0		238
Community Support Framework 2000-06				
Input-Output Model, EC (2002a)				
Effect of Objective 1 3/	1.0	1.0	5.0	300
Effect of grant element of Objective 1 4/	1.5	0.7	3.0	204
	(Deviation from baseline in percent)			
MOISEES Model, EC (2001a) 5/				
Effect of Objective 1 3/	0.9	...	5.4	122

1/ Contribution to growth expressed as a percent of the increase in GDP in the period.

2/ Fraction of the original income per capita differential with the average income per capita of Spain, assuming constant differential in population

3/ Includes the effect of increased taxes required to finance the Spanish contribution to the projects.

4/ Reflects the effect of only the grant element of the Objective 1 funds.

5/ Modelo de Investigación y Simulación de la Economía Española.

F. Migration

26. Immigrants from accession countries are a very small fraction of the Spanish population, but have recently increased substantially.¹⁹ Of the roughly 850 thousand citizens of accession countries that reside in the EU-15—roughly 0.2 (0.5) percent of the EU population (accession)—about 60 thousand reside in Spain, which is roughly the same share as in the EU. In Spain,

only three accession countries account for the bulk of these immigrants: Romania (about half), Poland (21 percent), and Bulgaria (19). In general, migration flows from AC-10 countries to the EU

	Foreign Residents in Spain (In thousands)					
	1997	1998	1999	2000	2001	2002
Total Foreign Residents	538.2	609.8	719.6	801.3	923.9	1,370.7
Of which:						
Accession Countries	6.2	10.8	14.1	16.5	20.0	63.0
Bulgaria	1.0	1.7	2.3	3.0	3.0	12.0
Czech Republic	0.2	0.6	0.8	0.9	1.0	1.7
Estonia	0.0	0.0	0.0	0.0	0.1	0.1
Hungary	0.2	0.3	0.4	0.4	0.6	0.9
Latvia	0.0	0.0	0.0	0.1	0.1	0.2
Lithuania	0.0	0.1	0.1	0.1	0.2	1.8
Poland	3.2	5.5	6.7	6.5	8.2	13.5
Romania	1.4	2.4	3.5	5.1	6.4	31.6
Slovak Republic	0.1	0.1	0.3	0.4	0.3	0.9
Slovenia	0.0	0.1	0.1	0.1	0.1	0.2

Source: EUROSTAT

occurred mostly between the fall of the Iron Curtain and EU recession in 1993; thereafter migration faced increased restrictions.²⁰ Ever since, migration is limited to short-term stays to bordering regions and neighboring countries (often seasonal labor or border commuter), and regulated by bilateral agreements (OECD, 2001 and European Commission, 2001b); however, the effect of networking is important.²¹ In Spain, however, the official statistics suggest a very large flow in 2002, most probably reflecting earlier flows that had not been captured before in the official statistics; the data remain nonetheless somewhat puzzling.

27. The experience of the Southern enlargement suggests that the likelihood of mass migration is low. Net migration flows from Spain and Portugal to the EU following accession were virtually nil in the second half of the 1980s. During this period, there were restrictions on migration for seven years. Even after these were lifted—coinciding with the recession of the early 1990s—there was hardly any increase in the migration flows from

¹⁹ Accession countries in this section refer to Central and Eastern European countries: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia. In contrast, AC-10 does not include Bulgaria and Romania, and includes Cyprus and Malta.

²⁰ The European Agreements made minimal concessions with regard to free movement of labor and did not impair the authority of individual EU member states to regulate the immigration of labor and persons from accession countries.

²¹ Thus, emigrants from Slovenia, Czech Republic and Slovakia choose Austria as their destination, whereas Germany is the primary destination for emigrants from Hungary, Poland, and Romania. Emigrants from Latvia and Lithuania have concentrated in the United Kingdom and those from Bulgaria in Greece. Finally, Estonians have emigrated almost exclusively to Finland (see Martin and others, 2002).

either country. In general, strong economic growth (and real convergence) experienced by Southern European countries as a result of joining the European Union, not only discouraged emigration but encouraged the return of citizens to their countries of origin. To the extent that policies in the AC-10 result in above average growth, migration is likely to be moderate.

28. Available empirical studies predict a modest increase in migratory flows from accession countries in the short-run, followed by long-lived flows needed for migration stocks to reach their new long-run equilibrium. This is due to the high costs of migration, and limited capacities of labor markets to absorb these flows. In particular,

- About 335 thousand (or 0.1 percent of the EU-15 population) were estimated to migrate, assuming that all of the barriers would have been removed in 2002, followed by increasing flows (peaking at about 1.1 percent of EU-15 population) over the following 30 years (Box 2). Of these, Germany was expected to receive about 220 thousand at first with the stock of immigrants reaching 3.5 percent of the German population. In contrast, Spain was expected to receive about 4 thousand in 2002 with a very small effect on its stock.
- A recent report for Germany (Boeri and others, 2002) suggests that cumulative net migration or long-run migration stocks from the new member states (attained 15–20 years after the free movement of labor has been introduced) will amount to between 2 and 3 percent of the population.
- The European Commission (2001b) estimates that annual flows to the EU-15 will increase from about 120 to a maximum of 215 thousand four years after accession. By 2009, migration is estimated to be about 900 thousand, roughly 1.2 percent of AC-10 countries' combined population or some 0.4 percent of the projected EU working-age population.

29. Suggestive evidence from gravity models, as in the case of exports, indicate that migration flows are significantly lower than expected but not consistently across countries (Table 14). Although migration is likely to respond to the same factors as trade (indeed economic theory suggests international trade can lead to similar effects as international labor mobility), other elements noted earlier are likely to play. Keeping in mind the tentative nature of the evidence, the estimates suggest the following regarding migratory flows between EU-15 and AC-10 countries:

- The bilateral migration elasticity with respect to the economic mass implies that migration increases less than proportionally with respect to the size of the economies.
- The distance between countries reduces migration substantially; sharing a common border boosts migration by about 50 percent; and migration is lower if either of the countries is land-locked.

Box 2. Estimating the Long-Term Equilibrium of Migrants from Eastern Europe

Using long time-series for the German experience, Boeri and Brücker (2000) estimate an error correction model to quantify the long-term migration from AC-10 countries, and the expected length of time needed to reach the new equilibrium. The model posits that migration decision is taken as an investment in human capital whose returns are determined by expectations regarding future income. These expectations are assumed to be based on past values of the differential of per capita income and employment opportunities between the host and the home country, and is formalized with the following equation:

$$\Delta mst_{h,t} = \beta_1 \times \Delta \ln(y_f / y_h)_t + \beta_2 \times \Delta \ln(e_f)_t + \beta_3 \times \Delta \ln(e_h)_t + \beta_4 \times \ln(y_f / y_h)_{t-1} + \beta_5 \times \ln(e_f)_{t-1} + \beta_6 \times \ln(e_h)_{t-1} + \beta_7 \times mst_{h,t-1} + \beta_8 \times FREE + \beta_9 \times GUEST + \beta_{10} \times COUNTRY$$

where $mst_{h,t}$ denotes the ratio of the stock of migrants to the population in the home country, y the per capita income (purchasing power parities), and e the employment rate; subscripts f and h denote respectively the foreign and home countries. $FREE$ and $GUEST$ are dummy variables respectively reflecting whether labor mobility between Germany and the accession country is unrestricted, or that a guest worker agreement exist; $COUNTRY$ are country specific constants.

Using the estimated coefficients to extrapolate the migratory flows for other EU countries and assuming the introduction of free movement of labor in 2002, the model suggests that the initial net migration from AC-10 countries is expected to be around 335 thousand—with Germany and Austria receiving respectively about 65 and 12 percent of this flow. Also, estimates suggest that the steady state stock of migrants—some 3.9 million or 1.1 percent of the population of the EU—is reached in about 30 years.

Migration flows from Accession Countries to the EU-15 (In thousands)

	1998 (Stock)	2002 /1	Projections (Immigrants per year)						
			2002	2005	2010	2015	2020	2025	2030
EU-15	853.1	...	335.8	248.6	146.9	82.6	42.3	17.4	2.4
Of which:									
Germany	554.9	20.3	218.4	161.7	95.6	53.7	27.5	11.3	1.5
Italy	34.5	...	13.6	10.1	5.9	3.3	1.7	0.7	0.1
United Kingdom	39.0	...	15.4	11.4	6.7	3.8	1.9	0.8	0.1
Spain	10.5	43.0	4.1	3.1	1.8	1.0	0.5	0.2	0.0

Source: Boeri T. and Brücker, H. (2000); EUROSTAT.

1/ These data were not available at the time of the study.

Comparing the projections to the most recent data suggest that the projections for Spain were off by a factor of ten in 2002: only 4.1 thousand were expected to migrate to Spain compared with 43 thousand. This deviation and that of Germany highlight the difficulties in estimating these flows with any degree of precision.

- Migration between the EU-15 and AC-10 is as much as about 50 percent lower than justified by fundamentals; the degree of “undermigration” varies substantially across countries, with Spain exhibiting a greater degree of undermigration than other large EU countries.

G. Summary and Policy Conclusions

30. **Spain has experienced income convergence consistently in the past decade, despite gradual losses in competitiveness.** The stability orientation of macroeconomic policies and reforms in the labor and product markets were the two key pillars of this performance. Robust growth was accompanied by sizeable increases in trade flows, with the EU as its principal trading partner. But a persistent inflation differential with the euro area—not matched by a correspondingly strong productivity developments in the available data—indicate a gradual erosion of competitiveness relative to other euro area countries which is also revealed in a relatively faster rise in unit labor costs. Although exports have held up so far, export margins have been under pressure and EU enlargement holds the potential for increased competition for Spain’s share of the EU import market.

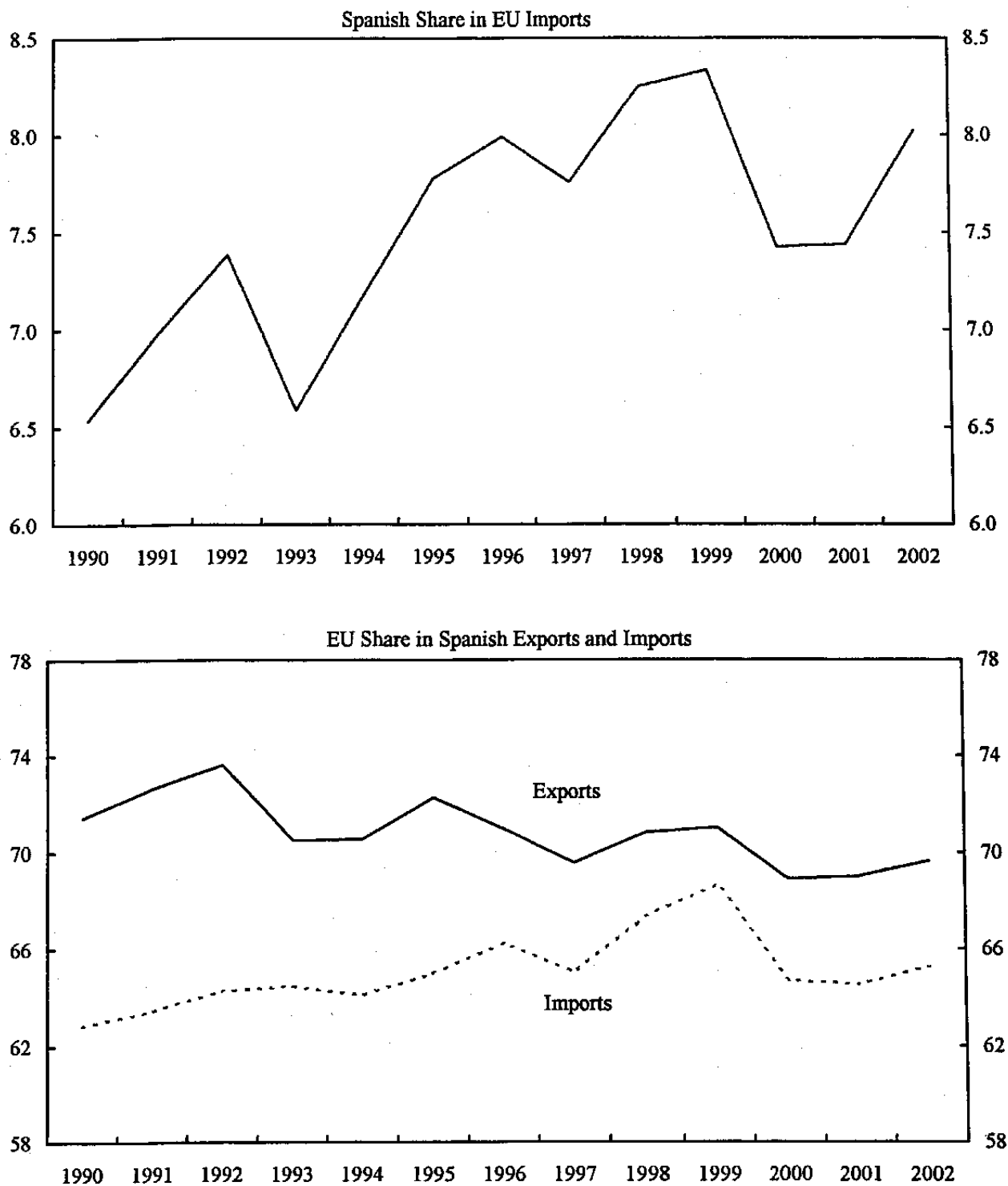
31. **The empirical evidence indicates that overall EU enlargement offers a range of opportunities for Spain, and points to potential pressures in specific sectors.** Specifically,

- ***International trade.*** The existing level of trade between EU-15 and AC-10 countries bodes well for significant trade creation opportunities; these are estimated to be at least as large as those experienced in previous EU enlargements. Overall, Spain’s exports would not appear to come under additional pressure from the EU enlargement. But there is a clear potential for specific sectors—notably machinery and equipment—to be displaced over time by the increased competition from AC-10 countries.
- ***FDI.*** Likewise, the existing level of FDI suggests substantial potential for increased FDI. Overall, FDI in Spain would not appear to suffer following enlargement; taken literally the evidence suggests a small increase is possible. However, this must be taken with some caution given the inherent problems with FDI data, and anecdotal information pointing in the other direction.
- ***European Structural Funds.*** Enlargement will reduce funds flowing into Spain over time. Although available estimates of the benefits to Spain vary, their positive contribution is likely to outlive them to the extent that these boosted infrastructure. With the future of the ESF currently under discussion, it is premature to access the impact that enlargement may have, but this is likely to be borne primarily by specific regions in the medium- and long-run
- ***Migration.*** Available estimates in the literature and gravity model estimates indicate that migratory flows from the AC-10 countries are likely to remain small,

particularly into countries that are further away, such as Portugal and Spain. In Spain, given the lack of cultural ties and an established beach head of immigrants from these countries, it is unlikely that migratory flows will have an economy-wide effect. Over time, some migration could materialize in specific labor market segments with limited overall impact.

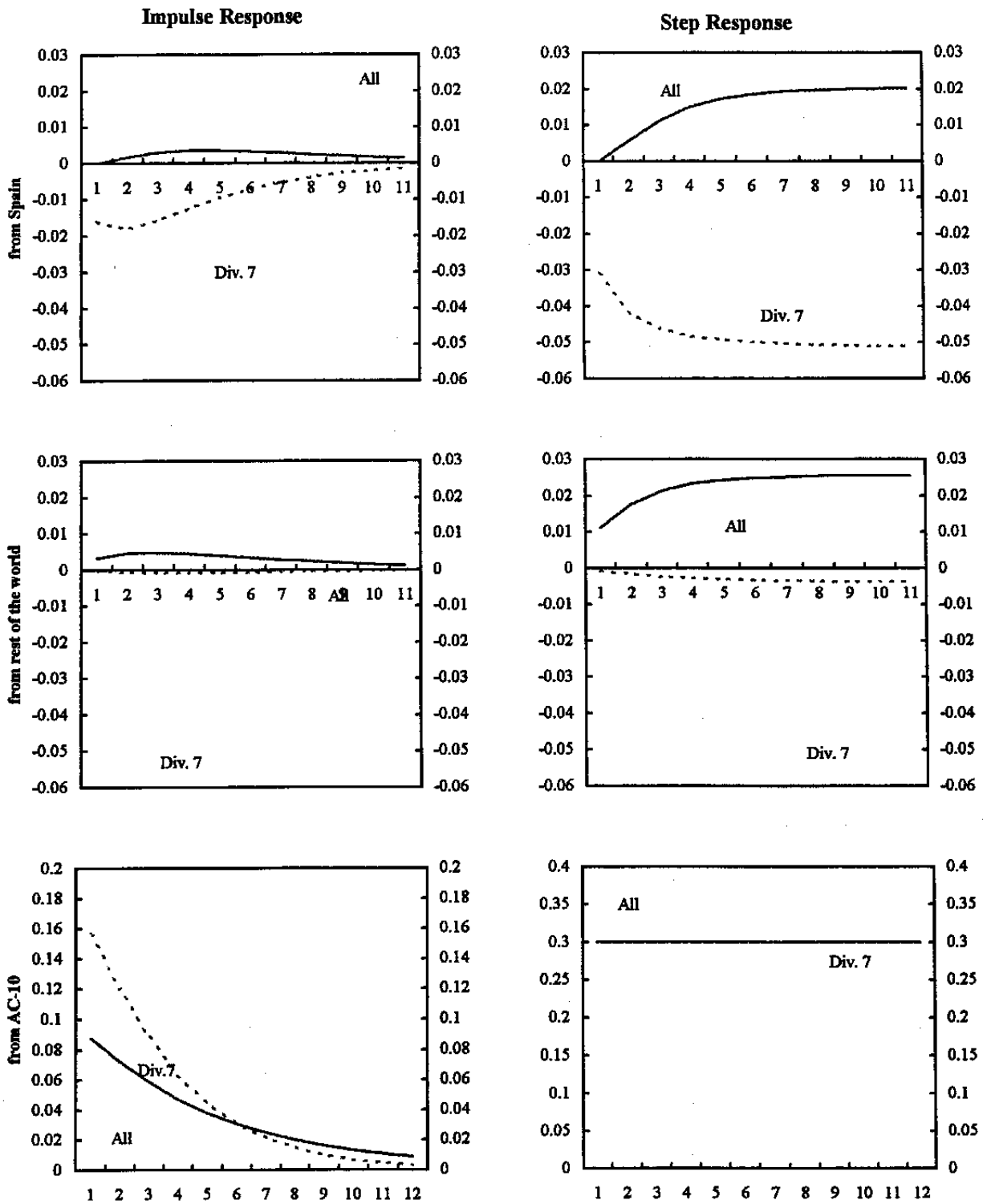
32. In sum, EU enlargement offers Spain more opportunities than challenges; tackling the latter requires increasing the flexibility of the economy. Be it through increased trade or FDI, the EU-25 will offer new opportunities for exporters and firms, particularly in an environment where the stability orientation of policies continues to be maintained. As the effects of enlargement are felt to different degrees in different sectors over time, the importance of increased flexibility will become all the more evident. Reducing the adjustment costs involved in the needed reallocation of resources will thus require continued efforts to reform the economy, particularly labor and product markets.

Figure 1. Spain: Share of EU Imports and Importance of Exports to EU, 1990-2002



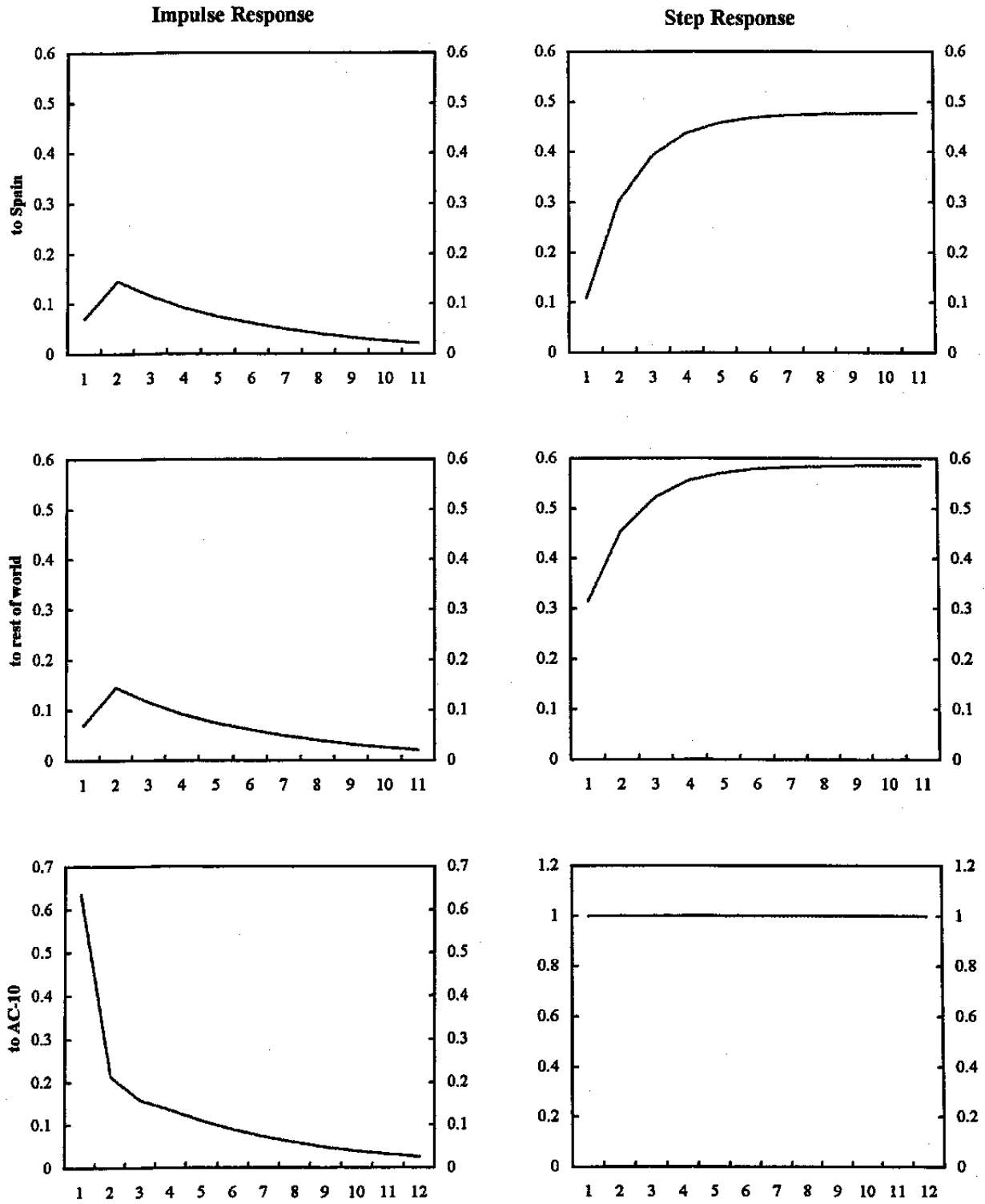
Source: IMF, *Direction of Trade*.

Figure 2. Third Market Effects: "EU-14" Imports



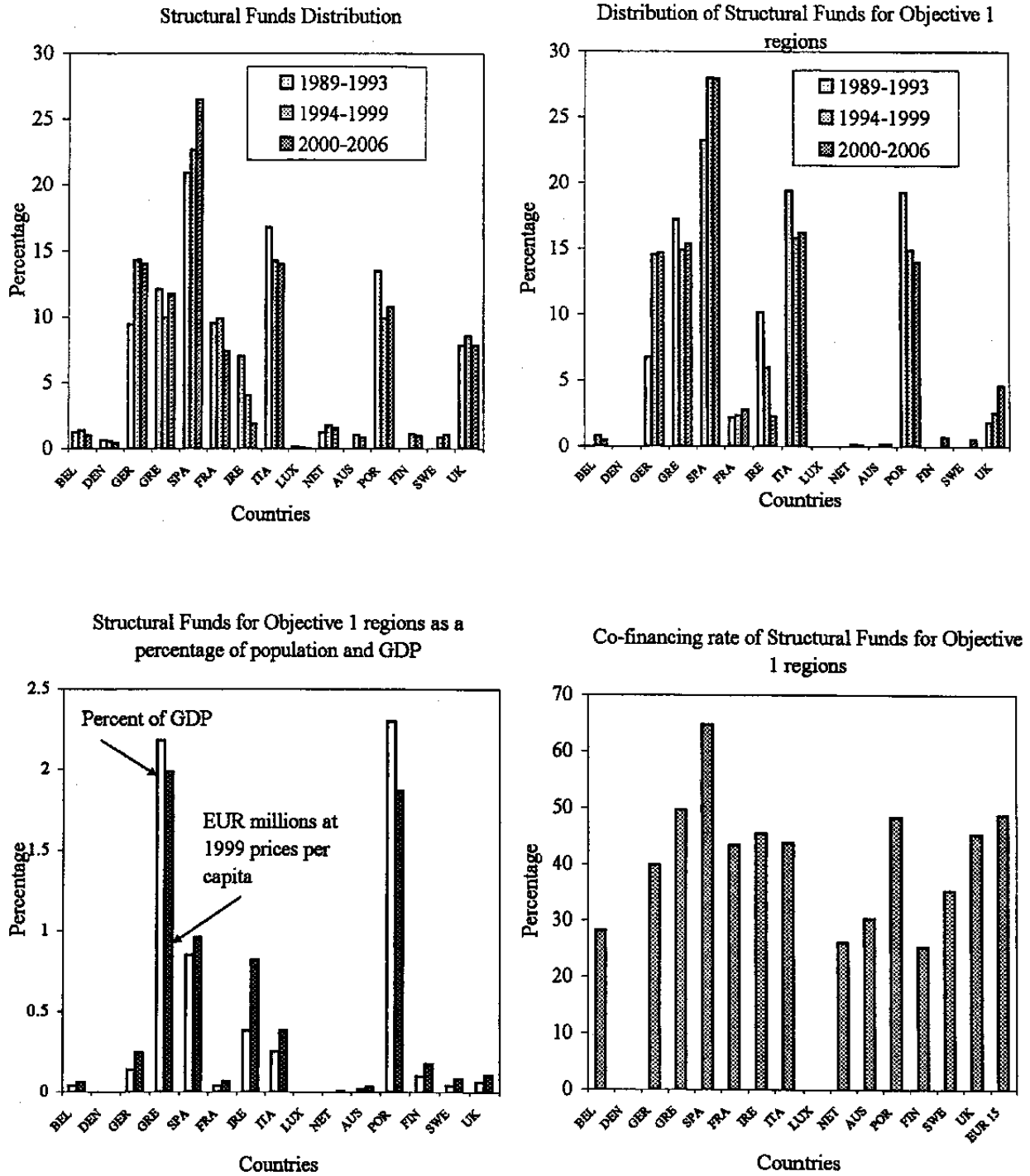
Sources: World Integrated Trade Solution; and Fund staff estimates.

Figure 3. Third Market Effects: " EU-14" Outward FDI Flows



Sources: World Integrated Trade Solution; and Fund staff estimates.

Figure 4. Distribution of Structural Funds Among EU Members, 1989-2006



Sources: Martin and others (2002); and Spanish Representation at the European Commission (2002).

Table 1. Geography of Spanish Exports

	Exports (shares in percent)			Distance (km.)	Population (millions)	GDP (billions of dollars)
	1993	1997	2001			
EU	69.0	69.9	70.6	1,669 1/	25.4 1/	575 1/
Germany	14.6	13.4	11.9	1,870	82.5	1,990
France	18.9	18.3	19.5	1,053	61.2	1,423
Italy	9.1	9.7	9.0	1,370	58.1	1,188
United Kingdom	8.2	8.8	9.0	1,263	59.2	1,557
AC-12	1.3	2.2	3.0	2,737 1/	6.4 1/	41 1/
Rest of the world	29.7	28.0	26.3
Total (billions of dollars)	60.9	106.1	116.1

Sources: IMF, *WEO*; COMTRADE (United Nations Statistical Division); and U.S. Department of Agriculture.
1/ Average.

Table 2. EU Exports to Accession Countries

	AC-10 (total)		Poland		Hungary		Czech Republic	
	1993	2002	1993	2002	1993	2002	1993	2002
	Exports to (share in percent)							
Share in total exports:								
Spain	1.08	3.26	0.39	1.01	0.20	0.49	0.16	0.62
Germany	4.76	8.09	1.61	2.45	0.86	1.68	1.27	2.42
France	1.26	3.16	0.38	1.06	0.20	0.55	0.19	0.61
Italy	3.50	5.42	0.89	1.59	0.59	1.04	0.37	0.81
United Kingdom	0.99	2.34	0.60	0.72	0.17	0.41	0.24	0.56
	Distance (kms.)							
Spain	2,737		2,289		1,975		1,772	
Germany	1,448		515		690		281	
France	2,015		1,366		1,248		883	
Italy	1,724		1,322		814		931	
United Kingdom	2,151		1,449		1,454		1,036	

Sources: EIS, *Direction of Trade*; and U.S. Department of Agriculture.

Table 3. Structure of Spanish Exports

	Division	Share of exports	
		1993	2001
All Trade			
Food and Live Animals	0	13.0	12.0
Beverages and Tobacco	1	1.7	1.6
Crude Materials, Inedible, Except Fuels	2	2.0	2.2
Mineral Fuels, Lubricants, and Related Material	3	2.9	2.9
Animal and Vegetable Oil and Fats	4	1.2	1.0
Chemicals	5	7.6	9.7
Manufactured Goods	6	19.8	17.5
Machinery and Transport Equipment	7	41.6	41.0
Miscellaneous Manufactured Articles	8	8.9	10.5
Commodities and Transactions not Elsewhere Classified	9	1.4	1.7
Machinery and Transport Equipment			
Machinery and Transport Equipment	7	41.6	41.0
Power Generating Machinery and Equipment	71	1.9	1.8
Machinery Specialized for Particular Industries	72	1.6	1.4
Metalworking Machinery	73	0.7	0.6
General Industrial Machinery, Equipment, and Parts	74	3.7	3.6
Office Machines & Automatic Data Processing Equipments	75	1.7	1.4
Telecommunications & Sound Recording Apparatus	76	2.1	2.4
Electrical Machinery, Apparatus & Appliances	77	4.3	4.7
Road Vehicles (incl. air cushion vehicles)	78	21.9	23.0
Other Transport Equipment	79	3.8	2.0

Sources: COMTRADE (United Nations Statistical Division); and SITC-Revision 2.

Table 4. Structure Spanish Exports Compared to Accession Countries
(Share in percent, average 1997-2001)

	Division	Spain	AC10 (average)	Selected AC10 countries		
				Poland	Hungary	Czech Republic
Food and Live Animals	0	12.0	8.5	8.9	8.3	3.0
Beverages and Tobacco	1	1.6	1.6	0.4	0.7	0.9
Crude Materials, Inedible, Except Fuels	2	2.1	6.6	2.9	2.1	3.4
Mineral Fuels, Lubricants, and Related Material	3	2.7	4.7	5.4	1.8	3.1
Animal and Vegetable Oil and Fats	4	1.1	0.3	0.1	0.4	0.1
Chemicals	5	8.7	8.0	6.5	6.3	6.8
Manufactured Goods	6	17.9	20.2	25.4	11.9	26.5
Machinery and Transport Equipment	7	42.0	32.8	29.9	54.2	43.0
Miscellaneous Manufactured Articles	8	10.0	17.0	19.4	12.3	12.9
Commodities and Transactions not Elsewhere Classified	9	1.7	0.5	1.0	2.1	0.2
Division 7	Two-digits					
Power Generating Machinery and Equipment	71	2.0	2.3	3.1	10.5	2.7
Machinery Specialized for Particular Industries	72	1.4	1.3	1.7	1.3	3.4
Metalworking Machinery	73	0.7	0.5	0.4	0.2	1.7
General Industrial Machinery, Equipment, and Parts	74	3.6	2.9	2.9	2.7	5.7
Office Machines & Automatic Data Processing Equipments	75	1.5	1.7	0.3	11.0	1.6
Telecommunications & Sound Recording Apparatus	76	2.4	3.6	2.8	9.0	1.6
Electrical Machinery, Apparatus & Appliances	77	4.8	12.1	6.4	11.4	9.8
Road Vehicles (incl. air cushion vehicles)	78	23.2	7.2	8.0	7.7	14.5
Other Transport Equipment	79	2.4	1.3	4.3	0.3	2.0

Sources: COMTRADE (United Nations Statistical Division); and SITC-Revision 2

Table 5. FDI in Spain and Accession Countries, Average 1999-2001.

Country of Origin:	FDI in:			
	(Share of total in column country, in percent)			
	Spain	Czech	Hungary	Poland
EU	67.4	83.6	76.0	92.1
Of which:				
Germany	5.0	25.0	30.4	15.1
France	6.0	12.1	2.1	30.6
Italy	2.1	0.5	1.5	7.3
United Kingdom	25.3	18.4	15.2	19.0
Netherlands	10.4	2.0	6.2	1.8
Belgium-Luxembourg	12.0	2.4	8.6	7.0
Spain	...	0.2	0.3	1.8
Sector Receiving Investment:				
Primary	0.7	2.2	1.1	0.5
Manufacturing	5.7	34.0	25.0	22.5
Services	82.1	63.8	65.8	76.9
Electricity, Gas and Water	0.1	4.9	2.2	3.2
Construction	3.8	0.9	1.0	1.3
Trade and Repairs	3.9	15.4	20.5	11.3
Hotels and Restaurants	1.1	0.8	0.5	0.3
Transports, Communication	17.3	8.5	8.1	26.7
Financial Intermediation	4.3	23.3	14.1	29.9
Real Estate and Business Activities	50.2	9.4	17.2	3.5
of which: Real estate	8.3	2.9	5.4	2.4
Unallocated	5.6	0.0	8.1	0.3

Source: OECD

Table 6. Characterizing EU-15 Exports
(Dependent variable: log of exports from country *i* to country *j*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\log(Y_i Y_j)$	0.78 (0.05)		0.80 (0.05)	0.80 (0.05)	0.81 (0.05)	0.80 (0.05)	0.81 (0.05)
$\log((Y_i Y_j)/(P_i P_j))$		0.79 (0.05)					
$\log(P_i P_j)$			-0.65 (0.14)	-0.67 (0.14)	-0.69 (0.14)	-0.65 (0.14)	-0.69 (0.14)
$\log D_{ij}$	-0.99 (0.02)	-0.99 (0.02)	-0.99 (0.02)	-0.92 (0.02)	-0.74 (0.02)	-0.99 (0.02)	-0.74 (0.02)
<i>language</i> _{ij}				0.22 (0.03)			0.00 (0.03)
<i>border</i> _{ij}					0.56 (0.03)		0.56 (0.03)
<i>landlocked</i> _{ij}						-0.45 (0.09)	-0.58 (0.09)
Observations	4,642	4,642	4,642	4,642	4,642	4,642	4,642
Adjusted R-squared	0.94	0.94	0.94	0.94	0.95	0.94	0.95
Standard Error of the Estimation	1.11	1.69	1.80	1.82	1.84	1.38	1.41

Note. All regressions include country and time dummies for each of the EU-15 countries and years 1978-2002. Robust standard errors are shown in parenthesis as an indication of the precision of the estimates; the ratio of the coefficient and the standard error has a non-standard distribution.

Table 7. Exports and Previous EU Enlargements
(Dependent variable: log of exports from country i to country j)

	(1)	(2)	(3)
$\log(Y_i Y_j)$	0.81 (0.05)	0.82 (0.05)	0.81 (0.05)
$\log(P_i P_j)$	-0.69 (0.14)	-0.6 (0.14)	-0.55 (0.14)
$\log D_{ij}$	-0.74 (0.02)	-0.73 (0.02)	-0.74 (0.02)
<i>language</i> _{ij}	0.00 (0.03)	0.00 (0.03)	0.00 (0.03)
<i>border</i> _{ij}	0.56 (0.03)	0.56 (0.02)	0.56 (0.02)
<i>landlocked</i> _{ij}	-0.58 (0.09)	-0.51 (0.09)	-0.49 (0.09)
EU membership dummies			
<i>BOTH</i> _{ijt} members at time <i>t</i>		0.17 (0.02)	0.36 (0.04)
<i>ONE</i> _{ijt} member at time <i>t</i>			0.18 (0.03)
Observations	4,642	4,642	4,642
Adjusted R-squared	0.95	0.95	0.95
Standard Error of the Estimation	1.41	1.51	1.31

Note: See note in Table 6 for details. The dummy variable BOTH and ONE take the value of one respectively when both or only one of the trading partners is an EU member, it is zero otherwise.

Table 8. Exports and Southern EU Enlargement
(Dependent variable: log of exports from country i to country j)

	(1)	(2)	(3)
$\log (Y_i Y_j)$	0.93 (0.06)	0.91 (0.07)	0.9 (0.07)
$\log (P_i P_j)$	-0.79 (0.15)	-0.73 (0.15)	-0.73 (0.15)
$\log D_{ij}$	-0.49 (0.03)	-0.52 (0.03)	-0.53 (0.03)
<i>language</i> _{ij}	0.18 (0.04)	0.17 (0.04)	0.17 (0.04)
<i>border</i> _{ij}	0.56 (0.03)	0.57 (0.03)	0.57 (0.03)
<i>landlocked</i> _{ij}	0 0	0 0	0 0
D^{EUAC3}	-0.12 (0.04)	-0.08 (0.04)	-0.07 (0.04)
Number of years since accession		0.01 0.00	
Number of years since accession minus one			0.01 0.00
Observations	2,824	2,824	2,824
Adjusted R-squared	0.96	0.96	0.96
Standard Error of the Estimation	2.15	2.07	2.07

Note: Southern enlargement refers to the accession of Greece, Spain, and Portugal; other accession countries (Austria, Finland, and Sweden) are not included in the definition of EU. D^{UEAC3} is a dummy variable (holding the definition of EU constant) that takes the value of one when trade is between the EU and Southern accession countries; it is zero otherwise. See note in Table 6 for further details.

Table 9. Characterizing "EU-25" Exports
(Dependent variable: log of exports from country i to country j)

	Total Exports				Division 7
	(1)	(2)	(3)	(4)	(5)
$\log(Y_i Y_j)$	0.33 (0.11)	0.69 (0.11)	0.69 (0.10)	0.69 (0.10)	1.06 (0.12)
$\log(P_i P_j)$	2.13 (1.28)	-2.17 (0.68)	-2.16 (0.68)	-2.18 (0.67)	-2.64 (0.96)
$\log D_{ij}$	-0.79 (0.03)	-1.19 (0.03)	-1.16 (0.03)	-1.18 (0.03)	-1.28 (0.05)
$language_{ij}$	-0.06 (0.04)	0.06 (0.07)	0.02 (0.07)	0.01 (0.07)	0.06 (0.09)
$border_{ij}$	0.55 (0.03)	0.72 (0.08)	0.66 (0.07)	0.68 (0.08)	0.46 (0.10)
$landlocked_{ij}$	-0.61 (0.09)	-0.67 (0.10)	-0.70 (0.09)	-0.71 (0.09)	-0.64 (0.14)
D^{EUAC10}			-0.34 (0.03)	-0.43 (0.03)	-0.38 (0.05)
Interaction of the country dummy with D^{EUAC10}					
Spain				-0.19 (0.07)	-0.36 (0.11)
Germany				0.48 (0.07)	0.55 (0.08)
France				0.47 (0.07)	0.62 (0.12)
Italy				0.13 (0.05)	0.11 (0.09)
United Kingdom				0.55 (0.07)	0.29 (0.08)
Observations	1,962	5,756	5,756	5,756	5,057
Adjusted R-squared	0.96	0.90	0.90	0.90	0.88
Standard Error of the Estimation	3.15	1.84	1.83	1.79	3.69

Note. Column 1 reproduces column 7 of Table 6 using the sample period 1993-2002; other columns correspond to EU-25, defined as EU-15 plus AC-10 for 1993-2002. Division 7 (machinery and transport equipment) corresponds to the SITC-Revision 2 classification. D^{EUAC10} is a dummy variable taking the value of one when trade is between an EU-15 and AC-10 country, and zero otherwise.

Table 10. Characterizing EU-15 FDI.
(Dependent variable: log of FDI from country i to country j)

	(1)	(2)	(3)	(4)	(5)	(6)
$\log(Y_i Y_j)$	1.14 (0.25)		1.2 (0.25)	1.19 (0.25)	1.2 (0.25)	1.2 (0.25)
$\log((Y_i Y_j)/(P_i P_j))$		1.19 (0.23)				
$\log(P_i P_j)$			-1.18 (0.53)	-1.18 (0.53)	-1.15 (0.53)	-1.15 (0.53)
$\log D_{ij}$	-0.91 (0.08)	-0.91 (0.07)	-0.91 (0.08)	-0.86 (0.09)	-0.66 (0.09)	-0.66 (0.09)
<i>language</i> _{ij}				0.15 (0.14)		0.01 (0.14)
<i>border</i> _{ij}					0.48 (0.09)	0.48 (0.10)
<i>landlocked</i> _{ij}						-2.94 (1.31)
Observations	1,817	1,817	1,817	1,817	1,817	1,817
Adjusted R-squared	0.75	0.75	0.75	0.75	0.75	0.75
Standard Error of the Estimation	1.66	1.71	1.86	1.73	1.82	1.66

Note. See note in Table 6 for details.

Table 11. FDI and Previous Enlargements
(dependent variable: log of FDI from country i to country j)

	(1)	(2)	(3)
$\log(Y_i Y_j)$	1.2 (0.25)	1.16 (0.24)	1.11 (0.24)
$\log(P_i P_j)$	-1.15 (0.53)	-0.91 (0.53)	-0.78 (0.53)
$\log D_{ij}$	-0.66 (0.09)	-0.63 (0.09)	-0.66 (0.09)
<i>language</i> _{ij}	0.01 (0.14)	0.00 (0.14)	0.01 (0.14)
<i>border</i> _{ij}	0.48 (0.10)	0.47 (0.09)	0.49 (0.09)
<i>landlocked</i> _{ij}	-2.94 (1.31)	-2.43 (1.31)	-2.26 (1.30)
EU membership dummies			
<i>BOTH</i> _{ijt} members at time <i>t</i>		0.46 (0.11)	0.95 (0.27)
<i>ONE</i> _{ijt} member at time <i>t</i>			0.5 (0.24)
Observations	1,817	1,817	1,817
Adjusted R-squared	0.75	0.75	0.76
Standard Error of the Estimation	1.66	1.55	1.55

Note. For details see notes in Tables 6 and 7.

Table 12. FDI and Southern EU Enlargement
(Dependent variable: log of FDI from country i to country j)

	(1)	(2)	(3)
$\log(Y_i Y_j)$	1.83 (0.32)	1.93 (0.33)	1.93 (0.33)
$\log(P_i P_j)$	-1.7 (0.57)	-1.86 (0.57)	-1.85 (0.57)
$\log D_{ij}$	-0.35 (0.10)	-0.27 (0.11)	-0.27 (0.11)
<i>language_{ij}</i>	-0.11 (0.15)	-0.06 (0.15)	-0.05 (0.15)
<i>border_{ij}</i>	0.45 (0.10)	0.43 (0.10)	0.43 (0.10)
<i>landlocked_{ij}</i>	0 0	0 0	0 0
D^{EU-3}	-0.37 (0.17)	-0.46 (0.18)	-0.47 (0.18)
time		-0.03 (0.01)	
timeb			-0.02 (0.01)
Observations	2,824	2,824	2,824
Adjusted R-squared	0.96	0.96	0.96
Standard Error of the Estimation	2.15	2.07	2.07

Note. For details see the notes in Tables 6 and 8.

Table 13. Characterizing "EU-25" FDI
(Dependent variable: log of FDI from country i to country j)

	(1)	(2)	(3)	(4)
$\log(Y_i Y_j)$	0.29 (0.54)	0.10 (0.41)	-0.23 (0.39)	-0.39 (0.39)
$\log(P_i P_j)$	-5.35 (7.94)	4.26 (4.07)	7.47 (3.73)	6.54 (3.63)
$\log D_{ij}$	-0.79 (0.13)	-1.08 (0.10)	-1.11 (0.09)	-1.08 (0.10)
<i>language</i> _{ij}	-0.11 (0.21)	-0.10 (0.19)	-0.18 (0.19)	-0.15 (0.20)
<i>border</i> _{ij}	0.48 (0.14)	0.47 (0.14)	0.30 (0.14)	0.34 (0.14)
<i>landlocked</i> _{ij}	0.28 (2.30)	-0.61 (0.44)	-0.33 (0.46)	-0.20 (0.46)
D^{EUAC10}			-1.11 (0.14)	-0.80 (0.17)
Interaction of the country dummy with D^{EUAC10}				
Spain				-0.29 (0.32)
Germany				-0.93 (0.26)
France				-0.32 (0.29)
Italy				-0.68 (0.27)
United Kingdom				-0.87 (0.29)
Observations	812	1,274	1,274	1,274
Adjusted R-squared	0.74	0.73	0.75	0.76
Standard Error of the Estimation	4.19	3.26	5.05	4.40

Note. Column 1 reproduces Column 6 of Table 10 for 1993-2002; other columns correspond to EU-25, defined as EU-15 plus AC-10 for 1993-2002. For further details see the notes to Tables 6 and 9.

Table 14. Characterizing "EU-25" Migration
(Dependent variable: log of migration from country i to country j)

	(1)	(2)	(3)	(4)
$\log(Y_i Y_j)$	0.04 (0.25)	0.19 (0.16)	0.14 (0.16)	0.14 (0.15)
$\log(P_i P_j)$	-2.14 (2.82)	-0.15 (1.28)	-0.02 (1.25)	-0.25 (1.21)
$\log D_{ij}$	-0.68 (0.06)	-1.08 (0.05)	-1.08 (0.05)	-1.09 (0.05)
<i>language</i> _{ij}	-0.16 (0.09)	-0.37 (0.10)	-0.39 (0.10)	-0.32 (0.10)
<i>border</i> _{ij}	0.52 (0.08)	0.57 (0.09)	0.51 (0.08)	0.46 (0.08)
<i>landlocked</i> _{ij}	-1.33 (0.22)	-0.37 (0.16)	-0.37 (0.18)	-0.39 (0.18)
D^{EUAC10}			-0.39 (0.07)	-0.40 (0.07)
Interaction of the country dummy with D^{EUAC10}				
Spain				-0.99 (0.17)
Germany				0.51 (0.12)
France				-0.03 (0.14)
Italy				-0.10 (0.12)
United Kingdom				0.76 (0.22)
Observations	1,407	2,614	2,614	2,614
Adjusted R-squared	0.85	0.85	0.86	0.86
Standard Error of the Estimation	4.67	1.09	1.09	1.11

Note. Column 1 reproduces column 6 of Table 10 for the sample period 1993-2002; other columns correspond to EU-25, defined as EU-15 plus AC-10 for 1993-2002. For further details see the notes to Tables 6 and 9.

DATA DEFINITIONS AND SOURCES

Variable	Definition	Source
$TRADE_{ij}$	Bilateral exports from country i to j (current US\$ millions).	Direction of Trade and UN COMTRADE.
FDI_{ij}	Bilateral foreign direct investment flows from country j to i (current € millions).	Eurostat and OECD.
$MIGRATION_{ij}$	Bilateral migration flows from country j to i .	Eurostat.
$Y_i (Y_j)$	Nominal GDP of country i (j) (current US\$ billions).	World Economic Outlook database
$P_i (P_j)$	Population of country i (j) (millions of inhabitants).	World Economic Outlook database
D_{ij}	Distance between the capital cities of countries i and j (Km).	U.S. Department of Agriculture http://www.wcrl.ars.usda.gov/cec/java/capitals.htm
$language_{ij}$	Dummy variable taking the value of one if countries i and j use the same official or commercial language.	
$border_{ij}$	Dummy variable taking the value of one if countries i and j share a common border.	
$landlocked_{ij}$	Dummy variable taking the value of one if country i or j is landlocked.	
$BOTH_{ijt}$	Dummy variable taking the value of one if countries i and j are EU members at time t .	
ONE_{ijt}	Dummy variable taking the value of one if only one country (i or j) is EU member at time t .	
D^{EUACS}	Dummy variable taking the value of one if country i or j is Greece, Spain or Portugal, and the trading partner is either Belgium/Luxembourg, Denmark, France, Germany, Ireland, Italy, Luxembourg, Netherlands or United Kingdom.	
D^{EUACTO}	Dummy variable taking the value of one if one country (i or j) is EU member and the trading partner is an accession country.	

		Regional Grouping, and Other Country Characteristics.						
Regional Grouping	Landlocked	Official or Commercial Language					VAR sample	
		Dutch	English	French	German	Greek		Swedish
Austria	EU-15	x			x			x
Belgium	EU-15		x		x			
Denmark	EU-15				x			x
Finland	EU-15						x	x
France	EU-15			x				x
Germany	EU-15				x			x
Greece	EU-15					x		
Ireland	EU-15		x					x
Italy	EU-15							x
Luxembourg	EU-15	x		x	x			
Netherlands	EU-15		x					x
Portugal	EU-15							
Spain	EU-15							x
Sweden	EU-15						x	x
United Kingdom	EU-15		x					
Bulgaria	AC-10							
Cyprus	AC-10					x		
Czech Republic	AC-10	x						x
Estonia	AC-10							
Hungary	AC-10	x						x
Latvia	AC-10							
Lithuania	AC-10							
Malta	AC-10		x					
Poland	AC-10							x
Romania	AC-10							
Slovak Republic	AC-10	x						
Slovenia	AC-10							

Table A1. Small-Sample Bias in Gravity Equations

	"OLS" (1)	DOLS (2)	Change
$\log(Y_{it}Y_{jt})$	0.81	0.91	0.10
$\log(P_iP_j)$	-0.69	-0.74	-0.05
$\log D_{ij}$	-0.74	-0.75	-0.01
<i>language_{ij}</i>	0.00	-0.02	-0.02
<i>border_{ij}</i>	0.56	0.55	-0.01
<i>landlocked_{ij}</i>	-0.58	-0.59	-0.01
Observations	4,642	4,542	
Adjusted R-squared	0.95	0.95	
Standard Error of the Estimation	1.41	1.65	

Note: For reference, column 1 reproduces the fixed-effects estimates (OLS with individual constants) in column 6, Table 6. DOLS are obtained by adding to that model the corresponding auxiliary regressors (leads and lags of the difference of the regressors).

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