

EU EASTERN EXPANSION AND THE EFFECTS ON TRADE

by

SELENA C. SMITH

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Selena C. Smith

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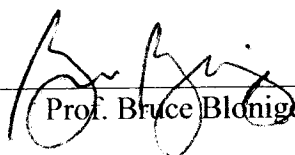
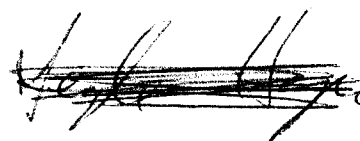
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The European Union will admit ten new members in 2004, and the consequences of this expansion are both controversial and uncertain. One possible benefit is an increase in international trade between the accession countries and the current EU member states. Using the gravity trade model and regression analysis, this paper looks at the effects on trade of EU membership with Spain, Portugal, and Greece as the past, relevant examples. The results on trade are mixed, though, making prediction of the effects on trade of the 2004 expansion difficult. This paper analyzes the possible reasons for the inconsistency between the results and economic theory as well as the implications of the results for the upcoming enlargement process.

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## EU Eastern Enlargement and the Effects on Trade

### Introduction

Since the end of World War II, Europe has been working to establish a more united continent to bring the European citizens much-desired peace and economic growth. As a starting point, six countries came together to establish the European Coal and Steel Community in 1951 with the hope of preventing another world war by making the flow of major wartime factors of production more transparent. Six years after this establishment came the Treaty of Rome, creating the European Economic Community, which has grown in membership as well as aspiration into today's European Union.

The European Union has recently announced the accession of ten new member states: Poland, Hungary, the Czech Republic, Estonia, Latvia, Lithuania, Slovenia, Slovakia, Malta, and Cyprus. The date of accession is expected to be January 1<sup>st</sup>, 2004, at which time these ten new members will join the fifteen current EU members: Germany, France, Belgium, the Netherlands, Luxembourg, Italy, the United Kingdom, Denmark, Ireland, Greece, Spain, Portugal, Austria, Sweden, and Finland. Many Europeans see this expansion of the European Union as both exciting and uncertain. The accession countries are, for the most part, far behind the current EU-15 economically; this may mean a higher initial cost of integration, especially with the former Communist countries, than any other enlargement thus far. Also, this will be the largest expansion in the history of the EU, nearly doubling current membership. Although the possible costs of the eastern enlargement are cause for some peoples' worries, many Europeans hope that the benefits will include a more economically

and politically stable Central and Eastern Europe. The exact consequences of the integration, though, are still quite controversial and uncertain.

My thesis looks at one aspect of the economic integration: international trade. International trade is important for a country's economic well-being. Trade is a major component of a nation's income, which is measured by the gross domestic product (GDP). A nation's standard of living is often measured by GDP per capita. Changes in trade therefore affect a nation's standard of living, which is of great importance to its citizens. Empirical evidence also supports the economic theory regarding a positive correlation between trade and national income. Jeffrey A. Frankel and David Romer found that by analyzing only the geographic factors of trade, such as a country's size and location, trade and income are positively related. According to their experiment, "the relation between the geographic component of trade and income suggests that a rise of one percentage point in the ratio of trade to GDP increases income per person by at least one-half percent," (The American Economic Review, 1999). Thus, both economic theory and empirical evidence suggest that international trade plays an important role as a component of national income.

International trade's relationship with economic growth is a major reason for the Central and Eastern European Countries' desire to join the EU and the EU-15's aspiration for further expansion. However, the exact benefits of the enlargement process are still unclear. This paper attempts to predict the intra-EU trade effects that can be expected starting in 2004 with the CEECs' (Central and Eastern European Countries') accession to the EU. I use the gravity trade model in regression analyses to estimate the impact of EU membership on international trade flows in three past, relevant examples: the accessions of Spain, Portugal, and Greece. The estimates on Portugal reveal an initial positive impact of joining the EU on

trade, but the estimates on Spain and Greece are inconsistent with my expectations. In the case of Greece, the estimates have a small positive impact on trade but are statistically insignificant. The estimates on Spain's accession to the EU reveal a possible negative relationship with trade, the opposite of my expectations. If the estimates on Portugal prove to be accurate, the CEECs that more closely resemble Portugal than Spain or Greece may experience an increase in trade with accession. Overall, however, my findings suggest that the upcoming enlargement process will not have large effects on international trade flows between most CEECs and the current EU-15.

#### Background Information

The EU eastern expansion has many unique qualities to it. The most important aspects are the fairly recent drastic change from a Communist government to a democracy and from a centrally-planned economy to capitalism for the majority of the accession countries. The opening up of these economies has brought a substantial amount of foreign direct investment (FDI) and other forms of financial aid from the current EU-15. Due to this help, a significant amount of "catching up" has already been achieved in the new accession countries. Trade agreements were quickly put into place between Western and Central/Eastern Europe in the early 1990s. In 1990, the European Community removed import quotas on a number of products coming in from the CEECs. The European Community also established new assistance programs, such as the Phare Programme in 1989, to provide financial support to these former communist countries to reform or rebuild their economies.

Along with these financial assistance programs from the European Community, many Western European firms sent FDI east. Trade between Western Europe and Central and Eastern Europe has increased dramatically since 1989. One of the main questions in the EU today, however, is how long this trend will last. With these CEECs integrating into the European Union over the next few years, the economic integration may increase trade even more, or it may become apparent that the benefits of the catching-up process have already peaked.

Much of the FDI, trade agreements, and financial assistance sent to the former communist states have had the goal of bringing their economies to the level of the basic requirements needed to apply for EU membership. Satisfying the EU economic requirements, however, does not bring these countries to the same level as the current fifteen member states. These requirements, as outlined in the Copenhagen Criteria (1993), include:

The candidate country [must have] achieved:

- 1) stability of institutions guaranteeing democracy, rule of law, human rights, and respect for and protection of minorities;
- 2) the existence of a functioning market economy as well as the capacity to cope with competitive pressure and market forces within the EU;
- 3) the ability to take on obligations of membership including adherence to the aims of political, economic, and monetary union (European Commission, 2000).

Therefore, to open negotiations of accession, these former Communist countries had to show that they had taken great strides in rebuilding their economies and reforming their legal institutions; this obviously takes time and money, and most of the foreign financial aid thus far has gone to achieving these goals.

Other requirements have also been added since the Copenhagen Criteria, including the 1995 Madrid European Council meeting, which called for establishing appropriate administrative and judicial structures to implement legislation effectively. Also, the

Luxembourg and Helsinki Council meetings of 1997 and 1999 added that member states and candidate countries “must share the values and objectives of the European Union as set out in the treaties” and share “the importance of high standards of nuclear safety” (European Commission, 2000).

For these candidate countries, which have taken great strides to achieve the above requirements, an unprecedented amount of financial aid will continue to flow to their governments. The EU will give EUR 3.120 billion annually between 2000 and 2006 via the Phare Programme and two other pre-accession programs, the ISPA (Instrument for Structural Policies for Pre-Accession) and the Sapard (Special Accession Programme for Agriculture and Rural Development) (European Commission, 2000). These assistance programs have been established specifically for this enlargement process, due to the large proportion of poorer countries. The Phare Programme will provide EUR 1.560 billion annually to finance institutional reform (EC, 2000). The ISPA finances reform and/or rebuilding of major environmental and transport infrastructure with an annual budget of EUR 1.040 billion (EC, 2000). The Sapard finances agricultural and rural development with EUR 520 million annually (EC, 2000). (The euro and the dollar hold an approximate one to one ratio.)

As stated earlier, significant opening up of the former communist countries' economies since 1989 has increased trade between these countries and the EU-15, especially between the border-states, like Austria and Germany. With many trade agreements already in effect, the major economic benefits after integration may mainly come from the escalation from these trade agreements to an economic union. This means seeing benefits from the removal of all trade barriers between the states, including the elimination of all tariffs



between members, creating a common external tariff policy, establishing the free movement of labor and capital, and coordinating economic policy.

### Current Concerns

Due to the size of the upcoming enlargement and the current economic standing of the countries involved, many concerns arise for the EU-15. One major concern, especially for the border-states such as Austria and Germany, is the migration of workers after EU integration or after the transition period. Estimates of the influx of persons seeking work range from 41,000 to 680,000 (OeNB, 2002). A restriction on the free movement of persons will be placed on the new member states due to this concern. The restriction allows the current EU-15 to choose not to admit citizens of the CEECs for a transition period of up to seven years after integration. This would allow time for the CEECs to continue the catching-up process, create jobs, and reduce unemployment rates in the accession states to lower the number of migrant workers when the transition period ends. This legislation, however, may extend the time it takes to reach a full economic union, which could cause a slower realization of all the benefits from economic integration.

The EU expenditures will also need some amending. The Structural Funds and the Cohesion Funds, which are the two main programs that financially support the poorer EU member states, may need more money or may need to be redistributed from the current recipients to the CEECs once they enter the EU. The estimated cost of the enlargement process for the first few years is at EUR 40.16 billion or 1.08% of GNP (of the EU-15), according to the European Commission (2000). These costs would cover the years 2004 to 2006, assuming the ten new member states join in 2004. More restructuring will also be

required in the agricultural policy of the EU. The CEECs depend much more on their agriculture sector than the EU-15; most likely, Structural Funds and other agriculture subsidies will have to be redistributed to the incoming member states and away from Spain, Greece, and Italy, especially.

The concern here is whether or not the lower end of the current EU-15 can afford to lose some of their funding. Arguments have been made that the catching-up process in Italy, Spain, Portugal, Ireland, and Greece has been substantial, and that these countries no longer need the aid of the Structural and Cohesion Funds. Other arguments have been made, though, that their catching-up process still needs financial support from the wealthier EU-15 and that redirecting this aid to the new member states could hurt the current catching up countries.

Similarly, with the further EU integration, the disparity between the wealthier and the poorer countries will be a serious issue in the future. Already, the Benelux countries (Belgium, the Netherlands, and Luxembourg) and the UK have voiced strong opposition against paying a larger proportion of their GDP to the EU budget to spend on other countries' economies. Net-investing member states, such as the UK, will most likely pay one of the higher portions of the EU budget for a while longer. The current net-receivers of EU financial support may now have to become net-investors. Most likely, the new member states will be net-receivers of aid through 2006 at least, and they will either receive less money as past net-receivers have or the net-investors will have to increase their contributions.

Due to the unique aspects of the upcoming enlargement, including the number of accession countries and the political backgrounds based mainly on communism, the EU-15

have spent much time studying the possible effects of further integration. Also due to these unique aspects, there still exists much controversy over the findings of the different studies. It is widely agreed upon, though, that the upcoming enlargement will be a historic one.

### Why should we care?

The EU is already becoming a major world player economically and politically. In the year 2000 alone, the EU's total trade with the rest of the world was 5008.2 billion dollars; this was over twice the U.S.' total world trade at 2039 billion dollars (WTO, 2001). The EU's economic role in third world countries also dwarfs that of the U.S. Aid to the third world from the EU reached 31.873 billion dollars in 1997, compared to the U.S.' 6.878 billion dollar contribution (European Commission and Eurostat, 2000).

The EU is now the largest single, capitalist market in the world in terms of population and as of recently, in terms of GNP. Despite the achievements of successfully implementing a common currency in twelve member states and building an even larger economic union, the main goal of the foundation of the European Union is to maintain peace on the European continent. Since the establishment of the European Coal and Steel Community in 1951, Europeans have prided themselves in their longest period of peace on the continent in history, and many Europeans point to the economic integration of the European Community as the cause for the prolonged period of peace. With the idea that a stable economy will enable a politically stable nation, the EU has invested billions of euros in reforming Europe's central banks and legal institutions. The further integration of the European Union, however, will require even more billions of euros in infrastructure reform, economic stabilizing, industry liberalization, and legal institution rebuilding. Looking in-depth at the effects the

eastern enlargement will have on trade specifically, we can see the extent of the benefits from the EU-15's investment of billions of euros in the CEECs.

Although the economic policies and goals of the EU receive much more attention from the world, including the EU member states themselves, the goals of the EU include further political and judicial integration. If the eastern expansion proves to be economically successful, we may start to see reforms in the other sectors as well, and an economically and politically cohesive European Union may rise to rival the United States as a strong, single, international superpower.

#### Trade Flow Analysis: Methodology

Understanding the history and the politics of the European Union is essential for understanding the economics of the union as well. Even though literature provides much information on the possible implications of further EU integration, running a regression analysis offers a more accurate method for predicting the changes in trade with eastern expansion. To make predictions on what will happen in the accession countries and in the current EU-15, I use the gravity trade model as the basis for running regressions on data from the integration of Spain, Portugal, and Greece. Looking at changes in the trade flows in these three countries surrounding their accession to the EU offers a foundation for predicting what will happen to new EU members starting in 2004.

The gravity trade model relates trade between two countries to the importer's demand, the exporter's supply, and the cost of doing business (transportation and transactions costs). The model incorporates the incomes of two countries, the distance between them, and barriers to trade. In its simplest form, the gravity model states that trade is positively related

to the income of both countries and negatively related to the distance between them. This can be written as:  $\text{trade}_{ijt} = f(\text{GDP}_{ijt}, \text{distance})$ , where the  $i$  and  $j$  subscripts stand for the two countries and  $t$  indexes the year. For empirical estimation, it is common to put the variables in logarithms; therefore, the log of the trade flows is a function of the log of the product of the two countries' GDPs, denoted  $\text{GDP}_{ijt}$ , and the log of the distance between them. In addition to these independent variables, I also control for other variables that may also affect trade flows, such as a shared border or shared culture between the countries. Based on these data and my empirical equation, I estimate the factors that affect bilateral trade flows across countries and over time, and use these results to predict what we can expect with the eastern enlargement and trade.

The gravity model is a useful tool for my analysis. One important aspect of this model is its proven real-world applicability. Many economists have tested the gravity model using historical data, and the results clearly support the expected negative relationship between trade and distance and the expected positive relationship between trade and GDP. Knowing that the basic model accurately depicts real-world trading patterns allows for a reliable measurement of the factors that determine trade flows between countries.

Econometrics and regression analysis are also useful in my research. Regression analysis allows for predicting future values, such as trade, based on a trend found in existing data. Simply stated, regression analysis is using a given set of observations and fitting a line to the set that best describes the trend of the observations. This line estimates the coefficients of the variables in the theoretical equation. Prediction of future values for the dependent variable is based on the trend of the regression line. Econometrics provides methods for testing the significance of the coefficient estimates and for future predictions based on the

regression line. The analysis is easier with the help of computer programs, such as Stata, which is the one I used for my research.

Going further in-depth, to find the “best-fitting” regression line, I used the standard Ordinary Least Squares (OLS) procedure to estimate the gravity model. OLS minimizes the sum of the squared residuals to find a linear relationship that best describes the data set. The residuals are the vertical distances between each actual observation and the estimated regression line. Comparing the sum of the squared residuals reveals the smallest value as representing the best-fitting regression line.

The exact form of the gravity model equation I use is based on a recent working paper by Andrew Rose, a professor at the University of California in Berkeley, titled “Do We Really Know that the WTO Increases Trade?” In this paper, Rose uses the gravity trade model to study the effects of membership in the World Trade Organization on trade. In addition to his paper, he also provides the data set on his web site. Thus, I use these data for my analysis as well. Rose’s data set consists of statistics on trade, GDP, land area, distance between countries, and more, for 178 countries from 1947 through 1999.

Following Rose, the particular form of the gravity model I use to measure the impact of EU membership on trade is:

$$\begin{aligned} \ln \text{trade}_{ijt} = & \beta_0 + \beta_1(\ln \text{landl})_{ij} + \beta_2(\ln \text{island})_{ij} + \beta_3(\ln \text{border})_{ij} + \beta_4(\ln \text{comlang})_{ij} + \beta_5(\ln \text{comcol})_{ij} \\ & + \beta_6(\ln \text{curcol})_{ijt} + \beta_7(\ln \text{comctry})_{ij} + \beta_8(\ln \text{colony})_{ij} + \beta_9(\ln \text{custrict})_{ijt} + \beta_{10}(\ln \text{regional})_{ijt} + \\ & \beta_{11}(\ln \text{lareap})_{ij} + \beta_{12}(\ln \text{ldist})_{ij} + \beta_{13}(\ln \text{rgdp})_{ijt} + \beta_{14}(\ln \text{rgdppc})_{ijt} + \beta_{15}(\ln \text{rta})_{ijt} + \beta_{16}(\ln \text{onein})_{ijt} + \\ & \beta_{17}(\ln \text{bothin})_{ijt} + \beta_{18}(\ln \text{gsp})_{ijt} + \gamma_1(\ln \text{speu})_{ijt} + \gamma_2(\ln \text{poeu})_{ijt} + \gamma_3(\ln \text{greu})_{ijt} + \varepsilon, \end{aligned}$$

where:

$i, j$  = subscripts for country  $i$  and country  $j$

$t$  = at time  $t$

$\ln trade$  = log of trade (the dependent variable): measured by total exports

between  $i$  and  $j$  at time  $t$ ;

$landl$  = landlocked: the number of landlocked countries in the pair  $i$  and  $j$ , taking

on a value of 0, 1, or 2;

$island$  = island: the number of island countries in the pair  $i$  and  $j$ , taking on a

value of 0, 1, or 2;

$border$  = border: binary variable taking on a value of 1 if  $i$  and  $j$  share a border

and 0 otherwise;

$comlang$  = common language: binary variable taking on a value of 1 if  $i$  and  $j$

share a common language and 0 otherwise;

$comcol$  = common colonizer: binary variable taking on a value of 1 if  $i$  and  $j$

shared a common colonizer during the sample and 0 otherwise;

$comctry$  = common country: binary variable taking on a value of 1 if  $i$  and  $j$  were

part of the same country during the sample and 0 otherwise;

$colony$  = colony: binary variable taking on a value of 1 if either of  $i$  or  $j$  was ever

a colony of the other and 0 otherwise;

$curcol$  = current colony: binary variable taking on a value of 1 if either  $i$  or  $j$  are

colonies at time  $t$  and 0 otherwise;

$custrict$  = currency union: binary variable taking on a value of 1 if  $i$  and  $j$  are part

of the same currency union at time  $t$  and 0 otherwise;

$regional$  = regional free trade area: binary variable taking on a value of 1 if  $i$  and  $j$

belong to the same regional free trade area and 0 otherwise;

lareap = log of area: log of the land area of i and j;

ldist = log of distance: log of the distance between i and j;

lrgdp = log of real GDP: log of the product of the real GDPs of i and j;

lrgdppc = log of real GDP per capita: log of the product of the real GDPs per person of i and j;

rta = regional trade agreement: binary variable taking on a value of 1 if i and j belong to the same regional trade agreement and 0 otherwise (an example of such an arrangement is NAFTA);

onein = one in: binary variable taking on a value of 1 if i or j is a member of the GATT/WTO at time t and 0 otherwise;

bothin = both in: binary variable taking on a value of 1 if both i and j are members of the GATT/WTO at time t and 0 otherwise;

gsp = Generalized System of Preferences: binary variable taking on a value of 1 if either i or j was a GSP beneficiary of the other at time t and 0 otherwise;

speu = Spain: binary variable taking on a value of 1 starting with Spain's accession to the EU and 0 before;

poeu = Portugal: binary variable taking on a value of 1 starting with Portugal's accession to the EU and 0 before;

greu = Greece: binary variable taking on a value of 1 starting with Greece's accession to the EU and 0 before.

The last three variables are the variables I created in order to find a regression line that would allow for a prediction of changes in trade due to the upcoming enlargement. Greece joined



the EU in 1981, and Spain and Portugal joined in 1986; therefore, the greu variable is equal to one for 1981 to 2000, and the speu and poeu variables are equal to one for 1986 to 2000. Before 1981 for Greece and before 1986 for Spain and Portugal, the three variables are equal to zero.

The reasons for using Spain, Portugal, and Greece to estimate an impact of EU membership on trade stem from their economic standings and the time of their accessions. In order to find an estimated impact on trade of joining the EU that would be relevant to the CEECs, I decided to use countries in the lower half (economically) of the EU. Spain, Portugal, and Greece are in the lower half of the EU-15 and have been there since accession. Comparing the GDPs per capita of each country in the European Union is a simple measurement of where each stands economically. Also, it was important to look at the more recent EU enlargements. The last enlargement (in 1995) brought Austria, Sweden, and Finland to the EU; however, these three countries are relatively wealthy, and the majority of the CEECs will make up the new poorest section of the EU. Another similarity the CEECs share with Spain, Portugal, and Greece is that they are entering an economic union but not joining the euro-area. When Spain, Portugal, and Greece joined in the 1980s, the euro had not been adopted yet; therefore, they were not entering a currency union at the time of accession. They also were not expecting to join a currency union in the foreseeable future. Although a common currency area now exists, the CEECs are not yet qualified to join, and no expected start date has been determined. When Austria, Sweden, and Finland joined in 1996, it was clear that the euro would be introduced within a few years and that these three countries would be eligible to adopt the new currency. Therefore, in order to find an

estimated impact on trade of joining the EU that would be the most relevant to the upcoming enlargement, Spain, Portugal, and Greece appeared to be the best countries to use.

After determining which countries to use as the base for measuring the impact on trade of EU membership, I had to build the rest of the model. Andrew Rose's data set provided the other variables I determined were necessary in my model to help explain changes in bilateral trade.

### Trade Flow Analysis: Results

Before running the regression, my expectation was to see an increase in trade between Spain, Portugal, and Greece and the other EU members after accession. The size of the increase would be estimated with the regression analysis. Also, based on economic theory, I expected to see greater trade increases between border-states; for example, trade should increase more between Spain and France than between Greece and France. Therefore, I expected regional disparities to occur due to transportation costs and/or trade preferences based on shared borders. I also expected to see greater economic benefits in the poorer countries than in the wealthier ones; this means that Spain's, Portugal's, and Greece's benefits of increased trade would most likely significantly outweigh similar benefits the wealthier EU would receive. The actual regression results, however, turned out to be quite different from my expectations.

Using Stata as the tool for running the regression, I imported the data set Rose provided and added the variables for Spain, Portugal, and Greece. Rose's data set is the most comprehensive data on trade flows to date, with observations of bilateral trade flows across 178 countries and over 50 years, from 1947 through 1999. The computer program estimated

the coefficients on each of the gravity-model variables based on the data observations.

Looking at the coefficient estimates is not enough though. It is also important to know how likely the estimates are in the real world. The data used to generate the coefficient estimates are only a sample from actual data. If the sample is chosen randomly, a good chance exists that the coefficients accurately depict real-world relationships between the independent and dependent variables. Hypothesis testing and t-statistics help determine whether coefficient estimates are statistically likely or not.

The t-test compares a calculated t-statistic with a t-critical value to see whether or not we can reject a null hypothesis. The t-statistic is defined by the difference between the estimated coefficient and the null hypothesis value (zero in this case) divided by the standard error of the estimate. By comparing the t-statistic with the t-critical value, we can determine whether the estimate is significant or not. The t-critical value regarding my analysis is found in a normal distribution table and is determined by how many observations are in the sample and the chosen level of significance, with which we can possibly reject the null hypothesis with a certain degree of confidence. Hypothesis testing and t-tests cannot determine a cause and effect relationship; all that can be determined is whether the estimated coefficient is significantly different from zero in a specified direction.

The results from my regressions for the EU membership coefficients generally yielded small t-statistics, some of which were statistically significant, but others could not be determined as significantly different from zero. My expectations were to see positive effects on trade with EU membership in all three cases. However, only Portugal's coefficient turned out positive and significant in more than one regression. Spain's coefficient was statistically significant in more than one regression, but in both cases it was negative, which was the

opposite of my expectations. Also, in another regression, Spain's coefficient yielded a positive value, although insignificant. The coefficient for Greece generally was quite small and only once was statistically significant.

I ran eight different regressions, each yielding noticeably different results for the EU membership coefficients (as shown in tables 1 and 2). Regressions 1.1 and 2.1 are two variations of the gravity trade model, one of which is simply an extension of the other, and do not have the EU membership variables in them. Regression 1.2 adds three variables to 1.1, all of which appear relevant to the equation. Regressions 1.3 and 2.2 include the Spain, Portugal, and Greece variables in the two variations of the gravity model. Regression 1.3 reveals negative values for Spain and Greece's membership coefficients; however, only Spain's is statistically significant at  $-0.7924$ . This would imply that Spain's trade decreased by 79.24% with accession to the EU; this result is not consistent across the regressions, though. The negative coefficient estimate for Spain appears again in regression 2.2; this result is also statistically significant but smaller in value, at  $-.5839$ . Looking at Spain's coefficient estimate in 2.3 reveals a positive value, although insignificant. The unexpected negative coefficient estimates and the inconsistency of Spain's results bring forth questions of how reliable Spain's coefficients are. They appear to be quite sensitive to small changes in specifications; more testing should be done before concluding the apparent real-world effects of Spain's accession on trade.

Greece's coefficient estimates generally were small in value and insignificant statistically. The one exception is in regression 2.3 with a value of  $.7036$ ; however, this is significant only at the 10% level and is the most optimistic of Greece's entire set of coefficient estimates.

Portugal is the only case with consistently positive results. In regression 2.3, Portugal's coefficient estimate is 1.447 and statistically significant. Also, in regression 1.4, Portugal's coefficient is 1.2103 and significant. These estimates imply a positive impact on trade with Portugal's accession to the EU, which is consistent with my expectations. These regressions also include the variable *poeut*, which is an interaction variable measuring the impact of Portugal's accession and the trade trend over time. In regression 1.4 this estimate is -.0884, which is also statistically significant (although only at the 10% level). Regression 2.3 yields a *poeut* estimate of -.0905 with the same level of significance as in regression 1.4. The combination of Portugal's coefficient and the interaction variable's coefficient implies a positive impact on trade in the first year of Portugal's accession by 67.99% in regression 1.4 and by 90.4% in regression 2.3 due to EU membership, and each year after that, the impact on trade of accession declines by 8.84% and 9.05%, respectively, until the impact of EU membership is no longer significant. Although the coefficient estimates on Greece and Spain yielded less promising results, the estimates on Portugal support an increase in trade due to EU membership, which would decline over time. Therefore, as far as predicting the changes in trade for the CEEC enlargement process, perhaps the countries that resemble Portugal in size and economic standing will benefit from an increase in trade with accession. However, estimates on Spain and Greece support an insignificant change in trade for the majority of the CEECs due to EU membership.

#### What Does This Mean?

The results from the regressions by and large were not what I expected. Econometrically, the small t-statistics mean we cannot conclude that there exists a significant

impact on trade from joining the EU in most cases. This does not mean that trade definitely will not change during the year of accession and beyond, but it does mean that EU membership alone does not have a significant impact on bilateral trade, except in possible country-specific cases similar to Portugal's accession. The disparity in the regression estimates on Spain, Portugal, and Greece make predictions of the CEECs' changes in trade starting in 2004 less clear. If an accession country is more similar to Portugal than Spain or Greece, perhaps a significant increase in the amount of trade can be expected due to EU membership. However, if an accession country more closely resembles Greece or Spain, I would predict no significant impact on trade due to membership alone.

The Czech Republic is most likely the best candidate for experiencing an increase in trade similar to that of Portugal's. Both countries are relatively small, and unlike Greece, both are adjacent by land to the EU. The Czech Republic also is not as poor as other small CEECs, and is therefore closer to Portugal's economic standing as a new member. Given the estimations of Portugal's coefficients in the regression, we can extrapolate these to predict the Czech Republic's changes in trade due to EU membership. If the similarities between the Czech Republic and Portugal prove to be true, based on my regression results, the Czech Republic can expect an increase in trade by 67.99 to 90.4% in 2004 and a declining impact of 8.84 to 9.05% for seven to ten years after 2004 due to EU membership. Although a minority of the CEECs may experience increases in trade similar to the estimations on Portugal, this does not appear to be the reality for the majority of the countries.

What does this imply for the majority of the CEECs? First, this may accurately depict what will happen in 2004 with the EU enlargement; in this case, trade will not be affected by accession unless a country shares important economic and geographic

characteristics with Portugal. Economic theory, though, supports the idea that eliminating barriers to trade and integrating economically increases trade. Is this no longer the case? Perhaps the most important aspect to consider in looking at EU membership and trade is the ten years or so leading up to accession. In all the cases of the EU-15 and the CEE accession countries, trade agreements have been established before membership began. In addition, most of the trade agreements came in steps leading toward freer trade between the countries. Perhaps the reality is that changes in trade due to economic integration have already peaked through the establishment of trade agreements. This would support the theory that economic integration boosts trade and still be consistent with my findings.

Another possible implication is that the model in the regression is an incomplete model. Leaving out other variables that have an impact on trade could have biased the regression and returned inaccurate results. The gravity trade model provides a base model that relates trade between two countries with the size of the countries and the distance between them. In developing a more complex model, it is possible that not all of the relevant variables are included; the relevant variables should be determined by the economic theory behind the model. Measuring the impact on trade of joining a unique economic union, such as the EU, is relatively new, and the possibility that one or more important variables have been left out of the regression could exist.

Perhaps the model is correct, though, and membership to the EU has both positive and negative effects on trade, which have cancelled each other out in the regression. Membership to the EU has proven to cause increased liberalization of industries and the continued elimination of trade barriers. Although in the long run this should have positive effects on trade due to increased efficiency, in the short run, this causes many firms to

struggle with increased competition. Governments often have incentives to place barriers to trade, such as tariffs and quotas, on imports. Joining the EU, however, requires eliminating such barriers, and domestic firms that have been protected to an extent from foreign competitors must suddenly compete in a much larger market. At one end, this may be devastating to a particular domestic firm or industry, as increased competition causes inefficient firms to go out of business; at the other end, though, comparative advantage in production costs for a certain domestic firm or industry can lead to an increase in trade with the larger market. In most cases, both occur to an extent, and therefore, while some of the protected, inefficient firms may leave the market and cause a decrease in trade, others will be able to adjust to the increased competition and perhaps even reveal an advantage in production, leading to an increase in trade.

In addition to comparative advantage are specialization and economies of scale, which also can have both positive and negative effects on trade in the short run. All three increase efficiency in the market; comparative advantage leads to a particular country producing a large proportion of a certain good for itself and other countries because it can do so at a lower cost than the others. The other countries would produce a large proportion of other goods, which they could produce at lower costs. Specialization occurs when employees or entire firms learn and put to use a specific skill in the production process, while others specialize in a different skill. Economies of scale occur when it is less costly to have a larger production facility, which would in turn be able to increase production for a larger consumer group. A larger market can facilitate these advantages better and therefore, increase efficiency. Increasing efficiency should also increase overall trade within the EU, but for specific firms and industries trade can increase or decrease.



Another important point to keep in mind is that while membership to the EU may not have a significant effect on trade, it may affect other aspects of the countries' economies. Membership increases competition among firms in the EU, which leads to lower prices for consumers and greater efficiency in the market. This in turn can increase GDP and GDP per capita, raising the standard of living for EU citizens. Therefore, even though EU membership may not affect trade specifically, it may have other valuable economic benefits for the citizens of the member countries.

#### Future Analysis and Concluding Remarks

Throughout my analysis, I have looked at overall trade. As mentioned earlier, though, the greatest changes in trade may be more apparent in looking at various industries or segments of an economy. My analysis of the EU membership effects on total trade failed to yield strong results, but breaking down trade into different industries may have revealed more significant conclusions. This is a project the European Central Bank is constantly working on. Further analysis could also look at the effects on trade of the various trade agreements established in the decade leading up to membership for the current members and the accession countries.

The expected statistics on changes in trade over the next few years vary among regions and publishers; for example, according to various estimations performed through the OeNB, an increase in trade expectations due to EU membership range from 0.05% of GDP to 0.25% of GDP (data from "Focus on Transition, 2002," p. 51; estimations by Breuss in 2001, Kohler in 2000, and Baldwin, Francois and Portes in 1997). The few studies on EU membership's effect on trade reveal small trade effects attributable to EU membership, and

broader studies suggest that “the trade effects represent just a fraction of the overall macroeconomic impact of EU eastern enlargement,” (51). Other studies conducted by the OeNB claim that in the 1990s, “trade effects were the most predominant effects” of the CEECs’ opening up, and that “within the first five years after the fall of the Iron Curtain, the share of the EU-15’s imports from the associated countries doubled,” (50, 63). However, with multiple trade agreements having been established between the EU-15 and the CEECs, “most of the trade effects have already taken place...Most of the process of trade intensification has already come about since the opening up began in the early 1990s” with most industries (44).

As the time approaches 2004 and for a while beyond, overall trade will most likely continue to increase. However, if my analysis proves to be roughly accurate, for a minority of the CEECs, accession will bring a significant increase in trade in the first year and diminish over the following decade; for the majority of the CEECs, though, EU membership alone will not play a key role in trade creation.

Acronyms and Definitions (in alphabetical order):

|                 |  |
|-----------------|--|
| Benelux:        | Belgium, the Netherlands, and Luxembourg: a nickname that stuck after these countries established a free trade area (an EU predecessor). |
| CEE:            | Central and Eastern Europe   |
| CEEC:           | Central and Eastern European Countries (in this paper, referring to the eight CEECs acceding the EU).                                    |
| EC:             | European Community/-ies: the middle predecessor to the EU.   |
| ECSC:           | European Coal and Steel Community: the first predecessor to the EU, established in 1951.   |
| EEC:            | European Economic Community: the latest predecessor to the EU.   |
| EU:             | European Union   |
| EU-15:          | The fifteen current members of the EU.   |
| EUR:            | The standard World Bank's notation for the euro.   |
| FDI:            | Foreign Direct Investment: foreign money invested in a country through the building of a factory, buying of a firm, etc.                 |
| GDP:            | Gross Domestic Product: the total value of goods and services produced in particular economy in a given year.                            |
| GDP per capita: | GDP per person.  |
| GNP:            | Gross National Product: the total value of goods and services produced by a particular nation in a given year.                           |
| ISPA:           | Instrument for Structural Policies for Pre-Accession: financial aid program for the current accession countries provided by the EU-15.   |
| OECD:           | Organization for Economic Cooperation and Development.   |
| OeNB:           | Austria's National Bank (Oesterreichische National Bank).  |
| OLS:            | Ordinary Least Squares: a regression procedure to find the "best-fitting" line.  |

Sapard: Special Accession Programme for Agriculture and Rural Development: financial aid program for the current accession countries provided by the EU-15.

Symbols:

$\beta$ : A coefficient estimate in the regression.

$\varepsilon$ : The Stochastic Error term: in the regression, this is the measure of any unincorporated error that affects the dependent variable.

$\gamma$ : The coefficient estimate for EU membership.

The Variables:

ltrade: Log of trade (the dependent variable): measured by total exports between two countries at time t.

landl: Landlocked: the number of landlocked countries in the pair, taking on a value of 0, 1, or 2.

island: Island: the number of island countries in a pair, taking on a value of 0, 1, or 2.

border: Border: binary variable taking on a value of 1 if the two countries share a border and 0 otherwise.

comlang: Common Language: binary variable taking on a value of 1 if the two countries share a common language and 0 otherwise.

comcol: Common Colonizer: binary variable taking on a value of 1 if the two countries shared a common colonizer during the sample and 0 otherwise.

cometry: Common Country: binary variable taking on a value of 1 if the two countries were part of the same country at time t and 0 otherwise.

colony: Colony: binary variable taking on a value of 1 if either of the two countries were ever a colony of the other and 0 otherwise.

curcol: Current Colony: binary variable taking on a value of 1 if either of the two countries are colonized by the other at time t and 0 otherwise.

|            |  |
|------------|--|
| custriect: | Currency Union: binary variable taking on a value of 1 if the two countries are part of the same currency union at time t and 0 otherwise.                         |
| regional:  | Regional Free Trade Area: binary variable taking on a value of 1 if the two countries belong to the same regional free trade area and 0 otherwise.                 |
| lareap:    | Log of Area: log of the land area of both countries.   |
| ldist:     | Log of Distance: log of the distance between the two countries.  |
| lrgdp:     | Log of Real GDP: log of the product of the countries' GDPs.  |
| lrgdppc:   | Log of Real GDP per Capita: log of the product of the countries' GDPs per person.  |
| rta:       | Regional Trade Agreement: binary variable taking on a value of 1 if the two countries belong to the same regional trade agreement and 0 otherwise.                 |
| onein:     | One In: binary variable taking on a value of 1 if only one of the countries is a member of GATT/WTO at time t and 0 otherwise.                                     |
| bothin:    | Both In: binary variable taking on a value of 1 if both of the countries are members of GATT/WTO at time t and 0 otherwise.  |
| gsp:       | Generalized System of Preferences: binary variable taking on a value of 1 if either of the countries was a GSP beneficiary of the other at time t and 0 otherwise. |
| speu:      | Spain: binary variable taking on a value of 1 starting with Spain's accession to the EU and 0 before.  |
| poeu:      | Portugal: binary variable taking on a value of 1 starting with Portugal's accession to the EU and 0 before.  |
| greu:      | Greece: binary variable taking on a value of 1 starting with Greece's accession to the EU and 0 before.  |
| speut:     | Spain and Trend: interaction variable measuring the impact of Spain's accession and a trend in trade flows over time.  |
| poeut:     | Portugal and Trend: interaction variable measuring the impact of Portugal's accession and a trend in trade flows over time.  |

greut: Greece and Trend: interaction variable measuring the impact of Greece's accession and a trend in trade flows over time.

Table 1: Estimates of EU Membership Effects for Spain, Portugal, and Greece  
Using a Basic Gravity Trade Specification

|          | 1.1                     | 1.2                                      | 1.3                                | 1.4   |
|----------|-------------------------|--|------------------------------------|---|
|          | Basic Model             | Basic Model +<br>gsp, onein, &<br>bothin | With EU<br>Membership<br>Variables | With EU<br>Membership &<br>Interaction Trend<br>Variables |
| landl    | -.3993***<br>(-40.25)   | -.4227***<br>(-42.43)                    | -.4247***<br>(-42.94)              | -.4246***<br>(-42.93)                                     |
| island   | .0350***<br>(3.42)      | .0537***<br>(5.26)                       | .0526***<br>(5.19)                 | .0526***<br>(5.18)  |
| border   | .4342***<br>(15.07)     | .4534***<br>(15.80)                      | .4224***<br>(14.89)                | .4224***<br>(14.89)                                       |
| comlang  | .3505***<br>(29.41)     | .3492***<br>(29.36)                      | .3459***<br>(29.25)                | .3460***<br>(29.25)                                       |
| comcol   | .2574***<br>(14.81)     | .3317***<br>(19.10)                      | .3277***<br>(18.96)                | .3278***<br>(18.96)                                       |
| comctry  | -.7167**<br>(-2.53)     | -.7106**<br>(-2.52)                      | -.7097**<br>(-2.52)                | -.7099**<br>(-2.52)                                       |
| colony   | 1.4710***<br>(43.72)    | 1.4098***<br>(42.04)                     | 1.3938***<br>(41.97)               | 1.3937***<br>(41.97)                                      |
| curcol   | 1.7360***<br>(15.07)    | 1.9594***<br>(17.07)                     | 1.9685***<br>(17.23)               | 1.9685***<br>(17.23)                                      |
| custrict | 1.2877***<br>(31.89)    | 1.3195***<br>(32.76)                     | 1.3197***<br>(32.90)               | 1.3199***<br>(32.91)                                      |
| regional | -.2285***<br>(-3.55)    | .0162<br>(0.25)                          | .0005<br>(0.01)                    | -.0014<br>(-.02)  |
| lareap   | -.0393***<br>(-18.19)   | -.0480***<br>(-22.13)                    | -.0474***<br>(-21.99)              | -.0474***<br>(-21.99)                                     |
| ldist    | -1.1352***<br>(-172.31) | -1.1414***<br>(-173.42)                  | -1.147***<br>(-176.73)             | -1.1470***<br>(-176.73)                                   |
| lrgdp    | .8679***<br>(323.66)    | .8801***<br>(319.25)                     | .8797***<br>(321.72)               | .8797***<br>(321.73)                                      |
| lrgdppc  | .3569***<br>(88.19)     | .3164***<br>(76.24)                      | .3186***<br>(77.45)                | .3187***<br>(77.47)                                       |
| rta      | .2622***<br>(20.35)     | .2128***<br>(16.53)                      | .2146***<br>(16.85)                | .2149***<br>(16.87)                                       |
| gsp      | --                      | .4535***<br>(39.01)                      | .4428***<br>(38.46)                | .4426***<br>(38.43)                                       |
| onein    | --                      | -.3274***<br>(-19.80)                    | -.3262***<br>(-19.87)              | -.3262***<br>(-19.87)                                     |
| bothin   | --                      | -.5360***<br>(-31.28)                    | -.5195***<br>(-31.12)              | -.5195***<br>(-31.12)                                     |
| speu     | --                      | --                                       | -.7924***<br>(-3.92)               | -.2013<br>(-.31)  |

|                        |                          |                          |                          |                          |
|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| poeu                   | --                       | --                       | .0911<br>(0.45)          | 1.2103*<br>(1.87)        |
| greu                   | --                       | --                       | -.0850<br>(-0.46)        | .4858<br>(1.22)          |
| speut                  | --                       | --                       | --                       | -.0461<br>(-.97)         |
| poeut                  | --                       | --                       | --                       | -.0884*<br>(-1.82)       |
| greut                  | --                       | --                       | --                       | -.0543<br>(-1.62)        |
| constant               | -27.0925***<br>(-273.09) | -26.4855***<br>(-254.78) | -26.4609***<br>(-256.81) | -26.4633***<br>(-256.83) |
| Number of Observations | 234,597                  | 234,597                  | 237,143                  | 237,143                  |
| R <sup>2</sup>         | 0.5876                   | 0.5916                   | 0.5978                   | 0.5978                   |
| F-statistic            | 22,280.73                | 18,881.88                | 16,783.46                | 14,686.05                |

NOTES: Robust t-statistics are in parentheses, with \*\*\*, \*\*, and \* denoting statistical significance (two-tailed test) at the 1, 5, and 10 percent levels, respectively.



Table 2: Estimates of EU Membership Effects for Spain, Portugal, and Greece Using an Extended Gravity Trade Specification

|          | 2.1<br>Extended Model   | 2.2<br>With EU<br>Membership<br>Variables | 2.3<br>With EU<br>Membership &<br>Interaction Trend<br>Variables | 2.4<br>With Fixed<br>Effects |
|----------|-------------------------|---|--|------------------------------|
| landl    | -.4233***<br>(-42.77)   | -.4234***<br>(-42.78)                     | -.4233***<br>(-42.77)  | --                           |
| island   | .0451***<br>(4.42)      | .0453***<br>(4.44)                        | .0452***<br>(4.43)   | --                           |
| border   | .4483***<br>(15.68)     | .4492***<br>(15.71)                       | .4492***<br>(15.71)  | --                           |
| comlang  | .3432***<br>(28.94)     | .3430***<br>(28.93)                       | .3430***<br>(28.93)  | --                           |
| comcol   | .3143***<br>(18.08)     | .3148***<br>(18.10)                       | .3149***<br>(18.11)  | --                           |
| comctry  | -.7079**<br>(-2.52)     | -.7078**<br>(-2.52)                       | -.7079**<br>(-2.52)  | --                           |
| colony   | 1.3928***<br>(41.90)    | 1.3943***<br>(41.94)                      | 1.3942***<br>(41.94)   | --                           |
| curcol   | 1.9766***<br>(17.30)    | 1.9757***<br>(17.29)                      | 1.9757***<br>(17.29)   | --                           |
| custrict | 1.3020***<br>(32.40)    | 1.3017***<br>(32.39)                      | 1.3018***<br>(32.40)   | --                           |
| regional | -.1803***<br>(-2.73)    | -.1698**<br>(-2.31)                       | -.1723**<br>(-2.35)  | .9110***<br>(15.59)          |
| lareap   | -.0479***<br>(-22.21)   | -.0480***<br>(-22.19)                     | -.0479***<br>(-22.19)  | ---                          |
| ldist    | -1.1449***<br>(-176.18) | -1.1450***<br>(-176.19)                   | -1.1450***<br>(-176.19)  | ---                          |
| lrgdp    | .8818***<br>(320.99)    | .8818***<br>(320.99)                      | .8818***<br>(321.00)   | .2238***<br>(26.03)          |
| lrgdppc  | .3185***<br>(77.34)     | .3184***<br>(77.31)                       | .3185***<br>(77.33)  | .3771***<br>(31.83)          |
| rta      | .1600***<br>(6.19)      | .1589***<br>(6.09)                        | .1591***<br>(6.10)   | -.0936***<br>(-5.49)         |
| gsp      | .4362***<br>(37.85)     | .4379***<br>(37.96)                       | .4376***<br>(37.93)  | .1111***<br>(9.79)           |
| onein    | -.3259***<br>(-19.84)   | -.3261***<br>(-19.86)                     | -.3261***<br>(-19.86)  | .0621***<br>(3.85)           |
| bothin   | -.5167***<br>(-30.94)   | -.5171***<br>(-30.96)                     | -.5171***<br>(-30.97)  | .1793***<br>(9.68)           |
| usi      | 1.0622*<br>(1.93)       | 1.053*<br>(1.91)                          | 1.0550*<br>(1.91)  | -.1611<br>(-0.39)            |

|                        |                          |                          |                          |                        |
|------------------------|--------------------------|--------------------------|--------------------------|------------------------|
| naf                    | .1655<br>(0.37)          | .1575<br>(0.35)          | .1587<br>(0.35)          | .2841<br>(0.93)        |
| car                    | .7782***<br>(7.52)       | .7725***<br>(7.36)       | .7738***<br>(7.37)       | -.6881***<br>(-6.15)   |
| pat                    | 1.1061<br>(1.04)         | 1.098<br>(1.03)          | 1.0997<br>(1.03)         | -.4616<br>(-0.66)      |
| anz                    | 1.8113***<br>(3.41)      | 1.8082***<br>(3.41)      | 1.8087***<br>(3.41)      | .2085<br>(0.52)        |
| cac                    | .3853**<br>(2.06)        | .3828**<br>(2.05)        | .3835**<br>(2.05)        | 1.7237***<br>(9.74)    |
| mer                    | -.1304<br>(-0.45)        | -.1318<br>(-0.46)        | -.1317<br>(-0.45)        | .9124***<br>(4.76)     |
| ase                    | (dropped)                | (dropped)                | (dropped)                | .9554***<br>(4.73)     |
| spr                    | .7441***<br>(2.85)       | .7438***<br>(2.85)       | .7438***<br>(2.85)       | (dropped)              |
| speu                   | --                       | -.5839***<br>(-2.86)     | .0330<br>(0.05)          | .1869<br>(0.46)        |
| poeu                   | --                       | .3003<br>(1.46)          | 1.447**<br>(2.23)        | .1243<br>(0.30)        |
| greu                   | --                       | .1304<br>(0.69)          | .7036*<br>(1.77)         | -.1395<br>(-0.55)      |
| speut                  | --                       | --                       | -.0481<br>(-1.01)        | .0114<br>(0.38)        |
| poeut                  | --                       | --                       | -.0905*<br>(-1.86)       | -.0119<br>(-0.39)      |
| greut                  | --                       | --                       | -.0544<br>(-1.63)        | .0033<br>(0.16)        |
| constant               | -26.5613***<br>(-255.34) | -26.5607***<br>(-255.32) | -26.5633***<br>(-255.34) | -6.8185***<br>(-26.80) |
| pairid F-stat          | --                       | --                       | --                       | 43.899??               |
| Number of Observations | 237,143                  | 237,143                  | 237,143                  | 237,143                |
| R <sup>2</sup>         | 0.5979                   | 0.5980                   | 0.5980                   | 0.8522                 |
| F-statistic            | 13,562.41                | 12,160.26                | 11,020.65                | 1,354.79               |

NOTES: Robust t-statistics are in parentheses, with \*\*\*, \*\*, and \* denoting statistical significance (two-tailed test) at the 1, 5, and 10 percent levels, respectively.

## Actual Statistics on Trade:

| Merchandise Trade Statistics (in billions of dollars):                               |             |             |             |             |
|--|-------------|-------------|-------------|-------------|
| Year:  |             |             |             |             |
| <u>1963</u>  | <u>1973</u> | <u>1983</u> | <u>1993</u> | <u>2000</u> |
| Western European Exports to the World:   |             |             |             |             |
| 63.7   | 258.9       | 714.8       | 1591.1      | 2441.3      |
| Western European Imports from the World:   |             |             |             |             |
| 73.4   | 277.4       | 752.3       | 1608        | 2566.9      |
| Total Merchandise Trade (Exports plus Imports) between Western Europe and the World: |             |             |             |             |
| 137.1  | 536.3       | 1467.1      | 3199.1      | 5008.2      |
| Western European Exports to the CEECs:   |             |             |             |             |
| 2.548  | 11.651      | 30.736      | 62.053      | 129.389     |
| Western European Imports from the CEECs:   |             |             |             |             |
| 3.083  | 10.819      | 40.624      | 59.496      | 143.746     |
| Total Merchandise Trade (Exports plus Imports) between Western Europe and the CEECs: |             |             |             |             |
| 5.631  | 22.47       | 71.36       | 121.549     | 273.135     |

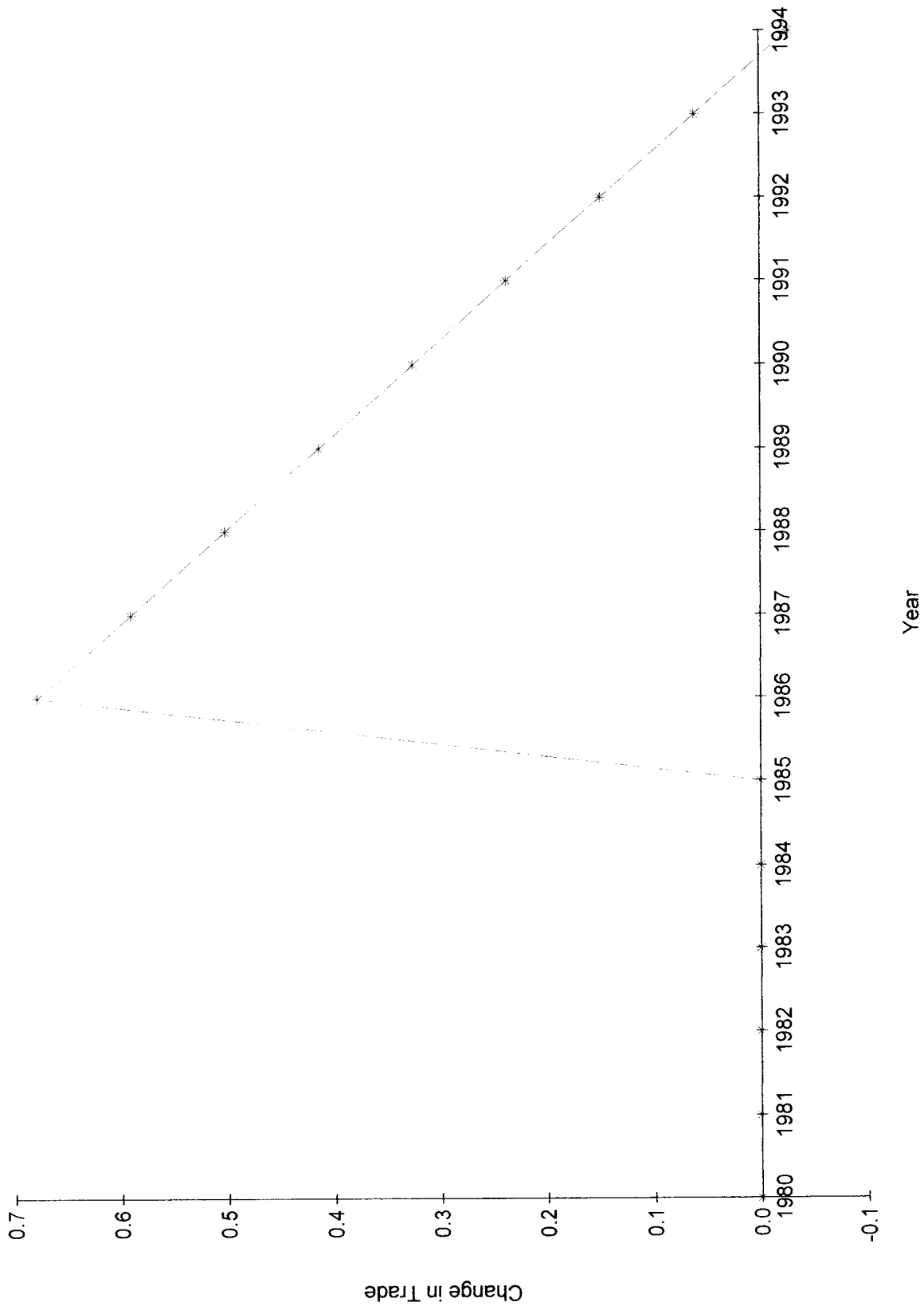
| Comparing the U.S. and Canada's vs. the EU-15's Total Merchandise Trade to the World (in billions of dollars): |       |       |        |        |        |
|--|-------|-------|--------|--------|--------|
| Year:  | 1963  | 1973  | 1983   | 1993   | 2000   |
| EU-15:   | 137.1 | 536.3 | 1467.1 | 3199.1 | 5008.2 |
| U.S. & Canada:   | 53.7  | 193   | 617.9  | 1801.5 | 2039   |

Note: in 2000: Share of Goods and Services in the total trade of U.S. and Canada: 77.2% goods and 22.8% services; for Western Europe: 78.8% goods and 21.2% services.

(source: WTO Trade Statistics, 2001)

# EU Membership and Portugal's Trade

Regression 1.4



# EU Membership and Portugal's Trade

Regression 2.3

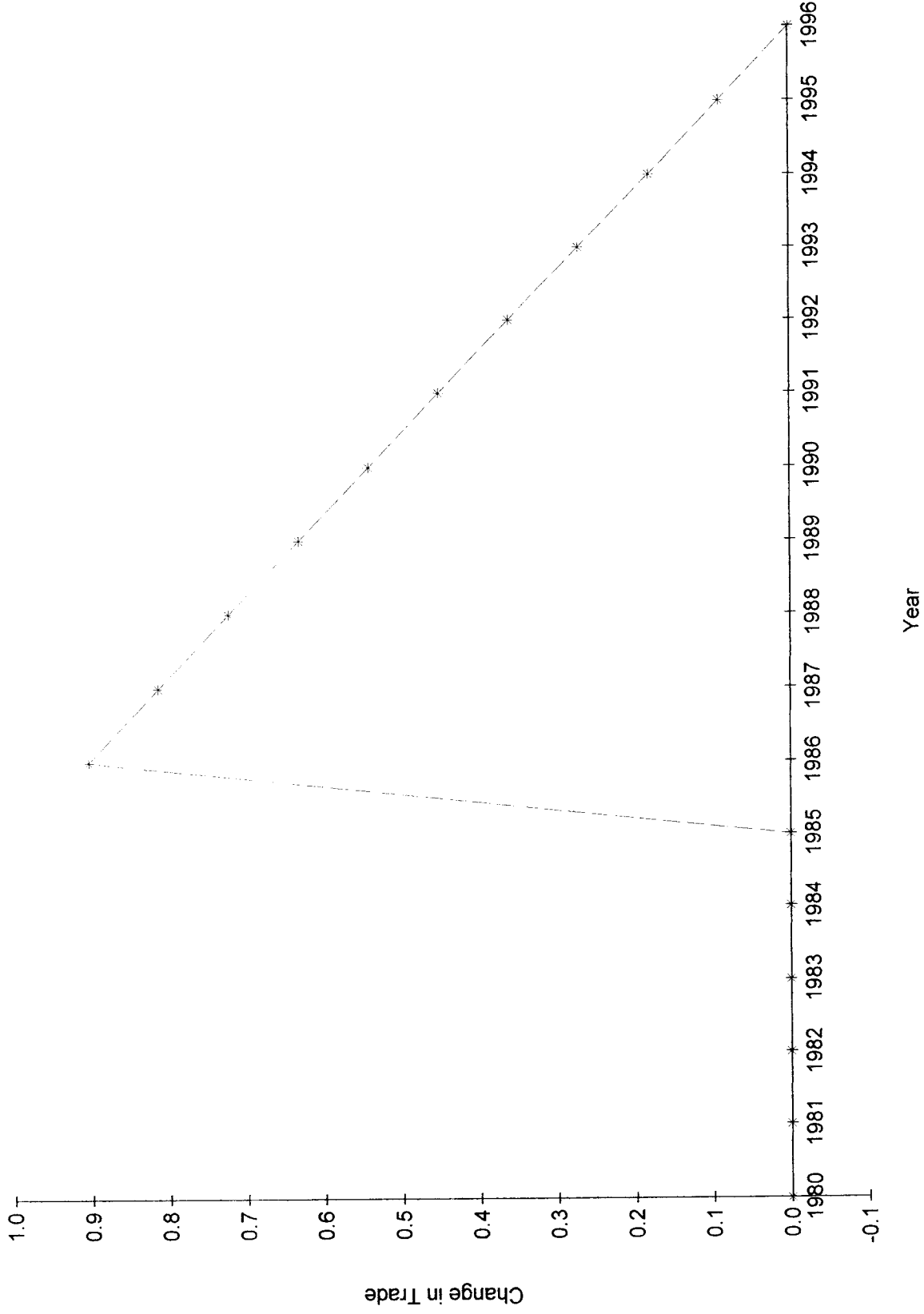


Chart 2

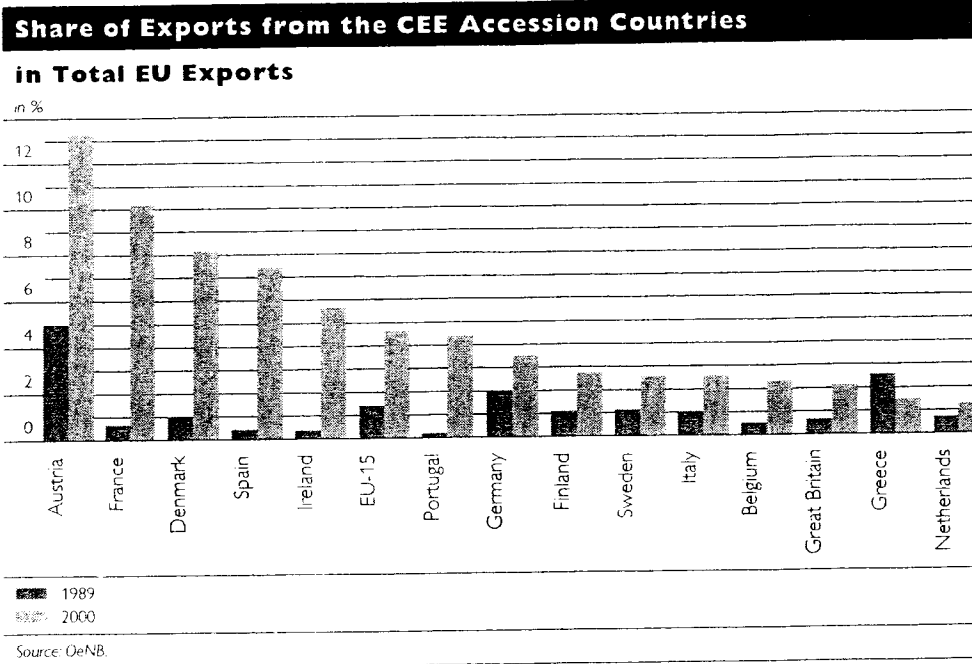
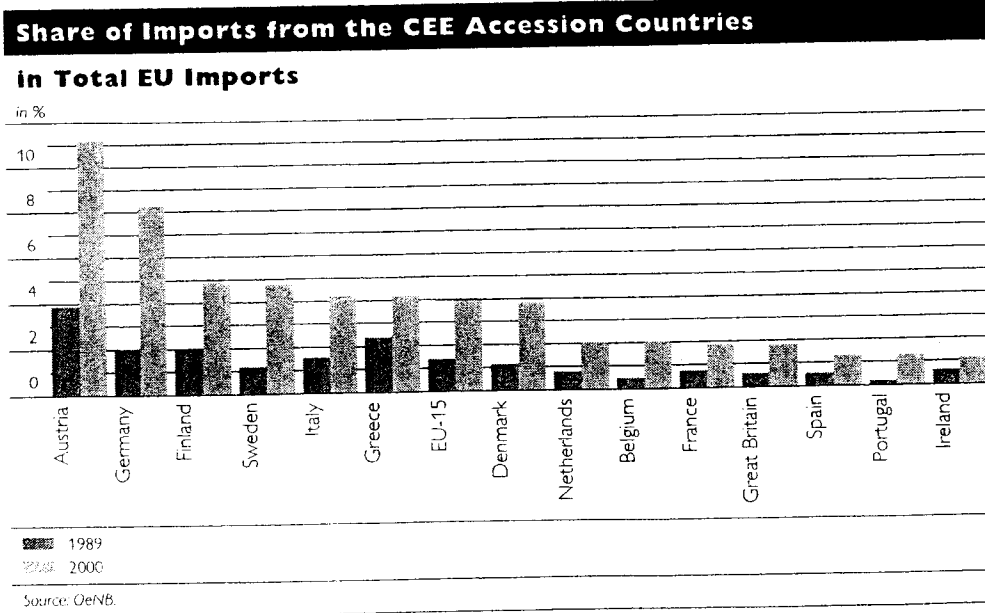


Chart 1



# European Countries



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