

EUROPEAN ECONOMIC AND MONETARY UNION; AN ANALYSIS
OF ITS EFFECTS ON THE UNITED STATES AND ITS EXPORTS

by

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The advent of European economic and monetary union in 1999 will include economic consequences involving the United States. There has been much debate over which nations will found EMU, but careful analysis of European economic data and individual national situations provides a strong indicator of who these founding nations will be. The new euro will be a hard currency, and it will be stable versus the dollar. The challenge is to find which exports to which countries stand to benefit the most from a more stable euro, and this study conducts correlation analysis on US commodity exports and exchange rate levels of European Union nations over the last six years. The result of this study indicates that European EMU will benefit the general economic well being of

the United States, but exporters of certain commodities stand to gain a substantially greater benefit than others.

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CHAPTER 1

INTRODUCTION

Europe is now on the threshold of what will become its defining moment for the twenty first century. Economic and monetary union, or EMU, had been little more than a frustrating concept for thirty years, until the Maastricht Treaty set the timetable in 1991 for monetary union and the introduction of the new European currency. The nations who qualify for EMU will together leverage their individual economic strengths, and the European Union will seek to regain its competitive edge in the world marketplace.

The advent of EMU has tremendous consequences for the rest of the world, including the United States. A new currency, the euro, will come into existence, and some European currencies will become a thing of the past. Europe will enjoy the benefits of having one currency instead of many, and a single monetary policy will attempt to control the economic fate of an entire continent.

Europe now stands as the second largest trading partner of the United States, therefore it should be concerned about how Europe will operate when EMU enters its third and final stage in January 1999. There is no doubt that rising exports is good news for the US economy, but foreign demand and exchange rates are critical in fostering this rise. Strong foreign demand, along with a stable exchange rate, is the best possible situation for US exporters. EMU will encourage demand for US products, and will also provide a stable dollar/euro rate.

EMU represents an opportunity for American exporters to Europe, but the opportunities are not uniformly disbursed across Europe, nor are they all the same size. Industry exporters who are the most sensitive to exchange rate volatility stand to benefit the most from a stable dollar/euro rate. Likewise, exporters to those EMU member nations whose currencies have been more volatile versus the dollar than others in the past, stand to gain the most from a more stable exchange rate.

As a nation, the United States benefits from a strong European economy. EMU is in the best interests of the US, but the US will have to operate differently upon its inception. While the American and European continents become more dependent on trade for income, the Federal Reserve and the new European Central Bank will feel pressure to cooperate in order to promote economic stability in the world. In this sense, the US will lose some of its economic autonomy, as both continents will be more dependent on each other economically than ever before.

For the purpose of this paper, a couple of assumptions have been made. The first assumption is that EMU will commence as planned, and that it will continue to exist upon its inception. The second assumption is that currency hedging is costly and imperfect, and is not preferred to a stable and predictable exchange rate.

CHAPTER II

THE US AND TRADE

One of the most often used catch phrases that has asserted itself in the 1990's has to be the phrase "global economy." Many Americans may feel somewhat uncomfortable at the insinuation which the phrase makes; namely that America is now part of a highly integrated global economy, and thus, has given up at least a portion of its autonomy of decision regarding commerce. This is the same uneasiness that resides in the bellies of those who fought against NAFTA and GATT, and against US membership in the World Trade Organization. Those who fought against agreements such as GATT point to the United States' persistent trade deficit ex post as proof that such agreements not only do not make America better off, but sacrifice the country's option to create tariffs in order to protect American industry. Those that would maintain the ways of the past and shun a fearful notion known as the "global economy" use these points to argue that America should retain control of its own economic destiny, and should therefore stand apart from the global commercial mainstream.

Whether one takes an international economic viewpoint, or a domestic one, this isolationist viewpoint does not make sense when considering what is materially best for the citizens of the United States of America. An international viewpoint considers the globe with its different places and peoples, and considers the notion of comparative advantage. This simple idea says that if one country can produce shoes more economically and efficiently than any other country, then it should produce shoes. If

another country can produce socks more efficiently than any other country, then it should likewise do so. After production is complete, these two countries can trade with each other, thus enjoying the privilege of both products at the lowest possible cost in terms of efficiency, which translates into savings of materials, labor, energy, etc. It is this idea of efficiency and comparative advantage, especially in the light of today's global crises such as overpopulation, poverty, and environmental degradation, which will drive the way business is done now and in the future.

What the global economy means to the United States can be understood in an analysis of the US's position in world trade. The Department of Commerce provides trade statistics concerning any doodad that is imported or exported, but it is very important to concentrate on the most important summary statistics if one is concerned with the overall health of the US economy. The general move toward trade between national economies has been phenomenal in the last ten to fifteen years. In 1960, the sum of imports and exports for the United States comprised an equivalent of 9% of GDP. By 1996, that figure had risen to 23%¹. One can either view this rise as America's increasing dependence on trade for income, or as America's looking abroad for opportunity to enhance income and thus, standard of living. Statistics seem to support the latter argument. Twelve million US workers now owe their jobs to exports, and these jobs pay on average 13% more than the national average². In a broad, global view, the US has a comparative advantage in high technology and highly specialized manufacturing, along with sophisticated services, so it can consequently command higher income than those that have an advantage in low wage, low skill sectors². This income

advantage is compounded for those who work in exporting plants, as these plants “just seem to pay higher wages than non-exporting plants” according to the Council of Economic Advisors³. Clearly exports have a direct effect on the pocketbooks of many American workers.

There are those critics that point to the excessively large and widely reported trade deficit as definitive evidence that the US is losing the trade war. It is true that a consistently large and growing trade deficit is not a healthy trend for a national economy, but again, one must look at the big picture scenario to determine if this problematic trade deficit statistic of recent years should really be all that troubling. The fact is that in the decade of the 1990's, the economy of the United States has performed better than any industrialized country in the world. Unemployment has been at what many consider to be an optimum level for the last two years, the stock market has been on one of the most incredible bull runs in history over the last seven years, and export growth continues its torrid pace, now accounting for one-third of real GDP growth⁴. When looking abroad at its industrial counterparts for comparison, the US sees the European Union which has been trying to fully pull itself out of a recession since the early nineties and whose composite unemployment rate stands near 11% at the end of 1996, and Japan, which likewise has experienced similar recessionary difficulties and whose national stock market has seen nothing of the meteoric rise of the Dow Industrials or the other broader markets of the US over the last seven years. Clearly, if we look at these so-called G-3 countries, the real buying power growth has accrued in the United States in this decade. It is not difficult to see how this translates into an erosion of the trade balance, as

Americans have money to buy European and Japanese goods, but the Japanese and Europeans do not have equivalent funds to purchase American goods. This scenario assumes perfectly free trade, which of course is not the reality, but in this case the general premise stands. The result is the erosion of the US trade balance, which in retrospect, is not a result of lack of US competitiveness per se, but rather the result of a healthy US economy relative to the major economies of the industrialized nations. This explanation makes sense for the situation of the US in the 1990's, where perhaps the same argument would not apply in the 1980's when the much more erratic dollar level and competitiveness issues cast a different light on the trade deficit. If trade fundamentals remain solid, that is, export growth continues, theoretically there should be no reason, other than a major shift in the dollar, why the trade deficit shouldn't shrink once the industrial economies abroad find better economic footing.

When looking at the figures, it is found that trade is vital to the income level of this country, and therefore the United States needs to consider its present and future position in trade very carefully. Expanding exports is certainly a top priority, but improving the terms of trade, that is, the ratio of the average price of US exports to that of US imports, is also critical. Statistics show that a 1% rise in the terms of trade causes more than a seven billion dollar increase in real income⁵. As the US looks abroad at the changing face of Europe, trade should be a chief concern as historical events offer up challenges and opportunities. Hand in hand with trade, the US will need to consider all implications of currency exchange rates, as the euro is introduced and competes with the dollar in world markets. As more and more of our national income comes from exports,

the United States will need to be dynamic in order to capitalize on the new opportunity that a Europe participating in economic and monetary union offers.

¹ United States. Council of Economic Advisers. Economic Report of the President. Washington D.C. Government Printing Office, 1996.

² United States. Council of Economic Advisers. Economic Report of the President. Washington D.C. Government Printing Office, 1996.

² United States. Council of Economic Advisers. Economic Report of the President. Washington D.C. Government Printing Office, 1996.

³ United States. Council of Economic Advisers. Economic Report of the President. Washington D.C. Government Printing Office, 1996.

⁴ United States. Council of Economic Advisers. Economic Report of the President. Washington D.C. Government Printing Office, 1996.

⁵ United States. Council of Economic Advisers. Economic Report of the President. Washington D.C. Government Printing Office, 1996.

CHAPTER III

EUROPEAN ECONOMIC AND MONETARY UNION

Critical for the interests of American businesspeople and consumers alike is the understanding of how the European Union will enter monetary union, and perhaps even more important, when the monetary union will take place. The key document for setting the guidelines and timetable for monetary union is the Maastricht Treaty, a treaty approved in December 1991 by the European Council. The treaty did not go into effect until November 1993, however, as fierce debate occurred in a few of the member country's national bodies of government over whether or not to approve the treaty. The most notable battles occurred in the British and Danish governments¹. The most important thing to remember about the Maastricht Treaty, besides the goals and guidelines that it sets, is that it will take a unanimous vote of member countries to override and dismantle the treaty. With this in mind, the treaty can be examined as though it were something akin to an amendment to the Constitution of the United States. Considering the amount of widespread support that EMU has in the halls of the various national governments, the treaty exists now and is likely to continue to exist for all intents and purposes.

The ultimate goal of the Maastricht Treaty is economic and monetary unification, or EMU, of the European Union. The treaty divides this incredible task into three distinct stages. The first stage was implemented as soon as the treaty was ratified by all bodies of national government. Monetary coordination between national central banks became

more organized and a greater emphasis was placed on the existence of such coordination. Hand in hand with this, exchange rates were stabilized by implementing narrow trading bands within which to move. These bands were initially set at plus or minus 2.25%, but the exchange rate crisis of 1992-93 proved these bands to be unrealistic, and the bands were widened to plus or minus 15%. This exchange rate crisis, when currencies such as Great Britain's pound and Italy's lira dropped out of the Union's exchange rate mechanism, created wide spread skepticism over whether or not EMU could take place in Europe. The crisis did not, however, derail the EMU effort. As currency markets calmed down, the wide trading bands of plus or minus 15% remained. The pound and lira remained out of the exchange rate mechanism, or ERM, until late in 1996 when the lira rejoined. Now only the drachma of Greece and the pound of Great Britain remain outside of the ERM.

The second stage of the treaty took affect on January 1, 1994. On that date, the European Monetary Institute, or EMI, was created. Essentially the EMI's duty is to act as the predecessor to the European Central Bank, which will come into existence when stage three goes into action in 1999². The creation of the EMI was made possible by the tight monetary coordination of the national banks. Essentially, the EMI is setting up the processes which the European Central Bank, or ECB, will use upon its inception in 1999. When the European Central Bank is born, and begins work along with its support network called the European System of Central Banks, the EMI will cease to exist. It is strictly a temporary body geared towards a smooth transition in monetary activity as stage three of EMU approaches.

Stage three is the most important stage, and stands as the ultimate goal, of the Maastricht Treaty. Under the provisions of the treaty, stage three could take place as early as 1997, but if no action is taken to implement stage three, then it will automatically go into affect on January 1, 1999³. Realistically, the Union is looking towards this automatic date as the momentous day of EMU. On this date then in 1999, the values of all the currencies of the qualifying EU nations will become fixed, or frozen, versus each other on the open markets. Their frozen values will become pegged to the new currency of Europe, the “euro.” Although the value of the euro will exist beginning in 1999, actual paper and coin money will be introduced no later than January 1, 2002⁴. National currencies will be exchanged for euros at this time, and by July 1, 2002, national currencies of member EMU countries will no longer exist. Euros will be the only currency in use.

The critical task of deciding which countries qualify for the third stage of EMU belongs to the European Council. The Council will determine which countries qualify based on criteria laid out in the Maastricht Treaty. In order to make this determination in time for the freezing of exchange rates at the beginning of 1999, the Council will convene and consider their decision as soon as complete 1997 economic data can be obtained for every union member, a date that will fall sometime in 1998⁵. It is important to note that there is no minimum number of countries that must qualify in order for EMU to take place. Those countries that do not immediately qualify for EMU as determined by the European Council, will not have the ability to block those countries who do qualify from proceeding with EMU. Therefore, the only event that will prevent some form of EMU

from taking place will be a unanimous vote by all member countries to dismantle the Maastricht Treaty.

Critical to interests here in the US, especially exporters and currency traders, is the decision about which countries will participate in monetary union. The Maastricht Treaty provides specific guidelines for each country, but it is important to note that they are only guidelines, and not requirements. The European Council has the sole authority to determine which countries will participate in EMU, and technically their decision need not be governed strictly by the guidelines in the Maastricht Treaty. Realistically, however, these guidelines will be the criteria the Council uses when analyzing each country's prospects for EMU membership. Their existence should be, and have been, taken as requirements for all intents and purposes for every country striving for initial acceptance in EMU.

The criteria for qualification specified in the Maastricht Treaty is broken down into four categories. C. Randall Henning states that a country's rate of inflation must be no more than 1.5% above "that of, at most, the three best performing Member States"⁶. This is usually interpreted to mean that a country's inflation rate must not exceed the average of the three best performing inflation countries plus 1.5%. Over the last fifteen to twenty years, inflation rates in the European Union have become more and more convergent. Based on 1995 data, eleven out of fifteen members would qualify under this guideline, with Greece, Italy, Portugal, and Spain being the only countries who would not⁷. In Dirk Kaiser's macroeconomic convergence forecast for 1997, Portugal and Spain are predicted to qualify under this guideline, while Italy and Greece, although making

significant gains in this aspect, would still not qualify. Due to the convergent behavior of inflation rates in the EU, and considering that inflation rates are near all time lows across Europe, the inflation guideline is the least worrisome of the four for most countries.

Besides the guideline concerning inflation rates, there is a guideline concerning long term interest rates. The guideline states that long term interest rates must remain at no more than 2% above those of the average of the three lowest inflation countries^{7a}. Based on 1995 data, ten out of fifteen countries would qualify under this guideline. The countries that would not qualify would be Greece, Italy, Portugal, Spain, and Sweden. As the benchmark interest rate is predicted to fall, however, countries that do not qualify as yet under this guideline will find it harder and harder to do so. In 1995, the benchmark for interest rates was 9.9%, but by 1997 Dr. Kaiser predicts the benchmark to fall to 9.0%⁸. If this were the case, then Greece, Italy, Portugal, Spain, and Sweden would still not qualify under the interest rate guideline. The ten countries who qualified in 1995 would still qualify in 1997 based on this forecast.

While a majority of EU countries meet the first two guidelines for EMU membership, only a distinct minority meet the third guideline, which deals with fiscal policy. The fiscal guideline in the Maastricht Treaty says that a country's deficit must not exceed the equivalent of 3% of GDP, and debt must not exceed the equivalent of 60% of GDP⁹. The only country that meets both of these criteria, based on 1995 data, is Luxembourg¹⁰. EU countries have made concerted efforts to trim their fiscal deficits the last couple of years, and aided by a recovering European economy, debt figures have improved as a result. When 1997 economic data is available, however, it will be evident

that some EU members will not be close to meeting the fiscal guideline. According to Dr. Kaiser's 1997 forecast, only Germany, Finland, Great Britain, and Luxembourg would meet the fiscal guidelines¹¹. Countries that will not be close to the deficit mark would be Greece and Italy, with deficit ratios at 8.0% and 5.8% respectively. These countries will not be close with their debt ratios either, along with Belgium. Countries close to meeting both fiscal guidelines include France, Denmark, Ireland, the Netherlands, and Austria.

It is clear that if the fiscal guidelines are treated as requirements, initial EMU membership will be limited to four countries, based on the first three qualifying benchmarks described in the Maastricht Treaty. More than in any other guideline, there does appear to be a subjective margin of acceptance. For instance, if a country has a debt to GDP ratio above 60%, but has a small deficit ratio and has showed consistent progress in reducing the debt ratio, then it is very conceivable that the country would make it under the fiscal criteria¹². Countries in this particular situation include Denmark, Ireland, the Netherlands, and Austria. It could even be argued that despite its debt ratio of 130%, Belgium has shown a consistent effort towards fiscal responsibility. Country's such as Portugal, Spain, and Sweden have made strides in the fiscal department, but still retain deficit ratios that are not close to the 3% benchmark.

A situation arose in December of 1996 that might support the idea of a subjective margin of acceptance with regard to the fiscal guidelines of the Maastricht Treaty. In December of 1996, a European Council summit took place in Dublin and produced an agreement called the "stability and growth pact" which, among other things, sets criteria

that will encourage member EMU countries to retain budget deficits of 3% or less.

Member countries who have deficits that exceed 3% of GDP will be subject to fines by the Council of between 0.2 to 0.5 percent of GDP. A caveat to this pact is if a country is experiencing a recession, described as a drop of at least 0.75% in GDP, then the Council will decide, based on a qualified majority, whether to waive the sanctions¹³. Sanctions would be dropped automatically if the downturn was equivalent to -2.0% of GDP¹⁴. The formation of this stability pact has quelled the fears of many who worried that once countries qualified for EMU, they would cease fighting to remain fiscally solvent. This pact may also support the notion of subjective criteria of acceptance, as countries that either meet the deficit guideline and are close to meeting the debt guideline, or who are close to meeting the deficit requirement, might be willing to risk fines applied by the Council in order to be accepted into EMU membership in 1999. The Council might be willing to accept a nation if they are close to meeting a fiscal guideline, as the nation would then have the incentive of being fiscally responsible in order to avoid the risk of incurring a fine. The two ideas of Maastricht fiscal criteria and EMU membership fiscal guidelines may seem like they have nothing to do with each other, but the possibility exists that the formation of the stability pact may allow the Council to feel more comfortable about accepting nations into membership who have not specifically met the fiscal criteria.

In order to illustrate this point, the country of Austria can be used as an example. Austria is certainly a solid candidate for EMU membership in every aspect of the Maastricht criteria except for the fiscal guidelines. Based on 1995 data, Austria has a

deficit ratio of 5.0%, with its debt ratio sitting at 77.5%. According to Dr. Dirk Kaiser's convergence forecast, Austria is predicted to have a deficit ratio of 3.9% in 1997, and a debt ratio of 69.3%¹⁵. When it comes time for the European Council to determine whether or not Austria qualifies for EMU, it will see Austria's overall solid economic record with regard to the Maastricht guidelines, and it will recognize that Austria has demonstrated good results in trimming its fiscal deficit and debt. Based on its sharp deficit reduction in only two years time, Austria may be confident that it could reduce its deficit further in only a couple of more years to comply with the 3.0% benchmark instilled by the stability pact. Austria may be willing to endure the possibility of a temporary sanction of 0.2% of GDP in order to be an immediate member of EMU and receive all the benefits thereof. There is no guarantee that Austria would incur a sanction at all, as a qualified majority in the Council would have to approve it. The point is that a provision has been created in the form of the stability and growth pact which will encourage fiscal responsibility within the EMU, and there should be an easing of scrutiny on the fiscal ratios for countries, like Austria, that will be close to meeting those ratios in 1997. This determination opens the door a little wider for certain countries such as Austria, the Netherlands, Belgium, Denmark, Ireland, and France to be considered for EMU even when they don't meet the fiscal guidelines of the Maastricht Treaty.

The fourth and final guideline outlined in the Maastricht Treaty has to do with exchange rates. National currencies must not be devalued significantly, that is, devalued to the point of falling through the 15% band, for the two years prior to EMU¹⁶. A part of this guideline also requires that all nations striving for EMU membership must have their

national currency in the European monetary system's exchange rate mechanism, or ERM, by the time in 1998 when the European Council begins to consider membership¹⁷.

Currently Greece and Great Britain are the only nations with currencies outside of the ERM¹⁸. Greece is widely acknowledged as not having a chance to be a founding member of EMU, and Great Britain, which is in very good shape to qualify to be a founding member, would seemingly have no problem placing the pound sterling into the ERM sometime before membership is decided. The reason for the devaluation clause is clear. When a national currency is devalued significantly, their goods become cheaper to outside countries. A major devaluation could be considered a short term gain in competitiveness, and the Council does not want nations trying to undercut each other as EMU approaches. This clause of Maastricht does not seem to pose a problem for most currencies, but only time will tell. Over a trillion dollars worth of currency transactions take place every day, so it is really impossible to say for sure whether or not there will be any major devaluations up through the beginning of 1998¹⁹. It is interesting to note that Dr. Kaiser has forecasted major devaluations of the peseta and escudo in his paper, events which would seemingly disqualify Spain and Portugal from founding membership²⁰.

Post January 1, 1999

One of the most important considerations of EMU will be who will constitute the founding membership. Just as important, however, is consideration of who will not be a founding member, and what their relationship will be with the EMU members. Certainly some degree of political tension may arise between the "ins" and the "outs," but the EU

has attempted to plan for this scenario. Those nations not accepted into membership immediately can be reviewed for membership as often as every couple of years²¹. This provides the “outs” the incentive to continue striving to meet the convergence criteria. Another consideration is the planned introduction of ERM II, which will be instituted when EMU enters the third stage. The first thing to note is that membership in ERM II will be voluntary. The EU’s finance ministers have decided to make the euro the center of a “hub and spokes” system of exchange rates²². All countries not qualifying as founding members can be a part of the new exchange rate mechanism, with the new European System of Central Banks, or ESCB, coordinating actions and policy with non-member national banks to keep national currencies within the 15% bands versus the euro. Greece, for example, can place the drachma in the ERM II and have its national bank work with the ESCB to keep the drachma stable. The institution of this ERM II will not only serve to prepare the “outs” for eventual incorporation into EMU, but its very existence helps to prevent any major division that may occur between founding and non-founding members of EMU.

Besides ERM II, the other major post January 1, 1999 plan is the stability and growth pact which will effect all EMU members. The pact, as mentioned before, will exist to prevent national governments from creating excessive budget deficits. The EU wants the euro to be a strong world currency, and by requiring qualifying nations to be fiscally responsible, it is removing a potential drag on the euro’s value. There is historical evidence of fiscal mismanagement undermining the value of a national

currency. The devaluation of the dollar coinciding with ballooning budget and trade deficits in the late eighties, and then again in the early nineties, is a good example.

Founding Members of EMU

At this time there is much speculation about how the Council will apply the Maastricht guidelines and who it will choose to be founding members of EMU. It is important to note that some countries, like Germany, favor a very rigid interpretation of the treaty²³. Many German officials would, in the interest of price and euro stability, rather have an initial small membership if many nation's were close to meeting the guidelines. Most nations who will be close to meeting the guidelines, most notably the fiscal ones, most likely favor a more liberal interpretation.

The key for deciding membership is where the Council draws the line, with regard to the convergence criteria. The inflation and interest rate criterion will probably be used rigidly, as many countries, such as Germany, are adamant about these guidelines. Using these criterion rigidly should not be a problem for the Council, as there is a large disparity between rates of countries who currently qualify under these provisions, and those who do not currently qualify. Greece and Italy appear as though they will still be far from reaching both marks by 1997, and it appears that Spain and Portugal will at least not reach the interest rate benchmark. The only country on the cusp of meeting the interest rate guideline is Sweden, and although they have no trouble with the inflation mark, their poor fiscal status will probably disqualify them for founding membership. If we accept

that the Council will apply the first two guidelines rigidly, then four countries will be eliminated from consideration from the start: Greece, Italy, Spain, and Portugal.

After assuming that these four countries will not be founding members of EMU, the fiscal criteria can then be considered for the remaining eleven contenders. The first assumption to be made concerning the fiscal criteria is that it will not be applied rigidly by the European Council. This assumption is based on the creation of the stability and growth pact, and on the general understanding of the EU that a small initial EMU membership will not create the widespread economic benefits that a wider membership would. There is also evidence in the language of the Maastricht Treaty that supports the projection of subjectivity in the Council's decision. With respect to the deficit criteria, the treaty states in Article 104c.2a that the criteria must be met unless "either the ratio has declined substantially and continuously and reached a level that comes close to the reference value," or "alternatively, the excess over the reference value is only exceptional and temporary and the ratio remains close to the reference value²⁴".

The second part of this clause will become important, as the word "exceptional" could be applied with the European recession in mind. The argument will be that recessions are temporary, and that the recession in Europe that began in 1992, and that is still lingering, is "exceptional" and is at the same time to blame for a portion of individual national deficits. With this in mind, the fiscal management of all nations will be scrutinized, and an attempt will be made to determine how much of a nation's deficit is the result of a recession, and how much is due to general fiscal irresponsibility. This analysis will most likely be done by the European Commission in late 1997 or early 1998,

and submitted to the European Council for consideration. At this point, however, most EU countries are shying away from the temptation of a temporary fiscal expansion, even in the face of abysmal unemployment figures virtually across the continent. The language of the Maastricht Treaty emphasizes that there is a way around the 3% guideline, but it also emphasizes that for a country to be considered, the general trend of their fiscal deficit must be going down.

Despite great social unrest due to high unemployment levels, countries, such as France, are desperately trying to rectify their fiscal situations. Proponents of a large initial EMU are discouraged when examining the deficit figures of EU nations for 1995. Only three countries, Denmark, Ireland, and Luxembourg, came in under the 3% benchmark that year. Some countries, like Finland, Belgium, France, Great Britain, and Austria had deficit ratios of 4.2% or greater²⁵. With the continuing European economic recovery underway, along with a general commitment among all nations to lower the deficit ratio, the 1995 figures are bound to improve. According to Dr. Kaiser's economic forecast for 1997, Denmark, Germany, Finland, Great Britain, Ireland, Luxembourg, and the Netherlands will have ratios under 3%. Those countries projected to have ratios between three and four percent are Belgium, France, and Austria²⁶.

When analyzing these projections, the most interesting case that stands out is that of France. It is generally understood that an effective monetary union has to include Germany and France, the "core of the core"²⁷. France had a public sector deficit of 5.5% in 1995, but is projected to trim this ratio to 3.9% in 1997, a span of just two years²⁸. It can be argued that France has made a tremendous effort towards trimming its deficit, and

with this argument, along with the argument that it has endured excess deficit due to an “exceptional” recessionary period, one could project France to be one of the “ins” in 1998 based on the deficit criteria. Despite the recognition that French membership in EMU is vital, the same criteria has to be applied to all countries. In this light, Belgium and Austria suddenly become contenders despite their projected 1997 deficits of 3.5 and 3.9 percent respectively²⁹. Austria, which has historically maintained a small deficit ratio and has an overall sound economy, will undoubtedly blame the European recession for their temporary budget woes, and possibly even make it clear that if France could be accepted with a figure of 3.9%, then they should as well. Based on their strong history of fiscal responsibility, as well as their recent commitment to shrink their deficit ratio, Austria’s argument will more than likely not be refuted. Based on these decisions, Belgium will apparently meet the deficit criteria, as their ratio will come in lower than France or Austria’s. There will be some countries who are not happy with the final decisions related to the deficit criteria, but the Council is bound to carefully sift through all the economic data and suggestions put forth by the Commission, and will apply an amended, but equitable, deficit criteria to all nations.

After these deficit forecasts and analyses are made, there is still a substantial group of nations in contention for membership. The projection is that France will survive the deficit scrutiny, and in the wake of this action, Austria and Belgium will as well. Along with these three countries, Germany, Finland, Denmark, Great Britain, Ireland, Luxembourg, and the Netherlands will have cleared the inflation, interest rate, and deficit hurdles.

These ten nations will face another fiscal hurdle in the form of the debt benchmark. As the Maastricht treaty provides evidence against the rigid application of the deficit criteria, so too does it provide evidence that the debt criteria need not be applied rigidly. The treaty states in Article 104.c.2.b that the 60% debt benchmark is binding “unless the ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace³⁰”. Like the deficit criteria, the Council will apply an equitable, but at the same time subjective, debt criteria to all nations. The country that stands out the most concerning the debt ratio is Belgium. Belgium had a debt ratio of 133.7% in 1995, and Dr. Kaiser projects them to have a ratio of 130.1% for 1997³¹. This can hardly be construed as a figure approaching the reference value “at a satisfactory pace,” and although it is almost inconceivable to picture EMU without Belgium, there is no evidence that they are even close to meeting the debt benchmark. If the Council was to apply the debt criteria rigidly, Belgium would more than likely not qualify for membership for many decades. According to analysis done by Peter Kenen, a nation with a debt ratio of 100% and a GDP growth rate of 5% would need twenty two years to reach the 60% benchmark if the nation’s deficit ratio remained at 2% a year³². This statistic paints an abysmal picture for Belgium, as it has a much higher debt ratio, a much lower GDP growth rate, and a higher deficit ratio than is suggested in this example. Belgium has historically been a fiscally responsible nation, but became saddled with a huge public debt burden in the 1980’s and 1990’s when the European economy slumped. The European Council will face a pivotal decision concerning Belgium. If it decides to exclude Belgium because of its debt status, Belgium will likely remain excluded for a very long

period of time. The Council will either have to determine that Belgium's debt is exceptional, or that its public spending habits are irresponsible and would contribute to instability within the EMU framework. Because Belgium, as a Benelux nation, stands to be a vital piece of the EMU framework, the prediction is that the Council will make the former argument. Belgium will be accepted, but it will be pressed extremely hard by the EU to drastically improve its fiscal station.

Based on 1995 figures, countries such as Denmark, Finland, Austria, and the Netherlands are over the debt benchmark, but are within realistic striking distance of achieving it by 1997. Germany, France, Great Britain, and Luxembourg are all safely under the mark, and it is unlikely that these countries would allow themselves to go over the mark before 1998. According to Dr. Kaiser's 1997 projections, Finland will make the benchmark due to a stringent fiscal policy³³. Denmark and the Netherlands will have made visible gains in reducing their debts in time, and are projected by Dr. Kaiser to have debts of 70% and 75.5% respectively³⁴. Austria's debt is actually projected to rise slightly, but will remain under 70%.

The country of Ireland is an interesting case with regard to the debt criteria. Ireland had a debt ratio of 86.7% in 1995, and is projected by Dr. Kaiser to have a debt of 80.6% in 1997³⁵. Despite being well over the debt benchmark, Ireland, due to its expanding economy, is slated to show the greatest improvement in the debt ratio out of all the remaining candidates. Ireland's situation with the debt ratio can be compared with France's situation with the deficit mark. The point can be made that although an EMU without France is inconceivable, an EMU without Ireland would not be earth shattering.

The fact is that Ireland, outside of its debt figure, is in a very strong economic position in every other respect. Economic expansion has not been matched by any of the continent nations in the last few years. Irish membership would certainly be a lift to EMU, rather than a drag. With this in mind, the Council will regard Ireland's debt ratio as approaching the reference value at a satisfactory place. This decision will certainly help the plight of Denmark, the Netherlands, and Austria, who all have ratios between the benchmark and Ireland's.

The approval of Belgium and Ireland on the debt criteria will show that out of all the guidelines, the debt guideline will be administered with the least rigidity. On a macroeconomic scale, most analysts would agree that the inflation, interest rate, and deficit criteria all rank as more vital than the debt criteria. With Belgium and Ireland clearing the debt hurdle, and the inevitable approval of Denmark, Austria, and the Netherlands, there will be a substantial group of nations remaining after the inflation, interest rate, and fiscal criteria are applied. After these three tests ten nations, including Denmark, Germany, Finland, France, Belgium, Great Britain, Ireland, Luxembourg, Austria, and the Netherlands will stand poised to initiate EMU.

Even after this final group of nations has been determined, there is an important factor to consider. During the ratification process for the Maastricht Treaty, Denmark and Great Britain argued for and received options to exclude themselves from EMU if they so decided in 1998³⁶. Both nations are heavily divided as to whether or not to join, but recent developments in Great Britain make that nation the more likely to join.

Parliamentary elections are scheduled for May 1, 1997. As of April 27 the Labor Party

had a twenty point lead over the Tory Party in the polls, so it is likely that Great Britain will have its first Labor leader in eighteen years. While the Tory Party is divided over EMU, the Labor Party virtually unanimously supports it. Traditionally, Great Britain has never concentrated on its economic ties to the continent, choosing instead to look abroad to the United States and elsewhere for the majority of its commerce. This view has changed in the last few years, and Great Britain is much more interested in continental affairs. This new view, along with the support of the Labor Party, will push Great Britain into EMU.

The prospects of Danish initial membership are not quite as good as Great Britain's. According to the clause negotiated for by Denmark, a national referendum must be held before it can join EMU. At present, polls indicate that a majority of Danish voters are opposed to EMU³⁷. When the Maastricht Treaty was constructed, it took Denmark two years to finally ratify it. Clearly, Denmark is moving towards EMU kicking and screaming. Despite present polling, however, the benefit of the doubt should be given to Denmark concerning acceptance. The possibility exists that it will wait a couple of years to see whether EMU functions as planned, and then apply to join. Much can happen in the next year's time, however, to convince the Danes that joining is in their best interests. The EU is already concentrating its efforts to educate its citizens about EMU. The fact remains that Denmark could go either way, but for the purposes of this paper, Denmark will be considered to be a founding member of EMU in 1999.

In 1999, then, ten nations will launch EMU in Europe. The consideration now of which countries will likely found EMU is of great importance to those US business

people who are looking for opportunities abroad. EMU is billed as being a economically invigorating phenomena for Europe, but at the very least it will change the way Europe operates commercially. The key for US interests is to identify how it will change, and then examine the different opportunities, specifically in regards to US exports, that will arise.

¹ Henning, C. Randall. "Europe's monetary union and the United States." Foreign Policy. No. 102.

² Kenen, Peter B. Economic and Monetary Union in Europe. New York: Cambridge University Press, 1995.

³ Belmont European Policy Centre. The New Treaty on European Union. Washington D.C.: Thompson-Lesser Publishing, 1991

⁴ Belmont European Policy Centre. The New Treaty on European Union. Washington D.C.: Thompson-Lesser Publishing, 1991

⁵ Pollard, Patricia S. "EMU: Will it Fly?" Federal Reserve Bank of St. Louis Review. July/August 1995.

⁶ Henning, C. Randall. "Europe's monetary union and the United States." Foreign Policy. No. 102.

⁷ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

^{7a} Belmont European Policy Centre. The New Treaty on European Union. Washington D.C.: Thompson-Lesser Publishing, 1991

⁸ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

⁹ Belmont European Policy Centre. The New Treaty on European Union. Washington D.C.: Thompson-Lesser Publishing, 1991

¹⁰ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

¹¹ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

¹² Henning, C. Randall. "Europe's monetary union and the United States." Foreign Policy. No. 102.

¹³ European Union. Eurecom. January 1997. <http://www.eurunion.org/news/eurecom>

¹⁴ European Union. Eurecom. January 1997. <http://www.eurunion.org/news/eurecom>

¹⁵ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

¹⁶ Belmont European Policy Centre. The New Treaty on European Union. Washington D.C.: Thompson-Lesser Publishing, 1991

¹⁷ Belmont European Policy Centre. The New Treaty on European Union. Washington D.C.: Thompson-Lesser Publishing, 1991

¹⁸ European Union. Eurecom. December 1996. <http://www.eurunion.org/news/eurecom>

¹⁹ Madura, Jeff. International Financial Management. fourth edition. New York. West Publishing Company, 1995

²⁰ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

²¹ Henning, C. Randall. "Europe's monetary union and the United States." Foreign Policy. No. 102.

²² European Union. Eurecom. October 1996. <http://www.eurunion.org/news/eurecom>

²³ Henning, C. Randall. "Europe's monetary union and the United States." Foreign Policy. No. 102

²⁴ Belmont European Policy Centre. The New Treaty on European Union. Washington D.C.: Thompson-Lesser Publishing, 1991

²⁵ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

²⁶ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

²⁷ Henning, C. Randall. "Europe's monetary union and the United States." Foreign Policy. No. 102.

²⁸ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

²⁹ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

³⁰ Belmont European Policy Centre. The New Treaty on European Union. Washington D.C.: Thompson-Lesser Publishing, 1991

³¹ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

³² Kenen, Peter B. Economic and Monetary Union in Europe. New York: Cambridge University Press, 1995.

³³ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

³⁴ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

³⁵ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

³⁶ Henning, C. Randall. "Europe's monetary union and the United States." Foreign Policy. No. 102.

³⁷ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon, November 1996.

CHAPTER IV

THE DOLLAR AND THE EURO

One of the most important considerations for American industry when considering the whole process of European Monetary Union, is what the new dollar/euro exchange rate will be and how it will behave over time. In fact the exchange rate is one of the most important macroeconomic variables to consider when a country is attempting to promote its exports and either improve or preserve its competitiveness. For proof of just how much exchange rates can affect world trade, one needs only to look at the behavior of the dollar versus major world currencies in the 1980's.

The first half of the 1980's saw the steady real appreciation of the dollar versus major currencies such as the yen and D-mark. The reason for this mass appreciation has been pondered, but many economists point to the mismatched fiscal and monetary policies of the United States as being a primary reason. During this time the United States was experiencing a tightly run monetary policy by the Federal Reserve, but the fiscal policy was being run very loosely by Congress. The combination of large government deficits and tight money supply certainly contributed to the run up in the dollar. Some also point to the general air of instability in the world as a reason for the flight to the dollar. Interest rates in the US were also higher relative to other industrial countries. Whatever the reasons for its steady appreciation, the period 1980-1985 and the level of the dollar had a profound impact on world trade.

The incredible real appreciation of the dollar during this time allowed for imports to compete heavily with domestic goods on a basis of cost. Rudiger Dornbusch points

out graphically using a price level index how imports began to decline in price in 1980, fell below the domestic price level in 1981 and continued to fall until 1985. Meanwhile the domestic price level exhibited a fairly steady rise from the base period of 1979 to 1985¹. With another chart on page nine, Dornbusch displays the relationship of import volume versus domestic manufactures production. Using a moving average, and again using 1979 as the base year equal to one hundred, Dornbusch shows how the two averages stay very level until 1981, when import volume shoots up, but manufactures take a dip before experiencing any growth. By the end of 1984, import volume now stands at 169 and manufactures production stands at 112². The lesson here is that the sharp real appreciation of the dollar in such a short period intensified international competition so quickly that the cheap availability of imports helped to erode American manufacturing competitiveness and dampened an economic recovery in the United States.

The real exchange rate not only has a distinct effect on the price of imports, but on the overall trade balance as a whole. Intuitively, one can see how a steadily appreciating dollar would make imports increasingly cheap and exports increasingly less competitive overseas, but Dornbusch provides an empirical statement to consider. He states that a 10% appreciation of a currency deteriorates the trade balance, measured as a fraction of GDP, by roughly 0.8%³. Looking at the behavior of the dollar versus the D-mark from the period 1980-85, one can see that the dollar appreciated roughly 70% against the D-mark. If we utilize Dornbusch's estimation, this would translate into a deterioration of the trade balance of 5.6% of GDP by 1985. Appreciation of this magnitude is not good news for either the domestic market nor the export market.

Besides affecting the price of imports and the trade balance as a whole, movements in the real exchange rate also have an effect on inflation. Dornbusch estimates that a 10% appreciation of the dollar reduces inflation in the United States by at least one percentage point, and possibly as much as two⁴. Reducing inflation is always a good thing for a domestic economy, but for the case period of 1980-85 there were two problems. The first problem applies to any such scenario, and that is that these gains in the form of reduction in inflation are temporary, and can be reversed by a subsequent depreciation in the currency, in this case, the dollar. The second problem which is somewhat unique to this period, is that inflation in the United States was already so much higher than in industrial countries such as Japan and Germany that even a strong appreciation of the dollar could not bring its domestic inflation rate under those of its industrial counterparts. Changes in wages for the period help to tell the story of the inflation differential. From 1980 to 1984, wages in the United States rose a cumulative 29.6%. During the same period, wages rose only 14.4% in Japan, and in Germany wages actually declined by a whopping 22.4%⁵. The big picture was not a rosy one at the time for the United States. Inflation, although coming down, was still higher than for its industrial competitors, and interest rates were likewise higher. This made the dollar more attractive, driving its value up, and making it harder to export abroad. The end result is a sharp loss in competitiveness for American manufacturing in this period.

After analyzing the data for the period, perhaps a good question to ask is why there were no policy moves up to 1985 in order to impede the dollar's rapid appreciation in order to preserve American manufacturing competitiveness for the time being, and in

fact give it time to react to the intensity of foreign competition. A leading economist, Peter Kenen, recognizes that uncertainty about future exchange rates, which manifests itself in the form of exchange rate volatility, affects capital formation in known ways that reduce economic efficiency⁶. It would make sense for the government then, in light of this, to want to take action in order to stabilize the exchange rate, and in doing so, promote economic efficiency and national competitiveness. Political and economic realities, however, make governmental intervention on behalf of the dollar extremely unlikely in all but the most extreme cases. The very premise of a freely floating exchange rate regime is a reason not to actively interfere in exchange rate levels, and Kenen provides another reason when he states that democratic governments, such as the United States, “cannot be expected to put their exchange rate commitments ahead of their domestic policy objectives⁷”. The exchange rate would then seem to fall below quite a few objectives on the long list of things to worry about for the government. Kenen does not chastise the government for failing to focus on such an important macroeconomic variable, however. He speaks of the potential costs being greater than the economic gains of intervention for the sake of the dollar when he says,

Stable exchange rates may yield significant gains in economic efficiency by reducing exchange rate uncertainty. Those gains, however, are less visible and may be much smaller than the costs of reducing economic activity, especially the costs of cutting investment by raising interest rates to the levels required to defend a pegged exchange rate⁸ (page 2).

From the analysis of the period 1980-85, one can see what relatively high interest rates can do to a nation’s domestic competitiveness. Intervention by the government for the

sake of the dollar may not only be an unrealistic hope considering that the real interests of government may lie in domestic policy objectives over fluctuations in the dollar, but it may just be a bad idea considering the potential economic side effects of such intervention.

Even after the euro is born, then, it is understood that there will be no fixing of the dollar/euro rate. Any such fixing is not in the best interests of Europe and the US, and it is probably not even a feasible possibility if it was in the best interests of the two trading blocks. What will exist then is what economists call a dirty float. The currencies will be free to move against each other, but government intervention is a possibility if the exchange rate becomes troublesome.

The ECB; Europe's Central Bank

Upon commencement of stage three in 1999, the European Central Bank (ECB), along with the system of national banks that it will be a part of called the European System of Central Banks (ESCB), will be established. The general understanding is that the ECB will operate in a fashion not unlike the Federal Reserve of the United States, with the added difficulty of operating over several diverse countries with varying needs. Essentially the ESCB will concentrate on four primary tasks. These tasks include defining and implementing monetary policy, conducting foreign exchange policy, managing the foreign exchange reserves of member states, and promoting smooth payment systems⁹. The ECB is the central authority in this system, and is responsible for note issue, open market operations, and the setting of reserve requirements¹⁰. The projection is that the ECB will in essence be an independent body, although it will be

obliged to follow preset policy priorities. In 1996, it was agreed by national heads of state that the future ECB would follow a policy of monetary targeting, as opposed to price level targeting or exchange rate targeting¹¹. The effect of this decision is key, in that monetary targeting allows the central bank system the option of keeping a strong grip on price levels, but also affords the option of loosening up monetary policy and promoting growth. Although the ECB will essentially do as it sees fit within the monetary targeting parameter, the bank is still subject to audit and will be under the jurisdiction of the Court of Justice¹². Also, the ECB will have to make an annual report on its activities to the Council and the European Parliament¹³.

The ramifications of a single central banking system within Europe are astounding. The central bank will control short term interest rates for all participating nations, and interest rates on equivalent assets will be the same across the board¹⁴. One body, or system of bodies, will be able to quickly step on the gas peddle and accelerate growth in Europe, or if it so chooses, tap the brake to control growth and price levels. Pressure will perhaps mount for the Federal Reserve and the ECB to cooperate in policymaking, in the interest of world wide economic stability. If the dollar/euro rate proves to be volatile, then this will also add to this pressure to act. It is important to note that any cooperation between central banking systems will not have as its central goal exchange rate stability. Both systems have their priorities, and as of now it appears that the Fed's is sustained growth with moderate inflation, and the ECB's will be price stability and monetary targeting. Britton and Mayes confirm this idea when they write, "It will not be possible to pursue an exchange rate policy for the (euro) which is not

consistent with the aim of price stability in Europe to which the European central bank will be committed¹⁵”. Potential cooperation can then be seen through a concentration on interest rates and price levels, but not necessarily exchange rates. The dollar/euro rate will most assuredly, however, be affected by any cooperation between central banks. Interest rates in particular seem to be tied very closely to changing currency levels. In general, signs of lower interest rates on the horizon tend to cause increased US investment in foreign currencies, while signs of higher rates reduce investment in foreign currencies¹⁶. Interest rates will be an option for both central bank systems in the case of exchange rate stabilization, but given past history, this type of action would be highly unusual. More typical will be the buying and selling of world currencies to promote stability.

The Real Benefits of the Euro

Up until this point, the real benefits of EMU have not been discussed. The most obvious real gain is the savings associated with the elimination of transaction fees for converting one currency into another. It has been estimated that this savings will amount to roughly fifteen billion euros annually, or roughly 0.4 percent of EU GDP¹⁷. While most of these gains are financial, large firms who have treasury departments specifically for the purpose of currency exchange and hedging, will be able to cut costs significantly in this area¹⁸.

These savings through transaction costs, however, will not turn out to be uniform for all members. Greater benefits will be had by members with small, open economies

and by members with inefficient exchange services. Members whose national currency has been relatively more variable against other EU currencies will also reap a disproportionate amount of benefits¹⁹. The benefits reaped due to a nation's economy being open can be tied directly to an individual country's trade behavior. By examining percentages that reveal how open individual EU countries are to each other in terms of trade, it can be determined that countries such as Austria, Belgium, France, Ireland, Luxembourg, and the Netherlands stand to benefit more than other members due to their relatively high shares of trade with the EU as a whole. Refer to table 1, with its market share figures from the 1995 World Fact Book²⁰. Out of this group, France will

(table 1)

Market Shares of Imports and Exports in 1995

	Import %		Export %	
	from EU	from US	to EU	to US
Austria	66.8%	4.4%	63.5%	3.4%
Belgium	73.0%	4.8%	75.5%	3.7%
Denmark	53.4%	5.7%	54.3%	4.9%
Finland	47.2%	6.1%	53.2%	5.9%
France	64.4%	9.5%	66.4%	6.4%
Germany	46.4%	7.3%	47.9%	7.7%
Greece	43.0%	unknown	51.0%	4.0%
Ireland	66.0%	15.0%	75.0%	9.0%
Italy	56.3%	4.6%	53.4%	7.8%
Luxembourg	80.0%	2.0%	76.0%	5.0%
Netherlands	64.0%	8.0%	77.0%	4.0%
Portugal	72.0%	3.4%	75.5%	4.3%
Spain	60.7%	7.4%	71.2%	4.8%
Sweden	53.6%	8.4%	55.8%	8.2%
UK	51.7%	11.6%	56.7%	10.9%

not benefit as much as the others, as its large economy and the common use of the Franc internationally will limit its benefits. The savings to large nations are projected to be

between 0.1 and 0.2 percent of GDP annually, and for smaller, more open economies it is slated to be as high as 0.9 percent of GDP annually^{20a}.

Transaction costs appear to be harder on small and medium sized firms compared to large firms, as well²¹. The relative advantage these smaller firms will experience upon EMU will then give them a boost, competitively speaking. Once there are no extraneous costs standing in the way of intra EU trade for EMU members; intra-European trade will take off even more than it has under the Single Market plan. The savings and openness, combined with the boost given to smaller national economies and small to medium sized firms, will enhance competition, thereby contributing to the efficiency of the EU economy and creating jobs and new markets in the process.

An important consideration from the American perspective is whether or not a significant increase in intra-EU trade will hurt EU-US trade, specifically whether advantages for an EMU member to trade more with its EU partners than the US will contribute to the idea of a "Fortress" Europe, thus dampening demand for US products in Europe. This is a legitimate concern, but there are two reasons that the advent of EMU will not hurt US-EU trade, most importantly in the long term. The first reason is that current intra-EU trade figures are already quite high, so if they were to continue to rise, they would very quickly reach some kind of ceiling and then most likely stabilize. This is speaking in terms of market share of course, not in real value terms. Secondly, the reality of the global economy today is such that successful firms are forced to compete in a variety of markets in order to experience significant growth. This is more true for large firms than medium or small firms, but there are even small firms around the globe who

realize that the secret to their prosperity is to find new and more attractive markets, even if it means going half way around the world to find them. So in reality, American firms should be more concerned with how they will compete with European firms than about losing market share strictly due to the efficiency in trade gains brought about by EMU.

With this perspective in place, it can be stated that an economically healthy Europe is certainly good news for US exporters, and hence, the American economy. It has become obvious in this decade that the American economy can do just fine while the EU economy stumbles, so at this point, one does not appear to be too dependent on the other. The important thing to note is that there is real material wealth gains to be made by fostering a vital trade relationship with a Europe that begins to feel the reinvigorating effects of EMU. Besides the real benefits that EMU members will experience, there will also be a reduction in the uncertainty that investors and business people feel in Europe, an event that is hard to calculate with numbers, but will nonetheless foster a tremendous rise in investment, growth, and employment²².

One last consideration when examining benefits is interest rates. Currently, interest rates have converged quite nicely amongst EU nations, but upon inception of EMU there will be a relative advantage to those countries who now have slightly higher interest rates than others. Once the ECB is established and controls short term interest rates for all member nations, nations such as Great Britain, Ireland, and Finland will experience better interest rate terms relative to other members at the start. This could act as a boost to these countries, as relatively lower interest rates usually equate to growth and investment. The added bonus for these countries is that there will be no

repercussions to their currencies. In other words, their currencies will not be devalued due to lower interest rates, as all member currencies will at the time be irrevocably locked. This is just another example which points out the fact that disproportionate benefits will be experienced by individual members of EMU.

The Existence of Excess Reserves

EU countries currently hold large amounts of official ECU as well as EU currencies in reserve. For EMU members, these reserves will lose their original purpose, and they will be able to be moved or used in another fashion. Specifically, upon the advent of EMU the official ECU will turn into dollars and gold, and the member currencies will turn into euros²³. EU countries have fairly large holdings of EU currencies. Holdings of EU currencies, as a share of total foreign exchange reserves not counting ECU, accounted for more than 32.5 percent in 1991²⁴. Once EMU takes place, there will be excess reserves, reserves that have been intended to be used until this point to stabilize European currencies. The European Commission made a rough calculation in 1990, and determined that this surplus equated to between 200 and 230 billion dollars²⁵. The irony of having this excess reserve is that Europe will most likely be unable to fully liquidate it. First of all, if they attempt to sell off large amounts of dollars on the open market, they will drive its value down. A weaker dollar makes European goods more expensive in America. Second of all, any move to spend excess euros could result in a threat to price stability, something that Europeans are very keen on. It has been suggested that Europe could use the reserves by way of capital formation²⁶. This is the most likely

event to occur, as this action would stimulate the economy and increase jobs. The introduction of reserves into the economy will most likely be slow, but it can be easily controlled in the interest of price stability. The dollar reserves are another matter, and will likely sit in the near term. The existence of excess euro reserves gives Europe an alternate option to the monetary policy of the ECB in the decision process over how to optimize the European economy while keeping prices stable.

The Euro As a Strong World Currency

There is much debate as to whether or not the new euro will be a hard or soft world currency. Some economists believe that other European currencies will dilute the strength of the D-Mark, and thus the euro will be soft. Intuitively, this might make sense, but the chances of the euro becoming a soft currency, or in other words a second or third rate world currency, are remote. The first thing to look at is the market fundamentals. Europe is home to roughly 370 million people, a large portion of which are likely be using euros in five years. This is the base of demand for the currency, but there will also be outside demand. Countries in Eastern Europe, many of whom are candidates to join an expanding European Union, will most likely base their currencies on the euro. These countries will look to the European financial centers for loans and euro denominated assets²⁷. This outside demand will likely spread to Africa also, as Europe has many trade ties there. Smaller industrial nations have diverse currency reserves, and this is unlikely to change unless there is a shift in the pricing of a major commodity such as oil²⁸. What

this means is that where once there were various EU currencies, there will be an equal proportion of euros.

All of this evidence points to there being rock solid worldwide demand for the euro, which will buoy its value and make it a hard currency. Even if the euro has a shaky introduction to world currency exchanges, Europe certainly has the excess dollar reserves to stabilize it in the short term, and allow world market demand take it from there. If Europe decides to use some of its excess euro reserves on capital formation, then this will further create demand for the euro as growth takes off in Europe. The big picture then includes a strong euro worldwide in the long term, while Europe will retain the option to stabilize the currency in the short term if it does prove to have a rough introduction.

One other variable to consider when arguing for the euro as a hard currency is the actions of the as yet to be created ECB. It has already been stated that the ECB's first priority will be monetary targeting. This in itself would seem to mean that the ECB has less concern with the level or status of the euro worldwide. History and the general beliefs of Europeans, however, point to price stability as being one of the most important goals of the continent. This has been the goal of Germany's Bundesbank, and the country has prospered because of it. Although the ECB will be an independent body, it will most certainly concern itself with price stability within the framework of monetary targeting. Monetary targeting will not be its chief tool in keeping prices stable, however, as moving interest rates up or down has a much more direct effect. It is well known that the Bundesbank is conservative when it comes to setting interest rates, as Germans have demonstrated extra disdain for inflation. The projection is that the ECB will retain at

least some of this conservatism. The determination, then, is that rates will be set relatively on the high side by the ECB, as it will want to make sure that prices remain under control with all the uncertainty surrounding the initial few years of EMU. As far as the euro is concerned, these higher than otherwise expected interest rates will act as a supporting mechanism, and in essence spur demand for euros.

The argument has been made that the euro will be a strong world currency, but one of the most important, yet unknown, factors will be the state of the US economy and the dollar during the initial years of EMU. A stable dollar will contribute to a stable euro, and this would be the best case scenario for Europe. A sharp dollar depreciation versus the euro initially is less likely than the opposite scenario coming to pass, but as the fundamentals and economic realities do not support this scenario, a depreciating or soft euro is very unlikely to occur.

The Portfolio Effect and the Dollar/Euro Rate

By analyzing monthly exchange rate data for all EU members from 1990 through 1996, it can be seen that some EU currencies showed a depreciating trend versus the dollar, while some show an appreciating trend. Refer to Appendix B. Of the ten nations slated to found EMU, three of them, namely Finland, Ireland, and the United Kingdom, have currencies which show a depreciating trend versus the dollar from 1990 to 1996. The currencies of the other seven nations, which include Austria, Belgium and Luxembourg, Denmark, France, Germany, and the Netherlands show an appreciation trend versus the dollar over the same period. These historical trends have no completely

dependable power of prediction for the future behavior of currency levels, but they do offer a window of understanding.

Currency traders all over the world usually keep a portfolio of currencies, adjusting their levels of ownership in any given currency periodically. Investors and mutual fund managers do the same thing with their stocks and other investments. The purpose of maintaining a portfolio of investments is to diversify away firm-specific risk. The better the diversification, the more firm-specific risk is eliminated, and what is left is market risk. The result of diversification is that the expected return becomes much more predictable than it otherwise would have been with an undiversified portfolio.

This idea of a portfolio effect will apply to the dollar/euro rate once the currencies of the ten qualifying nations are frozen. The market forces that drove the currency levels up and down in the past will still exist, but the difference is that the individual currencies will not be able to display the effects of these market forces. The euro will be the only currency to do this. The euro will represent a portfolio in a sense, with much of the currency altering market effects acting like waves in a pool. One wave will come from one direction and a different one from another direction, but they will clash and their energies will neutralize each other, producing a smoother surface. This metaphor applies to the currency trends of the 1990's. If dollars were used to buy a portfolio of the nine European currencies already mentioned, the risk, and hence the performance, of the portfolio would be less than if a single currency was bought. Those currencies that depreciated versus the dollar would combine with those currencies that appreciated, and the result would be a calmer, more predictable, and less volatile trading range. This

argument applies to the formation of the euro, and in turn is a major factor that will contribute to a stable dollar/euro rate.

Of the ten nations slated to found EMU, some have currencies which have historically been more volatile versus the dollar than others. The same monthly currency data from 1990 to 1996 can be analyzed to determine the standard error of the estimates and standard deviations of these currencies for the period. Refer to Appendix A, which contains figures from International Financial Statistics²⁹. Table two shows that out of the ten nations the D-mark, Irish pound, and Dutch guilder exhibit the least volatility over the period, while the Belgian franc, Austrian schilling, and Finnish markkaa show the most volatility.

(table 2)

EU Ranked By Volatility Of Currency

Rank	EU Nation	Currency	Standard Deviation	Standard Error	Confidence Level
1	Germany	D-Mark	0.10308	0.01125	0.02204
2	Ireland	Pound	0.10324	0.01126	0.02208
3	Netherlands	Guilder	0.1177	0.01284	0.02517
4	United Kingdom	Pound	0.14277	0.01558	0.03053
5	France	Franc	0.33266	0.03269	0.07114
6	Denmark	Kroner	0.40197	0.04386	0.08596
7	Finland	Markkaa	0.65483	0.07145	0.14003
8	Austria	Schilling	0.72607	0.07922	0.15527
9	Sweden	Krona	0.83219	0.0908	0.17796
10	Belgium/Lux	Franc	2.24681	0.24515	0.48048
11	Portugal	Escudo	12.11595	1.32196	2.59099
12	Spain	Peseta	18.2868	1.99525	3.91062
13	Greece	Drachma	31.91324	3.48202	6.82462
14	Italy	Lire	193.15358	21.07478	41.30575

Due to the portfolio effect, all founding nations will enjoy a more stable rate with the dollar, but the nations who will experience the most benefit will be those who have consistently had more volatile dollar rates in the past.

Sacrificing Economic Autonomy

Upon the advent of EMU, the two economic centers of the world will have two major currencies between them, instead of ten. Likewise, instead of eleven bodies regulating monetary policy, there will be two. The big picture of what can expect to happen between the US and EU starts with the behavior of the dollar/euro rate and the existence of trade, but it does not end there. As the economic cycle picks up in Europe and EMU members enjoy the invigorating effects that are expected, trade between the two continents will boom even more than it has in the last ten years. This boom in trade will contribute to the wealth of both parties involved, but it will place even more concern on the value of the exchange rate, and consequently, on the market fundamentals which influence it. Some of these fundamentals are controlled by the Federal Reserve and the future ECB. The two central banks will feel pressure in the future to cooperate in order to promote economic stability and avoid being economically off-sync.

This pressure to cooperate is evidence that the economic fates of Europe and the United States will be more tied together than ever before. With the advent of continuing deregulation in both the US and EU, issues of competitiveness will become even more important in the private sector. The closer tying of fates overall, however, means that potential shocks on one side of the Atlantic will be felt all that much more on the other. These shocks can be political, economic, or even social.

In the future, the actions of the ECB and the Federal Reserve will become increasingly important to the world, as they will set the economic tone as long as Europe

and the US remain the two economic and financial giants. It is true that there will be fewer currencies for speculators to invest in, but there is no evidence that currency speculation will drop off³⁰. It has recently been clear the effect that interest rate hike speculation has on the US stock market, and this kind of speculation will affect the dollar/euro level. This speculation will act to increase the volatility of the exchange rate, but will offset only some of the effects of the stability enhancing factors.

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⁴ Dornbusch, Rudiger. Dollars, Debts, and Deficits. Leuven University Press. Leuven, Belgium. 1986.

⁵ Dornbusch, Rudiger. Dollars, Debts, and Deficits. Leuven University Press. Leuven, Belgium. 1986.

⁶ Kenen, Peter B. "Ways To Reform Exchange Rate Arrangements." Prints In International Finance. Princeton University, Princeton, New Jersey. 1994.

⁷ Kenen, Peter B. "Ways To Reform Exchange Rate Arrangements." Prints In International Finance. Princeton University, Princeton, New Jersey. 1994.

⁸ Kenen, Peter B. "Ways To Reform Exchange Rate Arrangements." Prints In International Finance. Princeton University, Princeton, New Jersey. 1994.

⁹ Britton and Mayes. Achieving Monetary Union in Europe. Sage Publications. London. 1992

¹⁰ Britton and Mayes

¹¹ Kaiser, Dirk. "European Monetary Unification: History, Current State, and Perspectives." Lecture handout. Portland, Oregon. November, 1996.

¹² Britton and Mayes. Achieving Monetary Union in Europe. Sage Publications. London. 1992

¹³ Britton and Mayes. Achieving Monetary Union in Europe. Sage Publications. London. 1992

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¹⁸ Emerson, Michael and Christopher Huhne. The ECU Report. Great Britain. Pan Books. 1991.

¹⁹ Emerson, Michael and Christopher Huhne. The ECU Report. Great Britain. Pan Books. 1991.

²⁰ Central Intelligence Agency. World Factbook. Government Printing Office. Washington D.C. 1995.

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²¹ Emerson, Michael and Christopher Huhne. The ECU Report. Great Britain. Pan Books. 1991.

²² Emerson, Michael and Christopher Huhne. The ECU Report. Great Britain. Pan Books. 1991.

²³ Kenen, Peter B. Economic and Monetary Union in Europe. New York. Cambridge University Press. 1995.

²⁴ Kenen, Peter B. Economic and Monetary Union in Europe. New York. Cambridge University Press. 1995.

²⁵ Kenen, Peter B. Economic and Monetary Union in Europe. New York. Cambridge University Press. 1995.

²⁶ Kenen, Peter B. Economic and Monetary Union in Europe. New York. Cambridge University Press. 1995.

²⁷ Kenen, Peter B. Economic and Monetary Union in Europe. New York. Cambridge University Press. 1995.

²⁸ Kenen, Peter B. Economic and Monetary Union in Europe. New York. Cambridge University Press. 1995.

²⁹ International Monetary Fund. International Financial Statistics. Publication Services. Washington D.C. Volumes 41-49. 1990-1996.

³⁰ Kenen, Peter B. Economic and Monetary Union in Europe. New York. Cambridge University Press. 1995.

CHAPTER V

TECHNICAL ANALYSIS

One of the most important things for US exporters to understand is that EMU will offer new opportunities to increase certain exports dramatically. Historically, some commodities exported to Europe have been more sensitive to movements in exchange rates than others. It is the exporters of these commodities who stand to benefit the most from a single currency.

When applying technical analysis to trade figures, it is difficult to pinpoint a precise relationship between movements in exchange rates and movements in trade totals. Trade totals represent many other factors besides the specific exchange rate involved, including the state of the importing nation's economy, the changing nature of competition and the availability of substitutes, and the personal preferences of the importing nation's people. With all of these factors working within supply and demand, a direct causal relationship, in other words an equation of some sorts, seems to be elusive.

To identify trends and opportunities, however, it might be good enough in some cases to identify certain correlations among variables. Correlations do not imply causation, therefore they cannot be used in prediction, but they may offer insight into whether or not certain variables seem to have a special relationship.

The technical analysis in this paper was started by finding monthly dollar exchange rates for the fourteen different EU national currencies. The monthly figures are an average of the daily rate of each particular currency for every day of the month¹.

These monthly figures were then averaged for each year from 1990 until 1996. The percentage change from one year to the next was then calculated for each currency. Refer to Appendix C.

The next step was to locate data for US exports to each individual EU nation. Commodity export totals were found at an internet site called Stat-USA, which is produced by the US Department of Commerce². A diverse group of commodities were chosen from the listing at this site, along with the total commodities figure, which represents the total commodities exported from the US to an individual EU nation for any given year. The commodities selected were (08) Edible fruits and nuts; peel of citrus fruit or melon, (22) Beverages, spirits, and vinegar, (24) Tobacco and manufactured substitutes, (30) Pharmaceutical products, (47) Pulp of wood or other fibrous cellulosic material, (85) Electrical machinery and equipment and parts thereof, (87) Vehicles, other than railway or tramway, and (88) aircraft, spacecraft, and parts thereof. The numbers associated with each group are used by the Department of Commerce to categorize and organize trade data. Like the currency figures, these raw export numbers were then converted to represent the percentage rise or fall for each category from one year to the next.

The currency changes from year to year were then compared to each individual commodity's change from year to year using correlation analysis. Correlation analysis involves a computer program, such as Excel, comparing two data streams and determining to what degree their movements are identical in nature. A correlation result of one means that the two data streams change at the exact same rate and in the same

direction in a data series. This is called perfect correlation. A result of negative one means that the two data streams change at the exact same rate, but move in opposite directions. For example, one data stream might be 1, -4, 2, -9. A perfectly negative correlation would exist if it was compared to a data stream of -1, 4, -2, 9. A correlation of zero is taken to mean that the two data streams are not related in any way, positively or negatively.

A generally accepted economic principle is that an appreciating foreign currency versus the dollar will spur demand for domestic products. Likewise, a depreciating foreign currency versus the dollar, or in other words, a situation where the dollar is gaining strength versus another currency, hurts demand for domestic products abroad. This principle can be examined by looking at trade and currency data, and by performing correlation analysis. No causation will be found, but certain commodities should show themselves to be more sensitive to exchange rates than others for some countries.

All of the exchange rate figures are given in European terms, that is, the foreign currency over the dollar. This includes the British and Irish pounds which are traditionally given in American terms. This means that if the generally accepted principle that was mentioned holds strong, then a correlation of close to negative one should exist for the commodities analyzed. Given all of the other factors in international economics that exist, a perfect negative correlation would not be expected to exist, but through this analysis some nations should prove to be more sensitive to swings in the exchange rate, and certain commodities should prove to be more sensitive than others as well.

Results of Correlation Analysis

In order to make sense of the correlation figures, some categories have to be established. Any number between -0.95 and -1.0 demonstrates a very strong negative correlation. Any number between -0.9 and -0.95 demonstrates a strong negative correlation. Finally, any number between -0.85 and -0.9 demonstrates a convincing negative correlation, albeit not as strong as some would like to show a strong relationship.

Table 3 ranks the fourteen nations by how strong of a negative correlation their respective currencies had with the composite of all commodities exported to their country by the United States. Luxembourg is not included due to incomplete trade data. From this ranking, Austria is seen to have the strongest negative correlation, with a figure that almost makes the strong negative category. Austria, Spain, the United Kingdom, and the Netherlands all had figures that show a convincing negative correlation. All nations produced a negative correlation, just as one would expect to see. Finland has the weakest negative correlation, with a figure that is close enough to zero to determine that no substantial relationship exists between its currency level and its US imports from this time period.

It could be surmised, although not predicted since correlation analysis relates no matter of causation, that EMU, along with its stable euro, will benefit US commodity exports to Austria, the United Kingdom, and the Netherlands the most out of all founding members. The data shows that during the 1990's when the schilling, the pound, and the guilder depreciated versus the dollar, American commodity exports to Austria, the UK, and the Netherlands tended to respond by shrinking. The opposite scenario applies also.

[illegible]

At the other end of the spectrum, the movements of Finland's markkaa did not seem at all with levels of American commodity exports to that country.

Like the figures for the composite commodities category, the individual commodity categories can be analyzed to see if any strong negative correlations exist between any given export commodity and the exchange rate for the nation that it is exported to. A figure that falls into the very strong negative correlation category exists for the United Kingdom and the commodity of edible fruits. One could surmise that exports of edible fruits to Britain from the US could receive a strong boost with the advent of a more stable currency than the pound. Ireland's edible fruit figure places it in the strong negative category, and Austria's figure places it in the convincingly negative category. These three nations were the only ones who had figures that fell into the predetermined categories for edible fruits.

For the commodity of beverages, only the country of Spain retains a figure that places it in one of the categories. The peseta's negative correlation of $-.862452$ places it in the convincingly negative category. This suggests that American beverage exports to Spain, if it were included in EMU, might receive the biggest boost out of all the EU nations with the advent of a more stable currency.

For the commodity of tobacco, two countries exhibit figures that fall into the very strong negative correlation category. American tobacco exports to the Netherlands and Germany could respond the best with a more stable currency. Italy's figure places it right on the edge between the strong negative and convincingly negative categories.

As far as US pharmaceutical exports stand, no EU country exhibits any convincing negative correlation with the exchange rate. For this particular industry, one possible explanation for this is the incredible growth around the world that it has experienced in the last few years. Demand for pharmaceuticals is also more inelastic than many other commodities. The two other commodity categories that show no convincingly negative correlations are electric machines and aircraft. The aircraft category might be explained by the fact that aircraft sales are generally larger and more infrequent than other sales, and although the exchange rate is an important part of the sale, it is a lower business priority to sellers and buyers than other factors. The same might be said for electric machines.

For the commodity of wood pulp, four nations have figures that fall into one of the three negative categories. The figures for Germany and Denmark place them in the very strong negative category, suggesting that American exports of wood pulp to these two nations might benefit the most from a more stable currency. The figure for the Netherlands places it in the strong negative category, and the figure for France places it in the convincingly negative category.

For the commodity of vehicles, two countries, Greece and France, have figures that place them in the convincingly negative category. Exports of vehicles to France and Greece, if it were a member of EMU, might stand to benefit the most from a more stable currency.

Of the commodities chosen for this technical analysis, exports of wood pulp appear as though they might be the most sensitive to fluctuating exchange rates.

Exporters of this commodity then, might stand to benefit the most from a more stable currency. After wood pulp, edible fruits and tobacco appear to be the most sensitive. Beverages and vehicles fall into the middle of the group. Aircraft, electric machines, and finally pharmaceuticals, might benefit less than these other commodities with a more stable currency.

It is important to note that correlation analysis provides only one perspective on a very complex economic picture. The fact that correlation involves no causation, combined with the fact that historical figures are never the perfect model for future figures, shows that correlation analysis should not be used in a predictive capacity.

¹ International Monetary Fund. International Financial Statistics. Publication Services. Washington D.C. Vol. 41-49, 1990-1996.

² United States. Department of Commerce. Stat-USA. <http://www.stat-usa.gov/stat-usa.html>

CHAPTER VI

CONCLUSION

Statistics show that exports are good for the growth of wealth here in the United States. With this in mind, the objective for the US should not only be to increase its net exports abroad, but also to compete and enhance its market share position in the various individual markets all over the world. America's second largest export market is the European Union, a market that will endure significant change in the next few years due to the implementation of Europe's economic and monetary union, or EMU.

Through an analysis of EMU's critical document, the Maastricht Treaty, and through analysis of present day positions and trends of the economies of member European Union countries, it was determined which nations will qualify for EMU membership on January 1, 1999. These nations include Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Luxembourg, the Netherlands, and the United Kingdom. This projection is tempered by the fact that Denmark may opt out of EMU given their unique position of choice and current lack of public support for EMU. The United Kingdom is the only other nation to retain this option according to the Maastricht Treaty, but due to the circumstances of the last few years, is projected not to exercise this option. It will be these nations then whose currencies will be irrevocably frozen against each other in 1999, with the new currency, the euro, taking their place no later than 2002.

The advent of EMU represents a tremendous opportunity for Europe and others. A single monetary policy will govern member nations, one which will be set by the

European Central Bank and its system of national banks called the European System of Central Banks. Having one currency instead of nine means that savings will be accrued through the lack of transaction fees. Other savings and benefits will coincide as well, as Europe becomes much more of a single, open market. These savings, combined with the existence of excess reserve funds, will act to reinvigorate the European economy. The ECB will employ monetary targeting as its method of policy, but it will also concentrate on maintaining price stability. What can be expected then is employment growth with stable prices in Europe.

Through analysis of the macroeconomic variables that exist, it was determined that the new euro will be a hard currency, and will exist in a stable rate with the dollar. Strong demand for the euro will be the base of its strength, but the actions of the ECB will tend to provide support also, especially in the first few years of EMU. Something described as the portfolio effect will contribute to the euro's stability versus the dollar, although keen speculation about Federal Reserve and ECB actions, which will contribute to the movement of the dollar/euro rate, will work against the stability provided by the portfolio effect. The dollar/euro rate, however, will endure this speculation and remain more stable than most of the national European currencies have been in the past.

US exporters stand to do very well in Europe as opportunities arise through the advent of EMU, but the opportunities will not be uniform across all industries nor across all European nations. Exporters to countries whose currencies have been traditionally more volatile versus the dollar in the past stand to gain the greatest benefit. Likewise,

industries whose exports have been more sensitive to fluctuating exchange rates than others in the past, stand to gain the greatest benefit of a more stable euro.

Through correlation analysis of trade and currency figures from the last six years, some idea of just which exports to which European nation stand to benefit the most from a stable dollar/euro rate. Of the nine commodity exports that were examined, exporters of wood pulp, edible fruits, and tobacco appear to be the greatest beneficiaries of a stable exchange rate. Exporters of aircraft, electrical machines, and pharmaceuticals will benefit from a more stable rate, but not to the degree of these other commodity exporters.

The benefits experienced by the advent of EMU cannot occur without the US giving up some of its economic autonomy of decision. As trade and investment between the US and EU continues to grow, pressure will mount for the two nations to cooperate in order to produce the best possible economic scenario for both areas. Specifically, the Federal Reserve and the ECB, two supposedly independent bodies, will feel pressure to coordinate monetary policy in order to ensure worldwide economic stability. This scenario results in a more codependent relationship between the two trading blocks.

In the final analysis, EMU is not only good for Europe, but it provides opportunity for the United States. Because of the firm trade ties that already exist, an economically healthy Europe is good for the health of the US economy. US exporters to Europe will find this to be true in time.

APPENDIX A

Austria					
yr/mo	monthly avg.	year avg.	%diff.	weight avg.	
90-01	11.907			#N/A	Column1
90-02	11.806			#N/A	
90-03	11.998			11.9037	Mean
90-04	11.878			11.8940	Standard Error
90-05	11.693			11.8563	Median
90-06	11.849			11.8067	Mode
90-07	11.540			11.6940	Standard Deviation
90-08	11.054			11.4810	Sample Variance
90-09	11.042			11.2120	Kurtosis
90-10	10.729			10.9417	Skewness
90-11	10.444			10.7383	Range
90-12	10.498	11.370		10.5570	Minimum
91-01	10.627			10.5230	Maximum
91-02	10.409			10.5113	Sum
91-03	11.265			10.7670	Count
91-04	11.983			11.2190	Confidence Level(95.000%)
91-05	12.070			11.7727	
91-06	12.557			12.2033	
91-07	12.591			12.4060	
91-08	12.285			12.4777	
91-09	11.949			12.2750	
91-10	11.897			12.0437	
91-11	11.413			11.7530	
91-12	11.065	11.676	2.69%	11.4583	
92-01	11.116			11.1980	
92-02	11.398			11.1930	
92-03	11.691			11.4017	
92-04	11.601			11.5633	
92-05	11.406			11.5660	
92-06	11.079			11.3620	
92-07	10.493			10.9927	
92-08	10.210			10.5940	
92-09	10.189			10.2973	
92-10	10.395			10.2647	
92-11	11.167			10.5837	
92-12	11.126	10.989	-5.88%	10.8960	
93-01	11.363			11.2187	
93-02	11.551			11.3467	
93-03	11.591			11.5017	
93-04	11.229			11.4570	
93-05	11.302			11.3740	
93-06	11.626			11.3857	
93-07	12.070			11.6660	
93-08	11.937			11.8777	
93-09	11.420			11.8090	
93-10	11.507			11.6213	
93-11	11.965			11.6307	
93-12	12.026	11.632	5.85%	11.8327	

94-01	12.255			12.0820		
94-02	12.219			12.1667		
94-03	11.908			12.1273		
94-04	11.948			12.0250		
94-05	11.660			11.8387		
94-06	11.461			11.6897		
94-07	11.052			11.3910		
94-08	11.012			11.1750		
94-09	10.917			10.9937		
94-10	10.710			10.8797		
94-11	10.849			10.8253		
94-12	11.072	11.422	-1.81%	10.8770		
95-01	10.774			10.8983		
95-02	10.571			10.8057		
95-03	9.895			10.4133		
95-04	9.710			10.0587		
95-05	9.897			9.8340		
94-06	9.848			9.8183		
95-07	9.771			9.8387		
95-08	10.159			9.9260		
95-09	10.286			10.0720		
95-10	9.964			10.1363		
95-11	9.967			10.0723		
95-12	10.139	10.082	-11.73%	10.0233		
96-01	10.278			10.1280		
96-02	10.312			10.2430		
96-03	10.393			10.3277		
96-04	10.591			10.4320		
96-05	10.788			10.5907		
96-06	10.747			10.7087		
96-07	10.591			10.7087		
96-08	10.430			10.5893		
96-09	10.595			10.5387		
96-10	10.756			10.5937		
96-11	10.637			10.6627		
96-12	10.919	10.586	5.01%	10.7707		

Belgium and Luxembourg						
yr/mo	monthly avg.	year avg.	%diff.	weight avg.		
90-01	35.468			#N/A	Column1	
90-02	35.020			#N/A		
90-03	35.394			35.2940	Mean	32.60146429
90-04	34.912			35.1087	Standard Error	0.245147065
90-05	34.306			34.8707	Median	32.3905
90-06	34.617			34.6117	Mode	#N/A
90-07	33.759			34.2273	Standard Deviation	2.246809961
90-08	32.308			33.5613	Sample Variance	5.048154999
90-09	32.282			32.7830	Kurtosis	-1.022873741
90-10	31.387			31.9923	Skewness	0.041952461
90-11	30.637			31.4353	Range	8.502
90-12	30.925	33.418		30.9830	Minimum	28.353
91-01	31.102			30.8880	Maximum	36.855
91-02	30.474			30.8337	Sum	2738.523
91-03	32.982			31.5193	Count	84
91-04	35.028			32.8280	Confidence Level(95.000%)	0.480478706
91-05	35.263			34.4243		
91-06	36.703			35.6647		
91-07	36.855			36.2737		
91-08	35.937			36.4983		
91-09	34.975			35.9223		
91-10	34.815			35.2423		
91-11	33.377			34.3890		
91-12	32.268	34.148	2.19%	33.4867		
92-01	32.462			32.7023		
92-02	33.338			32.6893		
92-03	34.197			33.3323		
92-04	33.901			33.8120		
92-05	33.355			33.8177		
92-06	32.404			33.2200		
92-07	30.700			32.1530		
92-08	29.880			30.9947		
92-09	29.868			30.1493		
92-10	30.475			30.0743		
92-11	32.683			31.0087		
92-12	32.531	32.150	-5.85%	31.8963		
93-01	33.256			32.8233		
93-02	33.843			33.2100		
93-03	33.927			33.6753		
93-04	32.850			33.5400		
93-05	33.040			33.2723		
93-06	33.934			33.2747		
93-07	35.441			34.1383		
93-08	36.440			35.2717		
93-09	34.825			35.5687		
93-10	35.647			35.6373		
93-11	36.222			35.5647		
93-12	35.733	34.597	7.61%	35.8673		

94-01	36.242			36.0657		
94-02	35.807			35.9273		
94-03	34.866			35.6383		
94-04	34.964			35.2123		
94-05	34.125			34.6517		
94-06	33.562			34.2170		
94-07	32.377			33.3547		
94-08	32.245			32.7280		
94-09	31.965			32.1957		
94-10	31.292			31.8340		
94-11	31.713			31.6567		
94-12	32.320	33.457	-3.30%	31.7750		
95-01	31.549			31.8607		
95-02	30.926			31.5983		
95-03	29.005			30.4933		
95-04	28.353			29.4280		
95-05	28.985			28.7810		
94-06	28.778			28.7053		
95-07	28.565			28.7760		
95-08	29.693			29.0120		
95-09	30.066			29.4413		
95-10	29.102			29.6203		
95-11	29.129			29.4323		
95-12	29.609	29.480	-11.89%	29.2800		
96-01	30.036			29.5913		
96-02	30.152			29.9323		
96-03	30.371			30.1863		
96-04	30.930			30.4843		
96-05	31.505			30.9353		
96-06	31.413			31.2827		
96-07	30.999			31.3057		
96-08	30.530			30.9807		
96-09	31.001			30.8433		
96-10	31.476			31.0023		
96-11	31.137			31.2047		
96-12	31.989	30.962	5.03%	31.5340		

Denmark					
yr/mo	monthly avg.	year avg.	%diff.	weight avg.	
90-01	6.560			#N/A	Column1
90-02	6.468			#N/A	
90-03	6.529			6.519	Mean 6.147428571
90-04	6.441			6.479	Standard Error 0.043858173
90-05	6.338			6.436	Median 6.1435
90-06	6.411			6.397	Mode 6.338
90-07	6.244			6.331	Standard Deviation 0.4019668
90-08	6.006			6.220	Sample Variance 0.161577308
90-09	5.996			6.082	Kurtosis -0.938943536
90-10	5.820			5.941	Skewness -0.017591657
90-11	5.698			5.838	Range 1.507
90-12	5.752	6.189		5.757	Minimum 5.411
91-01	5.817			5.756	Maximum 6.918
91-02	5.693			5.754	Sum 516.384
91-03	6.122			5.877	Count 84
91-04	6.512			6.109	Confidence Level(95.000%) 0.085960313
91-05	6.563			6.399	
91-06	6.882			6.652	
91-07	6.917			6.787	
91-08	6.752			6.850	
91-09	6.559			6.743	
91-10	6.530			6.614	
91-11	6.306			6.465	
91-12	6.105	6.397	3.36%	6.314	
92-01	6.116			6.176	
92-02	6.278			6.166	
92-03	6.447			6.280	
92-04	6.382			6.369	
92-05	6.265			6.365	
92-06	6.060			6.236	
92-07	5.737			6.021	
92-08	5.598			5.798	
92-09	5.610			5.648	
92-10	5.711			5.640	
92-11	6.108			5.810	
92-12	6.122	6.036	-5.63%	5.980	
93-01	6.236			6.155	
93-02	6.305			6.221	
93-03	6.326			6.289	
93-04	6.126			6.252	
93-05	6.184			6.212	
93-06	6.322			6.211	
93-07	6.643			6.383	
93-08	6.918			6.628	
93-09	6.645			6.735	
93-10	6.627			6.730	
93-11	6.768			6.680	
93-12	6.707	6.484	7.42%	6.701	

94-01	6.771			6.749		
94-02	6.773			6.750		
94-03	6.632			6.725		
94-04	6.666			6.690		
94-05	6.490			6.596		
94-06	6.390			6.515		
94-07	6.170			6.350		
94-08	6.186			6.249		
94-09	6.113			6.156		
94-10	5.952			6.084		
94-11	6.023			6.029		
94-12	6.161	6.361	-1.90%	6.045		
95-01	6.034			6.073		
95-02	5.928			6.041		
95-03	5.630			5.864		
95-04	5.427			5.662		
95-05	5.500			5.519		
94-06	5.469			5.465		
95-07	5.411			5.460		
95-08	5.599			5.493		
95-09	5.667			5.559		
95-10	5.492			5.586		
95-11	5.489			5.549		
95-12	5.580	5.602	-11.92%	5.520		
96-01	5.652			5.574		
96-02	5.672			5.635		
96-03	5.708			5.677		
96-04	5.814			5.731		
96-05	5.916			5.813		
96-06	5.888			5.873		
96-07	5.802			5.869		
96-08	5.730			5.807		
96-09	5.799			5.777		
96-10	5.859			5.796		
96-11	5.804			5.821		
96-12	5.939	5.799	3.51%	5.867		

Finland					
yr/mo	monthly avg.	year avg.	%diff.	weight avg.	
90-01	4.0022			#N/A	Column1
90-02	3.9523			#N/A	
90-03	4.0222			3.9922	Mean 4.606134524
90-04	3.9925			3.9890	Standard Error 0.071448157
90-05	3.9231			3.9793	Median 4.4601
90-06	3.9583			3.9580	Mode #N/A
90-07	3.8397			3.9070	Standard Deviation 0.654833173
90-08	3.7018			3.8333	Sample Variance 0.428806484
90-09	3.7070			3.7495	Kurtosis -0.728548257
90-10	3.6190			3.6759	Skewness 0.5264545
90-11	3.5607			3.6289	Range 2.4111
90-12	3.6033	3.824		3.5943	Minimum 3.5607
91-01	3.6421			3.6020	Maximum 5.9718
91-02	3.5892			3.6115	Sum 386.9153
91-03	3.8269			3.6861	Count 84
91-04	3.9929			3.8030	Confidence Level(95.000%) 0.140035607
91-05	4.0392			3.9530	
91-06	4.2203			4.0841	
91-07	4.2739			4.1778	
91-08	4.2365			4.2436	
91-09	4.1350			4.2151	
91-10	4.1192			4.1636	
91-11	4.1943			4.1495	
91-12	4.2583	4.044	5.77%	4.1906	
92-01	4.2967			4.2498	
92-02	4.4233			4.3261	
92-03	4.5329			4.4176	
92-04	4.4949			4.4837	
92-05	4.4020			4.4766	
92-06	4.2305			4.3758	
92-07	4.0770			4.2365	
92-08	3.9785			4.0953	
92-09	4.4387			4.1647	
92-10	4.6945			4.3706	
92-11	5.0483			4.7272	
92-12	5.1360	4.479	10.77%	4.9596	
93-01	5.4193			5.2012	
93-02	5.8297			5.4617	
93-03	5.9718			5.7403	
93-04	5.5968			5.7994	
93-05	5.4792			5.6826	
93-06	5.5497			5.5419	
93-07	5.7775			5.6021	
93-08	5.8307			5.7193	
93-09	5.7832			5.7971	
93-10	5.7495			5.7878	
93-11	5.8053			5.7793	
93-12	5.7548	5.712	27.52%	5.7699	

94-01	5.6920			5.7507		
94-02	5.5839			5.6769		
94-03	5.5326			5.6028		
94-04	5.4911			5.5359		
94-05	5.4072			5.4770		
94-06	5.4276			5.4420		
94-07	5.2014			5.3454		
94-08	5.1384			5.2558		
94-09	4.9691			5.1030		
94-10	4.6761			4.9279		
94-11	4.7172			4.7875		
94-12	4.8455	5.224	-8.56%	4.7463		
95-01	4.7358			4.7662		
95-02	4.6433			4.7415		
95-03	4.3769			4.5853		
95-04	4.2650			4.4284		
95-05	4.3155			4.3191		
94-06	4.2983			4.2929		
95-07	4.2488			4.2875		
95-08	4.3000			4.2824		
95-09	4.3717			4.3068		
95-10	4.2696			4.3138		
95-11	4.2400			4.2938		
95-12	4.3351	4.367	-16.40%	4.2816		
96-01	4.4425			4.3392		
96-02	4.5520			4.4432		
96-03	4.6019			4.5321		
96-04	4.7313			4.6284		
96-05	4.7565			4.6966		
96-06	4.6713			4.7197		
96-07	4.5888			4.6722		
96-08	4.4777			4.5793		
96-09	4.5393			4.5353		
96-10	4.5714			4.5295		
96-11	4.5500			4.5536		
96-12	4.6398	4.594	5.20%	4.5871		

France						
yr/mo	monthly avg.	year avg.	%diff.	weight avg.		
90-01	5.7598			#N/A	Column1	
90-02	5.6928			#N/A		
90-03	5.7549			5.7358	Mean	5.386215476
90-04	5.6694			5.7057	Standard Error	0.036296056
90-05	5.5986			5.6743	Median	5.37475
90-06	5.6648			5.6443	Mode	#N/A
90-07	5.5005			5.5880	Standard Deviation	0.33265885
90-08	5.2731			5.4795	Sample Variance	0.11066191
90-09	5.2575			5.3437	Kurtosis	-1.108382962
90-10	5.1050			5.2119	Skewness	0.192529826
90-11	5.0005			5.1210	Range	1.2394
90-12	5.0664	5.445		5.0573	Minimum	4.8325
91-01	5.1307			5.0659	Maximum	6.0719
91-02	5.0394			5.0788	Sum	452.4421
91-03	5.4598			5.2100	Count	84
91-04	5.7594			5.4195	Confidence Level(95.000%)	0.071138858
91-05	5.8197			5.6796		
91-06	6.0581			5.8791		
91-07	6.0719			5.9832		
91-08	5.9304			6.0201		
91-09	5.7800			5.9274		
91-10	5.7630			5.8245		
91-11	5.5369			5.6933		
91-12	5.3561	5.642	3.61%	5.5520		
92-01	5.3801			5.4244		
92-02	5.5111			5.4158		
92-03	5.6397			5.5103		
92-04	5.5740			5.5749		
92-05	5.4493			5.5543		
92-06	5.2985			5.4406		
92-07	5.0312			5.2597		
92-08	4.9248			5.0848		
92-09	4.9239			4.9600		
92-10	5.0307			4.9598		
92-11	5.3694			5.1080		
92-12	5.3931	5.294	-6.17%	5.2644		
93-01	5.4812			5.4146		
93-02	5.5639			5.4794		
93-03	5.5949			5.5467		
93-04	5.3972			5.5187		
93-05	5.4124			5.4682		
93-06	5.5652			5.4583		
93-07	5.8340			5.6039		
93-08	5.9276			5.7756		
93-09	5.6752			5.8123		
93-10	5.7494			5.7841		
93-11	5.9091			5.7779		
93-12	5.8486	5.663	6.98%	5.8357		

94-01	5.9205			5.8927		
94-02	5.9010			5.8900		
94-03	5.7646			5.8620		
94-04	5.8135			5.8264		
94-05	5.6810			5.7530		
94-06	5.5680			5.6875		
94-07	5.3871			5.5454		
94-08	5.3674			5.4408		
94-09	5.3063			5.3536		
94-10	5.2059			5.2932		
94-11	5.2949			5.2690		
94-12	5.4145	5.552	-1.96%	5.3051		
95-01	5.2943			5.3346		
95-02	5.2289			5.3126		
95-03	4.9833			5.1688		
95-04	4.8460			5.0194		
95-05	4.9908			4.9400		
94-06	4.9164			4.9177		
95-07	4.8325			4.9132		
95-08	4.9714			4.9068		
95-09	5.0431			4.9490		
95-10	4.9411			4.9852		
95-11	4.8865			4.9569		
95-12	4.9637	4.992	-10.10%	4.9304		
96-01	5.0056			4.9519		
96-02	5.0406			5.0033		
96-03	5.0591			5.0351		
96-04	5.1060			5.0686		
96-05	5.1914			5.1188		
96-06	5.1768			5.1581		
96-07	5.0934			5.1539		
96-08	5.0600			5.1101		
96-09	5.1283			5.0939		
96-10	5.1667			5.1183		
96-11	5.1160			5.1370		
96-12	5.2423	5.116	2.48%	5.1750		

Germany						
yr/mo	monthly avg.	year avg.	%diff.	weight avg.	Column1	
90-01	1.6918			#N/A		
90-02	1.6760			#N/A		
90-03	1.7045			1.6908	Mean	1.578709524
90-04	1.6882			1.6896	Standard Error	0.011247115
90-05	1.6617			1.6848	Median	1.57315
90-06	1.6840			1.6780	Mode	#N/A
90-07	1.6399			1.6619	Standard Deviation	0.103081516
90-08	1.5707			1.6315	Sample Variance	0.010625799
90-09	1.5697			1.5934	Kurtosis	-0.952358441
90-10	1.5233			1.5546	Skewness	-0.015072033
90-11	1.4870			1.5267	Range	0.4081
90-12	1.4920	1.616		1.5008	Minimum	1.3806
91-01	1.5100			1.4963	Maximum	1.7887
91-02	1.4799			1.4940	Sum	132.6116
91-03	1.6022			1.5307	Count	84
91-04	1.7031			1.5951	Confidence Level(95.000%)	0.022043909
91-05	1.7170			1.6741		
91-06	1.7843			1.7348		
91-07	1.7887			1.7633		
91-08	1.7452			1.7727		
91-09	1.6981			1.7440		
91-10	1.6915			1.7116		
91-11	1.6250			1.6715		
91-12	1.5695	1.660	2.71%	1.6287		
92-01	1.5774			1.5906		
92-02	1.6197			1.5889		
92-03	1.6611			1.6194		
92-04	1.6483			1.6430		
92-05	1.6206			1.6433		
92-06	1.5740			1.6143		
92-07	1.4909			1.5618		
92-08	1.4510			1.5053		
92-09	1.4477			1.4632		
92-10	1.4816			1.4601		
92-11	1.5877			1.5057		
92-12	1.5798	1.562	-5.90%	1.5497		
93-01	1.6158			1.5944		
93-02	1.6416			1.6124		
93-03	1.6474			1.6349		
93-04	1.5960			1.6283		
93-05	1.6061			1.6165		
93-06	1.6522			1.6181		
93-07	1.7147			1.6577		
93-08	1.6957			1.6875		
93-09	1.6226			1.6777		
93-10	1.6380			1.6521		
93-11	1.7000			1.6535		
93-12	1.7097	1.653	5.87%	1.6826		
94-01	1.7431			1.7176		

94-02	1.7372			1.7300		
94-03	1.6923			1.7242		
94-04	1.6982			1.7092		
94-05	1.6578			1.6828		
94-06	1.6291			1.6617		
94-07	1.5709			1.6193		
94-08	1.5646			1.5882		
94-09	1.5509			1.5621		
94-10	1.5184			1.5446		
94-11	1.5387			1.5360		
94-12	1.5723	1.623	-1.85%	1.5431		
95-01	1.5324			1.5478		
95-02	1.5018			1.5355		
95-03	1.4066			1.4803		
95-04	1.3806			1.4297		
95-05	1.4077			1.3983		
94-06	1.4003			1.3962		
95-07	1.3894			1.3991		
95-08	1.4451			1.4116		
95-09	1.4623			1.4323		
95-10	1.4143			1.4406		
95-11	1.4165			1.4310		
95-12	1.4407	1.433	-11.69%	1.4238		
96-01	1.4617			1.4396		
96-02	1.4661			1.4562		
96-03	1.4777			1.4685		
96-04	1.5061			1.4833		
96-05	1.5334			1.5057		
96-06	1.5274			1.5223		
96-07	1.5050			1.5219		
96-08	1.4828			1.5051		
96-09	1.5058			1.4979		
96-10	1.5283			1.5056		
96-11	1.5117			1.5153		
96-12	1.5515	1.505	5.00%	1.5305		

Greece					
yr/mo	monthly avg.	year avg.	%diff.	weight. avg.	
90-01	158.03			#N/A	Column1
90-02	157.92			#N/A	
90-03	162.47			159.47	Mean 210.8133333
90-04	163.91			161.43	Standard Error 3.482020146
90-05	163.52			163.30	Median 224.975
90-06	164.84			164.09	Mode 245.33
90-07	160.63			163.00	Standard Deviation 31.91324178
90-08	154.88			160.12	Sample Variance 1018.455001
90-09	155.09			156.87	Kurtosis -1.257181862
90-10	153.07			154.35	Skewness -0.502884598
90-11	152.26			153.47	Range 98.47
90-12	155.56	158.515		153.63	Minimum 152.26
91-01	159.87			155.90	Maximum 250.73
91-02	158.51			157.98	Sum 17708.32
91-03	172.75			163.71	Count 84
91-04	184.77			172.01	Confidence Level(95.000%) 6.824623973
91-05	187.84			181.79	
91-06	194.96			189.19	
91-07	195.74			192.85	
91-08	192.62			194.44	
91-09	188.37			192.24	
91-10	188.27			189.75	
91-11	183.84			186.83	
91-12	179.66	182.267	14.98%	183.92	
92-01	182.33			181.94	
92-02	187.06			183.02	
92-03	192.16			187.18	
92-04	192.81			190.68	
92-05	192.00			192.32	
92-06	190.88			191.90	
92-07	181.85			188.24	
92-08	179.35			184.03	
92-09	182.01			181.07	
92-10	191.68			184.35	
92-11	206.18			193.29	
92-12	209.19	190.625	4.59%	202.35	
93-01	215.82			210.40	
93-02	220.40			215.14	
93-03	223.45			219.89	
93-04	217.42			220.42	
93-05	217.90			219.59	
93-06	225.03			220.12	
93-07	234.65			225.86	
93-08	237.73			232.47	
93-09	232.43			234.94	
93-10	237.21			235.79	
93-11	243.64			237.76	
93-12	245.33	229.251	20.26%	242.06	
94-01	250.28			246.42	

94-02	250.73			248.78		
94-03	246.96			249.32		
94-04	249.14			248.94		
94-05	245.44			247.18		
94-06	245.25			246.61		
94-07	237.28			242.66		
94-08	237.00			239.84		
94-09	236.10			236.79		
94-10	233.09			235.40		
94-11	237.11			235.43		
94-12	242.84	242.602	5.82%	237.68		
95-01	238.20			239.38		
95-02	235.91			238.98		
95-03	228.75			234.29		
95-04	224.92			229.86		
95-05	228.97			227.55		
94-06	226.21			226.70		
95-07	225.46			226.88		
95-08	232.04			227.90		
95-09	235.90			231.13		
95-10	232.56			233.50		
95-11	233.80			234.09		
95-12	237.93	231.721	-4.49%	234.76		
96-01	240.50			237.41		
96-02	242.41			240.28		
96-03	241.58			241.50		
96-04	241.80			241.93		
96-05	243.20			242.19		
96-06	241.53			242.18		
96-07	237.75			240.83		
96-08	236.83			238.70		
96-09	239.38			237.99		
96-10	239.92			238.71		
96-11	238.33			239.21		
96-12	245.33	240.713	3.88%	241.19		

Ireland						
yr/mo	monthly avg.	year avg.	%diff	weight. avg.	Column1	
90-01	1.5628			#N/A		
90-02	1.5832			#N/A		
90-03	1.5625			1.5695	Mean	1.59265
90-04	1.5882			1.5780	Standard Error	0.011264056
90-05	1.6115			1.5874	Median	1.5891
90-06	1.5923			1.5973	Mode	1.4345
90-07	1.6358			1.6132	Standard Deviation	0.103236778
90-08	1.7084			1.6455	Sample Variance	0.010657832
90-09	1.7101			1.6848	Kurtosis	-0.096490749
90-10	1.7588			1.7258	Skewness	0.24653663
90-11	1.8009			1.7566	Range	0.4385
90-12	1.7872	1.658		1.7823	Minimum	1.3917
91-01	1.7681			1.7854	Maximum	1.8302
91-02	1.7979			1.7844	Sum	133.7826
91-03	1.6635			1.7432	Count	84
91-04	1.5697			1.6770	Confidence Level(95.000%)	0.022077111
91-05	1.5585			1.5972		
91-06	1.4976			1.5419		
91-07	1.4968			1.5176		
91-08	1.5322			1.5089		
91-09	1.5749			1.5346		
91-10	1.5825			1.5632		
91-11	1.6453			1.6009		
91-12	1.6996	1.616	-2.59%	1.6425		
92-01	1.6901			1.6783		
92-02	1.6486			1.6794		
92-03	1.606			1.6482		
92-04	1.6173			1.6240		
92-05	1.6468			1.6234		
92-06	1.6971			1.6537		
92-07	1.7888			1.7109		
92-08	1.8302			1.7720		
92-09	1.8249			1.8146		
92-10	1.7768			1.8106		
92-11	1.6627			1.7548		
92-12	1.674	1.705	5.55%	1.7045		
93-01	1.6344			1.6570		
93-02	1.4805			1.5963		
93-03	1.4756			1.5302		
93-04	1.5287			1.4949		
93-05	1.5137			1.5060		
93-06	1.4768			1.5064		
93-07	1.4115			1.4673		
93-08	1.3917			1.4267		
93-09	1.4358			1.4130		
93-10	1.4345			1.4207		
93-11	1.4043			1.4249		
93-12	1.4176	1.467	-13.97%	1.4188		
94-01	1.433			1.4183		

94-02	1.4197			1.4234		
94-03	1.4345			1.4291		
94-04	1.4371			1.4304		
94-05	1.4705			1.4474		
94-06	1.4959			1.4678		
94-07	1.5272			1.4979		
94-08	1.5228			1.5153		
94-09	1.5441			1.5314		
94-10	1.587			1.5513		
94-11	1.5654			1.5655		
94-12	1.5361	1.498	2.09%	1.5628		
95-01	1.5577			1.5531		
95-02	1.5633			1.5524		
95-03	1.5999			1.5736		
95-04	1.6293			1.5975		
95-05	1.6198			1.6163		
94-06	1.6311			1.6267		
95-07	1.6403			1.6304		
95-08	1.6032			1.6249		
95-09	1.59			1.6112		
95-10	1.6134			1.6022		
95-11	1.6071			1.6035		
95-12	1.59	1.604	7.08%	1.6035		
96-01	1.5835			1.5935		
96-02	1.582			1.5852		
96-03	1.5725			1.5793		
96-04	1.5651			1.5732		
96-05	1.5632			1.5669		
96-06	1.5838			1.5707		
96-07	1.6037			1.5836		
96-08	1.6111			1.5995		
96-09	1.6104			1.6084		
96-10	1.6079			1.6098		
96-11	1.6647			1.6277		
96-12	1.6596	1.601	-0.20%	1.6441		

Italy						
yr/mo	monthly avg.	year avg.	%diff.	weight. avg.		
90-01	1262.5			#N/A	<i>Column1</i>	
90-02	1244.0			#N/A		
90-03	1257.3			1254.6	Mean	1432.727381
90-04	1239.9			1247.1	Standard Error	21.07478313
90-05	1221.5			1239.6	Median	1522.6
90-06	1237.1			1232.8	Mode	#N/A
90-07	1201.7			1220.1	Standard Deviation	193.1535779
90-08	1158.7			1199.2	Sample Variance	37308.30466
90-09	1171.7			1177.4	Kurtosis	-1.516084527
90-10	1141.7			1157.4	Skewness	-0.31313911
90-11	1116.3			1143.2	Range	610.6
90-12	1124.9	1198.108		1127.6	Minimum	1102.6
91-01	1134.4			1125.2	Maximum	1713.2
91-02	1111.0			1123.4	Sum	120349.1
91-03	1199.5			1148.3	Count	84
91-04	1261.0			1190.5	Confidence Level(95.000%)	41.30575476
91-05	1275.8			1245.4		
91-06	1327.6			1288.1		
91-07	1332.7			1312.0		
91-08	1304.3			1321.5		
91-09	1269.9			1302.3		
91-10	1263.8			1279.3		
91-11	1221.8			1251.8		
91-12	1185.6	1240.617	3.55%	1223.7		
92-01	1190.8			1199.4		
92-02	1216.6			1197.7		
92-03	1248.4			1218.6		
92-04	1241.6			1235.5		
92-05	1220.5			1236.8		
92-06	1191.0			1217.7		
92-07	1129.9			1180.5		
92-08	1102.6			1141.2		
92-09	1168.1			1133.5		
92-10	1303.3			1191.3		
92-11	1364.4			1278.6		
92-12	1411.6	1232.400	-0.66%	1359.8		
93-01	1492.6			1422.9		
93-02	1548.7			1484.3		
93-03	1591.4			1544.2		
93-04	1535.4			1558.5		
93-05	1476.5			1534.4		
93-06	1499.8			1503.9		
93-07	1582.9			1519.7		
93-08	1605.1			1562.6		
93-09	1568.0			1585.3		
93-10	1625.7			1599.6		
93-11	1668.2			1620.6		
93-12	1689.6	1573.658	27.69%	1661.2		

94-01	1700.2			1686.0		
94-02	1686.5			1692.1		
94-03	1667.6			1684.8		
94-04	1626.5			1660.2		
94-05	1594.6			1629.6		
94-06	1591.9			1604.3		
94-07	1564.5			1583.7		
94-08	1582.6			1579.7		
94-09	1567.4			1571.5		
94-10	1548.8			1566.3		
94-11	1584.9			1567.0		
94-12	1633.8	1612.442	2.46%	1589.2		
95-01	1609.5			1609.4		
95-02	1618.8			1620.7		
95-03	1690.3			1639.5		
95-04	1713.2			1674.1		
95-05	1652.3			1685.3		
94-06	1639.0			1668.2		
95-07	1609.7			1633.7		
95-08	1605.4			1618.0		
95-09	1615.1			1610.1		
95-10	1605.7			1608.7		
95-11	1593.7			1604.8		
95-12	1594.5	1628.933	1.02%	1598.0		
96-01	1583.8			1590.7		
96-02	1572.4			1583.6		
96-03	1563.3			1573.2		
96-04	1565.6			1567.1		
96-05	1557.9			1562.3		
96-06	1542.2			1555.2		
96-07	1526.7			1542.3		
96-08	1516.6			1528.5		
96-09	1520.2			1521.2		
96-10	1525.0			1520.6		
96-11	1513.1			1519.4		
96-12	1528.4	1542.933	-5.28%	1522.2		

Netherlands						
yr/mo	monthly avg.	year avg.	%diff.	weight. avg.	Column1	
90-01	1.9085			#N/A		
90-02	1.8895			#N/A		
90-03	1.9196			1.9059	Mean	1.773990476
90-04	1.9010			1.9034	Standard Error	0.012842437
90-05	1.8707			1.8971	Median	1.7715
90-06	1.8954			1.8890	Mode	1.6365
90-07	1.8474			1.8712	Standard Deviation	0.117702878
90-08	1.7696			1.8375	Sample Variance	0.013853967
90-09	1.7691			1.7954	Kurtosis	-0.942204906
90-10	1.7182			1.7523	Skewness	-0.028897064
90-11	1.6768			1.7214	Range	0.4689
90-12	1.6855	1.821		1.6935	Minimum	1.5463
91-01	1.7018			1.6880	Maximum	2.0152
91-02	1.6683			1.6852	Sum	149.0152
91-03	1.8089			1.7263	Count	84
91-04	1.9187			1.7986	Confidence Level(95.000%)	0.025170676
91-05	1.9327			1.8868		
91-06	2.0108			1.9541		
91-07	2.0152			1.9862		
91-08	1.9666			1.9975		
91-09	1.9133			1.9650		
91-10	1.9049			1.9283		
91-11	1.8289			1.8824		
91-12	1.7659	1.870	2.68%	1.8332		
92-01	1.7753			1.7900		
92-02	1.8224			1.7879		
92-03	1.8697			1.8225		
92-04	1.8549			1.8490		
92-05	1.8260			1.8502		
92-06	1.7734			1.8181		
92-07	1.6805			1.7600		
92-08	1.6365			1.6968		
92-09	1.6299			1.6490		
92-10	1.6692			1.6452		
92-11	1.7859			1.6950		
92-12	1.7779	1.758	-5.95%	1.7443		
93-01	1.8167			1.7935		
93-02	1.8491			1.8146		
93-03	1.8510			1.8389		
93-04	1.7942			1.8314		
93-05	1.8019			1.8157		
93-06	1.8527			1.8163		
93-07	1.9272			1.8606		
93-08	1.9075			1.8958		
93-09	1.8213			1.8853		
93-10	1.8415			1.8568		
93-11	1.9084			1.8571		
93-12	1.9161	1.857	5.62%	1.8887		

94-01	1.9508			1.9251		
94-02	1.9478			1.9382		
94-03	1.9006			1.9331		
94-04	1.9071			1.9185		
94-05	1.8608			1.8895		
94-06	1.8267			1.8649		
94-07	1.7611			1.8162		
94-08	1.7569			1.7816		
94-09	1.7391			1.7524		
94-10	1.7034			1.7331		
94-11	1.7255			1.7227		
94-12	1.7602	1.820	-2.01%	1.7297		
95-01	1.7178			1.7345		
95-02	1.6837			1.7206		
95-03	1.5776			1.6597		
95-04	1.5463			1.6025		
95-05	1.5776			1.5672		
94-06	1.5674			1.5638		
95-07	1.5559			1.5670		
95-08	1.6185			1.5806		
95-09	1.6381			1.6042		
95-10	1.5845			1.6137		
95-11	1.5869			1.6032		
95-12	1.6137	1.606	-11.78%	1.5950		
96-01	1.6365			1.6124		
96-02	1.6413			1.6305		
96-03	1.6540			1.6439		
96-04	1.6828			1.6594		
96-05	1.7147			1.6838		
96-06	1.7109			1.7028		
96-07	1.6880			1.7045		
96-08	1.6631			1.6873		
96-09	1.6883			1.6798		
96-10	1.7142			1.6885		
96-11	1.6957			1.6994		
96-12	1.7412	1.686	5.00%	1.7170		

Portugal						
yr/mo	monthly avg.	year avg.	%diff.	weight. avg.		
90-01	149.15			#N/A	Column1	
90-02	147.63			#N/A		
90-03	150.53			149.10	Mean	150.3903571
90-04	149.41			149.19	Standard Error	1.321958871
90-05	146.90			148.95	Median	149.625
90-06	147.89			148.07	Mode	139.39
90-07	143.99			146.26	Standard Deviation	12.11595318
90-08	138.76			143.55	Sample Variance	146.7963216
90-09	139.07			140.61	Kurtosis	-0.171001364
90-10	134.41			137.41	Skewness	0.184813321
90-11	130.72			134.73	Range	51.03
90-12	132.21	142.556		132.45	Minimum	125.13
91-01	134.46			132.46	Maximum	176.16
91-02	130.30			132.32	Sum	12632.79
91-03	139.39			134.72	Count	84
91-04	147.76			139.15	Confidence Level(95.000%)	2.59098794
91-05	149.44			145.53		
91-06	156.34			151.18		
91-07	154.49			153.42		
91-08	149.60			153.48		
91-09	145.86			149.98		
91-10	145.38			146.95		
91-11	141.50			144.25		
91-12	139.27	144.483	1.35%	142.05		
92-01	136.62			139.13		
92-02	139.39			138.43		
92-03	143.09			139.70		
92-04	140.81			141.10		
92-05	134.95			139.62		
92-06	130.81			135.52		
92-07	126.19			130.65		
92-08	125.13			127.38		
92-09	127.32			126.21		
92-10	132.17			128.21		
92-11	141.50			133.66		
92-12	142.01	134.999	-6.56%	138.56		
93-01	145.51			143.01		
93-02	149.65			145.72		
93-03	152.23			149.13		
93-04	148.00			149.96		
93-05	151.85			150.69		
93-06	157.34			152.40		
93-07	167.27			158.82		
93-08	173.48			166.03		
93-09	166.32			169.02		
93-10	169.36			169.72		
93-11	173.96			169.88		
93-12	174.65	160.802	19.11%	172.66		
94-01	176.16			174.92		

94-02	175.47			175.43		
94-03	171.01			174.21		
94-04	173.49			173.32		
94-05	170.57			171.69		
94-06	168.38			170.81		
94-07	161.39			166.78		
94-08	159.82			163.20		
94-09	158.08			159.76		
94-10	155.28			157.73		
94-11	157.30			156.89		
94-12	161.24	165.683	3.04%	157.94		
95-01	158.02			158.85		
95-02	155.55			158.27		
95-03	147.94			153.84		
95-04	145.88			149.79		
95-05	148.39			147.40		
94-06	147.62			147.30		
95-07	146.00			147.34		
95-08	149.74			147.79		
95-09	152.34			149.36		
95-10	148.87			150.32		
95-11	148.31			149.84		
95-12	150.94	149.967	-9.49%	149.37		
96-01	151.61			150.29		
96-02	152.43			151.66		
96-03	152.94			152.33		
96-04	154.54			153.30		
96-05	157.59			155.02		
96-06	157.16			156.43		
96-07	154.77			156.51		
96-08	152.23			154.72		
96-09	153.81			153.60		
96-10	154.45			153.50		
96-11	152.79			153.68		
96-12	156.61	154.244	2.85%	154.62		

Spain						
yr/mo	monthly avg.	year avg.	%diff.	weight. avg.		
90-01	109.69			#N/A	<i>Column1</i>	
90-02	108.29			#N/A		
90-03	109.36			109.11	Mean	116.0660714
90-04	107.11			108.25	Standard Error	1.995253713
90-05	103.86			106.78	Median	121.34
90-06	103.96			104.98	Mode	#N/A
90-07	100.56			102.79	Standard Deviation	18.28680234
90-08	97.03			100.52	Sample Variance	334.4071398
90-09	98.47			98.69	Kurtosis	11.50134189
90-10	95.70			97.07	Skewness	-2.253531168
90-11	93.96			96.04	Range	131.7
90-12	95.23	101.935		94.96	Minimum	11.34
91-01	95.20			94.80	Maximum	143.04
91-02	92.61			94.35	Sum	9749.55
91-03	99.33			95.71	Count	84
91-04	105.20			99.05	Confidence Level(95.000%)	3.910619627
91-05	106.32			103.62		
91-06	111.34			107.62		
91-07	112.04			109.90		
91-08	109.00			110.79		
91-09	106.52			109.19		
91-10	106.59			107.37		
91-11	102.56			105.22		
91-12	100.25	103.913	1.94%	103.13		
92-01	100.02			100.94		
92-02	101.72			100.66		
92-03	104.79			102.18		
92-04	103.79			103.43		
92-05	101.35			103.31		
92-06	99.02			101.39		
92-07	94.84			98.40		
92-08	93.23			95.70		
92-09	97.47			95.18		
92-10	105.59			98.76		
92-11	113.83			105.63		
92-12	112.91	102.380	-1.48%	110.78		
93-01	114.59			113.78		
93-02	117.50			115.00		
93-03	117.70			116.60		
93-04	115.56			116.92		
93-05	121.03			118.10		
93-06	126.91			121.17		
93-07	134.43			127.46		
93-08	138.72			133.35		
93-09	130.64			134.60		
93-10	132.23			133.86		
93-11	137.47			133.45		
93-12	140.35	127.261	24.30%	136.68		
94-01	143.04			140.29		

94-02	141.22			141.54		
94-03	138.91			141.06		
94-04	138.13			139.42		
94-05	136.70			137.91		
94-06	134.38			136.40		
94-07	129.47			133.52		
94-08	129.87			131.24		
94-09	128.72			129.35		
94-10	126.27			128.29		
94-11	128.50			127.83		
94-12	132.30	133.959	5.26%	129.02		
95-01	132.61			131.14		
95-02	130.50			131.80		
95-03	128.54			130.55		
95-04	124.37			127.80		
95-05	123.21			125.37		
94-06	121.65			123.08		
95-07	119.75			121.54		
95-08	123.28			121.56		
95-09	125.55			122.86		
95-10	122.55			123.79		
95-11	121.70			123.27		
95-12	122.53	124.687	-6.92%	122.26		
96-01	123.20			122.48		
96-02	123.51			123.08		
96-03	124.40			123.70		
96-04	125.71			124.54		
96-05	127.99			126.03		
96-06	128.82			127.51		
96-07	127.02			127.94		
96-08	125.73			127.19		
96-09	126.96			126.57		
96-10	128.63			127.11		
96-11	127.23			127.61		
96-12	130.73	126.661	1.58%	128.86		

Sweden						
yr/mo	monthly avg.	year avg.	%diff.	weight avg.	Column1	
90-01	6.1798			#N/A		
90-02	6.1077			#N/A		
90-03	6.1637			6.1504	Mean	6.731579762
90-04	6.1179			6.1298	Standard Error	0.090799623
90-05	6.0510			6.1109	Median	6.66195
90-06	6.0920			6.0870	Mode	#N/A
90-07	5.9512			6.0314	Standard Deviation	0.832192288
90-08	5.7737			5.9390	Sample Variance	0.692544004
90-09	5.6700			5.7983	Kurtosis	-1.152569469
90-10	5.6439			5.6959	Skewness	0.132411335
90-11	5.5641			5.6260	Range	3.0735
90-12	5.6135	5.938		5.6072	Minimum	5.2927
91-01	5.6402			5.6059	Maximum	8.3662
91-02	5.5339			5.5959	Sum	565.4527
91-03	5.8599			5.6780	Count	84
91-04	6.1221			5.8386	Confidence Level(95.000%)	0.177963727
91-05	6.1451			6.0424		
91-06	6.4238			6.2303		
91-07	6.4682			6.3457		
91-08	6.3367			6.4096		
91-09	6.1791			6.3280		
91-10	6.1604			6.2254		
91-11	5.9310			6.0902		
91-12	5.7692	6.047	1.85%	5.9535		
92-01	5.7509			5.8170		
92-02	5.8829			5.8010		
92-03	6.0259			5.8866		
92-04	5.9574			5.9554		
92-05	5.8340			5.9391		
92-06	5.6862			5.8259		
92-07	5.4000			5.6401		
92-08	5.2927			5.4596		
92-09	5.3658			5.3528		
92-10	5.5835			5.4140		
92-11	6.2255			5.7249		
92-12	6.8812	5.824	-3.70%	6.2301		
93-01	7.2485			6.7851		
93-02	7.5068			7.2122		
93-03	7.7396			7.4983		
93-04	7.4553			7.5672		
93-05	7.3327			7.5092		
93-06	7.4232			7.4037		
93-07	7.9687			7.5749		
93-08	8.0605			7.8175		
93-09	8.0197			8.0163		
93-10	8.0227			8.0343		
93-11	8.2571			8.0998		
93-12	8.3662	7.783	33.65%	8.2153		
94-01	8.1255			8.2496		
94-02	7.9749			8.1555		
94-03	7.9019			8.0008		
94-04	7.8779			7.9182		
94-05	7.7154			7.8317		
94-06	7.8131			7.8021		

94-07	7.7683			7.7656		
94-08	7.7417			7.7744		
94-09	7.5393			7.6831		
94-10	7.2668			7.5159		
94-11	7.3508			7.3856		
94-12	7.5162	7.716	-0.87%	7.3779		
95-01	7.4675			7.4448		
95-02	7.3845			7.4561		
95-03	7.2686			7.3735		
95-04	7.3409			7.3313		
95-05	7.2899			7.2998		
94-06	7.2577			7.2962		
95-07	7.1794			7.2423		
95-08	7.2269			7.2213		
95-09	7.1257			7.1773		
95-10	6.8347			7.0624		
95-11	6.5931			6.8512		
95-12	6.6303	7.133	-7.55%	6.6860		
96-01	6.7240			6.6491		
96-02	6.8781			6.7441		
96-03	6.7272			6.7764		
96-04	6.7271			6.7775		
96-05	6.7996			6.7513		
96-06	6.6814			6.7360		
96-07	6.6425			6.7078		
96-08	6.6178			6.6472		
96-09	6.6407			6.6337		
96-10	6.6003			6.6196		
96-11	6.6235			6.6215		
96-12	6.8144	6.706	-5.98%	6.6794		

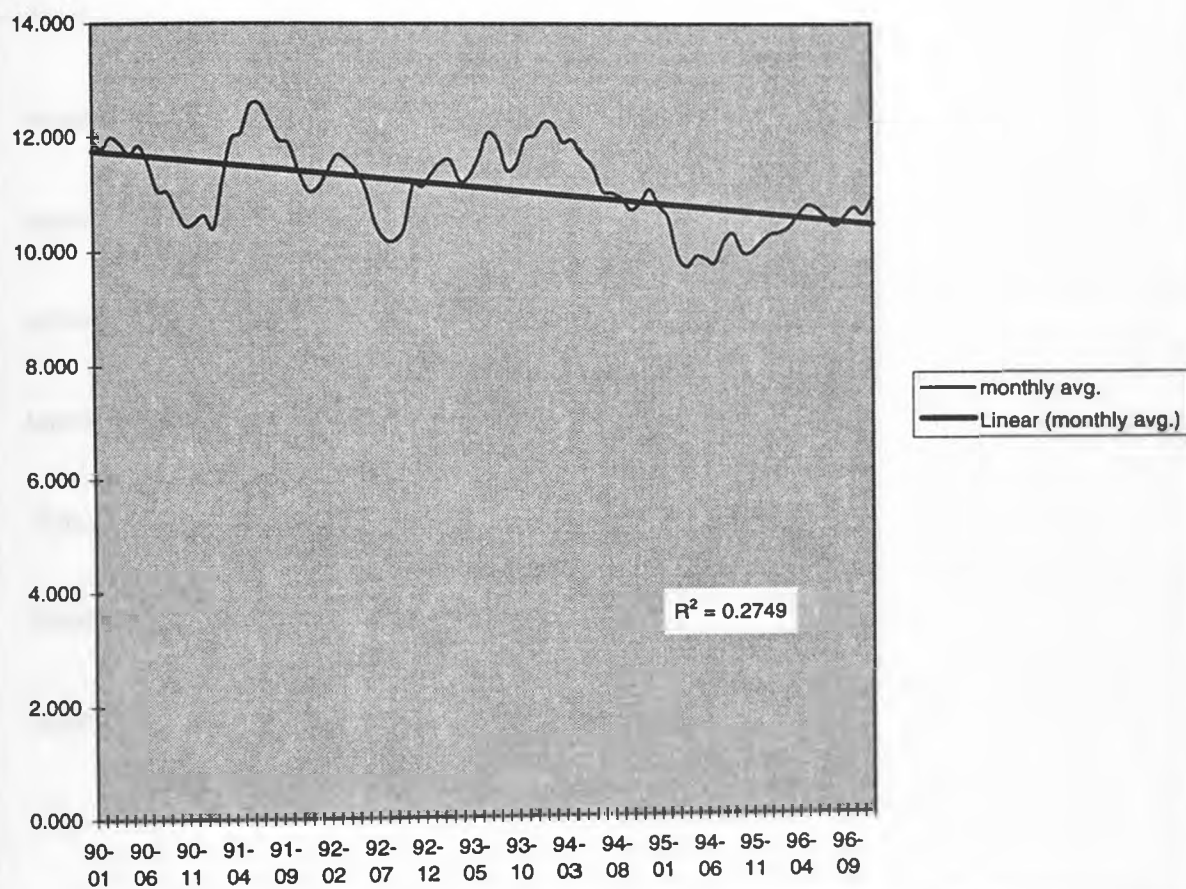
United Kingdom					
yr/mo	monthly avg.	year avg.	%diff.	weight avg.	
90-01	1.6515			#N/A	Column1
90-02	1.6960			#N/A	
90-03	1.6251			1.6575	Mean 1.641925
90-04	1.6367			1.6526	Standard Error 0.01557747
90-05	1.6784			1.6467	Median 1.5888
90-06	1.7081			1.6744	Mode #N/A
90-07	1.8068			1.7311	Standard Deviation 0.142769868
90-08	1.8982			1.8044	Sample Variance 0.020383235
90-09	1.8798			1.8616	Kurtosis -0.415527546
90-10	1.9451			1.9077	Skewness 0.846463016
90-11	1.9639			1.9296	Range 0.5281
90-12	1.9272	1.785		1.9454	Minimum 1.4376
91-01	1.9337			1.9416	Maximum 1.9657
91-02	1.9657			1.9422	Sum 137.9217
91-03	1.8310			1.9101	Count 84
91-04	1.7499			1.8489	Confidence Level(95.000%) 0.030531234
91-05	1.7263			1.7691	
91-06	1.6477			1.7080	
91-07	1.6480			1.6740	
91-08	1.6834			1.6597	
91-09	1.7237			1.6850	
91-10	1.7225			1.7099	
91-11	1.7775			1.7412	
91-12	1.8232	1.769	-0.86%	1.7744	
92-01	1.8120			1.8042	
92-02	1.7769			1.8040	
92-03	1.7245			1.7711	
92-04	1.7567			1.7527	
92-05	1.8106			1.7639	
92-06	1.8531			1.8068	
92-07	1.9190			1.8609	
92-08	1.9390			1.9037	
92-09	1.8571			1.9050	
92-10	1.6590			1.8184	
92-11	1.5266			1.6809	
92-12	1.5518	1.766	-0.22%	1.5791	
93-01	1.5321			1.5368	
93-02	1.4376			1.5072	
93-03	1.4605			1.4767	
93-04	1.5466			1.4816	
93-05	1.5484			1.5185	
93-06	1.5120			1.5357	
93-07	1.4968			1.5191	
93-08	1.4919			1.5002	
93-09	1.5242			1.5043	
93-10	1.5036			1.5066	
93-11	1.4807			1.5028	
93-12	1.4899	1.502	-14.92%	1.4914	
94-01	1.4927			1.4878	
94-02	1.4786			1.4871	
94-03	1.4908			1.4874	
94-04	1.4827			1.4840	
94-05	1.5029			1.4921	
94-06	1.5247			1.5034	

94-07	1.5452			1.5243		
94-08	1.5426			1.5375		
94-09	1.5636			1.5505		
94-10	1.6061			1.5708		
94-11	1.5897			1.5865		
94-12	1.5598	1.532	1.97%	1.5852		
95-01	1.5749			1.5748		
95-02	1.5717			1.5688		
95-03	1.6004			1.5823		
95-04	1.6085			1.5935		
95-05	1.5879			1.5989		
94-06	1.5948			1.5971		
95-07	1.5947			1.5925		
95-08	1.5696			1.5864		
95-09	1.5572			1.5738		
95-10	1.5788			1.5685		
95-11	1.5638			1.5666		
95-12	1.5392	1.578	3.06%	1.5606		
96-01	1.5303			1.5444		
96-02	1.5361			1.5352		
96-03	1.5272			1.5312		
96-04	1.5153			1.5262		
96-05	1.5145			1.5190		
96-06	1.5423			1.5240		
96-07	1.5536			1.5368		
96-08	1.5497			1.5485		
96-09	1.5592			1.5542		
96-10	1.5852			1.5647		
96-11	1.6629			1.6024		
96-12	1.6645	1.562	-1.06%	1.6375		

APPENDIX B

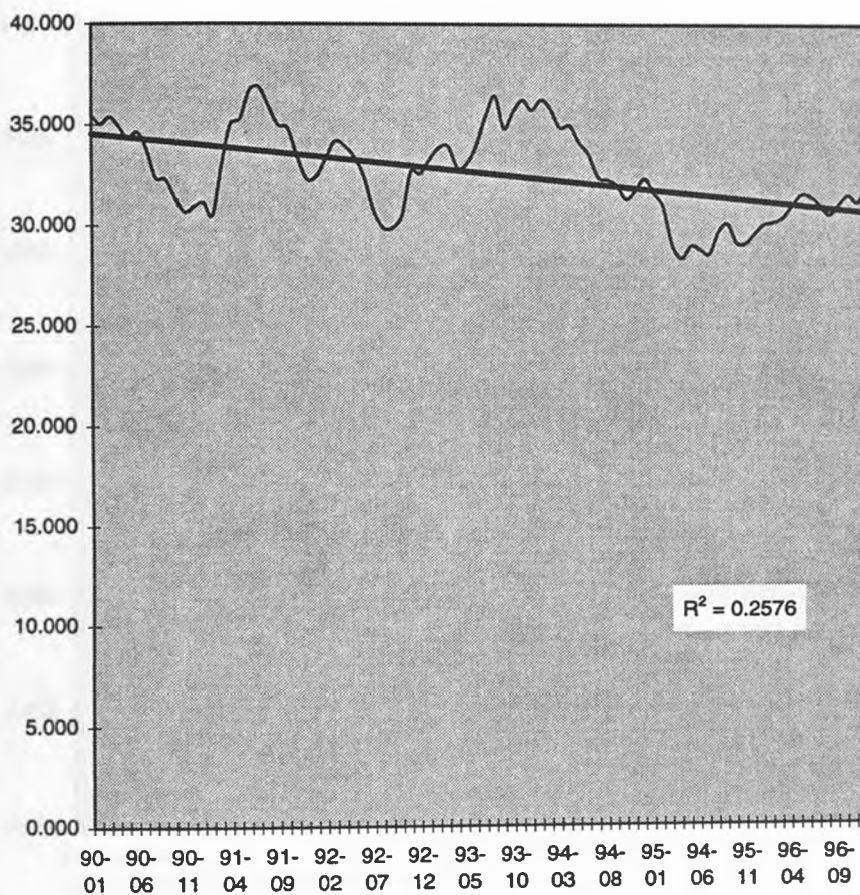
Shilling vs. Dollar (1990-1996)

Austria's Shilling



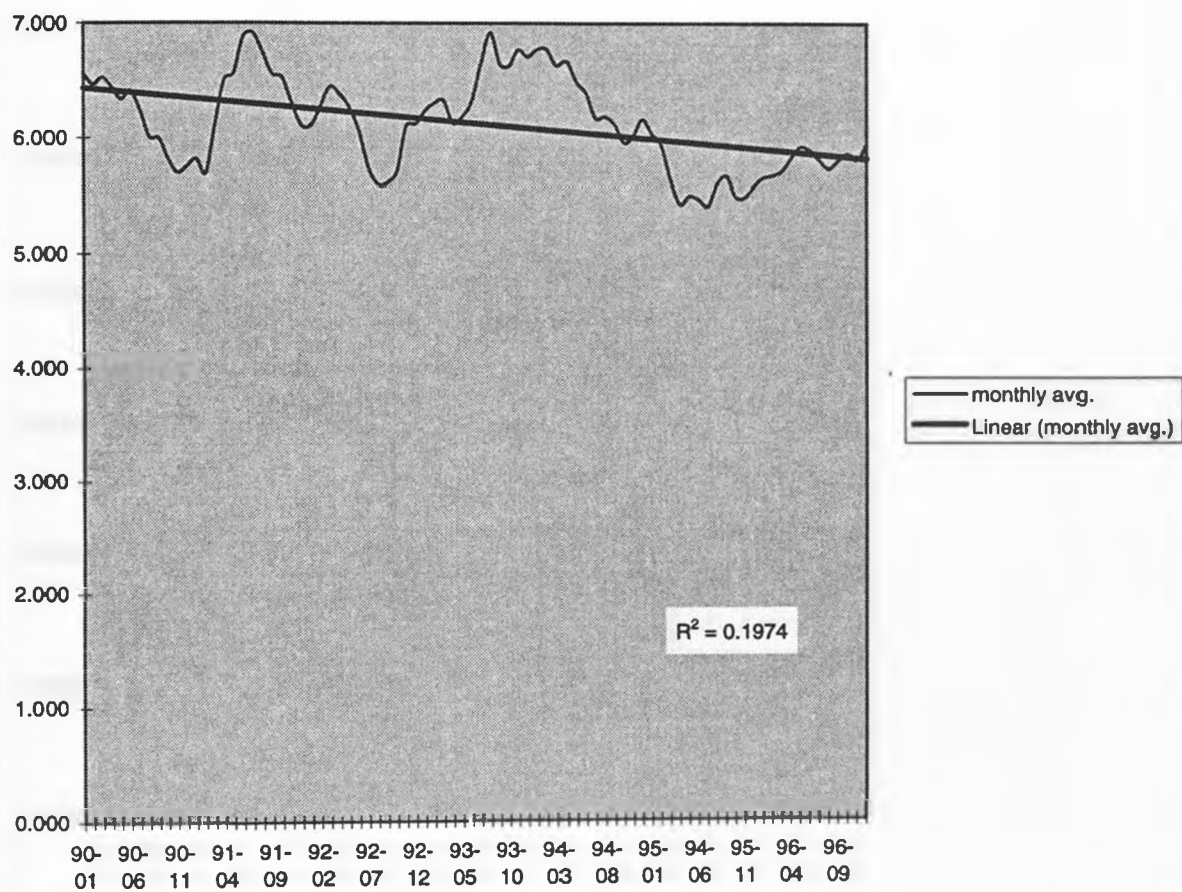
Belgian Franc vs. Dollar (1990-1996)

Belgium's Franc



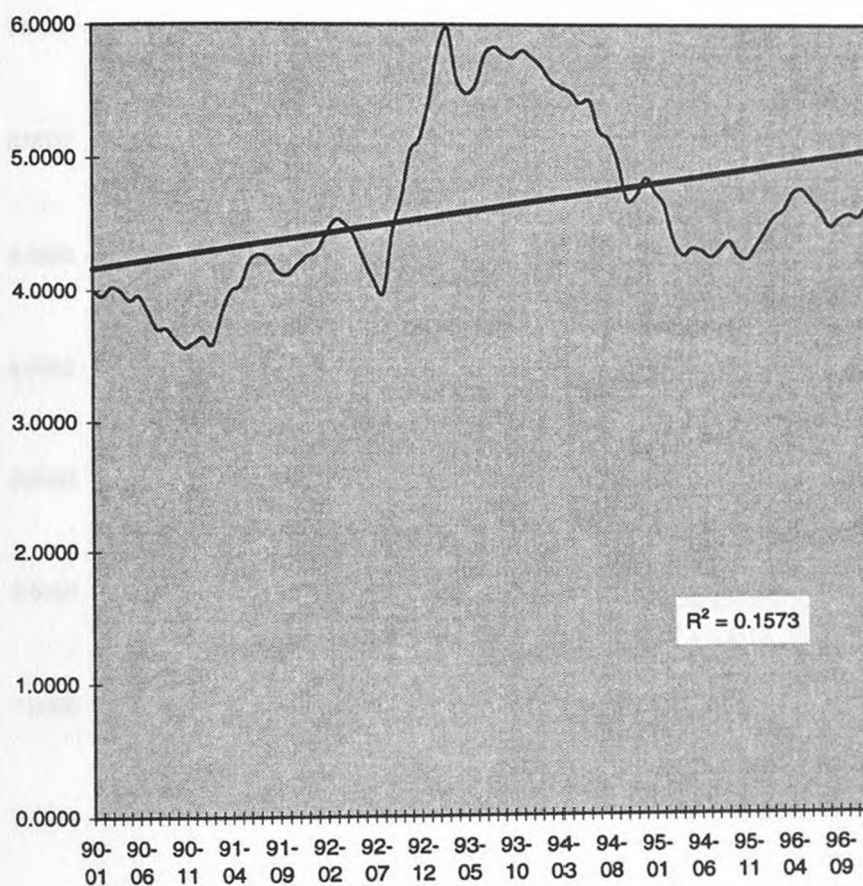
Kroner vs. Dollar(1990-1996)

Denmark's Kroner



Markkaa vs. Dollar (1990-1996)

Finland's Markkaa

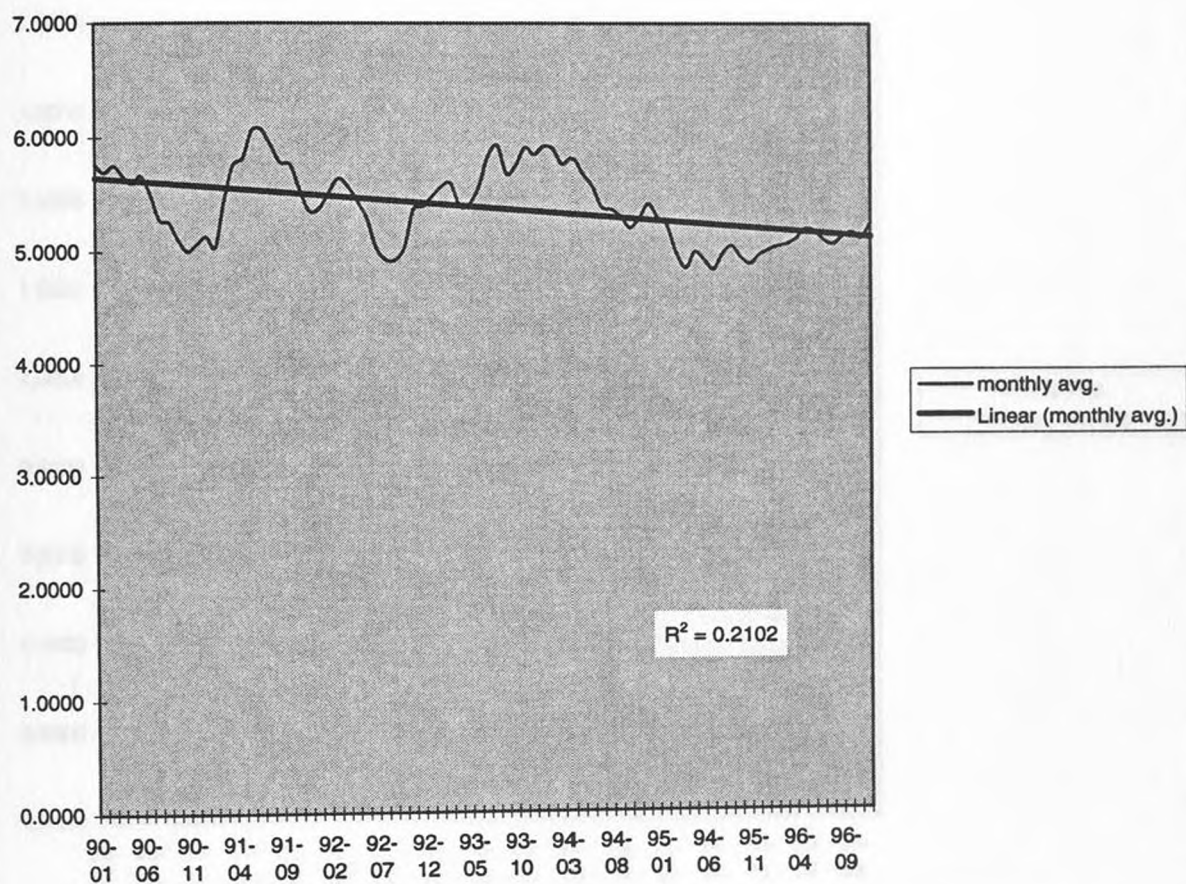


— monthly avg.
— Linear (monthly avg.)

$R^2 = 0.1573$

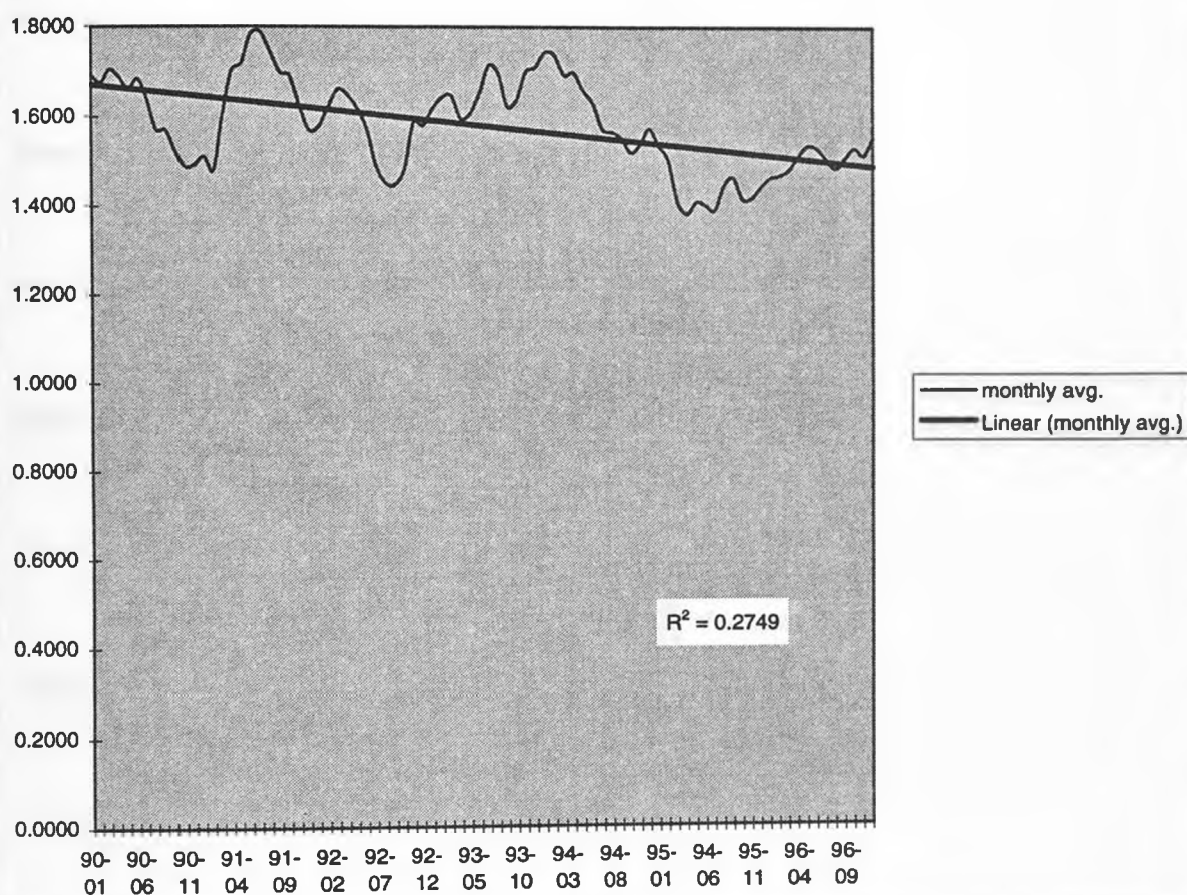
Franc vs. Dollar(1990-1996)

France's Franc



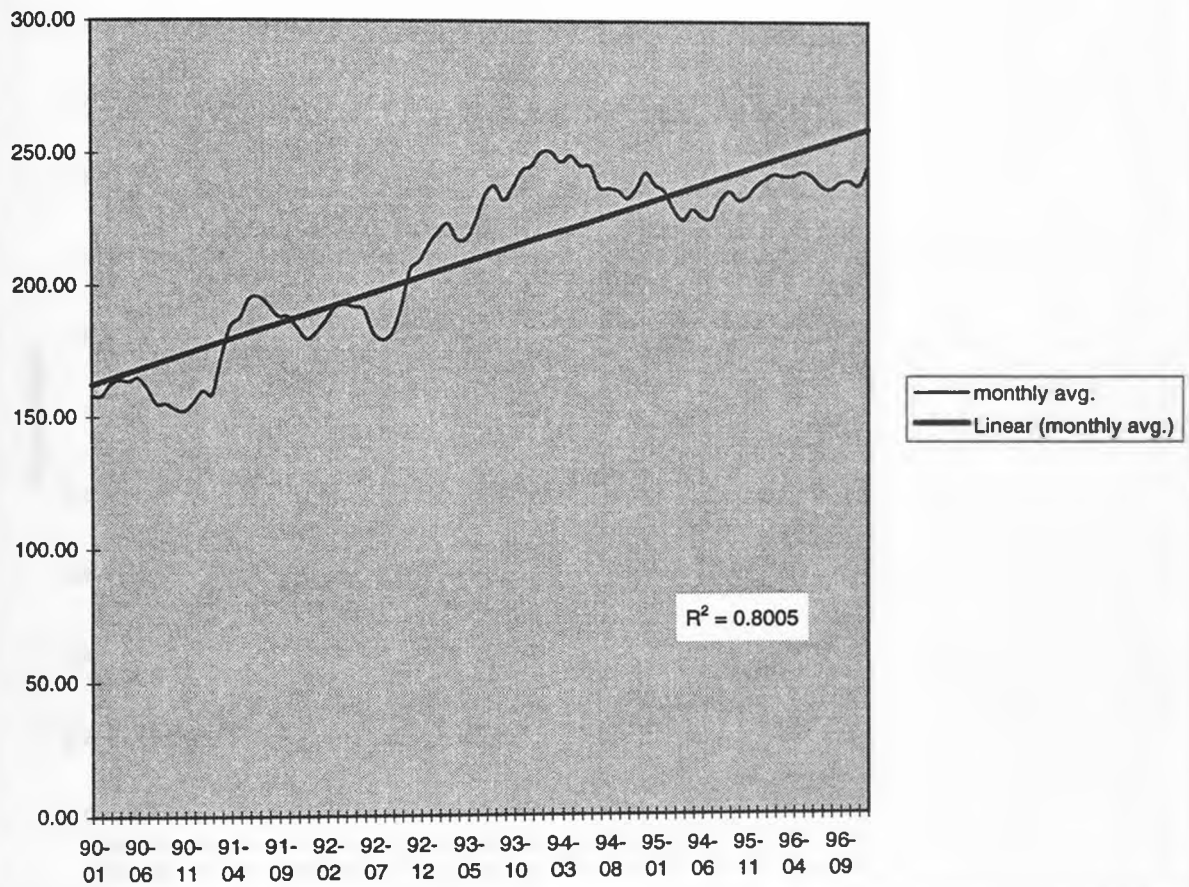
D-Mark vs. Dollar (1990-1996)

Germany's D-Mark



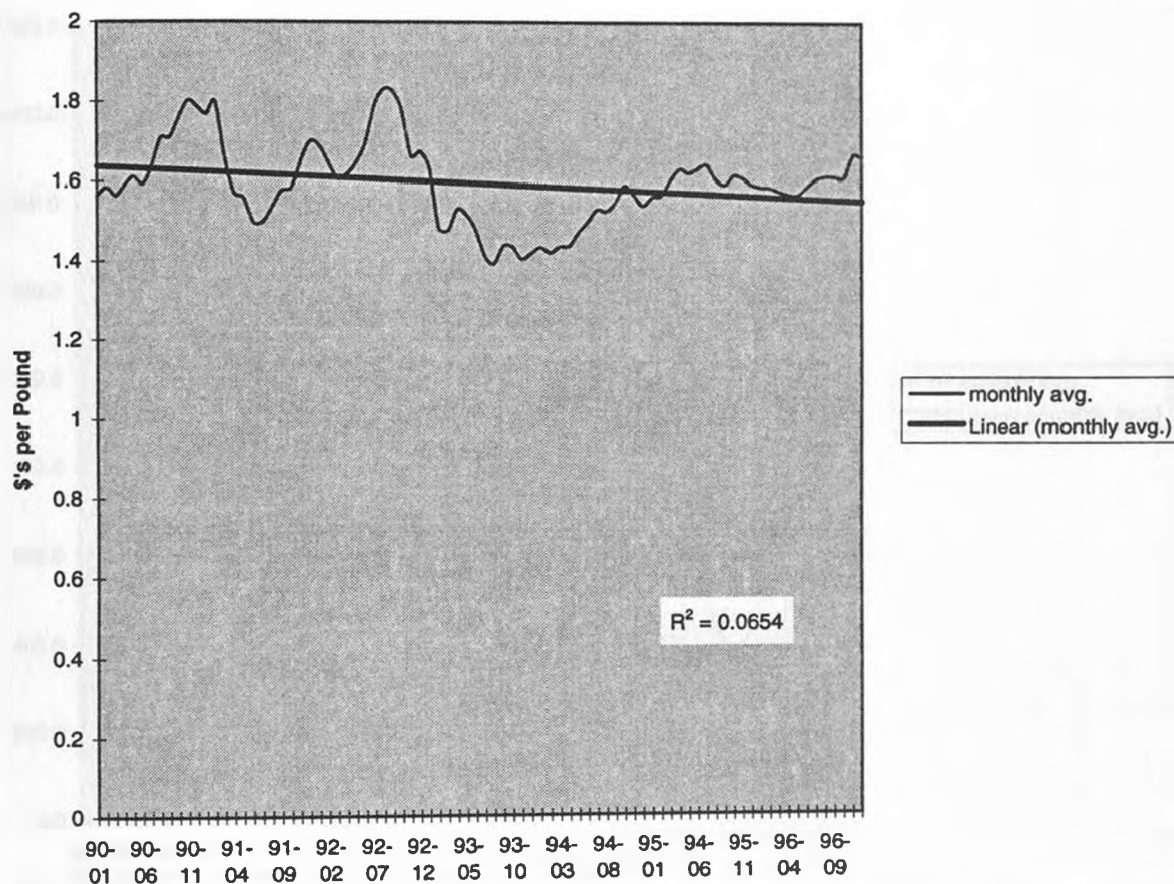
Drachma vs. Dollar (1990-1996)

Greece's Drachma



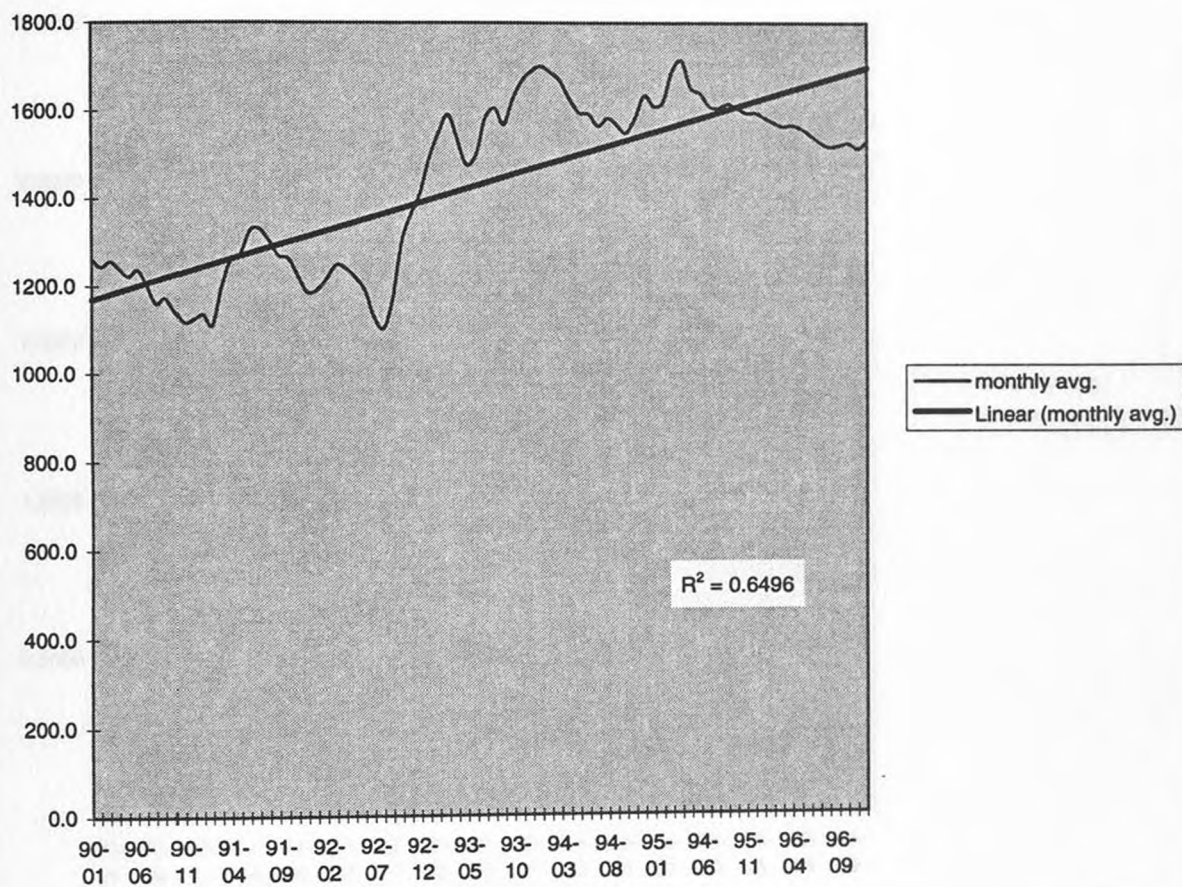
Dollar vs. Irish Pound (1990-1996)

Ireland's Pound



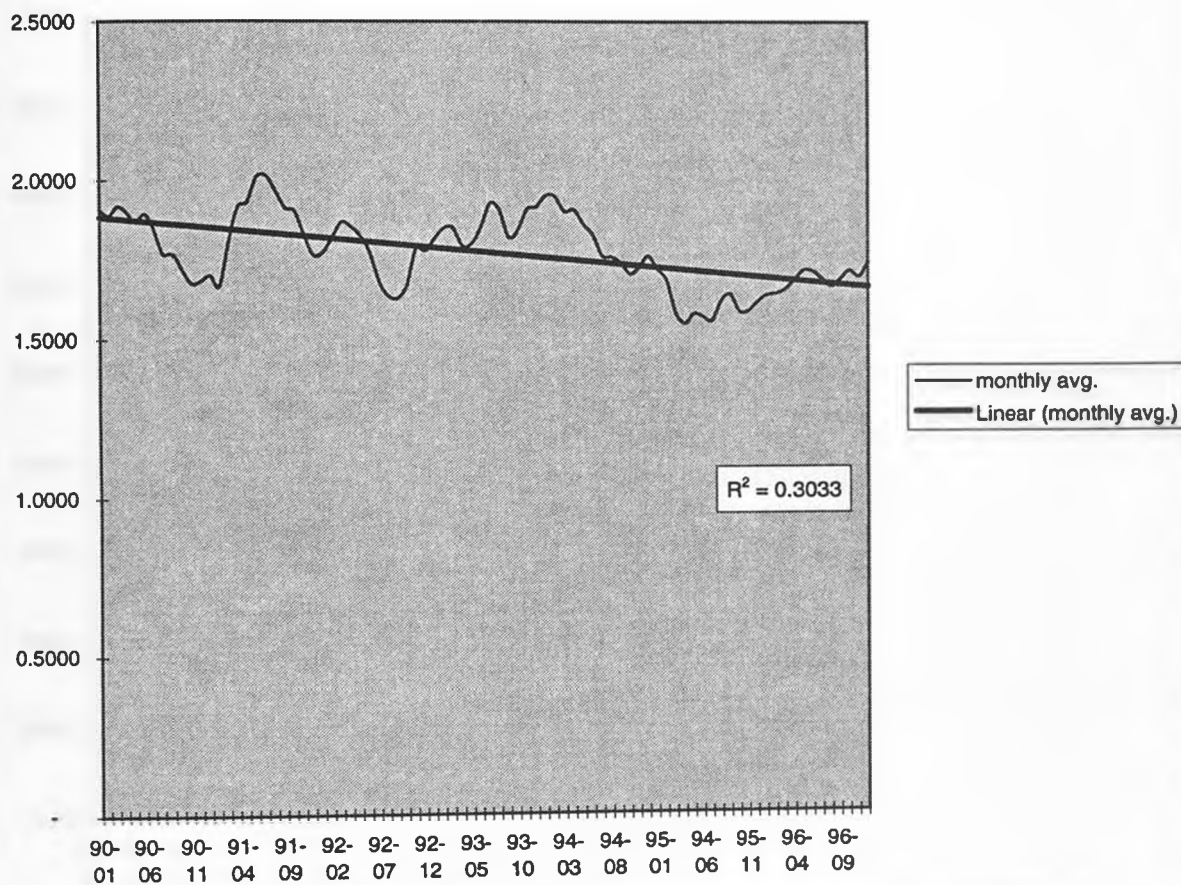
Lira vs. Dollar (1990-1996)

Italy's Lira



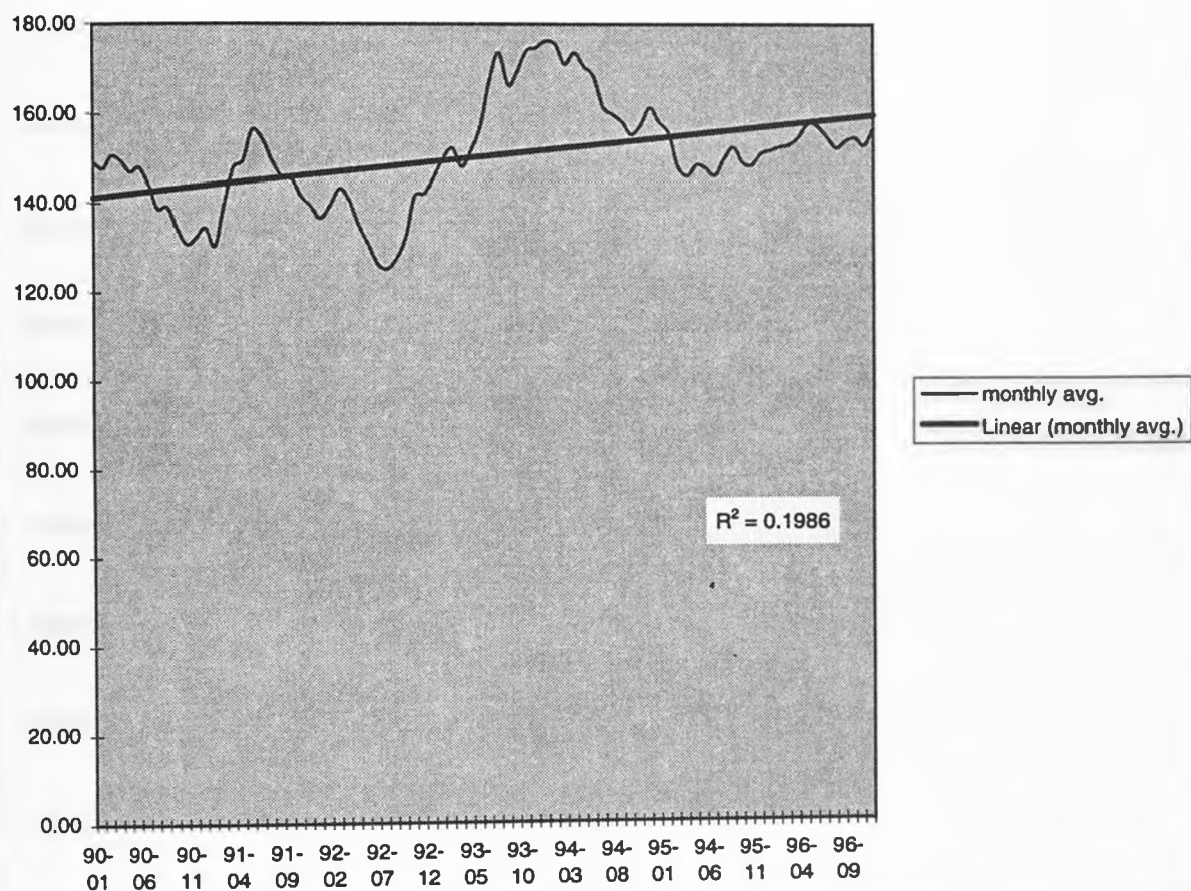
Guilder vs. Dollar (1990-1996)

Netherland's Guilder



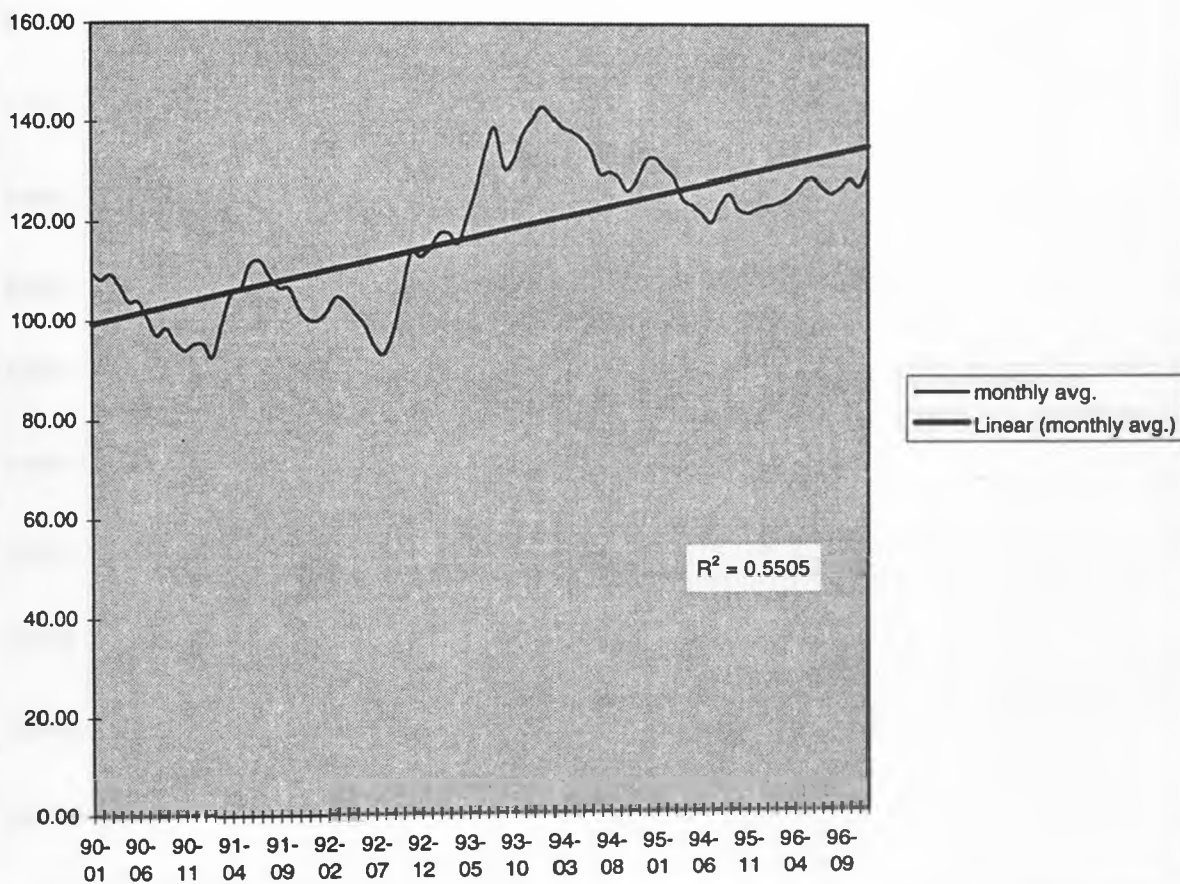
Escudo vs. Dollar (1990-1996)

Portugal's Escudo



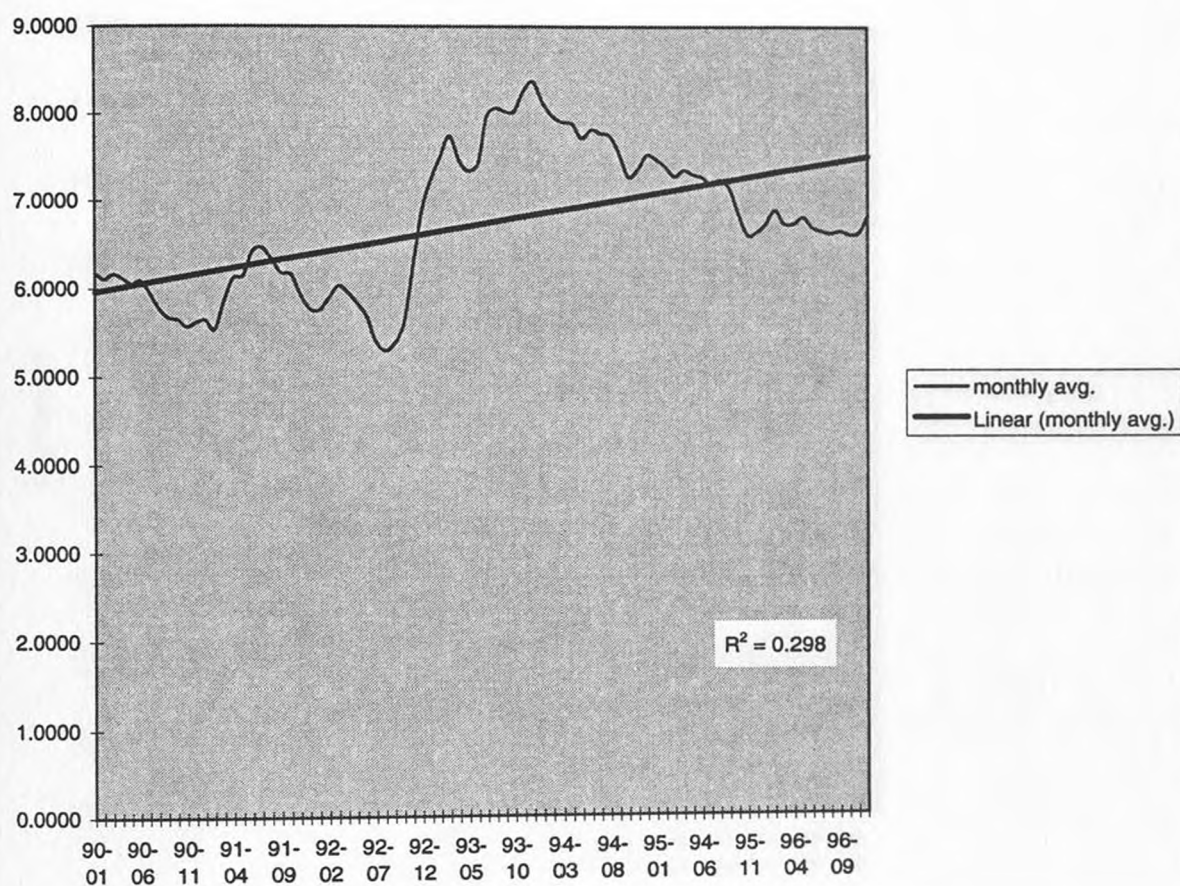
Peseta vs. Dollar (1990-1996)

Spain's Peseta

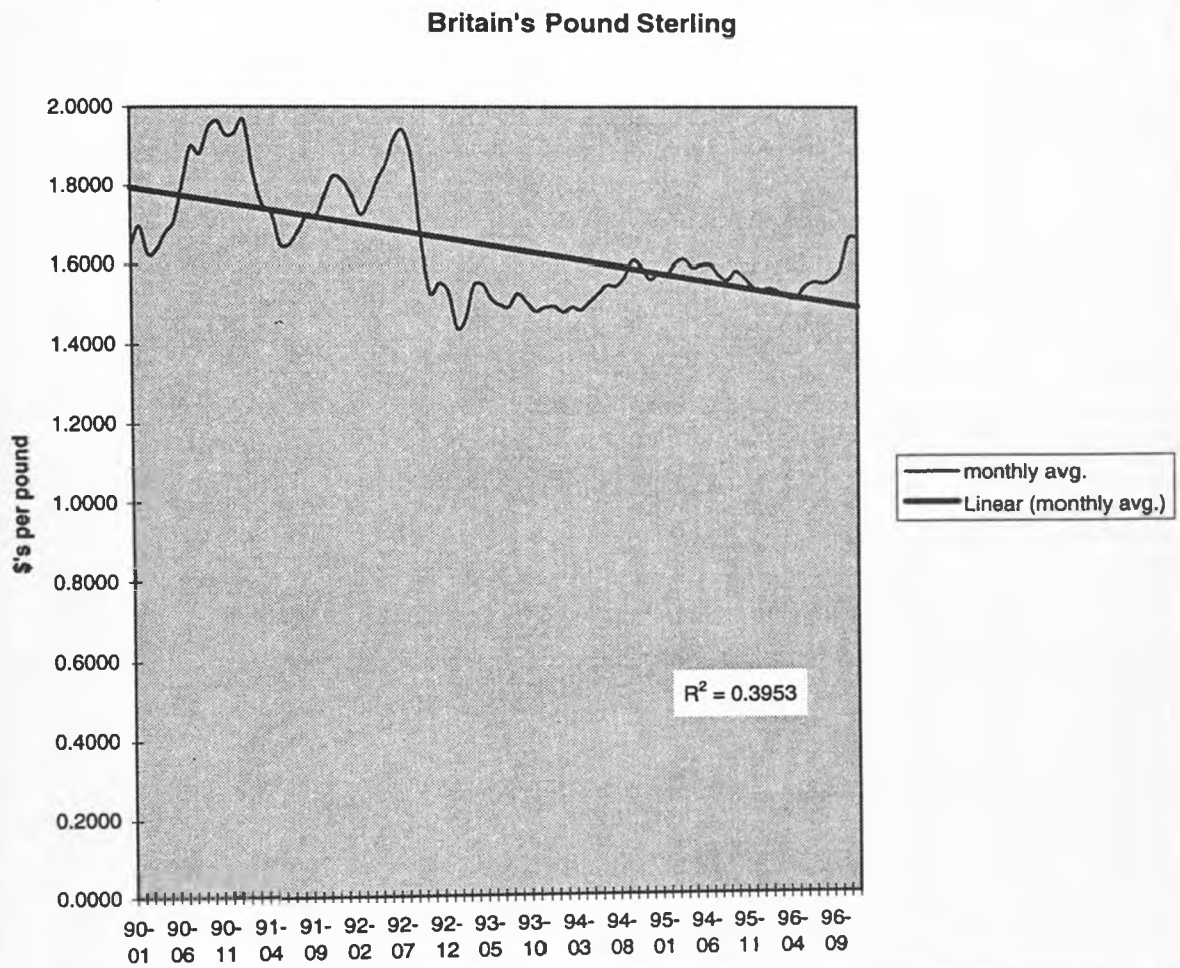


Krona vs. Dollar (1990-1996)

Sweden's Krona



Dollar vs. British Pound (1990-1996)



APPENDIX C

Austria	Commodity Exports from US to Austria (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	2009047	2016895	1372596	1325660	1257332	1054863				
(2) Edible fruits	6069	6284	4874	5070	4972	4080				
(3) Beverages	1722	2819	1686	1912	1532	1607				
(4) Tobacco	14973	10250	18733	11542	7429	12892				
(5) Pharmaceuticals	106381	91209	73089	86819	53495	75234				
(6) Wood Pulp	13044	8553	6514	7417	10305	8442				
(7) Electric Machines	158604	168704	144256	130615	107339	108970				
(8) Vehicles	862391	800651	410398	325829	252005	73663				
(9) Aircraft	22837	108136	18180	90231	184082	109548				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		19.19%	5.43%	3.54%	46.94%	-0.39%				
(2) Edible fruits		21.86%	1.97%	-3.87%	28.93%	-3.42%				
(3) Beverages		-4.67%	24.80%	-11.82%	67.20%	-38.91%				
(4) Tobacco		-42.38%	55.36%	62.30%	-45.28%	46.08%				
(5) Pharmaceuticals		-28.90%	62.29%	-15.81%	24.79%	16.63%				
(6) Wood Pulp		22.07%	-28.03%	-12.17%	31.30%	52.51%				
(7) Electric Machines		-1.50%	21.68%	10.44%	16.95%	-5.99%				
(8) Vehicles		242.11%	29.29%	25.96%	95.09%	7.71%				
(9) Aircraft		68.04%	-50.98%	-79.85%	494.81%	-78.88%				
(10) %change E.R. YrB4		-5.88%	5.85%	-1.81%	-11.73%	5.01%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.9281409	1								
(3) Beverages	0.8391824	0.703621	1							
(4) Tobacco	-0.851384	-0.972139	-0.519874	1						
(5) Pharmaceuticals	0.0011993	-0.147857	0.4223874	0.3124438	1					
(6) Wood Pulp	0.2742809	0.3013446	-0.202825	-0.456309	-0.279665	1				
(7) Electric Machines	0.3306326	0.1415445	0.7789729	0.0930232	0.6234969	-0.708948	1			
(8) Vehicles	0.4525561	0.7361612	0.157077	-0.815464	-0.564098	0.1843561	-0.2674022	1		
(9) Aircraft	0.9883807	0.8743775	0.8359599	-0.792885	0.0826872	0.3306785	0.33522727	0.3291068	1	
(10) %change E.R. YrB4	-0.892028	-0.858175	-0.605659	0.8407407	0.4283307	-0.270844	-0.11644393	-0.59073033	-0.84643867	1

Belgium	Commodity Exports from US to Belgium (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	12519854	12459150	10944196	8876342	9778904	10573899				
(2) Edible fruits	55880	52186	36947	31529	28432	28981				
(3) Beverages	25367	29382	14827	11919	14739	18302				
(4) Tobacco	1394999	1597447	1714853	999176	1121562	1254548				
(5) Pharmaceuticals	277214	225496	166867	142510	117499	99578				
(6) Wood Pulp	66983	146540	69132	69988	74638	71380				
(7) Electric Machines	533812	511463	487711	402033	407799	380114				
(8) Vehicles	814714	869291	651547	521101	580169	759294				
(9) Aircraft	388524	203201	257436	208624	315502	723793				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		-7.52%	-9.23%	23.30%	13.84%	0.49%				
(2) Edible fruits		-1.89%	10.89%	17.18%	41.25%	7.08%				
(3) Beverages		-19.47%	-19.13%	24.40%	98.17%	-13.66%				
(4) Tobacco		-10.60%	-10.91%	71.63%	-6.85%	-12.67%				
(5) Pharmaceuticals		18.00%	21.29%	17.09%	35.14%	22.94%				
(6) Wood Pulp		4.56%	-6.23%	-1.22%	111.97%	-54.29%				
(7) Electric Machines		7.28%	-1.41%	21.31%	4.87%	4.37%				
(8) Vehicles		-23.59%	-10.18%	25.03%	33.42%	-6.28%				
(9) Aircraft		-56.41%	-33.88%	23.40%	-21.07%	91.20%				
(10) %change E.R. YrB4		-5.85%	7.61%	-3.30%	-11.89%	5.03%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.63166038	1								
(3) Beverages	0.6881741	0.960509348	1							
(4) Tobacco	0.7862583	0.127390428	0.166702635	1						
(5) Pharmaceuticals	0.21135241	0.843134754	0.811164973	-0.404706	1					
(6) Wood Pulp	0.37546379	0.834677592	0.889056739	-0.0537244	0.7694624	1				
(7) Electric Machines	0.78253041	0.047385006	0.18238045	0.92821697	-0.395519	-0.03624841	1			
(8) Vehicles	0.90367504	0.897823383	0.88939469	0.52924605	0.559963	0.6388289	0.45721237	1		
(9) Aircraft	0.31127709	-0.034691439	-0.088529725	0.18816723	-0.034957	-0.51981352	0.20630045	0.17091537	1	
(10) %change E.R. YrB4	-0.5125775	-0.562076469	-0.762752744	-0.1605832	-0.473941	-0.80965838	-0.36361196	-0.53916303	0.38014099	1

Denmark	Commodity Exports from US to Denmark (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	1729690	1517499	1215279	1091939	1476518	1572310				
(2) Edible fruits	33746	30173	23071	23012	22402	19104				
(3) Beverages	9482	5299	4056	7513	11355	5138				
(4) Tobacco	40282	38623	37791	39354	38671	36862				
(5) Pharmaceuticals	20039	11060	20152	19691	16767	13649				
(6) Wood Pulp	2729	4920	2754	2117	4695	3042				
(7) Electric Machines	200312	197451	200893	169424	159241	161883				
(8) Vehicles	35246	33788	251134	19947	27141	39043				
(9) Aircraft	278469	204469	148803	60089	299900	435476				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		-6.09%	-26.05%	11.30%	24.87%	13.98%				
(2) Edible fruits		17.26%	2.72%	0.26%	30.78%	11.84%				
(3) Beverages		121.00%	-33.84%	-46.01%	30.65%	78.94%				
(4) Tobacco		4.91%	1.77%	-3.97%	2.20%	4.30%				
(5) Pharmaceuticals		22.84%	17.44%	2.34%	-45.12%	81.18%				
(6) Wood Pulp		54.34%	-54.91%	30.09%	78.65%	-44.53%				
(7) Electric Machines		-1.63%	6.39%	18.57%	-1.71%	1.45%				
(8) Vehicles		-30.48%	-26.51%	1159.01%	-86.55%	4.32%				
(9) Aircraft		-31.13%	-79.96%	147.64%	37.41%	36.19%				
(10) %change E.R. YrB4		-5.63%	7.42%	-1.90%	-11.92%	3.51%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.54247	1								
(3) Beverages	0.165704	0.5593494	1							
(4) Tobacco	-0.139424	0.5303824	0.8405199	1						
(5) Pharmaceuticals	-0.231413	-0.437758	0.3633573	0.37403871	1					
(6) Wood Pulp	0.534208	0.6451906	0.2354652	-0.10145386	-0.722196	1				
(7) Electric Machines	-0.077287	-0.797228	-0.783494	-0.92814182	-0.032851	-0.18494	1			
(8) Vehicles	0.192162	-0.599106	-0.581793	-0.91119189	-0.105579	0.1151442	0.92990357	1		
(9) Aircraft	0.727299	-0.123916	-0.291712	-0.70117238	-0.144191	0.345381	0.60594176	0.80971671	1	
(10) %change E.R. YrB4	-0.655822	-0.793723	-0.311032	-0.02316256	0.6928711	-0.969982	0.33513933	0.03433295	-0.31868533	1

Finland	Commodity Exports from US to Finland (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	2438318	1248425	1069177	847107	786686	950791				
(2) Edible fruits	16019	12479	19173	13315	13883	14978				
(3) Beverages	3999	3647	4505	7266	2111	1701				
(4) Tobacco	81002	70673	68998	20919	23314	27365				
(5) Pharmaceuticals	7015	7828	10802	6958	9218	7225				
(6) Wood Pulp	477	2021	2235	1027	5356	1624				
(7) Electric Machines	175396	189957	139075	113095	96635	82234				
(8) Vehicles	103437	69801	67167	53349	56909	59905				
(9) Aircraft	1185881	122185	160821	131278	60771	191068				
	%change from previous year									
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		-17.26%	7.68%	26.22%	16.77%	95.31%				
(2) Edible fruits		-7.31%	-4.09%	44.00%	-34.91%	28.37%				
(3) Beverages		24.10%	244.20%	-38.00%	-19.05%	9.65%				
(4) Tobacco		-14.80%	-10.27%	229.83%	2.43%	14.62%				
(5) Pharmaceuticals		27.58%	-24.52%	55.25%	-27.53%	-10.39%				
(6) Wood Pulp		229.80%	-80.83%	117.62%	-9.57%	-76.40%				
(7) Electric Machines		17.51%	17.03%	22.97%	36.59%	-7.67%				
(8) Vehicles		-5.00%	-6.26%	25.90%	3.92%	48.19%				
(9) Aircraft		-68.19%	116.02%	22.50%	-24.02%	870.56%				
(10) %change E.R. YrB4		10.77%	27.52%	-8.56%	-16.40%	5.20%				
Correlation Function										
	<i>Row 1</i>	<i>Row 2</i>	<i>Row 3</i>	<i>Row 4</i>	<i>Row 5</i>	<i>Row 6</i>	<i>Row 7</i>	<i>Row 8</i>	<i>Row 9</i>	<i>Row 10</i>
(1) All Commodities	1									
(2) Edible fruits	0.5128926	1								
(3) Beverages	-0.239837	-0.214262	1							
(4) Tobacco	0.1095718	0.7248151	-0.446265	1						
(5) Pharmaceuticals	-0.196394	0.6423639	-0.478853	0.7591279	1					
(6) Wood Pulp	-0.599069	0.0625584	-0.441308	0.2723792	0.7795156	1				
(7) Electric Machines	-0.707931	-0.566015	-0.120132	0.1477151	0.0234981	0.285135	1			
(8) Vehicles	0.9296495	0.7150844	-0.485786	0.3944758	0.1679903	-0.29626	-0.65397845	1		
(9) Aircraft	0.9375092	0.4471222	-0.032571	-0.141377	-0.277355	-0.579376	-0.8836561	0.81804025	1	
(10) %change E.R. YrB4	-0.157734	0.0260209	0.8736431	-0.446996	-0.21401	-0.180468	-0.45478856	-0.31799109	0.14170682	1

France	Commodity Exports from US to France (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	14427810	14240535	13622257	13266711	14574859	15365409				
(2) Edible fruits	88320	86992	73584	69523	66457	67700				
(3) Beverages	27500	21122	18947	18718	17908	16995				
(4) Tobacco	11124	14543	10312	12314	12232	22287				
(5) Pharmaceuticals	242031	204359	173180	172178	185123	128663				
(6) Wood Pulp	199310	275378	150695	116598	189611	189571				
(7) Electric Machines	1530831	1568034	1371485	1228507	1156311	1334295				
(8) Vehicles	342082	351650	307496	274894	413264	391549				
(9) Aircraft	953752	195724	1197035	1458117	1667475	2133566				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		-5.14%	-8.98%	2.68%	4.54%	1.32%				
(2) Edible fruits		-1.84%	4.61%	5.84%	18.22%	1.53%				
(3) Beverages		5.37%	4.52%	1.22%	11.48%	30.20%				
(4) Tobacco		-45.12%	0.67%	-16.26%	41.03%	-23.51%				
(5) Pharmaceuticals		43.88%	-6.99%	0.58%	18.00%	18.43%				
(6) Wood Pulp		0.02%	-38.51%	29.24%	82.74%	-27.62%				
(7) Electric Machines		-13.34%	6.24%	11.64%	14.33%	-2.37%				
(8) Vehicles		5.55%	-33.48%	11.86%	14.36%	-2.72%				
(9) Aircraft		-21.85%	-12.56%	-17.91%	-83.65%	387.29%				
(10) %change E.R. YrB4		-6.17%	6.98%	-1.96%	-10.10%	2.48%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.57547761	1								
(3) Beverages	0.32453748	-0.0739224	1							
(4) Tobacco	0.3931798	0.96386622	-0.0281991	1						
(5) Pharmaceuticals	0.06034106	-0.2879645	0.20603771	-0.4139387	1					
(6) Wood Pulp	0.73093985	0.8057461	-0.2241619	0.62534191	0.15360236	1				
(7) Electric Machines	0.48209321	0.82958233	-0.211472	0.8265039	-0.7348446	0.544794522	1			
(8) Vehicles	0.81463786	0.31713602	0.02493712	0.05970954	0.49759637	0.777264492	0.09365504	1		
(9) Aircraft	0.13503493	-0.4271703	0.89260321	-0.3698941	0.06917578	-0.5366382	-0.34217027	-0.13164388	1	
(10) %change E.R. YrB4	-0.57271047	-0.4768914	0.15159269	-0.2672537	-0.6143795	-0.86998204	-0.06092188	-0.85872393	0.45102384	1

Germany	Commodity Exports from US to Germany (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	23473943	22376432	19236883	18956904	21235853	21315793				
(2) Edible fruits	312219	291662	219004	213224	192311	187033				
(3) Beverages	79992	55606	50964	61175	47005	36535				
(4) Tobacco	238736	303036	223840	195994	315391	262506				
(5) Pharmaceuticals	578941	438727	437968	388974	343436	281297				
(6) Wood Pulp	260355	306804	216052	187862	276944	224233				
(7) Electric Machines	2590399	2802034	2367974	2213186	2128709	2118282				
(8) Vehicles	2309151	1839943	1687850	1789296	2015973	1690380				
(9) Aircraft	1234419	1027070	994398	1201562	2310748	2883450				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		-0.38%	-10.73%	1.48%	16.32%	4.90%				
(2) Edible fruits		2.82%	10.87%	2.71%	33.18%	7.05%				
(3) Beverages		28.66%	30.15%	-16.69%	9.11%	43.85%				
(4) Tobacco		20.15%	-37.86%	14.21%	35.38%	-21.22%				
(5) Pharmaceuticals		22.09%	13.26%	12.60%	0.17%	31.96%				
(6) Wood Pulp		23.51%	-32.17%	15.01%	42.00%	-15.14%				
(7) Electric Machines		0.49%	3.97%	6.99%	18.33%	-7.55%				
(8) Vehicles		19.26%	-11.24%	-5.67%	9.01%	25.50%				
(9) Aircraft		-19.86%	-48.00%	-17.24%	3.29%	20.19%				
(10) %change E.R. YrB4		-5.90%	5.87%	-1.85%	-11.69%	5.00%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.66886617	1								
(3) Beverages	-0.23516789	-0.0857667	1							
(4) Tobacco	0.72934707	0.37982399	-0.56257649	1						
(5) Pharmaceuticals	-0.34186346	-0.72484888	0.63157687	-0.49870085	1					
(6) Wood Pulp	0.76386043	0.44006477	-0.51879069	0.99696336	-0.51222584	1				
(7) Electric Machines	0.48152571	0.76321708	-0.64029109	0.6233318	-0.98595681	0.6393855	1			
(8) Vehicles	0.47515318	-0.02770332	0.54626385	0.22533319	0.57861458	0.25324937	-0.44647021	1		
(9) Aircraft	0.78819311	0.24852737	0.14821632	0.31545954	0.2788741	0.34363264	-0.14243999	0.77359764	1	
(10) %change E.R. YrB4	-0.72556234	-0.56793639	0.4517161	-0.96108463	0.62429518	-0.97479328	-0.73521813	-0.17978581	-0.23020679	1

Greece	Commodity Exports from US to Greece (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	819900	1518933	829854	883917	896468	1036239				
(2) Edible fruits	9682	8549	8562	3205	12206	5522				
(3) Beverages	7944	6172	9068	8112	6381	5199				
(4) Tobacco	5654	2425	640	3080	2443	11528				
(5) Pharmaceuticals	17551	16182	22462	16222	12965	12562				
(6) Wood Pulp	10732	18146	12317	6143	13240	18238				
(7) Electric Machines	58999	76701	60484	87128	60418	54283				
(8) Vehicles	37980	42430	23427	29793	69714	53661				
(9) Aircraft	65795	564162	77444	122095	73616	289331				
	%change from previous year									
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		-13.49%	-1.40%	-6.12%	83.04%	-46.02%				
(2) Edible fruits		121.04%	-73.74%	167.15%	-0.15%	13.25%				
(3) Beverages		22.74%	27.13%	11.79%	-31.94%	28.71%				
(4) Tobacco		-78.81%	26.07%	-79.22%	278.91%	133.15%				
(5) Pharmaceuticals		3.21%	25.12%	38.47%	-27.96%	8.46%				
(6) Wood Pulp		-27.40%	-53.60%	100.50%	47.32%	-40.86%				
(7) Electric Machines		11.30%	44.21%	-30.58%	26.81%	-23.08%				
(8) Vehicles		29.92%	-57.26%	-21.37%	81.12%	-10.49%				
(9) Aircraft		-74.56%	65.85%	-36.57%	628.48%	-88.34%				
(10) %change E.R. YrB4		4.59%	20.26%	5.82%	-4.49%	3.88%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	-0.209352	1								
(3) Beverages	-0.945225	0.0455658	1							
(4) Tobacco	0.6038296	-0.602244	-0.67332	1						
(5) Pharmaceuticals	-0.659333	0.2995244	0.7050628	-0.780609	1					
(6) Wood Pulp	0.4383489	0.610221	-0.58053	-0.022206	0.07777	1				
(7) Electric Machines	0.5162467	-0.69143	-0.234139	0.28069	-0.386735	-0.435381	1			
(8) Vehicles	0.6850904	0.1515641	-0.798144	0.5522398	-0.88785	0.3036496	0.110685	1		
(9) Aircraft	0.9638381	-0.372473	-0.941033	0.7939972	-0.757009	0.3205451	0.49704488	0.69546392	1	
(10) %change E.R. YrB4	-0.451307	-0.368311	0.6927719	-0.497626	0.6913329	-0.487717	0.33800218	-0.8886154	-0.49606018	1

Ireland	Commodity Exports from US to Ireland (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	3659636	4094806	3415484	2730757	2853062	2683001				
(2) Edible fruits	2547	3034	2184	1600	3371	2888				
(3) Beverages	15678	12471	10080	2999	2006	943				
(4) Tobacco	1739	8094	3940	6666	5398	11333				
(5) Pharmaceuticals	85379	106745	144680	110855	95743	117520				
(6) Wood Pulp	3298	4182	2900	1922	2258	2731				
(7) Electric Machines	645511	759972	632044	494719	358455	320999				
(8) Vehicles	6158	6348	7239	7057	4119	3700				
(9) Aircraft	70651	137922	79659	103917	392369	297530				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		6.34%	-4.29%	25.07%	19.89%	-10.63%				
(2) Edible fruits		16.72%	-52.54%	36.50%	38.92%	-16.05%				
(3) Beverages		112.73%	49.50%	236.11%	23.72%	25.72%				
(4) Tobacco		-52.37%	23.49%	-40.89%	105.43%	-78.51%				
(5) Pharmaceuticals		-18.53%	15.78%	30.51%	-26.22%	-20.02%				
(6) Wood Pulp		-17.32%	-14.88%	50.88%	44.21%	-21.14%				
(7) Electric Machines		11.67%	38.01%	27.76%	20.24%	-15.06%				
(8) Vehicles		11.32%	71.33%	2.58%	-12.31%	-2.99%				
(9) Aircraft		31.88%	-73.52%	-23.34%	73.14%	-48.77%				
(10) %change E.R. YrB4		-5.22%	16.23%	-2.07%	-6.62%	0.19%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.852171	1								
(3) Beverages	0.6157506	0.4534484	1							
(4) Tobacco	0.3955498	0.1708468	-0.380631	1						
(5) Pharmaceuticals	0.2635879	-0.16276	0.710659	-0.168604	1					
(6) Wood Pulp	0.9258868	0.7547515	0.4736741	0.4850095	0.2916643	1				
(7) Electric Machines	0.4623756	-0.047471	0.3390924	0.5321884	0.6431432	0.4034469	1			
(8) Vehicles	-0.4401	-0.819396	-0.102304	0.0523261	0.4886547	-0.459448	0.58179508	1		
(9) Aircraft	0.6017482	0.7910466	-0.067112	0.4936345	-0.588123	0.4595528	-0.03821255	-0.64481051	1	
(10) %change E.R. YrB4	-0.546787	-0.902572	-0.197894	0.017627	0.5059367	-0.434846	0.43270167	0.93408845	-0.81032787	1

Italy	Commodity Exports from US to Italy (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	8784867	8862266	7192610	6458361	8697961	8578604				
(2) Edible fruits	74566	60388	60369	40459	49349	59571				
(3) Beverages	13756	9631	8317	8768	7832	5839				
(4) Tobacco	48070	36147	28456	24327	59899	68181				
(5) Pharmaceuticals	261987	192459	135224	179550	231770	225283				
(6) Wood Pulp	31266	472007	257974	176783	328466	332170				
(7) Electric Machines	1080680	1093605	829460	777885	911435	963884				
(8) Vehicles	220909	237928	152968	144303	201807	133609				
(9) Aircraft	736484	823764	890590	486599	1146390	945441				
	%change from previous year									
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		1.39%	-25.75%	11.37%	23.21%	-0.87%				
(2) Edible fruits		-17.16%	-18.01%	49.21%	0.03%	23.48%				
(3) Beverages		34.13%	11.95%	-5.14%	15.80%	42.83%				
(4) Tobacco		-12.15%	-59.39%	16.97%	27.03%	32.98%				
(5) Pharmaceuticals		2.88%	-22.53%	-24.69%	42.33%	36.13%				
(6) Wood Pulp		-1.12%	-46.18%	45.93%	82.97%	-93.38%				
(7) Electric Machines		-5.44%	-14.65%	6.63%	31.85%	-1.18%				
(8) Vehicles		51.04%	-28.49%	6.00%	55.54%	-7.15%				
(9) Aircraft		21.25%	-57.55%	83.02%	-7.50%	-10.60%				
(10) %change E.R. YrB4		-0.66%	27.69%	2.46%	1.02%	-5.28%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.43570127	1								
(3) Beverages	-0.1277405	-0.365039	1							
(4) Tobacco	0.83188108	0.651378	0.1804459	1						
(5) Pharmaceuticals	0.51959079	-0.072942	0.6237487	0.6630412	1					
(6) Wood Pulp	0.73209299	0.1246876	-0.614981	0.2533882	0.0137364	1				
(7) Electric Machines	0.90095671	0.2599934	-0.213177	0.6907073	0.6007548	0.7611428	1			
(8) Vehicles	0.7590158	-0.191738	0.147088	0.421579	0.4755381	0.6755467	0.65236804	1		
(9) Aircraft	0.59711221	0.7227941	-0.391537	0.5079057	-0.243394	0.4734001	0.26167319	0.32166767	1	
(10) %change E.R. YrB4	-0.7478354	-0.454878	-0.42338	-0.89597	-0.613269	-0.144356	-0.47344551	-0.57686661	-0.55906962	1

Netherlands	Commodity Exports from US to Netherlands (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	16614503	16558532	13590835	12839330	13740130	13528271				
(2) Edible fruits	141216	112961	96565	85644	80246	88377				
(3) Beverages	99666	51251	57078	38283	29179	17649				
(4) Tobacco	156726	264090	173690	168761	208042	167712				
(5) Pharmaceuticals	257303	163428	154843	130368	147373	112249				
(6) Wood Pulp	141635	264959	129353	97235	172689	170662				
(7) Electric Machines	1851717	1498790	1314540	1171044	1233542	1079105				
(8) Vehicles	410068	433634	404190	380914	354041	343061				
(9) Aircraft	1147872	1723749	1371924	854657	908830	1049590				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		1.57%	-6.56%	5.85%	21.84%	0.34%				
(2) Edible fruits		-9.20%	6.73%	12.75%	16.98%	25.01%				
(3) Beverages		65.33%	31.20%	49.09%	-10.21%	94.47%				
(4) Tobacco		24.05%	-18.88%	2.92%	52.05%	-40.65%				
(5) Pharmaceuticals		31.29%	-11.54%	18.77%	5.54%	57.44%				
(6) Wood Pulp		1.19%	-43.69%	33.03%	104.83%	-46.54%				
(7) Electric Machines		14.31%	-5.07%	12.25%	14.02%	23.55%				
(8) Vehicles		3.20%	7.59%	6.11%	7.28%	-5.43%				
(9) Aircraft		-13.41%	-5.96%	60.52%	25.64%	-33.41%				
(10) %change E.R. YrB4		-5.95%	5.62%	-2.01%	-11.78%	5.00%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.28336242	1								
(3) Beverages	-0.64192934	0.010562721	1							
(4) Tobacco	0.789390022	-0.34871259	-0.7327671	1						
(5) Pharmaceuticals	-0.08352177	0.255781512	0.809422584	-0.37475602	1					
(6) Wood Pulp	0.951958116	0.068949996	-0.7534435	0.895419365	-0.29352337	1				
(7) Electric Machines	0.382805413	0.373798251	0.457124613	0.011755191	0.888310626	0.16863308	1			
(8) Vehicles	0.268867683	-0.39054224	-0.83089045	0.610556912	-0.92672456	0.52130839	-0.73146767	1		
(9) Aircraft	0.49055796	0.055890821	-0.52840396	0.474766966	-0.43327274	0.66771944	-0.15749401	0.65716245	1	
(10) %change E.R. YrB4	-0.86588289	0.230083985	0.606143191	-0.96989627	0.153158857	-0.91783406	-0.25320086	-0.42134144	-0.44434515	1

Portugal	Commodity Exports from US to Portugal (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	960409	898513	1054551	734791	1023958	791993				
(2) Edible fruits	5203	4646	5361	3379	3776	2699				
(3) Beverages	851	643	812	909	801	388				
(4) Tobacco	21	660	189	1667	2595	1728				
(5) Pharmaceuticals	8281	7020	8365	7396	7753	5669				
(6) Wood Pulp	1109	4765	1061	412	728	2916				
(7) Electric Machines	144353	130249	110086	87848	97495	100990				
(8) Vehicles	15799	18430	28399	22322	20284	15536				
(9) Aircraft	47953	35593	297161	38297	213296	51060				
	%change from previous year									
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		29.29%	-28.24%	43.52%	-14.80%	6.89%				
(2) Edible fruits		39.90%	-10.51%	58.66%	-13.34%	11.99%				
(3) Beverages		106.44%	13.48%	-10.67%	-20.81%	32.35%				
(4) Tobacco		50.17%	-35.76%	-88.66%	249.21%	-96.82%				
(5) Pharmaceuticals		36.76%	-4.60%	13.10%	-16.08%	17.96%				
(6) Wood Pulp		-75.03%	-43.41%	157.52%	349.10%	-76.73%				
(7) Electric Machines		-3.46%	-9.89%	25.31%	18.32%	10.83%				
(8) Vehicles		30.56%	10.05%	27.22%	-35.10%	-14.28%				
(9) Aircraft		317.74%	-82.05%	675.94%	-88.02%	34.73%				
(10) %change E.R. YrB4		-6.56%	19.11%	3.04%	-9.49%	2.85%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.9770631	1								
(3) Beverages	0.3190281	0.3228014	1							
(4) Tobacco	-0.369976	-0.480828	-0.152374	1						
(5) Pharmaceuticals	0.7342845	0.7347852	0.8428679	-0.480244	1					
(6) Wood Pulp	-0.093763	-0.181057	-0.727066	0.6835637	-0.677756	1				
(7) Electric Machines	0.4462752	0.3367699	-0.604766	0.0961327	-0.196917	0.6959429	1			
(8) Vehicles	0.6234409	0.761572	0.5161273	-0.554207	0.6820125	-0.511125	-0.28203377	1		
(9) Aircraft	0.9333278	0.9709459	0.1171806	-0.426912	0.5552022	-0.002712	0.44417668	0.72979235	1	
(10) %change E.R. YrB4	-0.379419	-0.198182	-0.177101	-0.635078	-0.185415	-0.470848	-0.46526808	0.26624711	-0.15072967	1

Spain	Commodity Exports from US to Spain (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	5486052	5529422	4624798	4180929	5487363	5481555				
(2) Edible fruits	135317	101808	49064	32004	52423	50751				
(3) Beverages	12510	11082	8233	7436	10361	6439				
(4) Tobacco	134753	102225	129164	87692	122109	203605				
(5) Pharmaceuticals	114513	102021	99958	106594	94692	80757				
(6) Wood Pulp	77045	127596	68828	64521	99071	90283				
(7) Electric Machines	583328	604519	411706	375450	458031	427782				
(8) Vehicles	261826	232379	205169	199511	172481	117995				
(9) Aircraft	277302	279173	464129	347603	644309	876809				
	%change from previous year									
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		0.11%	-23.81%	10.62%	19.56%	-0.78%				
(2) Edible fruits		3.29%	-38.95%	53.31%	107.50%	32.91%				
(3) Beverages		60.91%	-28.23%	10.72%	34.60%	12.89%				
(4) Tobacco		-40.03%	-28.19%	47.29%	-20.86%	31.82%				
(5) Pharmaceuticals		17.26%	12.57%	-6.23%	2.06%	12.24%				
(6) Wood Pulp		9.73%	-34.87%	6.68%	85.38%	-39.62%				
(7) Electric Machines		7.07%	-18.03%	9.66%	46.83%	-3.51%				
(8) Vehicles		46.18%	15.67%	2.84%	13.26%	12.67%				
(9) Aircraft		-26.52%	-46.05%	33.52%	-39.85%	-0.67%				
(10) %change E.R. YrB4		-1.48%	24.30%	5.26%	-6.92%	1.58%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.95186889	1								
(3) Beverages	0.63366811	0.4355682	1							
(4) Tobacco	0.29535001	0.3055265	-0.247067	1						
(5) Pharmaceuticals	-0.608475	-0.642303	0.1355484	-0.619906	1					
(6) Wood Pulp	0.7888525	0.7964431	0.5445986	-0.266045	-0.434073	1				
(7) Electric Machines	0.89642476	0.9149755	0.5848765	-0.086071	-0.469174	0.9662562	1			
(8) Vehicles	-0.17953192	-0.368973	0.6358636	-0.722615	0.7550167	0.0174188	-0.07175984	1		
(9) Aircraft	0.35835298	0.2377293	0.0239133	0.9034669	-0.589596	-0.208956	-0.07265544	-0.44053538	1	
(10) %change E.R. YrB4	-0.88531078	-0.797457	-0.862452	-0.073898	0.1762827	-0.671354	-0.80053771	-0.19992645	-0.17147602	1

Sweden	Commodity Exports from US to Sweden (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	3428598	3076594	2519835	2353480	2843966	3287957				
(2) Edible fruits	39164	38356	37331	35367	34503	37609				
(3) Beverages	12320	7157	10346	10022	11956	11160				
(4) Tobacco	11052	8989	24073	20282	20545	20424				
(5) Pharmaceuticals	33046	36307	47230	47522	39783	40588				
(6) Wood Pulp	6026	7884	7138	3271	10122	4759				
(7) Electric Machines	602720	539260	426724	355305	330927	341487				
(8) Vehicles	214243	249626	217007	149695	180608	168047				
(9) Aircraft	366580	238648	82615	191198	417713	843404				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		-13.50%	-17.25%	7.07%	22.10%	11.44%				
(2) Edible fruits		-8.26%	2.50%	5.55%	2.75%	2.11%				
(3) Beverages		7.13%	-16.18%	3.23%	-30.82%	72.14%				
(4) Tobacco		0.59%	-1.28%	18.69%	-62.66%	22.95%				
(5) Pharmaceuticals		-1.98%	19.45%	-0.61%	-23.13%	-8.98%				
(6) Wood Pulp		112.69%	-67.68%	118.22%	10.45%	-23.57%				
(7) Electric Machines		-3.09%	7.37%	20.10%	26.37%	11.77%				
(8) Vehicles		7.47%	-17.12%	44.97%	15.03%	-14.17%				
(9) Aircraft		-50.47%	-54.23%	-56.79%	188.87%	53.61%				
(10) %change E.R. YrB4		-3.70%	33.65%	-0.87%	-7.55%	-5.98%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
(1) All Commodities	1									
(2) Edible fruits	0.5128586	1								
(3) Beverages	0.1055457	-0.056229	1							
(4) Tobacco	-0.404478	-0.010705	0.706671	1						
(5) Pharmaceuticals	-0.864941	-0.019982	-0.064732	0.5380699	1					
(6) Wood Pulp	0.0263528	-0.343366	-0.061801	0.1600815	-0.231968	1				
(7) Electric Machines	0.849183	0.8029906	-0.269015	-0.476929	-0.551146	-0.092503	1			
(8) Vehicles	0.3608796	0.2295708	-0.318951	-0.070392	-0.312422	0.8061666	0.46308352	1		
(9) Aircraft	0.8109937	0.2290592	-0.129842	-0.766404	-0.835095	-0.294504	0.65744192	-0.04722174	1	
(10) %change E.R. YrB4	-0.691807	0.1695575	-0.324128	0.1443061	0.881176	-0.560367	-0.28209757	-0.45108644	-0.4848589	1

United Kingdom	Commodity Exports from US to United Kingdom (\$1000's)									
	1996	1995	1994	1993	1992	1991				
(1) All Commodities	30916001	28826886	26832723	26375936	22808197	22063593				
(2) Edible fruits	196040	171325	146909	130091	159931	151355				
(3) Beverages	149418	113973	81854	78690	66000	46575				
(4) Tobacco	92790	47836	50457	55077	73649	48291				
(5) Pharmaceuticals	568152	375351	341270	236690	179087	150150				
(6) Wood Pulp	205821	323630	182488	139720	198873	144073				
(7) Electric Machines	4852666	5526802	4763813	3740004	3097139	2729880				
(8) Vehicles	749911	747330	846313	531390	502588	428884				
(9) Aircraft	2544706	1927603	3023871	2727761	2624959	3107232				
%change from previous year										
	1991	1992	1993	1994	1995	1996				
(1) All Commodities		3.37%	15.64%	1.73%	7.43%	7.25%				
(2) Edible fruits		5.67%	-18.66%	12.93%	16.62%	14.43%				
(3) Beverages		41.71%	19.23%	4.02%	39.24%	31.10%				
(4) Tobacco		52.51%	-25.22%	-8.39%	-5.19%	93.98%				
(5) Pharmaceuticals		19.27%	32.16%	44.18%	9.99%	51.37%				
(6) Wood Pulp		38.04%	-29.74%	30.61%	77.34%	-36.40%				
(7) Electric Machines		13.45%	20.76%	27.37%	16.02%	-12.20%				
(8) Vehicles		17.19%	5.73%	59.26%	-11.70%	0.35%				
(9) Aircraft		-15.52%	3.92%	10.86%	-36.25%	32.01%				
(10) %change E.R. YrB4		0.16%	17.59%	-1.97%	-2.91%	1.03%				
Correlation Function										
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10
Row 1	1									
Row 2	-0.77545301	1								
Row 3	0.02039846	0.21261307	1							
Row 4	-0.32738433	0.43533342	0.47364357	1						
Row 5	-0.05732758	0.01472273	-0.6179884	0.35826077	1					
Row 6	-0.51902912	0.51233588	0.29275099	-0.3163914	-0.7509262	1				
Row 7	-0.04708501	-0.3112073	-0.478741	-0.8893618	-0.3717069	0.4708807	1			
Row 8	-0.57258573	0.08120485	-0.7646043	-0.2147905	0.43527517	0.04735595	0.51911088	1		
Row 9	0.04572546	-0.0865143	-0.5057774	0.44179017	0.98127879	-0.8496476	-0.46872141	0.31881145	1	
Row 10	0.87991502	-0.9669935	-0.2308885	-0.3594759	0.1202316	-0.6531793	0.14217708	-0.19112699	0.2249569	1

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