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“Thoughts about the EURO – predictions,
reflections and analysis within a decade”

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1. Abstract

This thesis is meant to give you an overview of the history of the Euro within the past decade, namely from 1997 to 2006. The main facts that will be dealt with are expectations, both positive versus negative and correct versus incorrect, before the start of the European Monetary Union (EMU) in 1999 and the de facto launch of the Euro currency in 2002 and in the early days of the Euro, as well as findings and analyses of the recent development and predictions for the future. A large part of this article is dedicated to a review of the literature from the time span in question.

In the introduction I decided to provide a short overview of hard facts concerning the Euro, mainly based on data from the European central bank (ECB) and the international monetary fund (IMF).

Following the introduction, the next topic will deal with articles and publications from both sides of the Atlantic Ocean in the time span from 1997 to 2006. In this section I tried to point out the differences between American and European economists on the topic of EMU.

Chapter four deals with political influences on (or by) decision makers and the roles of the ECB, the Federal Reserve and the IMF.

The next part is all about statistics. The key issue is the development of the exchange rate of the Euro compared to the US Dollar in the past decade. A few

other data such as several interest rates and data about trade force will also be introduced to lead into the empirical part: the attempt to find and explain the most important variables to explain the value of the European currency.

To summarize things up, you will find a short coverage of all the relevant information in the conclusion (chapter six) and all the mentioned and referred to literature in the references.

The appendix consists of my curriculum vitae and an abstract of the paper in English and in German.

2. Introduction

In this introduction, you will find some background information about the history of the Euro and certain other things that are not fully covered in the main part of the thesis. I will also explain why I chose to write about this special issue, and the reasons for certain limitations in my research.

The decision on the history of the Euro as the subject of my diploma thesis came mostly because of personal interest. In the final stages of my studies I developed, at this stage I may gratefully mention the positive influence of Professor Erich W. Streissler, a special interest in monetary subjects. Thus currencies, especially the domestic currency, namely the Euro, seemed to be an interesting subject to focus my research on. As there are an enormous number of articles that focus on the Euro, I thought it might be useful to summarize the most important findings and remarks of the past decade up and add some remarks and new findings to the history.

I chose the time span from 1997 to 2006. The choice for 1997 as starting year came because the Stability and Growth Pact and the principles and fundamental elements of the new exchange rate mechanism were adopted by the Euro zone members in June of that year. Also in September 1997 the Finance Ministers of the European Union agreed on the date of May 1998 to announce the definitively fixed bilateral exchange rates for the participating currencies in the euro area. In May 1998 the 11 countries that then met the convergence criteria were presented

and later became the 11 day one Euro countries at the beginning of 1999. The end of the chosen time span is to be explained through the fact, that data from 2006 are the most recent ones to seriously analyze and draw meaningful conclusions from.

I concentrate mostly on the third and final stage in the creation process of the European Monetary Union (EMU) which started on 1 January 1999. The 11 countries that met the convergence criteria (*“The degree of convergence is assessed on the basis of several criteria in the Maastricht Treaty, which require a country to have: a high degree of price stability, sound public finances, a stable exchange rate, low and stable long-term interest rates¹”*) and introduced the Euro as their “virtual currency” on January 1 1999 were: Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland. Greece joined this group two years later on 1 January 2001 after fulfilling the criteria², becoming the 12th country to introduce the Euro as its real and only currency on January 1 2002. The 13th and by now the latest country to join the European currency union was Slovenia on January 1 2007.

The Euro zone countries have to choose to subordinate to the criteria of keeping budget deficit below three percent and government debt below 60 percent of the Gross Domestic Product (GDP) in order to be able to join the monetary union.

¹Citation from: ECB Publications May 2006 "The European Central Bank, the Eurosystem, the European System of Central Banks"

² Greece reported falsified data and thereby suggested the impression that they fulfilled the criteria, which they actually did not.

Violations of these rules in longer terms result in sanctions against the concerning countries.

The situation in Europe on the edge to introduce a common currency is, in some way, comparable to the situation of the Austrian-Hungarian Monarchy just before the introduction of the gold standard. Carl Menger (1892) then argued in favor of the adaptation of the gold standard in order to become competitive in an international sense. Even in the late 19th century, Menger described the handicap of the then silvervaluta³ as follows: There is neither sufficient inflow nor sufficient outflow of money in the outsider's market. In order to get back to equilibrium, there has to be money flowing into the domestic market if there is not enough money circulating and the interest rates move up. Also there has to be money flowing out if market conditions move in the complementary direction. The domestic economy can hardly benefit from favorable business cycles in countries with other currencies because transaction costs eat up most of the gained profit from advantageous interest rates.⁴ These findings from the late 19th century express one of the probably most important arguments in favor of a common currency (standard).

More than 100 years or two centuries later, the decision to join a monetary union carries of course benefits and costs for each member country. The most obvious

³ all other European countries except for Austria-Hungary and Russia had already turned to the gold standard at that time

⁴ See Menger, C. "Beiträge zur Währungsfrage in Oesterreich-Ungarn" (1892) from: Carl Mengers Gesammelte Werke Band IV, 2. Auflage (1970) pp. 138-145

benefits are reduced transaction costs and highly stable (or at least predictable) prices, while the most remarkable cost is probably the loss of independent National Banks which results in giving up monetary policy to a higher authority and thereby losing an important stabilizing tool. Several studies show that trade levels of countries within a currency area is much larger than trade capacity of countries that have their own currencies. The same positive effect can be found in connection with business cycles. Within a currency union, business cycles become much more synchronized. Rose and Engel (2002) for example explain that business cycles seem to be more synchronized and correlated between members of a currency union, but they are not as highly correlated as they are between regions of a single country.

Rose and van Wincoop (2001) see an enormous chance in the monetary union, taking the example of EMU. The authors predict a rise of inner European trade by more than 50 percent. The main argument in their article is that foreign currencies are a barrier to trade. Eliminating this barrier will in their opinion lead to considerable beneficial effects and it will outweigh the negative effects of giving up national monetary policy. Their results show, that the largest increase in welfare occurs if the countries in question have been trading amongst each other before they join the union. Rose and van Wincoop conclude with the outlook on further currency unions if the EMU and the numerous countries that introduced the US Dollar⁵ as their common trade currency are as profitable for common welfare as expected.

⁵ The phenomenon of foreign countries adapting the US Dollar as their trade currency is referred to as “Dollarization”.

After having heard of these arguments for a common currency, many might ask why we do not establish a global currency. Richard Cooper (1984) dealt with this idea which was picked up in an Article by Rogoff (2001). Rogoff starts by expressing the thought that the system of the US Dollar, the Yen and the Euro as the leading currencies is an arrangement that is close to being optimal. As the number of currencies is likely to decline over the next couple of years it seems obvious that leading currencies will be of increasing relevance. Still, independent monetary policy is an important tool which would have to be given up when joining a currency area. A more precise look on this matter can be found in chapter four of this paper.

3. Review of the Literature

In the time span from 1997 to 2006 there are an enormous number of articles, remarks and reports to be found. In this paper I tried to focus mainly on those that were published in the leading collections of literature such as the American Economic Review (AER), the European Economic Review (EER), the Journal of Money, Credit and Banking, the Journal of Finance, the Journal of Economic Perspectives, the Journal of Political Economy and a few others but only if the articles were of special interest to the subject.

During the process of reading the literature I found that the American writers, especially in the years just before the launch of the then new European currency, tended to have, or at least express different expectations concerning the Euro than most of their European colleagues in terms of exchange rate stability, difficulties in adapting the new European currency and several other issues. The range of divergence runs from “slightly different opinions” to “completely different opinions”.

Therefore I chose to separate some of the most important articles that will be analyzed into European ones on the one hand and American ones on the other. Also I tried to keep a certain structure within the summarized topics by sorting them according to contents and (wherever possible) according to time of publishing. There are of course lots of cross-section topics where American and European economists deal with the same issues and sometimes come up with

different suggestions or findings. I tried to link those by referring to related text passages whenever such an event occurs.

The literature is of course not entirely either typically American or European.

Papers and publications that do not fit into the former scheme are mentioned and referred to in the suitable passages of other chapters. Therefore this paper is heavy on already published literature but I think that this is a good way to get an overview of the vast amount of articles and comments that have been published over the past ten years.

3.1. The European view

While studying the literature, I found that there are a whole lot of articles on the European view of European monetary union. EMU as such was seen only to be reasonable with a larger number of countries taking part right from the start. European Economists showed mainly a rather positive and excited view on EMU, especially in the years before the start of the Euro.

In an article Thygesen (1997) deals mainly with the aspect of flexible integration,⁶ where he mentions the importance of at least seven to eight countries being day one participants of EMU. He also supposes that a certain kind of asymmetry might be needed in order to make it more attractive for others to join either right at the start or in a later stage.

Rüdiger Dornbusch (1997) wrote an article about the possibility of overweighting fiscal criteria in the EMU. Dornbusch found that debt is of course a risk for solid monetary policy and that the Maastricht Treaty with its limitation on debt and deficits is a proper tool to avoid inflation, but the danger of pushing limitations too far and too hard was definitely subject to several discussions at the time.

Wyplosz (1997) even raises the question whether the tough criteria of the Maastricht Treaty will backfire on Europe and if Europe is an optimal currency

⁶ The term flexible integration is explained as to differentiate between core policy areas which are mandatory for all members and other areas where participation is voluntary.

area at all.⁷ He also refers to several other studies on topics like the labor movement issue that are dealt with later on in chapter 3.2.

The Deutsche Mark-US Dollar market was the world's largest one in terms of turnover; it was highly liquid and had low transaction costs.⁸ This issue will be picked up in chapter 4.1. of this paper where the topic is the European Central Bank and the leading role of Germany in European monetary policy since the implementation of EMU.

Regional differences and the reaction to country- or region specific shocks (asymmetric shocks) without the tool of exchange rates are an often discussed matter in connection with pros and cons of EMU. This pattern is also discussed in further detail in chapter 3.2 of this paper.

One of the earliest publications on this topic that I found within the examined time span is by Fatás (1997) and concentrates on the evolution of cross-boarder relationships. In his article, Fatás explains the danger of uncertain effects of asymmetric shocks like regional recessions and unemployment because of limited labor movement in the EU. He concludes that negative correlations across countries decrease over time while at the same time cross country correlations are

⁷ See Wyplosz, C. "EMU: Why and How It Might Happen", *Journal of Economic Perspectives* 11(4), Fall 1997, p. 3-22

⁸ See Andersen, T. G.; Bollerslev, T. "Deutsche Mark-Dollar Volatility: Intraday Activity Patterns, Macroeconomic Announcements, and Longer Run Dependencies", *The Journal of Finance*, Vol. 53, No. 1 (Feb., 1998), pp. 219-265

constantly increasing.⁹ This leads to the result that members of the EU switch their economic view from seeing different countries to one seeing different regions within the Union. A common currency would most likely further support this movement.

One of the few skeptical papers is by Thom and Walsh (2002). They use the experience from the introduction of the exchange rate between Ireland and the UK in 1979 to find evidence for or against common currencies. The authors found, that the exchange rate regime had no effect on trade between Ireland and the UK. They mention that this is consistent with findings on large and developed countries but is contradictory to findings that include heterogeneous country groups. The concluding remark indicates that the authors are doubtful about the effects of a currency union on countries that already trade freely amongst each other.

⁹ In his article, Fatás shows that the correlations of employment growth rates of the 12 EU countries from 1992 are all positive overall from 1966 to 1992. He uses employment growth to approximate business cycles and as a measure of economic activity.

3.2. The American view

Most US-American articles of the time before 2002 are dealing with the possible situation of the post 2002 years, after the Euro was visibly introduced, and its effects especially on the US Dollar. In the earlier articles that I treat (those that were published from 1997 to 1999), the common belief was that the European Union's member countries will have a hard time keeping the Euro at a level (in terms of the exchange rate) with the Dollar.

A common statement from that time is one that I found in an article by Bayoumi and Eichengreen (1997) where they confess that a review of the theoretical literature of that time is likely to be summed up by the conclusion that most authors share the opinion that “[...]”*Europe is not an optimal currency area*” *without providing much analysis of how this situation is changing or of the comparative prospects of different countries.*”¹⁰ The “Optimal Currency Issue” is subject to several other articles that are dealt with later in this paper.

A pretty obvious finding is mentioned in a publication by Frankel and Rose (1997) where they claim that countries with a history of close trade links tend to have correlated business cycles and therefore are more likely to satisfy the criteria for entering a currency union because of their higher economic integration. They

¹⁰ Citation from: Bayoumi and Eichengreen, “Ever closer to heaven? An optimum-currency-area index for European countries”, *European Economic Review*, Volume 41, Number 3, April 1997 , pp. 761-770

raise the question whether the two indices of trade integration and symmetric business cycles can be assessed independently. Their empirical study shows that increased trade integration and open borders can either result in specialization and asynchronous business cycles or in highly correlated business cycles because of intra industry trade.

There are, of course, more articles from that time that are about profits and costs of currency areas in general and the EMU in particular. Feldstein (1998) for example referred to the advantages of a common currency because of cost and risk reduction in trade and investments within EMU countries which would result in an increase of intra-EMU trade. As for the exchange rate, Feldstein pointed out that several officials in Europe wanted the ECB to weaken the EURO on purpose to strengthen European industries and to make domestic products more competitive. According to Feldstein, French officials thought that a lower value of the EURO compared to the Dollar would help to fight unemployment and help boosting domestic industries.¹¹

In an article from Obstfeld (1998) the strategy for the start of the common European currency is analyzed from the pre-EMU view. In his work, he breaks down the scheme of switching from many national currencies to one common currency. It becomes clear, that the highly predictable and reliable preannounced currency conversion factors after the selection of EMU members in May 1998

¹¹ See Feldstein, M. “The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability”, *The Journal of Economic Perspectives*, Vol. 11, No. 4 (Autumn, 1997), pp. 23-42

only held strong because no one of the potential members left the EMU between May 1998 and the end of stage two in the creation of EMU which ended on December 31 1998. A reduction of the number of participants at that time may have had unpredictable effects on the start, the early years and the intra-European exchange rates of the EMU. On January 1 1999 the irrevocably fixed exchange rates became reality.

Michael Mussa (1997) indicated the symbolic importance of a common currency as being one of the most important criteria in favor of the EMU alongside its economic benefits. He also talks about the stronger commitment to fixed exchange rates and also to membership of a group itself once countries are in a currency union and no longer in a currency area where every country has its own independent Central Bank.

In a publication by Dominick Salvatore from the Department of Economics of Fordham University in New York (1997) he states that the currency area of the United States is much closer to being an optimal one, than the EMU, because of the much greater labor mobility and fiscal redistribution within the United States. An article by Krugman (1993) points out, that the lack of mobility within Europe results in regional specialization and that this situation will become even worse if asymmetric shocks occur.¹²

¹² Krugman, Paul, "Lessons of Massachusetts for EMU" In Torres, Francisco and Francesco Giavazzi, eds., "The Transition to Economic and Monetary Union." Cambridge University Press, 1993, pp 241-269

The mobility topic is also mentioned in other articles, especially the fact, that greater mobility makes it easier for an economy to lower the need for exchange rate adjustment because of the possibility to cope with asymmetric shocks through migration and movement of manpower and other sources of labor.¹³ Some articles even point out the lack of mobility not only between countries in Europe, but also between regions of the same country.¹⁴ The findings of course differ.¹⁵

¹³ Blanchard, O.; Katz, L. et al. "Regional Evolutions", Brookings Papers on Economic Activity, Vol. 1992, No. 1 (1992), pp. 1-75

¹⁴ Eichengreen, B. 'European Monetary Unification', Journal of Economic Literature, 31, September 1993 pp. 1321-1357

¹⁵ See chapter 3.1 of this paper

4. Political Issues

With a far-ranging and highly sensitive major change in an economic area as the common currency area in the EU, there is the need to always take economic as well as political aspects into consideration. This chapter deals with the whole range from federal and regional policies over politically induced corporate feeling to global policy and its (possible) effects on world trade. The broader topics like Central Banks or enlargement of the Union are dealt with in separate subchapters.

A big issue is the birth of a new, big trade area with a common currency. Several authors see an extremely good possibility to make global negotiations in world trade easier and to reduce volatility in exchange rates by reducing the G-7 countries (the seven largest industrialized nations of the world: United States, Japan, Germany, France, Britain, Italy and Canada) by combining Germany, France, Great Britain (with its own currency) and Italy into one (EU).¹⁶ There were of course also rather skeptical thoughts on this issue as from Feldstein (1998) who expressed the opinion that the creation of the ECB, which would be in charge of the money supply for the whole EMU and control the short-time interest rates, would rather result in a higher inflation rate than the system of National Central Banks.

¹⁶ See: Kenen, P.; "Sorting out some EMU issues", Reprints in international Finance, Princeton University No. 29, December 1996 and Wyplosz, C. "EMU: Why and How It Might Happen", Journal of Economic Perspectives 11(4), Fall 1997, p. 3-22

The political aspect of the introduction of EMU is also the subject in articles in the pre-EMU era. In one of the most notable ones Martin Feldstein (1998) expresses his opinion that the decision for or against EMU does not depend as much on economic issues as it does on political ones. He thinks, that the loss of power of all the individual countries in favor of an ECB can only be realized if the decision makers are convinced that the political advantages of a monetary union outweigh the disadvantages to the individual countries and the positive effect on the common European political development outweighs the advantage of giving more power to a NCB, but only for a single and of course smaller country and its currency.¹⁷

Another symbolic issue is the importance of a single currency as an icon for sovereign countries in general and to the EU in particular. The introduction of the Euro could help building a corporate feeling among the people living in the EU member countries as referred to by Feldstein (1998). The same issue is also mentioned in an article by Michael Mussa (1997) where he points out that the EMU is a symbolic act with big influence on the strengthening of political dimensions within the European Union. It was also of particular political importance for the EMU to start on time¹⁸, because skeptics were always taking the chance of delays or even failure of the EMU into account. The fact that the southern countries of Italy, Spain, Portugal and Greece were struggling to fulfill

¹⁷See Feldstein, M. "The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability", *The Journal of Economic Perspectives*, Vol. 11, No. 4 (Autumn, 1997), pp. 23-42

¹⁸ The scheduled and actual starting date was January 1, 1999.

the criteria to be part of the EMU straight from the start had almost forced either a delay or the disqualification of these countries. In 1997 R. Mundell pointed out the crucial danger of facing a first- and a second class status within the EU. Therefore it was inevitable for the former mentioned countries to fulfill the criteria and join the Euro zone as only this ensured that the Euro really became the European currency and not only the currency of the richer European countries. In his paper, he mentions the successful policy of Italy, Spain and Portugal which made their interest rates approximate the German level. He suggests that this might be appropriate for Greece too, as it would cut interest payments on debt enormously. Mundell concludes that it might be possible for all EU countries to join the monetary union by 1999.

One of the most apparent advantages of a common currency is the absolute price transparency. Alesina et al. (2005) highlighted the opportunity to facilitate price stability in a currency area from which all participants would profit. In their article, the authors mention the problematic situation of conflict of interests that arises from the difference of national and European preferences. The ongoing debate about the European constitution is of little help in this matter. The authors mention in their own words that “[...] *the EU is struggling with finding the correct balance between coordination and centralization of policies at the EU level and autonomy of member countries.*”¹⁹

¹⁹ Citation from: Alesina, A., Angeloni, I. and Etro, F. "International Unions" The American Economic Review Vol. 95 No. 3 (June 2005) pp. 602-615

Transparency of prices is also subject to an article I found by Crucini et al. (2005). The Law-of-One-Price (LOP) that they refer to indicates that “[...] *identical goods in different countries should have identical prices, once the prices are expressed in common currency units.*”²⁰ As the danger that arises from a lack in adjustment of domestic prices to changes in exchange rates is eliminated by the common currency, this finding seems pretty obvious. Their empirical findings show that in the European Union, most of the means of price differences of comparable goods are indeed close to zero.

Bayoumi and Eichengreen (1997) made an interesting finding in their article about currency areas. They constructed an Optimal Currency Area (OCA) Index and, based on that, divided the EMU candidate countries into three groups: the highly ready ones, the ones with a tendency to converge and countries where little or even no convergence is measurable. The most notable exception is France. The data show, that France does neither have high bilateral exchange rate stability with Germany, nor an easy transition to monetary union, but still the will to join the EMU was very strong. This, according to the authors, underlines the importance of not only economic issues, but also political ones in the case of France joining the EMU.²¹ In my opinion, it is also a good example of the weight of political influence in decision making, especially in monetary policy.

²⁰ Citation from: Crucini, M., Telmer, C. and Zachariadis, M. "Understanding European Real Exchange Rates", The American Economic Review Vol. 95 (3) (June 2005) pp. 724-738

²¹ See Bayoumi and Eichengreen, “Ever closer to heaven? An optimum-currency-area index for European countries”, European Economic Review, Volume 41, Number 3, April 1997 , pp. 761-770

Federal policies in the EU, especially compared to US policies were also subject to papers as one from Forni and Reichlin (2001) where they propose an estimation method which exploits output fluctuations and compares European regions with US counties. Their empirical results show, that Europe is as integrated as the US, while the highest integration in Europe can be found within regions that do not necessarily belong to only one country.²² They play down their findings in the conclusion by stating that trade flows and diversification of local economies are not likely to change in the short run.

Blanchard (2004) describes the mood in Europe after the troubled years at the beginning of the new century as “*gloomy*”²³. He refers to the broadly expressed opinion that the model of the European economy is no longer up to date, as it failed to keep up with globalism. In the author’s opinion, the main difference between Europe and the US is that the increased productivity of the work force has resulted to an increase in leisure time in Europe while in the US it resulted in an increase of income. These different trends manifest the fact that the ratio of GDP per capita in the EU 15 compared to the US practically has not changed from 1970 to 2000, while the GDP per hour worked showed a massive catch up of the EU 15 countries within the same time period, climbing from about 65% of the US value up to about 91% according to the data in Blanchard’s article. The author

²² The authors find that the regional component in Europe is much more important than the national one.

²³ Citation from Blanchard, O. “The Economic Future of Europe” The Journal of Economic Perspectives, Vol. 18, No. 4 (autumn, 2004), pp. 3-26

furthermore criticizes the inefficient regulation within Europe but he adds a positive aspect to the article by stating that there is a reform process going on.

Carré and Collard (2003) find the households in an economy can benefit from the implementation of a monetary union when there is a “[...] *positive asymmetric permanent shock to either technology or government expenditures occurring in one country [...]*”.²⁴

One of the problems that authors thought could come with EMU might be the inevitable cutbacks in social welfare programs across Europe. The cutback would have come anyway as they are absolutely necessary but, especially according to American Economists like Mussa (1997), the population might hold EMU responsible for the loss of many of these social benefits. Because of the commonly known Maastricht Criteria, the EMU might get politically blamed for decreasing several welfare programs in order to fulfill the criteria for the stability pact.

²⁴ Citation from: Carré, M. and Collard, F. “Monetary union: A welfare based approach” European Economic Review 47 (2003) pp. 521 – 552

4.1. The European Central Bank

The duties and responsibilities of the ECB consist of making monetary policy for the EMU, deal with the exchange rate policy of the Euro and take care of domestic fiscal issues.

“The Maastricht Treaty only came about because the lifting of capital controls had reduced the alternate options to just two unpalatable extremes: either allow exchange rates to float freely or accept the complete domination of Germany’s Bundesbank over Europe’s monetary policy.”²⁵

This statement by Wyplosz (1997) explains the outcome of the political pressure that Germany implemented on the European Union in return for the sacrifice of one of its most powerful institutions – the German Bundesbank in favor of a European Central Bank. The German Bundesbank had made quite a reputation for fighting inflation and keeping the domestic currency, the D-Mark, strong and therefore it came as no big surprise, that the newly founded ECB is practically a successor of the German Bundesbank with its Headquarters in Frankfurt/Main in Germany. The ECB profits from existing infrastructures of the former National Central Banks (NCB). The Maastricht Treaty defined 1 July 1998 as the deadline for the establishment of the European Central Bank (ECB).

²⁵ Citation from Wyplosz, C. “EMU: Why and How It Might Happen”, Journal of Economic Perspectives 11(4), Fall 1997, p. 3-22

Since the European Monetary Institute (EMI) had been established in 1994, it had focused on preparatory work for establishing a European System of Central Banks (ESCB) which now consists of the ECB and the NCBs of all member countries of the EU. The most important issue that the EMI dealt with was that the ECB would conduct the single monetary policy with its primary objective being the maintenance of price stability.

Dr. W. F. Duisenberg, President of the European Monetary Institute explained the four main characteristics of the ESCB's operational framework in a speech at the International Banking Seminar in Hong Kong on 22 September 1997 like this:

“First, the ESCB will operate in the money market mainly through standard market-oriented operations, such as open market operations. Two standing facilities and the possibility of imposing reserve requirements have also been prepared. Administrative instruments that may create distortions or subsidies for some categories of operators have been discarded.

Second, the monetary policy operations of the ESCB will largely be executed in a decentralized manner by the NCBs. It has been agreed that the ECB will be entitled to conduct fine-tuning operations, under exceptional circumstances, and occasional foreign exchange intervention.

Third, in defining eligible assets for monetary policy operations, existing differences in Member States' financial structures, which are of particular importance for national financial markets and banking systems, have been taken

into account in the preparatory work with a view to ensuring some continuity for market participants in the different countries.

*Finally, the monetary policy framework has been designed with a view to ensuring that homogeneous conditions are applied to all counterparties, irrespective of their location in the euro area. For instance, although regular tenders for central bank money will be implemented in a decentralized manner, they will be decided and organized centrally by the ECB, thereby ensuring equal treatment for counterparties.”*²⁶

The monetary policy of the ECB’s antecessor, the Deutsche Bundesbank was subject to a close investigation by Ben Bernanke and Ilian Mihov (1997). It was remarked that the Bundesbank responded more to inflation and much less to changes in money growth forecasted. In support it was shown that the Bundesbank used to specify money growth targets as ranges and inflation target as more accurate points. The main focus of the Bundesbank from 1985 on was always to reach the inflation target of two percent which it considered to be equal to price stability.

The idea of Germany as being a suitable “leader” of the ECB is supported by Mussa (1997). He points out that the policy of following a dominant leader (Germany) has worked out fine throughout the 1990’s for smaller countries, but

²⁶ Citatation from: Duisenberg, Dr. W. F. “The European Monetary Institute and progress towards monetary union” Speech at the International Banking Seminar in Hong Kong on 22 September 1997

he sees problems with such linkages between countries of similar economic size (e.g. Germany and France). With the goal of becoming one of the founding members in EMU, most countries in the European Union had brought down their inflation rates following the German example to the “German standard” of around two percent. The fact that smaller countries like Austria and the Netherlands had their currencies successfully fixed to the Deutsche Mark before had already been proof for the benefit of a fixed parity.

The big influence of Germany is an often discussed matter in the literature. Nautz and Offermanns (2006) for example tried to examine whether virtual pre-EMU data or German data are a better base for the evaluation of Euro/Dollar exchange rate behavior. The dominance of Germany in the time before EMU makes this decision a very hard one. The choice for the synthetic data would imply that the determination of the European exchange rate remains unchanged. The choice for the German data would imply that the Euro more or less took over the place of the German Mark. The authors remark, that the assumption that the Euro simply follows the Mark is a far too simple view. *“Above and beyond that, out-of-sample predictions show that specifications based on synthetic European data significantly outperform German models over the EMU period.”*²⁷

The history of the ECB is commonly seen as a success story. Alesina and Perotti (2004) for example grant the EU undisputed success with their Central Bank and

²⁷ Citation from: Nautz, D., Offermanns, C. “Does the Euro follow the German Mark? Evidence from the Monetary Model of the Exchange Rate” *European Economic Review* 50(5) (June 2006) pp. 1279-1295

the monetary policy thanks to avoidance of institutional complexity in the process of the foundation of this independent institution. Alesina and Perotti further mention the importance of the one main objective policy which puts price stability in the center of attention.

The efficiency of the ECB relies mostly on the common will of the member countries. The EMU members had already proven their intention to trust the ECB as their decision maker in terms of monetary policy by giving up their sovereign National Central Banks in favor of a superior institution. Frankel and Rose (1998) argue that because the business cycles of the countries that join the EMU will become more synchronized, the disadvantage of giving up independent national monetary policy will be lowered significantly.

On the subject of EMU and ECB models, I recommend Dixit (2001). In his paper he constructed various models of EMU and ECB with their member countries having different objectives and not acting in concert. In his opinion, the most encouraging finding is that even continued tracing of national goals by member countries does not necessarily lead to failure in pursuing the interest of the EMU and the ECB. He concludes with the statement that if every country votes in its own national interest and inflation is moderate²⁸, the situation leads to equilibrium.

²⁸ According to Dixit (2001), because of the low variance of the median of country specific shocks, the volatility of inflation within EMU is reduced.

An interesting aspect that comes along with the fusion of the sovereign National Banks in the Euro zone is the danger of relying too much on the decision makers of the ECB. Ricci and Isard (2002) express a warning note as EMU countries might not put as much effort into the stabilization of exchange rates as they did in the pre-EMU era. Therefore they see the argument that the Euro will be a more stable currency than its predecessors as possible but not certain.

4.1.1. Monetary policy of the ECB

The absolute power of conducting monetary policy for the EMU and the problematic situation at the beginning of the Euro era has been treated in several articles. In the years before the start of the new European currency, the forecasts of European economic performance were in the center of attention. One of the articles that deal with this issue is one by Marcellino et al. (2003). They investigated data from the EMU countries over a 15 year time span from 1982 to 1997. Their most significant finding shows that “[...] forecasts constructed by aggregating the country-specific models are more accurate than forecasts constructed using the aggregate data.”²⁹

²⁹ Citation from: Marcellino M.; Stock J.H.; Watson M.W. “Macroeconomic forecasting in the Euro area: Country specific versus area-wide information” European Economic Review, Volume 47 (1), (February 2003) pp. 1-18

The ECB has always been superficially seen as a European counterpart to the US Federal Reserve.³⁰ The ECB however always refers to its primary objective as being the maintenance of price stability and the intention to keep inflation rates at the level of below two percent over the medium term. Rudebusch and Svensson (2002) speak of a [...] “*weak type of monetary targeting and an implicit form of inflation targeting*”³¹ when talking about the monetary strategy of the ECB. In their article, they try to draw conclusions from US data in order to project European data by comparing the relative performance of the former mentioned monetary targeting and inflation targeting. The authors confess, that the difficult issue about empirical analysis at that time was, in general, the lack of utilizable data from the euro-area. Still, the relevance of US data as some sort of guideline is indisputable as the two areas are roughly comparable in terms of economic size and importance and, of course, monetary union. The results show, that monetary targeting seems to be quite inefficient in both the American and the European model. Inflation targeting leads to comparable results while keeping inflation lower. Also the effect of output gap variability is higher in the money targeting model.

The impact of asymmetries on the effectiveness of monetary policy in the Euro area is the key issue in an article by Aksoy et al. (2002). The political

³⁰ See “<http://www.ecb.int/mopo/html/index.en.html>” for a detailed overview of ECB monetary policy and “<http://www.federalreserve.gov/monetarypolicy/fomc.htm>” for a detailed overview of Federal Reserve monetary policy.

³¹ Citation from: Rudebusch, G. and Svensson, L. "Eurosysteem Monetary Targeting: Lessons from U.S. Data" *European Economic Review* 46 (2002) pp. 417-442

independence of the ECB is mentioned as well as the fact that all other objectives that belong to the duties of the ECB may not keep the ECB from achieving its main objective which is price stability. As mentioned in chapter 4.1., the interest conflict of national representatives in the process of decision making is also mentioned. The findings show that the differences from the commonly decided interest rate³² to the ones that are desired nationally can lead to considerable frustration, especially in smaller countries. Another conflict may arise if one country desires to stabilize its output. In that case, the interest rate is favored to react to asymmetric shocks thus leading to a gap between the nationally desired interest rate and the one decided by the ECB. The authors state that welfare across the union is more likely to increase under a policy that acts on behalf of the EMU than under a policy that is driven by several national interests. I agree with that finding, as a situation in which every member country's representative is only pursuing national interests would most probably lead to stagnation.

Coenen and Wieland (2005) compare the three largest economies in the EMU, Germany, France and Italy, and find that both France and Italy had to run through a convergence process, while Germany had already achieved stable inflation before the EMU. The goal is to construct a model of three countries within the Euro area to show the performances of alternative monetary strategies. They compare the nominal wage contracting model to several versions of the relative wage contracting model. Their findings show that the relative wage contracting

³² The commonly decided interest rate refers to the interest rate fixed by the ECB which represents the median voter's decision.

model fits countries that come from a high inflation regime, like France and Italy better, while the nominal wage contracting model fits German data better.

Many economists held the ECB responsible for the rather poor performance of the Euro in its early years because of the ECB's solid persuasion of all the EMU member countries and their respective National Banks to stick strictly to the Maastricht criteria and adopt the interest rates to the low standard of Germany at that time. Further remarks on that topic are to be dealt with in chapter 5.1. of this article.

Voices against the current ECB strategy recently became louder, as some economists questioned the strategy of differing between economic and monetary dimensions. Former leading economist of the ECB, Othmar Issing, just recently spoke out against intended changes of the ECB's strategy. Issing stated in a guest article in the Financial Times Germany (2006) that as long as a solid solution for unifying the two pillars of the ECB has not been worked out, there is no need to change the current situation which he describes as a success story.

Clarida et al. (1999) published a very interesting article where they treat the importance of monetary policy as such and the newly found interest on the matters of monetary policy at the end of the old century. This paper provides in depth information for better understanding of the backgrounds and developments in monetary policy.

4.1.2. ECB and the Fed

As mentioned in Chapter 4.1.1., in the literature the ECB is often compared to the US Federal reserve. In its structure, there are also several similarities. Both institutions had for example 12 members in the examined time span. The Fed consists of 12 Federal Reserve Banks that represent different regions of the US. The 12 are: Atlanta, Boston, Chicago, Cleveland, Dallas, Kansas City, Minneapolis, New York, Philadelphia, Richmond, San Francisco, and St. Louis. The ECB consisted of the 12 National Central Banks of the starting Euro member countries which are mentioned in the introduction.³³

For a close insight of Fed policy from the late 1980's on, I highly recommend the paper of Alan Greenspan (2004), where he talks about the key developments of monetary policy in the US. Amongst other facts, Greenspan explains the Fed's intentions in raising the funds rate (refinancing interest rate) to 6.5 % in May 2000 to keep the inflation rate down and he speaks about the rate falling (also connected to the terrorist actions in September 2001) to 1 % in mid-2003 as mirroring the goal of price stability that has been worked on for over two decades.³⁴ Greenspan also mentions the phenomenon of the very mild recession in the US in the early years of the new century "*[...] despite the stock market plunge, terrorist attacks, corporate scandals, and wars in Afghanistan and Iraq*

³³ With Slovenia joining the Euro Area on January 1 2007, there are now 13 NCB members in the ECB.

³⁴ See Figure 1

[...].”³⁵ He refers to other opinions that see the business decline from May 2001 to 2003 only as a part of long term imbalances.

The Fed’s policy is also investigated in relation to the new economy. Ball and Tchaidze (2002) dedicated an article to that subject. The former chairman of the Fed, Alan Greenspan is described as one of the first to realize the growth in productivity in the 1990s but still he kept the interest rates at very low levels against all odds. The positive situation that the US markedly benefited from low inflation and unemployment as well as stable growth especially in the second half of the 1990s, which stands for the area of the “*new economy*”³⁶, was of course very helpful for the successful era in the US at that time. The common opinion at that time was that Greenspan spotted the new economy before others did. The authors conclude that Greenspan’s achievements were remarkable, but not everything stands and falls with one man, as they have rather positive expectations for the new century.

When observing data from both the European and the US American market, the most obvious differences are the rapid and intense reactions to economic events by adapting interest rates by the Fed. The ECB tends to take things easier and rely more on consistency when readjusting the European interest rates. The often

³⁵ Citation from: Greenspan, A. “Risk and Uncertainty in Monetary Policy” The American Economic Review, Vol. 94, No. 2 (May, 2004) pp. 33-40

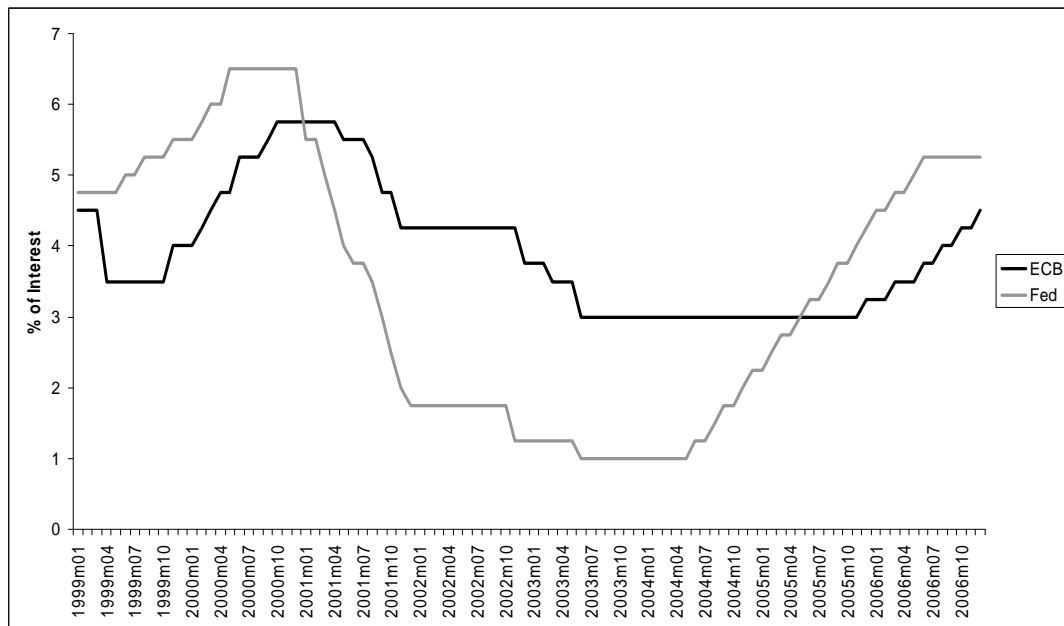
³⁶ Citation from: Ball, L. and Tchaidze, R., "The Fed and the New Economy" The American Economic Review Vol. 92 No. 2 (May 2002) pp. 108-114

described situation sees the Fed as the leader and the ECB as the follower because the US trends are usually adopted in Europe afterwards.

When focusing on short term interest rates, one has to wonder how effective monetary policies can be made by the Central Banks when facing short term interest rates at very low levels. Bernanke and Reinhart (2004) gave an overview of monetary policies with short term interest being close to zero or even zero all together. They state that monetary policy commitments can influence the economy for example by ensuring that the short term interest rates will be kept lower in the future than the current expectations indicate. The central banks seem to even value the importance of influencing market expectations by giving out information about their future policies very early. The danger with short term interest being close to zero is of course that investors will be looking for alternatives. This would affect liquidity in some markets as more people would invest in more profitable long term funds. The danger arising from public belief is that people might interpret low overnight interest rates as a sign of ineffectiveness of monetary policy and incompetence of the central bank. They repeat on that occasion that central banks also have other means of stimulating monetary policy than lowering short term interest.

In contrast to the short time interest rates, I will now focus on longer term, refinancing interest rates from both the ECB and the Fed. In Figure 1, you can see the movements from the beginning of the Euro area (January 1999) until December 2006.

Figure 1: Refinancing interest Rates of the ECB and the Fed from January 1999 to December 2006.



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In the period since the introduction of the Euro the Fed has been more active in adjusting its interest rates than the ECB. In Figure 1, I chose to compare the changes in the refinancing interest rates in both the US and the EU from 1999 to 2006. While the interest rates in the US range from 1 percent to 6.5 percent in the observed eight year period, the interest rate in the Euro zone ranges only from 3 percent to 5.75 percent in the same period. The data prove the commonly accepted situation of the Fed reacting faster and more radically to outside influences while the ECB follows the trend of the fed but with a considerable time lag and a much smoother appreciation or depreciation of the interest rate.

³⁷ Data source: eurostat; see eurostat Homepage for full data set ([http:// ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)).

A closer look at Figure 1 shows that ECB interest rates tend to follow the direction that is predetermined by the Fed. This development in time leads to the assumption that the ECB interest rate changes are related to the ones given by the leader, the Fed.

Monetary policy shocks and their power to measure unexpected developments in monetary policy are subject to a paper by Cochrane and Piazzesi (2002). The authors find that the Fed seems to react on long term interest rates, as short term interest rates seem to be of little help in forecasting target changes. Due to this, the event of interest-forecasts of target changes may be influenced not only by interest rate target changes but also by the Fed's reaction to interest rates. They add another remark which states that the Fed always claims only to react to economic events, and never confess that they might influence certain events with their actions.

4.2. EU enlargement

This subchapter is dedicated to reviews of publications on enlargement, especially eastern enlargement, of the EU.

The question of further enlargement of the EU area has always been an issue, also before the European currency was “born”. Many writers have expressed their concern about more and more countries joining the EU and in succession joining

EMU. The accession criteria, also called Copenhagen criteria, are stated by the European Council as follows:

“Membership criteria require that the candidate country must have achieved

- *stability of institutions guaranteeing democracy, the rule of law, human rights and respect for and protection of minorities;*
- *the existence of a functioning market economy as well as the capacity to cope with competitive pressure and market forces within the Union;*
- *the ability to take on the obligations of membership including adherence to the aims of political, economic & monetary union.”³⁸*

Alesina et al. (2005) found that in order to accept new candidate countries, the existing members must benefit from the effects that result from the entry of new members into existing unions. They describe it as “[...] a trade-off between the size and the scope of the union.”³⁹ In the context of enlargement, the problematic question is whether to specifically arrange the competences of the EU in the new constitution or to leave many areas as vaguely defined as they are now. The advantages and disadvantages of rigid versus flexible Unions are also discussed in the article mentioned.

³⁸ Citation from: European Council, June 1993

(http://ec.europa.eu/enlargement/enlargement_process/accession_process/criteria/index_en.htm)

³⁹ Citation from: Alesina, A., Angeloni, I. and Etro, F. "International Unions" The American Economic Review Vol. 95 No. 3 (June 2005) pp. 602-615

Since the introduction of EMU, the EU has accepted twelve countries as new members: In 2004, The Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovakia and Slovenia and in 2007 Romania and Bulgaria. Among all of these only Slovenia has already switched from its former currency, the Tolar, to the Euro⁴⁰ with Cyprus and Malta being scheduled to follow in 2008.

In the literature there are different opinions on enlargement. Daviddi and Ilzkovitz (1997) say that the integration into the Euro area should not be the number one target of the countries that were then associated to be candidates of an enlargement, but still they should make efforts to establish sound economic policies and see a membership in the Euro area as a long term goal.

⁴⁰ On January 1 2007, Slovenia became the thirteenth member of the Euro area.

5. The Euro/Dollar relationship

“Thus, whatever standard explanation of the exchange rate we turn to, it is at best true for a small part of the period in question, and that only if we close an eye.”⁴¹

Exchange rates are always a highly sensitive subject to work on. Especially the work on floating exchange rates is seen to be hard in terms to get meaningful conclusions from. The research on linkages between macroeconomic basics like interest rates, productivity and money supply and the floating exchange rates are recently getting rather one sided, as the probability of them being close to random walks is mentioned more often in up to date publications. The traditional forecasts of exchange rates based on the most popular indicators, purchase power parity (PPP) and uncovered interest parity (UIP), and their relative low reliability are the main reason for the pessimistic comments on exchange rate predictions. This aspect is treated in detail in Streissler (2007) where he finds that both the PPP theory and the UIP theory turned out to deliver more wrong predictions than right ones in the forecast of US Dollar movement from the first quarter of 2002 to the fourth quarter of 2005. In the case of the US compared to the EU, both PPP and the interest rate showed very little differences over the past years which would implicate a negligible change in the exchange rates. As time has shown there was a rather larger movement in the exchange rate which shows that these theories are not exactly applicable in this case.

⁴¹ Citation from Streissler, E. W. “Towards an Empirically Founded Theory of Exchange Rates” (2007)

Charles Engel and Kenneth D. West published a theory in 2005 where they state that “[...] *floating exchange rates between countries with roughly similar inflation rates are in fact well approximated as random walks. Fundamental variables do not help predict future changes in exchange rates.*”⁴² This statement is of course meant in a general way, as they later refer to an article by Cheung, Chinn and Pascual (2002) which concludes that a certain model may perform well for one exchange rate but not for another. Engel and West further state that the fundamentals of macroeconomics⁴³ might not be important figures to explain exchange rates, but exchange rates could potentially be helpful to predict future developments of these fundamentals. The authors continue to assume that there might be some not yet discovered and examined variables that control exchange rates. They admit however that in the late 1990’s the exchange rates within Europe became more predictable, which was mostly due to known arrangements of European countries to support exchange rate stabilization in order to prepare for the currency union. Perhaps the most significant conclusion that Engel and West are drawing is explained in the following citation: “*We do not find much evidence that the exchange rate is explained only by the “observable” fundamentals.*”⁴⁴

⁴² Citation from: Engel, C. and West, K. “Exchange Rates and Fundamentals” *Journal of Political Economy* Vol. 113 (2005), pp. 485–517

⁴³ Engel and West refer to the standard set of fundamentals as money, income, prices, and interest rates

⁴⁴ Citation from: Engel, C. and West, K. “Exchange Rates and Fundamentals” *Journal of Political Economy* Vol. 113 (2005), pp. 485–517

The random walk theory of exchange rates by Meese and Rogoff (1983) has never been definitely proven wrong by empirical studies up to now. In fact, the literature seems to rather support the theory of (up to certain standards) non predictable exchange rates.⁴⁵

Another aspect to take into consideration is the fact that capital movement amongst (highly) developed countries is practically free nowadays which results in interest rate equality and an acclimatization of prices in a global context. These adjustments are obvious because otherwise investors would be constantly moving their capital to wherever it is most profitable for them.

5.1. Euro/Dollar exchange rate development empirically

“Of all the asset prices in an economy, one of the most important—certainly the most important if the economy is very open—is its currency’s exchange rate against foreign currencies.”⁴⁶

⁴⁵ See for example Fernando Alvarez, Andrew Atkeson, and Patrick J. Kehoe “If Exchange Rates Are Random Walks, Then Almost Everything We Say About Monetary Policy Is Wrong” (2007) AEA Papers and Proceedings (May 2007) pp. 339-345

⁴⁶ Citation from: Obstfeld, M. “Inflation-Targeting, Exchange-Rate Pass-through, and Volatility” The American Economic Review Vol. 92 No. 2 (May, 2002) pp. 102-107

This quotation from Obstfeld (2002) shows the high importance of exchange rate movements in a more and more globalized world. Obstfeld refers to the common view that inflation targeting in the domestic market is the most essential tool to keep the exchange rate at reasonable levels. In the conclusion, he mentions that exchange rate movements do not necessarily bring coordination problems among sovereign countries, but they will probably result in income redistributions within countries.

I found an article that specializes on the exchange rate variability of the EMU and its effects on external countries. In the article by Ricci and Isard (2002), they find that the optimization of monetary policies does not necessarily lead to the conclusion that the EMU goes hand in hand with greater exchange rate variability. In a situation where countries are specializing because of comparative advantages, the authors investigate variability for several countries. When looking at small, specialized countries within the Euro area, a shock in the segment that they are specialized in results in higher variability under EMU than in the pre-EMU era. The opposite is true for large countries.

In the time span from January 1997 to December 2006 I laid special interest on the average exchange rates of the Euro and the US Dollar based on monthly averages. Based on the Data from the ECB, the Euro had a “decade-high” exchange rate of 1.3408 Dollars per Euro in December 2004 and a “decade low” of 0.8532 Dollars per Euro in June 2001.⁴⁷

⁴⁷ See ecb.com for full data set

The ongoing trend of the Euro appreciation and the Dollar devaluation is subject to an article by Atkins and Schieritz (2006). In their article they refer to ECB and Fed data according to which the total value⁴⁸ of Euro cash overtook the total value of US Dollar cash for the first time in history in October 2006. The authors see this development as an indication of the Euro outrunning the Dollar in international competition⁴⁹.

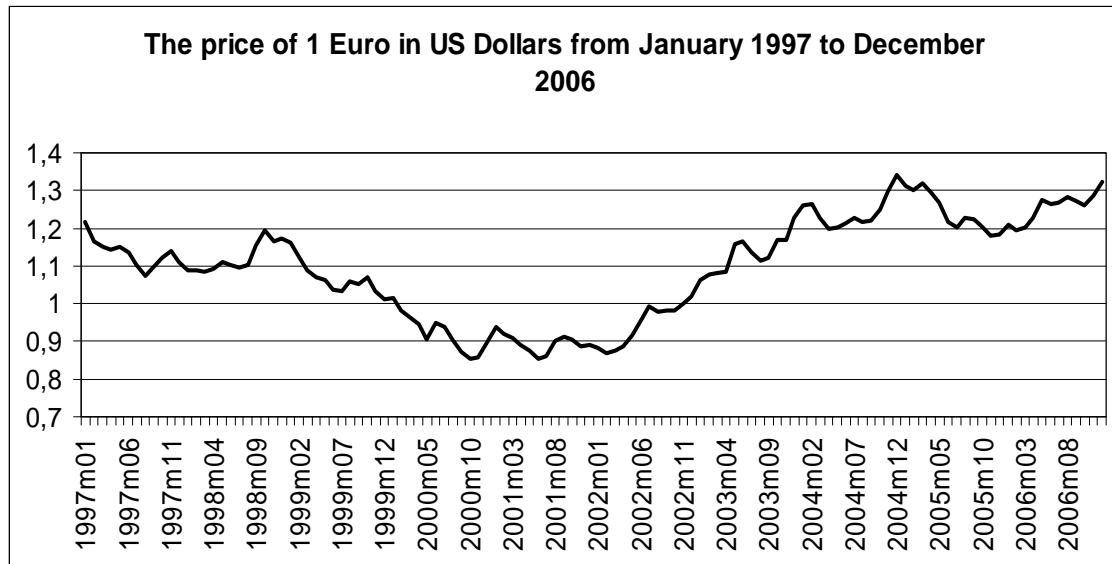
In international terms, investments in Euro currency also became particularly popular. Several sovereign governments have hinted that they are planning to rearrange their foreign currency assets and switch (at least partly) from Dollars to Euros. The rising demand for Euros goes hand in hand with the appreciation of the currency which is feared to lead to heavy losses in export business.

To illustrate the data graphically, I used the monthly averages of the exchange rates which I found on the homepage of eurostat and worked out the following figures:

⁴⁸ Based on the effective exchange rate there were Euro bills worth approx. 592 billion Euro and Dollar bills worth approx. 579 billion Euros in circulation.

⁴⁹ Outside the Euro and Dollar Zone

Figure 2: The price of one Euro in US Dollars from January 1997 to December 2006.



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Figure 2 shows the development of the Euro/Dollar exchange rate over the past decade.

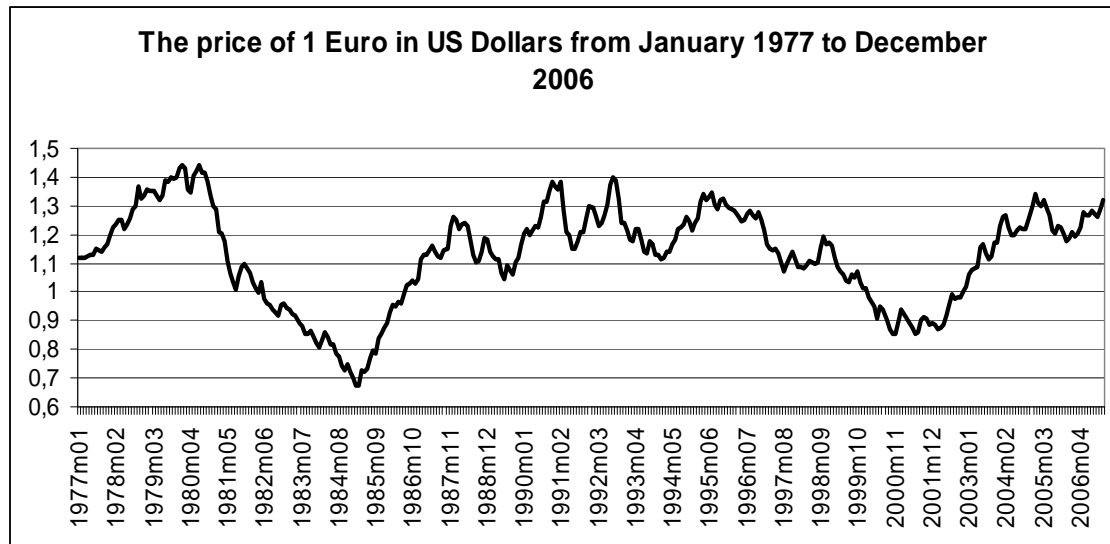
The starting rate in January 1997 was 1.21621 Dollar per Euro and stayed pretty constant in the last two pre EMU years with a rate of 1.17212 in December 1998. One can see a more or less constant decline of the Euro in the years from 1999 to 2001. The introduction of the Euro as a visible and cash currency in 2002 marks a turning point in the Euro/Dollar relationship. One Euro was worth 0.8833 US Dollars in January 2002 and its rate climbed up to the worth of 1.3213 US Dollars in December 2006. One can see the troubled years between 1999 and 2002 mentioned in the former chapters. If you look at the change of the exchange rate

⁵⁰Data source: eurostat; see eurostat Homepage for full data set ([http:// ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)). For further information on data before 1999, see comments to table 2.

value, ECB data show that the Euro has appreciated by more than 25 percent from January 4, 1999 to November 22, 2007. The change since the introduction of Euro cash in 2002 shows a far more dramatic number, namely an appreciation of almost 64 percent from January 3, 2002 to November 22, 2007.

Most recent data show of course the ongoing boom of the Euro/Dollar exchange rate with an up to date (based on monthly average data) high of 1.4227 Dollars per Euro in October 2007. The November figures show a continued development as the Euro reached a new all time high of 1.4829 Dollars per Euro on November 22, 2007.

Figure 3: The price of one Euro in US Dollars from January 1977 to December 2006.



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A more comprehensive figure than figure 2 can be derived according to eurostat, “Data are taken from the European system of central banks (Eurosystem). The source is the European Central Bank. Until 31 December 1998 these exchange rates refer to the ECU and the source was the European Commission. The ECU rates are as calculated by the European Commission according to the Commission Communication of 13 March 1979 on “the calculation of the equivalent of the ECU and the European Unit of Account published by the Commission””.⁵²

To show the exchange rate movement in a larger context, I chose to include this graph for a longer period. In the last 30 years, there were several ups and downs in

⁵¹ Data source: eurostat; see eurostat Homepage for full data set ([http:// ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)).

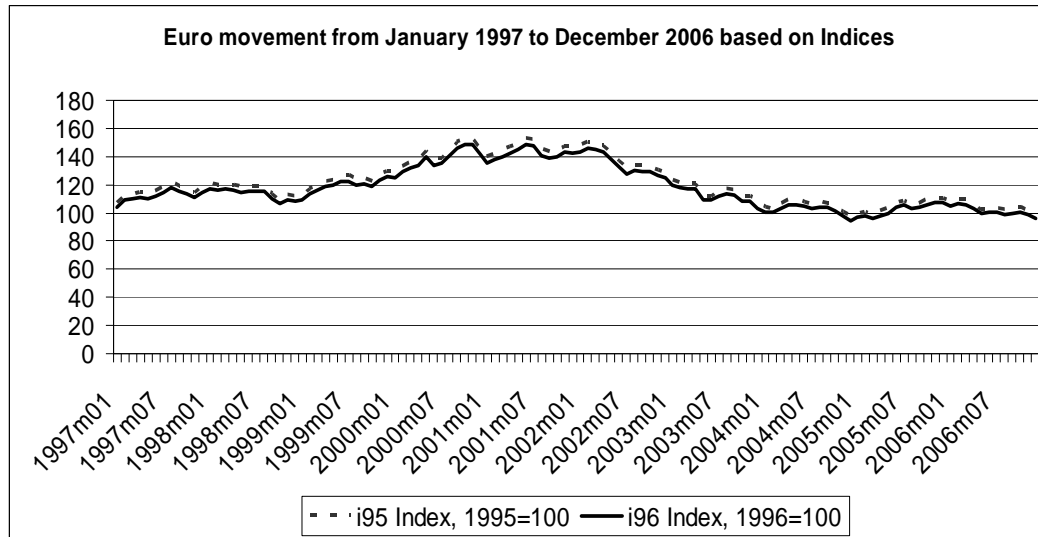
⁵² Citation from: “http://europa.eu.int/estatref/info/sdds/en/ert/ert_bil_eur_sm.htm#basic_data”

the relationship of Dollar and Euro. The constant decline of the Euro in the late 1990's might be explainable through the US stock market boom of that time and the appreciation of the Dollar because of the large amount of direct investments in the US markets.

The high number of 1.44072 of the Euro value in July 1980 was the highest for almost three decades. Only in November 2007, this value has been exceeded and the new top figure is now the one of November 22, 2007 with a value of 1.4829 Dollars per Euro.

Figure 4: Euro movement from January 1997 to December 2006

based on Indices.



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Figure 4 shows the development of the Euro compared to the US Dollar based on indices, where either i95 or i96 equals 100%. One can see that the curves are the inversion of the movement in Table 2. That means that in July 2001 the Dollar was at around 150% of its worth of 1995/1996 relative to the Euro. This Figure does not provide as much explanatory power as I hoped it would but it represents a not so often used view on exchange rate development.

⁵³ Data source: eurostat; see eurostat Homepage for full data set ([http:// ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)).

5.1. The weak start of the Euro

The Euro has permanently and continuously depreciated versus the US Dollar in the time span in which the Euro was only a virtual currency. As data show, the market value in comparison to the Dollar began to rise again shortly after the emission of Euro cash.⁵⁴ In the literature I found some attempted explanations of this matter.

The first year of the Euro is subject to a paper by Svensson (2000). He investigated the success of the Euro system in its first year by taking a closer look at the (achieved or not) goals, the monetary policy decisions and their framework and the communication with third parties. The ECB's focus is on the medium run, this being an argument in favor of a not precipitate interest rate adjustment. The impression of a flexible inflation targeting monetary policy is supported.

Svensson spots no "*fatal mistakes in either design or instrument setting*"⁵⁵ and he concludes by expressing his optimism about the future of Euro system monetary policy.

Even before the introduction of the Euro in terms of hard cash, Cohen and Loisel (2001) published an article that dealt with the phenomenon of the weak Euro at

⁵⁴ From January 1 1999 to December 31 2001, the Euro was only a deposit currency until the tangible money was introduced in 2002. For a graphical illustration see Figure 1 of this paper.

⁵⁵ Citation from: Svensson, L. "The First Year of the Eurosystem: Inflation Targeting or Not?" *The American Economic Review* Vol. 90 No. 2 (March 2000) pp. 95-99

that time. The authors find the main reason for the depreciation in too strict and tight fiscal arrangements to fulfill the convergence criteria and the convergence of interest rates which meant in most of the member countries a lowering of the interest rates.

One big issue was of course the booming US stock market at the end of the 1990's which resulted in huge capital flows into the US. The most interesting aspect concerning stock markets is, however, that the Euro fell even when the European stock market performed better than the stock market in the US.

Cohen and Loisel (2001) published a finding that refers to the former mentioned reasons and the fact that inflation in Europe has always been significantly lower than in the US. Based on these figures they draw the meaningful conclusion that the main reason for the struggling Euro in its early years was excess supply. A tight fiscal policy and loose monetary policy were held responsible for this situation by the authors.

The reason for the supply problem in the early years of the Euro might also have been that all the sovereign currencies were exchanged at full value into the new currency. The aspect that induced excess supply was that with the new, common currency there was no longer the need to keep as many cash reserves as before. All European countries had considerable cash reserves in other European currencies. But these countries from 2002 on all had the Euro. Because of the no more needed reserves for currency exchanges but the still existent physical presence of them, it was permissible to talk about excess supply.

Another reason for excess supply may be innovations and new means in payment arrangements which lead to an economization in the use of currency and drives individuals to carry less cash. This phenomenon is examined in an article by Green (2002) where he deals with the subject of alternative means of money transactions. The paper itself does not relate to EMU, but it treats a global topic that is also applicable to Europe.

One of the most interesting points in the article is the empirical proof of the US stock market being some sort of a trendsetter for the European one. As data show, a positive supply shock in the US market leads to a permanent increase in the domestic stock market and a temporary increase in the foreign (here: European) stock market, while a positive supply shock in Europe leads to an increase in the European stock market, but leaves the US stock market practically untouched. The effect of supply shocks on exchange rates was rather surprising: The studies of Cohen and Loisel (2001) showed that a positive supply shock in the US market appreciates the Dollar, while a positive supply shock in Europe depreciates the Euro.

5.2. Variables explaining the Euro-Dollar exchange rate

During the process of reviewing the literature on the subject I found few data evidently explaining the movement of the exchange rate. Most of the studies

conducted concentrate on the impact of interest rates on the exchange rate movement. A very recently issued article by Fernando Alvarez, Andrew Atkeson, and Patrick J. Kehoe; with the title *“If Exchange Rates Are Random Walks, Then Almost Everything We Say About Monetary Policy Is Wrong”*⁵⁶ expresses serious doubts on the predictability of exchange rates with the help of current prediction tools. They write that the main focus of monetary policy analysis right now is to determine how changes in an asset price and the short-term interest rates affect the economy. The authors explain that *“[...] if exchange rates are random walks, then all of the fluctuations in interest differentials are accounted for by fluctuations in conditional variances and none by fluctuations in conditional means. The data are so opposite of what standard models assume that even the most die-hard defenders of them should take note. If these data are accurate, then almost everything we say about monetary policy is wrong.”*⁵⁷

Engel and West (2005) stated that exchange rate models since the 1970’s had the common belief that exchange rate models equal asset prices and therefore are influenced by future expectations. One of their findings shows *“[...] that the presence of persistent deviations from uncovered interest parity, in the form of a*

⁵⁶ See: Alvarez, F., Atkeson, A. and Kehoe, P. “If Exchange Rates Are Random Walks, Then Almost Everything We Say About Monetary Policy Is Wrong” AEA Papers and Proceedings (May 2007) pp. 339-345

⁵⁷ Citation from: Alvarez, F., Atkeson, A. and Kehoe, P. “If Exchange Rates Are Random Walks, Then Almost Everything We Say About Monetary Policy Is Wrong” AEA Papers and Proceedings (May 2007) pp. 339-345. See Article for further details on the matter and remarks on the observed data.

risk premium or expectational error, could potentially play a large role in accounting for movements in exchange rates.”⁵⁸

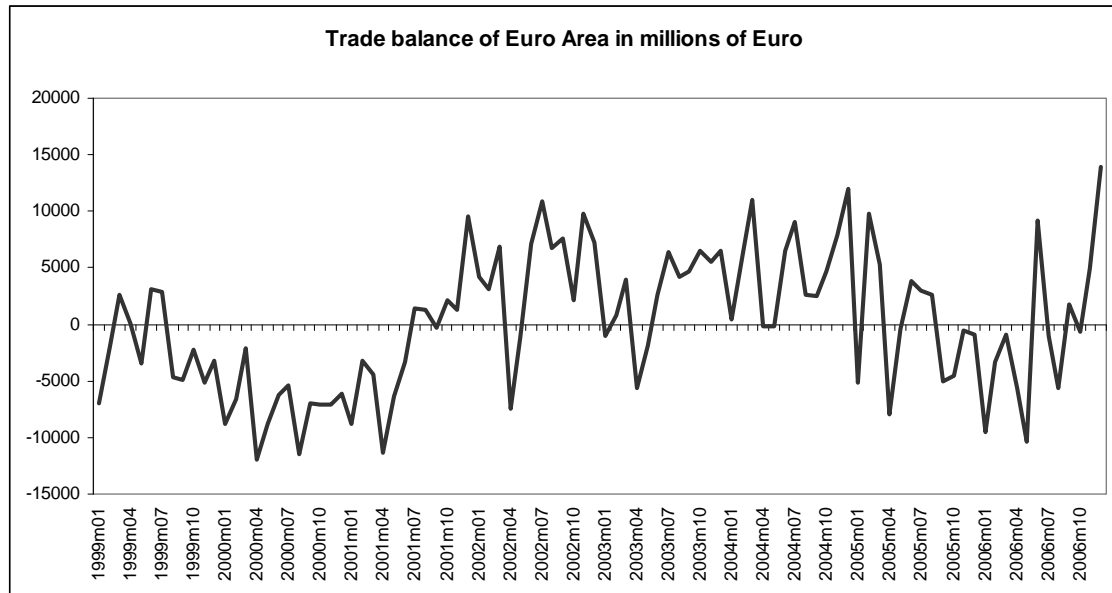
5.2.1. Model 1: Trade Balance of the Euro Area and the Euro/Dollar Exchange rate

In an empirical attempt to show which data are explaining the exchange rate of the Euro to the Dollar I tried to find a linkage of the exchange rate and the trade balance of the Euro area. In figures 5 and 6 I present an illustration of both the trade balance and the exchange rate movement for the data viewed. I chose the time span from 1999 (the launch of the Euro) to 2006 based on monthly data where the data for 1999 represent the 11 Euro Zone countries (Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland) and from 2000 on, the data represent the 12 Euro Zone countries (the 11 original ones including Greece). The numbers of the trade balance do not represent Euro Zone/US market trade, but Euro Zone trade with the rest of the world.⁵⁹

⁵⁸ Citation from: Engel, C. and West, K. “Exchange Rates and Fundamentals” Journal of Political Economy Vol. 113 (2005), pp. 485–517

⁵⁹ Data source: eurostat; see eurostat Homepage for full data set ([http:// ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)).

Figure 5: Trade Balance of the Euro Area from January 1999 to December 2006



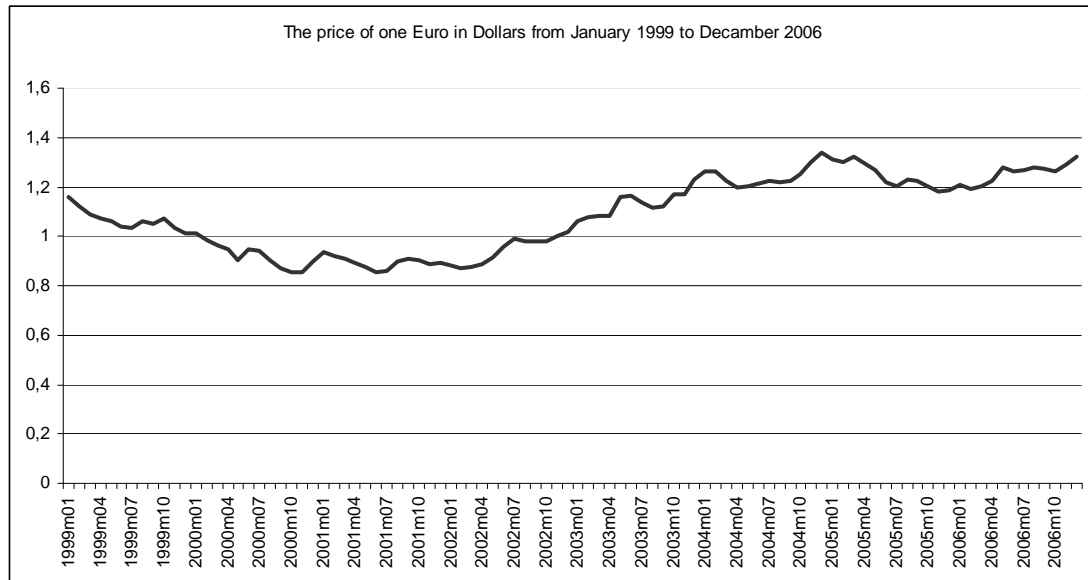
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One can see a constantly negative period from August 1999 to June 2001. From there on, the curve makes vast movements, which does not lead to the assumption of a continuous development.

⁶⁰ Data source: eurostat; see eurostat Homepage for full data set ([http:// ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)). The direct URL to the trade balance data source is:

“http://epp.eurostat.cec.eu.int/extraction/evalight/EVAlight.jsp?A=1&language=de&root=/theme1/euroind/bp/bpca_m”

Figure 6: The Euro/Dollar Exchange rate movement from January 1999 to December 2006



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I created a data set of the Euro/US Dollar exchange rate from January 1999 to December 2006 based on monthly average data and the trade balance of the Euro area countries (11 countries in 1999, 12 countries from 2000). I ran a linear regression with the exchange rate being the independent variable and the trade balance as the independent one.

⁶¹ Data source: eurostat; see eurostat Homepage for full data set ([http:// ec.europa.eu/eurostat](http://ec.europa.eu/eurostat)). The direct URL to the exchange rate data source is:

“http://epp.eurostat.cec.eu.int/extraction/evalight/EVAlight.jsp?A=1&language=de&root=/theme2/ert/ert_bil_eur_m”

Table 1: Significance

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,199	1	,199	9,624	,003 ^a
	Residual	1,942	94	,021		
	Total	2,141	95			

a. Predictors: (Constant), Trade Balance Euro Area

b. Dependent Variable: Exchange Rate USD / EUR

The first finding shows, that the model is significant at the 0.003 level, i.e. highly significant.

Table 2: r² and standard error

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,305 ^a	,093	,083	,14373178

a. Predictors: (Constant), Trade Balance Euro Area

b. Dependent Variable: Exchange Rate USD / EUR

The r² of the model shows, that only 9.3 % of the data is explained by the model with a standard error of 0.1437.

The outcome of the regression shows an interesting tendency. The exchange rate of the Euro to the Dollar seems to rate the Euro higher at times when the trade balance of the Euro Zone is higher. According to traditional findings, the higher the value of the domestic currency, the worse it should be for exports, as domestic goods become more expensive abroad.

Figure 7: Relations between Exchange rate and Trade Balance

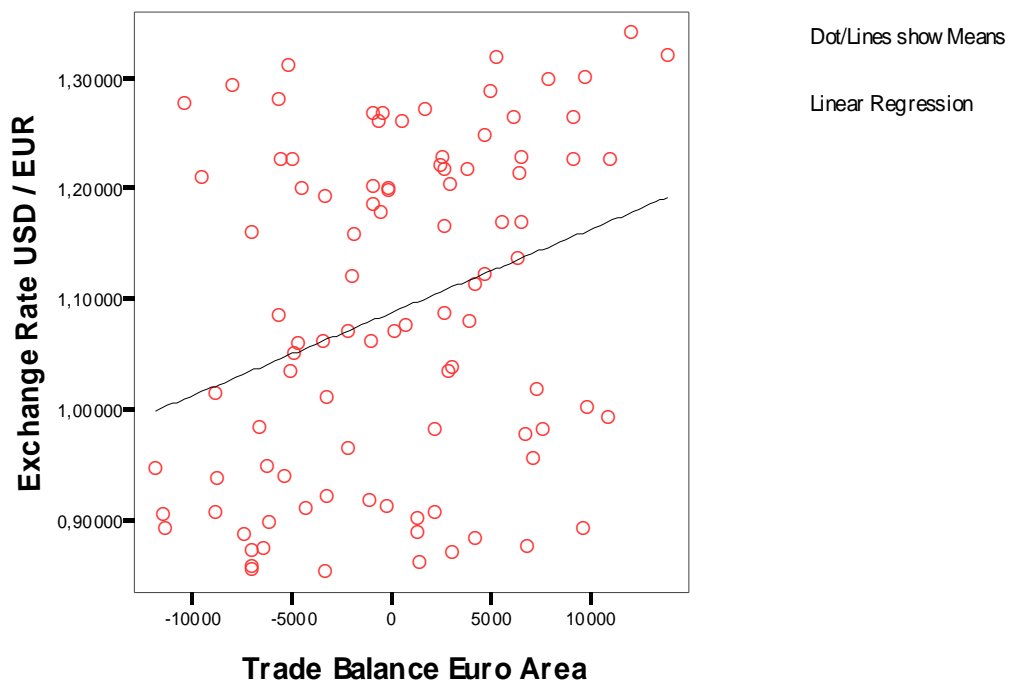


Figure 5 shows that the tendency as indicated by the black line leads to the conclusion, that the better the European trade balance performs, the more valuable the Euro is compared to the Dollar. The model however only explains around 9,3 % of the variance of the data which means that this conclusion has no very high

value as shown in Figure 5 with the single points of intersection being not very close to the median line. Estimation of the standard error shows that significance is not achieved.

5.2.2. Model 2: Refinancing Interest Rates of the ECB and the Fed and the Euro/Dollar Exchange rate

In the second model I ran a linear regression with data of the refinancing interest rates of the ECB and the Fed (see Figure 1) and looked at the links to the development of the Euro/Dollar exchange rate (see Figure 6) all in the time span of January 1999 to December 2006. All data are based on monthly averages. I selected the exchange rate as the independent variable and the two interest rates as the dependent variables.⁶²

Table 3: Descriptive statistics

Descriptive Statistics			
	Mean	Std. Deviation	N
Exchange Rate USD / EUR	1,0882625	,15011407	96
Refinancing Interest ECB (EU)	3,9245	,89378	96
Refinancing Interest Fed (US)	3,4349	1,89120	96

⁶² Again, the data are taken from the eurostat Homepage ([http:// ec.europa.eu/eurostat](http://ec.europa.eu/eurostat))

The numbers of Table 3 show, that the mean of the exchange rate over the examined period is close to one which of course leaves the serious ups and downs as expressed by the standard deviation over time unnoted. The Mean of the refinancing interest rates of both the ECB and the Fed also lie within 0.5 percent with approx. 3.92% on the European side and approx. 3.43% on the US side. The standard deviations of the interest rates show larger activities on the Fed's movements.

Table 4: Correlations of model 2

		Correlations		
		Exchange Rate USD / EUR	Refinancing Interest ECB (EU)	Refinancing Interest Fed (US)
Pearson Correlation	Exchange Rate USD / EUR	1,000	-,780	-,226
	Refinancing Interest ECB (EU)	-,780	1,000	,547
	Refinancing Interest Fed (US)	-,226	,547	1,000
Sig. (1-tailed)	Exchange Rate USD / EUR	.	,000	,013
	Refinancing Interest ECB (EU)	,000	.	,000
	Refinancing Interest Fed (US)	,013	,000	.
N	Exchange Rate USD / EUR	96	96	96
	Refinancing Interest ECB (EU)	96	96	96
	Refinancing Interest Fed (US)	96	96	96

Table 4 shows the highly negative correlation of the ECB refinancing interest rate and the lightly negative correlation of the Fed refinancing interest rate to the

Euro/Dollar exchange rate. The high significance levels for the two investigated indices in the observed 96 cases leads to the assumption that the model is reasonable. The linkages between refinancing interest rates and exchange rate values is graphically shown in the two scatter plots that are indicated as figures eight and nine.

Figure 8: Scatter plot of Dollar/Euro Exchange Rate and ECB refinancing interest rate

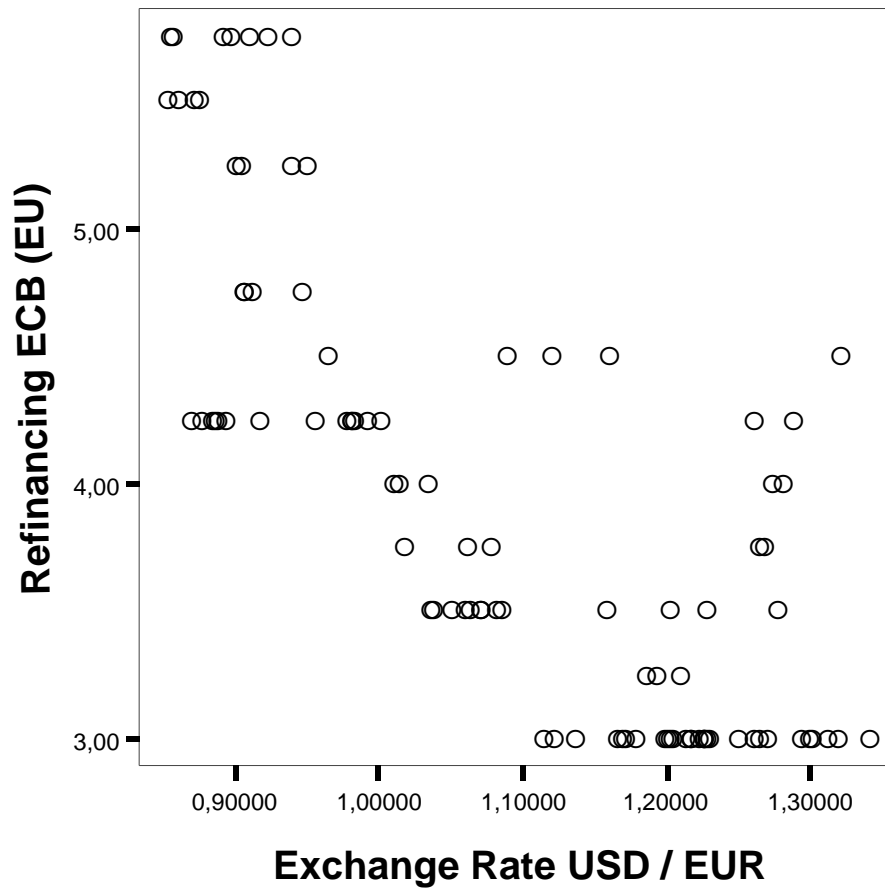
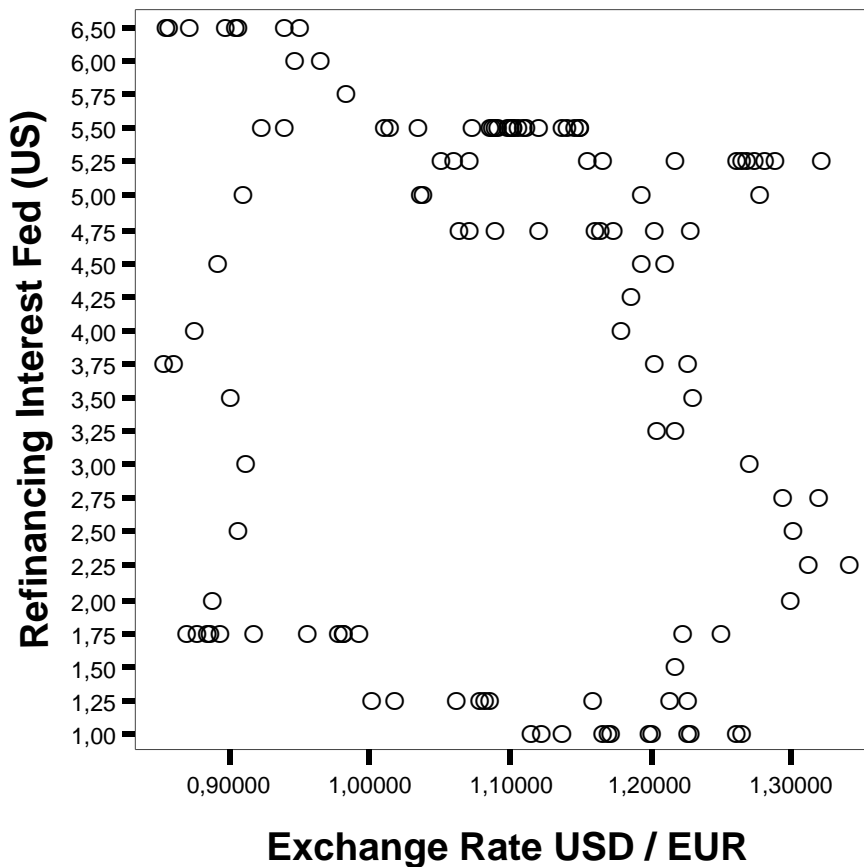


Figure eight shows the negative correlation between the refinancing interest rate of the ECB and the Euro/Dollar exchange rate. The scatter plot indicates low values of the Euro when the interest rate is high and an accumulation of higher values of the Euro that are linked to lower interest rates.

One can see that there are a few outliers, but the big picture shows clearly that higher interest rates are commonly associated with lower exchange rates compared to the US Dollar.

Figure 9: Scatter plot of Dollar/Euro Exchange Rate and Fed refinancing interest rate



The scatter plot in figure nine does not allow the making of a clear statement. There are high and low exchange rate values in both cases of low and high refinancing interest rates in the US. The analysis of figures 8 and 9 leads to the conclusion that European interest rates do have a rather predictable influence on the Euro/Dollar exchange rate, while data concerning the influence of US interest rates on the Euro/Dollar exchange rate is distributed rather randomly.

6. Conclusion

The summary of the vast amount of literature on the Euro subject was really challenging. I tried to provide the most important information and most crucial findings that were published within the investigated time span. The literature supported the a priori assumption that US publications were rather negative about the Euro, especially at the time before 2002, partly because the US economy tried to weaken the hype that was going on around the European common currency which had become a real competition for the Dollar in the battle for the leading global currency.

European publications on the other hand tried mostly to reduce the uncertainty about the development of the Euro and shed a rather positive light on future expectations.

I treated the ECB, its system and monetary policy as well as its fiscal targets. I tried to provide some useful information about the European monetary system and its role in global context. The leading role of the US Federal reserve was highlighted and the role of the ECB as a follower of the trends in interest rate movements with more moderate measures and after a considerable time lag to avoid hasty decisions.

The last chapter is all about the relationship between the Euro and the US Dollar.

The comments on the literature were very versatile. Especially the issue of

exchange rates came to the center of attention in the last couple of years. I tried to mention some of the most common ways to deal with the subject as well as some of the more extravagant ways of looking at exchange rates. It is mostly up to the individual reader to decide on a favorite way of measuring and predicting exchange rate movements, as the voices that call the developments as being close to a random walk become louder and louder.

In the final section, I provide two small models that link trade volume and interest rates to the exchange rate movement of the Euro compared to the dollar. Both models turned out to be significant and indicated trends, but the findings are certainly not the peak of wisdom.

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8. Appendix

8.1. Abstract in English

This diploma thesis is meant to provide an overview of the literature on the common European currency, the Euro in the time span from 1997 to 2006. The choice for this decade came because of the fact that the events of fixing the Stability and Growth Pact of the European Union as well as the implementation of the Maastricht criteria, the introduction of the Euro as a virtual currency in 1999 and Euro cash in 2002 all took place in the observed years. Thus the years just before the start, the start itself and the first years with the new currency were examined in this paper.

While chapters one and two are an abstract and the introduction, chapter three and its subchapters are strictly dedicated to the issue of reviewing the literature and try to give an understanding of both the European and the American view on the Euro.

Chapter four broadly deals with the political issues that come along with the change in the European economic area. The decisions of policymakers are of tremendous importance when taking such a big step. These steps come alongside the economical ones when creating a monetary union. The trade off between the benefits of a common trade area and the loss of the powerful instrument of the

sovereign national monetary policy and the symbolic value of a common currency that were supposed to stimulate the citizens of the EU to develop a more sophisticated sense of community were the most challenging issues that policy makers of EMU countries had to deal with.

The European Central Bank, its structures and goals in monetary policy are dealt with in this paper as well as the possibilities of the ECB to achieve its goals and the troubled first years of EMU. The leading role of the US Federal and the role of the ECB as a follower of the trends in interest rate movements are also highlighted and supported by numerous articles.

Another big issue, especially in the most recent past, is the phenomenon of exchange rate movements. This paper provides information on the different views of looking at exchange rates and focuses mainly on the Euro/Dollar relationship. I treat the most common ways of measuring and predicting exchange rate movements and present two simple models that fit in the big picture – they are significant and, in part, indicate a certain trend but one can not really draw meaningful conclusions in terms of predicting future movements from them. The literature of the articles that concentrate on exchange rate movements leads to the conclusion that the theory of exchange rate movements being close to random walks cannot be rejected.

8.2. Abstract in German / Zusammenfassung in deutscher Sprache

Das Ziel dieser Diplomarbeit ist es, dem Leser einen Überblick über die einschlägige Literatur der letzten zehn Jahre, welche sich mit der europäischen Einheitswährung, dem Euro, beschäftigt, zu verschaffen. Der Zeitraum von 1997 bis 2006 schien mir angemessen, da sowohl die Einigung auf den Wachstums- und Stabilitätspakt als auch die Festlegung der Maastricht Kriterien und die Einführung des Euro als Buchgeld 1999 und als Bargeld 2002 in diese Zeitspanne fällt. Des Weiteren ermöglicht dieser Zeitraum die Beobachtung der Jahre kurz vor der Einführung des Euro, die Zeit der Einführung selbst und die Beobachtung der ersten Jahre mit der neuen Währung.

Nachdem die Kapitel eins und zwei einen Abstract und die Einführung in die Arbeit beinhalten, werden in Kapitel drei und seinen Unterkapiteln Artikel aus der Fachliteratur bearbeitet und es wird versucht, dem Leser einen Eindruck der Sichtweisen den Euro betreffend von beiden Seiten des Atlantischen Ozeans aus zu vermitteln.

Politische Themen die mit einer derart weitgreifenden Änderung im Europäischen Wirtschaftsraum wie der Einführung einer gemeinsamen Währung einhergehen werden im Kapitel vier untersucht. Die politischen Aspekte und ihre Verknüpfung und Auswirkung auf Ökonomische Bereiche werden ebenso besprochen wie die Notwendigkeit von politischen Entscheidungsträgern wirtschaftliche Vorteile wie

die Freihandelszone ohne Wechselkursrisiken gegen politische Nachteile wie die Aufgabe der souveränen Wechselkurspolitik an eine übergeordnete Stelle abzuwägen. Die Stärkung des Gemeinschaftssinnes durch eine einheitliche Währung ist außerdem als positiver Effekt anzumerken.

Die Europäische Zentralbank, ihre Strukturen und geldpolitische Ziele werden ebenfalls in der Arbeit betrachtet. Auch werden die schwierigen ersten Jahre der Währungsunion und die Beziehungen der europäischen Zentralbank zur ihrem amerikanischen Pendant, der Federal Reserve, genauer unter die Lupe genommen.

Den Abschluss der Arbeit bilden Gedanken und Reflektionen über die Erscheinung der Wechselkursentwicklungen. Es werden verschiedenste Ansätze in der Theorie besprochen, und zwei simple Beispiele der Beziehung des Euro/Dollar Wechselkurses in Relation zu Leistungsbilanzen bzw. zu Refinanzierungzinssätzen runden das Kapitel ab. Auf Grund des momentanen Informationsstandes besagt der allgemeine Grundtenor zurzeit, dass die Annahme, dass Wechselkursentwicklungen weithingehend einem Zufallsprinzip folgen nicht völlig ausgeschlossen werden kann.

8.2. Curriculum Vitae

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Sommer 2002: Logistikprojektleiter bei Fa. Vogel & Noot Wärmetechnik (Wartberg im Mürztal) zum Thema Roadpricing.

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Word (Sehr Gut)

Excel (Sehr Gut)

Outlook (Sehr Gut)

Internet (Sehr Gut)

Power Point (Sehr Gut)

SPSS (Gut)

HTML (Gut)

Java Script (Grundkenntnisse)

Access (Grundkenntnisse)

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