The UK and the Euro: An examination of the costs and benefits of adopting the euro and a reassessment of the UK's five economic tests

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Presented to Marc Lavoie as required for the course ECO7997: Major Paper

University of Ottawa
July 2012

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Introduction and objective of this paper

At the time of writing, Europe is faced with an economic crisis where a number of countries are trying to find solutions to address their high debt-to-GDP ratios. Inflation, interest rates, and GDP growth are extremely low and unemployment is high. During times like these, it seems that being part of an economic union would make sense since countries could work together and support each other to address their economic problems. It seems that for countries that have always been indecisive about whether to join the Eurozone, this would be as good of an opportunity as ever. Or is it? Germany seems to have done extremely well since joining the Eurozone whereas Greece hasn't had the same fortune. Would Germany have done well without the Eurozone and would Greece be on the brink of default if it wasn't constrained by the regulations imposed on countries in the Eurozone? These questions are beyond the scope of this paper but show that determining whether a country would benefit or not from joining the Eurozone is not a simple question.

This paper will examine the particular case of the United Kingdom (UK), which has, for a number of years, debated whether or not to join the European Monetary Union and the Eurozone. The UK has the highest GDP amongst non-Eurozone members. But, more importantly, it is the country that has done the most to figure out whether it should join the Eurozone or not, including studies, extensive tests and a series of public opinion polls.

Since the early 1990s, a number of economists have explored the issue of adoption of the euro. As this paper will show, there are pros and cons to joining the Eurozone. Most economists have a pre-determined view on the issue and, as a result, have picked a side and focused on either the pros or cons of adopting the euro. The result is a number of studies promoting adoption of the euro and a number of studies rejecting the adoption of the euro. Furthermore, there are far more studies that examined the impact of the UK adopting the euro than there are studies for any other country.

Many will argue that Britain is further now than it ever was from adopting the euro. This paper comes at a time of tension between the UK Treasury and the European Central Bank (ECB). The UK Treasury is taking legal action against the ECB for trying to implement a policy that would require one of Britain's largest clearing houses to move to the Eurozone. Furthermore, recent polls of British citizens have shown that there is less support now than there ever was for adoption of the euro. However, the purpose of this paper is not to determine whether Britain will adopt the euro but rather whether it would be beneficial for them to do so or not.

The paper will begin by providing a brief history of the European Monetary Union and the Eurozone. The paper will clarify the criteria that the UK must meet in order to join the Eurozone and it will look at lessons learned from countries that have already joined the Eurozone and adopted the euro. In the fourth section, it will identify the costs and benefits to the UK if it were to adopt the euro and will examine the factors and considerations that should be examined by countries deciding whether to join the Eurozone, but with a particular focus on the United Kingdom for whom the issue has been examined at length by economists. The paper will examine the UK's macroeconomic policies in the 1990s at a time when many European countries were deciding whether to join the Economic and Monetary Union and, in particular, will assess the UK's five economic tests which it must pass in order to adopt the euro. The paper will finish by re-examining the requirements of the Maastricht treaty and the UK Treasury's five economic tests in light of the current economic conditions and assess whether the UK is better placed to enter the Eurozone now than it did in 1997 and 2003 when the five tests were conducted.

1. The European Union (EU), the European Economic and Monetary Union (EMU) and the Eurozone – Description and brief history

This section will provide a brief description of the EU, the EMU and the Eurozone and provide a brief history of their creation, their objective (raison d'être) and their

administration. This section will also outline the role of the European Central Bank (ECB) in terms of economic and monetary policy.

The European Union currently has 27 member states. It originated from the creation of the European Economic Community in 1958. But it isn't until 1992 that the treaty on the European Union (Maastricht treaty) is signed and establishes the EU we know today. However, it isn't until November 1993 that the Maastricht treaty is ratified by all signing countries and comes into force. A set of rules was defined for new potential members to join the EU. These are known as the Copenhagen criteria and were created at a meeting of the European Council in Copenhagen. The Maastricht treaty and the Copenhagen criteria will be examined in the next section.

The purpose of the EU is to facilitate economic cooperation between member countries. This is achieved through the elimination of barriers in the movement of people, goods and services across countries. Each member country contributes to the EU budget an amount equal to 0.73% of their Gross National Product (GNP).

The European Economic and Monetary Union (EMU) was created in three stages. Stage 1, implemented in 1990 saw the removal of all restrictions related to the movement of capital between member states. The Committee of Governors of the member states' central banks was given the responsibility of coordinating monetary policies between the member states. However, in order to implement stages 2 and 3, the treaty which established the European Economic Community had to be revised. This led to the Treaty on the European Union which was signed in Maastricht in 1992 and came into force in 1993.

The second stage of the creation of the EMU saw the implementation of the European Monetary Institute (EMI) in 1994 which took over the role of the Committee of Governors of the member states' central banks. However, the role of conducting monetary policy remained with the various national central banks. The role of the EMI was to enhance cooperation between central banks and to enhance the coordination of

monetary policy between the central banks. In addition, it was required to make the necessary preparations for the establishment of the European System of Central Banks (ESCB) and for the creation of a single currency.

A new exchange rate mechanism was adopted in 1997 called the ERM II and the European Central Bank (ECB) was established in 1998. After the creation of the ECB, the EMI had completed its tasks and was dissolved.

The third and final stage of the creation of the EMU came into place in 1999. Under the ERM and the subsequent ERM II, exchange rates were allowed to fluctuate up to a maximum of 2.25% around the German mark (this band was widened to 15% in 1993). On January 1st, 1999, exchange rates were frozen and a common currency was adopted for eleven member states (the ones that were deemed to have met the necessary conditions set by the Maastricht treaty). Between then and now, six additional countries have joined what is called the Eurozone for a total of 17 member states: Belgium, Ireland, France, Luxembourg, Austria, Germany, Italy, Portugal, Spain, The Netherlands, and Finland joined when the euro area was created in January 1999, and Greece, Slovenia, Cyprus, Malta, Slovakia, and Estonia joined afterwards.

The European Central Bank (ECB) is in charge of setting monetary policies in the EU. In order to maintain price stability, it sets the interest rates for the euro area. EU countries have put in place a set of common rules surrounding public finances in order to achieve targets in stability, growth and employment. This is called the Stability and Growth Pact (SGP).

The ECB defines price stability as a maximum increase in the Harmonized Index of Consumer Prices below 2% with the idea of maintaining inflation at or below 2%.

The ECB is also responsible for managing the Eurozone's foreign currency reserves and making the necessary adjustments to keep balanced exchange rates. In addition, it

ensures the proper supervision of financial institutions and smooth functioning of payment systems.

The creation of the Eurozone means that the responsibility for monetary policy was transferred from the individual member state central banks to the European Central Bank.

The ECB has a General Council which includes the governors of the central banks of each EU member. In order to become a member of the Governing Council of the ECB, EU members have to join the Eurozone. The Governing Council is the decision-making body of the ECB.

However, economic conditions such as per capita income vary widely between countries inside the Eurozone and that must make it difficult to develop macroeconomic policies that will meet the needs of every member state. Before countries can join the Eurozone, they must meet a number of criteria to ensure that they can manage with the loss of some of their capacity to set their own macroeconomic policies. In the next section, I will explore these criteria in greater detail.

2. Definition of the criteria for adopting the euro

In order to adopt the euro, countries have to meet a number of rules and conditions outlined in a number of treaties. This section will provide a detailed description of the requirements that countries have to meet before adopting the euro. In particular, it will examine the Copenhagen criteria which countries must meet before they join the European Union. Once members of the European Union, most countries (we'll discuss the exceptions later) must eventually adopt the euro. In order to do so, they must meet additional criteria established in the Treaty on the European Union (Maastricht treaty). These are called the Maastricht criteria or, more often, the convergence criteria.

Joining the European Union

The Treaty on the European Union defines the high level conditions that countries have to meet in order to join the European Union. None of these conditions relate to the economic functioning of the country so they aren't of much interest for this paper. However, before a country can become a member of the EU, it must also meet a set of requirements defined as the Copenhagen criteria. These criteria were defined in 1993 at a meeting of the European Council in Copenhagen:

1) The country requesting membership must have "stable institutions that guarantee democracy, the rule of law, human rights, and respect for, and the protection of, minorities".

2) The country requesting membership must have "a functioning market economy, as well as the ability to cope with the pressure of competition and the market forces at work inside the Union."

3) The country requesting membership must "assume the obligations of membership, in particular, adherence to the objectives of political, economic and monetary union."

In addition to these, the accession country must be able to implement EU rules and regulations and must be able to modify its administrative structure as necessary in order to implement EU legislation.

When a country applies for membership to the EU, the application is sent to the Council of the European Union. All members must agree for the application to be approved. At this point, the Council may negotiate on a set of terms with the accession country.

The UK is already a member of the EU so in theory, it should already meet all three requirements listed above but the third criterion relates to the requirement that accession countries to the Eurozone must commit to join the Eurozone and eventually adopt the euro. While the UK and Denmark are members of the EU, they have a special opt-out status that is unique to them.

Joining the Eurozone

Once members of the EU, countries must adopt the euro, but before they can do so, they must meet a number of requirements set out in the Treaty on the European Union. These requirements are meant to ensure financial integration and convergence. They are known as the Maastricht criteria (also known as the convergence criteria).

The Maastricht criteria are made up of four components:

1) Inflation:

   Countries must keep their inflation rate at a level of 1.5% or less higher than the average of the three countries with the lowest inflation rates;

2) Countries must have and maintain good fiscal management including:

   a. Ratio of deficit to GDP of 3% or less;
   b. Ratio of debt to GDP of 60% or less.

The Stability and Growth Pact (SGP) was established in 1997 to ensure that countries respect the 3% deficit level and to act as a debt monitoring system. However, shortly after implementation, many countries within the European and Monetary Union exceeded the 3% limit imposed on the deficit level. As a result, the SGP was reformed in 2005. The revised SGP still kept the 3% deficit ceiling but reduced constraints in the types of situations when a country could exceed

the ceiling without having to invoke excessive deficit measures. The revised SGP includes preventive rules that countries are encouraged to follow to ensure that their deficit levels remain low. The revised SGP was put to the test after the 2008 recession when most Eurozone countries incurred deficits well beyond the 3% limit. Muscatelli (2012) points out that the Greek debt build-up is a sign that the SGP failed as a debt monitoring system as it should have raised alarms sooner.

At the time of writing (2012), most of the world is coming out of a recession (or at least trying to) and hence, has accumulated, either because of expensive stimulus measures or simply because of poor government fiscal management, significantly more debt than the 60% ratio of debt to GDP. In fact, according to Eurostat, in 2010, the seventeen Eurozone countries had a combined general government gross debt of 85.3% of total GDP and a combined deficit to GDP ratio of 6.2%. Given these numbers, there has to be some level of flexibility in this criterion.

3) Exchange rate:

New countries wishing to adopt the euro must meet the requirements of the European Exchange Rate Mechanism (ERM II) for at least two years. That is, their currency must remain within a fluctuation band of 15% with respect to the euro. When first introduced in 1979, ERM had a band of only 2.25%. However, this band was expanded in 1993 to 15% to accommodate a number of countries which weren't able to keep their currencies within the narrower 2.25% band.

One of those countries was the UK which was a member of the ERM in 1990 but was forced to pull out in 1992 because they were unable to keep the pound within the 2.25% limits.

Meeting this requirement and the inflation requirement simultaneously may be difficult for countries with a lower per capita GDP than that of the Eurozone

(Feuerstein, Grimm, 2004). The reason is the Balassa-Samuelson Effect and we'll discuss this in more detail in section four.

4) Interest rates on the long-term bonds must not be more than 2% higher than that in the three countries with the lowest inflation rate;

Long-term bond yields (in this case, 10 years), are usually a good indicator of how much confidence investors have in the government's ability to repay their debt. Interest rates on long-term bonds will normally increase if a government has accumulated a high level of debt. However, as examined later, there are exceptions to this rule.

While the Maastricht criteria have imposed a number of restrictions, it has been criticised by many as being either ineffective or, not enforced to the extent that it should be. Annett (2006) shows that the Maastricht criteria and the SGP seem to have been carefully enforced when countries are joining the Eurozone but enforcement seems to drop significantly after countries have joined.

However, on the fiscal management component, Bell (2003) argues that the upwards pressure on the interest rates demanded on long-term government bonds would be an important deterrent keeping governments from incurring large amounts of debt, therefore rendering the need for enforcement unnecessary.

Some economists may argue that the Maastricht criteria have harmed economic growth in the EU as governments are constrained in the fiscal policies that they can use to stimulate the economy to respond to economic crises. However, Castro (2011) shows that the Maastricht and SGP rules and criteria did not negatively impact growth. This is precisely what we'll explore in the next section of the report: what can we learn from countries that have already joined EMU and adopted the euro?

3. Countries that have joined the ERM II, the EMU and adopted the euro

It has already been over 12 years since the Eurozone was created so there should be plenty of data available to examine the impact of adopting the euro on the countries that did. However, while the data may show GDP growth, financial integration, inflation, etc., researchers won't be able to answer "what if" questions by examining economic data. However, these types of questions can be answered through modelling and a number of authors have done exactly that. In this section, the paper will review findings from papers that examine the economic impact of adopting the euro.

a) Who joined the Eurozone and when?

As mentioned in the introduction, there are 17 member states to the Eurozone: Belgium, Ireland, France, Luxembourg, Austria, Germany, Italy, Portugal, Spain, The Netherlands, and Finland were the founding members when it was created in January 1999. Subsequently, Greece joined in January 2001, Slovenia joined in January 2007, Cyprus and Malta in January 2008, Slovakia in January 2009, and Estonia in January 2011.

Countries that join the European Union are expected to join the European Monetary Union as well and eventually adopt the euro. The UK, along with Denmark, however, was granted an exemption to this rule. While they are members of the EU, they are not participating in the EMU.

It's now been twelve years since the Eurozone was created and the big question is, has the Eurozone been beneficial for the countries that are part of it? Did some countries benefit more than others? Theoretically, there are many advantages to a monetary union such as the elimination of monetary exchange barriers, mobility of money and capital and financial integration and many disadvantages such as losing the capacity to devalue your currency and losing the capacity to print money. While the next section of this paper contains a detailed discussion of the theoretical benefits and costs of joining

the Eurozone, this section will examine the experiences of countries that have joined the Eurozone, what can be learned from their accession and how they have benefited from this membership.

b) What can be learned from accession countries that have, or are planning to, join the Eurozone?

One of the biggest perceived costs from joining a monetary union is forgoing the monetary policy function of the central bank to the ECB. As such, it is important that countries are financially integrated before and after joining a monetary union. Countries that are financially integrated will have a need for the same responses to economic shocks and hence, would expect that the ECB will respond to economic shocks in the same way that they would. This is an issue that countries will evaluate closely before making the decision to join the EMU. Ferreira et al. (2010) examine financial integration of non-Eurozone EU countries with that of Eurozone countries before they adopted the euro. They achieve this by looking at capital mobility through covered interest parity (CIP). What they find is that a number of non-Eurozone countries, including the UK, have a lower degree of financial integration than what Eurozone countries had prior to adopting the euro. The authors suggest that, in the case of the UK, this is because the economic policies in the UK are independent and very different from those in the Eurozone.

Karam et al. (2008) use a two-country version of the Global Economy Model to examine the particular case of a small, emerging economy adopting the euro. What they find is that joining a common currency will eliminate shocks due to fluctuating exchange rates; however, it will increase variability in inflation and domestic outputs due to the loss of the capacity to adjust domestic currency to respond to economic shocks. However, this cost would become less important over time as the small country reaches financial integration with the rest of the Eurozone and markets become more competitive and flexible. This issue will be further discussed in the next section which will examine the costs and benefits to joining the EMU and adopting the euro.

Dubois et al. (2007) provide a quantitative assessment of the impact of the Eurozone on each of its member countries using a counterfactual approach. They examine various scenarios in which the euro would never have been implemented and look at outputs and inflation rates. They also look at what would have happened if Italy had not chosen to adopt the euro. To do so, they use a Global Vector Auto Regressive (GVAR) model to simulate a number of scenarios where the Eurozone countries would have reverted back to floating exchange rates and followed different types of monetary rules and policies following the September 1992 crisis with the European Exchange Rate Mechanism.

When examining the results from the five scenarios, what they find is that they cannot draw any conclusions for the three most important Eurozone countries (France, Germany and Italy) since they seem to benefit from the adoption of a single currency in some scenarios but not as much in others. However, smaller Eurozone members seem to have benefitted from adopting the euro and from the associated effect on convergence. That being said, two of the five scenarios are of particular interest to this paper and they are worth being discussed in more detail.

The first scenario examines a situation where all Eurozone countries would have exited the ERM, reverted back to floating exchange rates following the ERM economic crisis of September 1992, and adopted monetary policies and rules similar to that of the UK (i.e., low interest rates and price stability). The findings show that price levels would have been higher under UK monetary policies for Germany, Austria, Belgium, and The Netherlands as well as for Spain and Ireland. However, for the case of the latter two, the gap in price levels comes down to zero towards the end of the 1990s. For all other Eurozone countries, the price level would have been lower under UK monetary policies although the differences seem to be small or negligible. On the other hand, for most countries, output seems to be higher under the monetary union than the UK monetary policies. These differences are more significant for Italy, Netherlands and Portugal and become very significant for France, Luxembourg, Ireland and Spain. The output gap is

negligible for Greece and Austria and is significantly negative for Germany meaning that Germany would have had higher output under UK monetary policy than with the Eurozone.

The second is a scenario which explores the results if Italy had chosen not to rejoin the ERM in 1997 and adopt the euro in 1999. In other words, it examines the scenario where Italy would have maintained the monetary policies and rules it had in place in the 1990s. What they find is interesting. If Italy had not adopted the euro, the impact on outputs and prices on the other members of the Eurozone would have been negligible. Furthermore, they find that even if it hadn't adopted the euro, it would have been in Italy's best interest to keep its macroeconomic policies in line with those of the Eurozone.

Finally, Pesaran et al. (2005) also uses a GVAR model in order to examine a theoretical scenario in which the UK would have adopted the euro in 1999 and examine the impact of euro adoption on the UK and Eurozone's output and price level. They construct a number of scenarios which examine the impact if the UK were to enter at different periods and with different exchange rates.

The first scenario examined is one in which the UK adopts the euro in 1999 at par (the exchange rate prevalent in the fourth quarter of 1998). What they find is that UK GDP and prices would have benefited from the adoption of the euro in the medium term (higher GDP and lower prices). Conversely, in the medium term, the Eurozone would have lower per capita GDP and higher prices. The UK and the Eurozone would both benefit from lower interest rates. The authors examine a second scenario where the UK would adopt the euro in 2004 and find very similar results.

The authors also examine the importance of adopting the euro at the right exchange rate. They examine the model with different exchange rates (10% over parity, at parity, 10% below parity, and 30% below parity). What they find is that the lower the exchange rate is, the higher the probability of achieving a lower interest rate (i.e. there is a higher

probability of achieving a lower interest rate if the UK were to enter at 30% below parity). In terms of GDP, joining at a lower exchange rate would increase the probability that adopting the euro increases UK GDP, while joining at a higher exchange rate would increase the probability of achieving a higher Eurozone GDP. In terms of prices, joining at 30% below parity means a higher likelihood of lower prices for the UK. What's interesting is that if the UK were to join at 30% below parity, prices are likely to be lower for the Eurozone as well (at least in the short term).

Finally, Castro (2011), uses statistical regression on 2006 OECD data to examine the impact of the restrictions imposed by the convergence criteria and the Stability and Growth Pact (SCP) on economic growth. The idea is that, if countries are constrained in the choice of economic policies they have at their disposal, then they may not be able to adopt a policy which is optimal for growth. What he finds is that economic growth was not negatively impacted by the regulations imposed in the Maastricht criteria. Furthermore, he finds that not being able to control the macroeconomic variables which are set by the Maastricht criteria (interest rates) did not have a negative impact on growth. In particular, he finds that in EU countries, growth of per capita GDP was greater after 1997 than before. Not only that, he finds that EU countries experienced greater growth after 1997 than did non-EU countries. After factoring out country differences, he concludes that growth in EU countries was not lower than growth in non-EU countries.

The conclusion that can be drawn from the findings presented in this section is that there may be a bit of work to be done to ensure that the UK is fully integrated with the Eurozone. However, models show that if the UK would have adopted the euro back in 1999, it would have benefited from lower prices, higher GDP, and lower interest rates. Furthermore, many Eurozone countries would have been better off with the Eurozone monetary policies than if they had adopted the UK's monetary policies. It was found that if Italy did not adopt the euro, then its optimal economic policy would have been one that is as close as possible to that of the Eurozone. It was also found that if the UK were to adopt the euro, it would be better off doing so at an undervalued exchange rate rather

than an overvalued exchanged rate. Finally, it was found that the restrictions in the Maastricht criteria and macroeconomic policies of the Eurozone didn't seem to be have impacted economic growth in the Eurozone countries.

In the next section, an exhaustive list of all the costs and benefits to adopting the euro is compiled and their applicability for the UK's situation is determined.

4. What are the economic costs and benefits to adopting the euro?

The literature has identified a number of economic costs and benefits to adopting the euro. However, not all authors agree that these issues should actually be labelled as costs or benefits and offer arguments as to why some of these costs/benefits may be negligible or should be dismissed entirely. For each of these costs and benefits, this paper will examine the existing literature and attempt to identify the extent to which they would apply to the UK.

Costs

a) Losing the ability to set interest rates and inflation targets;

The ECB sets interest rates and inflation targets with the objective of keeping inflation between zero and two percent. Reducing uncertainty in interest rates and inflation would reduce investment risk and, hence, increase investment levels. However, the interest rate set by the ECB applies to all Eurozone countries. It is therefore important for accession countries to have fully converged with the Eurozone before entry. Failure to have achieved full convergence means that the macroeconomic policies of the Eurozone may not be optimal for the new member country. Furthermore, if asymmetric shocks arise, Eurozone countries cannot rely on the capacity to adjust interest rates as a potential response.

Schoors (2002) finds that this cost will be lower for stable countries than for unstable countries because stable countries are less likely to face asymmetric shocks and therefore, don't have the need for an independent monetary policy system. In general, he finds that the benefits of adopting the euro are positively correlated with inflation at the time of entry into the Eurozone (i.e., the higher the inflation rate, the higher the benefits of having adopted the euro).

The UK Treasury's first of their five tests is meant to ensure that if the UK were to join the Eurozone, it wouldn't be significantly impacted by the loss of its ability to set its own interest rates, inflation targets and price levels. The idea is that countries that have similar business cycles and economic structures would have similar interest rates, inflation and price levels. What is shown later in the report is that over the last decade, the UK has converged towards the Eurozone and, at the time of writing, had very similar economic structures and business cycles. As such, this would not be a significant cost for the UK.

b) Losing the ability to devalue currency as a fiscal policy measure

This, along with the inability to print money, is probably one of the biggest perceived costs of joining the Eurozone, and, for many, it is one of the main reasons behind the economic troubles facing Greece and other Eurozone countries. Schoors (2002) defines the cost of joining the Eurozone as the opportunity cost of losing the ability to implement monetary and exchange rate policies. These would be used primarily as a response to asymmetric economic shocks. The cost would then depend on what other tools and mechanisms government have access to in order to respond to economic shocks. On the other hand, it is worth examining the extent to which governments have actually used monetary and exchange rate policies to respond to asymmetric shocks in the past.

Godley (1992) argues that if a country doesn't have the ability to devalue its currency, then there must be a system of fiscal transfers in place in order to prevent important declines in the standard of living. In fact, having a system of fiscal transfers in place is

one of the four requirements for an optimum currency area according to Frankel and Rose (1998). However, Godley further argues that in order to have a system of fiscal transfers in place, there must be a central governing body with a large budget for the European Community which there isn't for the European Union.

On the other hand, many now see the exchange rate as an outcome from fiscal policy, monetary policy and the external environment (Barrell, 2002). As such, governments don't use exchange rates as an instrument of policy but rather, in the case of the pound, exchange rates fluctuate depending on policies and markets. However, that doesn't mean that exchange rates don't have a role on rectifying asymmetric shocks. Even if they are not changed deliberately, exchange rates will fluctuate depending on the demand for the local currency and the state of the economy. In times of economic crises, a drop in the exchange rate, whether instigated by government or because of a reaction of the money markets, would lower the cost of exports, and hence, increase demand for that country's exports.

Schoors (2002) stipulates that the likelihood of having asymmetric shocks depends on trade openness, the relative scale of income and population, and differences in economic structures. Without the option of monetary or exchange rate policies, countries have to rely on other mechanisms in order to mitigate the risk of, or respond to, asymmetric shocks. These include openness, capital mobility, labour mobility, wage and price flexibility and fiscal transfers. However, as mentioned earlier, the Eurozone doesn't have any formal system of fiscal transfers, therefore, that is not an option and, as Helleiner (2006) points out, wages and prices are often slow to adjust, and until they do, the result is increased unemployment and decreased real output .

The flexibility of the labour market is likely to be the best tool to respond to asymmetric shocks without the use of monetary or exchange rate policies and this is essentially one of the UK's five tests for adopting the euro.

In assessing whether this would be a significant cost for the UK, we must determine the likelihood of the UK facing economic shocks that are not faced by the Eurozone and, what is the flexibility of the labour market to respond to such shocks should they happen. Both of these questions will be answered in detail in sections five and six below.

c) Having a one-time "switching cost" of converting the pound to the euro

The switching cost can actually be broken down into a number of distinct costs. In addition to the trivial cost of actually removing the pound from circulation and replacing it with the euro, there are the costs of converting financial systems into the new currency.

As Schoors (2002) explains it, countries switching to the euro will have to use foreign exchange reserves to buy enough hard currency in euros in order to replace the existing money in circulation. The existing currency would be removed from circulation and destroyed. Subsequently, all financial transactions would take place in euros.

This later statement means that all mechanisms and systems currently adapted to use the pound, must be converted to the euro. The United Kingdom House of Common Trade and Industry Committee estimated the total cost to switch from the pound to the euro to approximately 30 billion pounds. Minford (2004) finds that by annualizing this cost, he obtains approximately 1.2 billion pounds per year. He concludes that this exceeds the gains in reduced transaction costs from having only one currency which he estimates to be approximately 1 billion pounds per year.

d) Increase of exchange rate fluctuations with the dollar

Joining the Eurozone and adopting the euro would obviously eliminate the exchange rate between the UK and other Eurozone countries and, hence, also eliminate all the

expenses that are related with that exchange rate and its variability. However, what about the exchange rate with other major currencies such as the dollar?

Minford (2004) argues that there has been lot of volatility in the euro-dollar exchange rate while the UK's effective exchange rate has remained much more stable. He argues that because a large percentage of UK trade is done in US dollars, the added benefits of eliminating fluctuations with the euro may be counterbalanced with increased exchange risk with the dollar. Minford simulates a situation where the UK joins the Eurozone and compares it with a situation in which the UK remains outside of the Eurozone. He finds an increase in the variability of the real exchange rate with the UK as part of the Eurozone. However, he comes to this conclusion by reconstructing the economic shocks experienced by Eurozone members in the 1980s and 1990s which didn't receive any policy response from the European Central Bank (ECB) simply because it and the Eurozone didn't exist at the time.

However, authors such as (Barrell, 2002) dismiss this conclusion. Barrell finds that it is unrealistic to think that the ECB wouldn't respond to economic shocks should they be repeated, thereby reducing their negative impact on inflation rates. Furthermore, shocks on UK's economy are likely to be highly correlated with shocks on the Eurozone. Hence, the policy reaction of the EBC is likely to be similar to that of the Bank of England.

e) The potential of having to bail-out other Eurozone countries with financial problems

Minford (2004) identifies the possibility of having to bail-out other Eurozone countries facing financial problems as an important cost. With the recent developments in Europe with Germany having to bail-out Greece, these costs are certainly not to be overlooked.

Earlier, it was mentioned that fiscal transfers are an important and necessary component of an economic and monetary union sharing a common currency. Yet, the European Union does not have a fiscal transfer mechanism in place. Instead, it focuses on economic integration with the idea that if member states are economically integrated (convergence) then none of them should face asymmetric economic shocks and, hence, be in need of fiscal transfers. In fact, the Stability and Growth Pact states that fiscal transfers are not allowed. However, this rule was put aside during the recent European economic crisis in which Germany bailed out Greece to prevent it from defaulting on its debt obligations.

Minford (2004) identifies another cost of joining a monetary union which is that of harmonization. The Stability and Growth Pact currently has some measures that monitor its member's expenditures, deficits and debt levels and this could be viewed as a first step towards the harmonization of practices and institutions. However, Minford defines the ultimatum of harmonization as the creation of central institutions that would be able to make those fiscal transfers to regions facing asymmetric shocks. These central institutions would obtain funding through taxes in order to ensure that all member states can offer the same levels of services and social supports to its citizens. In turn, the expenditure of these transfers would be closely regulated. Member states would be obliged to adopt minimum levels of social support. This is equal to the issue raised earlier about fiscal transfers and the need for a central governing body with a significant budget.

That being said, countries already contribute funds to the International Monetary Fund, which, at the time that this paper is written, is providing a bailout package for Eurozone countries in economic crisis. So this is not really a cost specific to joining the Eurozone.

f) Losing the capacity to act as lender of last resort

Central banks can come to the rescue of banks facing potential default by temporarily lending them money. However, the central banks of countries in the Eurozone do not

have this capacity anymore. During times of economic growth, this is not an issue but it becomes very important during economic downturns. Following the 2008 economic crisis, the United States had to bail out a number of its financial institutions. Schoors (2002) shows that there are alternatives such as the government taking the role of lender of last resort by setting aside assets from which it could provide emergency liquidity to banks in trouble or having banks set up a common fund from which they can draw from when necessary.

g) Losing the money creation function

By joining the Eurozone, central banks would hand over the capacity to create money to the ECB. In doing so, Godley (1992) argues that governments from member states would no longer be able to make drafts on their central bank in order to fund deficits. Instead they would have to rely on selling bonds. This is important because funding deficits through money creation may have a positive impact on output and inflation which, in periods of very low inflation, may be desirable. Furthermore, when relying solely on the bond market to fund deficits, countries must pay the interest rates on bonds demanded by investors. As examined in section 6, this becomes an issue if investors lose confidence in a country's ability to repay their debt (which is likely for indebted Eurozone countries who do not have access to the usual monetary management tools), in which case, countries have to live with very high interest rates on their debt. One solution for the Eurozone could be to have all bonds issued through a central governing body. Member states would then be in debt to the central governing body. As such, all Eurozone countries would pay the same interest rates on bonds.

The other cost from losing the capacity to create money would be seigniorage which is defined as governments making a profit from the production and issuing of coins and banknotes. Coins and banknotes typically cost less than their face value to mint. As long as the government doesn't have to buy back that currency, then the difference between the cost of production and the face value of the coins and notes is kept by the

government as profit. If governments loose the responsibility of issuing coins and banknotes, they also loose this profit from seigniorage.

h) The Balassa-Samuelson (BS) effect

For many Eastern European countries, one of the desirable benefits of joining the the EU and the Eurozone is to reach the same standard of living as the rest of the member countries faster than if they wouldn't join the Eurozone. However, for this convergence to happen, the growth of productivity in those accession countries has to be faster than in the current Eurozone. Because of competition, productivity growth is usually higher in goods that are traded internationally than goods and services that are offered locally. An increase in productivity growth in the tradable goods sector will translate into increased wages which will in turn result in a corresponding wage increase in the local goods and service sector. However, because that sector did not have an increase in productivity, this means that the higher wages will result in an increase in prices. Hence, in theory, accession countries will experience higher inflation than Eurozone countries. Countries have to meet the convergence criteria for a period of two years before they can adopt the euro but during that time, higher inflation will result in an appreciation of the real exchange rate. However, countries must satisfy the inflation limits imposed by the Maastrich treaty. They will therefore have to find solutions to keep inflation within the imposed limits (Hochreiter, Wagner, 2002).

The BS effect would not be an issue for the UK because it already has a standard of living and productivity level similar to that of the Eurozone.

Benefits

a) Elimination of transaction costs of having two currencies

Minford (2004) estimates that the cost of exchanging currencies in the UK represents approximately one billion pounds per year. This estimate is based on a study done by

the European Commission who determined that in countries with advanced banking systems, the costs of currency transactions amounted to approximately 0.1% of GDP. This study used two approaches to estimate the costs of currency transactions, both of which arrived at roughly the same result. The first method was to sum up financial institution's revenues generated by the processing of monetary transactions. The second method was to multiply fees charged on monetary transactions and the difference between the buying and selling rates by the total amount of money being exchanged in a year. Having a single currency would eliminate those costs.

b) Elimination of the fluctuating exchange rates with the euro leading to financial integration, and increased investment and trade with other members in the Eurozone

In addition to the transaction costs mentioned above, the variability in exchange rates can be a significant risk that investors must take into account when dealing in foreign currencies. There is no doubt long-term contractual agreements exchanging goods and services must include mitigation clauses to protect against fluctuations in the exchange rate.

However, variability in the exchange rate may not be such a big issue after all. Minford (2004) argues that there is very little or no relationship between exchange rate volatility and trade. In many cases, manufacturers would simply pass on those additional costs to consumers. However, in markets with high levels of competition, firms may not be able to pass on the higher costs of production to consumers.

c) Positive impact on output, inflation and price level stability

The European Central Bank's monetary policies are designed to keep inflation between zero and two percent. Barrell (2002) concludes that if the UK were to join the Eurozone, it would benefit from a reduction in inflation variability and price level variability. The reduction in the uncertainty in inflation and price level would lead to an increase in the

level of investment and hence of output per person employed. However, he concludes that while the level of output would increase, the output volatility would also increase.

Barrell's model also examines the impact on the Eurozone if the UK were to join and finds that the Eurozone would benefit from significant decreases in the variability of output, price level and inflation.

Of course, these findings are reflective of the economic reality present at the time of Barrell's study. The UK would not likely see an increase in output, inflation and price level stability if it were to join the Euro during Europe's economic crisis.

d) Reduction in nominal interest rates

Schoors (2002) shows that reductions in nominal interest rates would be another benefit of joining the Eurozone. He defines nominal interest rates as the sum of the change in the real exchange rate, expected inflation, default risk premium, currency risk premium and the liquidity risk premium. The idea is that joining the Eurozone would eliminate the currency risk and would significantly reduce the risk of default due to devaluation. It would also manage the risk of inflation and liquidity. As a result, nominal interest rates will be reduced. A reduction in nominal interest rates means lower borrowing costs, which in turn leads to increase in investment. That being said, the economic crisis in Europe has resulted in a situation where a number of southern European countries are on the verge of default. As explained earlier, those countries are on the verge of default in part because they are members of the Eurozone. Their inability to devalue their currency, as well as the inability of their central banks to purchase government securities, means that when they run budget deficits they are at the mercy of the financial markets, and hence may have to accept to pay high interest rates on their debts.

As we've seen, there are multiple costs and benefits to joining the Eurozone. In terms of costs for the UK, there would be a one-time conversion cost to convert the pound to the

euro and losing the capacity to create money. All other costs identified either don't apply to the UK, would occur even if the UK didn't join the Eurozone, can be avoided through the use of other mechanisms, or could be mitigated if the UK was fully economically integrated with the Eurozone. This last statement is important because if a country is not economically integrated with the Eurozone, then a number of important additional costs would apply such as the ability to devalue your currency or to set your own interest rates in response to asymmetric shocks. However, the literature also identified that a number of these costs could be avoided with the creation of a central governing body in the Eurozone capable of issuing fiscal transfers to member states within the European Monetary Union.

In terms of benefits, there is the elimination of the currency conversion costs, the elimination of fluctuating exchange rates, a reduction in nominal interest rates, and a positive impact on output, inflation and price level stability.

It's hard to weight the costs and benefits because they are fundamentally different. By integrating these results with those from section 3, it is clear that joining the Eurozone is not likely to have a negative impact on economic growth and there are positive outcomes from membership such as increased investment and reductions in transaction fees. In fact, it seems like as long as members can practice sound government fiscal policies and as long as the economic situation in Europe is positive, then costs are almost non-existent. However, as soon as countries face a large amount of debt, then being a member of the Eurozone can be extremely costly since countries don't have access to the tools and mechanisms that would help them boost their economy and recover. For those countries, as we're seeing with Greece and a number of other Eurozone countries, it essentially becomes a downward spiral.

The next section will examine the UK's attempts at adopting the euro in the 1990s and early 2000s.

5. The UK's path to joining the ERM II, EMU and adoption of the euro

In this section, the paper will review the UK's path towards the adoption of the euro. Even though the UK hasn't adopted the euro, a lot of efforts went into determining whether it would be beneficial for the UK to adopt the euro. First, the paper will examine the policy failures in the 1980s and 1990s that led to the UK joining the European Monetary System (predecessor to the ERM II). It will examine why the UK exited the EMS and negotiated an opt-out from the EMU. Finally, we'll examine the UK's macroeconomic policy in the 1990s including its shift to the setting of inflation targets and the creation of an independent central bank. This section of the paper will also examine the UK Treasury's five tests, conducted in 1997 and 2003 to determine if the UK was ready to and could adopt the euro. It will examine contradicting opinions on whether or not the tests passed or failed and, finally, this section will examine public opinion poll results with regards to the adoption of the euro.

In 1979, Britain adopted a monetary targeting approach known as the Medium-Term Financial Strategy (MTFS) in response to high inflation and high unemployment. The result was a rapid reduction in inflation. However, the monetary targeting approach brought on other problems. The pound appreciated quickly to unsustainable levels and changes to Britain's financial system made it difficult to target monetary aggregates. By the late 1980s, Britain was facing high inflation again and high interest rates. Britain chose to enter the European Monetary System (EMS) as it had a proven track of keeping inflation at low levels. The idea was that currency targets would address issues with the credibility of Britain's financial authorities. The EMS was essentially the predecessor to the Exchange Rate Management System II (ERM II). Joining it meant that countries had to keep their currencies within a fluctuation band of 2.25% of their peg with the German mark.

In 1992, the German central bank raised interest rates in response to local inflation. However, Britain was facing a period of very low inflation, low growth and low

employment levels. The policy solution would have been to cut interest rates but this would have had an impact on their exchange rate which would decrease outside of the 2.25% band prescribed by the EMS. After incurring very large expenses on the foreign exchange market in an effort to remain within the 2.25% band, Britain had to exit the EMS on what is called 'Black Wednesday', September 16, 1992.

Re-joining the EMS later on would have been much easier for Britain since they could have joined at a new exchange rate. Furthermore, in 1993, the fluctuation band for the exchange rate was widened from 2.25% to 15%.

In 1993, the British government began setting targets for inflation which they released publicly in order to remain transparent. However, in order to further increase their credibility, England's central bank became fully independent in 1997. Inflation targets were set by the government and the bank was free to do what was needed in order to achieve those targets.

Walsh (2007) argues that major macroeconomic policy changes in Britain, and in many other countries, are brought about following major policy failures. In fact, he argues that politicians and the general public would be more likely to consider the adoption of the euro if doing so may be perceived as a possible solution to an important economic issue brought about by policy failure.

The UK Treasury's five tests

In 1997, the UK Treasury introduced a series of five tests to determine whether or not the UK was prepared to enter the Eurozone and, whether or not it was in the UK's best interest to do so. The five tests were evaluated for the first time in 1997, prior to the introduction of the euro and then again in 2003, after the euro had been introduced.

The five tests are:

1) Convergence: 'Are business cycles and economic structures compatible so that we and others could live comfortably with euro interest rates on a permanent basis?'

2) Flexibility: 'If problems emerge is there sufficient flexibility to deal with them?'

3) Investment: 'Would joining EMU create better conditions for firms making long-term decisions to invest in Britain?'

4) City and financial services: 'What impact would entry into EMU have on the competitive position of the UK's financial services industry, particularly the City's wholesale markets?'

5) Growth, stability and jobs: 'Will joining EMU promote higher growth, stability and a lasting increase in jobs?'

In 1997, the UK Treasury's assessment of the five tests concluded that Britain was not ready to join the Eurozone:

> *"The Treasury's 1997 assessment concluded that the UK was not convergent with the prospective euro area, that flexibility was insufficient and that the lack of sustainable and durable convergence meant that the risks of membership were such that the UK would not be in a position for some time to reap the potential benefits of EMU in terms of higher investment, growth and jobs."*

Convergence:	Cyclical convergence is the test which is given the most importance by the UK Treasury. In the 1997 assessment, it was found that the British economy was not convergent with that of the Eurozone.

Interest rates were higher in the UK than in continental Europe and the recession of the 1990s started and ended earlier in the UK than in the rest of Europe. The assessment mentions that convergence is expected to increase in future years as the economy recovers.

Flexibility:

As pointed out in the UK Treasury's 1997 assessment, flexibility is important especially if Britain has not fully converged with the rest of the Eurozone. Britain needs to work on a few aspects of flexibility where there are weaknesses such as the skill of workers, low levels of participation in the labour force, and high unemployment rates. The assessment concludes that further work needs to be done in order for Britain's labour market to be flexible enough to adopt the Euro.

Investment:

The 1997 assessment of the tests acknowledges that adopting the euro would promote investment since Britain would likely gain in areas such as economic stability and opening up new trading opportunities. However, it warns that investment may be discouraged if Britain joins before having reached full convergence. It concludes that further work is needed to prepare business for adoption of the euro so that they can make the most of EMU membership.

City and financial services:

In 1997, the UK Treasury determine that The City and financial services are likely to benefit from the implementation of the euro whether Britain joins the

Eurozone or not. However, the assessment concludes that benefits would be larger if the UK were part of the Eurozone.

Growth, stability and jobs: The 1997 assessment of the tests concludes that adopting the euro would likely be positive for growth, stability and employment levels but, only if the UK has reached full convergence with the rest of the Eurozone.

In summary, the 1997 assessment of the five economic test concluded that once Britain has addressed the issue of convergence, it will be much better placed to join the EMU.

In 2003, the UK Treasury completed a thorough reassessment of the test and the results were much more positive.

Convergence: The 2003 assessment notes that the UK has made some significant gains in terms of convergence with the Eurozone. In fact, it even notes that in 2003, the UK had a greater degree of convergence than some Eurozone countries had at the time they adopted the euro and, even greater than some countries currently in the Eurozone. The report further notes that the UK meets the Maastricht criteria for inflation, interest rates and government debt/deficit. However, it points that some important gaps remain, for example, in the housing sector. As such, further works needs to be done to achieve full integration of business cycles and, hence, achieve satisfactory convergence.

Flexibility:	Between 1997 and 2003, the UK saw strong employment growth which has resulted in one of the lowest levels of unemployment in Europe. Even though improvements have been brought to labour, product and capital markets in the UK, the UK Treasury feels that there is still room for improvement in terms of flexibility. This test has not been satisfied in 2003.
Investment:	The 2003 assessment points out the many benefits in terms of investment of the UK joining the EMU including a potential reduction in the cost of capital, increase cross-border investment, and foreign direct investment in the UK. The report concludes that if convergence is achieved, then UK investment will increase as a result of joining the EMU.
City and financial services:	The UK's financial sector already holds a strong position within Europe. Entry in the EMU would provide the sector with the benefits of greater integration with continental Europe. The assessment concludes that this test is met.
Growth, stability and jobs:	Finally, the 2003 assessment concludes that entry in EMU could lead to significant growth in trade with the euro area, an increase in output and in jobs. However, if the UK joins without having achieved full convergence, stability may be more difficult to maintain. The assessment concludes that this test would be met if full convergence is achieved.

To summarize the 2003 assessment of the five tests, the results are much more positive than in 1997. However, it appears that the UK Treasury still believes that some work is needed to achieve full convergence and reach optimal flexibility in the labour, goods and capital markets.

A number of economists disagree and believe that the UK easily passes all five tests.

Barrell (2002) compared output gaps across Eurozone countries in 1997 and in 2001 and found a significant reduction in variance; an indication, according to him, of convergence. However, for the convergence to be sustainable, the UK has to be able to withstand economic shocks while maintaining the inflation targets set by the ECB. He argues that while the UK is more sensitive to interest rates than the rest of the Eurozone (due to the UK housing market being dependent on variable interest rates), his model shows that being part of the Eurozone would result in less variability in interest and inflation rates than outside of it. In terms of flexibility, he comes to the same conclusion that the UK Treasury did in 2003, which is that the UK has made tremendous progress in terms of flexibility of the labour market but that there is still progress to be made. He further concludes that both investment and financial services would benefit from being inside the Eurozone. Finally, he also concludes that joining the Eurozone would increase output and employment.

Ardy et al. (2002) support and further reinforce the conclusions from Barrell. They reinforce the importance of entry at the right exchange rate. An undervalued rate would increase inflation while an overvalued rate would stall the economy. They also conclude that the UK has the labour market flexibility it needs to deal with asymmetric shocks, even though those are less likely to occur within the Eurozone. Otherwise, they conclude that joining the Eurozone would further increase convergence, and be beneficial for investment, financial services, stability and employment and growth.

Finally, Buiter (2008) re-examines the issue of cyclical convergence and flexibility in 2008, at the start of the financial crisis, and finds that the UK is completely synchronized

with the rest of the Eurozone. Furthermore, it is at least equally flexible as the rest of the Eurozone members. He points out that there is very little evidence supporting the difference in impact of a common currency on different housing market structures. He also points out that interest rates in the UK have been closely aligned with those of the Eurozone for a number of years.

Howarth (2006) argues that the five economic tests were implemented as an excuse for the government not to further consider the issue of joining the EMU for a long time by using economics to mask the real (political) reason for not joining the EMU. Howarth (2006) also argues that the tests served to reduce the differences in opinion between the two major British parties on the issue of adoption of the Euro.

Public Opinion Polls

Both Britain's Labour party and Conservative party have promised to hold a referendum before making the decision to join the Eurozone. So obtaining public approval is an essential step in adopting the euro. However, the latest public opinion polls, conducted in early 2012, show that most Britons are against the adoption of the euro with only 1 in 20 favouring the adoption of the euro as a replacement for the pound (Angus Reid, 2012).

So the question is: why is Britain so reluctant to adopt the euro? Walsh (2007) shows that most of the arguments supporting Britain's reluctance from adopting the euro are weak and not well-founded:

- Business cycles including interest rates and inflation are now closely aligned.
- Investment and trade between Britain and the EMU has grown significantly since the European Union was created. In fact, the euro may have encouraged trade between the Eurozone and other EU countries (including Britain).

- While Britain doesn't have strong support for adoption of the euro, it also doesn't have any strong opposition. This indifference is due to weaker social ties between banks and industry in Britain than in other continental Europe countries. As such, the government doesn't face any strong pressures to adopt a common currency.
- There are differences in opinion on the issue of adopting the euro between, and more importantly within, the two largest political parties in Britain.
- While only a minority of the public supports the adoption of the euro, public opinion can change when voters face a real decision. Close to half of those opposing the adopting of the euro say that their opinions are not set. Walsh argues that if government pushes hard for the adoption of the euro, it would likely be possible to influence voters during a referendum.

The UK Treasury went through a lot of efforts to determine whether or not the UK was ready to join the Eurozone. While the UK Treasury's five economic tests have failed in 1997 and 2003, a lot of progress has been made between the first and second assessment. A number of economists believe that the tests should have passed. However, the latest public opinion polls show little support for adoption of the euro. Since the last assessment in 2003, the UK Treasury hasn't re-examined the issue. It may be that what is needed is an important policy failure to bring about change in Britain, the same way it did in the 1980s and 1990s. The next section of the paper looks at the current economic situation in Britain, in light of the recent economic crisis and assesses Britain's readiness to adopt the euro today.

6. How has the UK's economic landscape changed over the past decade in comparison with the Eurozone and is the UK ready to adopt the euro today?

This final section of the paper will examine a number of economic indicators to show how the UK's economic landscape has changed over the past decade. In particular, it

will examine the devaluation of the British pound against the euro, inflation levels and fluctuations in inflation, long-term and real interest rates, public sector deficits and debt as a percentage of GDP and, GDP growth, as well as labour force participation and unemployment rates. Based on these indicators, the convergence criteria and the five tests will be reassessed based on the prevalent economic conditions.

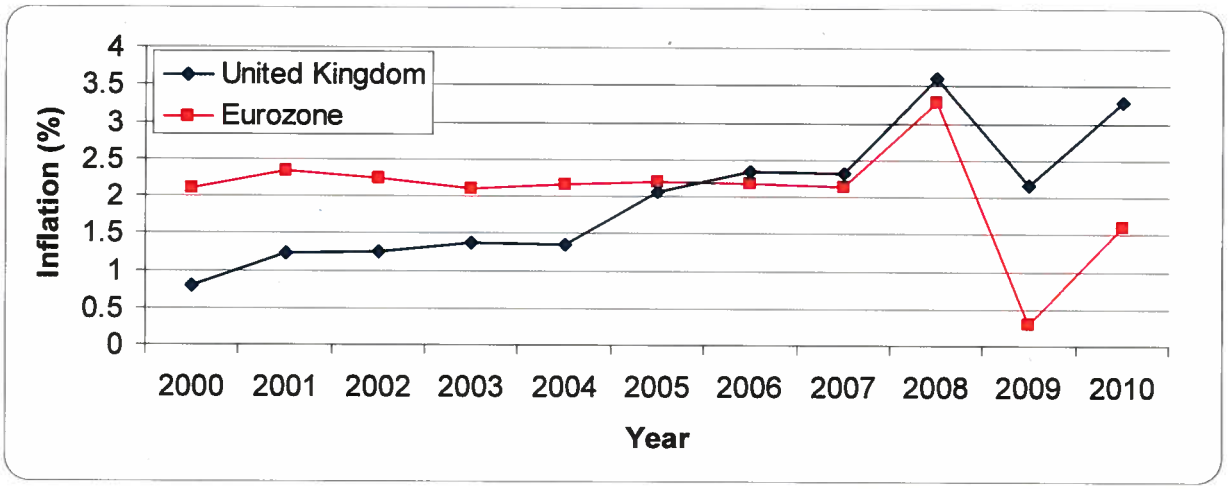
The five tests – reassessed

1) Convergence

Inflation rates

After joining the Eurozone, the UK would relinquish its central bank powers to the ECB. This means, among other things, that it would have to meet the ECB's targets for inflation which is 2%. The ECB will set interest rates appropriately to maintain inflation at or around 2%, hence the importance of having similar economic cycles. However, there are other mitigation factors on which a country can rely on to reduce the likelihood of high inflation such as having a flexible and mobile workforce which would reduce skill shortages and hence reduce upwards pressure on wages. It is worth noting that the British government also has an inflation target of 2%. Should the Bank of England fail to keep inflation within 1% of the target, it must write an open letter to the Chancellor of the Exchequer and explain how it plans to bring the inflation back within target. Figure 1 below shows inflation rates for the UK and the Eurozone between 2000 and 2010. Apart from 2009 and 2010, the UK's inflation rates have, over the past decade, always been lower or almost equal to that of the Eurozone.

Figure 1: Inflation rate in the UK and in the Eurozone (2000 to 2010)



Source: World Bank, 2012 and European Central Bank, Statistical Data Warehouse, 2012

However, the UK hasn't always had the best performance record in terms of inflation. Barrell (2002) shows that the UK has had much greater levels and variability in inflation over the past 40 years than the euro area and would likely benefit from the reduction in variability in inflation from joining the Eurozone.

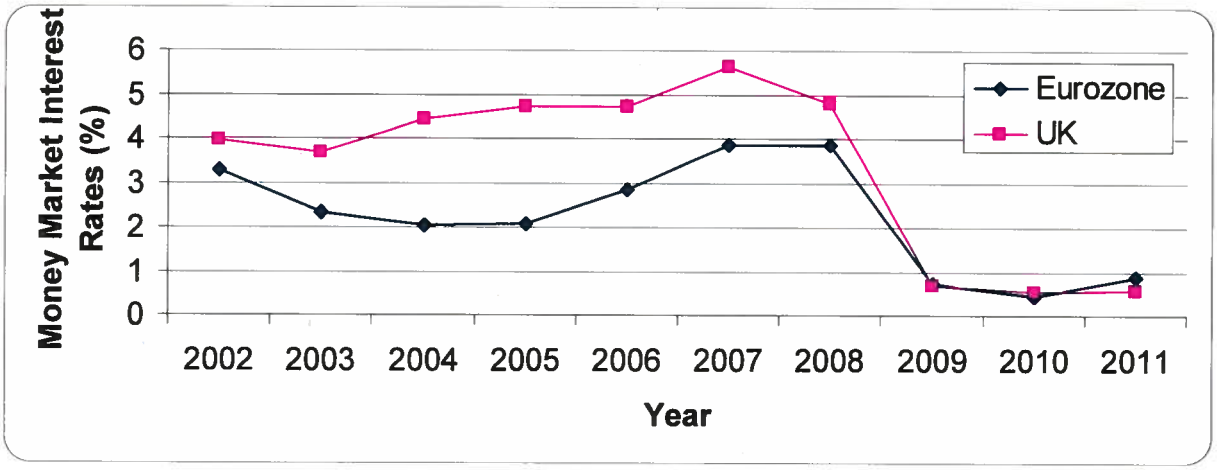
Interest rates

Interest rates are an important indicator of convergence. Currently, the UK and the Eurozone will independently set interest rates in order to best respond to their economic conditions. Interest rates which are closely aligned are a sign of economic convergence. It's also a sign that the UK could live with ECB-set interest rates. The UK economy was always thought to be more sensitive to fluctuating interest rates because of a housing market which has a high percentage of variable mortgages. As such, before joining the Eurozone, the UK will want to ensure that it can live with the interest rates set by the ECB.

In Figure 2, it can be observed that there has been a consistent gap between the money market interest rates of the UK and the Eurozone until the arrival of the economic crisis, at which point, the interest rates have become almost identical. Both the Bank of

England and the ECB are likely choosing to keep a low interest rate in order to stimulate the economy, despite having a negative impact on inflation.

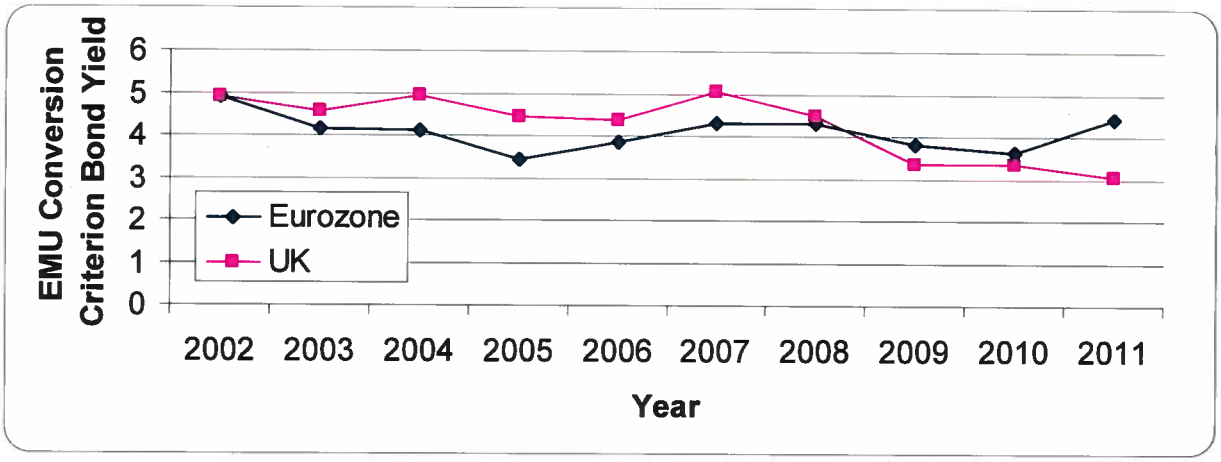
Figure 2: Money market interest rate for the UK and the Eurozone



Source: Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/interest_rates/data/database, February, 2012

The convergence criteria includes a provision on long-term bond yields which states that long-term (10 year) bond yields must stay within 2% of the yields for the three countries with the lowest inflation. As figure 3 shows, long-term bond yields in the UK have, over the last decade, been consistently within a margin of 1 percentage point of the Eurozone average, except in 2011.

Figure 3: EMU Convergence Criterion Bond Yields for the UK and the Eurozone



Source: Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/interest_rates/data/database, February, 2012

By February 2012, the long-term bond yield dropped significantly in the UK. It was 4.45% in the Eurozone and only 1.48% in the UK.[1] Long-term bond yields are supposed to be a reflection of investors' confidence in the government's ability to repay their debt. If that's the case, one would expect that long-term bond yields would be similar for countries with similar levels of debt. However, as seen below, deficits are much larger in the UK than in the Eurozone and the debt to GDP ratio is about the same in the UK than what it is in the Eurozone. In fact, the debt to GDP ratio is higher in the UK than it is for France and Spain and yet, the UK's long-term bond yield is approximately half of what is it in France and a third of what it is in Spain. The long-term bond yields are actually lower in the UK than they are in all other Eurozone countries including Germany. So why do investors have so much confidence in the UK government's ability to repay their debt as compared to other Eurozone countries? For one, the unemployment rate is much lower in the UK than it is in the Eurozone and an inactive workforce is very costly for the government. Governments faced with a high unemployment rate will likely have much more difficulty getting their debt under control. However, the second factor to consider, and the one that's most relevant for this paper, is that the UK still has access to all its monetary policy tools in order to get its economic

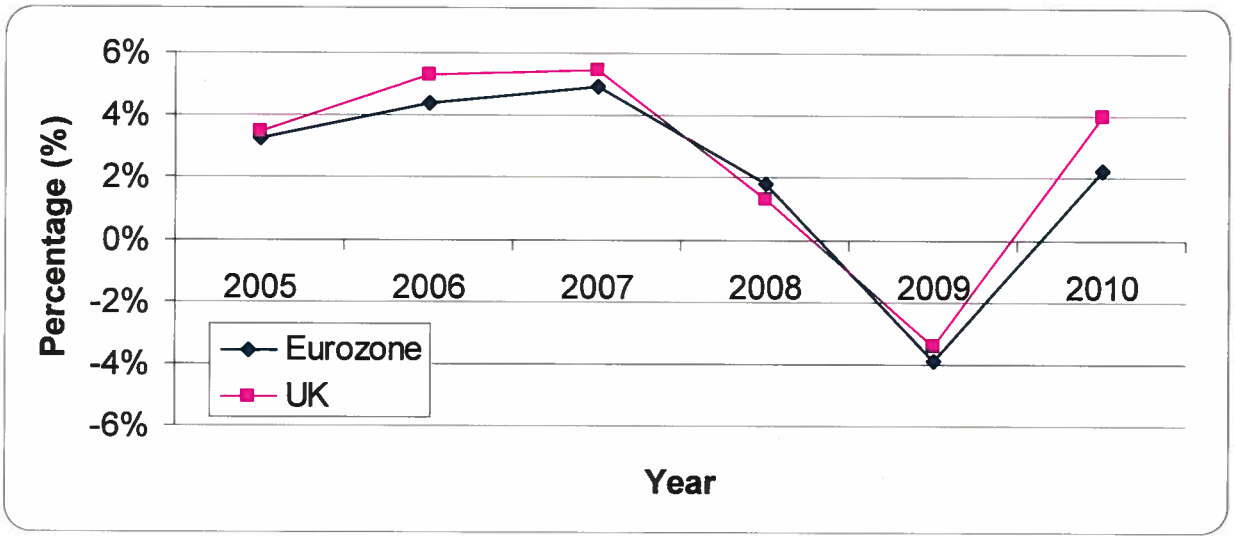
[1] Source: Eurostat, long-term government bond yields (teimf050), http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database, April, 2012.

situation back under control while the rest of the Eurozone countries don't and this is likely an important contributor to lower long-term interest rates.

GDP Growth

One of the biggest indicators of cyclical convergence is GDP growth. Changes in GDP growth relative to the Eurozone are indicators of the presence of asymmetric shocks. Figure 4 below shows that GDP growth of the UK has been closely synchronized with that of the Eurozone even during the recent recession; an indication that the impact of the recession on the UK has been similar to the Eurozone.

Figure 4: Annual GDP growth rates



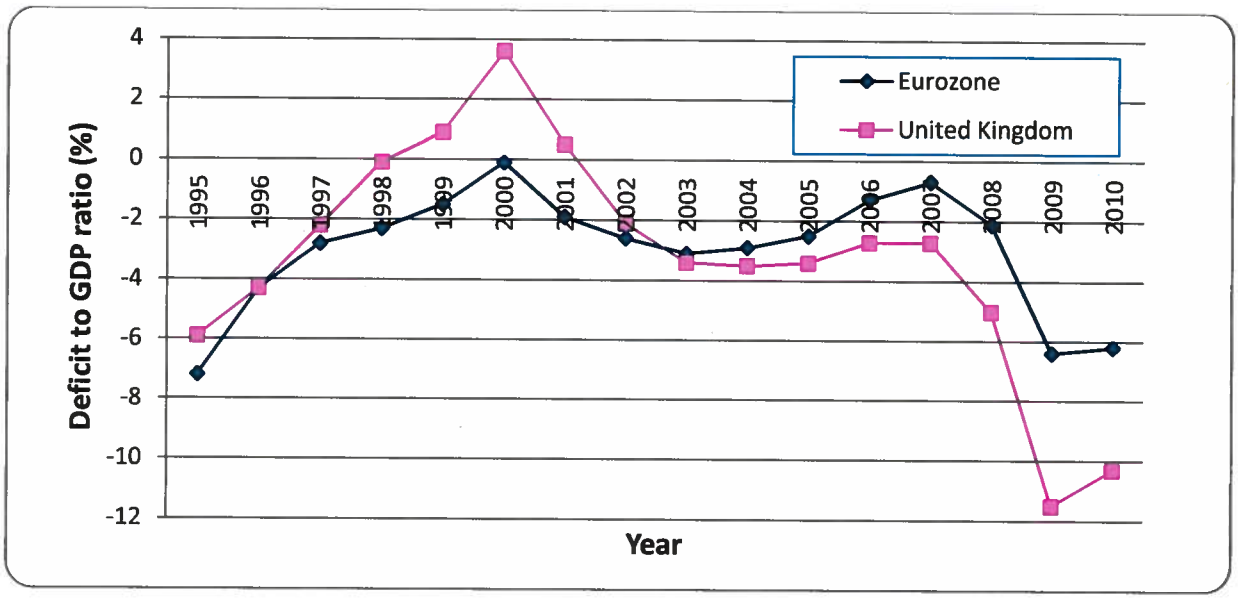
Source: Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/database, February, 2012

Debt and deficit

The convergence criteria for joining the Eurozone limit the amount of deficit that a country can incur to 3% of GDP. This requirement is monitored by the Stability and Growth Pact which will allow greater levels of deficit during times of recession as seen in Figure 5 below where a negative value represents a deficit and a positive value, a surplus. It is also apparent that the UK meets the convergence criteria for essentially

every year since the creation of the Eurozone except for 2003 to 2005 where the deficit slipped slightly higher than 3%.

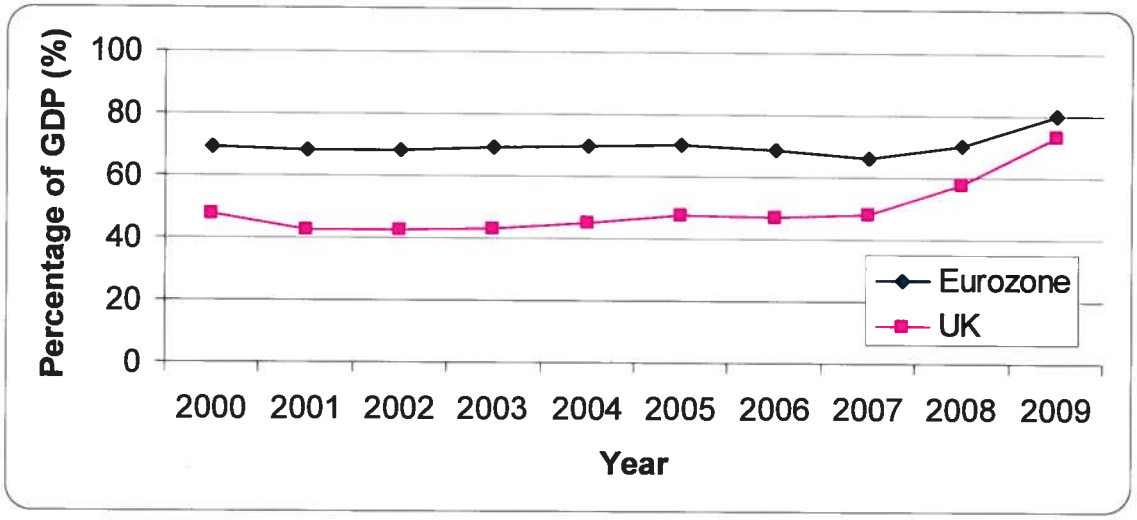
Figure 5: Deficit to GDP ratio for the UK and the Eurozone



Source: Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database, April, 2012.

Finally, we examine government debt as a percentage of GDP. Keeping government debt at a level below 60% of GDP is a requirement of the convergence criteria for joining the Eurozone. Figure 6 below shows that government debt-to-GDP ratios in the UK have been consistently lower than in the rest of the Eurozone. However, it's interesting to note that the debt to GDP ratio in the Eurozone has, for the past decade, always been higher than 60% and even reached 80% in 2009. There is a marked increase in government debt levels in both the UK and the Eurozone in 2008 and 2009; a result of the stimulus spending of governments as a response to the recession.

Figure 6: Government debt as a percentage of GDP



Source: World Bank, 2012 and European Central Bank, Government debt as percentage of GDP, 2012

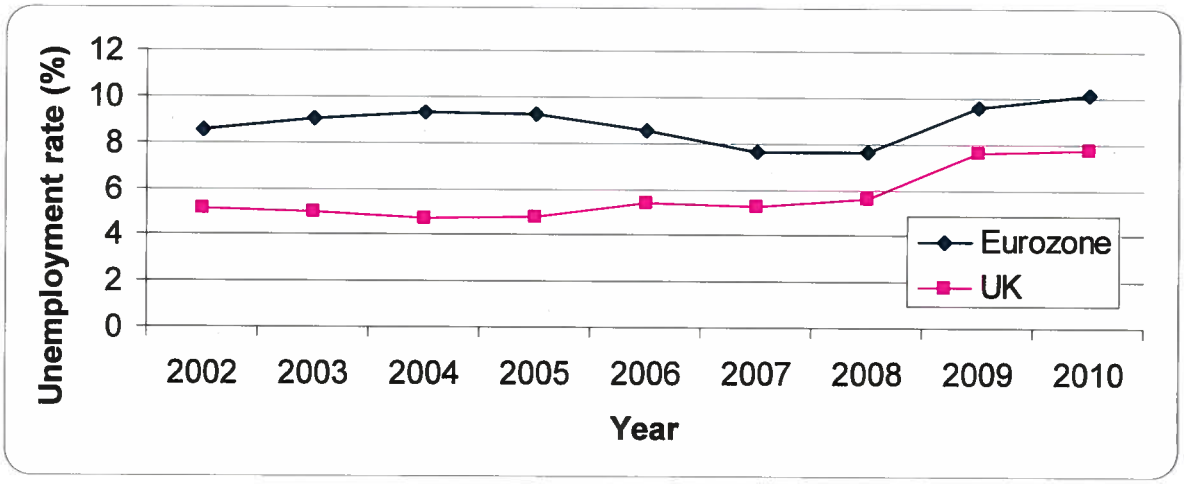
Before moving on to examine flexibility, there is one more issue that is worth examining and that is external trade. In 2010, only 53% of all external trade done by the UK was with the European Union. This is the lowest out of all European Union countries and compares with 64% for the European Union countries as a whole. [2] This is somewhat of an issue to keep in mind if the UK were to adopt the euro because fluctuations of foreign currencies such as the American dollar is likely to have a greater impact on the UK's economy than it would on the rest of the Eurozone countries.

2) Flexibility

Labour market flexibility, as mentioned earlier, is essential to respond to economic shocks. A mobile and flexible labour force will be more responsive to changes in the demand for goods and services and will allow the country's labour market to adjust and adapt to a changing economy faster. Figures 7 and 8 below show that the UK has consistently had (at least for the most part of the last decade) a lower unemployment rate than the Eurozone and higher labour force participation than the Eurozone.

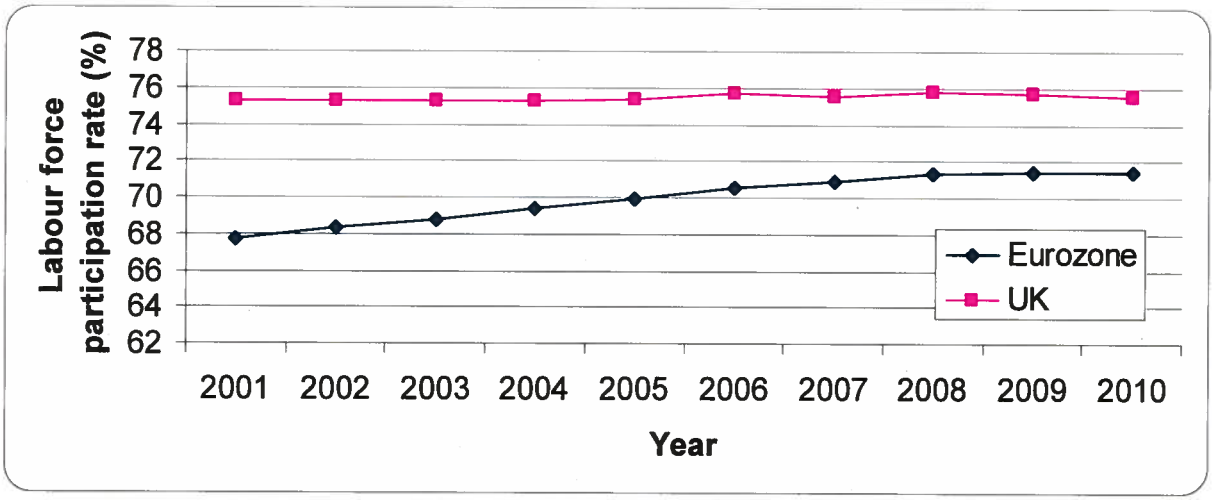
[2] Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database, intra EU trade in goods, April, 2012.

Figure 7: Unemployment rate for the UK and the Eurozone



Source: Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_lfs/data/database, February, 2012

Figure 8: Labour force participation rate (15 to 64 year olds)



Source: Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/employment_unemployment_lfs/data/database, February, 2012

In 2010, 37.7% of the UK workforce aged 15 to 74 had some form of post-secondary education (tertiary education). This compares to only 28.4% in the Eurozone)[3].

[3] Source: Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database, April, 2012.

Overall, the UK has a higher labour force participation rate, a lower unemployment rate and, has a workforce which is more educated than the Eurozone. As such, it can be argued that the UK has a more flexible labour market than that of the Eurozone.

However, the discrepancy between the unemployment and labour market participation rates between the UK and the Eurozone may be reflective of the ECB's policies. Seccareccia and Lequain (2006) argue that the ECB is adopting an "overly narrow" policy objective of achieving price stability via the setting of interest rates which doesn't consider unemployment levels as an outcome that should be targeted by macroeconomic policy. A high unemployment is extremely costly for a country, not only because it results in lower output and taxes but also because it puts a lot of pressure on a country's social programs. By including unemployment as an outcome of macroeconomic policy, the ECB may have been able to prevent or at least reduce the severity of some of the economic troubles facing the Eurozone.

3) Investment

Investment, after joining the Eurozone, is likely to increase as a result of greater price stability and the elimination of exchange rate variability. Barrell (2002) concludes that a reduction in uncertainty in exchange rates, interest rates, inflation, and the price level would increase the level of output and investment. He also argues that the increase in macroeconomic stability in Germany and France is likely to have contributed to the higher level of capital stock per worker in those countries than what is found in the UK. However, the Eurozone doesn't have the level of macroeconomic stability that it had when Barrell's paper was written. It is unlikely that the same conclusions could be reached with the current economic crisis facing the Eurozone.

4) City and financial services

In 2011, the ECB issued a paper which proposed that clearing houses that handled more than 5% of a euro-denominated product market had to be located within the Eurozone. If enforced, this rule would mean that many of Europe's biggest clearing houses (currently located in London), would have to relocate in the Eurozone.

While this rule is not likely to be enforced, it does point to possible disadvantages that the UK faces in being outside of the Eurozone. Barrell (2002) argues that the UK would miss on important opportunities if it stays out of the Eurozone as financial markets inside the Eurozone become more integrated providing benefits in economies of scale for big financial centers within the Eurozone (Frankfurt and Paris). The UK treasury's assessment of the five tests as well as the papers from Barrell (2002), Ardy et al. (2002) and Buiter (2008) all point to benefit gains in terms of financial services from joining the Eurozone.

5) Growth, stability and jobs

Earlier, it was concluded that joining the Eurozone would likely lead to increased stability and, hence, investment. In turn, the increased level of investment would lead to an increased level of capital which would then increase employment levels and real wages.

However, in many studies, these last three tests would only be passed if the UK's economy was synchronized with that of the Eurozone. As demonstrated earlier, we've shown that at the time of writing, and over the last decade, it was as close at it will likely ever get.

We can thus conclude that at the time of writing, the UK passed the five economic tests of the UK Treasury.

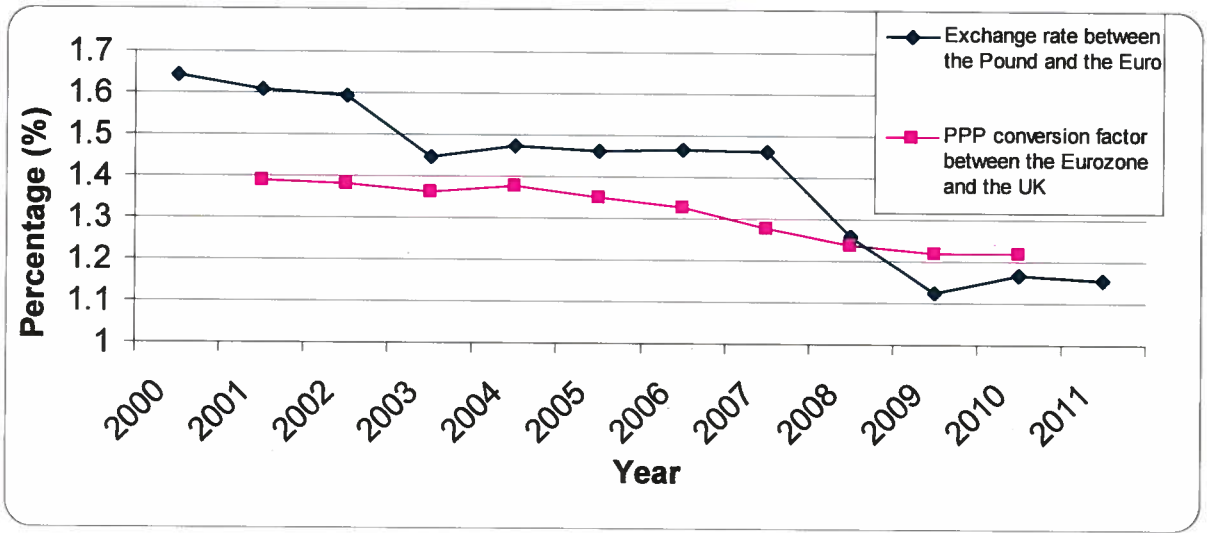
Pound sterling and euro exchange rate

There is one last issue to examine. In many studies, the issue of the exchange rate was raised as an important variable to achieve a successful integration into the Eurozone. A conversion to the euro at an over-inflated rate would lead to stagflation and low economic growth while joining at a rate too low would result in high inflation and high growth in output levels.

Eliminating the exchange rate variability is one of the main benefits from joining the Eurozone and a particularly important one for Britain which has seen some large variance in exchange rate variability over the years, and may have been amongst the most unstable currencies in Europe (Ardy et al., 2002). These variations become somewhat problematic when determining the appropriate rate of entry.

As seen in Figure 9 below, in 2011, the British pound traded with the euro at an average rate of 1.15 euros per pound. This is significantly lower than the yearly average of over 1.6 euros per pound achieved in the early 2000s. However, the figure shows that in 2011, the exchange rate is closer than it has been for many years to the purchasing power parity (PPP) conversion factor between the Eurozone and the UK.

Figure 9: Average yearly exchange rate between the pound sterling and the euro, 2000 to 2011 and PPP conversion factor between the Eurozone and the UK, 2001-2010.



Source: UK Office for National Statistics, *Monthly Review of External Trade StatisticsDecember 2011*, http://www.ons.gov.uk/ons/rel/uktrade/monthly-review-of-external-trade-statistics/december-2011/tsd-monthly-review-of-external-trade-statistics.html, February 2012 and, Eurostat, http://epp.eurostat.ec.europa.eu/portal/page/portal/purchasing_power_parities/data/database, February 2012.

Barrell (2002) concludes that the ideal exchange rate when entering the EMU and adopting the euro would be around 1.5 euros per pound. An exchange rate below that would lead to higher than desirable inflation while an exchange rate higher than that would lead to a decrease in output growth and low inflation. However, the economic landscape has changed a lot since 2002 and an exchange rate of 1.5 is likely to be no longer desirable. As seen on Figure 9 above, the ideal exchange rate is likely to be closer to 1.2 than 1.5.

We can therefore conclude that at the time of writing, the UK passes the five economic tests. However, if the convergence criteria were evaluated at the time of writing, the UK probably wouldn't meet all of them. While the inflation rate in the UK has remained below or close to that of the Eurozone in most of the last decade, it has increased beyond 3% due to the recession. The exchange rate, however, has remained within a 15% fluctuation band over the last two years. Debt and deficit levels have exceeded

their limits imposed by the convergence criteria but so has those of the Eurozone. Finally, the UK would meet the interest rate requirement on long-term bond yields which are amongst the lowest in the European Union. Whether the European Council would make an exception given the current economic conditions is a question beyond the scope of this paper.

Conclusion

In 1999, the Eurozone was created and now comprises 17 countries. In 1997, the UK devised five tests to determine whether or not it was ready to join and, since then, the UK Treasury along with a number of economists have examined whether or not it was in the best interest of the UK to join. The objective of this paper was to assess the costs and benefits of entry by conducting a review of the existing literature followed by a re-assessment of the UK Treasury's five economic tests in light of the recent economic recession and the prevailing economic conditions.

In examining the experiences of countries that have joined the Eurozone, it was found that countries that have joined were more integrated at the time that they joined compared to those who haven't joined yet.

It was found through modelling, that for most countries, output seems to be higher under a monetary union than it would have been under the monetary policies of the UK. It was also found that if Italy would not have joined the Eurozone, it would still have been in its best interest to keep its macroeconomic policies in line with those of the Eurozone.

Through modelling, it was found that if the UK would have adopted the euro in 1999 or 2004, it would have benefitted from higher GDP, lower prices and lower interest rates over the medium term. That being said, interest rates on long-term bonds in the UK have been lower than in the Eurozone during the economic crisis.

Finally, it was found that the exchange rate at the time of adopting the euro is important since adopting the euro at a rate below parity would increase the probability of higher UK GDP as well as lower UK interest rates and prices.

This paper examined the economic costs and benefits to adopting the euro. In terms of costs, losing the ability to set your own interest rates and to devalue your currency are probably the most widely identified costs in the literature as they are perceived as important means of responding to economic shocks. However, these only become issues if a country has not fully converged with the rest of the Eurozone at entry.

In terms of inevitable costs, there would be a one-time cost for converting the pound to the euro. There is also the possibility of having to bail-out other Eurozone countries facing high levels of debt. There is also the loss of the capacity to act as lender of last resort and the loss of the capacity to create money. Finally, for smaller countries with lower productivity, there is the Balassa-Samuelson effect which means that these countries would experience higher rates of inflation as they catch up to the rest of the Eurozone countries. But this would not be an issue for the UK.

In terms of benefits, there is the elimination of transaction costs of having two currencies, and the elimination of fluctuating exchange rates with the euro, leading to financial integration, increased investment and trade. There's also the positive impact on output, a result of lower inflation and increased investment. Finally, joining the euro may result in lower interest rates.

Further research needs to be done in order to determine the extent to which the economic woes facing some Eurozone countries such as Greece are due to the loss of monetary policy tools and how much is due to poor fiscal management.

In chapter 5, it was found that major changes in Britain's monetary policy tend to follow periods of policy failures. It was also found that the UK Treasury determined that Britain

failed the five economic tests in 1997 and in 2003 (even though it made some significant progress in 2003). Three papers where examined that contradict these findings and show that Britain is fully synchronized with the Eurozone and should easily pass the five tests.

The section ended by asking why is Britain so reluctant to adopt the euro as seen in poor results from public opinion polls on the issue. The main reasons that stand out are strong differences in opinion within political parties and that there may not be much pressure on the government to do so.

Finally, in section 6, the convergence criteria and the five economic tests are reassessed in light of the most recent economic conditions present in Britain.

Over the last decade, the UK has made significant progress and, if it weren't for the recession, would have easily passed the convergence criteria. It has lower inflation than the Eurozone except since the 2008 recession, when inflation increased over 3%; long-term bond yields, which, as of early 2012, are the lowest in Europe; it has a debt to GDP ratio which has only risen above 60% after the recession hit; and, it has a deficit which has remained lower than 3% for the past decade, except in response to the recession. Finally, while the exchange rate has dropped significantly over the last decade, it has remained within the 15% range since the beginning of the recession.

In terms of the five tests, most agree that the UK would benefit from joining the Eurozone in terms of increased investment, financial services and growth, stability and employment but only if the UK fully satisfied the first two tests, convergence and flexibility.

In terms of the convergence test, GDP growth has been closely aligned with that of the Eurozone for the past decade. The UK has had, for the past ten years, a somewhat higher interest rate than that of the Eurozone but interest rates have converged and dropped together starting in 2009, showing an identical response to the recession.

However, the UK has the lowest percentage of external trade done within the EU amongst all EU countries. As such, fluctuations in foreign currencies may have a greater impact on the UK economy than the Eurozone economy. Otherwise, the UK is as close to convergence with the Eurozone as it has been in the past 20 years.

In terms of the flexibility test, the UK has a lower unemployment rate and a higher labour force participation rate than those of the Eurozone. In addition, its labour force is more educated than that of the Eurozone. As such, its labour market is likely to be better able to respond to economic changes than that of the Eurozone countries. It has been determined that the UK is as close as it has ever been to pass the five economic tests.

Finally, in 2011, the UK's exchange rate with the euro was very close to the purchasing power parity conversion factor between the Eurozone and the UK, an indication that the exchange rate is not over or under valued by any great extent. It is likely to be an appropriate rate at which to join the Eurozone.

So it seems like there are a number of benefits from joining the Eurozone but also a number of significant costs. However, many of these costs would be mitigated if a country practiced sound fiscal management and was economically integrated with the Eurozone. At the time of writing, the UK seems to pass the UK treasury's five economic tests and if it weren't for the recession, it would also meet the convergence criteria set out in the Maastricht treaty. Finally, the current exchange rate seems to be at or near an optimal level for adoption of the euro.

That being said, with the current situation in the Eurozone, it's not likely that the UK would want to adopt the euro at this point. It is apparent from the diverging long-term bond yields that, during economic downturns, the costs of being part of the Eurozone far outweigh the benefits. While being part of the Eurozone may not harm growth, the loss of monetary policy tools by member states will undoubtedly harm recovery during

economic hardships. Finally, as long as the UK is economically healthy (at least compared to the rest of Europe), it likely won't face any pressures to join the Eurozone.

By examining the costs of joining the Eurozone, it was apparent that significant changes to the way the ECB operates are necessary in order to have a functioning monetary union and the UK will likely want to wait until these changes are implemented before joining.

References

Angus Reid, (2012) Most Britons Side with Cameron on EU Treaty Rejection, Angus Reid Public Opinion, London, January 4, 2012, obtained from http://www.angus-reid.com/polls/44279/most-britons-side-with-cameron-on-eu-treaty-rejection/ on April 7, 2012.

Annett, A. (2006) Enforcement and the Stability and Growth Pact: How Fiscal Policy Did and Did Not Change Under Europe's Fiscal Framework, International Monetary Fund, IMF Working Paper 06/116.

Ardy, B., Begg, I., Hodson, D. (2002) TheUK and the Euro: An Evaluation of the Five Economic Tests, SouthBankUniversity, Working Paper.

Askari, H., Chatterjee, J. (2005) The Euro and Financial Market Integration, *Journal of Common Market Studies*, 43(1), pp.1-11.

Barrel, R. (2002) The UK and EMU: Choosing the Regime, *National Institute of Economic Review*, 180, pp.54-71.

Bell, S. (2003) Common Currency Lessons from Europe: Have Member States Forsaken their Economic Steering Wheels? from Rochon, L.P., Seccareccia, M. *Dollarization: Lessons from Europe and the Americas*, New-York, Routledge, pp. 70-91.

Buiter, W.H. (2008) Why the United Kingdom Should Join the Eurozone, *International Finance*, 11(3), pp. 269-282.

Castro, V. (2011) The impact of the European Union fiscal rules on economic growth, *Journal of Macroeconomics*, 33, pp. 313-326.

Dedek, O. (2004) Adopting the Euro: Brake on or Engine for True Convergence?, *Eastern European Economics*, 42(2), pp.45-62.

Dubois E., Hericourt, J., Mignon, V. (2007) Costs and Benefits of Euro Membership: a Counterfactual Analysis, Centre d'Études prospectives et d'informations internationales, No. 2007(17).

European Commission (1990) One Market One Money: An Evaluation of the Potential Benefits and Costs of Forming an Economic and Monetary Union, *European Economy*, 44 (October).

Ferreira, P., Dionisio, A., Pires, C. (2010) Adopt the euro? The GME approach, *Journal of Economic Interaction and Coordination*, 5(2), pp. 231-247.

Feuerstein, S., Grimm, O. (2004) The Road to Adopting the Euro, *Intereconomics: Review of European Economic Policy*, Springer, 39(2), pp. 76-83.

Frankel, J.A., Rose, A.K. (1998) The Endogeneity of the Optimum Currency Area Criteria, *The Economic Journal*, 108 (July), pp. 1009-1025.

Godley, W. (1992) Maastricht and all that, *London Review of Books*, 14(19), obtained from http://www.lrb.co.uk/v14/n19/wynne-godley/maastricht-and-all-that, on March 31, 2012.

Helleiner, E. (2006) To Join or Not To Join: Canada, Britain and the Politics of Monetary Union, *Current Politics and Economics of Europe*, 17(2), pp.171-191.

HM Treasury (1997) UK membership of the single currency: An assessment of the five economic tests, Crown copyright.

HM Treasury (2003a) The euro: background to the five economic tests, House of Commons Library, Research paper 03/53, ISSN 1368-8456.

HM Treasury (2003b) The five tests framework, Crown copyright.

HM Treasury (2003c) UK membership of the single currency: An assessment of the five economic tests, Crown copyright.

Hochreiter, E., Wagner, H. (2002) The Road to the Euro: Exchange Rate Arrangements in European Transition Economies, *The Annals of the American Academy of Political and Social Sciences*, 579, pp. 168-182.

Howarth, D. (2006) The Domestic Politics of British Policy on the Euro, *Current Politics and Economics of Europe*, 17(2), pp.193-218.

Karam, P., Laxton, D., Rose, D., Tamirisa, N. (2008) The Macroeconomic Costs and Benefits of Adopting the Euro, *IMF Economic Review*, 55(2), pp. 339-355.

Lequain, M, Seccareccia, M. (2006) What Can We Learn from the EMU Model? Lessons for Canada and Britain, *Current Politics and Economics of Europe*, 17(2) pp. 289-315.

Minford, P. (2004) Britain, the Euro, and the Five Tests, *The Cato Journal*, 24(1-2), pp. 75-87.

Muscatelli, V.A., Piergiovanna, N., Patrizio, T. (2012) A simple and flexible alternative to Stability and Growth Pact deficit ceilings. Is it at hand?, *European Journal of Political Economy*, 28, pp.14-26.

Pesaran, M.H., Smith, L.V., Smith, R.P. (2005) What if the UK had Joined the Euro in 1999? An Empirical Evaluation using a Global VAR, CESifo Working Paper No. 1477, June 2005.

Rinaldi-Larribe, M-J., Is economic convergence in New Member States sufficient for an adoption of the Euro?, *The European Journal of Comparative Economics*, 5(2), pp. 133-154.

Schoors, K. (2002) Should the Central and Eastern European Accession Countries Adopt the EURO Before or After Accession?, *Economics of Planning*, 35, pp. 47-77.

Walsh, J.I. (2007) How and why Britain might join the single currency: The role of policy failure, *Review of International Political Economy*, 14(5), December 2007, pp. 868-892.