Practical Guide to the European Monetary Union

August, 2012

The objective of this guide is to provide a broad overview of the European Monetary Union (EMU) for non-experts, students, policymakers, businesspeople, and anyone else interested in the eurozone. We start with basic factual information. Then, we explain the strengths and weaknesses of the EMU and discuss whether the EMU is a suitable group of countries for a monetary union. That takes us to the recent crisis and a conjecture about the future. The discussion is illustrated with charts and tables using data from the World Bank.

An interactive version of the guide is available on TheGlobalEconomy.com. Please feel free to send us comments and questions by using the contact information on that website.

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General description of the European Monetary Union

The European Monetary Union (EMU) is a group of 17 European countries that use the same currency, the euro. The euro came into existence as a “virtual currency” in 1999. Then in 2001 it was implemented as an actual physical currency in the member states. The introduction of the euro was a high point in the process of integration on the European continent. Giving up the national currencies has been a difficult decision for the EMU member states. The euro is seen as a catalyst to further economic, fiscal, and political integration.

There is, of course, much doubt about the wisdom of forming a monetary union among such a diverse set of countries. There is little labor mobility between the member states and little fiscal coordination among the various countries. The financial crisis seems to have validated these concerns and now the EMU is at a cross-road: 1) muddle through, keep the current structure of the eurozone, and risk an eventual collapse or 2) accelerate the process of fiscal and political integration. It is not clear yet which road will be taken but there seem to be efforts to pursue the latter option: more integration.

EMU members in dark blue.
Montenegro and Kosovo, in light blue, also use the euro.
Forming a currency union is one of many options that countries have when it comes to their currency policy. They may let their currencies float depending on market conditions; or fix the value of their money against the dollar, the euro or some other major currency; or choose something in-between: floating within limited bounds. Some countries have decided to replace their currency with the dollar, which is a policy called Dollarization. For example Ecuador had replaced its currency with the U.S. dollar but such an action does not make the U.S. and Ecuador a monetary union. In a monetary union, the member states make joint decisions about their monetary policy while, with Ecuador’s dollarization, the decision making remains in the U.S.

The EMU is one of several monetary unions around the world, including the CFA zone with 14 members in West Africa and the Eastern Caribbean Currency Union with 8 members in the Caribbean. The United States is also a currency union with the U.S. states using the same currency, the dollar. The East Africa Community (EAC) composed of Burundi, Kenya, Tanzania, Rwanda, and Uganda is also in the process of implementing an EAC currency union.

Next, the guide provides basic information about the EMU. Then, we explain the costs and benefits of the EMU for the member states and discuss whether the EMU is based on a suitable group of countries for a monetary union. That takes us to an explanation of the recent crisis and a conjecture about the future.

Quick facts about the EMU

- Headquarters of the European Central Bank: Frankfurt, Germany
- The President of the European Central Bank: Mario Draghi
- Members of the eurozone: 17
- Members of the European Union that are not in the eurozone: 10
- Year of introduction of the euro: 1999 as “virtual currency”, 2001 physical implementation
- Population of the eurozone in 2011: 334 million
- Gross Domestic Product in 2011: 13.1 trillion dollars
- Unemployment rate in 2010: 10.0 percent
GDP per capita in 2011: **39,267 dollars**

Public debt in 2009: **64.7 percent of GDP**

The euro banknotes

**Differentiating the European Monetary Union from the European Union**

One should differentiate between the European Union (EU) and the European Monetary Union. The EU has 27 member countries that can freely trade and invest across borders. Of those, 17 are in the EMU and use the euro as official currency and 10 are not in the EMU. The ten countries outside the EMU are the United Kingdom, Sweden, and eight transition countries in Central and Eastern Europe.

In principle, all EU members are required to join the EMU at some point in the future but the timing is not specified. Therefore, in practice, the requirement to join the EMU is not compulsory. As of now, a few countries have expressed interest to join as soon as possible. These are primarily small economies in Eastern Europe that have already pegged their currencies to the euro. Other medium-sized countries have taken a wait-and-see stance and some, such as the UK, would probably not join for many years, if ever.
Members of the European Union. European Monetary Union members are indicated with a *.

<table>
<thead>
<tr>
<th>Austria*</th>
<th>Estonia*</th>
<th>Ireland*</th>
<th>Netherlands*</th>
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<tr>
<td>Denmark*</td>
<td>Hungary</td>
<td>Malta*</td>
<td>Slovenia*</td>
<td></td>
</tr>
</tbody>
</table>

The economic size of the EMU

The chart below shows that the 27 members of the EU have a slightly greater Gross Domestic Product than the U.S., when expressed in dollars. The combined GDP of the EU was about 16 trillion dollars in 2010 whereas the U.S. GDP was about 14 trillion dollars. The economic size of the EU reflects its population size of over 500 million citizens and its high level of prosperity. It also reflects the appreciation of the euro against the dollar over the years. Still, currency values aside, the graph shows that the EU is a large economic entity.

The chart also makes clear that the combined GDP of the 17 members of the European Monetary Union is substantial, totaling about 12 trillion dollars in 2010. This includes the economies of Germany, France, Italy, and Spain. With the exception of the U.K. these are the largest economies in Europe. Therefore, the EMU is also a large economic entity and it represents much of the economy of the EU.

Gross Domestic Products, in dollars
The EMU and the U.S. economies account for about 40 percent of world output. They are also closely interlinked. U.S. merchandise exports to EMU members stood at $176.7 billion in 2010 while U.S. imports of goods from the EMU was $242.7 billion in 2010.

The euro-dollar exchange rate

The chart below shows that the euro steadily appreciated against the dollar from 2001 to 2008. Data from the International Monetary Fund reveal that during that period, the share of the euro in the reserves of central banks around the world had increased to about a quarter of all reserves. That, and the demand for euro assets by private investors, contributed to the appreciation of the euro.

Then, since 2008 the euro has lost some value relative to the dollar. That coincides with the onset of the global financial crisis. Although the epicenter of the crisis was the U.S. financial markets, from where is spread around the world, investors nonetheless pulled back toward the traditional safe-haven during turbulent times: the U.S. dollar and the U.S. financial markets. That behavior suggests that investors still do not consider the euro as a perfect substitute to the dollar when it comes to long-term stability.

The euro-dollar exchange rate (euro per one U.S. dollar)
Economic indicators of the EMU countries

The table below provides key economic indicators for the EU and the EMU member states and, for comparison, the same indicators for the United States. We also show the averages for the EU and the EMU. The numbers give much interesting information but we would like to point out a few important facts.

The EMU is composed of economies of drastically different sizes. The biggest economy in the EMU (and in the EU) is Germany with an annual GDP in 2011 of about 3.57 trillion dollars. The smallest economy is Malta with a GDP of only 9 billion dollars. The four largest economies in the EMU: France, Germany, Italy, and Spain account for roughly 75 percent of the union’s GDP. Hence, the economic might of the EMU is highly concentrated in a few players.

The U.S. and the EMU combined produce more than 40 percent of the world output. Therefore, what happens in each of these two economic entities has significant importance to the other one and to the world economy.

The average income per capita in the EMU was 39,3 thousand dollars in 2011, i.e. the EMU is a highly advanced economic region. However, there is substantial disparity of the incomes within the EMU. When we exclude the somewhat special case of Luxembourg where GDP per capita was over 100,000 dollars in 2011, the highest income per capita was in Denmark: 59.7 thousand dollars and several countries’ income per capita were close to that of the U.S., including Austria, Ireland, and the Netherlands. At the other end of the income distribution in the EMU are a few Eastern European countries with GDP per capita somewhere between 12, 000 and 20, 000 dollars per year. Overall, the difference in incomes per capita between the richer Western part and the poorer Eastern part of the EMU is of a magnitude of about 3.

In terms of public debt, the EMU as a whole was close to its own requirement that government debt should not exceed 60 percent of GDP. According to that measure, the EMU governments are less indebted compared to the U.S. where government debt was 67 percent of GDP in 2009. However, there are large differences across countries. The lowest level of public debt is in Estonia: only 9 percent of GDP and the highest is in Greece: 142 percent of GDP. Several EMU countries have government debt in excess of 60 percent of GDP.
Unemployment rates also vary considerably across the EMU. The unemployment rate in 2010 was lowest in Austria: only 4.4 percent of the labor force and highest in Spain: 20.1 percent. Several countries have double digit unemployment.

In short, when looking at the EMU averages we see a large economic entity with prosperous countries, low public debt, and relatively low unemployment. The EMU compares favorably to the U.S. along many of the indicators. However, when we look at individual countries, we see examples of countries with low income, large debt, and substantial unemployment. The EMU and the euro are expected to help reduce these differences over time but, in the meantime, the disparities are the weak point of the eurozone structure.

**Indicators for 2011 (public debt for 2009, unemployment for 2010). EMU members with a *.

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP (billion USD)</th>
<th>Population (million)</th>
<th>GDP per capita (USD)</th>
<th>Public debt (% of GDP)</th>
<th>Unemployment (% of labor force)</th>
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<td>34.8</td>
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</table>
What are the economic benefits of the EMU for the member countries?

Using the same currency across countries eliminates exchange rate uncertainty and currency conversion costs. On a personal level, travel and cross-border shopping is much easier if one does not need to exchange currencies. Imagine, for example, that going on a holiday from New York to Florida required exchanging NY dollars for FL dollars. Should you buy FL dollars now or right before you leave? How much should you buy? Clearly, that hassle is eliminated when New York and Florida use the same money.

The same benefits apply to firms. They don't have to spend money to convert currencies and they don't need to worry about the future value of various currencies. They also don't need to spend money and effort to hedge against currency risk, i.e. to protect themselves from currency changes. As a result, businesses can trade and invest across borders more easily. That leads to more international investment and more international trade which, ultimately, might lead to stronger economic growth and greater prosperity.

The chart below shows that exports as percent of GDP for the EMU countries increased substantially since year 2000 when the euro was introduced. For comparison, the exports as percent of GDP for the U.S. did not increase during that period, suggesting that something special was going on in Europe.

![Graph: Exports as percent of GDP](chart.png)

Besides that, the monetary union could bring lower inflation to member countries that usually have relatively high inflation. The central bank of the monetary union cannot be pressured to create money as easily as individual central banks. It is more independent of the governments of individual countries and it is concerned with the level of inflation for the overall
union. There could also be countries in the monetary union that stand as a guarantor for monetary discipline. In the EMU that role is performed mostly by Germany that has a reputation for low inflation policies. Many of the Southern European countries have at times been more lax with monetary policy but once in the EMU they experienced low inflation. Notice on the chart the decline of inflation in Greece once it entered the EMU.

The inflation rate in Greece

There is one additional, more subtle benefit. As we explain later, in a currency union the member countries cannot use monetary policy (i.e. they cannot manipulate interest rates) and currency policy (i.e. devalue their currency to gain competitive advantage) to stimulate their economies. Instead, they have to implement reforms making their economies more flexible and productive. Whether or not that actually happens is debatable but, in theory, the restrictions of a currency union could motivate member states to improve economic governance.

What are the economic costs of the EMU?

When several countries use the same currency and investment moves between them without restrictions, then their interest rates become similar. To see why, let's say that interest rates on credits are higher in the Netherlands compared to Italy. Then, Italian investors will increase their lending to Dutch borrowers. The additional funding from Italy would lower interest rates in the Netherlands and would bring them closer to interest rates in Italy. The reverse would happen if interest rates in the Netherlands are lower than interest rates in Italy.
Notice on the chart that lending interest rates in the Netherlands and Italy declined and became more similar after the introduction of the euro in the two countries. They also started to move together more closely with ups and downs at roughly the same time, and with roughly the same magnitude.

**Interest rates on credit**

![Interest rates chart](chart.png)

Having the same interest rates could be a problem. We can continue the example to see why. Let's say that the Italian economy is in a deep recession with high unemployment while the Dutch economy is overheating and has high inflation. Then, we would like to have low interest rates in Italy to stimulate the economy and high interest rates in the Netherlands to slow down the economy. However, with a currency union the interest rates in both countries would move in the same direction. As a result of this "one-size-fits-all" policy, we would have persistent high unemployment in Italy and persistent high inflation in the Netherlands. Neither country would be able to address its individual problem.

**When can a monetary union work well?**

From an economic standpoint, the decision to form a monetary union or join an existing one should be based on the costs and benefits described above. Clearly, the benefits of a monetary union are greater if, as in Europe, the countries are close together geographically and already have many trade and investment ties. Using a common currency lowers the cost of these exchanges and helps them develop even further.
Now, let’s look at the costs. As we discussed, the monetary union transfers all monetary policy to the union level. Individual countries cannot expand or contract money supply, increase or lower interest rates, or change their currency policy depending on their particular economic situation. If one country is in an expansion while another country is in a recession, the common monetary policy cannot suit both of them.

Notice on the chart that economic growth rates have been quite different across the EMU member states. After the introduction of the euro and up to the financial crisis in 2008, Ireland, Spain, and Greece were growing very rapidly with annual growth rates of about 5 percent. The rapid growth during these years helped inflate the real estate bubble that later burst in these countries. If they were able to set their own interest rates, they might have opted for higher interest rates to prevent the rapid growth of property prices that later contributed to the crisis.

In contrast, the economic growth in Italy and Germany was much lower during that period. These countries might have opted for lower interest rates to stimulate their economies. However, in the monetary union, all of the member states have the same monetary policy.

How can then the monetary union function? A monetary union can function well if the following conditions hold:

- There is labor mobility between the member countries.
- The countries can lower wages if they enter a recession.
- The countries in expansion are willing to transfer money to the countries in recession.
Let us consider an example. Notice on the chart that in the last several years, Spain has been suffering with a double digit unemployment rate. At the same time, the German economy has been growing and unemployment has been below 10 percent. In that situation, Spain needs exceptionally low interests rates, or a lower value of its currency to stimulate its economy whereas the German economy seems to be doing fine without any help from easier monetary or currency policy. What happens then?

**Unemployment rate**

<table>
<thead>
<tr>
<th>Year</th>
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<tbody>
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<td>2010</td>
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</table>

**Solution 1:** Spaniards move to Germany. If Spanish workers move to Germany, that would reduce the unemployment rate in Spain and may raise it somewhat in Germany. The migration would go on until the unemployment rates in the two countries become similar. Then, having the same monetary policy and the same exchange rate policy would not be a problem.

**Solution 2:** Wages and prices in Spain drastically decline. Then, Spanish goods and services become more competitive and Spanish exports to Germany and other countries increase. That leads to lower unemployment in Spain.

**Solution 3:** German taxpayers increase their payments to Spain. That gives a boost to the Spanish economy while the extra tax burden slows down the German economy. If the transfers are large, then the economic conditions in the two countries become similar and the same monetary policy and exchange rate policy become acceptable.
Should Europe have a monetary union?

The brief answer to that question is no. Although the labor markets in the EU are open to workers from all countries, in practice there is limited labor mobility in Europe. The most important obstacle is the language barrier. There are few countries in Europe that use the same language. Moreover, there are different laws, customs, and social practices across the various countries. All of that makes moving from Spain to Germany much more difficult than moving from, say, Louisiana to Alabama in the U.S. Without labor mobility, differences in unemployment between the countries cannot be evened out and the “one-size-fits-all” monetary and exchange rate policies become a straitjacket.

In terms of wage flexibility, long-term labor contracts, labor union agreements, and social protection policies make it very difficult to lower wages during recessions. Then, an economy, such as Spain, that is experiencing a recession cannot easily restore its competitiveness. If Spain was not in the EMU, it could depreciate its currency and help its export sector. Without the option to devalue and without the option to lower wages, it has to struggle with the recession much longer.

Finally, the EMU members have decided to have separate fiscal policy with very limited transfers between countries. Without a fiscal union, the economic conditions cannot be evened out across the union using subsidies from one country to another.

Based on that, we can conclude that, although there are important benefits for the EMU member countries from having the same currency, the costs associated with the one-size-fits-all policy are substantial. These costs are in fact probably greater than the benefits.

Why was the EMU formed?

The formation of the EMU was a political decision. The common currency is believed to forge even closer ties between European countries and to secure a path of deeper economic and political integration. A common currency is a strong binding tie between the member countries as the reintroduction of national currencies is risky and very expensive.

The desire to push for greater integration on the European continent is driven by the still recent memory of devastating military conflicts. Greater integration is believed to prevent
such calamities as countries are too dependent on each other. A greater and more cohesive EU is also seen as an important world player in economic and political matters, a counterweight to the U.S. and, lately, emerging markets such as China.

We should mention something else. According to some theories, a group of countries that are not suitable to form a monetary union may become suitable if they form a monetary union. Here is how that might work. Consider again our example of Germany that has an economic expansion and Spain that goes through a recession. If the two countries had independent monetary policies, Germany would raise its interest rates to combat inflation and Spain would lower interest rates to lower its unemployment rate. However, the countries cannot implement these policies and therefore unemployment in Spain remains persistently high. With no hope for help from monetary policy, the unemployed Spaniards will be pressed to move where the jobs are abundant, i.e. to Germany. That, in essence, means greater labor mobility. In that way, forming a monetary union and eliminating independent monetary policy has forced an increase in labor mobility. Then, the greater labor mobility, the theory goes, makes the monetary union more sustainable.

Similar logic applies to the flexibility of wages. With independent monetary policy, the member countries could lower interest rates to boost employment. Without that option, the workers may be forced to accept lower wages that make their companies more competitive. Again, the implementation of the monetary union has forced greater flexibility in the labor market that, in turn, makes the monetary union more sustainable.

It is debatable whether these scenarios would unfold as predicted. Still, the idea that labor markets, people, and the economies in general would adjust to the new realities if a monetary union is implemented might have been important when deciding to implement the EMU.

Greece, Spain and the current crisis

Imagine the following scenario: One of the member countries of the EMU cannot service its international debts and stops making payments. The banks and other lenders that have extended credits to that country, and their business counterparts, take losses. To cover the
losses, investors sell off assets (e.g. real estate) which leads to falling prices. Moreover, banks curtail lending to the businesses and households and they reduce their purchases of goods and services. The economies across the monetary union slow down. Other governments are pressured to increase spending to support their financial sectors and their economies. That raises concern that they, too, might at some point fail to pay their debts. And so on the downward spiral goes.

To avoid that scenario, the EMU has requirements on it members written in the Maastricht treaty. Budget deficits should not exceed 3% of GDP and government debt should not exceed 60% of GDP. As one can see from the chart, the EMU as a whole has more or less fit within the government debt requirements. However, Greece is a notable exception with government debt exceeding 120 percent of GDP. Apparently, Greece had a large public debt even before its entry into the EMU. It was admitted anyway with the expectation that it would reduce its debt over time. However, that never happened. Instead, the government debt span out of control when the economy went into recession during the global financial crisis.

Notice on the chart that Spain did not have a large government debt. Its level of debt as percent of GDP was, in fact, lower than the EMU average. Spain, however, had other problems that are visible on the chart below. It experienced an exceptionally rapid growth in bank credit to the private sector. The level of credit as percent of GDP increased from about 120 percent of GDP in 2001 when the euro was introduced to over 200 percent of GDP when the crisis started.
By 2010 Spain had a significantly greater private debt level compared to the average for the EMU.

Many of the private sector credits in Spain had financed real estate developments. As the prices of these properties declined, Spain’s banks came under severe pressure. The government stepped in to help with public funds and as a result the public finances started to deteriorate.

Notice also on the next chart that both Spain and Greece had large trade deficits leading up to the crisis. The trade deficit was particularly pronounced in Greece where it reached over 10 percent of GDP for several years. At the same time, the EMU as a group recorded trade surpluses. The large trade deficits in the two countries indicate that their economies were not very competitive. Wages and prices in the two countries were higher than what can be justified based on labor productivity. In the absence of a monetary union, the natural resolution to that problem is to depreciate the local currencies. Then, prices and wages decline relative to international prices and wages, and competitiveness is restored. However, being part of the EMU, neither Spain nor Greece can depreciate their currency. The solution then is to increase labor productivity through reforms but this is a slow process. The other solution is the so-called “internal devaluation,” i.e. to cut wages and prices. That is a shorter road to regain competitiveness but it is extremely painful and creates social and political unrest, as we have seen in the two countries.
The lack of competitiveness combined with the high level of public debt in Greece created a situation where Greece faces extreme difficulties paying its debts. It is already indebted and its economy is not functioning well. It cannot depreciate its currency to gain competitiveness as it is part of the EMU. It seems that, barring an exit from the EMU, the long term solution has to include reforms that strengthen the public sector to avoid further build-up of debt and private sector reforms to increase competitiveness.

The problems in Spain seem to be concentrated in the banking sector, with a spillover into the public sector because of the bank bailouts. These are not easy to deal with but they are less fundamental than the significant lack of competitiveness and the large public sector debt in Greece.

Spain and Greece were not the only EMU countries that were severely affected by the financial crisis. Portugal, Ireland, and Italy have significant problems as well. One can explore their key economic indicators leading up to and during the crisis at the respective country pages on the website www.theglobaleconomy.com.

**Eurozone collapse or further integration?**

The EMU is at a crossroad. Its member countries have to choose between: 1) keeping the current structure of the eurozone which would lead to its eventual disintegration and 2) more integration. Even if the EMU manages to muddle through its current difficulties, the problem remains that there is little labor mobility, wage flexibility, and fiscal transfers in
Europe. It is a matter of time before pressures build up in some countries to the point where they cannot sustain their public finances. Then, again, we’ll have the threat of default with catastrophic consequences for the union.

That scenario was predicted by economic theory long before the EMU came into existence. However, it is only now considered as a real possibility by the wider public because it actually happened. The structural faults of the EMU are no longer academic but real. Still, reforms are usually initiated as a consequence of crises and it is not a surprise that preventive measures were not in place. Now that the crisis is real, the EMU scrambles to put together a roadmap for crisis reaction and prevention.

In the short run the effort would be to stop the deterioration in Greece and Spain and to limit contagion to other countries. It is also important to resume economic growth. If other member countries fall into deep recession, they may pose the same threats as Greece and Spain. Long-term growth depends on structural reforms and greater productivity but these take time to achieve. A long-term solution also must include greater fiscal discipline as prescribed in the rules of the EMU: low deficits and low public debt. In the meantime, public and private spending from countries that can afford it can keep the EMU economies afloat.

It is possible that labor mobility and wage flexibility would increase over time under the pressure of unemployment. However, both of these processes are slow and painful, accompanied by social unrest and dislocation. Therefore, the main reform would have to come from a fiscal union between the member countries. A fiscal union would pool the risk to public finances across the members. However, for that to happen there must also be appropriate checks and balances on taxation and spending on the union level. That means that the EU and the EMU in particular have to advance to a deeper political union as well. The central authorities would be responsible for allocating an increased portion of the tax burdens and the revenue.

Clearly, a fiscal and political union cannot be set up overnight. Countries cannot agree to take responsibility for each others’ public finances in a matter of months. However, it seems that EMU political leaders recognize the need for a change in that direction and are taking steps. Few observers or politicians advocate the disintegration of the eurozone as everyone
recognizes that this would have a drastic impact on the EU and the global economy. Whether or not these plans take convincing shape soon enough remains to be seen. It is clear, however, that the short-term measures have to be combined with a road map for closer integration if the eurozone is to survive.