**International Economics**

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**Lecture No. # 09**

Good afternoon. Today, we are going to talk about, the Optimum Currency Area; the idea floated by Professor Mendel in the early sixties, and the optimum currency area is about the currency unions. So, the debate is, whether a group of countries should go for having a single currency. Now clearly if there are benefits of doing it, then a group of countries can adopt a common currency. The Europeans have done it at least from 1999; there are some countries in the Europe, who have adopted the common currency, which is called the Euro. There are examples of the currency unions or monetary unions in the other parts of the world; for example, former French colonies in Africa have also come together, to form currency union.

In the Americas Ecuador for example, has adopted its currency to be dollar that is called dollarization. So, it is not a group of country, but one country which has adopted the other country's currency; and panama also adopts US dollars. In Asia, we have now Asian plus china, Japan and Korea which peg their currencies to a basket of currencies. So, it is like a precursor towards having a common currency for the Asian countries. So, Asian which has eleven countries plus china, Japan and Korea have come together, to peg their currency to a basket of currencies.

If you look at India's history also, India had pegged its rupee; especially after the 70s it had pegged to the basket of currencies. So, it had some reserve currencies and it would peg its currencies to the basket of currencies; that model went on till the early 90s and then we have moved to having market exchange rates. But this optimum currency area is dealing with having one currency, for a group of countries.

Now what we have been discussing in the classes that if there is a shift of expenditures from domestic to foreign goods or foreign to domestic goods. It leads to imbalances in the economy; you move out of internal and external balance. So, if you have to move back to the equilibrium position, that is having both internal and external balance, then you switch back your expenditures. So, if you find that a country starts liking goods from abroad, there is a switch of expenditures from domestic to foreign goods. The only way to bring back your

economy into equilibrium is to switch back your expenditures, from foreign to domestic goods; that means you depreciate your economy.

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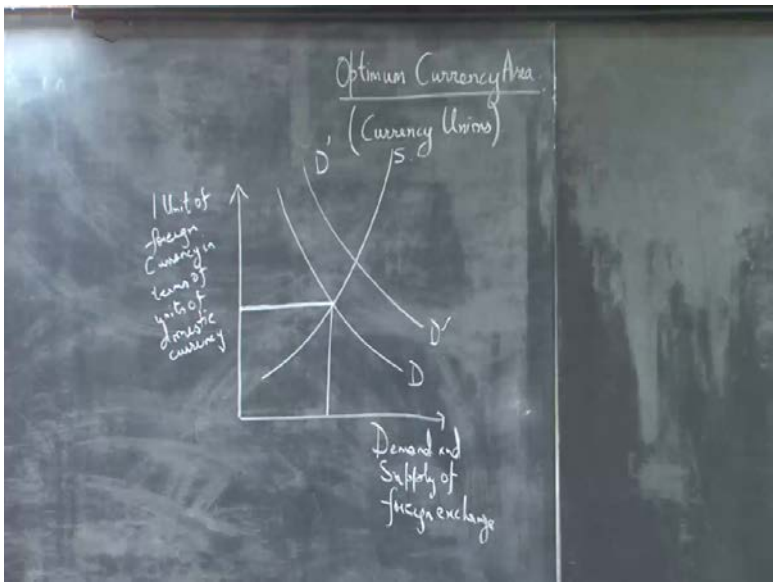


Now when you have these currency unions, the problem comes that you need to take care of the change in the demand and supplies of the foreign exchange, because at the end you want to have maintained parity. So, if you have the demand curve and the supply curve of foreign exchange, (no audio from 5:33 to 6:15) in the currency unions you would have a situation, where each country would peg its currency to this common currency. So, if you peg your currency to a common currency and the others also do it, then it is like a fixed exchange rate system working for the entire group of countries within the region.

If you look at this handouts that I have given to you, please refer to the table 21.2; in the middle, you have a list of 27 countries; 14 countries in the Europe that is table 21.2 the EU 27 and the euro project in 2007, table 21.2 in the middle, the handout has 9 pages in the middle that is page 6th, now you can see a list of 27 countries. So, this EU comprises of the euro zone countries which have adopted the common currency euro.

There are countries which are part of the EU, but not part of the euro zone which are countries in the, Exchange Rate Mechanism. So, the difference between the countries in the Exchange Rate Mechanism and the euro zone is that, the countries in the Exchange Rate Mechanism have their own currency; they have not adopted euro, but they have pegged their currency to the euro.

There are other EU countries, 7 of them again which are not part of the Exchange Rate Mechanism, but part of the EU. So, EU comprises of countries in the euro zone which have adopted euro common currency. There are countries in the Exchange Rate Mechanism which have not adopted euro, but they have pegged their own currency to euro, and there are other EU countries, which are potential candidates to be part of the Exchange Rate Mechanism and once you became a part of the Exchange Rate Mechanism, then you graduate to the euro zone.

I will talk about this graduation from the other to Exchange Rate Mechanism and then to the countries in the euro zone, but what I want to tell you is, all countries in the EU have a euro parity rate. They have their own national currency which is pegged to the euro and the euro parity rate is given in one of the columns, which is euro parity euro 1 is equal to 13.760 shilling. 1 euro is equal to40.3399 franc.

So, if each of these currencies is pegged to euro, then you can work out the fixed exchange rate between shilling and franc, because each is pegged to the euro. When we had the gold standard, a monetary arrangement that we had from 1870 till the end of the Second World War, you had countries, which were pegging their currencies to the ounces of gold; here the difference is that, you are pegging your currency to a common currency, which is euro. So, it is like a fixed exchange rate system within the region.

Now, fixed exchange rate system has its own problem; you have your common currency it is managed by a common central bank for all the countries. So, you lose on the monetary independence; you do not have monetary independence, in case of a fixed exchange rate. So, if you do not have a monetary independence, what do you do about the changes in the demands, which take place in the economy? Example which is just given in the literature to explain this Optimum Currency Areas, example of the European union, where people from this is what I am talking about, Europe before 90s. So, you had one set of countries in the Eastern Europe and you had rich countries in the Western part of the Europe.

So, you had all sort of restrictions on movement of people and movement of goods especially in Exchange Rate Mechanism which was bifurcated into west and East Exchange Rate Mechanism. So, this East Exchange Rate Mechanism would always wish to have goods coming from the west, because there were certain restrictions on movement of people and movement of goods; it was very difficult for the East Exchange Rate Mechanism to move to

West Exchange Rate Mechanism. Now in this type of scenario say for example, the East Exchange Rate Mechanism start liking goods emanating from the west.

So, if it were a floating exchange rate, it would not matter much because if the demand for the western goods increases the demand for foreign currency goes up, your exchange rate that means, your domestic currency depreciates, the foreign currency appreciates. So, the price movement helps you to take care of the changes in the demands which initially changed, because the East Exchange Rate Mechanism started liking goods emanating from the west.

But in a scenario where you have to maintain this parity; how do you take care of these changes in demand or do you do something in the economy to curtail those demands for the western goods? Now the adjustment takes place (no audio from 14:31 to 15:11) mainly through these three points.

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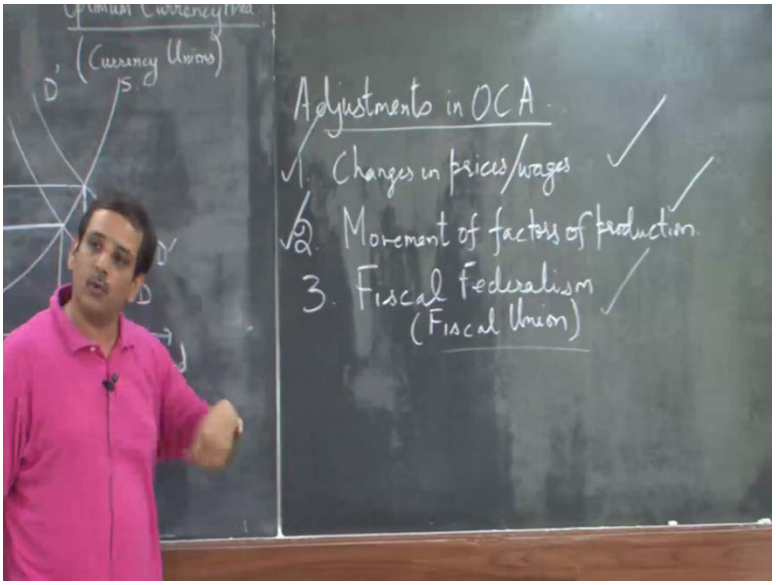


So, say for example, you start liking goods emanating from the western world .So, the adjustments if the exchange rate cannot change, what can change the prices? So, if you start liking western goods, the demand for the western goods would go up; the price of the western goods would go up. So, if the price goes up, the aggregate demand in their economy goes down and correspondingly in your home country, the prices go down. Therefore, the aggregate demand in the economy goes up. So, it takes care of that shift in the demand for the foreign goods.

So, the adjustments in Optimum Currency Area will take place, if there is price flexibility wages and prices are flexible; second, because generally it is observed that the prices are sticky. So, it would be an advantage for a country to be part of Optimum Currency Areas, if you have free mobility of factors of production. Why because say for example, if you start demanding foreign goods, the production of the foreign goods has to go up; if the production has to go up, the demand for foreign labour would go up, because you need foreign labour to take care of the increase in products.

So, the way the adjustments would take place is that, if East Exchange Rate Mechanism had a common currency and if they have to take care of the shift in the demand, the labour needs to move from East Exchange Rate Mechanism to West Exchange Rate Mechanism, to take care of that increase in demand of the western goods.

So, Optimum Currency Area works if there is free mobility of factors of production; Optimum Currency Area works if you see changes in prices happen; Optimum Currency Area works if you have fiscal federalism; in the sense that, you have fiscal union, because if the demand for the foreign goods goes up; the production goes up; the income goes up; the tax that you generate in foreign country also goes up.

So, if the tax goes up, there the aggregate demand in the foreign country goes down. So, you should have a system, where the money from the west should flow back to the east, in case initially there was an increase in demand for the foreign goods. So, the tax payments there would go up, the tax payments in the eastern part would go down; the aggregate demand would increase in your country; the aggregate demand in their country would go down, if you have a fiscal union.

Optimum Currency Area works quite well in those regions, where you have all these three. The price movement factors moving without any problem, without any hurdles and you have the fiscal transfers taking place without any problem and hurdles. So, the issue comes that if this is so, why not that each country or each state inside a country has its own currency? Do you understand this debate? Because if this is so, then say, a state of Gujarat within India would also like to have its own currency, because it knows that, if it is part of India there is no problem in the movement of factors of production; you may be born in Uttar Pradesh, but if you get some work outside the state of Uttar Pradesh you can easily move there no such restrictions.

You may have a fiscal union, you may have this price movement and if you do not find this, then you can always argue that let us have our own currency. So, then the debate went on to identify, whether it is beneficial for EU as compared to the United States; Are they better candidates for an Optimum Currency Area?

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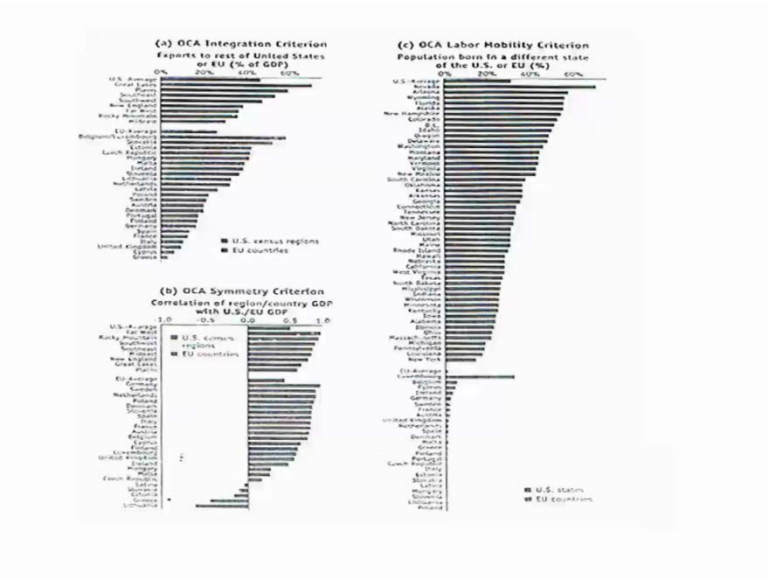


So, if you look at the handout, the table 21.4, that is table 1 to the 3rd table, compares the performance of the US and the EU as candidates of an Optimum Currency Area. Now, look at the three criteria for an Optimum Currency Area, one is Optimum Currency Area integration criterion; the second is Optimum Currency Area symmetry criterion and the third is Optimum Currency Area labour mobility criterion. So, after this, there were people who worked on Optimum Currency Area and they reclassified all these into two points, which were integration and symmetry.

So, you form a currency union, if you are highly integrated with the other regional trading partners, and you have a symmetrical relationship with the other trading partners; integration can be in Exchange Rate Mechanisms of 1 proxy can be the exports to the rest of the region as a percentage of GDP, this is an integration criterion; and symmetrical relationship is that if each country tend to react in the same manner, due to some shocks which happen outside the region.

So, this point I can explain it, in your family if you have a group of 4 or 5 family members, then how close are you in Exchange Rate Mechanisms of your relationship that is integration;

and symmetry is that if there is a shock which happens, there is some problems which emanate from outside, if all the members react in the same way then you say that, you have symmetrical relationships; you have tend to react in the same way.

So, these adjustments were reclassified into integration and symmetry, and then the debate was whether United States or EU was good contenders for an Optimum Currency Area. So, this table which is given in finch and Taylor, they do a simple exercise where they work out the Optimum Currency Area integration criterion, the Optimum Currency Area symmetry criterion and Optimum Currency Area labour mobility criterion.

So, if you look at the Optimum Currency Area integration criterion, 1 proxy for this integration criterion is exports emanating from different states of United States and going to the rest of the United States or exports emanating from one of the countries in EU and going to rest of the EU countries. So, you find that if you look at the United States average and if you compare with EU average, the United States average is higher than the EU average; that means, the states within the United States are more integrated in the sense that, more exports are happening from each state going to the other states.

So, say for example, you want to work this integration criterion for India, then you have to work out, how much exports is happening from a state of Gujarat; what is the proportion of exports which is happening from Gujarat and going to the other states in India. So, you may call it exports or you may call it the goods which go out of the states. If you find this proportion, then you can work out an Optimum Currency Area integration criterion.

From this it seems that, US is more integrated than the Europeans, the EU regions. Luxembourg, Belgium are the top most countries in EU which have very high percentage of exports going to the rest of the European countries, following by Slovakia, Estonia, Czech, republic Hungary, the least one is Cyprus and Greece, United Kingdom they are more closed within the European union.

Look at France, Italy they are all in the bottom. So, from outside anyone who knows about Europe, it would seem that they are very highly integrated economies; but here you find that most of these large rich countries, they are the ones which are in the bottom. The countries which are on the top are Luxembourg, Slovakia, Estonia, Czech, Hungary, Malta island and so on. For US, you have these different states, great lakes, planes, south east, south west new England which are at the top. So, as far as integration criteria are concerned, US is more

integrated; the states in US are more integrated with each other. So, they are good candidates for having a common currency.

If you look at the sea point, Optimum Currency Area labour mobility criterion this is proxies by the population born in a different state of the US or EU in percentage. So, again if you work out the EU average and the US average, the US average is far bigger than the EU average. So, people who are outside European Union their general perception is that, anyone who is born in Sweden can easily go to the other countries and work there; this is not confirmed by this labour mobility criterion.

It seems that, US again scores over the Europe. The Europeans wherever they are born, they want to work in that same country; they are reluctant to go outside. Earlier the impression was these Europeans, if you go to Europe it would seem everything is same, you would meet people who are born somewhere else; and they come and meet you it would seem that, there was full mobility of factors of production; but if you see the date, it would seem that, they do not have enough labour mobility.

Again US scores over the European Union in Exchange Rate Mechanisms of the labour mobility. As far as the symmetry criterion is that, you tend to react in the same manner as the others; if you tend to react in the same manner, then you can say that you are part of a family; you can form a union.

So, there is a shock which happens, which emanates outside the region and if the countries within the region they react in the same way, then you say that there is a symmetrical response. So, a crude proxy for this symmetrical criterion is the correlations of a region slash country GDP with US slash EU GDP. So, if you want to find whether Gujarat has a symmetrical response in comparison to the other states in India; you correlate Gujarat's GDP with India's GDP; this is one proxy for that symmetrical criterion.

Now, here you cannot make distinction between US and EU. EU's average is more or less same as the US average and we have reasons for it, because of the fact that, many of these countries they do not tend to produce the whole set of varieties; in Europe you find that, countries produce limited set of varieties; they reap economies of scale; they export certain varieties, import another set of varieties.

So, in Europe you tend to specialize in different varieties; that is the reason that you may find high correlations in these GDP; rather than saying that they have face the same symmetrical shocks. So, what is comes out of this table is the fact that United States is a better contender for an Optimum Currency Area rather than Europe

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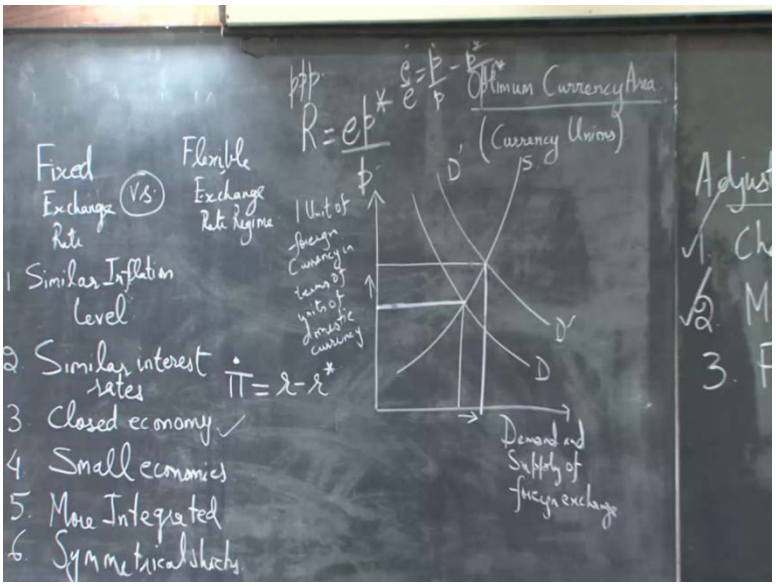


The next point is, how Optimum Currency Area different from a fixed exchange rate regime. Now what you need to understand is the fixed exchange debate about, (no audio from 33:34 to 33:52 ) whether the country should go for a fixed exchange rate or a flexible exchange rate; and the reason that, I want to discuss this is, because this Optimum Currency Area is a higher form of a fixed exchange rate.

Now if you read the literature, on countries choosing between fixed and flexible exchange rate, they come out with a set of criteria's it is said that countries with similar inflation levels should adopt a fixed exchange rate; countries with similar interest rates should adopt the fixed exchange rate; countries which are closed that is, trade to GDP is lower should adopt the fixed exchange rate; countries which are small they should adopt the fixed exchange rate; countries which are more integrated they should adopt a fixed exchange rate; countries which face symmetrical shocks they should adopt a fixed exchange rate.

If you recall when we were discussing this open interest parity, if you recall that pi dot, the open interest parity that we got the expected rate of change of exchange rate was the difference between the interest rate, which prevailed in your country and foreign country. So,

if you do not want any depreciation in your exchange rates, then only and if the interest rates are same then pi dot would be equal to 0; that is the reason that, you say that if you have similar interest rates, then you go for a fixed exchange rate.

Similarly, if you work on the purchasing par parity theory, which says that the real exchange rate e p star by p, it is a constant and if you work on this equation, you would get e dot e to be equal to p dot p minus p dot star p star. The inflation levels here and the inflation levels in the foreign country, purchasing par parity theory says that, this real exchange rate is a constant for the same set of goods; the prices which prevail for the same set of goods are same here and in the foreign country, that is what purchasing par parity means.

So, if you work on this, you will get e dot by e is p dot by p minus p dot star by p star. So, if you have similar inflation levels, there will be no change in the exchange rates. So, you can go for the fixed exchange rate. If it is an open economy like Norway and you have flexible exchange rates, then it would tend to create volatility in your markets. So, more open is the economy, a small correction this should not be closed, this should be an open economy. If you are more open, then your trade to GDP is on the higher side and if it is a flexible exchange rate then you tend to lose, if you have an open economy.

So, if you have a fixed exchange rate system, then for an open economy you should go for the fixed exchange rate; small economies also should go for a fixed exchange rate regime, because in a fixed exchange rate regime you lose your monetary autonomy. So, when you lose your monetary autonomy it is better that you have a small economy rather than a large economy; now you have economies which are highly integrated with each other and they face symmetrical shocks, all these should go for a fixed exchange rate regime. On the other hand, countries which do not have a similar inflation level, similar interest rates is a closed economy; is a large economy; is not integrated; faces asymmetrical shocks; they should adopt a flexible exchange rate regime .

Now, the reason that I am talking about this is, because this optimum currency area is a higher form of a fixed exchange rate regime; it is a hard peg; here, you may have a band wherein your exchange rate can move two percent positive or negative or it can go till 15 percent, but here in the Optimum Currency Areas, this band is certainly lower than what you have in a fixed exchange rate regime.

The Danish, the Swedish, the United Kingdom they want to be a part of the optimum currency area. So, if you had seen the earlier table, the entire Europe is divided into euro zone, Exchange Rate Mechanism exchanged rate mechanism and others; and see the position of the United Kingdom and Sweden, they are not even part of the Exchange Rate Mechanism the Exchange Rate Mechanism that is, they do not want to be part of the Optimum Currency Area. If you want to be a part of Optimum Currency Area, then the first thing that you have to do is, you follow certain economic criteria and then, after two years you move to the Exchange Rate Mechanism and then in the Exchange Rate Mechanism you peg your currency to the euro and after this you move to the euro zone.

Now these, it is an interesting story about the United Kingdom and the Sweden. In 1991 when you had that famous Maastricht treaty which decided on having a euro by 1999 and it also said some economic criteria of joining the European Union. In the initial list, United Kingdom and Sweden were part of it, and they agreed to be part of the Exchange Rate Mechanism after a year or two years, but then they faced a crisis they had a referendum in their own countries and subsequently they opted out of the Exchange Rate Mechanism and now they are put in the other EU countries.

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| | | YEAR THAT COUNTRY JOINED | | | | |
|---|---|---|---|---|---|---|
| | | EU | ERM | Eurozone | Euro Parity (€1 = ) | National Currency (current or former) |
| Countries in the Eurozone | Austria | 1995 | 1995 | 1999 | 13.7603 | schilling |
| | Belgium | 1958 | 1979 | 1999 | 40.3399 | frank |
| | Finland | 1995 | 1996 | 1999 | 5.94573 | markka |
| | France | 1958 | 1979 | 1999 | 6.55957 | franc |
| | Germany | 1958 | 1979 | 1999 | 1.95583 | mark |
| | Greece | 1981 | 1999 | 2001 | 340.75 | drachma |
| | Ireland | 1973 | 1979 | 1999 | 0.787564 | pound |
| | Italy | 1958 | 1979 | 1999 | 1936.27 | lira |
| | Luxembourg | 1958 | 1979 | 1999 | 40.3399 | franc |
| | Netherlands | 1958 | 1979 | 1999 | 2.20371 | guilder |
| | Portugal | 1986 | 1992 | 1999 | 200.482 | escudo |
| | Slovenia | 2004 | 2004 | 2007 | 239.64 | tolar |
| | Spain | 1986 | 1989 | 1999 | 166.386 | peseta |
| Countries in the ERM | Cyprus | 2004 | 2005 | 2008 | 0.585274 | pound |
| | Denmark* | 1973 | 1999 | ? | 7.46038 | krone |
| | Estonia | 2004 | 2004 | 2009? | 15.6466 | kroon |
| | Latvia | 2004 | 2005 | 2009? | 0.702804 | lat |
| | Lithuania | 2004 | 2004 | 2009? | 3.4528 | litas |
| | Malta | 2004 | 2005 | 2008 | 0.4293 | lira |
| | Slovakia | 2004 | 2005 | 2009? | 35.4424 | koruna |
| Other EU Countries | Bulgaria | 2007 | ? | ? | ? | lev |
| | Czech Republic | 2004 | ? | ? | ? | koruna |
| | Hungary | 2004 | ? | ? | ? | forint |
| | Poland | 2004 | ? | ? | ? | zloty |
| | Romania | 2007 | ? | ? | ? | leu |
| | Sweden* | 1995 | * | ? | ? | krona |
| | United Kingdom* | 1973 | 1990-92 | ? | ? | pound |

So, Sweden and United Kingdom, as of today would never want to have their currency to be converted into euro. Denmark, on the other hand is a part of Exchange Rate Mechanism, it has its own currency Krone pegged to the euro, but it is very hesitant to have its own

currency as euro. So, people were reluctant, the countries were reluctant to move from this fixed exchange rate which is a lower form of the Optimum Currency Area. Optimum Currency Area is a hard peg.

So, then the question comes. If you look at this, the 2nd page that is figure 21.2 it has an interesting diagram which on the x axis has market integration and on the y axis there are symmetry of shocks; and you see a line which there are two set of lines downward sloping lines, one is a fix and the other is an Optimum Currency Area. So, anyone who joins EU has to first go through, cross this fix line and then subsequently cross this Optimum Currency AREA Line. The countries which cross the Optimum Currency Area lines are the ones who have higher market integration and they have symmetrical shocks.

Now, related to this is , who joins this European union in 1991, there was a famous treaty which came into being called the Maastricht treaty, this Maastricht is a place in Netherlands; what it evolved was a set of criteria for joining into European Union ; that set of criteria is called the convergence criteria . So, tomorrow if Turkey wants to join the European Union, it has to follow the economic or the convergence criteria given in the Maastricht treaty.

Now, that is mention in table 21.3 that is rules of euro membership. So, the rules of the club or the convergence criteria relates to the exchange rate, inflation rate, the long Exchange Rate Mechanism nominal interest rate, the government deficit and the government debt . So, if your economy wants to have a member of the European Union, then it has to be in 2 consecutive years in Exchange Rate Mechanism band with no devaluation.

EU, it has euro zone, it has Exchange Rate Mechanism and there are others. If you want to graduate to euro zone you have to be part of that Exchange Rate Mechanism and that Exchange Rate Mechanism is Exchange Rate Mechanism where you need to peg your currency to euro and this exchange rate has to be stable, there should not be excessive devaluations taking place.

Second, this is interesting, no more than 1.5 percentage points above the level in the 3 member states with the lowest inflation in the previous year. So, your inflation should not exceed 1.5 percent of the averages of the three countries, which have the lowest inflation. Similarly, there are criterions for the interest rates, deficit should not be more than 3 percent of GDP in previous financial year, government debt should not be more than 60 percent of GDP in previous financial year.

This inflation rate and long Exchange Rate Mechanism nominal interest rate, these criterions are not coming from anywhere else, but it is coming from the uncovered interest parity. If you have the same interest rates, then you can have a fixed exchange rate regime; if you have the same inflation levels, then you can have a fixed exchange rate regime. So, 2nd and 3rd have the reason is an economic reason that is, uncovered interest parity and the ppp, inherent is these, and then government deficit and government debt are talking about having fiscal austerity.

No more than 3 percent of GDP in previous financial year, no more than 60 percent of GDP in previous financial year; although you can always question me on these figures, why 3 percent and 60 percent there is no economic interpretation for this, but then these are the set of criteria for joining into the EU which is like a hard peg; it is much more than the fixed exchange rate regime, where your currency cannot even take these bands.

Presently in the Exchange Rate Mechanism you can have a 15 percent band, but as soon as you go for an optimum currency area, you do not see you are bound to have your own currency peg to the euro; where you do not see much changes in the value of your currency, because even though you are dealing in euro inherently if you go to any bank in Europe, when they give you a bill, that bill always mentions the exchange rate between your currency and the currency that you had before 1999, say Italian lira with euro and that is pegged that cannot change; you do not; it is a hard peg.

Then the issue is that, what is happening now in Europe when they are facing financial crisis, people have started questioning, whether it is beneficial for Europe to have a common currency? Will it be prudent on part of countries to move out of Optimum Currency Area? To answer that, it is very difficult apart from the fact that, you have to reprint your own currency, again there are other set of issues.

So, it was made in such a way that, someone who enters Optimum Currency Area cannot go back and have its own currency. So, we will study different parameters of these economies and we will see whether these economies indeed, followed these Maastricht criteria and to your surprise, you will find that table is also there, the last table, most of the countries do well in Exchange Rate Mechanisms of the government deficit and government debt and this is an old data.

So, the origins of this financial crisis does not lie in the last 2, 3 years; the origin lies from 2001, what is happening from 2001, 2002? They did not follow their own set of criteria's that they had built under the convergence criteria's. This set of literature is new; this is only the very second time I am communicating. So, I do not have that much of confidence, because the literature is coming in what is happening in Optimum Currency Area, but what you can do is, if you want to compare whether India is a good contender for an Optimum Currency Area.

Compare it with something which is happening with respect to east Asia; where they have Asian plus china, Japan and Korea, whether they or us; if you compare whether we or them; whether we are better contenders for Optimum Currency Area; whether we should have an Optimum Currency Area among search or whether we or they should have a common currency and what happens, if India joins this east Asia club; what will happen to the Optimum Currency Area criteria?

So, you can think of doing something like that, in search for example, the economic indicators will never tell you that, you have a monetary union; it will be difficult, but politically it may be a good idea. Like in Europe also, it is more of a political integration rather than economic integration.

But what if India joins this east Asia club and you have an Optimum Currency Area common currency, Asian common currency, I do not know what you will call that in future, but the Koreans, the Japanese, the Chinese, we all have a common currency; it is difficult that was the same thing which happened in the 60s; people would laugh at professor Mendel and say what are you talking? Would you have a common currency?

So, may be in future, so let us start some work on this ; have some region work out this Optimum Currency Area indicators; see whether you can have a common currency; you have these integration and symmetrical criterion; see whether you can work on that and something can come in.