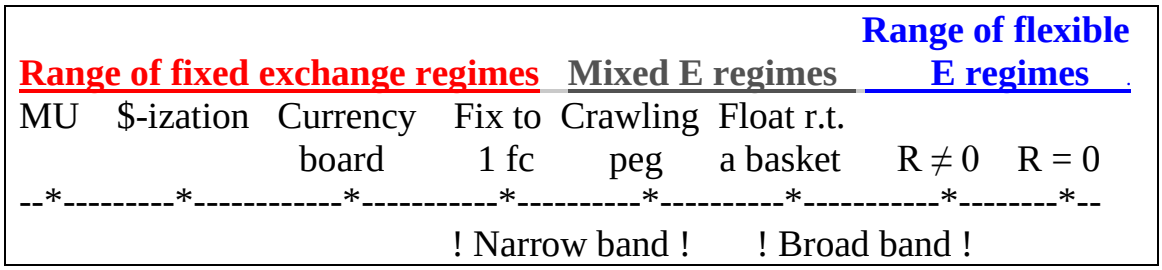
Session 8 outline: Synthesis of modules 1 and 2

1. Alternative exchange regimes

Motivate: In the two modules, an exchange rate was defined and the exchange rate's relationship with other macroeconomic variables was reviewed. The effectiveness of macroeconomic policy was shown to be affected by the type of exchange rate regime. Economic theory offers no firm guidance on the choice of the exchange regime. Here a range of exchange rate regimes are presented and the advantages and disadvantages as outlined in session 7 become apparent. [Read KOM and AFC (as needed) for basic concepts; SRP pages 1-7; slides 1-2]

The chart below presents a range of exchange rate regimes. To the right is the purest form of flexible exchange rate regime; to the left is the strictest form of a fixed exchange regime. The purest form of flexible regime is the where central bankers would never intervene in currency markets to affect the exchange rate. The official reserve balance, R, could be zero under such a situation because there would never be a need for a change in the official reserve position, i.e., R = 0 and $\Delta R = 0$. This is referred to as a "clean float" because the central bank never intervenes and the local currency value is allowed to change according to the market's valuation, regardless of the direction or magnitude of the change. Capital flows would simply offset any BOT imbalance. There is no real-world example of such a situation, of course.



The more typical flexible regime is where official reserves neither have a zero balance, $R \neq 0$, nor where the official reserve balance does not change, $\Delta R \neq 0$. That is, the central bank will allow the local currency value to change, but it will intervene at some point if and when the currency's value changes by too much. This is referred to as a "dirty float", i.e., a flexible regime up to some point.

There are exchange regimes that can be considered a mixed with elements of both a flexible and fixed regime. Some would argue that the mixed regime has more of the advantages of both regimes and fewer of the disadvantages. In some cases, countries might choose to allow the currency to float relative to a basket of currencies (those with which the country conducts most of its trade). The more transparent is the weighting of the basket (and if relative weights are maintained over time), the more the regime resembles a flexible exchange rate. The central bank allows the local currency to change based on how the market values the local currency relative to the basket of currencies. Market participants knowing the weighting scheme will know how and by how much the local currency value will change based on observable market changes.

A dirty float and a float relative to a basket of currencies can be set up similarly to an arrangement where the central bank announces how much the exchange rate is allowed to float. That is, the central bank announces a band (or a range of some % above or below a certain rate) about which the local currency's value can change before the central bank

intervenes. The central bank signals to the market the conditions in which it intervenes and/or how it changes the weighting scheme of the basket. The wider is the band, the more the regime acts as a flexible exchange rate.

Moving toward a fixed regime, one must keep three things in mind: first is that a fix must be credible and the central bank has to be seen as being committed to it (doing whatever it takes to maintain it to set market expectations); second, monetary policy must be geared to keeping the fix which limits the central bank's independence and monetary policy's effectiveness; and third, reserves tend to matter more the stricter the fix becomes. Under a crawling peg system, the value of the currency is allowed to depreciate on regular intervals at a specified rate, e.g., a monthly depreciation by 10%. This is a flexible regime in the sense that the local currency's value is allowed to move in one direction (down, which is the market's expectation of the change). This is intended to be a more orderly means of devaluing the currency over time rather than shocking the market with larger, irregular devaluations that might take the market by surprise. [Slides 1-2]

The most common fixed exchange regime is fixing the local currency to a "hard" currency, typically the US dollar but also the euro, pound, yen, Swiss franc and more recently the yuan. Ideally, a country fixing its currency to a foreign currency would have a large share of its international transactions denominated in the currency to which it is fixed and that the domestic economy be somewhat integrated to the foreign economy. The US dollar, being the international reserve currency, has been the choice of many developing countries (and oil exporting countries) because the goods they export are denominated in US dollar and because there might be considerable trade with the US. However, as we will see, just because a substantial amount of trade is denominated in dollars does not mean the macroeconomy of the country tying its currency to the dollar maintains the same business cycle as the US economy. Argentina's fix to the US dollar (one-for-one) is an example of the challenge of maintaining a credible fix when business cycles do not coincide.

Beyond the fix to a single foreign currency, a country starts getting into stricter forms of a peg. A currency board is a political institution where the central bank's responsibilities are essentially taken over by the board. The country maintains its own currency, but the central bank loses its ability to conduct monetary policy. The board's function is solely to ensure that the currency is fixed at the announced rate. As with any credible fixed rate, monetary policy is limited to maintaining the fix (or in some sense monetary policy is surrendered to the country to which the currency is pegged).

Recall the relationships behind purchasing power and interest-rate parity, i.e., $E_{lc/fc}$ and P_H and $E_{lc/fc}$ and i_H. PPP says that $E_{lc/fc} = P_H/P_F$, but also that it be related to changes in relative prices, $\Delta CPI_H/\Delta CPI_F$. Under a strict fix, this implies that $P_H = P_F$, and that changes in relative prices should also tend to move together, meaning that the country's business cycle should be in synch with the anchor country. Interest-rate parity says that $i_H = i_F^e + [E^F - E_o]/E_o$, but if the exchange rate is fixed then the price of local currency to foreign currency does not change, $\Delta E_{lc/fc} = 0$, and $i_H = i_F^e$, or that interest rates are the same in Home and Foreign. Investors are completely indifferent between a local currency earning asset and the foreign currency denominated asset (to which the country's currency is fixed) because the expected earnings are the same when converted into local currency. Thus, monetary policy's aim is to keep E fixed, i.e., the loss of central bank independence, and explains why monetary policy under a fixed exchange regime is useless (exercise 2).

Therefore, a currency board is a political institution that ensures that the monetary authority is fully committed to the fix. Argentina's currency board tied the peso to the US dollar one-for-one. The IMF provided Argentina assistance to ensure that for every Argentine peso in circulation there was one USD held in reserve in the central bank of Argentina. The only way for Argentina to increase its money supply was to earn another US dollar and put it into

reserves and increase the quantity of pesos in circulation. This example illustrates the greater importance reserves play under the fixed exchange regime. [See SRP and text for more details on currency boards of Argentina and Hong Kong.]

Dollarization is when a country legalizes the use of a foreign currency, typically the USD, for all domestic transactions. This can be arranged by using the dollar together with local currency as Panama does (the colon and dollar are used for any transaction), or withdrawing the local currency altogether as was done by Ecuador and El Salvador more recently (in 2000 and 2001, respectively) when the USD was adopted. The currency board and dollarization type of regime essentially amounts to putting monetary policy into the hands of the foreign country. The inflation rate and interest rate are imported and the national bank (if not a central bank) cannot affect either macroeconomic variable. These are credible fixes because it is difficult to break away from these arrangements. The exchange rate cannot be changed so any changes to P_F and i_F^e must be adjusted to by the Home country through internal domestic adjustments (e.g., changes in wages or productivity). A decrease in P_F must be matched by a decrease in P_H, which can be achieved by reducing wages or increasing productivity. However, changes in productivity usually take place in the longer run.

Finally, the most extreme case of a fixed regime is monetary union whereby two or more sovereign nation states agree to jointly use a common currency. The countries remain politically independent but must create a supranational central bank that is charged with responsibilities over monetary policy. All countries in this union surrender their right to use monetary policy for the benefit of fixing their currency to all the countries in the union. If Britain breaking away from the economic union it had with the EU was difficult, breaking away from the euro, had Britain been in a currency union, would have only complicated the process further.

2. Monetary union: the theory of optimal currency areas

Motivate: Although the theoretical concept includes the word “optimal”, the theory behind a currency area is not sufficiently precise to allow one to judge when and where a monetary union makes sense, i.e., giving up one’s local currency to adopt a new currency along with other member states. Nevertheless, optimality in this context still depends on a cost-benefit analysis of fixing an exhange rate over an integrated area. [Readings: KOM and AFC have sections on optimal currency areas]

The costs of monetary union can be summarized as being mostly macroeconomic while the benefits are mostly microeconomic. The costs and benefits are summarized in the chart below.

Whether the use of one currency over more than one area (or country) is optimal depends on it meeting four necessary theoretical conditions. First, trade must be liberalized over the area (goods as well as services trade). Free trade will help to ensure the law of one price holds for all goods and services and that PPP holds, i.e., $P_H = P_F$ for the countries within the integrated area. For this to occur, trade policy must be the same (duty-free and quota-free trade within the area and common trade policy vis-à-vis non-member states) and national regulations must be the same or similar. Other common political institutions must exist, e.g., common competition authority to ensure competitive markets. Other conditions must also hold such as no or low transactions costs (other than those related to exchange rates) and that goods and services must be relatively close substitutes). [Recall the conditions over which PPP holds.]

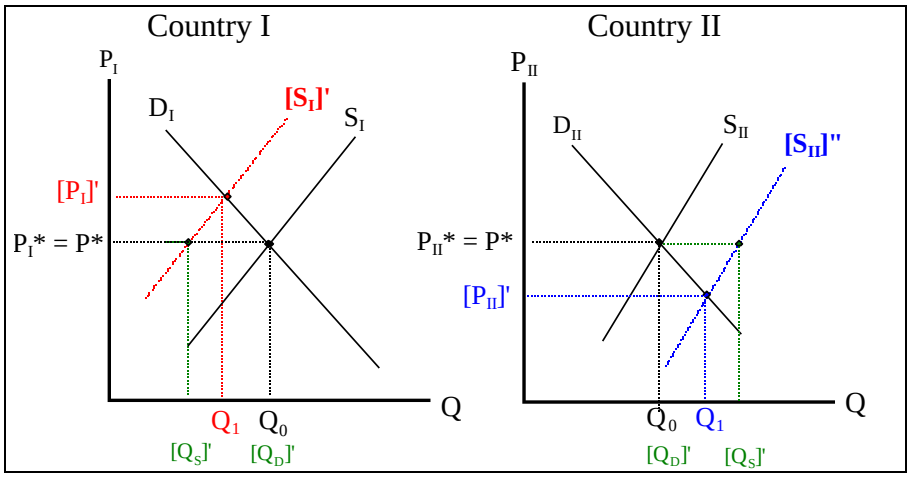
Costs: macroeconomic	Benefits: microeconomic
① Forego use of exchange rate as a policy over the integrated area, e.g., lose ability to ↓ value of lc, ↑E, to ↑(X-M) - ↑ competitiveness achieved by either: • ↑ productivity (not easily done in short run) or • by ↓ wages (↓ labor costs, i.e., internal devaluation ② Surrender MP to a supranational institution • Loss of control over MS, i-rate, and inflation (perhaps common inflation target) • National central bank can no longer serve as lender of last resort ③ Limits FP (G, T, G-T) decisions • Common rules on the use of subsidies • Loss of control over fiscal programs for national macroeconomic stabilization ④ Cost of economic adjustment from single market • Common trade policy • Common regulations/institutions across broad range of economic activity	① Eliminate transactions costs on currency exchange ② Decease search and information costs related to prices and market conditions • Improve P-discovery process (how prices are determined) • ↓ P discrimination • ↑ competition ③ Complement single market initiatives over the integrated area • P-convergence ($P_H = P_F$) • Interest rate parity ($i_H = i_F$) • Support the ↑ L,K mobility • Support the ↑ TIG and TIS • ↓ cost of internal devaluation ④ Dynamic adjustment: long-run benefits • ↑ market size, competition, and more choice for consumers • Economies of scale, merger and acquisition and cross-border investment

Second, capital and labor markets must be integrated, mobile and flexible for PPP and interest-rate parity to work and make sense for monetary integration. The economic convergence criteria expect relative factor prices to converge, e.g., that P_L/P_K should be about the same across the members of the union. For example, for the US to be an optimal currency area in theory, the ratio of wage rates to the returns on capital should be about the same in all 50 states. For this to occur, labor and capital must be mobile and regulations on capital and labor similar. There should not be any non-economic factors that act as a barrier to movement of labor or capital either (e.g., language differences, culture, preferences against moving away from home, etc.). Pensions, labor standards (hours per day or week, paid vacation, etc.), minimum wages, unemployment benefits, regulations on hiring or firing, etc. must be the same so as to discourage workers moving based on regulatory differences. The conditions placed on foreign firms (i.e., participation of foreign capital either as a manufacturing plant, a hotel, or as portfolio investment, etc.) should be no different than the conditions applied on national firms, i.e., non-discriminatory treatment in the regulation of all capital, local or foreign. This will ensure that capital does not move in search of the most favorable treatment by governments. For example, that tax breaks are given to foreign firms for relocating to an area.

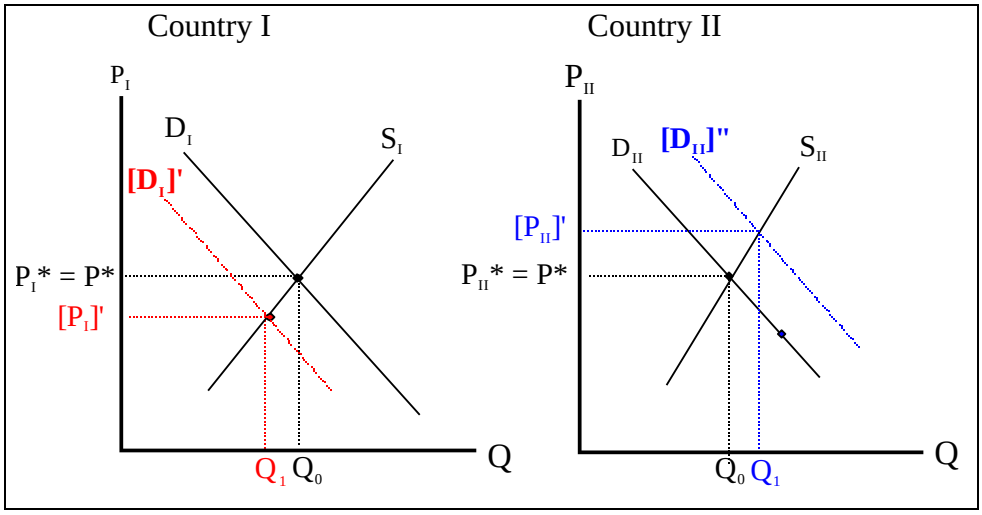
A third condition depends on how the economy of each of the states or regions within the area react to an external shock, e.g., an oil price change. If the economies are affected similarly, then an increase in the price of oil from the shock is said to have a symmetric effect. That is, the shock's effect on P_H will be similar in direction and magnitude as P_F in each of the states (i.e., a tendency for $\uparrow P_{oil} \rightarrow \uparrow P_H = \uparrow P_F$ for all regions or countries in the currency area) .

Lastly, when the first three conditions do not hold then fiscal transfers can be relied up to compensate. That is, there can be supranational transfers from one state to another when trade or cross-border factor mobilization cannot ensure convergence in prices, wages, interest rates, or the business cycle, more broadly. A shock, whether external or internal in origin, that affects states asymmetrically and where trade or factor mobilization cannot restore equilibrium requires supranational transfers.

To illustrate how an optimal currency area is supposed to work in theory, a few simple models are presented showing the role of trade flows, cross-border factor movements and fiscal transfers in response to an asymmetric shock.



First, trade flows ensure the law of one price (price convergence) is maintained for a particular good. In the figures, there are two countries that form the optimal currency area, country I and II. Initially, for the sake of simplicity, there is no trade because both countries are in equilibrium at $P_I^* = P_{II}^*$. Now consider a shock that affects the countries asymmetrically. In country I, the supply of this good shifts to the left, whereas the same shock causes the supply in Country II to shift to the right. Because of the shock prices diverge, to $[P_I]'$ in country I and $[P_{II}]'$ in country II. Free trade of the good between countries I and II will cause prices to converge. As $[P_{II}]'$ is less than $[P_I]'$, country II would be the exporter and country I the importer. Trade will occur until the surplus from country II is matched by the deficit in country I. In this simple example, the price P* happens to be at the pre-shock equilibrium price, only that now country I is a net importer and country II a net exporter. Trade is the means to ensure that $P_H = P_F$ after the shock, ensuring the law of one price continues to hold. If this adjustment occurs more generally across all goods and services trade, then PPP will tend to be maintained as well.

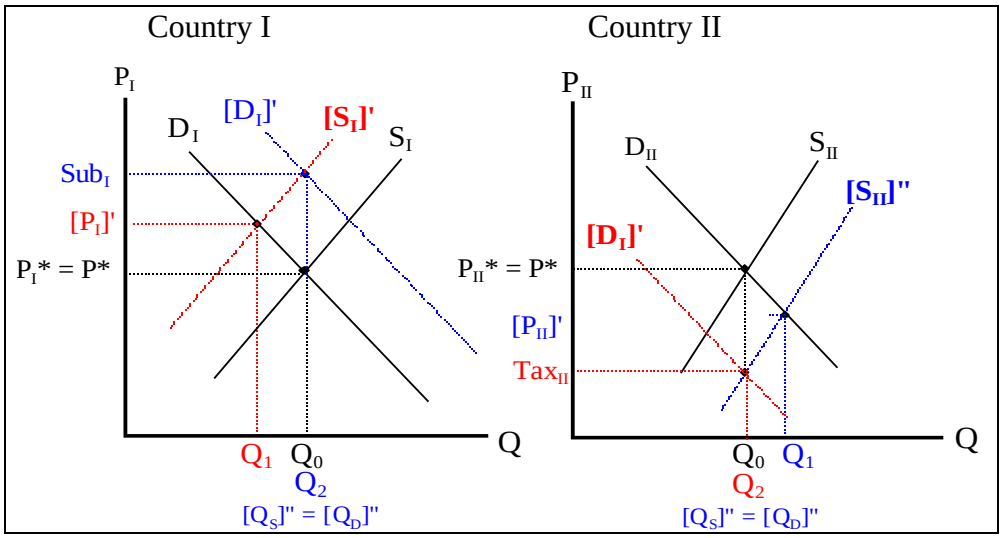


Now suppose that trade flows alone cannot ensure PPP and interest parity. Consider an economic shock that affects demand differently in countries I and II. In country I, demand decreases, shifting to the left, $[D_I]'$, and in country II demand increases, shifting it to the right, $[D_{II}]'$. The price of the good in country I decreases to $[P_I]'$ and increases in country II to $[P_{II}]'$. Trade flows are unable to ensure the law of one price holds. Instead, mobile factors flow to bring markets back into equilibrium. In country I,

prices increase, and quantity supplied decreases, while in country II prices rise and quantity supplied increases.

Stabilization occurs through two processes: through labor and capital mobility and wage flexibility. In response to the decreased production in country I, labor and capital are released, freeing that labor and capital to be employed in this sector in country II. If the changes in demand reflected a macroeconomic shock (recession in country I and expansion in country II), then labor and capital more broadly could move from country I to country II. The second issue involves factor prices. Falling prices and decreased production leads to unemployment in country I, causing wages to fall. In country II, higher prices and output requires more employment, causing wages to rise. So, either the lower wages in country I relative to country II makes goods competitive in country I or labor and capital find their way to country II. Country I either exports the good to country II or it exports labor and capital to country II in response to the increased factor demand there.

Let's turn our attention to the role of fiscal transfers for stabilization. Suppose the shock is the same as that in the first example, an asymmetric shock affecting supply in both countries. Only this time neither trade flows nor cross-border factor mobility can bring the economies back into equilibrium. When free trade and factor mobility cannot ensure PPP or interest-rate parity, a fiscal mechanism is necessary to ensure stabilization.



In country I supply decreases, shifting supply to the left and causing the price to increase to $[P_I]'$. In country II the shock causes supply to increase, shifting supply to the right and lowering the price to $[P_{II}]'$. To bring the markets into equilibrium, country II's consumption can be taxed and the proceeds can be used to subsidize consumption in country I. The tax in country II causes demand to shift to the left, lowering the market price, excluding the tax, to Tax_{II}. The tax collected is the difference between the market price with the tax and the price excluding the tax, or $P^* - Tax_{II}$. In country I, where consumption is subsidized, demand shifts to the right, causing the price to increase further, where the equilibrium is where the changes in supply and demand intersect, at Sub_I. The subsidy amounts to the difference between Sub_I and P*. The taxes in country II are used to subsidize country I. Direct income transfers (taxing income in growing economies and subsidizing income in countries in recession) could also be envisaged for this sort of stabilization without having to do it through taxing or subsidizing in goods or services markets. Either way, one can begin to see how politically challenging it will be to use fiscal transfers from one country to another. This can be problematic even between regions within a country much less from, say, northern Europe to southern European countries.

To summarize, monetary union will make more sense the closer the practical situation satisfies the theoretical conditions. Nevertheless, the optimality of a currency area depends to a great degree on political factors over which economic theory has little say.

As a thought exercise you might consider a comparison of how well the 50 states of the US and the 19 member states of the euro meet the theoretical criteria for an optimal currency area. [To answer this properly, one would have to have some knowledge of the steps taken by the European Union to create the single market.]

3. European monetary union and the euro crisis

Motivate: The European Union is considered an impressive experiment in economic integration. Monetary union is just another building block of that integration. Economic integration is not possible without political integration (the political will to give up some sovereignty by creating supranational political institutions such as the European Central Bank and creating common policies) and legal integration (the implementation and enforcement of the laws allowing for supranational entities and common policies/regulations). [Reading assignment: KOM textbook; and on website, RR-FT-EMU and AFC, ch 28 (as needed)]

3.1 European monetary union [SRP, pages 7-14; slides 3-14]

The single market initiative created more than just a customs union where all trade barriers were removed within the EU, and a common external trade policy for transactions involving non-EU states. The EU enshrined in treaty four freedoms: free movement of goods, services, people and capital. Common regulations, whether through harmonization (applying rules in the same manner) or by approximation (having to meet an equivalent standard with flexibility to meet it through, for example, different production methods), were an important means of ensuring greater market integration. The freedom of movement of people and capital was intended to integrate labor and capital markets and to further support provision of services in sectors in the private domain (i.e., excluding public sector services such as health, some education, military, etc., which were not intended to be integrated but to remain national).

The challenge was always going to be how much national sovereignty countries would be willing to give up in exchange for more integration in goods and services trade and cross-border movement of labor and capital. In addition to the common trade policy and the common legislation contained in the EU's *acquis communautaire* (i.e., the accumulated legislation, legal acts and court decisions), political institutions were necessary to ensure the four freedoms were not constrained by other means. For example, free trade in goods might require common regulations in transport, logistics, and insurance, services that are needed to move goods across borders. To ensure Home's goods and services were treated non-discriminatorily in Foreign, the EU had to ensure that competition rules were enforced similarly across the union (a supranational competition authority). Level competition also required rules on the use of subsidies to avoid having one member state using national regulations to give an advantage to its firms. Privatization was necessary to ensure that Home's private firms would not have to be competing against Foreign's state firms.

Nevertheless, national governments were reluctant to give up all of their power (services market integration has proceeded more slowly than that for goods, labor laws are still national, and limitations on capital do still apply for some sectors). Finally, the EU had a stability pact in which it was agreed that there would be no bailouts for member states. The EU budget was too small for fiscal transfers for macroeconomic stabilization and there was no appetite among the countries to backstop another country (cover the debt of another country's government). So, while government spending and taxation decisions were still decided at the national level, member states agreed to limit budget deficits at 3% of GDP and debt levels at 60% of GDP. The method of taxation may have been applied in the same way, but the rates were not harmonized. Estonia and Ireland are the cause of friction within the euro area because their tax rates are low when compared with France, for example, giving rise to the claim of unfair tax advantages by members states within the single market.

The creation of the euro, for those members who accepted this furthering of political integration, was intended to strengthen the gains from economic integration. Accepting the euro meant giving up the local currency with all that entails in terms of fixing the exchange rate to other euro area countries. It is meant ceding sovereignty to the European Central Bank (ECB) to pursue a monetary policy for the entire union. The ECB had control over all the monetary policy responsibilities (common interest rate and an inflation target for the whole euro area), but the no bailout of member state provisions applied to the ECB. This meant that the ECB could not function as the lender of last resort. Bank were international in life, but national in death. That is, free movement of capital implied that banks could make loans and take deposits across borders, but in the event of a bank failure the problem was an issue at the national level. There were no supranational procedures for restructuring a failing bank in the euro area. The ECB was a stateless entity running a currency beyond the bounds of any state.

Given this background, the euro area crisis and the EU's response to it becomes a little clearer. The euro area did not see their initial problem s a financial crisis, but as a BOT or a macroeconomic imbalance at the member state level. In Europe, the problem started in Greece where budget deficits were larger than the government had been willing to admit. The response was for fiscal austerity, which would decrease spending, increase taxes or both. Internal devaluation would require Greece exporting its way out of trouble by having wages fall to become more competitive and/or increasing productivity. The problem moved to Ireland, which was dismissed as some issue arising from a form of Anglo-American capitalism/finance. Once the problem shifted to Spain, which had a budget surplus and was not so reliant on financial services' contribution to its GDP, the euro area realized that it was in the midst of a financial crisis. Spain's problem was one of private borrowing, especially in the construction sector, from other EU member states. Italy's problem was public debt held to a large extent by financial firms in member states. While overall the euro area had balanced trade, internally Germany, in particular, had a large trade surplus while many of the southern states had trade deficits and cross-border capital flows were pronounced. Cross-border loans from the northern states fueled public and private overspending in the southern states.

The low interest rates in the euro area meant that the Greek government and Spanish firms could borrow cheaply. Europe was too slow to boost bank capital and liquidity. There was no mechanism to force bank losses onto creditors and not to taxpayers. Bad banks brought down weak governments and vice versa. Governments could no longer serve as a credible backstop for their banks and banks holding government debt realized they had worthless assets. The crisis began for real when euro 10-year bond yields diverged, i.e., $i_H \neq i_F$ suggesting serious risk premiums on bonds from Greece, Italy, Ireland, Spain and Portugal.

In the US, Lehman Brothers was allowed to fail (although the signal was to be that banks were responsible for the mess they created, it also created uncertainty throughout financial markets). Guarantees were issued by the Fed and equity was injected into banks and for non-banks deemed too big to fail. The Fed had the power to act and was central to create confidence through quantitative easing programs. Fiscal firepower was used through the Troubled Asset Relief Program, injecting capital and liquidity to financial and non-financial firms alike by having the US Dept. of Treasury buy up "troubled" assets, rather than imposing fiscal austerity.

Focus on convergence and divergence in the euro area:

Audio/video clip [from the 4th minute to 10th: https://www.stlouisfed.org/annual-report/2011

3.2 Chronology of the EU's response to the crisis [SPR, pages 15-34; slides 15-30]

The euro area's response to the crisis can be separated into the short-term actions that could be managed by existing institutions and actions that could be taken without requiring treaty changes. The ECB was the only existing institution able to react to a banking crisis, but its powers were limited by EU treaty. The ECB's mandate included applying monetary policy over the euro area and meeting an inflation target of 2%. It had neither authority over bailouts nor could assume the role as lender of last resort. In 2007, the ECB increased liquidity beyond price stability by buying bank debt backed by loans (a small version of QE), against strong opposition from some national governments.

In 2010, the ECB initiated a securities market program, the purchase of national debt issued by governments or public entities. It funded the first Greek bailout through collaboration with EU and euro zone member states and the IMF. The ECB also forced governments to accept bailout of Ireland and Portugal, and rescue packages for Spain and Italy through bond purchases. To distance the ECB's direct involvement, euro area governments created the European Financial Stabilization Facility (EFSF). This was a temporary, private company whose aim was to provide financial stability by issuing debt to raise funds needed to extend loans to struggling euro-area countries. It involved recapitalizing financial institutions through provision of loans to governments The EFSF funds amounted to €750 bn backed by the European Commission (EC), euro area governments and the IMF.

In 2012, after legal changes could make their way through European institutions, the European Stability Mechanism was created, a permanent body replacing the EFSF with a lending capacity of €500 bn and capital of €700 bn in guarantees.

As the ESM was going through its approval process to replace EFSF, the ECB had to find other "legal" means of intervening. The ECB needed to signal that it would keep long-term interest rates low through long-term refinancing operations (LTRO). This amounted to "back door" QE, which the ECB was not supposed to do. In 2011-12, LTRO injected cash into banks. In the first phase, the ECB provided unlimited funds in 3-year bank loans. In a second phase, mostly Italian and Spanish backs were provided loans. The intention was to increase the supply of credit to affect the real economy. Critics complained that the ECB exceeded its authority. In 2014, the ECB expanded the LTRO because of fear of deflation. Only in 2014, did the ECB start QE in earnest ("transparently" and without apology), claiming that the ECB would do whatever it takes to save the euro and to apply monetary policy throughout the euro area.

The longer-term institutional responses were mechanisms that required treaty changes to prevent reoccurrence of such events. The euro area approached this through three means. The ESM was limited in terms of its ability to backstop Italy and Spain. Institutionally, there needed to be a means to mutualize debt, euro area countries needed to jointly back debt held by a member state. The EC Commission outlined a proposal to categorize debt. Blue bonds were government bonds considered a safe asset backed by all euro area countries. That debt could be equal to a value up to 60% of the country's GDP. Beyond that debt level, government bonds were categorized as red bonds, considered national and riskier and not backed mutually. This proposal would require a treaty change and despite the serious negotiations in favor of it, its approval went nowhere.

A second necessary course of action was for greater political integration through a fiscal union. Fiscal policies of member states needed to be kept in line to support a common monetary policy. In 2012, the Treaty on Stability, Coordination and Governance came into effect. This strengthened rules on economic governance (a fiscal compact) where balanced budget rules (government spending could exceed taxes by a maximum of 0.5% of GDP and

the debt limit of 60% of GDP. Countries maintained their national sovereignty over tax and spending, but there was tighter supranational oversight over their fiscal budgets.

Finally, there was need for greater financial and banking integration to support monetary union. There were three pillars for banking union. First was to establish a single bank supervisor. This is a role the ECB took in 2014. The ECB began to oversee large banks and was responsible for their rescue through direct recapitalization. The European Banking Authority (EBA) was the EU bank regulator which writes rules and does national supervision (on smaller banks). It existed before and was a weak institution. The EBA was the logical authority to take on the supervisory role but it was opposed by some member states (e.g., Germany and the UK) for different contradicting reasons (Germany had some weak banks it did not want supranational oversight over and the UK thought this to be multilateral overreach to limit its banking sector).

A second aspect of banking union was creating a single resolution system, which was strengthened in 2016. The single resolution board would decide when a bank failed and when it is was to be put up for resolution (i.e., ensuring there was some orderly deleveraging). This required a process for breaking up a failed bank. The first aspect of banking union was for the creation of a joint deposit-insurance scheme. It remains incomplete and requires an estimated €11trn of funding to adequately insure deposits.

How the euro was saved: video clip from the Financial Times http://video.ft.com/3567899112001/How-the-euro-was-saved/World

3.3 State of euro area reforms in 2020: convergence or divergence? [slides 31-33]

Previously it was noted that reforms were pursued across three areas: creation of the ESM, and strengthening monetary union through political integration toward a banking and fiscal union. The ESM was created as a means of limiting the ECB's responsibility over acting as lender as last resort. Under the reforms towards a banking union, the ECB was made the banking supervisor. The single resolution mechanism (SRM) was created with a central board and its own funds to handle bank failures. By 2023 it is expected to have €60 bn in funds for that purpose. New rules have been put in place to support banks and sovereigns using ESM funds that can be used by the Single Resolution Mechanism as a last resort. A common EU resolution rule book was approved for handling bank failures and new rules on creditor write downs should bring greater clarity in situations when resolution is required. A national deposit guarantee scheme has been reinforced, but the EU deposit guarantee of up to €100 000 has yet to be agreed.

In addition, new reforms have yet to be approved that would clean up the EU banking system with regulatory steps making the banking system more resilient to shocks. New rules giving the SRM more options on dealing with bank failures have not been approved. Efforts to close loopholes in bank resolution rules have also been blocked. Finally, new capital and liquidity rules have not been put into place to promote more cross-border banking. European banking is still too national, slowing financial integration.

For northern Europeans the concern with banking union is that its taxpayers might be liable for southern banks' risky loans. The southern Europeans disapprove of penalties on its banks for holding too much Home country sovereign debt. In general, the fear is that the rules can make banks safer (by requiring higher capital reserves or reducing sovereign debt levels) and make sovereign debt riskier (signaling to investors to off-load sovereign debt) at the same time.

In 2019, the ECB resumed QE using newly created money. Euro area banks remain weak, in part from negative interest rates since 2014. Commercial banks pay to hold money at the ECB, part of their deposits earn zero interest while another part is subjected to negative rates. The concern is that over time low rates depress banks' interest rate margins (interest cost relative to interest returns) and profitability with negative rates on bank intermediation and financial stability in the long run.

As for fiscal union, the long-run fiscal position has four rules in place. The first two applied previously: budget deficits limited to less than 3% of GDP and public debt limited to 60% of GDP. These rules apply to all member states. Two additional rules are country-specific when these two conditions are violated. That is, an "excessive deficit procedure (EDP)" can be enacted. This involves tailoring a structured budget balance (excluding the impact of cyclical factors) and containing a country's real spending growth at or below the increase in the country's potential output. While the fiscal deficit conditions have been violated, EDP has not been enforced (though Italy came close in 2019).

EU-wide spending rules would make sense as a possible anchor for fiscal policy and preventing fiscal matters from requiring emergency actions. Tying nominal spending growth to the gains in output makes the fiscal rules less procyclical (not enforcing austerity when a country goes into recession). Nevertheless, no common euro area budget highlights the difficulty of imposing supranational rules above the nation state and its sovereignty over tax and spending decisions.

Challenges remain as the trends in the intra-euro area macroeconomic indicators do not always reflect convergence. Labor costs are increasing but Germany's remain lower than for some of the southern countries. Germany still maintains a current account surplus vis-à-vis France and other southern countries, though it is smaller than when the crisis hit. Real GDP, government debt levels and unemployment differ markedly in northern and southern countries with France somewhere in between.