

# Week 12 Recitation

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For this week's recitation, we will explore how exchange rates work, and how the supply and demand model can help us understand their fluctuation. After studying that model and observing how countries can use policies to change their exchange rates, we will take a look at some real world data that shows us how to identify the exchange rate policy adopted by selected countries.

- 1) Suppose that you're interested in studying the exchange market of European Union Euros and Japanese Yen, focusing on Japan's government and the exchange rate policies that they could adopt. Draw the supply and demand model for that market. Your graph should clearly show: the label of the X-axis, the label of the Y-axis, the supply and demand curves, and the equilibrium (which is at 132 Yen per Euro – therefore 0.0076 Euros per Yen, with \$5,043 billion of Yen traded for Euros every day).

**Since we should focus on Japan's government, our Y-axis should show the price of Yen, the Japanese currency; given that the price of one currency needs to be expressed in terms of another currency, here we have the price of Yens as measured in Euros (meaning how many Euros are needed to buy one Yen). Our X-axis should show us the quantity in Yens (meaning the quantity of Yens traded for Euros). Just like all other markets, the supply curve is upward sloping – when the Yen becomes more expansive (as measured in Euros), people who have it will try to sell it (for Euros, that are now relatively cheap). Similarly, the demand curve is downward sloping – when the Yen becomes cheap (as measured in Euros), people who hold Euros will buy more Yens.**

- 2) The Japanese government is afraid that there are too little locally produced goods in their domestic market, so they decide to decrease Japan's level of exports by targeting to achieve the rate of 103 Yen per Euro (0.0097 Euros per Yen). First, explain why such a policy would likely decrease the level of exports and debate whether or not it would be successful. Then, show graphically if the targeted exchange rate would lead to a shortage or surplus of Yen in the market

When the Yen is appreciated or strengthened, meaning that you need less Yen to buy one Euro (more Euros to buy one Yen), this means that Japanese goods will be more expensive in external markets, decreasing exports and likely keeping locally produced goods in domestic markets. However, since the Yen is now stronger, this would also make imported goods cheaper, so it could result in more imported goods on Japanese shelves. So the new exchange rate would likely decrease exports and increase imports, but the actual impact on the domestic market of locally produced goods would depend on a whole set of variables (such as level of wages and consumers tastes and preferences).

If the Japanese government just decided to enforce that exchange rate, there would be an initial surplus of Yen in the market (since the price of Yen increased (as measured in Euros) there will be too many people trying to sell Yen and not enough people willing to buy Yen at that exchange rate).

- 3) Now, consider the case where the Japanese government announces in advance that it is committed to using monetary policy to reach the desired Euros per Yen ratio. How does the announcement alter the price and quantity of Yen in the market (through altering exchange rate expectations)? Will the new equilibrium result in more, less, or the same quantity of Yen traded for Euros in the market?

**That announcement will increase demand for Yens, since people will expect it to gain value soon, so the demand curve will shift to the right. For the same reason, people who currently hold Yens will be less willing to sell it, so the supply curve will shift to the left. Those two shifts will increase the Euros per Yen ratio, but can either decrease the amount of yens traded for Euros (scenario 1), keep it at the same level (scenario 2) or increase the amount of yens traded for Euros (scenario 3), depending on the magnitude of each shift. But the main point here is that just the announcement of the central bank commitment to a higher exchange rate can actually lead to higher exchange rate as desired. But of course, this is only if investors believe the announcement is credible**



- 4) The Japanese government observes that the announcement of a new monetary policy aiming to strengthen the Japanese Yen is not enough to bring the Euros per Yen ratio to the desired level, so they decide to change the interest rate. Should the Central Bank increase or decrease the interest rate? Will the new equilibrium result in more, less, or the same quantity of Yen traded for Euros in the market?

**If the Japanese government decides to perform monetary policy to strengthen their currency, they should pursue a contractionary monetary policy, meaning that the government should increase the interest rate. A higher return for holding Yen would make them more attractive for the public, so the demand curve will shift to the right (more people want them) and the supply curve will shift to the left (less people are willing to sell them, since their return for holding Yen is now higher).**

**Just like the scenarios presented in Question 3 above, this could either decrease, keep the same level or increase the amount of Yen traded in the market, depending on the magnitude of each shift.**

- 5) Now let us observe some real-world exchange rates. Access <https://www.xe.com/>, click on the “Charts” tab, and answer the following questions:
- a. Analyze the Saudi Arabian Riyal to US Dollar exchange rate during the past 10 years by selecting those currencies than clicking on the “10Y” at the top of the graph. What does the graph tell us about the exchange rate policy of Saudi Arabia during that period?

**The Saudi Arabian Riyal has officially been hard pegged to the USD since 2003 at a rate of 1 riyal = 0.267 dollars. The graph shows some fluctuations until 2014, but these are very minor (look at the scale) and could just reflect noise in the data. You could show them the data for Aruba or Panama for examples that don’t have the noise in the data.**

- b. Do the same procedure for the Nicaraguan Cordoba to US Dollar exchange rate. Is there a trend of appreciation, depreciation or constant value of the Nicaraguan currency when measured in US Dollars?

**The Nicaraguan Cordoba clearly depreciated or weakened during the past 10 years, meaning we need more Cordoba to buy one Dollar through time. Since 1991, Nicaragua has used a “crawling peg” allowing their currency to depreciation based on market forces, but in a controlled way. This is an example of a “soft peg” policy.**

- c. Now look at the Swiss Franc to US Dollar exchange rate and compare it with the fluctuations of the Nicaraguan Cordoba analyzed above. Can you infer which exchange rate policies the Swiss Central Bank and the Nicaraguan Central Bank likely adopted during this time frame? Is there a trend of appreciation, depreciation or constant value of the Swiss currency when measured in US Dollars? Now look at the Swiss Franc to Euro exchange rate. Does this change your opinion about what exchange rate policies have been used by Switzerland?

**Since the Swiss Franc to US Dollar exchange rate fluctuates a lot more than the Nicaraguan currency, it may seem reasonable to believe that the Swiss Central Bank adopts a floating exchange rate regime (considerable fluctuations in short periods of time), while the Nicaraguan Central Bank opts for a soft peg policy (less changes in the short run, but large changes over longer periods of time). In this 10-year period, despite large fluctuations in the short run, we can't see a strong trend of either appreciation or depreciation of the Swiss Franc against the dollar. But when looking at the Franc against the Euro we can see a clearer policy break. The Swiss Franc was softly pegged to the Euro from 2011 to 2015. But the Franc was largely believed to be undervalued and the Swiss central bank couldn't maintain the peg. In the 2015, the Franc was allowed to freely float, hence the large appreciation spike. The spike was a big hit to the large export industry in Switzerland. It is important to note that a currency can only be pegged to one other currency, so it will still fluctuate in value relative to other currencies.**