

GEORGE WASHINGTON UNIVERSITY
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ECON284

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Problem Set 2

I. Answer the Following Questions:

1. Is it possible for a country to have a current account deficit at the same time it has a surplus in its balance of payments?
2. A U.S. dollar costs 1.1 Euros, but the same dollar can be purchased for 1.25 Swiss francs. What is the Euro/Swiss Franc exchange rate?
3. Suppose the dollar interest rate and the pound sterling interest rate are the same, 5 percent per year. What is the relation between the current equilibrium dollar/pound exchange rate and its expected future level? Suppose the expected future dollar/pound exchange rate, \$1.52 per pound, remains constant as Britain's interest rate rises to 10 percent per year. If the U.S. interest rate also remains constant, what is the new equilibrium dollar/pound exchange rate?
4. Imagine that investors pay a tax of 5 percent on domestic interest earnings. How would such a tax alter the analysis of the interest parity condition?
5. What is the short-run effect on the exchange rate of an increase in domestic real GNP, given expectations about future exchange rates?
6. In the midst of the economic boom in the late 1990s, the Federal Reserve Chairman suggested in a public address that if the US economy did not cool down, the FOMC would consider increasing the federal funds rate at the following meeting. What do you think was the effect on the value of the dollar immediately after the public address?
7. In October 1979, the U.S. central bank (the Federal Reserve System) announced it would play a less active role in limiting fluctuations in dollar interest rates. After this new policy was put into effect, the dollar's exchange rates against foreign currencies became more volatile. Does our analysis of the foreign exchange market suggest any connection between these two events?
8. Countries that suffer high inflation also suffer from what it has been called "dollarization." For example, households and firms in Latin America use dollars to make transactions instead of using domestic currency. Suppose that dollarization in Brazil increases. What will be the effect on the Brazilian real/ dollar exchange rate?

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Answers to Problem Set 2

1. Yes, if the financial account of the balance of payment is in surplus and this surplus is larger than the deficit in the current account.
2. $E/SF = (E/d) / (SF/d) = 1.10 / 1.25 = 0.88$
3. If the dollar and the pound interest rate are the same, then the only way for the interest parity to hold is that the current exchange rate and the expected future level should be the same. If interest rates in pounds increase to 10 percent a year, domestic and foreign investors will like to hold more British bonds, they will try to sell dollar-denominated assets to buy British pounds, with the dollar depreciating in terms of pounds (the current dollar/pound exchange rate increasing). In particular, the current equilibrium exchange rate will be 1.59. Note that since the expected future exchange rate is \$1.52, the dollar is expected to appreciate in the future. That is, since pound-denominated bonds pay a higher return, investors will be willing to hold dollar-denominated bonds only if the dollar is expected to appreciate in the future. For this to happen, the dollar should depreciate today.
4. If investors pay a 5 percent tax on interest earnings on domestic bonds, then the net return on those bonds will decline. The after-tax interest rate on domestic bond will be equal to $i(1-0.05)$. The new interest parity condition will be $(1+i(1-0.05)) = (1+i^*)e^E/e$. This means that after the imposition of a tax the current equilibrium exchange rate will increase (a depreciation of the domestic currency). Otherwise, no investors will like to hold domestic assets.
5. If domestic real GNP increases, there will be an overall increase in spending. Everything else equal, households and firms will need more money to make transactions. If money supply does not change, then domestic interest rates will have to increase to equilibrate the money market. But higher domestic interest rates will make investors be interested in buying domestic bonds. Investors will sell foreign-currency denominated bonds. As a result, the domestic currency will appreciate. See Figure 1.
6. A future increase in the U.S. domestic interest rate, makes dollar assets more attractive in the future. In the future, investors will try to buy dollar-denominated assets and sell foreign-currency denominated assets. In the future the dollar will appreciate. If investors are rational they know that the dollar will appreciate in the future. They will change their expectations accordingly. That is e^E will decrease. As expectations change, investors will re-allocate their portfolio at the time of the public address, selling more foreign bonds and trying to buy

U.S. bonds. The dollar appreciates immediately after the public address. See Figure 2 for a diagrammatic representation of this exercise.

7. At that time the Fed moved from targeting interest rates to targeting the stock of money supply. Let's examine in Figures 3 and 4 the effects of changes in money demand. Suppose in some periods, money demand is high (H). In some other periods, money demand is low (L). In Figure 3, as money demand is low, interest rates have to fall to equilibrate the money market (recall that money supply is still unchanged). When money demand increases, interest rates will have to increase to equilibrate the money market. Thus interest rates fluctuate from i_L to i_H . As interest rates fluctuate, the exchange rate will also have to fluctuate to equilibrate the foreign exchange market, with increases in domestic interest rates leading investors to demand more domestic bonds. As demand for domestic bonds increases, investors sell their foreign assets and purchase dollars. The dollar will have to appreciate following this increase in the demand for dollars. The exchange rate will move to e_H . In contrast, as the domestic interest rate falls to i_L , investors will like to hold foreign assets. The domestic currency, the dollar, will move to e_L . As you can see, when the Federal Reserve fixes the supply of money, changes in money demand will affect the interest rate in the U.S. and also the dollar exchange rate.

Suppose instead that the Federal Reserve targets interest rates. When demand for domestic currency increases, there is pressure for interest rates in the U.S. to increase as in the previous case. But now, the Federal Reserve wants to keep interest rates constant. To avoid the increase in U.S. rates, the Fed purchases bonds (an open-market purchase of U.S. Treasury bonds). It pays for those bonds by printing money, money supply increases to M^H . Interest rates do not change. If interest rates do not change, there is no need for a change in the equilibrium exchange rate. Similarly, a decrease in demand for domestic currency leads to a decline in domestic interest rates. The Fed avoids this decline by printing less money. The exchange rate does not need to change. Thus, when the Fed targets interest rates, the exchange rate becomes less volatile. (See Figure 4)

8. Some economies in Latin America have become dollarized as a result of chronic inflation or even hyperinflation. Dollarization means that domestic residents hold not only domestic-currency denominated assets but also foreign-currency denominated bonds. Moreover, they make transactions with foreign currency to avoid the continued deterioration of the purchasing power of their holdings of domestic money used for transaction purposes. Argentina, for example, became fully dollarized in the late 1980s. Even taxi rides were paid in dollars. In other words, demand for Argentine pesos declined. If dollarization in Brazil increases, demand for reales will decline. As money demand in Brazil declines, the exchange rate has to depreciate. If the dollarization is permanent, the devaluation has to be permanent. Thus demand for Brazilian bonds declines both because the fall in the demand for money (leading to a decline in domestic interest rates) and because there are expectations of a devaluation in the future. Both effects lead to an immediate devaluation of the domestic currency. There is an overshooting effect. Over time, prices will increase, supply of real balances will decline and domestic interest will increase again leading to an appreciation of the domestic currency. In the long run the overshooting effect will be eliminated. See Figure 5.

Figure 1

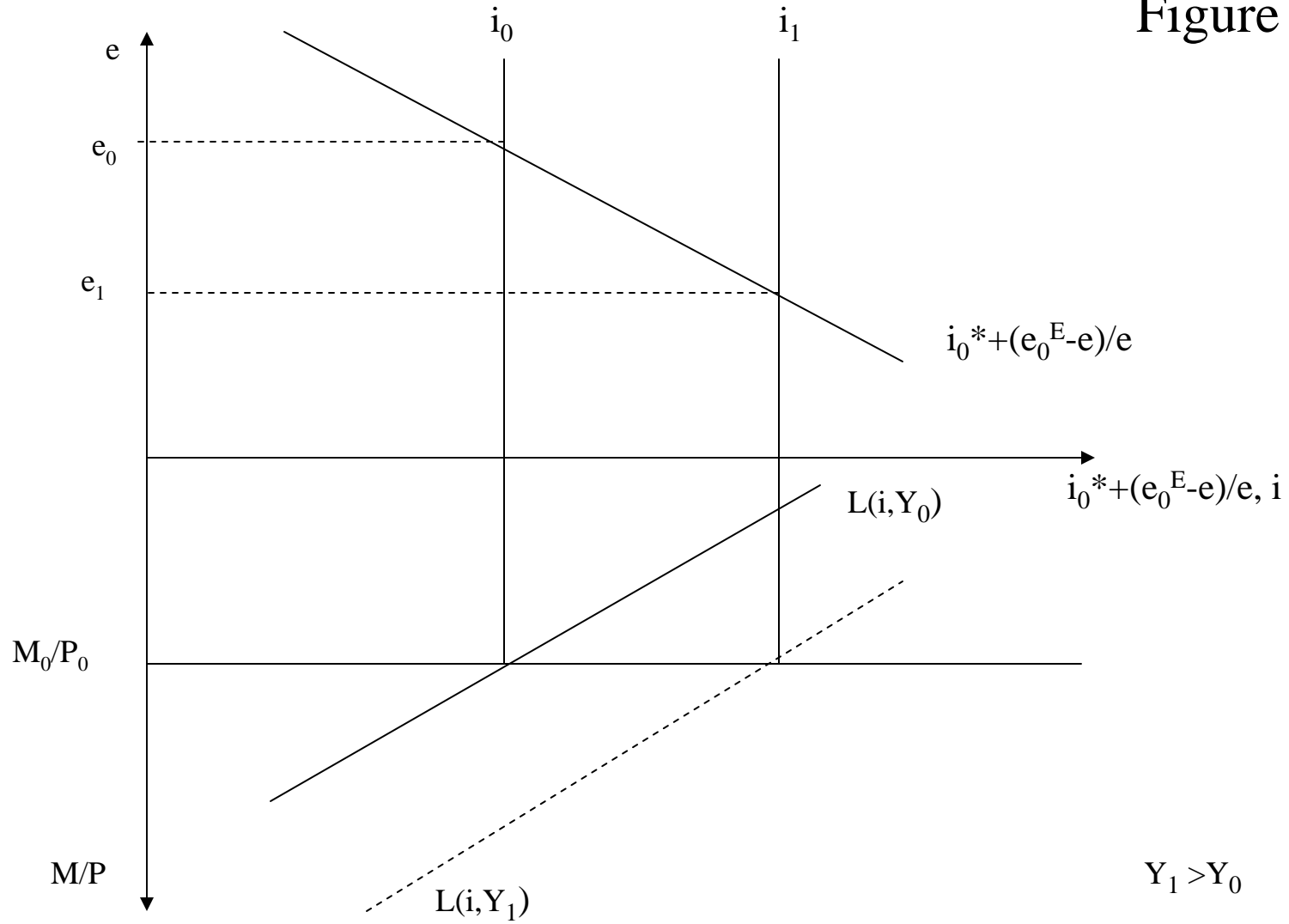
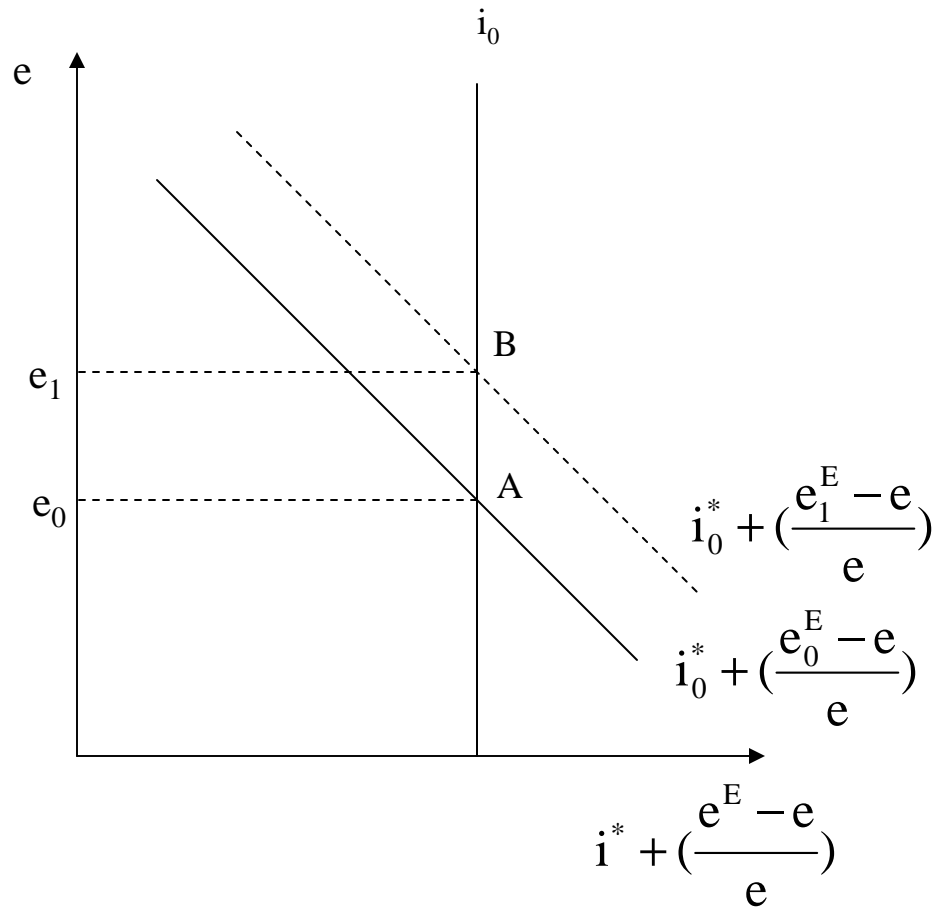


Figure 2



The Present

Figure 3
 Money Target

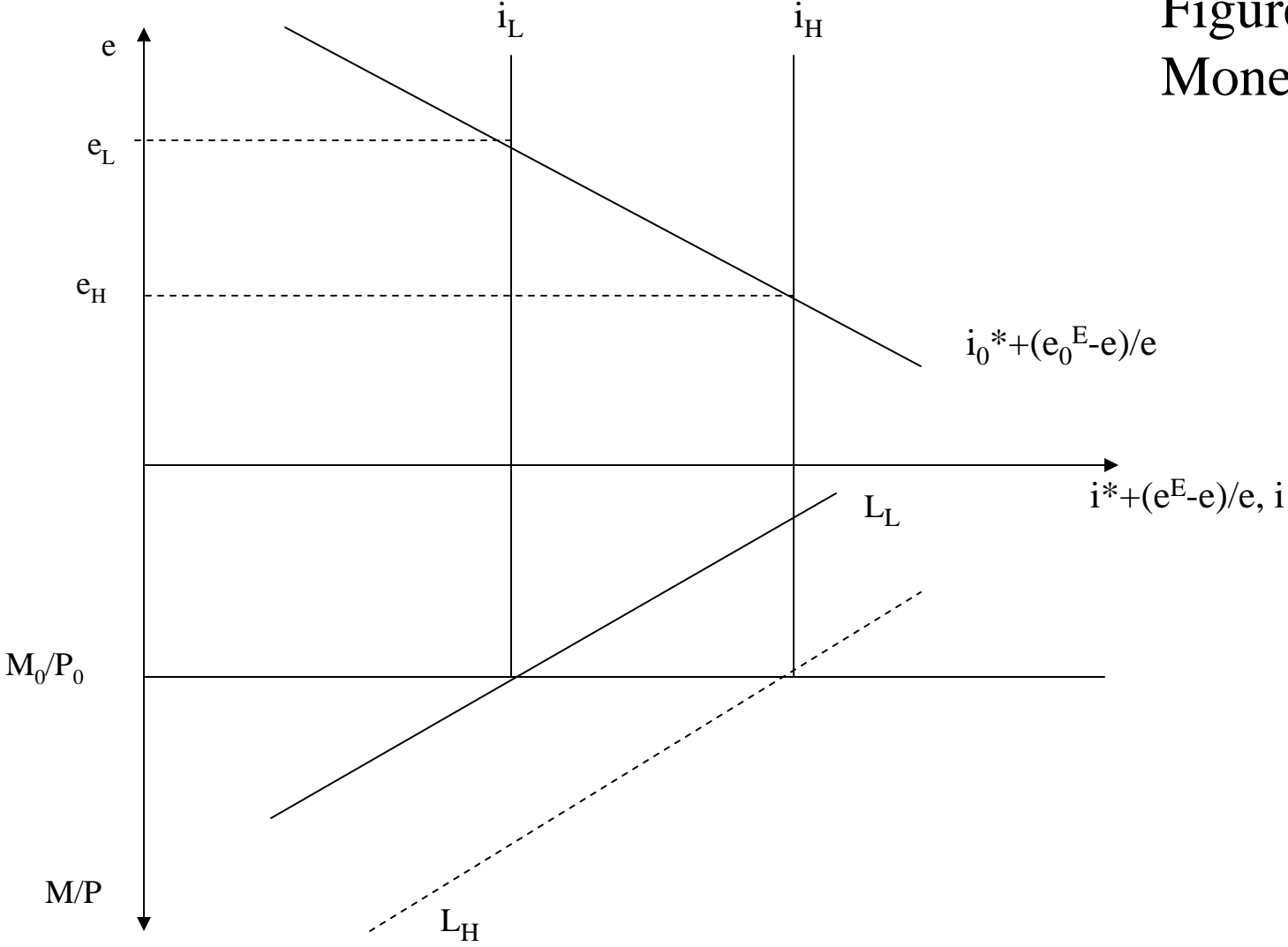
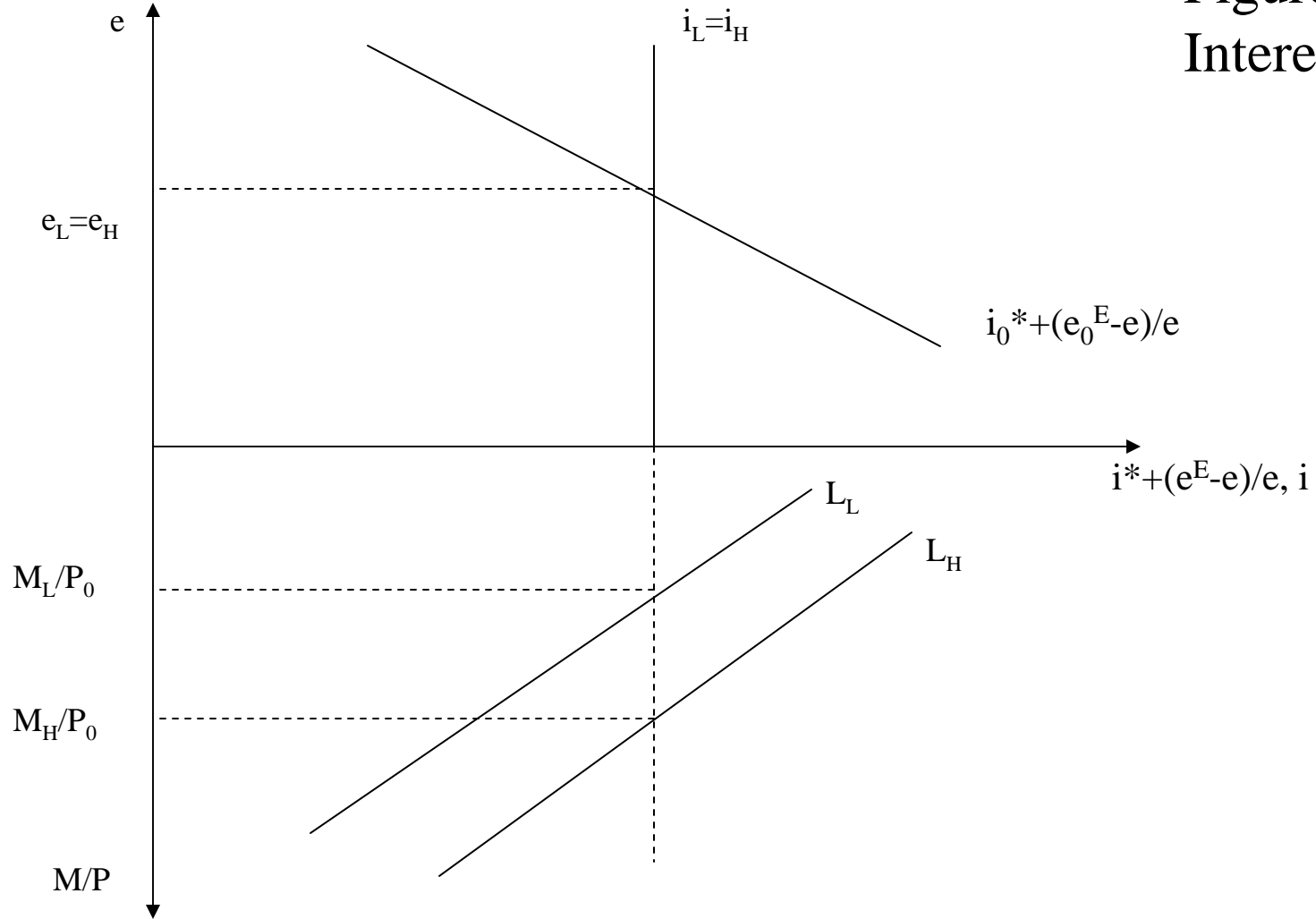


Figure 4
Interest Rate Target



Q : Captures the effect of dollarization. When the economy dollarizes Q Falls. Everything else remains the same, demand for reals to make transactions will fall as households in Brazil use dollars to make transactions.

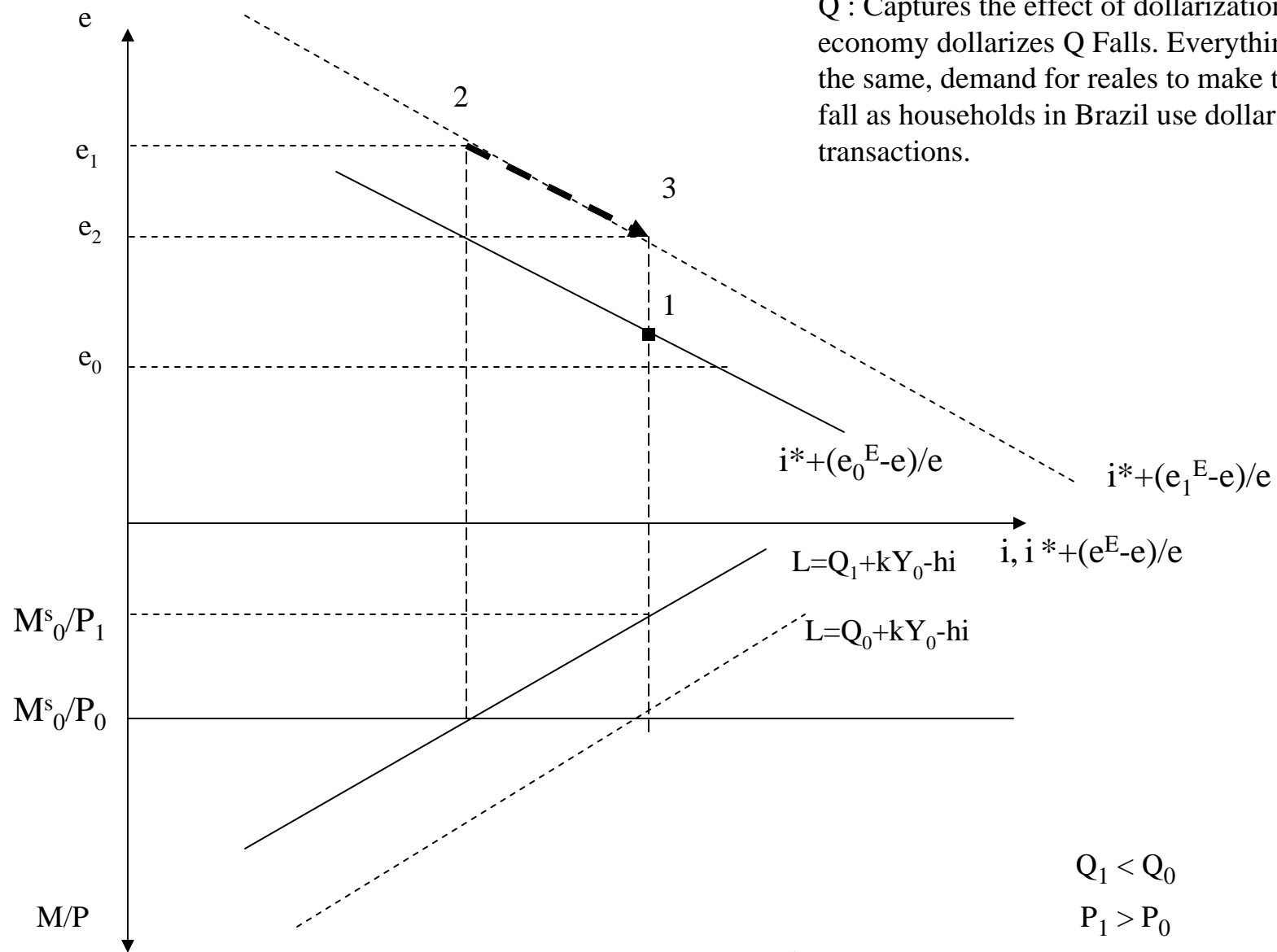


Figure 5