

ECON 4420/5420

Quiz #5 (Answers)

Last Name: _____, First Name: _____

(1) [10 points] **Price Levels and the Exchange Rate in the Long Run**

- (a) [3 points] Explain the Law of One Price. Give an example

The law of one price states that in competitive markets free of transportation costs and trade barriers, identical goods sold in different countries must sell for the same price when expressed in terms of the same currency. $P_{US}^i = E_{\$/\pounds} \times P_{UK}^i$ for good i . If, for example, the price of the same sweater was cheaper in London than in New York, U.S. importers and British exporters would have an incentive to buy sweaters in London and ship them to New York, pushing the London price up and the New York price down, until both were equal

- (b) [3 points] Explain Purchasing Power Parity (PPP)

PPP states that the exchange rate between two countries' currencies equals the ratio of the countries' price levels. A fall in a currency's domestic purchasing power (i.e. an increase in the domestic price level) will be associated with a proportional currency depreciation in the foreign exchange market and vice versa. Thus, PPP asserts that all countries' price levels are equal when measured in terms of the same currency

- (c) [4 points] Discuss the relationship between PPP and the Law of One Price

The law of one price applies to individual commodities while PPP applies to the general price level. Proponents of PPP argue that its validity in the long run doesn't require the law of one price to hold exactly. When goods and services temporarily become more expensive in one country than in others, the demands for its currency and its products falls, pushing the exchange rate and domestic prices back in line with PPP and vice versa

(2) [10 points] **Exchange Rate Overshooting**

Explain the effects of a permanent increase in the U.S. money supply *in the short run* and *in the long run*. Assume that the U.S. real national income is constant

See figure 1. An increase in the nominal money supply raises the real money supply, lowering the interest rate in the short run (the movement from 1 to 2 on the lower left figure). The money supply increase is considered to continue in the future, and thus it will affect the exchange rate expectations. This will make the expected return on the euro more desirable and thus the dollar depreciates. In the case of a permanent increase in the U.S. money supply, the dollar depreciates more than under a temporary increase in the money supply (from point 1 to point 2 in the upper left figure). Now, in the long run, (the right hand side figure), prices will rise until the real money balances are the same as before the permanent increase in the money supply (from point 2 to point 4, in the lower right figure). Since the output level is given, the U.S. interest rate which decreased before, will start to increase, until it will move back to its original level (from Point 2 to 4 in the lower left figure). The equilibrium interest rate must be the same as its original long run value (at point 4 in the lower right figure). This increase in the interest rate must cause the dollar to appreciate against the euro after its sharp depreciation as a result of the permanent increase in the money supply (this process is depicted in the upper right figure from point 2' to 4'). So a large depreciation (from Point 1' in the left upper figure to point 2' in both the left and right upper figures) is followed by an appreciation of the dollar (the movement from 2' to point 4' in the upper right hand side figure). Eventually, the dollar depreciates in proportion to the increase in the price level, which in turn increases by the same proportion as the permanent increase in the money supply. Thus, money is neutral, in the sense that it cannot affect in the long run real variables, such as output, investment, etc. Note that points 3' and 4' represent the same exchange rate

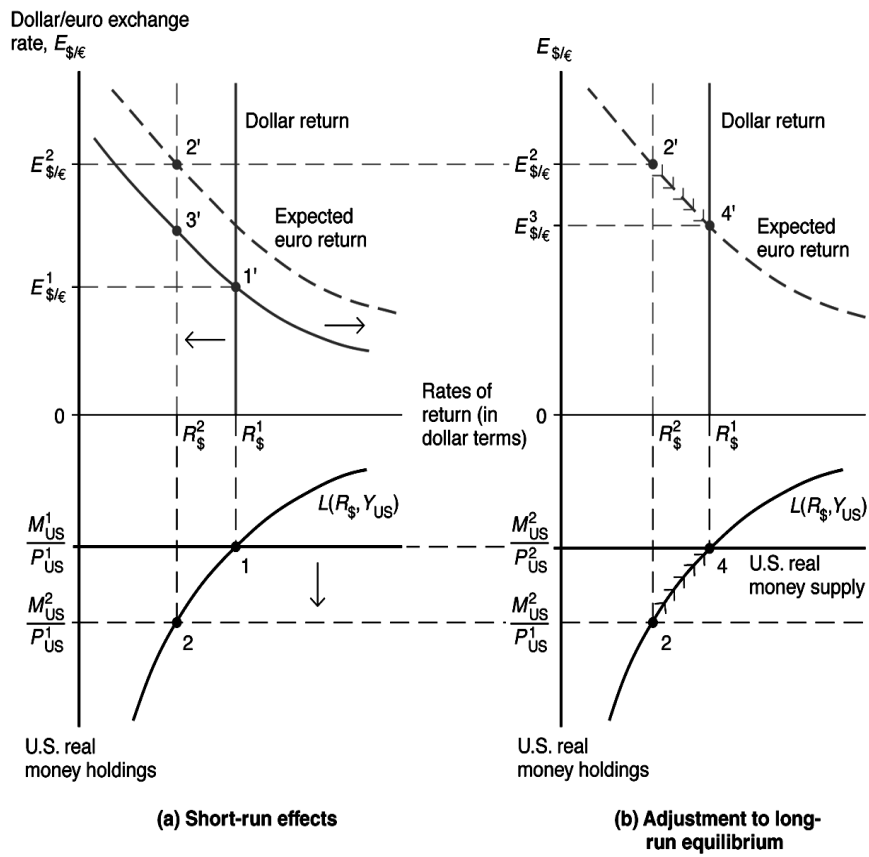


Figure 1: Short-Run and Long-Run Effects of an Increase in the U.S. money supply