The assessed coursework assignment comprises the following question:

"The test of a good theory is how well it stands up in the real world" Professor Adrian Buckley, "Multinational Finance"

Discuss the main theories of international finance and assess how each of them would pass Professor Buckley's test of standing up in the real world.

Foreign Exchange Rate Theory

At this moment, there are many theories about the foreign exchange rate. Every theories also have different definition and assumption. However, there are only five main theories, which are recognised and popular in the present situation. These three theories are Theory of Purchasing Power Parity (PPP), Theory of Interest Rate Parity, The Fisher Effect, The International Fisher Effect, and Expectations Theory.

Theory of Purchasing Power Parity (PPP)

According to this theory, it said, if the spot exchange rate of two countries start from the equilibrium point, the different in the inflation rate of these countries will tend to influence the value of these currencies in the long term. According to David Ricardo, the classical economist, in order to expect or determine the foreign exchange rate between each currencies, the ratio of the value of two currencies will equal to the ratio of the consumer price index of these countries. On the other hand, we can imply that, the foreign exchange rate of two countries is the main factor that maintains equilibrium the purchasing power of two countries. Then, the real exchange rates fluctuate stationary around a constant equilibrium level. It is a theory of exchange rate determination and a way to compare the average costs of goods and services between countries. The theory assumes that the action of importers and exporters, motivated by cross-country price differences, induces changes in the spot exchange rate. In another vein, PPP suggests that the transactions on a country's current account, affect the value of the exchange rate on the foreign exchange markets. PPP theory is based on an extension and variation of the "law of one price" as applied to the aggregate economy. The law of one price says that identical goods should sell for the same price in two separate markets when there are no transportation costs and no differential taxes applied in the two markets.

From the law of one price, it can be seen that PPP theory is based on the assumption that exchange rates are determined by the up and down movement of a basket of goods. For example, if a Big Mac in the US costs 5 USD and the same Big Mac costs 3 GBP in the UK, Purchasing Power Parity Theory would expect a GBP/USD exchange rate of 1.67 (5/3 = 1.67 USD/GBP). If the current spot exchange rate were instead 1.40 USD/GBP, PPP theorists would say that British Pound is undervalued and the USD is overvalued. Furthermore, PPP theorists would expect the USD/GBP exchange rate to trend toward the equilibrium level at 1.63.

From the above example, there is the opportunity for the speculators to gain profitable arbitrage. A merchant could buy 10 Big Mac for 30 GBP in the UK, and sell them in the US for 5 USD each or 50 USD. Converting the USD back to GBP at an exchange rate of 1.40 USD/GBP, then the total revenue from selling Big Mac in US is 35.71 GBP. The difference between the UK buy price and the converted sale price creates a risk free arbitrage of 5.71 GBP. As a result, the monetary policy makers could use PPP theory as the information in order to reach the equilibrium exchange rate.

The relationship between PPP and the foreign exchange rate

From PPP theory, it assumed that the foreign exchange rate is in the equilibrium point. If the prices in one country change in the higher way when compare to another country, the foreign exchange rate should be decreased in order to response the situation, according to PPP. If there is no change in the exchange rate, the goods and services from the country that has lower prices will become cheaper and gain comparative advantage in the world market. Nevertheless, as an economic indicator, PPP always useless when using it to predict the foreign exchange rate. Even in the freely floating exchange rate system, when the country has higher inflation rate than the others. Government always prefer to use the other solution to solve this problem rather than let's the market mechanisms decrease the foreign exchange rate, such as support the export sector or determine the quota for import sector.

However, there are some restrictions and the weak points of using PPP theory in order to predict or expect the foreign exchange rate. From this theory, if there is no other uncontrollable factor, the relation between PPP and the foreign exchange rate will be just right as said in the example, which is illustrated above. Nevertheless, if we use PPP to determine the foreign exchange rate, there are some unsuitable factors that distort the foreign exchange rate in the wrong way.

1. From the definition of PPP theory, the prices of goods, which are used to determine the foreign exchange rate is the prices of all goods and services, which are produced in the whole economic system. However, in the practical ways, it can be seen that there are many goods and services that cannot trade internationally, which are called non-tradable goods. As a result, if the PPP theorists calculate the foreign exchange rate from the prices of all goods and services, the calculated foreign exchange rate might be wrong, except that the prices of those non-tradable goods can affect the costs and prices of the export goods and services.
2. In the practical ways, there is a very important factor that PPP theory has not taken it into account in order to determine the foreign exchange rate, which is the transportation or transaction costs. Generally, the prices in the import countries are always higher than the prices of the same goods in the export countries. This situation depends on the transportation, transaction, and insurance costs. Therefore, it is not correct if the PPP theorists calculate the foreign exchange rate by ignore these factors.
3. In some situations, there are other factors, except prices, which might affect the quantities or volumes of the international trade, such as culture, value, and income. Therefore, it is not the ideal way to use the prices of tradable goods and services or power purchasing parity to determine the foreign exchange rate. Because, in some cases, even though the PPP of one currency is decreasing but in the practical ways, the balance of payment of that country might be in the better status if the other factors, except prices, have changed in the positive way for the international trade. In the full-employment situation, when the disposable income increase and the quantities of goods and services remain constant, the prices of

goods and services will increase as a result of the increasing income. Therefore, we can conclude that the PPP theory is valid and able to measure the foreign exchange rate precisely only in the situation that the economic system is in full-employment. Unless using PPP theory in this situation, the change in disposable income will not reflect the change in the prices of goods and services. Then, there will be no relationship between the foreign exchange rate and disposable income.

4. Even if we are using PPP theory to predict and measure the foreign exchange rate, the international capital transfer should have not been taken into account. From the international economic theory, IS-LM curves, if the capitals flow out of the country, this situation will affect the value of that currency in downward trend. In long-term, the export of this country will increase due to the devaluing of its currency. Finally, the increasing in export sector will neutralise the effect of capital outflow and increase the value of currency until it reach the old equilibrium point.
5. In order to calculate the prices of goods and services, which are used in PPP theory, we might choose the prices of export, wholesale, retail goods, or consumer price index. These prices, which are use in PPP theory, are different in every countries due to the different in the social and economic system. So it is very complicated to compare the prices of the different countries.
6. In the international trade system, in the practical ways, there are many obstacles that always distort the real pricing mechanism, such as, tariff and quota. As a result, we cannot find the proper and valid power purchasing to be used to predict and measure the foreign exchange rate.

Even if the PPP theory has many inappropriate factors, which are illustrated above, but this theory still can be used to predict and measure the foreign exchange rate quite precisely in long-term because, in the present time, there is no better theory. So, in order to use PPP theory correctly, the users have to adjust the inappropriate factors to be as much real as they can.

Theory of Interest Rate Parity

This theory is very similar to PPP theory but it has been concentrated on another side. Interest Rate Parity theory focus on the role of the interest rate, which is the factor that drives the capitals outflow from the country that has lower interest rate to the higher one. This situation is called, Interest Rate Arbitrage. So, if there are any different in the interest rate of two countries, the capitals will always flow out to the country that has higher interest rate. Consequently, the demand for that currency will increase automatically.

The international capital transfer might be the cause of risk in the foreign exchange rate. For example, bond in the UK has rate of return or interest rate of 9 percent while bond in Germany has rate of return of 6.5 percent. So the investors or speculators who invest in Germany's bond will change move their capital to invest in UK's bond instead of Germany, which has higher rate of return of 2.5 percent. In this kind of investment, the investors have to change their capital from EUR to GBP and after they get their returns, they have to change GBP back to EUR again. This process is very risky because in the first step that the investors sell EUR and buy GBP, the value of EUR will decrease when compare to GBP due to the excess supply. If the value of EUR has fall to the level that lower that the returns they gain from the Interest Rate Arbitrage, this investment will be unprofitable and unsuccessful.

However, there is the way that can reduce this risk. The investors can solve this problem by using swap contract. Using swap contract is to sell their GBP in advance while they are changing their EUR to GBP. This process is called Covered Interest Arbitrage and the investors who speculate from this process are called Arbitrageur.

From the concept of Covered Interest Arbitrage, we will get the equilibrium relationship between foreign exchange rate and interest rate, which is illustrated below.

Assume that e_f = forward exchange rate

e_c = spot exchange rate

r^* = foreign interest rate

r = domestic interest rate

The equilibrium relationship between foreign exchange rate and interest rate is $e_f = e_c \frac{(1+r^*)}{(1+r)}$

The interest rates in two countries always tend to equal or insignificant different. The reason is when the different in interest rate between two countries is as much as or more than the forward exchange premium rate, the investors will transfer their money to the country, which has higher interest rate. These transfers will increase the liquidity for that currency and the interest rate will tend to decrease until the different in interest rate between two countries equal to the forward exchange premium rate.

If we assume that F = forward exchange premium rate, in the extreme case, we can imply that $(r\text{-}F = r^*)$.

However, there are several opportunities that the relationship between the interest rates of two countries will not be as illustrated in Interest Rate Parity Theory. Firstly, there is no perfect capital mobility in the real world. And secondly, in order to gain the interest rate arbitrage, the investors have to complete at least two exchange transactions and these processes always have some transaction exposures from the foreign exchange rate fluctuation.

Fisher Effect Theory

Fisher Effect Theory has got this name from the economist name "Irving Fisher (1930)". Fisher hypothesised that the nominal interest rate in each country could be decomposed into two components, a real rate plus an expected inflation rate. Fisher claimed a one-to-one relationship between inflation and interest rates in a world of perfect foresight, with real interest rates being unrelated to the expected rate of inflation and determined entirely by the real factors in the economy, such as the productivity of capital and saver/investor time preference. This is an important prediction of the Fisher Hypothesis for, if real interest rates are related to the expected rate of inflation, changes in the real rate will not lead to full adjustment in nominal rates in response to expected inflation. From fisher

Hypothesis, we can get the simple relationship between these three variables, nominal interest rate, real interest rate, and expected rate of inflation, which are illustrated below.

Assume that i = nominal interest rate

r = real interest rate

E = expected rate of inflation

Then the relationship between these variables is "i = r + E"

For example, the nominal interest rate for UK's bond is 16 percent and for US's bond is 12 percent. The expected rate of inflation in UK and US are 13 and 9 percent respectively. Then both countries have equal real rate of return for investors, which is 3 percent (calculated from nominal interest rate minus with expected rate of inflation).

As with the PPP theory also exists a generalised version of this parity condition. The generalised version of the Fisher Effect states that real returns are equalised worldwide through arbitrage. If arbitrage is permitted, national capital markets will be integrated worldwide. This means that the real interest rates are determined by the world supply and demand for funds. In an integrated capital market is the domestic real interest dependent upon events both inside and outside the country. If the real interest rate were higher in one country than another, it would lead to a flow of capital into the country with the higher rate of return until the expected real rate of returns becomes equalised. The implicit assumption of this situation is that the investors view the foreign and domestic assets as the perfect substitution.

However, there are many factors that can prevent from freely flowing across borders to take the advantage of real interest rate differentials. If the real interest rate differentials do exist, they might be due to one or more of the following factors:

1. Psychological barriers: These barriers to the free flow of capital might incorporate an amount of uncertainty. Investors are generally more familiar with domestic markets than foreign markets. Different languages, time zones, and sources of information might limit capital flow across borders.

2. Legal constraints: Legal restrictions facing investors might vary amongst different countries and hinder investors from taking advantage of real interest differentials.
3. Transaction costs: The ability to access to the information might be costly and transactions often involve costs in the form of brokerage and management fees.
4. Taxes: Taxation might function as a discriminatory factor if taxes are higher in one country than another. This will be another factor that restrict the flow of capital across borders.
5. Political risk: If political risk is assumed to exist on foreign investments, it might dampen the amount of investments. Political risk can be in the form of fear of expropriation of capital investments from a foreign country.
6. Transaction exposure: The fear of devaluation and depreciation of a foreign currency might discourage the investors to invest in the risky currency.

If capital markets are perfect and capital is completely mobile, it will ultimately lead to the equalization of the real interest rates across the world, as illustrated above.

International Fisher Effect Theory

International Fisher Effect Theory, sometime it has been called "Fisher Open", is the international counterpart of the Fisher Effect. It can be seen as a combination of the general version of the Fisher Effect and the relative version of the Purchasing Power Parity. The general version of the Fisher Effect said that the real interest rates across countries would be equal due to the possibility of arbitrage. If the real interest rate is equal between different countries, it follows that the differences in the nominal interest rates must occur from the differences in expected rate of inflation. The PPP theory implies that the inflation differential will be offset by exchange rate changes.

Then, the International Fisher Effect proposes that the changes in the spot exchange rate between two currencies will be equal to the differences in their nominal interest rates. For example, the increasing of the UK inflation rate relatively to the US will cause a depreciation of GBP relative to USD. The nominal interest rate in the UK will also increase when compare to the US nominal interest rate. The adjustment of exchange rate

to nominal interest differentials between countries can come either directly through the capital flow across the international money markets, or through some sort of activity between the goods and money markets, some real cross-border investment activity or change in trade patterns in the goods and services market. The speculators would move their capital from countries with low interest rates to countries with higher interest rates. This movement of capital would cause a movement in the foreign exchange rate. The movement in the foreign exchange rate should on average offset the nominal interest rate differential. From the International Fisher Effect, we can imply that the nominal interest rate differential is the predictor of future changes in the spot exchange rate.

However, the purchase of foreign asset is not just an investment that pays a given rate of return; it is also an investment in a foreign currency, where the return depends on the appreciation or depreciation of the foreign exchange rate. The International Fisher Effect said that the return on a foreign investment would be offset by an exchange rate change. As a result, the investors that consistently purchase foreign assets will on average earn a similar return as if investing in domestic assets.

Expectations Theory

Some economists believe that in the case of the freely floating currencies, such as EUR, the international money market of these currencies will have more efficiency than the others. In the efficient market, the forward exchange rate will become a good predictor of the future spot rate. For example, assume that GBP has discount forward rate of 4 percent when compare to the others. Then, in one year, the value of GBP should depreciate 4 percent, according to this theory.

The relationship between forward rate and future spot rate is based on the assumption that there is an efficient international money market. This assumption means that all information in the market will be reflected by both spot rate and forward rate. If so, the spot and forward rate in this market will reflect the equilibrium point between demand and supply correctly.

Actually, the investors cannot predict the exchange rate correctly all the time. On the other hand, it is very difficult to gain certain profit from the prediction of future spot rate. Because, as I illustrated above, in the efficient market, the forward exchange rate will reflect the common information, which is used to predict the future spot rate. Sometime the future spot rate might be different from the market's expectation, which is shown in forward rate. This situation always occur because no one certainly knows that spot rate in the future will be different from present forward rate or not. So we can imply that the present forward rate is the unbiased estimator of the future spot rate.

In conclusion, there are three main factors, which are used to predict the future exchange rate in freely floating exchange rate system.

1. Expected change in spot rate
2. Difference in expected inflation and interest rate
3. Forward exchange premium or discount rate

These three factors are directly related with each other. Due to the assumption that the international money markets are efficient, every factors will change rapidly if there are any changes in any other factors. However, the expected inflation rate is the most important variable that will lead to the change in other factors. So the exchange rate predictors always try to analyse the factors that can lead to the change in inflation rate, such as money supply, business cycle, productivity, and capacity utilisation.