Financial Modelling Templates

International Fisher Effect

http://spreadsheetml.com/finance/internationalfishereffect_purchasingpowerparity_interestrateparity.shtml

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ConnectCode's Financial Modelling Templates

Have you thought about how many times you use or reuse your financial models? Everyday, day after day, model after model and project after project. We definitely have. That is why we build all our financial templates to be reusable, customizable and easy to understand. We also test our templates with different scenarios vigorously, so that you know you can be assured of their accuracy and quality and that you can save significant amount of time by reusing them. We have also provided comprehensive documentation on the templates so that you do not need to guess or figure out how we implemented the models.

All our template models are only in black and white color. We believe this is how a professional financial template should look like and also that this is the easiest way for you to understand and use the templates. All the input fields are marked with the '' symbol for you to identify them easily.*

Whether you are a financial analyst, investment banker or accounting personnel. Or whether you are a student aspiring to join the finance world or an entrepreneur needing to understand finance, we hope that you will find this package useful as we have spent our best effort and a lot of time in developing them.

ConnectCode

1. Purchasing Power Parity

1.1 The Law of One Price

The Law of One Price states that in an efficient market where there is free flow of goods, services and capital a commodity has only one price regardless of the country in which it is purchased. The idea behind the Law of One Price is that if a commodity costs more in one country than the other, arbitrage will be possible by moving the commodity from the country with lower price to the one with the higher price.

1.2 Purchasing Power Parity

The Purchasing Power Parity is based on the Law of One Price. It states that exchange rate will adjust so that a commodity will cost the same regardless of the country in which it is purchased in.

1.3 Relative Purchasing Power Parity

Relative Purchasing Power Parity further evolved from the concept of Purchasing Power Parity. Basically it relates the concept of Purchasing Power Parity with the concept of inflation. It states that the inflation in one country over the inflation of the other country determines the exchange rate between these two countries.

1.3.1 Relative Purchasing Power Parity spreadsheet

Based on the Relative Purchasing Power Parity, the expected exchange rate in the future is calculated as follows:

Expected exchange rate in the future = Current Spot Exchange Rate * ((1 + (Inflation of Foreign County - Inflation of Home Country)) ^ Number of Periods)

In the spreadsheet, the following formula is used to calculate the Expected exchange rate in N periods.

=F4*((1+(F6-F5))^F7)

	A	B	C	D	E	F
1	Purchasing Power Parity (Relative)					
2						
3	Copyright© 2009, ConnectCode. All rights reserved.					
4	Current Spot Exchange Rate*					1.43
5	Inflation rate in the home country (US)*					2.00%
6	Inflation rate in the foreign country*					4.00%
7	Periods (N)*					5.00
8	Expected exchange rate in N periods					1.58
9						

2. Interest Rate Parity

2.1 Interest Rate Parity

The Interest Rate Parity states that the interest rate difference between two countries is equal to the percentage difference between the forward exchange rate and the spot exchange rate.
The formula for the Interest Rate Parity is shown below. This is also the formula used by the InterestRateParity worksheet.

Forward exchange rate for settlement at period N = Current Spot Exchange Rate * ((1+Foreign country nominal risk free interest rate)/(1+US nominal risk free interest rate))

2.2 Interest Rate Parity spreadsheet

	A	B	C	D	E	F
1	Interest Rate Parity					
2						
3						
4	Current Spot Exchange Rate*					120.00
5	US nominal risk free interest rate*					10.00%
6	Foreign country nominal risk free interest rate*					5.00%
7	Forward exchange rate for settlement at period N					114.55
8						

An approximation of the exchange rate which supports N periods is calculated in the InterestRateParityApproximation worksheet. The formula used is as below :

Forward exchange rate for settlement at period N
= Current Spot Exchange Rate*((1+(Foreign country nominal risk free interest rate-US nominal risk free interest rate)) ^ Number of Periods)

	A	B	C	D	E	F
1	Interest Rate Parity					
2						
3						
4	Current Spot Exchange Rate*					120.00
5	US nominal risk free interest rate*					10.00%
6	Foreign country nominal risk free interest rate*					5.00%
7	Periods (N)*					1.00
8	Forward exchange rate for settlement at period N					114.00
9						

3. International Fisher Effect

3.1 International Fisher Effect

Both the Interest Rate Parity theory and the Purchasing Power Parity theory allows us to estimate the future expected exchange rate. The Interest Rate Parity theory relates exchange rate with risk free interest rates while the Purchasing Power Parity theory relates exchange rate with inflation rates. Putting them together basically tell us that risk free interest rates are related to inflation rates.
This brings us to the International Fisher Effect. The International Fisher Effect states that the real interest rates are equal across countries. Real interest rates are approximately the risk free rate minus the inflation rate.

3.2 International Fisher Effect spreadsheet

The InternationalFisherEffect table worksheets simply approximate the real interest rates of a foreign country compared to US.

	A	B	C	D	E	F	G
1	International Fisher Effect						
2							
3							
4	US risk free rate*						5.00%
5	Foreign risk free rate*						10.00%
6	US inflation rate*						2.00%
7	Foreign inflation rate*						7.00%
8	*US Real Interest Rate = Foreign Real Interest Rate*						
9	US real interest rate						3.00%
10	Foreign real interest rate						3.00%