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Risk Management Strategy Proposal BHP Billiton and Euro

Wei Xin

Finance, College of Business and Economics, Australian National University, Canberra, Australia

Email address:
xinweiruc@163.com

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Abstract: BHP Billiton is an Anglo-Australian multinational mining, metals and petroleum company headquartered in Melbourne, Australia. It is the world's largest mining company measured by 2013 revenues. The company has a large amount of business in Europe every year.In this article we focus on the risk and the risk management strategy for BHP on the Euro and try to establish a better way to hedge the foreign exchange risk for BHP.

Keywords: Bhp, Euro, Transaction Exposure, Economic Exposure, Translation Exposure

1. Introduction

1.1. Company Profile

BHP Billiton is a company with 155 years of history if traced back to the foundation of Billiton. BHP and Billiton merged in June 2001 becoming one of the world's largest diversified resources company. BHP Billiton, a leading global resources company with US$15.224 billion profit in year 2014. BHP is among the world's top producers of major commodities, including iron ore, metallurgical and energy coal, etc.

1.2. Sales Composition

BHP is the largest diversified resources company in the world. It has a large variety of products selling all over the world. BHP also has operations in 25 countries.

Different commodities contribute differently to BHP's revenue. Iron Ore is the largest part of the total revenue, about 45%; followed by copper and petroleum, both of which are approximately 20%.

Revenue by geography varies a lot from area to area. 60% of BHP's total income comes from Asia and Pacific region, making them the most important market for BHP. However, the main focus of this report, Europe, only contributes 0.25% to the total income of BHP Billiton.

1.3. Expected Future Sales

After deep analysis of BHP's annual reports and other resources about the commodities industry, we found out that:

- The percentage of revenue contributed from Europe is lower than 1%;
- Europe's economy is now slowly recovering, but cannot increase dramatically in nearest ten years due to the high unemployment rate, high deficit, bank system problems, and weak investment spending in Europe countries. (Brussels, 2015)
- Many Countries in the Eurozone have already introduced or are completing the introduction of regulatory responses to greenhouse gas emissions from the combustion of fossil fuels to address the impact of climate change. These physical effects and regulatory responses may adversely impact the productivity and financial performance of BHP's operations in Europe.

Considering these factors, we assume the future revenue from the Europe remaining steady or even drop in recent years.

1.4. International Financial Risks

Since sales in Europe are very low, the main exposure that BHP has to Euro is the Euro bonds they hold. In this case, limited the international financial risk that BHP has against Euroto two main international financial risks -- transaction risk and interest rate risk. Transaction risk will be analysed in detail in section three, and interest rate risk in section four.

Other risks like translation risk, economic risk, country risk is very limit, and the impact of these risks to BHP is minor. Thus we do not analyse these risks in detail.

2. Overview of Euro

2.1. History and Recent Story

The euro is the legal tender of Eurozone countries, which

has 19 member states of the European Union[1]. It introduced on 1st of January 1999 as accounting currency and three years later issued bank notes and coins in circulation. The Euro is the 2nd currency of the world in terms of foreign exchange trade and status of reserve currency[2]. Its monetary authority is the European Central Bank (ECB) and Central Banks of member countries.

The Euro has fluctuated over time. The value of Euro against USD has started from a low 0.84USD/Euro to a peak of almost 1.60USD/Euro before the GFC in 2008.Since then, Euro fluctuated but still stronger than USD. From July 2012 The Euro/USD ratio had strengthened. Until May 2014, it reached 1.387. However, Euro started plunging since then,.The Euro has plunged -9.2% since January 2015.

2.2. Comparison with Other Currencies

Currently, the path of USD has reversed comparing with the Euro. Now the US economy is in a better condition than Europe's, with the US unemployment rate is 5.5 % versus Euro's 11.2%.In contrast when in 2008, Europe's economy was a lot better than the US. To recover the economy, the Federal Reservelaunchedthe Quantitative Easing (QE) programme -- printing new money and pumping it into the market by buying bond; keeping interest rate low to generating spending, investment and export. And European Central Bank (ECB) is doing exactly the same right now. Currently, The Fed is enjoying the result, unemployment went down, and the US economy is recovering. Now the Fed is done buying bonds and considering raising interest rates, which can pushUSD stronger against most currencies in the world, especially the Euro. Since the ECB has applied the QE Program last March.

The AUD in the last ten years was not stable, however, the most extreme movement was duringGFC, AUD plunging to the lowest ratio of 0.61USD/AUD. Then recovered in 2009-2010, reaching the peak of around 1.099USD/AUD in 2011. Currently AUD is weaker against USD like most currencies in the world,from around 0.90USD/AUD in September 2014 and kept falling to around 0.78USD/AUD, because of the recovery of US economy.

2.3. Main Drivers

Empirical studies suggest that following factors are the reasonable factors that drive the medium-term Euro/US dollar exchange rate dynamics:

2.4. EUR/USD Forecast

In order to forecast euro exchange rate, we used the following single equation model based on sticky price - monetary theory. The empirical model predicts that useful forecast [3] : 0.90USD/AUD atthe end of 2016 and 0.95USD/AUD at the end of 2019. We will use this exchange rate forecast for next sections.

$$e_t = 0.24 - 0.03e_{t-1} - 0.72 * RIR_{t-2} + 4.73 * GDP_t + 0.64 * RIR_{t-1}$$

This forecast is consistent with predications of the Economist Intelligence Unit and Scotia Bank, however some investment banks such as Goldman Sachs have different prediction for medium term.(Appendix 1)

3. FX Exposure Assessment

3.1. Translation Exposure

The US dollar is the functional currency of most operations within BHP Billiton. As a result, translation exposures arise from balances in currencies other than the US dollar. However, as known to all, US dollar is the dominated settlement currency of international commodity trades. BHP also follows this rule. Even when BHP sells products in Eurozone, only USD is accepted. This enables BHP to avoid all translation exposure from Euro. Additionally, based on the current sales amount that BHP has in Europe, it is highly unlikely for Euro to become the settlement currency of BHP in the recent future. Therefore，BHP does not take translation risk from Euro.

3.2. Economic Exposure

Although the settlement currency of commodity trades is not Euro, the movement of the value of Euro could directly influence the demand of BHP's products. The lower the exchange rate of Euro, the lower the demand of BHP's products. According to the latest sales data released by BHP Billiton, the sales in Eurozone only take 0.25% of their total revenue, and the absolute value of revenue from European customers keep decreasing since 2010.In addition, the demand of mineral products is rigid. Based on the above two reasons, the influence of exchange rate movement in BHP's selling activities in Eurozone is not significant, which means that BHP faces very limited economic exposure.

3.3. Transaction Exposure

No sales revenue is earned in Euro currency, but certain capital expenditure is incurred by some financing activities in Euro. The main transaction exposure that BHP has against Euro is from the Euro bonds they hold. According to the recent financial report released, there is about 23% of debtsissued in Euro bonds. Furthermore, BHP has a 20 billion Euro Medium Term Note Program, about €11 billion isalready used, left with €9 billion available for BHP to use when needed. When the exchange rate of Euro increases, the interest and principle payments will increase as well, which can also impact BHP's liability and profit. However, BHP has Euro to USD cross-currency interest rate swaps for the Euro bonds they already hold. This limited the transaction exposure faced by BHP down to only the new two billions Eurobond contract BHP just signed on the 23rd of April.

1CB euro introduction: https://www.ecb.europa.eu/euro/intro/html/index.en.html

2lease find Figure 7.1.1 and Figure 7.1.2

3evich (2001) defined exchange rate forecasts as accurate forecasts (small error terms) and useful forecasts that helps to make decisions regarding profitable speculative positions and correct hedging decisions.

4. Interest Rate Risk

4.1. The Relation Between BHP Future Borrowing and ECB Official Interest Rate

The decision of making future debt in the Eurozone area is related to the official interest rate. The official interest rate was declining sinceJune 2014 and remained stable at 0.05%. Why is the interest rate in Eurozone and the exchange rate of Euro currency is so low recently? It is because the ECB tries to increase the economic growth in Eurozone to generated export in this zone. Export contributes more than a quarter towards Europe's GDP, which is similar to the heavy export country -- China. A weaker Euro is beneficial for export and keeping interest rate low will allow the financial entities to obtain liquidity at a lower cost, and lend at a lower rate to European companiesto help them expand.

4.2. ECB Economic Forecast

Why we believe interest rate in Eurozone will stay low at least until the end of 2016? It is because ECB released this Economic Forecast:

1. ECB currently implemented quantitative easing program, whichis buying government bond from Eurozone countries for around €1 trillion until September 2016 or around €60 billion monthly to increase the supply of Euro.
2. ECB tried to reach amaximum 2 % targeted inflation rate at 2017, when current inflation rate in euro-zone in April is -0.1%. This indicates that there is room to increase the inflation rate, which means that ECB will still keeping the interest rate low.

There are the main reasonsmade we believe the interest rate will be steady at 0.05% until at least September 2016, and then will increase.

4.3. The Relation of ECB Official Interest Rate and Euribor

Borrowing money in Euro, BHP should also consider the Euribor rate. The Euribor rate ishighly correlated with the official interest rate. This is because if the ECB decrease the official interest, it means that financial entities could acquire liquidity at a lower cost as banks could lend money to each other with cheaper price. In the end it will impact on the decrease in Euribor because the level of Euribor is determined by the supply and demand of liquidity between banks.

4.4. BHP Future Borrowing

Considering the ECB economic forecast trend and the relation of it with Euribor, we suggest that BHP can borrow money until at least September 2016 using the floating rate because we believe that Euribor will remain at this very low rate at least until the end of Quantitative Easing program in September 2016. Also considering using Euribor rate rather than Libor, because the former will be still lower than the latter until September 2016.

5. Hedging Strategy

After all the analysis, we build our hedging strategy. We try to hedge against the transaction exposure and interest rate risk.

5.1. Keep Original Hedging Strategy

However, as shown in BHP's annual report, BHP already has Euro to USD cross-currency interest rate swaps in place to limit foreign exchange rate risk exposure.

As we can see, most swaps are pay floating/receive fixed rate swap and their current situation in swaps is great, all fair values of swaps are positive. The hedging strategy BHP already has in place has limited their exposure to transaction risk, and swapped their interest rate exposure from Euribor to Libor.

Comparing Euribor to Libor, Libor is currently higher, and is also expected to increase However, it is way too costly to drop a swap contract. Thus, we suggest BHP to keep the hedging strategy they have right now, the benefit for changing hedging strategy can hardly out weight the cost.

5.2. New Hedging Strategy for New Bonds

For the new two billions Euro bond contract they have just signed on the 23 of April, we suggest BHP not to have swaps, as the interest rate they have is really low. For the floating rate, 3-month Euribor is now negative 0.008%, much lower than the positive 0.28% three-month LIBOR rate. As forecast results, both EURIBOR and LIBOR will increase in the future. However, EUROBR is always much lower than LIBOR. Even if Euribor increase to 1.5% in 2020, it is still hard to find a swap with a lower rate. However if BHP can get a good swap deal, then swap is suggested. For the two fixed rate bands, 0.75% and 1.5% interest rate is low enough; even for an organization with constant "A" grade credit rating. The interest rate risk is already limited.

Thus, we suggest BHP only have forward contracts to lock in a beneficial exchange rate to USD for the principle payments. Since we forecasted the exchange rate will increase after 2016. We suggest BHP use forward rather than options is based on two considerations. First is the variance of forecast for Euro exchange rate is relatively low, considering the high premium for using options, it is very unlikely for BHP to gain a profit using options. Secondly, forwards a most commonly used by big companies hedging against foreign exchange rate for large amount of money, BHP and banks are more familiar to forward contract, thus easier for BHP to get a more beneficial exchange rate.

Additionally, we do suggest BHP keep financing with Euro Bond. The 20 billion Euro Medium Term Note Programme is not all used, still a little more than 9 billion left. BHP can fund more in Euro under this program before 2016. As the interest rate is currently very low.

6. Conclusion

To conclude, BHP has very low market exposure to Europe, so we only hedge for the Euro bonds they have. Hedging

against transaction exposure and interest rate risk. We suggest BHP to continue holding the Euro to USD cross-currency interest rate swap they already have, and for the 3 new bond contracts, use forward contracts to hedge for transaction risk. And based on the current economic situation in Europe, we suggest BHP not to have any more expansion in Europe. It is more beneficial to focus more on Asian market.

Appendices

Appendix 1- Theoretical Background on Exchange Rate Model

Due to medium-term[i] exposure of the euro currency (), we used structural econometric model of flexible price monetary models based on Purchasing Power Parity (PPP). The reason is that structural models are (i) more reasonable to observe euro area shocks such as ECB quantitative easing program, euro debt problem and Russian's political issues and (ii) more impact of economic adjustment process.

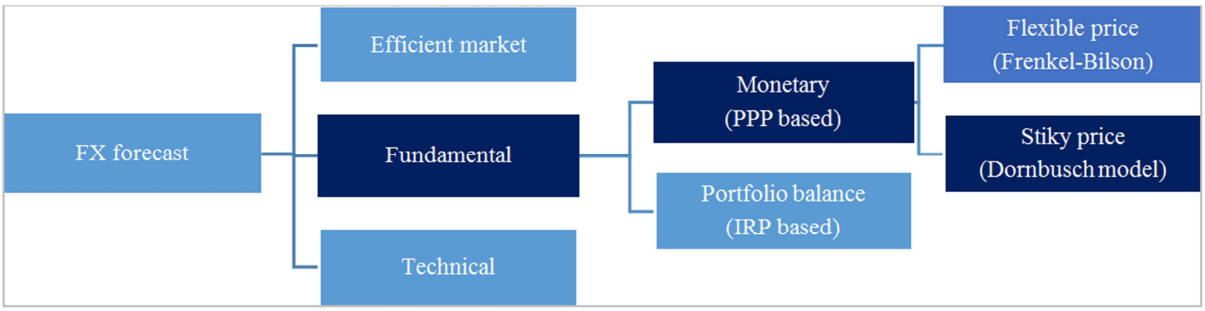


Figure 1. *Selection of the exchange rate forecasting model.*

Economist Intelligence Unit (EIU): According to the forecast report of March 2015 of the EIU the euro depreciation against the US dollar may continue until end of 2016 and rebound during 2017 and 2019. More specifically, the EIU expected the average rate of USD0.99:EUR1 and USD1.20:EUR1 respectively 2016 and 2019. Their assumption of the appreciation is that the divergence between interest rates and recovery of the euro area economic growth. From Table 1, we can see that real interest rate and inflation differential and will be decrease by end of 2019.

Table 1. *Determinants of euro currency.*

#	**Determinants of euro currency**	**Explanations**
A	Fundamentals factors	
	Real interest rate differential	Higher interest rate – euro appreciation
	Real GDP growth differential	Higher economic growth – euro appreciation
	Real oil price	High oil price – euro depreciation
	Relative price of tradeable and non-tradable sector	Productivity increase – euro appreciation
	Relative fiscal position	Low fiscal expenditure – euro appreciation
B	Market factors	
	Economic condition (GFC, Greece debt)	Positive shock – euro appreciation
	Quantitative easing program	Exit program – expectation - euro appreciation

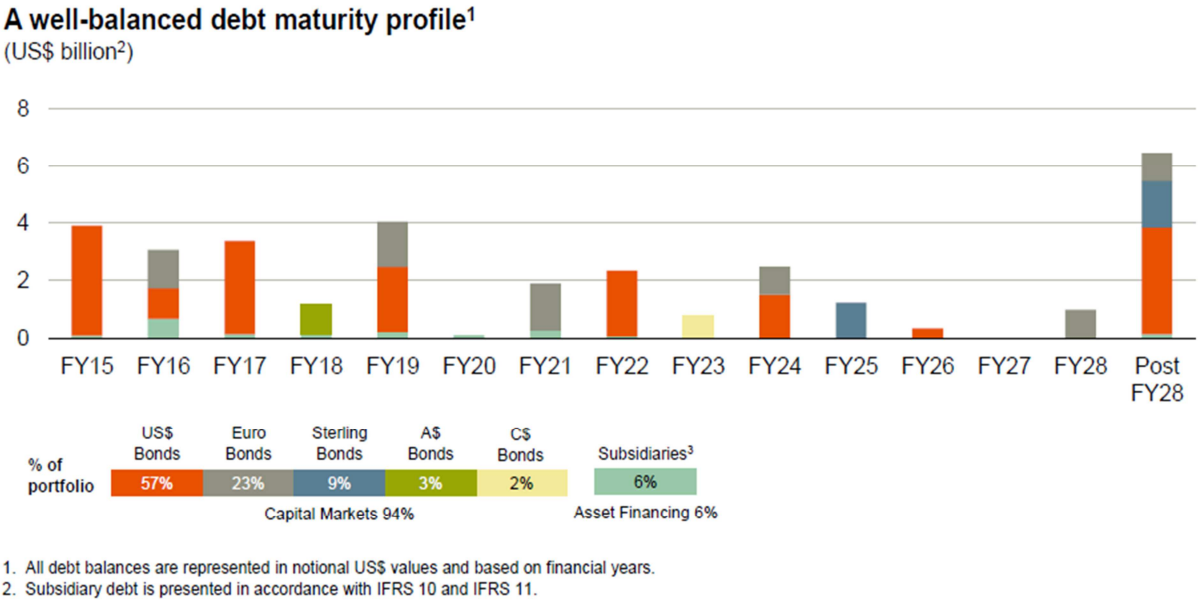
Table 2. *EIU: Exchange rate forecast as of March 2015.*

	2014	**2015**	**2016**	**2017**	**2018**	**2019**
USD/EUR	1.33	1.04	1.99	1.07	1.15	1.20
JPY/EUR	140.67	127.05	124.05	132.37	140.61	143.55
Real GDP Growth (%)	1.50	1.80	0.90	0.80	1.00	-0.30
US	2.40	3.20	2.50	2.40	2.60	1.40
EURO area	0.90	1.40	1.60	1.60	1.60	1.70
Real interest rate (%)	1.30	2.10	3.00	3.00	2.20	0.90
US(10Y gov.Bond)	2.50	2.50	3.90	4.60	4.70	4.80
Europe(Germany's 10Y gov.Bond)	1.20	0.40	0.90	1.60	2.50	2.90
Consumer price inflation (%)	1.20	0.60	1.40	1.00	1.00	0.50
US	1.60	0.40	2.20	2.30	2.50	2.00
EURO area	0.40	-0.20	0.80	1.30	1.50	1.50

Goldman Sachs: Robin Brooks, Chief currency strategist of the Goldman Sachs, expect that downside of the euro exchange rate will be remain in medium term and forecasted euro to US dollar 0.85, 0.80 at end of 2016 and 2019 respectively.

Scotia Bank: According to the Scotia Bank (May 2015) forecast euro against US dollar will depreciate through 2015-2016 and reach at USD1.00:EUR1 as end of 2016.

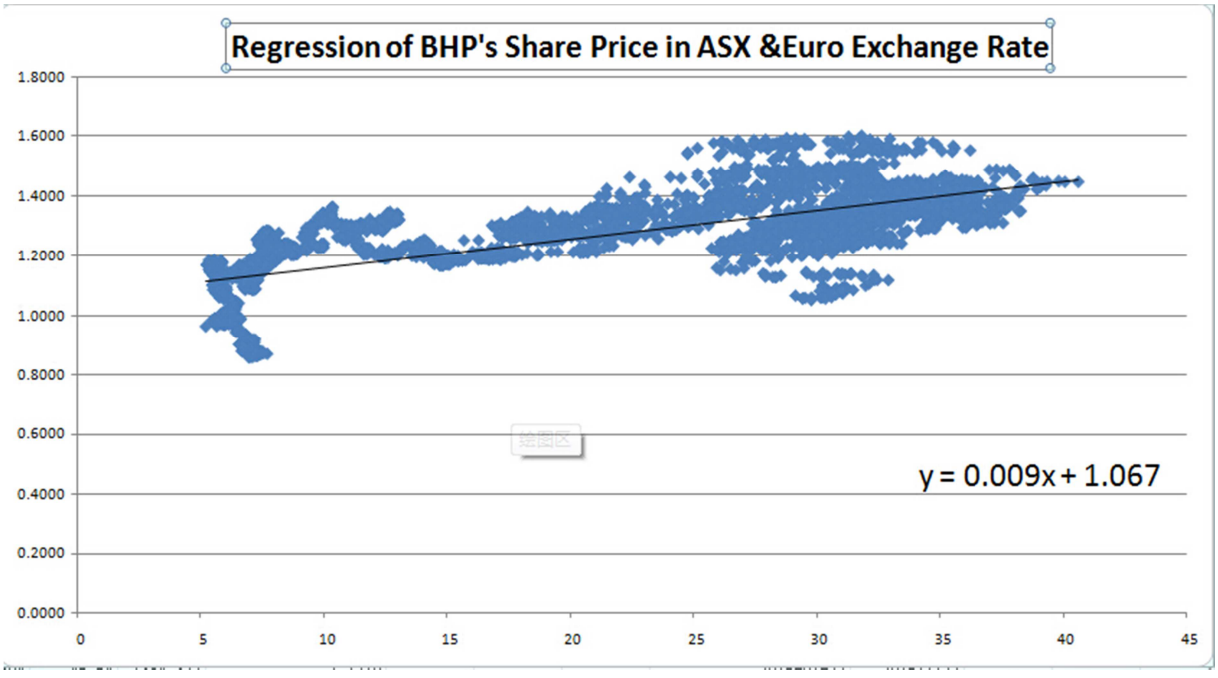
Appendix 2



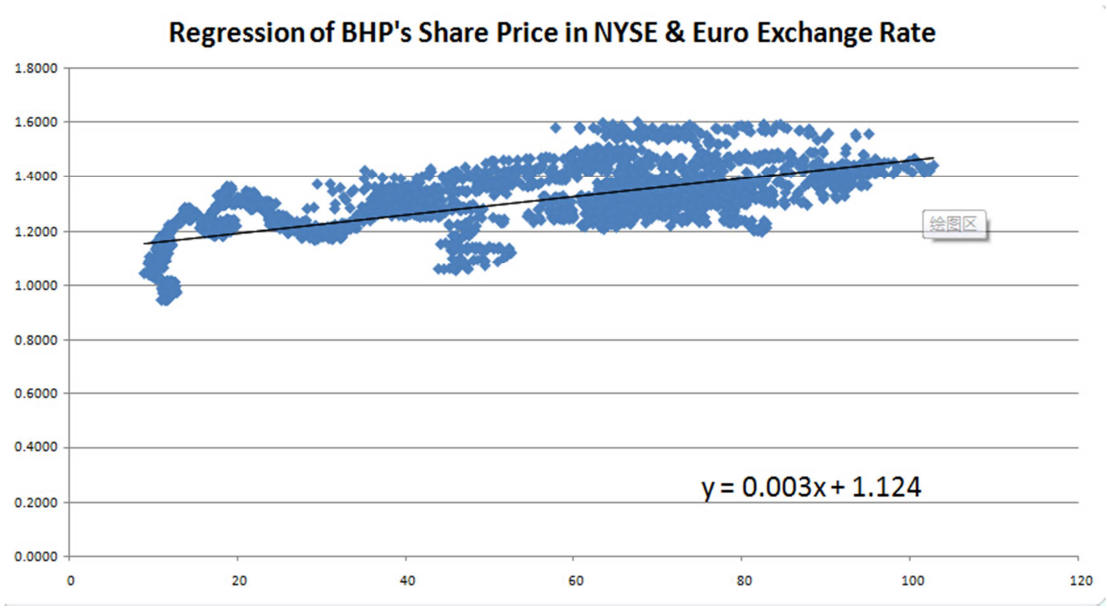
Picture 1. *The Forecast of Debt Sturcture of BHP from 2015 to 2028.*

Appendix 3

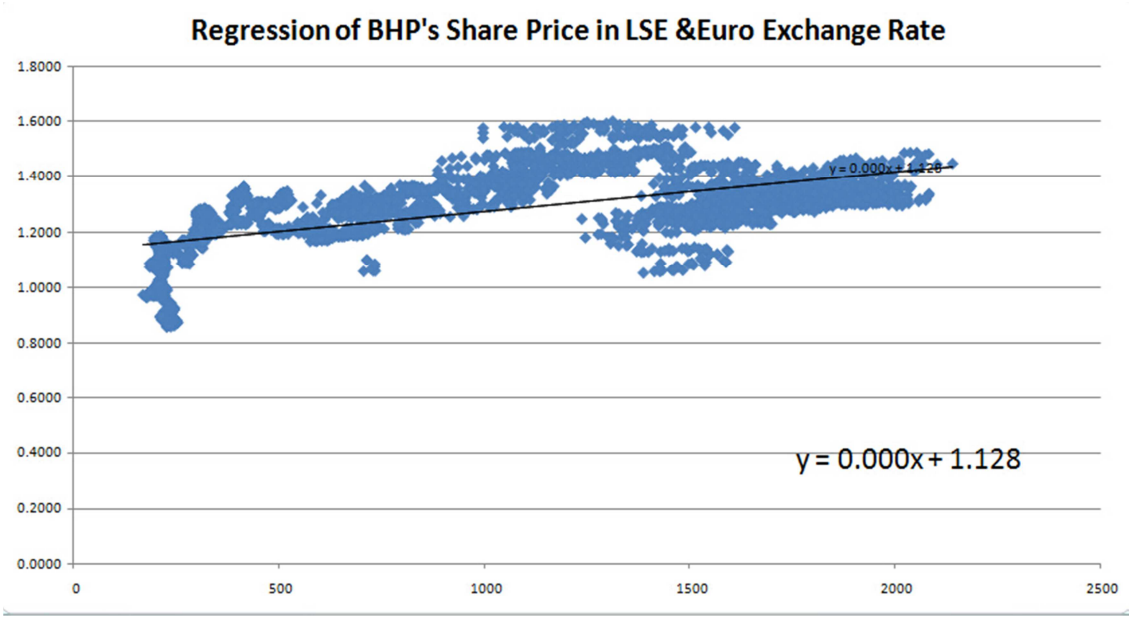
Regression analysis between the stock price of BHP in ASX, NYSE, LSE and Euro exchange rate were done respectively. The results clearly show that there is very low correlation between BHP's stock price and Euro exchange rate.Thus, the impact of Euro exchange rate to BHP's share price value is not discussed in the report.



Picture 2. *Regression of BHP's Share Price in ASX & Euro Exchange Rate.*



Picture 3. *Regression of BHP's Share Price in NYSE & Euro Exchange Rate.*



Picture 4. *Regression of BHP's Share Price in LSE & Euro Exchange Rate.*

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iore specifically, we interested in euro exchange rate forecast for 2016 and 2019.