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A study on performance of selected currency pairs listed in S&P 500

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Abstract
This empirical study examined the health care expenditure and national income in Togo, more unambiguously, the study investigated the determinants of health expenditure and national income in Togo economy. The results from the ordinary least squares (OLS) method revealed that the proportion of population aged between 0-14, GDP per capita and total fertility rate are significant in explaining the changes in real health care expenditure per capita in Togo. More conceivably, the empirical outputs showed that healthcare expenditure is a luxury good, because the coefficient of the natural log of GDP per capita variable was greater than one in the studied area. The findings of the study exhibited considerably perverse relationship between health care expenditure and national income in Togo health industry.

Keywords: Ordinary least squares (OLS), health care expenditure, national income, togo

Introduction

Introduction and Research Problem

India started facing balance of payments problems since 1985 and by the end of 1990, it was in a serious economic crisis. The government was close to default, RBI had refused new credit and foreign exchange reserves had reduced to the point that India could barely finance three weeks' worth of imports. The Balance of Payments crisis in 1991 pushed the country to near bankruptcy. In return for an IMF bailout, Gold was transferred to London as collateral, the rupee was devalued and economic reforms were forced upon India. At that time there was a need to transform the economy through badly-needed reforms to unshackle the economy. Controls started to be dismantled, tariffs, duties and taxes progressively lowered, state monopolies broken, the economy was opened to trade and investment; private sector enterprise and competition were encouraged and globalization was slowly embraced. Similarly, the establishment of a new unified market-determined exchange rate and a phased introduction of current account convertibility opened up the Indian economy to a great extent. Further trade liberalization, greater access to foreign capital and finally full capital account convertibility has been certainly on the agenda of the Indian government. India being the second largest economy amongst Asian countries has seen the greater foreign exchange trades over the years. The trade flows amongst Indian firms have increased exponentially mainly due to integration of international financial markets, increasing cross border trades and huge capital flows.

Currency risk is one of the major risks that investors in emerging markets are facing, as these markets often have a few financial instruments for creating common hedges for such financial exposure. Due to the fall of fixed exchange regime in 1973 has made the market forces of demand and supply leading to the advent of fluctuating exchange rate regime, this lead to the foreign currency. Thus leading to foreign exchange exposure risk, as it is associated with unanticipated changes in exchange rate.

Currency risk is the bane of foreign investment and trade, as trading products or assets in foreign countries automatically creates exposure to foreign currencies, which left unmanaged can hurt returns. Investors aiming to enhance their risk-adjusted returns should therefore consider the turnover ratio level in their fund investment decisions. The investment portfolio management process consists of an integrated set of steps to create an appropriate mixture of assets. Since it is highly depending on characteristics of the investor, it is possible to stress three main steps: planning, execution and feedback.

The most crucial part of portfolio management is the execution step during which a suitable portfolio is built. The procedure takes into account asset allocation, security analysis and investor requirements. The goal of the Most-Diversified Portfolio is not to be an equilibrium model. It can, however, potentially be transformed into an equilibrium model either by adding additional assumptions or by adding fundamental valuation criteria, such as earnings, sales, and so forth. Such additions would allow the model to accommodate different mispricing. To obtain the desired portfolio an investor must perform an analysis that gives the maximum return at a certain level of risk.

Objectives of the Study

- To analyse the performance of selected currencies listed in currency market.

Research Methodology

The present research is empirical in nature. In the current investigation, an extensive usage of secondary data was made in order to achieve the objectives of the present research. The study has taken currency exchange market for the data. The currencies such as US Dollar (USD), Euro (EUR), Japanese Yen (JPY), British Pound (GBP), Australian Dollar (AUD), Canadian Dollar (CAD), Swiss Franc (CHF), New Zealand (NZD) and Indian Rupee (INR) are formed as a 15 currency pairs and US Dollar (USD), Euro (EUR) are formed as base currency to find out the performance of the currencies for the investors. The study period consists a period of 10 years from 2008 to 2018 on day trading of international currency market.

Tools used for the Study

The data collected from secondary sources, descriptive and analytical research was considered the most appropriate for the study. The data thus collected was presented in a simple tabular form and simple statistical tools like:

- Johansen Co-Integration Test
- Granger Causality Test

Analysis and Discussion

Table 1: Johansen Co-integration Analysis on Select Currencies Traded in S&P 500

	Hypothesized No.of Ces	Trace Statistics	0.05 Critical Value	Max Eigen Value	0.05 Critical Value
USD	None*	16.889	15.4947	10.565	14.2640
	At Most 1*	6.323	3.8416	6.323	3.8416
EUR	None*	15.679	15.494	10.374	14.2640
	At Most 1*	5.305	3.8416	5.305	3.8416
JPY	None*	17.723	15.494	13.255	14.2640
	At Most 1*	4.468	3.8416	4.468	3.8416
GBP	None*	12.011	15.4947	8.205	14.2640
	At Most 1*	3.805	3.8416	3.805	3.8416
AUD	None*	13.996	15.494	9.409	14.2640
	At Most 1*	4.587	3.8416	4.587	3.8416
CAD	None*	20.498	15.494	15.365	14.2640
	At Most 1*	5.132	3.8416	5.132	3.8416
CHF	None*	10.732	15.4947	10.541	14.2640
	At Most 1*	0.191	3.8416	0.191	3.8416
NZD	None*	11.410	15.494	8.978	14.2640
	At Most 1*	2.432	3.8416	2.432	3.8416
INR	None*	22.776	15.494	18.998	14.2640
	At Most 1*	3.778	3.8416	3.778	3.8416

Source: Computed Data

Table 1 depicts the result of Johansen Cointegration Test which is used to check the long run equilibrium relationship between exchange rates and currencies listed in S&P 500. When Johansen Cointegration Test is applied lag four is used as per the recommendation made by the VAR Lag Order Selection Criteria. The second column of the table, is the Trace Statistics which has considerably exceeded the critical value at 5% level, indicating that there is co-integration between the exchange rates and currencies listed in S&P 500. The Trace Statistics for At most 1, which is less than the critical value, it clearly indicates that the null hypothesis co-integrating vectors cannot be accepted in the 5% level. The second most important test in co-integration test is the, Max-Eigen Value. This shows a complete confirmation that there is co-integrating equation at the 5% critical level and accept the alternative hypothesis. Whilst both co-integration tests reject the null hypothesis, indicating that the exchange rate move as an independent variable are significant to explain currencies traded in the companies listed in S&P 500 Index as a dependent variable and both affect each other in the long run. Therefore, the study rejects mull hypothesis.

Table 2: Performance of the USD Portfolio of Select Currencies Listed in S&P 500 Index

	USD-EUR	USD-JPY	USD-GBP	USD- AUD	USD-CAD	USD-CHF	USD-NZD	USD-INR	EW
Mean	-1.08$_2$	2.31	-0.49	2.07	-0.41	0.38	1.31	1.43	0.30
Omega	0.88	1.44	0.94$_2$	1.39	0.97	1.09	1.33	1.29	1.04
Sharpe ratio	-0.05	0.14	-0.02	0.12	-0.01$_2$	0.03	0.09	0.08	0.01
Sortino ratio	-0.06	0.24	-0.03	0.21	-0.02	0.04$_2$	0.14	0.12	0.02
Median	-0.60	1.39	-0.61	0.58	1.32	0.25	0.69	0.02	1.55
Volatility	11.49	8.43	11.61	8.49	16.18	6.88	7.19	8.89	6.13
Down. vol.	8.66	4.75	8.65	4.78	12.72	5.22	4.80	5.97	3.92
Down. vol. Ratio	0.54	0.40	0.53	0.40	0.56	0.54	0.47	0.48	0.46
CVaR, $\beta = 0.05$	-45.55	-24.13	-46.22	-24.90	-66.84	-32.43	-31.24	-35.76	-34.93
Skewness	-0.40	0.91	-0.47	0.95	-1.29	-1.53	-0.33	-0.53	1.52
Kurtosis	4.70	5.43	4.92	5.48	7.66	13.73	13.04	12.45	12.13
Realized return									
Last 5 years	0.94	3.34	1.52	2.92	-3.14	0.76	2.05	2.35	1.04
Last 3 years	2.97	4.07	2.75	4.24	-7.15	0.12	2.10	3.28	0.67
Last year	11.65	9.84	11.10	12.93	-5.50	6.27	9.48	11.16	1.74
Mean allocation									
USD-EUR	100	0	0	0	0	0	0	0	12.5
USD-JPY	0	100	0	0	0	0	0	0	12.5
USD-GBP	0	0	100	0	0	0	0	0	12.5
USD-AUD	0	0	0	100	0	0	0	0	12.5
USD-CAD	0	0	0	0	100	0	0	0	12.5
USD-CHF	0	0	0	0	0	100	0	0	12.5
USD-NZD	0	0	0	0	0	0	100	0	12.5
USD-INR	0	0	0	0	0	0	0	100	12.5

Source: Computed Data

Table 2 reports statistics of performance of the USD portfolio of select currencies listed in S&P 500 Index. The evaluation period covers January 2008 to Decemeber 2018. Statistics are calculated on the basis of monthly returns and then annualized assumed discrete compounding. The same statistics are reported for the benchmark portfloios based on composite forecasts and for the benchmark portfolios portfolios based on the random walk. The sub-indices show the results of the bootstrap test. Their values indicate how many optimal portfolios outperform (in terms of the respective performance measure) that specific benchmark portfolio. If no sub-index is present, the benchmark portfolio is not outperformed by any of the optimal portfolios. If there is only one sub-index, its value indicates the number of optimal portfolios outperforming the benchmark portfolio at the 10% significance level. In the case of two sub-indices, the first one indicates the number of optimal portfolios outperforming the benchmark portfolio at the 5% significance level and the second one at the 10% significance level.

Table 3: Performance of the EUR Portfolio of Select Currencies Listed in S&P 500 Index

	EUR-USD	EUR-JPY	EUR-GBP	EUR- AUD	EUR-CAD	EUR-CHF	EUR-NZD	EUR-INR	EW
Mean	1.60	3.12	4.19	2.97	2.63$_2$	1.92	1.28$_2$	1.94	0.38
Omega	1.11$_1$	1.30	1.24	1.54	1.19	1.16	1.07	1.26	1.09
Sharpe ratio	0.04	0.09	0.08	0.14	0.06	0.05	0.02	0.08$_2$	0.03
Sortino ratio	0.06	0.18	0.13	0.26$_2$	0.09	0.07	0.04	0.12	0.04
Median	4.67	0.38	3.11	2.07	5.22	1.52	2.32	3.08	0.25
Volatility	11.88	9.68	15.21	6.00	11.89	11.86	15.17	7.17	6.88
Down. vol.	8.19	5.04	9.20	3.27	8.05	8.38	10.15	4.74	5.22
Down. vol. Ratio	0.49	0.38	0.43	0.39	0.48	0.50	0.48	0.47	0.54
CVaR, $\beta = 0.05$	-62.05	-37.10	-65.71	-31.68	-62.12	-62.09	-70.25	-45.64	-32.43
Skewness	0.02	1.69	0.85	1.68	0.01	-0.93	0.53	0.38	-1.53
Kurtosis	3.89	8.92	5.99	12.06	3.99	15.09	6.07	9.07	13.73
Realized return									
Last 5 years	1.69	1.62	0.49	1.65	3.24	4.42	1.14	3.32	0.76
Last 3 years	7.48	0.20	-1.52	2.28	11.89	4.85	-1.50	5.24	0.12
Last year	4.29	9.46	5.69	6.72	4.89	9.80	5.71	7.04	6.27
Mean allocation									
EUR-USD	100	0	0	0	0	0	0	0	12.5
EUR-JPY	0	100	0	0	0	0	0	0	12.5
EUR-GBP	0	0	100	0	0	0	0	0	12.5
EUR-AUD	0	0	0	100	0	0	0	0	12.5
EUR-CAD	0	0	0	0	100	0	0	0	12.5
EUR-CHF	0	0	0	0	0	100	0	0	12.5
EUR-NZD	0	0	0	0	0	0	100	0	12.5
EUR-INR	0	0	0	0	0	0	0	100	12.5

Source: Computed Data

Table 3 reports statistics of performance of the EUR portfolio of select currencies listed in S&P 500 Index. The evaluation period covers January 2008 to December 2018. Statistics are calculated on the basis of monthly returns and then annualized assumed discrete compounding. The same statistics are reported for the benchmark portfloios based on composite forecasts and for the benchmark portfolios portfolios based on the random walk. The sub-indices show the results of the bootstrap test. Their values indicate how many optimal portfolios outperform (in terms of the respective performance measure) that specific benchmark portfolio. If no sub-index is present, the benchmark portfolio is not outperformed by any of the optimal portfolios. If there is only one sub-index, its value indicates the number of optimal portfolios outperforming the benchmark portfolio at the 10% significance level. In the case of two sub-indices, the first one indicates the number of optimal portfolios outperforming the benchmark portfolio at the 5% significance level and the second one at the 10% significance level.

Conclusion

Portfolios are investment investments in more than one type of stock or exchange rate, in the formation of this portfolio, which exchange rate must provide the maximum return with certain risks. The high level of liquidity and the acceleration of price movements in foreign currencies make foreign exchange the most popular investment choice because the return on investment obtained exceeds the average trade in general. As a result of these rapid movements, the foreign exchange market also has a high risk [1]. Investors choose their optimal portfolio every month, according to their preferences. We consider a large variety of different types of investors, ranging from the traditional mean- variance (MV) investor to the more modern conditional value-at-risk investor and to the very recent (linear and quadratic) loss aversion investor. To identify better performing portfolios, in terms of a given (risk-adjusted) performance measure, relative to a benchmark portfolio. This test is one without a potential data snooping bias. The benchmark portfolios to which we compare the optimal portfolio are the single assets (which compose the optimal portfolio) as well as the equally weighted portfolio, and the performance measures include the mean return, the Sharpe ratio and the Sortino ratio. These results suggest that the degree of predictability of the different exchange rates varies significantly, in spite of the fact that all three exchange markets are known to be flexible and liquid. Note, however, that the situation is different for longer forecast horizons, where the USD based on the random walk actually performs worse than the USD based on the composite forecast. The 'buy low, sell high' trading strategy on the one hand and the carry trade based trading strategy on the other hand are rather different by construction and also yield different results in terms of profitability of the single assets and the resulting optimal portfolio. The picture is not crystal clear but in general (with only few exceptions) the 'buy low, sell high' strategy seems to beat the carry trade based trading strategy, for any given type of investor, any given composite forecast, and any given forecast horizon

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