Regression analysis of high impact Monthly economic news releases

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**Introduction**

This project centres around generating predictive models for some of the news releases that are paramount in market analysis and trade execution for a fundamental trader. There are a host of news releases that are made public in a month, but the major ones that move the market instantaneously are the Employment Change and Bank Rates of the various economies, and these are the ones that were focused on in this project.

News releases are basically a reflection of the state of different sectors of the economy, and these in turn form an overall picture of how an economy is progressing or regressing. The clearer the picture a news release paints of the state of the general economy, the more impactful that news is. It is an obvious fact that various sectors of the economy are inter-dependent, and this is the same case with news releases. A lot of these news releases are inter-dependent, meaning a particular news can be used to predict another news to help a fundamental trader know how to react to an incoming news before it’s actual release, which is the objective of this project.

**Definitional Relation between the Dependent Variable (DV) and Independent Variables (IV)**

Models were generated for the following news releases; Employment Change and Bank Rates, and these models were dependent on the following news releases; Manufacturing PMI, Non-Manufacturing PMI, Trade Balance, Consumer Price Index, Retails Sales, and Building Approvals.

To further understand the influence of these news releases serving as the independent variable in the model, we need to briefly describe each and how they in turn reflect the dependent variables, which are the employment change and bank rates.

Employment Change and Unemployment Rate: Employment change is change in the number of employed people during the previous month, excluding the farming industry, while unemployment rate is percentage of the total work force that is unemployed and actively seeking employment during the previous month. These two news updates are obviously a contrast of each other, but they basically paint the same picture about the current state of the economy for the general public. The more people have jobs, the more money they have to spend on goods and services, hence the better the economy is in terms of transactions and liquidity, the stronger the currency and vice versa

Manufacturing PMI: Level of a diffusion index based on surveyed purchasing managers in the manufacturing industry. It's a leading indicator of economic health - businesses react quickly to market conditions, and their purchasing managers hold perhaps the most current and relevant insight into the company's view of the economy. It is derived via a survey of about 300 purchasing managers which asks respondents to rate the relative level of business conditions including employment, production, new orders, prices, supplier deliveries, and inventories. From the very definition of this news release one can see that upon release, it will give a fundamental trader insight on what the employment rate and manufacturing industrial state is.

N/B: Most of the subsequent news releases that will serve as independent variables in this project by definition have similar relation to the news releases serving as dependent variable, therefore this obvious relation between each I.V and D.V will not be repeatedly stated in each definition.

Non-Manufacturing PMI: Level of a diffusion index based on surveyed purchasing managers, excluding the manufacturing industry. This news and the previously described news (manufacturing PMI) are very similar in nature, the major difference is simply that the former (stated in this sentence) is a survey done with managers of other business sectors excluding manufacturing sector, while the latter is done with managers of the manufacturing sector.

Trade Balance: Difference in value between imported and exported goods and services during the reported month. Export demand and currency demand are directly linked because foreigners must buy the domestic currency to pay for the nation's exports. Export demand also impacts production and prices at domestic manufacturers.

Consumer Price Index: Change in the price of goods and services purchased by consumers. Consumer prices account for a majority of overall inflation. Inflation is important to currency valuation because rising prices lead the central bank to raise interest rates out of respect for their inflation containment mandate.

Retail Sales: Change in the total value of sales at the retail level. It's the primary gauge of consumer spending, which accounts for the majority of overall economic activity.

Building Approval/Housing Starts: Annualized number of new residential buildings that began construction during the previous month. It's a leading indicator of economic health because building construction produces a wide-reaching ripple effect. For example, jobs are created for the construction workers, subcontractors and inspectors are hired, and various construction services are purchased by the builder.

Bank Rates: Interest rate at which major financial institutions borrow and lend overnight funds between themselves. Short term interest rates are the paramount factor in currency valuation - traders look at most other indicators merely to predict how rates will change in the future.

**Analysis Results**

USD Currency

USD NFP (Employment Change, Unemployment Rate, Hourly Earnings)

The prediction of the optimal model had a correlation of 0.81, a standard error of 0.009, and a p-value of 7.14E-20.

 

Data Sheet/Statistics Parameter of Optimal Model Selection of Optimal Model

USD FOMC Rate

The prediction of the optimal model had a correlation of 0.88, a standard error of 0.003, and a p-value of 2.01E-26.

 

Data Sheet/Statistics Parameter of Optimal Model Selection of Optimal Model

CAD Currency

CAD Employment Change/Unemployment Rate

The prediction of the optimal model had a correlation of 0.79, a standard error of 0.003, and a p-value of 1.15E-17.

 

Data Sheet/Statistics Parameter of Optimal Model Selection of Optimal Model

BOC Rate

The prediction of the optimal model had a correlation of 0.73, a standard error of 0.002, and a p-value of 2.08E-12.

 

Data Sheet/Statistics Parameter of Optimal Model Selection of Optimal Model

AUD Currency

AUD Employment Change/Unemployment Rate

The prediction of the optimal model had a correlation of 0.61, a standard error of 0.003, and a p-value of 1.12E-08.

 

Data Sheet/Statistics Parameter of Optimal Model Selection of Optimal Model

RBA Rate

The prediction of the optimal model had a correlation of 0.67, a standard error of 0.006, and a p-value of 3.16E-10.

 

Data Sheet/Statistics Parameter of Optimal Model Selection of Optimal Model

**Conclusion and Recommendation/Further Research**

From the results of the project, some pretty high correlations were gotten, which will be generally considered as a good result as far as regression models go, but for a project to be considered a success, it is not just about getting good readings, but your results serving the originally intended purpose of the project. In the case of this project, the regression models were aimed at helping the fundamental trader predict the incoming news and react accordingly in the market, and the disparity between the prediction of a model with correlation of 0.88 and the real values of the dependent variable, no matter how little will put a fundamental trader off when making this decision which can lead to catastrophic losses. However, there are a host of news releases that weren’t considered for this project, most of which are interrelated to our dependent variable, so anyone seeking further research on this topic could consider bringing in and checking more news releases for ones with high correlation to the dependent variable and also sieve out the redundant variables and further eliminate multi-collinearity.

In as much as the project results fell short of the project aim and objective, our results weren’t completed useless as these result can help a long term fundamental trader have an overview of the economic direction and behavioural patterns over a long period of time, when visualized properly.