Variables For Stock Market Predictability

Abstract

This article aims to analyse the main variable in different areas and give an answer to an age-old question in the stock market: “Could people predict the movement of stock market and what kinds of factors should be taken into account?”. In the different sections of this paper, we point out several factors in economic, financial and political areas and analyse the main impact on the stock market predictability based on our research. The final section would give a brief conclusion on the predictability of stock markets.

Introduction

In this extended essay, we have done research on variables categorised into economic, financial and political that may be useful in predicting stock markets. Most of our sources are from academic articles, textbooks, Financial Times and articles from other major financial newspapers. After researching different variables that may have potential in predicting stock markets, we have selected a few that we believe to are the most useful.

Core analysis

Economics Variables:

Economic growth, inflation and unemployment rates:

Macroeconomic variables can change consumption and investment in the future and result in effecting variables of asset pricing models. Movement of industrial production may also have a positive impact on the stock prices through expected future dividends and speculation of future industrial production.

Unemployment rate could provide information about future risk-free interest rates, equity risk premium, corporate earnings and dividends. During the contraction, stock prices react negatively to unemployment which contains the information about the equity risk premium and growth expectations. In the expansion period, stock prices react positively to rise of unemployment which causes future interest rates to decline as well as change in the equity risk premium and growth expectations.

The effect of the positive or negative inflation shocks can have different impacts on stock returns, depending on whether investors interpret it as good or bad, and the state of economy. When positive CPI shocks occur in good economic states, there is a strong negative market reaction over a period of two weeks. On the other hand, in a declining and low economic state there seems to be a considerable but less significant positive market reaction to negative CPI and PPI shocks.

Monetary policy:

Monetary policy may have a delay effect on the stock returns. Expansionary monetary policy and stock market returns show a strong positive relationship while contractionary monetary policy shows a negative relationship with stock market performance. Interest rates seem to be the most reliable and consistent variable in predicting the stock market across different countries. Interest is a significant factor in the corporate cost of capital and therefore present value of the firms' future net cash flows, which affects stock prices. Interest rate from the U.S. Treasury has been used as a benchmark for discount.

Via credit channel, the monetary policy can affect the level of firms' investment which affect the future cash flow and therefore firms' market value. Via, the Wealth Effect reveal increased interest rates which will decrease the value of long-term assets such as stocks. During the period with high interest rates, the domestic currency will appreciate, therefore increase imports and decrease exports. Lower exports have a negative impact on the competition within the country, resulting in lower production and decreased asset prices.

Fiscal policy:

Fiscal policy may also be useful as it's affects the level of economic activity and interest rates. However, the fiscal policy is the most useful when observed with the monetary policy as they interact with each other.

Fiscal policy may connect with monetary policy through the government budget constraint on monetary policy and its effect on inflation, interest and exchange rates. An unsustainable fiscal policy will lead to an increase in default risk and risk premium, leading to capital outflows and currency depreciation. This result in further increase in national debt burden. Fiscal deficit can have a serious negative impact on current stock prices. Government expenditure and revenue shocks can have a negative and a limited positive effect on stock prices, respectively.

Financial Variables:

Yield curve:

Yield curve is the plot of different yield on bonds with credit quality against the year to maturity of the coupon bond. In a healthy economy, the normal yield curve should be upward sloping. Yield Curve would be one of the significant financial factors to predict the stock market because after US flatted the yield curve, the stock market (S&P 500) had poor performance after that week, which went down 1.7 percent. The short-term bond yields have rose above the long-term bond yields which gave the indication of tight monetary policy to investors. (Ft.com, 2019). Therefore, the flat yield curve would be a warning sign to the market. The flattening yield curve means there is a similar yield when holding a short and long-term bond. Hence the investors would not prefer holding long-term bonds as they cannot get any benefit for the risk associated with holding long-term security.

Another reason of why flattening yield curve is the indication of recession is Federal Reserve increasing interest rate for short-term bonds to narrow the gap between short and long-term interest rate to react, which would make a contractionary monetary policy and slow down the economic growth. Generally, a flat yield curve would represent a recession in the future because people who lend money believe that there will be less demand in borrowing money caused by the decrease of inflation and economic growth. So, they want to decrease the

interest rate to attract people.

DP ratio

Dividends could also be a useful factor to predict the stock market. Dividend is one of the most popular source of investment income for investors. Before the dividend is distributed, the company will announce the amount of dividend and the date to distribute and ex-dividend date. If investors could buy the stock before ex-dividend date, they are entitled to the dividend, which would attract more investors to purchase the stock. Therefore, the stock price would increase when the demand of the stock increase before the ex-dividend date.

Dividend payout ratio is also useful to investors to analyse the performance of company in the future. Investors could evaluate the financial condition of company depending on the dividend payout ratio. If the payout ratio reported by a company is very high, it may suggests that this company will not have sustainable growth in the long term, since only a small amount of earnings are reinvested. The purpose of re-investment of company is maintaining the continuous growth and adding value of company. Therefore, a reasonable dividend payout ratio compared to the industry's benchmark of this ratio would be a valuable indication for investors to predict stock market.

Duration

Understanding the duration of the bond could also help investors to analyse and predict the stock market. Modified duration is used to measure the percentage change in bond price when the yield to maturity changes by one unit. There is an inverse relationship between yield to maturity and the bond price. In other words, modified duration is the measurement of interest rate risk. (Blackrock, 2019) Based on the modified duration, investors could know the effect of the change of interest rate on the bond price to predict the stock market volatility.

Treasury bill rate

Treasury bills(T-bill), are short-term debt instruments issued by the U.S Treasury and are considered the world's safest debt, as they are backed by the full faith and credit of the United States government.

Due to its liquidity and low risk, T-bills could be regarded as risk-free. For stocks, investors face the danger of bankruptcy and bad decisions made by company and may lose their money without guarantee for their investments. Because of the higher risk related to stocks, the return must be higher than the return of T-bills, the difference between them is called risk premium. For instance, "stocks returned an average of 11.2 percent annually from 1928 to 2011, while Treasury bills returned just 3.66 percent, according to New York University's Stern Business School." (Finance.zacks.com, 2019) When the T-bill rate increased, the required return on stocks will also increase. Rational investors tend to invest more on T-bills, as it is less risky than stocks, therefore, the stock performance would be expected to decline.

Gold Price

Gold has several advantages compared with currencies, which is a cure of inflation, deflation, geopolitical uncertainty, mainly due to its supply constraints, therefore investors would consider

it to be a comparatively safer investment than other investments.

It is commonly known that the gold market and stock market are negatively correlated, though no clear evidence shows the relationship exists. In practice, when the global economy is expected to decline or suffer from any market uncertainty, rational investors would go into defensive mode (prefer to invest gold rather than stocks). This is due to risk-averse. Thus, the demand of gold would increase and the gold price is expected to rise sharply. It is fair to have an assumption that with trend of gold price, we can roughly predict the overall stock market performance. There is an example could partly illustrate the relationship between stock performance and gold price. “The Brexit vote and the election of Donald Trump drove global demand for gold to a four-year high in 2016. Global gold demand rose 2% last year to reach 4,309 tonnes, the highest level since 2013, according to a report from the World Gold Council, which represents gold miners.”(Kollewe, 2019)

The graph below illustrates the gold price and S&P 500 Index, which might support the opinion that gold and stock market are negatively correlated. (It is clearly that from 1987 to 2000, the trends of the two market show opposite direction.)

Political Variables:

It is for certain that politics play a part in the movement of the stock markets. For example, in the wake of the Brexit referendum result in 2016, the FTSE 100 and FTSE 250 both plummeted as an initial response. Not to mention, the Sterling fell to its weakest level since the mid-1980s (Mackenzie and Platt, 2016). The cause can be pointed at the uncertainty of the future of the UK and EU felt by investors from the Leave result. This section discusses whether such political factors could assist in the predictability of the stock market.

Adding to the point of political uncertainty, recent events such as the US trade talks with China have shown that investors do monitor what the government is doing, or what they plan to do. Where the talks have stalled, the market reacts negatively, and the opposite happens when progress is made. The study (Pástor and Veronesi, 2013) attempts to analyse this uncertainty and points out that the risk associated with political uncertainty is not fully diversifiable. The model in the study uses political cost as the source of political uncertainty. A key component from this study that may be useful in stock market predictability is the political risk premium. This is the compensation that investors demand for the “uncertainty about the outcomes of purely political events”. In a period where the economic condition is weak, the political risk premium is larger as information on potential new policies come to light, which consequently impact stock prices.

As for another political variable, a study on the US presidential election cycle (Wong, McAleer 2009), found that there was a cyclical trend with the stock market over a period of close to 40 years. Stock prices decreased by a statistically significant amount in the 2nd year, but then increased by a statistically significant amount in the 3rd year of a presidential cycle. An investor would be able to achieve an abnormal return by incorporating the election cycle into their investment decisions, as they could ‘predict’ how the stock markets would move. However, under the efficient market theory, such a cycle should not have persisted or be persisting for such a long time, if investors knew and took advantage of it. This begs the question of how efficient or inefficient is the market.

Continuing from the same study, political affiliation could potentially be another useful variable. Results from the study pointed out that the cyclical pattern was “much more significant” in a Republic administration than in a Democratic administration. This suggests that a greater degree of policy manipulation was used by the Republic party to win re-elections. With this in mind, preferential treatment may be given to specific industries, especially those where the party has many supporters. As a result, businesses and investors in those industries would reap the benefits and the relevant stock prices would go up as other investors try to get on board. From a different perspective, there may also be legislative risk associated with a specific party. This is the “potential that regulations or legislation by the government could significantly alter the business prospects of one or more companies” (Investopedia, 2019). Harsh changes to regulatory legislation would alter the prospects of the affected industries/ businesses, thereby deterring investors and decreasing the stock price.

Conclusions

Economic variables may have an impact on future consumption and investment opportunities. They are significant factors of aggregate stock market behaviour in consumption capital asset pricing model. However, for these variables to be useful, certain conditions have to be met as their predictive ability have been shown to be inconsistent. Moreover, each of the macroeconomic variables’ usefulness appear to be vary according to difference countries and the length of the horizon. Business cycle appears to give these variables different effect to the stock market predictability. The most important economic variable appears to be interest rate.

The flat yield curve indicating the weak market performance could be regarded as one of the financial variables on stock market predictability. A reasonable dividend payout ratio also demonstrate a bright future of the stock. Modified duration is the measurement of interest rate risk, which would give people an idea of the risk of the future market. T-bill rate and gold price are closely related to the performance of stock market, they are the substitutions of stocks when the investors are risk-averse. Generally, T-bill rate, gold price and modified duration have inverse relationship with the stock market.

There is still much groundwork needed to find suitable political variables, relative to the other categories. Although there have been studies in identifying them, more is required to be done to determine if a variable applies to stock markets across the world and to what degree. For example, the cyclical trend in the US presidential election cycle could be considered an anomaly that only applies in the US. There is yet to be proof that such a trend exists in say, the UK, where the election cycle goes up to 5 years. Furthermore, the political variables mentioned in this essay, only identify a general trend in the stock market movements with changes in the corresponding variable. There is not a model or formula that can be used with these variables to give an explicit number on how much exactly the stock market will move.

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