THE EFFECTS OF MACROECONOMIC NEWS ANNOUNCEMENTS ON MEAN STOCK RETURNS

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ABSTRACT

This study is aimed at carrying out a preliminary investigation of the impact of macroeconomic news on mean stock returns. We regress daily returns of Standard & Poor 500 (S&P 500) index on news announcements of twenty-seven types of macroeconomic indicators from 2001 to 2004 and find a negative relationship between the index return and news announcements.

INTRODUCTION

How macroeconomic fundamentals are priced into stock prices has always been one of the most intriguing yet least understood fields of investment finance. With a few exceptions, evidence of systematic, direct impacts of macroeconomic fundamentals on asset prices is scanty. This lack of evidence is puzzling. The very fact that financial and business practitioners spend tremendous resources on collecting data on macroeconomic indicators show that macroeconomic indicators should have implications to asset prices and portfolio management.

More recent studies use macroeconomic news announcement and/or announcement surprises (divergence between the actual value and the expected value of the macroeconomic indicators) instead of time series of macroeconomic indicators. Whether the impact, if any, of macroeconomic news announcement is due to the importance of the economic indicator itself or simply the fact that the indicator gives away information or changes expectations about other aspects of the economy remains an open question. Many assume that the first claim is reasonable.

Several studies have found jumps in asset prices in response to macroeconomic news and inferred from that macroeconomic fundamentals play key roles in the determination of foreign exchange rates (Goodhart et al.(1993), Almeida, Goodhart and Payne (1996), Anderson et.al (2003)) and futures contract (Balduzzi et.al (1997)). Similar studies in stock market do not produce as much success except for Flannery and Protopapadakis (2002) who find four macroeconomic indicators that have significant impacts on the aggregate stock market return.

The objective of this study is to carry out a preliminary study of the impact of macroeconomic news announcement of twenty-seven economic indicators on the mean return of Standard and Poor 500 (S&P 500) index. The paper is structured as follows: Section 2 consists of a literature survey. Section 3 describes the data and methodology. Section 4 discusses the results and concludes the paper with future research plans.

LITERATURE SURVEY

Traditional methodologies typically involve regression asset returns on the actual value of macroeconomic variables. Money supply and inflation are the only two macro-variables that researchers have found consistent success in pursuit of links between macroeconomic fundamentals and asset returns. Bodie (1976), Fama (1981) and Geske and Roll (1983) have found negative relationship between stock index returns with unexpected inflation and changes in expected inflation. Pearce and Roley (1983, 1985) show negative relationships between stock index returns with unanticipated

increase in the money supply. Researchers have very little luck with other macroeconomic indicators. Next to none real macro series have been identified as having consistent and convincing impacts on stock returns. (See Chan, Chen, and Hsieh (1985), Chen, Roll and Ross (1986), Chen (1991) , Ferson and Harvey (1991), and Chan, Karceski and Lakonishok (1998).) One of the possible reasons of these results is that data of macroeconomic variables are typically available at a lower frequency such as monthly. Other factors that affect stock returns may have masked the effects of macroeconomic fundamentals over a period as long as a month.

Researchers have since turned to using daily macroeconomic news announcement as a proxy of macroeconomic variables. However, identifying meaningful relationships between macroeconomic news announcements and stock returns is still a daunting task due to possible time-varying nature of this relationship. McQueen and Roley (1993) propose that macro-announcement surprises (divergence between the actual value and expected value of macroeconomic indicators) may have different ramifications at different points of business cycles. They find that only two of their eight macro-announcement surprise series are significant in a standard regression model whereas six of the eight show significant effects on stock returns under selected economic conditions.

Many studies focus on volatility instead of mean returns. Jones, Lamont and Lumsdaine (1998) use a GARCH model to find the impact of Employment and the Producer Price Index (PPI) on the volatility of daily returns of Treasury bonds. Without incorporating the "surprise" data as above, they manage to find significant increase in the volatility upon the arrival of macro-announcements. Ederington and Lee(1993) report that six macro announcements (Employment, Consumer Price Index (CPI), Producer Price Index (PPI), Balance of Trade (BOT), Gross National Product (GNP) and Retail Sales) significantly raise volatilities of prices of futures contracts

of dollar-DM, Treasury bond and Eurodollar that last up to 15 minutes.

Although the impact on volatility is relevant, the impact on mean return is generally of more interests. Studies in this aspect have been scarce and unfruitful with a few exceptions. For example, Anderson et.al (2003) find that macroeconomic news announced surprises produce conditional mean jumps in foreign exchange rates. Balduzzi et.al (1997) report that more than a dozen macroeconomic news announcements impact treasury notes and bonds' returns significantly. Flannery and Protopapadakis (2002), using a MGARCH model find that four out of seventeen macroeconomic announcement surprises impact the mean return of the value-weighted market portfolio of stocks significantly and another two impact the volatility of the portfolio. Flannery and Protopapadakis (2002)'s work is so far the only one, to our knowledge, that finds some significant results between mean stock returns with macroeconomic news announcement.

DATA and METHODOLOGY

We use daily data from January 02, 2001 through December 31, 2004. Standard and Poor Index (S&P) data are obtained from finance.yahoo.com. We collect dates of macroeconomic news announcements from different sources as described below. News announcements are divided into eight categories in addition to three readings of gross domestic product (GDP): real activity, consumption, investment, government purchases, net exports, prices, money supply and forward-looking indicators. The following table lists the frequencies and data sources for each type of announcements.

Table 1[1]:

Announcement	Source
Quarterly Announcement	
1. GDP Advance	BEA
2. GDP Preliminary	BEA
3. GDP Final	BEA
Monthly Announcement	
Real Activity	
4. Nonfarm Payroll Employment	BLS
5. Retail Sales	BC
6. Industrial Production	FRB
7. Capacity Utilization	FRB
8. Personal Income	BEA
9. Consumer Credit	FRB
Consumption	
10. Personal Consumption Expenditures	BEA
11. New Home Sales	BC
Investment	
12. Durable Goods Orders	BC
13. Construction Spending	BC
14. Factory Orders	BC
15. Business Inventories	BC
Government Purchases	
16. Government Budget Deficit	FMS
Net Exports	
17. Trade Balance	BEA
Prices	
18. Producer Price Index	BLS
19. Consumer Price Index	BLS
Forward-looking	
20. Consumer Confidence Index	CB
21. NAPM index	NAPM
22. Housing Starts	BC
23. Index of leading indicators	CB
Weekly Announcements	
Real Activity	
24. Initial Unemployment Claims	ETA
Money Supply	
25. Money supply, M1	FRB
26. Money supply, M2	FRB
27. Money Supply, M3	FRB

[1]Abbreviations: Bureau of Labor Statistics (BLS), Bureau of the Census (BC), Bureau of Economic Analysis (BEA), Federal Reserve Board (FRB), National Association of Purchasing Managers (NAPM), Conference Board (CB), Financial Management Office (FMO), Employment and Training Administration (ETA).

Our sample records 1003 trading days of stock returns. The mean stock returns for these days were 1228.91 and a standard deviation of 149.08. Out of these 1003 days, there was at least one news announcement in 417 days (approximately 41%).

Our model is as follows:

$$R_t = \beta_0 + \sum_{j=1}^{J} \beta_j D_{t-j} + \varepsilon_t$$

t=1,.......T

where $R_t = (\log S_t - \log S_{t-1})$. $\log S_t$ is the stock returns on the tth day.

$D_{t-j} = 1$ if there is a scheduled news announcement on day t - j

$D_{t-j} = 0$ if otherwise

The lag is determined by Schwartz Bayesian Criteria (SBC) and Akaike Information Criteria (AIC).

RESULTS and FUTURE RESEARCH PLAN

Both the SBC and AIC determined having two lags to be the appropriate model[2].
Table 2 shows that one-day-lag news announcements affect stock returns negatively.

Table 2:

Variables	Coefficients(standard errors)
Intercept	0.0003(0.0006)
D_{t-1}	-0.002(0.0008)*
D_{t-2}	0.001(0.001)

* significant at 5% level.

Our results may be confounded by several factors. First, our sample includes a bust of the high-tech stock bubbles starting from the late 2000 and the tragic 9-11 event in September, 2001. Second, we have not

[2] The SBC and AIC for this model are -5910.37 and -5925.10 respectively.

controlled for other risk factors of the index return such as January effects and weekday effects.

While we will address the above issues in our future research efforts, these efforts are not without trade-off. Longer sample with fewer news announcements is very likely to undermine the link between macroeconomic indicators and stock returns. Our choice of sample period is dictated by the availability of more news announcement starting from 2001. We have run the regression on a dataset starting from 1997 that includes the historical boom period and found negative yet insignificant impact of news announcement on stock returns.

In addition to controlling for January effects, weekday effects, 9-11 effects and other potential risk factors of index returns. We plan to study asymmetric effects of macroeconomic news. Veronesi (1999) claims larger responses of stock markets to bad news relative to good news in good times. Anderson et.al (2003) point out that larger surprises of news relative to previous forecasts of economic indicators lead to larger responses of foreign exchange rates to news announcements. Furthermore, we will explore the relative importance of each category of indicators on stock returns. Last but not least, in addition to using dummy variables of news announcement, we will investigate the impact of news surprise on the mean of index return.

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