Private Information of the Fed , Predictability of Stock Returns and Expected Monetary Policy

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Abstract

This paper analyses the effects of the private information that the Fed has about current and future inflation on the predictability of stock returns. The results of long-horizon regressions conclude that Fed's inflation forecasts can be used to predict long and short term stock returns. The contamporenous regressions show that Fed's private information is a factor in the current stock prices. The regressions considering the size effect conclude that predictability of the portfolio returns differs with the size. The consequences of the expected and unexpected parts of monetary policy changes are analyzed and empirical analysis concludes that expected and unexpected parts have different (reverse) effects on stock prices. These findings suggest that Fed has private information which the investors would like to know and that asymmetric information might be one of the reasons of the relation between monetary policy and stock returns.

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1 Introduction

The effects of monetary policy on stock returns has been analyzed by many financial economists. There are both empirical and theoretical results stating that monetary policy has a negative effect on stock returns and expected stock

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returns. But very little has been done to identify the reasons for this effect empirically. This paper empirically analyzes the predictive power of the Federal Reserve Bank's (Fed) private information about future inflation [1]on current and expected stock returns. Also, an event study analysis is applied to examine the effects of expected and unexpected monetary policy shocks. The empirical results show that private information of the Fed can be used to predict short and long-term stock returns of smaller size portfolios. The results of the paper suggests that one of the reasons for nonneutrality of monetary policy might be Federal Reserve's private information.

The first analysis of this paper utilizes long-horizon regressions as Fama and French (1989) to examine the effect of the Federal Reserve's private information about inflation on predictability of expected stock returns. The identification of the private information of the Federal Reserve about inflation is done using the forecasts from the Greenbooks published by Federal Reserve as Romer and Romer (2000). Following Fair and Shiller (1989) the informational content of different forecasts are compared by using both Greenbook and commercial forecasts as regressors in the predictive regressions.

The predictive regressions conclude that Federal Reserve's private information about future inflation is a significant factor in predicting future stock returns. The size effect is also considered in the analysis since Cooley and Quadrini (1999) show that small firms respond more to monetary policy shocks than large firms. The results suggest that smaller size portfolio returns can be predicted better than the larger size portfolio returns. So, one can conclude that Federal Reserve has very valuable information that investors would like to know and one of the reasons of monetary policy's effects on stock returns might be the information asymmetry between Federal Reserve and public.

Second analysis of the paper is about the effects of Federal Reserve's private information on current stock returns. The idea behind the regressions is similar to Fama (1990) and Schwert (1990). Stock return can be written as a function of stochastic discount factor and expected payoff. Federal Reserve's private information can affect both the stochastic discount factor and the expected payoff. The regressions conclude that private information about inflation is a significant factor in current stock returns. Private information about output is a significant factor but its effect differs with size of the portfolio.

Third and last analysis of the paper divides changes in the monetary policy into expected and unexpected parts using the methodology of Kuttner (2001) and performs an event-study analysis to examine the effects of expected and unexpected monetary policy changes on stock returns using the expected and unexpected changes in Kuttner (2001). The study concludes that both expected and unexpected parts are significant factors. The expected part of the monetary policy has a positive effect when the unexpected part has a negative effect. The results of the paper suggests that the private information Federal Reserve has about future inflation might be one of the reasons for effects of monetary policy

[1]Greenbook forecasts also include the forecasts of future GDP. Predictive power of GDP forecasts are not analyzed in this paper because Romer and Romer (2000) did not find strong evidence that the Fed can forecast GDP better than commercial forecasters.

on stock returns.

The outline of this article as follows: Section II reviews the related literature and states papers contribution. Section III describes the methodology and data used to perform predictive regressions and states the results of those regressions. Section IV analyzes the finite-sample properties of the predictive regressions. Section V explains the relationship between current stock returns and Federal Reserve's private information.[2] Section VI uses the event-study approach . Section VII gives a theoretical motivation for the results , and Section VIII concludes.

2 Literature Review

Jensen et al (1996) show that behavior of the proxies used by Fama and French (1989) and their effect on predictability of stock returns differs under different monetary conditions. Patelis (1997) uses long-horizon regressions and short-horizon VARs to conclude that monetary policy indicators predict stock returns. Thorbecke (1997) concludes monetary policy shocks have a large effect on ex-ante and ex-post stock returns and monetary shocks have larger effects in smaller firms than large firms. Cooley and Quadrini (1999) show that small firms respond more to monetary policy shocks than large firms. They argue that the higher sensitivity of small firms to monetary policy shocks derives from the fact that small firms take on more debt. Small firms choose higher debt-equity ratios because they are more profitable.

By examining Federal Reserve and commercial forecasts Romer and Romer (2000) conclude that Federal Reserve has important amount of private information especially about inflation. After performing some regressions they also conclude that monetary policy actions provide signals for the about Fed's private information and commercial forecasters modify their forecasts in response to Federal Reserve's signals.

Fama and French (1989) uses a long-horizon multivariate approach to analyze the predictability of stock returns in different business conditions. Fama (1990) examines the relationship between both expected and contemporaneous stock returns and real activity measured by production. Schwert (1990) regress stock returns in contemporaneous cash-flow proxies and concludes that contemporaneous returns can be explained by cash flow proxies. Fair and Shiller (1989) show that the informational content of different forecasts can be compared by regressing the actual change in a variable to be forecasted on forecasts of the change. Demirtas (2002) investigates the usefulness of analyst earnings estimates and realized earnings as predictors of both short and long-term expected stock returns.

Cook and Hahn (1989) regress the market interest rates on the changes in the federal funds rate target to analyze effects of Federal Reserve's policy on interest rates. They conclude that changes in the target rate causes large changes

[2] I would like thank Charles Carlstrom for drawing my attention to current stock returns.

in the short-term interest rates and smaller but significant changes on intermediate and long-term rates. Kuttner(2001), uses futures market for Federal funds to separate changes in the federal funds rate target into anticipated and unanticipated components. He concludes that bond rates' response to unanticipated component is much larger and significant than their response anticipated component.

2.1 Contribution of the Paper

This paper's contribution can be analyzed from two different perspectives. First perspective is the empirical asset pricing and predictability of stock returns. The second perspective is neutrality of monetary policy and monetary policy implementation.

There are two contribution this paper is making to the asset pricing literature. First, this paper extends the empirical analysis of Patelis (1997) and Thorbecke (1997). One of the main conclusions of the paper is that Federal Reserve's private information can be used to predict stock returns. So, the results of this paper proposes that the asymmetric information between the Fed and investors is one of the reasons for effects of monetary policy on stock returns. Second, the predictive regressions are performed on different size portfolios and the results suggest that different size portfolios react differently to monetary policy shocks verifying the theoretical results of Cooley and Quadrini (1999).

From a monetary policy perspective, this paper makes two contributions. First, separate effects of anticipated and unanticipated monetary policy changes are analyzed and we conclude that stock prices react differently to expected and unexpected parts of the monetary policy changes. Second, this paper makes an empirical statement about underlying reasons of relationship between monetary policy and stock returns. Empirical evidence that asymmetric information is one of the reasons for the non-neutrality of monetary policy is provided.

3 Predictive Regressions

This section performs Fama and French (1989) long-horizon multivariate regressions to answer the question whether private information of Federal Reserve can be used to predict stock returns.

3.1 Data

3.1.1 Stock Returns

Value-weighted returns , equally-weighted returns and size portfolio returns are from CRSP indices stock file index. Index level associated with value-weighted , equally-weighted and size portfolio returns are also from CRSP indices stock file index. Size portfolios are calculated by ranking the stocks according to capitalization and then dividing into ten equal parts each rebalancing period. The largest securities are placed in portfolio 10 and the smallest in portfolio 1.

Return data is quarterly and between 1968:4 to 1995:4. Because the Greenbook data is only available quarterly and between 1968:1 to 1995:4.[3] Excess stock returns are calculated by subtracting the return of 30 day Treasury bill for appropriate time periods. The treasury bill data is obtained from CRSP indices.

3.1.2 Private Information of the Federal Reserve

The variables about the Federal Reserve's private information about inflation are calculated using the method in Romer and Romer (2000). The inflation forecasts of the Fed and commercial forecasters for the current quarter and one quarter ahead are used in the analysis.

- THE FEDERAL RESERVE'S FORECASTS: The Federal Reserve's forecasts are from the Greenbooks of the Federal Reserve Board of Governors which are available at Federal Reserve Bank of Philadelphia's research web page. The quarterly greenbook data is available for 1969:1 to 1995:4. Greenbook forecasts of GDP deflator are used for inflation and forecasts of GDP are used for output.

- COMMERCIAL FORECASTS: Commercial forecasts are from Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters. SPF forecasts are available quarterly from 1968:4 to 2002:3. Data for the period of 1968:1 to 1995:4 is used. The mean of the GDP deflator forecasts and mean of the nominal GDP forecasts are used as variables of public information.

  The variable about the Federal Reserve's private information , C_{it} , is the difference between the Federal Reserve's forecast and commercial forecast at time t and forecast horizon of i.

3.1.3 Financial Variables:

Fama and French (1989) and many other papers in the literature identify Default premium and Term premium as good predictors of expected stock returns.[4]So, the effects of default and term premiums are being controlled by adding them into the regression. Another reason for using default and term premiums as regressors is controlling for the effects on T-bill rates since monetary policy affects T-bill rates. Default premium and term premium have T-bill rate embedded in them. These two variables are also closely related to monetary policy.

- DEFAULT PREMIUM: Default premium is taken from Ibbotson 2001 yearbook, bond default premium. It is defined as the "net return from investing in long-term corporate bonds rather than long-term government

[3]Both real and excess returns are analyzed because of the fact that the risk free rate is highly correlated with Fed's actions. To avoid that problem regressions are run for both real and excess returns.

[4]They also identify dividend yield but most of the recent papers conclude that effects of dividend yield are mostly captured by default premium so it is not included in the regressions.

bonds of equal maturity". So, it reflects the possibility of default on corporate bond. Chen, Roll, Ross (1986) argue that default premium is a measure of business conditions. It is negatively related to future output and income.

- TERM PREMIUM: Term premium is taken from Ibbotson 2001 yearbook, bond horizon premium. It is defined as the "premium investors demand for holding long-term government bonds instead of US Treasury bills". Fama and French (1989) show that term premium has a business cycle pattern. Meaning that it is low around business peaks and high around troughs.

3.2 Methodology and Results

To examine whether the Federal Reserve has private information that is valuable for the public, we used Fama and French (1989) long-horizon multivariate regressions. The predictive regressions also make use of the procedure proposed by Fair and Shiller (1989). They argue that the informational content of different forecasts can be compared by regressing the actual change in a variable to be forecasted on forecasts of the change. Fair and Shiller argue that:

> If neither forecast 1 nor forecast 2 contains any useful information for s-period-ahead forecasting of Y_t , then the estimates of (coefficients) should both be zero. ... If both forecasts contain independent information for s-period-ahead forecasting, then (coefficients) should both be nonzero. If both forecasts contain information, but the information in , say, forecast 2 is completely contained in forecast 1 and forecast 1 contains further relevant information as well, then (coefficient of forecast 1) but not (coefficient of forecast 2) should be nonzero.

The significance of the coefficient's of the Federal Reserve's inflation forecast shows that using the Federal Reserve's private information one can predict future stock returns. So, the Federal Reserve has valuable private information that the investors would like to know. Since, the Federal Reserve uses its private information while deciding on the monetary policy actions, those monetary policy actions reflect the Federal Reserve's private information about inflation and output. So, stock market reacts to monetary policy actions because they reflect the private information the Federal Reserve has and that information can be used to predict future stock returns.

We perform the following regression:

$$r_{t+k,t+1} = \alpha_k + \beta_k x_t + \xi_{t+k,t+1} \tag{1}$$

where $r_{t+k,t+1} = r_{t+1} + ... + r_{t+k}$ is the continuously compounded k-period rate of returns and x_t is the vector of variables in the market's information set at time t.

Since we are summing up the returns to find the compounded k-period rate of returns , we are using overlapping data. This causes serial correlation in estimated standard errors. To correct for this, we use Newey and West estimator to estimate heteroskedasticity and autocorrelation consistent errors. We analyzed the predictability of returns of 1 quarter and 2 years horizon. So, we ran regressions with $k = 1$and $k = 8$.

Table 1 displays the correlation matrix of the predictive variables. One might be concerned that since we use both the Fed's and SPF inflation forecasts at the same time, there might be a problem of multicollinearity. Table 1 shows that the correlation of variables are not high.

3.2.1 Short-Term Predictability of Stock Returns:

Table 2 and table 3 display the short horizon (1 quarter) regression results with different size portfolio returns. Table 2 and 3 show that greenbook 1 quarter ahead inflation forecasts are significant and SPF forecasts are not significant. To deal with serial-correlation Newey-West standard errors are calculated. Since, Newey-West gives consistent results a bootstrap methodology is applied to calculate the standard errors. Each method concludes that greenbook inflation forecasts are significant factors to predict one quarter ahead real and excess stock returns.

The coefficient of the greenbook forecast is positive. One explanation for the sign of the coefficient can be the Fed's inflation forecasts depend on the Fed's real activity (output) forecasts. Then high inflation forecast means expectation of high output, which also increases stock returns.

There are several theories like Cooley and Quadrini (1999) and Bernanke and Gertler (1995) stating that monetary policy affects firms with different sizes differently. So, we analyzed different size portfolios to see whether the predictability of stocks change with respect to size. For both real and excess returns the coefficients increase as the size of the portfolio gets smaller. And, the coefficient of the greenbook forecast is not significant for largest portfolios. So, our results verify the theoretical findings of Cooley and Quadrini (1999) and Bernanke and Gertler (1995).

As a result, the regression results conclude that 1 quarter ahead inflation forecasts of the Fed can be used to predict short-term (1 quarter ahead) stock returns. And, we also find that the predictability differs with the size of the portfolios. The larger portfolio returns can not be predicted (coefficient is not significant.) and for the significant ones the coefficient increases as the portfolio size gets smaller.

3.2.2 Long-Term Predictability of Stock Returns:

Table 5 and table 6 display the long horizon (2 year) regression results with different size portfolio returns using the greenbook forecasts of current inflation. Table 7 and table 8 display the long horizon (2 year) regression results with different size portfolio returns using the greenbook forecasts of 1 quar-

ter ahead inflation. From the tables we can conclude that both current and 1 quarter ahead inflation forecasts are significant and SPF forecasts are not significant. To deal with serial-correlation Newey-West standard errors are calculated. Since, Newey-West gives consistent results a bootstrap methodology is applied to calculate the standard errors. Each method concludes that greenbook inflation forecasts are significant factors to predict one quarter ahead real and excess stock returns. [5]

Same as short-term predictability regressions, the coefficient of the greenbook forecast is positive. The sign of the coefficient can be explained as before as the Fed's inflation forecasts depend on the Fed's real activity (output) forecasts. Then high inflation forecast means expectation of high output, which also increases stock returns. For both real and excess returns the coefficients increase as the size of the portfolio gets smaller. And, the coefficient of the greenbook forecast is not significant for largest portfolios. So, our results verify the theoretical findings of Cooley and Quadrini (1999) and Bernanke and Gertler (1995). The SPF forecasts are significant for some of the portfolios even though the coefficients are very close to zero. But , the bootstrap results show that the standard errors are much higher than the standard errors calculated using the consistent standard errors. So, we can argue that the significance of SPF forecasts come from a small-sample bias since the coefficients lose their significance when we use bootstrap standard errors.

As a result, the regression results conclude that current and 1 quarter ahead inflation forecasts of the Fed can be used to predict long-term (2 year) stock returns. And, we also find that the predictability differs with the size of the portfolios. The larger portfolio returns can not be predicted (coefficient is not significant.) and for the significant ones the coefficient increases as the portfolio size gets smaller.

4 Finite-Sample Properties of the Predictive Regressions:

Stambaugh (1999) shows that there is a bias in the parameter estimation of the predictive regressions. Consider the following model:

$$y_t = \alpha + \beta x_{t-1} + u_t \tag{2}$$

$$x_t = \theta + \rho x_{t-1} + v_t \tag{3}$$

where the errors (u_t, v_t) are serially independent and identically distributed as bivariate normal, with contemporaneous correlation,as,

[5] Valkonov (2003) shows that long-horizon regressions tend to give wrong t-statistics as the horizon increases. The methodology proposed by Valkonov (2003) is not applied here since his results depend on asymptotic arguments. Instead, in section IV , simulations are run to find the bias of the OLS regressions. We believe that the results of section 4 apply to the arguments of Valkonov (2003).

$$\begin{pmatrix} u_t \\ v_t \end{pmatrix} \tilde{}_{iid}\ N(0,\Sigma) \tag{4}$$

$$\Sigma = \begin{pmatrix} \sigma_u^2 & \sigma_{uv} \\ \sigma_v & \sigma_v^2 \end{pmatrix}$$

Stambaugh (1999) shows that if $\sigma_{uv} \neq 0$, then the ordinary least squares estimator of β based on a finite sample will be biased. Stambaugh (1999) offers the bias of the OLS estimator of β in the single-predictor model,

$$E\left[\widehat{\beta} - \beta\right] = \phi E\left[\widehat{\rho} - \rho\right] \tag{5}$$

where $\phi = \sigma_{uv}/\sigma_v^2$, and $\widehat{\beta}$ and $\widehat{\rho}$ are the OLS estimators of β and ρ.

If we take y_t as one quarter ahead returns of smallest size portfolio and x_t as one quarter ahead inflation forecast of the Fed we find σ_{uv} to be -0.0252. This suggests that we have to analyze whether our results have a finite-sample bias. To calculate the finite-sample bias, we follow the bootstrap procedure that is explained in Nelson and Kim (1993).We simulate the return data under the null hypothesis. Then we run the predictive regressions using the simulated data. The simulation is repeated 1000 times.

Table 4 gives the mean and 0.01 and 0.99 percentiles of the simulation results of short-term predictability regressions. The results show that the finite-sample bias of the OLS estimates is very small. Table 9 and 10 give the simulation results of long-term predictability regressions using current inflation forecast and 1 quarter ahead inflation forecast. As it can be seen from tables 9 and 10,the biases of the long-term regressions are very small.

5 The Federal Reserve's Private Information and Current Stock Returns

Hecht and Vuolteenaho (2002) , Fama (1990) and Schwert (1992) show that stock returns are correlated with contemporaneous cash-flow proxies. So, in this section of the paper stock returns are regressed on the Federal Reserve's private information to analyze whether there exist such a relationship between the Federal Reserve's private information about inflation and output and current stock returns.

5.1 Data and Methodology

5.1.1 Data

- STOCK RETURNS: Stock returns are taken from CRSP and the only difference from the precious section is they are contemporaneous stock returns. So, if the forecasts are made at time t then the stock returns are time t stock returns. And similar to the previous section value weighted

index, equally weighted index and different size portfolio returns are examined. The construction of the portfolios is the same as the previous section.

- Other variables in the information set are the same as the previous section. The same variables that predict the future returns are expected to be significant in this section because stock returns are believed to be driven largely by expected stock returns discounted by a stochastic discount factor.

5.1.2 Methodology and Results

The methodology applied in this section is similar to the methodology applied by Fama (1990). Stock returns are regressed on portfolio index , term premium and default premium. The following equation is estimated using ordinary least squares (OLS).

$$r_t = \alpha_k + \beta_k x_t + \xi_{t+k,t+1} \tag{6}$$

OLS should give consistent and unbiased results.

The contemporaneous regressions are run using both current inflation forecasts and 1 quarter ahead inflation forecasts. Current inflation forecasts contain information about the current state of the economy so current inflation forecasts are expected to be a factor in current stock returns. Table 11 display the results of regression 6 using current inflation forecasts. The coefficient of the Fed's forecast is significant for equally-weighted portfolio and size portfolios between 5 and 1. The coefficients are positive for all of the horizons. The coefficients of the smallest size (size 1) portfolio is much larger that the coefficients of the larger size (size 5) portfolio. These results conclude that smaller size stock returns react more to the monetary policy indicators. These results are consistent with empirical findings of Cooley and Quadrini (1999) and Bernanke and Gertler (1995).Table 13 displays the regression results of excess portfolio returns on the Federal Reserve's inflation forecasts. For excess stock returns, the effect of current inflation forecast is not as clear as real stock returns. As in the predictive regressions, the SPF forecasts are significant for most of the portfolios even though the coefficients are very close to zero. But , the bootstrap results show that the standard errors are much higher than the standard errors calculated using the consistent standard errors. So, we can argue that the significance of SPF forecasts come from a small-sample bias since the coefficients lose their significance when we use bootstrap standard errors.

Table 12 display the results of regression 6 using 1 quarter ahead inflation forecasts. The coefficient of the Fed's forecast is significant for equally-weighted portfolio and size portfolios between 7 and 1. The coefficients are positive for all of the horizons. The coefficients of the smallest size (size 1) portfolio is much larger that the coefficients of the larger size (size 7) portfolio. These results conclude that smaller size stock returns react more to the monetary policy indicators. These results are consistent with empirical findings of Cooley

and Quadrini (1999) and Bernanke and Gertler (1995).Table 14 displays the regression results of excess portfolio returns on the Federal Reserve's inflation forecasts. For excess stock returns, the effect of current inflation forecast is not as clear as real stock returns. The SPF forecasts are significant for most of the portfolios even though the coefficients are very close to zero. But , the bootstrap results show that the standard errors are much higher than the standard errors calculated using the consistent standard errors.

6 Expected and Unexpected Monetary Policy: Event-Study Analysis

When the Federal Reserve is deciding on the monetary policy changes it uses the information set that is available. Some of this information is also available to the public. So, public forms an expectation about a possible monetary policy change using its information. So, an unexpected monetary policy change reflects the information that is not available to the public. At section III and IV , we demonstrated that the Federal Reserve has very valuable information that can be used by investors to predict future expected returns and to explain current stock returns. Since, the unexpected part of the stock returns represent the Federal Reserve's private information investors are expected to react to this unexpected part. So, we use two different monetary policy indicators, expected and unexpected monetary policy and we expect to find different and significant coefficients for each of there parts.

Changes in the monetary policy are measured by the changes in the federal funds rate target . The data about expected and unexpected changes in target federal funds rate is taken from Kuttner (2001). Kuttner (2001) uses the Federal Reserve funds futures prices from Chicago Board of Trade to calculate the expected change in target rate. Then, event-study methodology similar to Cook and Hahn (1989) is applied to examine effects of expected and unexpected changes in target rate.

6.1 Kuttner (2001): Using Futures Rates to Measure Policy Expectations

Kuttner (2001) takes the Federal Reserve funds futures prices as a market-based proxy for expected the Federal Reserve policy. A policy surprise measure is calculated from the one-day change in the spot-month futures rate. The most important insight about using futures prices is that $t-1$ futures rate represents the expected change on or after date t. If the change occurs as expected, then the spot rate will remain unchanged. The deviations from the expected rate will be reflected as a change in the futures rate, by an amount proportional to the number of days affected by the change. So, a measure of the unexpected change in the target rate on date t, relative to the forecast made on date $t-1$ should be calculated

$$\Delta r_t = r_t - E_{t-1} r_t \tag{7}$$

The spot rate on day t of month s, $f^0_{s,t}$, can be interpreted as the conditional expectation of the average funds rate, r^a_t for month s,

$$f^0_{s,t} = E_t \frac{1}{m_s} \sum_{i \in s} r_i + \mu \tag{8}$$

If we assume that no further changes are expected within the month, any deviation from the expected rate will result in a change in the futures rate, by an amount proportional to the number of days affected by the change. The one-day surprise fro date is computed is:

$$\Delta r^u_t = \frac{m}{m-t} \left(f^0_{s,t} - f^0_{s,t-1} \right) \tag{9}$$

This method delivers a nearly pure measure of the 1-day surprise target change. The expected component of the change is then calculated as the actual minus the unexpected:

$$\Delta r^e_t = \Delta r_t - \Delta r^u_t \tag{10}$$

Target changes are assigned to the dates of the announcements, which usually come at 2:15 p.m. Eastern time. Since trading in the Federal Reserve funds futures ends at 3:00 Eastern time (2:00 Central), the closing futures price used in the analysis usually would have incorporated the news of the Federal Reserve's decision.

6.2 Data and Methodology

The methodology applied to analyze effects of expected and unexpected monetary policy changes is event-study analysis similar to Cook and Hahn (1989). This study focuses on the high frequency responses of stock prices. Daily value-weighted index and equally-weighted index are taken from CRSP database. The dates of the target rate changes , the expected and unexpected target rate changes are taken from Kuttner (2001). The responses of value-weighted index and equally-weighted index to federal funds rate target change is analyzed.

The daily stock prices are taken at the dates of the target rate changes then the following ordinary least squares regression is estimated:

$$\Delta P_{t+1} = \beta_0 + \beta_1 \left(\Delta r^e_t \right) + \beta_2 \left(\Delta r^u_t \right) \tag{11}$$

where ΔP_{t+1} is the difference between day t+1 and t in value-weighted index or equally-weighted index.[6] Δr^e_t is the expected amount of change in the target

[6] Regressions using the difference between day t and day t-1 in value-weighted index and equally-weighted index were run and regression results were insignificant. The reason for that may be the time of the target rate announcements. So, the effects of the changes occur at day t+1.

rate, and Δr_t^u is the unexpected change in the target rate. β_1 and β_2 should be different since we expect stock prices react differently to different components of the change. Because Δr_t^e represents the information known by the public and Δr_t^u represents the Federal Reserve's private information.

6.3 Results

The results of equation 11 , regression of difference in value-weighted index on expected and unexpected changes in the target rate are:

$$\begin{array}{rcccc} \Delta VW_{t+1} & = & .788 + .16\Delta r_t^e & - .26\,(\Delta r_t^u) \\ & & (0.37) \quad (1.84) & \quad (-1.71) \\ & & \textit{0.712} \quad \textit{0.074} & \quad \textit{0.095} \end{array}$$

R-squared = 0.1041, N. of observations = 42

The numbers in the parentheses are the t-statistics. The third row displays the p-values.

The regression results of changes in the equally weighted index on expected and unexpected changes in the target rate:

$$\begin{array}{rcccc} \Delta EW_{t+1} & = & 4.24 + .21\Delta r_t^e & - .43\,(\Delta r_t^u) \\ & & (1.24) \quad (1.49) & \quad (-1.78) \\ & & 0.224 \quad 0.144 & \quad 0.083 \end{array}$$

R-squared = 0.09, N. of observations = 42.

The numbers in the parentheses are the t-statistics. The third row displays the p-values.

The regression results show that there is a significant positive relation between value-weighted index and expected change in the target rate and a significant negative relation between value-weighted index and unexpected change in the target rate. One of the most important results of the regression is the sign difference of the coefficients of the expected and unexpected target rate change. This shows that market reacts differently to the expected part and unexpected. One possible reason for this is expected and unexpected rate changes reflect different kinds of information. Expected part of the rate change reflects public information and unexpected part reflects the Federal Reserve's private information about inflation and output. Chen , Roll and Ross (1986) find a negative coefficient for unexpected inflation. The explanation for the negative coefficient of the unexpected change can be that it contains information about unexpected inflation.

The regression of equally-weighted index gives an insignificant expected change and significant unexpected change. This result suggests that there might be a size effect meaning that different size portfolios might react differently to

target rate changes. We performed the regressions using different size portfolio indexes but the size effect was not very transparent from those regression results.

7 Theoretical Motivation

(To be completed)

8 Conclusion

This paper analyses the Fed's private information about inflation to explain the empirical results about effects of monetary policy on stock returns. Also, effects of expected and unexpected monetary policy changes on stock prices are analyzed since monetary policy changes reflect the Federal Reserve's information. The results of the first section of the paper shows that the Federal Reserve's inflation forecasts can be used to predict future stock returns. The predictive power of the Federal Reserve's private information changes for different size portfolios. The Federal Reserve's private information about current and future inflation can be use to predict 1 quarter ahead and 2 year ahead real and excess stock returns.

Regression results of section V concludes that the Federal Reserve's private information inflation and output also a significant factor in contemporaneous stock returns. Section III and section V conclude that the Federal Reserve had valuable information for the market. The Federal Reserve uses its private information while deciding on the monetary policy changes so monetary policy actions reflect the Federal Reserve's private information which market would like to know. So, our results at section III and section V suggest that the Federal Reserve's private information might be one of the reasons of the Federal Reserve's effect on stock market.

Section VI analyses this hypothesis from a different perspective. Section VI considers that expected part of the changes in monetary policy reflects public information and unexpected part of the changes in the monetary policy reflects the Federal Reserve's private information. So, one anticipates expected and unexpected parts of monetary policy changes to have different effects on stock prices. Using policy data from Kuttner (2001) we find results supporting that hypothesis. Both expected and unexpected parts of the monetary policy changes are significant but they have different signs. So, market reacts differently to different parts of monetary policy changes. Finally, our results suggest that the Federal Reserve's private information about current and future inflation and output might be one of the reasons of effects of monetary policy change on the stock market.

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Table 1:

Correlation Matrix for the Variables:

	term	default	defqtr0	spfdef0g
term	1.0000			
default	-0.3155	1.0000		
defqtr0	-0.1424	-0.0847	1.0000	
spfdef0	-0.1358	0.3116	0.1102	1.0000

	term	default	defqtr1	spfdef1g
term	1.0000			
default	-0.3155	1.0000		
defqtr1	-0.2290	-0.0687	1.0000	
spfdef1	-0.1365	0.3109	0.1219	1.0000

term: term premium
default: default premium
defqtr: Fed's inflation forecast
spfdef: SPF inflation forecast

Table 2:
The OLS result of the regression of one quarter ahead real stock returns on default premium , term premium , one quarter ahead inflation forecast of the Fed (Greenbook) and one quarter ahead inflation forecast of commercial forecasters (SPF).

Portfolio Return	Greenbook Forecast	SPF Forecast
Size 10 (1 quarter)	0.00185 (0.00360) (0.00351) (0.003797)	-0.00022 (0.00024) (0.00015) (0.0010667)
Size 9 (1 quarter)	0.00579 (0.00427) (0.00389) (0.0043701)	-0.00016 (0.00029) (0.00014) (0.0014037)
Size 8 (1 quarter)	0.00741 (0.00452) (0.00411) (0.0048234)	-0.00010 (0.00030) (0.00015) (0.0011103)
Size 7 (1 quarter)	0.00993 (0.00465)* (0.00441)* (0.0051027)	-0.00019 (0.00031) (0.00016) (0.0014633)
Size 6 (1 quarter)	0.01110 (0.00474)* (0.00397)** (0.0049191)*	-0.00017 (0.00032) (0.00017) (0.0012682)
Size 5 (1 quarter)	0.01137 (0.00483)* (0.00394)** (0.0051125)*	-0.00013 (0.00033) (0.00017) (0.0011869)
Size 4 (1 quarter)	0.01306 (0.00517)* (0.00441)** (0.0055037)*	-0.00012 (0.00035) (0.00024) (0.0012098)
Size 3 (1 quarter)	0.01563 (0.00550)** (0.00498)** (0.0062166)**	-0.00013 (0.00037) (0.00023) (0.0017666)
Size 2 (1 quarter)	0.01814 (0.00581)** (0.00531)** (0.0068848)**	-0.00006 (0.00039) (0.00025) (0.0014473)
Size 1 (1 quarter)	0.01757 (0.00687)* (0.00654)** (0.0079044)*	0.00018 (0.00046) (0.00032) (0.001589)

Observations 108
Standard errors in parentheses , Newey-West standard errors with maximum lag of 2 , bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 3: (Excess Stock Returns)
The OLS result of the regression of one quarter ahead excess stock returns on default premium , term premium , one quarter ahead inflation forecast of the Fed (Greenbook) and one quarter ahead inflation forecast of commercial forecasters (SPF).

Portfolio Return	Greenbook Forecast	SPF Forecast
Size 10 (1 quarter)	-0.00007 (0.00362) (0.00365) (0.0038375)	-0.00023 (0.00024) (0.00014) (0.0010242)
Size 9 (1 quarter)	0.00387 (0.00430) (0.00406) (0.0044489)	-0.00017 (0.00029) (0.00013) (0.001135)
Size 8 (1 quarter)	0.00549 (0.00455) (0.00428) (0.0047185)	-0.00011 (0.00031) (0.00014) (0.0012059)
Size 7 (1 quarter)	0.00800 (0.00469) (0.00459) (0.0050658)	-0.00019 (0.00032) (0.00016) (0.0013477)
Size 6 (1 quarter)	0.00918 (0.00477) (0.00414)* (0.0050038)	-0.00018 (0.00032) (0.00016) (0.001296)
Size 5 (1 quarter)	0.00944 (0.00487) (0.00411)* (0.0050116)	-0.00014 (0.00033) (0.00016) (0.0011179)
Size 4 (1 quarter)	0.01113 (0.00522)* (0.00460)* (0.005316)*	-0.00012 (0.00035) (0.00023) (0.0014412)
Size 3 (1 quarter)	0.01371 (0.00555)* (0.00515)** (0.0062683)*	-0.00013 (0.00037) (0.00022) (0.0015561)
Size 2 (1 quarter)	0.01622 (0.00586)** (0.00548)** (0.0068879)**	-0.00007 (0.00039) (0.00025) (0.0017228)
Size 1 (1 quarter)	0.01564 (0.00692)* (0.00671)* (0.0082506)*	0.00018 (0.00047) (0.00031) (0.001723)

Observations 108
Standard errors in parentheses , Newey-West standard errors with maximum lag of 2, bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 4:
Small Sample Bias of Predictive Regressions:
The small sample bias of the predictive regressions are calculated using the bootstrap methodology suggested by Nelson and Kim (1993). The table displays some descriptive statistics of 1000 bootstrap repetitions of predictive regressions of one quarter ahead stock returns of different size portfolios on predictive variables.

Portfolio Return	Historical	Mean Bias	0.01 Percentile	0.99 Percentile
Size 10	0.00185	0.0000896	-0.0087	0.0085
Excess	-0.00007	0.0000479	-0.0081	0.0082
Size 9	0.00579	-0.0000723	-0.0105	0.0087
Excess	0.00387	-0.0000326	-0.0099	0.0091
Size 8	0.00741	0.00014767	-0.0101	0.0107
Excess	0.00549	-0.0002488	-0.0111	0.0100
Size 7	0.00993	-0.0001193	-0.0118	0.0115
Excess	0.00800	0.0000727	-0.0114	0.0105
Size 6	0.01110	0.0000749	-0.0114	0.0116
Excess	0.00918	0.00011444	-0.0107	0.0111
Size 5	0.01137	-0.00011543	-0.0128	0.0101
Excess	0.00944	-0.00016741	-0.0112	0.0112
Size 4	0.01306	-0.0000169	-0.0126	0.0112
Excess	0.01113	-0.000003	-0.0115	0.0123
Size 3	0.01563	0.0000881	-0.0118	0.0126
Excess	0.01371	0.00016922	-0.0127	0.0134
Size 2	0.01814	-0.00028517	-0.0128	0.0136
Excess	0.01622	-0.0000669	-0.0128	0.0145
Size 1	0.01757	-0.00002	-0.0149	0.0151
Excess	0.01622	-0.0000815	-0.0146	0.0152

Table 5: (2 Year Ahead Stock Returns)
The OLS result of the regression of two year ahead real stock returns on default premium, term premium , current inflation forecast of the Fed (Greenbook) and one quarter ahead inflation forecast of commercial forecasters (SPF).

Portfolio Return	Greenbook Forecast (Current)	SPF Forecast (Current)
Size 10 (2 Year)	-0.00486 (0.01102) (0.0115)	0.00102 (0.00040)* (0.0024)
Size 9 (2 Year)	0.01490 (0.01211) (0.0115)	0.00083 (0.00031)** (0.0030)
Size 8 (2 Year)	0.02424 (0.01424) (0.0132)	0.00068 (0.00029)* (0.0031)
Size 7 (2 Year)	0.03801 (0.01515)* (0.0130)*	0.00063 (0.00027)* (0.0031)
Size 6 (2 Year)	0.04083 (0.01376)** (0.0118)**	0.00037 (0.00029) (0.0022)
Size 5 (2 Year)	0.04217 (0.01547)** (0.0135)**	0.00052 (0.00032) (0.0032)
Size 4 (2 Year)	0.05168 (0.01684)** (0.0147)**	0.00057 (0.00033) (0.0030)
Size 3 (2 Year)	0.06809 (0.01826)** (0.0158)**	0.00041 (0.00041) (0.0031)
Size 2 (2 Year)	0.07629 (0.01908)** (0.0175)**	0.00036 (0.00042) (0.0032)
Size 1 (2 Year)	0.06425 (0.02093)** (0.0168)**	0.00064 (0.00042) (0.0029)

Observations 108
Newey-West standard errors with maximum lag of 9 , block bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 6: (2 Year Ahead Excess Stock Returns)
The OLS result of the regression of two year ahead excess stock returns on default premium, term premium , current inflation forecast of the Fed (Greenbook) and one quarter ahead inflation forecast of commercial forecasters (SPF).

Excess Portfolio Return	Greenbook Forecast (Current)	SPF Forecast (Current)
Size 10 (2 Year)	-0.01742 (0.01289) (0.0120)	0.00096 (0.00037)* (0.0023)
Size 9 (2 Year)	0.00234 (0.01493) (0.0137)	0.00076 (0.00030)* (0.0025)
Size 8 (2 Year)	0.01169 (0.01724) (0.0152)	0.00062 (0.00028)* (0.0029)
Size 7 (2 Year)	0.02545 (0.01842) (0.0158)	0.00056 (0.00029) (0.0022)
Size 6 (2 Year)	0.02828 (0.01679) (0.0143)	0.00031 (0.00030) (0.0025)
Size 5 (2 Year)	0.02961 (0.01862) (0.0156)	0.00046 (0.00036) (0.0033)
Size 4 (2 Year)	0.03912 (0.02006) (0.0171)*	0.00051 (0.00036) (0.0036)
Size 3 (2 Year)	0.05553 (0.02174)* (0.0183)**	0.00034 (0.00044) (0.0032)
Size 2 (2 Year)	0.06373 (0.02252)** (0.0189)**	0.00030 (0.00044) (0.0035)
Size 1 (2 Year)	0.05169 (0.02457)* (0.0205)*	0.00058 (0.00045) (0.0045)

Observations 108
Newey-West standard errors with maximum lag of 9, block bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 7: (2 Year Ahead Stock Returns)
The OLS result of the regression of two year ahead real stock returns on default premium, term premium , 1 quarter ahead inflation forecast of the Fed (Greenbook) and one quarter ahead inflation forecast of commercial forecasters (SPF).

Portfolio Return	Greenbook Forecast (1 Quarter Ahead)	SPF Forecast (1 Quarter Ahead)
Size 10 (2 Year)	-0.00866 (0.01298) (0.0138)	0.00104 (0.00041)* (0.0016)
Size 9 (2 Year)	0.01542 (0.01424) (0.0143)	0.00083 (0.00035)* (0.0025)
Size 8 (2 Year)	0.02594 (0.01638) (0.0163)	0.00069 (0.00035)* (0.0031)
Size 7 (2 Year)	0.04276 (0.01784)* (0.0177)*	0.00062 (0.00032) (0.0028)
Size 6 (2 Year)	0.04745 (0.01694)** (0.0171)	0.00034 (0.00029) (0.0027)
Size 5 (2 Year)	0.04869 (0.01922)* (0.0189)*	0.00050 (0.00029) (0.0020)
Size 4 (2 Year)	0.05973 (0.02129)** (0.0203)**	0.00055 (0.00028) (0.0026)
Size 3 (2 Year)	0.07893 (0.02278)** (0.0219)**	0.00037 (0.00032) (0.0029)
Size 2 (2 Year)	0.08879 (0.02409)** (0.0220)**	0.00033 (0.00031) (0.0029)
Size 1 (2 Year)	0.07475 (0.02589)** (0.0233)**	0.00061 (0.00036) (0.0040)

Observations 108
Newey-West standard errors with maximum lag of 9 , block bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 8: (2 Year Ahead Excess Stock Returns)
The OLS result of the regression of two year ahead excess stock returns on default premium, term premium , 1 quarter ahead inflation forecast of the Fed (Greenbook) and one quarter ahead inflation forecast of commercial forecasters (SPF).

Excess Portfolio Return	Greenbook Forecast (1 Quarter Ahead)	SPF Forecast (1 Quarter Ahead)
Size 10 (2 Year)	-0.02435 (0.01433) (0.0146)	0.00099 (0.00036)** (0.0016)
Size 9 (2 Year)	-0.00026 (0.01674) (0.0163)	0.00078 (0.00034)* (0.0026)
Size 8 (2 Year)	0.01026 (0.01924) (0.0180)	0.00064 (0.00033) (0.0033)
Size 7 (2 Year)	0.02707 (0.02099) (0.0199)	0.00057 (0.00033) (0.0039)
Size 6 (2 Year)	0.03176 (0.01992) (0.0177)	0.00030 (0.00031) (0.0027)
Size 5 (2 Year)	0.03300 (0.02243) (0.0205)	0.00045 (0.00034) (0.0029)
Size 4 (2 Year)	0.04404 (0.02459) (0.0217)	0.00050 (0.00033) (0.0031)
Size 3 (2 Year)	0.06324 (0.02630)* (0.0240)*	0.00032 (0.00038) (0.0040)
Size 2 (2 Year)	0.07310 (0.02763)** (0.0255)**	0.00028 (0.00037) (0.0038)
Size 1 (2 Year)	0.05906 (0.02953)* (0.0257)*	0.00056 (0.00040) (0.0039)

Observations 108
Newey-West standard errors with maximum lag of 9 , block bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 9:
Small Sample Bias of Predictive Regressions: (2 Year Return)
(Current Inflation Forecast)
The small sample bias of the predictive regressions are calculated using the bootstrap methodology suggested by Nelson and Kim (1993). The table displays some descriptive statistics of 1000 bootstrap repetitions of predictive regressions of one quarter ahead stock returns of different size portfolios on predictive variables.

Portfolio Return (2 Year)	Historical	Mean Bias	0.01 Percentile	0.99 Percentile
Size 10	-0.00486	0.00007	-0.0179	0.0185
Excess	-0.01742	-0.00021346	-0.0203	0.0171
Size 9	0.01490	-0.0013573	-0.0204	0.0187
Excess	0.00234	-0.000063115	-0.0194	0.0192
Size 8	0.02424	0.00043443	-0.0200	0.0185
Excess	0.01169	-0.00019322	-0.0197	0.0180
Size 7	0.03801	0.000026045	-0.0205	0.0214
Excess	0.02545	-0.000086057	-0.0209	0.0228
Size 6	0.04083	0.00034938	-0.0199	0.0189
Excess	0.02828	-0.0013744	-0.0195	0.0200
Size 5	0.04217	0.00024135	-0.0205	0.0202
Excess	0.02961	0.0000011811	-0.0222	0.0221
Size 4	0.05168	-0.00016873	-0.0204	0.0188
Excess	0.03912	-0.0021916	-0.0212	0.0219
Size 3	0.06809	-0.00021313	-0.0231	0.0201
Excess	0.05553	0.00013337	-0.0234	0.0222
Size 2	0.07629	-0.00011653	-0.0227	0.0220
Excess	0.06373	-0.00030148	-0.0245	0.0218
Size 1	0.06425	0.00045182	-0.0252	0.0236
Excess	0.05169	-0.000052245	-0.0253	0.0242

Table 10:
Small Sample Bias of Predictive Regressions: (2 Year Return)
(1 Quarter Ahead Inflation Forecast)
The small sample bias of the predictive regressions are calculated using the bootstrap methodology suggested by Nelson and Kim (1993). The table displays some descriptive statistics of 1000 bootstrap repetitions of predictive regressions of one quarter ahead stock returns of different size portfolios on predictive variables.

Portfolio Return (2 Year)	Historical	Mean Bias	0.01 Percentile	0.99 Percentile
Size 10	-0.00866	0.000056799	-0.0213	0.0203
Excess	-0.02435	0.00021740	-0.0206	0.0204
Size 9	0.01542	0.00085115	-0.0224	0.0250
Excess	-0.00026	-0.00001177	-0.0238	0.0233
Size 8	0.02594	-0.00016917	-0.0230	0.0213
Excess	0.01026	-0.000037428	-0.0234	0.0221
Size 7	0.04276	-0.00038402	-0.0252	0.0234
Excess	0.02707	-0.00016862	-0.0284	0.0267
Size 6	0.04745	-0.00023955	-0.0256	0.0239
Excess	0.03176	0.00023216	-0.0235	0.0247
Size 5	0.04869	-0.00036282	-0.0256	0.0248
Excess	0.03300	0.00043771	-0.0267	0.0278
Size 4	0.05973	0.00010754	-0.0260	0.0247
Excess	0.04404	-0.000013543	-0.0250	0.0246
Size 3	0.07893	0.00017439	-0.0269	0.0270
Excess	0.06324	0.00014394	-0.0276	0.0276
Size 2	0.08879	-0.00012959	-0.0273	0.0259
Excess	0.07310	0.000077787	-0.0288	0.0268
Size 1	0.07475	-0.000018076	-0.0287	0.0278
Excess	0.05906	0.00018187	-0.0306	0.0288

Table 11: (Contemporaneous Stock Returns)
The OLS result of the regression of current real stock returns on default premium , term premium , current inflation forecast of the Fed (Greenbook) and current inflation forecast of commercial forecasters (SPF).

Portfolio Return	Greenbook Forecast (Current)	SPF Forecast (Current)
Value-Weighted	0.00253 (0.00294) (0.00249) (0.0027165)	-0.00053 (0.00023)* (0.00011)** (0.0007236)
Equally-Weighted	0.00798 (0.00396)* (0.00295)** (0.0038942)*	-0.00095 (0.00032)** (0.00022)** (0.0012815)
Size 10	0.00047 (0.00280) (0.00251) (0.0028802)	-0.00044 (0.00022) (0.00011)** (0.0009167)
Size 9	0.00472 (0.00322) (0.00257) (0.0029678)	-0.00063 (0.00026)* (0.00011)** (0.0011197)
Size 8	0.00614 (0.00347) (0.00279)* (0.0032774)	-0.00064 (0.00028)* (0.00016)** (0.0014045)
Size 7	0.00717 (0.00367) (0.00283)* (0.0033566)	-0.00079 (0.00029)** (0.00015)** (0.0013099)
Size 6	0.00711 (0.00385) (0.00286)* (0.0036621)	-0.00083 (0.00031)** (0.00019)** (0.0012525)
Size 5	0.00814 (0.00389)* (0.00321)* (0.0037229)*	-0.00086 (0.00031)** (0.00024)** (0.0012373)
Size 4	0.00931 (0.00415)* (0.00328)** (0.0041759)*	-0.00100 (0.00033)** (0.00026)** (0.0017356)
Size 3	0.01051 (0.00453)* (0.00349)** (0.0047187)*	-0.00101 (0.00036)** (0.00036)** (0.0017161)
Size 2	0.01237 (0.00480)* (0.00379)** (0.0050203)*	-0.00127 (0.00038)** (0.00037)** (0.0017951)
Size 1	0.01135 (0.00579) (0.00406)** (0.0060328)	-0.00141 (0.00046)** (0.00051)** (0.0025226)

Observations 108
Standard errors in parentheses , Newey-West standard errors with maximum lag of 2 , bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 12 : (Contemporaneous Stock Returns) (Effect of one period ahead inflation forecasts)
The OLS result of the regression of current real stock returns on default premium , term premium one quarter ahead inflation forecast of the Fed (Greenbook) and one quarter ahead inflation forecast of commercial forecasters (SPF).

Portfolio Return	Greenbook Forecast (1 Quarter Ahead)	SPF Forecast (1 Quarter Ahead)
Value-Weighted	0.00350 (0.00345) (0.00355) (0.0034724)	-0.00054 (0.00023)* (0.00011)** (0.0005941)
Equally-Weighted	0.00928 (0.00465)* (0.00389)* (0.0047226)*	-0.00095 (0.00031)** (0.00021)** (0.0013021)
Size 10	0.00108 (0.00328) (0.00351) (0.0037435)	-0.00044 (0.00022)* (0.00011)** (0.00101)
Size 9	0.00640 (0.00377) (0.00365) (0.0039311)	-0.00064 (0.00025)* (0.00010)** (0.000972)
Size 8	0.00768 (0.00407) (0.00384)* (0.0042331)*	-0.00065 (0.00027)* (0.00015)** (0.000972)
Size 7	0.00867 (0.00431)* (0.00400)* (0.0043481)	-0.00080 (0.00029)** (0.00015)** (0.0012318)
Size 6	0.00951 (0.00450)* (0.00378)* (0.0045263)*	-0.00085 (0.00030)** (0.00018)** (0.0013122)
Size 5	0.00994 (0.00456)* (0.00404)* (0.0044352)*	-0.00087 (0.00031)** (0.00023)** (0.0012365)
Size 4	0.01142 (0.00486)* (0.00425)** (0.0049015)*	-0.00101 (0.00033)** (0.00025)** (0.0013104)
Size 3	0.01225 (0.00532)* (0.00417)** (0.0054979)*	-0.00102 (0.00036)** (0.00035)** (0.0013936)
Size 2	0.01381 (0.00565)* (0.00438)** (0.0058353)*	-0.00128 (0.00038)** (0.00036)** (0.0014395)
Size 1	0.01077 (0.00684) (0.00487)* (0.0066672)	-0.00140 (0.00046)** (0.00051)** (0.002099)

Observations 108
Standard errors in parentheses , Newey-West standard errors with maximum lag of 2 , bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 13 : (Contemporaneous Excess Stock Returns)
The OLS result of the regression of current excess stock returns on default premium , term premium , current inflation forecast of the Fed (Greenbook) and current inflation forecast of commercial forecasters (SPF).

Portfolio Return	Greenbook Forecast (Current)	SPF Forecast (Current)
Value-Weighted	0.00092 (0.00295) (0.00246) (0.0026894)	-0.00054 (0.00023)* (0.00011)** (0.0006311)
Equally-Weighted	0.00637 (0.00399) (0.00291)* (0.0037106)	-0.00096 (0.00032)** (0.00022)** (0.0016486)
Size 10	-0.00114 (0.00280) (0.00248) (0.0029288)	-0.00045 (0.00022)* (0.00011)** (0.000935)
Size 9	0.00311 (0.00324) (0.00259) (0.0029555)	-0.00064 (0.00026)* (0.00011)** (0.0011332)
Size 8	0.00453 (0.00349) (0.00276) (0.0031517)	-0.00065 (0.00028)* (0.00016)** (0.0011436)
Size 7	0.00556 (0.00370) (0.00281) (0.003256)	-0.00080 (0.00029)** (0.00016)** (0.001344)
Size 6	0.00550 (0.00387) (0.00280) (0.0035171)	-0.00085 (0.00031)** (0.00019)** (0.0014274)
Size 5	0.00653 (0.00391) (0.00313)* (0.0037104)	-0.00087 (0.00031)** (0.00025)** (0.001354)
Size 4	0.00770 (0.00418) (0.00322)* (0.0039886)	-0.00101 (0.00033)** (0.00027)** (0.0015755)
Size 3	0.00890 (0.00456) (0.00343)* (0.0045618)	-0.00102 (0.00036)** (0.00037)** (0.001607)
Size 2	0.01077 (0.00482)* (0.00372)** (0.0051855	-0.00129 (0.00038)** (0.00038)** (0.0014742)
Size 1	0.00974 (0.00582) (0.00405)* (0.0056565)	-0.00143 (0.00046)** (0.00052)** (0.0024601)

Observations 108
Standard errors in parentheses , Newey-West standard errors with maximum lag of 2 , bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%

Table 14: (Contemporaneous Excess Stock Returns) (Effect of one period ahead inflation forecasts)
The OLS result of the regression of current excess stock returns on default premium , term premium one quarter ahead inflation forecast of the Fed (Greenbook) and one quarter ahead inflation forecast of commercial forecasters (SPF).

Portfolio Return	Greenbook Forecast (1 Quarter Ahead)	SPF Forecast (1 Quarter Ahead)
Value-Weighted	0.00158 (0.00347) (0.00358) (0.0038196)	-0.00055 (0.00023)* (0.00011)** (0.0007765)
Equally-Weighted	0.00736 (0.00468) (0.00395) (0.0048534)	-0.00096 (0.00032)** (0.00022)** (0.0010944)
Size 10	-0.00084 (0.00329) (0.00354) (0.0036757)	-0.00045 (0.00022)* (0.00011)** (0.0008227)
Size 9	0.00447 (0.00379) (0.00371) (0.0039274)	-0.00065 (0.00026)* (0.00011)** (0.0008294)
Size 8	0.00575 (0.00409) (0.00389) (0.0040998)	-0.00066 (0.00028)* (0.00016)** (0.0011298)
Size 7	0.00674 (0.00434) (0.00407) (0.004362)	-0.00081 (0.00029)** (0.00016)** (0.0008574)
Size 6	0.00759 (0.00452) (0.00383) (0.0047231)	-0.00086 (0.00031)** (0.00019)** (0.0012965)
Size 5	0.00801 (0.00459) (0.00409) (0.0048896)	-0.00088 (0.00031)** (0.00024)** (0.0010967)
Size 4	0.00950 (0.00489) (0.00433)* (0.0052264)	-0.00102 (0.00033)** (0.00026)** (0.0013543)
Size 3	0.01033 (0.00535) (0.00422)* (0.0057522)	-0.00103 (0.00036)** (0.00036)** (0.0015036)
Size 2	0.01188 (0.00568)* (0.00443)** (0.0058394)*	-0.00129 (0.00038)** (0.00037)** (0.0017069)
Size 1	0.00885 (0.00687) (0.00494) (0.0067554)	-0.00141 (0.00046)** (0.00052)** (0.0019711)

Observations 108
Standard errors in parentheses , Newey-West standard errors with maximum lag of 2 , bootstrap standard errors of 1000 repetitions.
* significant at 5%; ** significant at 1%