You listen to me when you really need it. Assessing the effect of macroeconomic forecasts on the stock market.

Emilio Colombo, Marco Marelli
University Milano-Bicocca

31 Dec 2013
preliminery, do not quote

Abstract

We provide an assessment of the impact of the release of three major surveys of forecasters, the Survey of Professional Forecasters, the Livingstone Survey and the Blue Chip Financial Forecasters, on the US stock market. We find a surprising empirical regularity: irrespective of the fact that these surveys are conducted with different methodologies, and with different frequencies, in approximately 30 % of the cases surveys dates have a statistically significant effect on the US stock market. The result is robust to the choice of the estimating window. The significance of the survey dates seems to be related with measures of uncertainty. When uncertainty about economic or political conditions is high surveys appear to are most useful and have the greater impact on the market.

Keywords: Survey forecast, uncertainty,

*University of Milano-Bicocca, DEMS, Piazza Ateneo Nuovo 1, 20126, Milano, Italy. We thank Maurizio Motolese for sharing with us survey data and for useful discussion. We thank also Giulia Rivolta for useful suggestions. The usual disclaimer applies.

1 Introduction

Macroeconomic forecasts play a relevant role in several domains. Policymakers often rely on them to gauge the possibility of implementing certain type of policies, market analyst extract from them useful information to interpret future market dynamics, even trade unions often rely on professional forecasts as support in bargaining processes.

In terms of accuracy, n recent decades the the usefulness of surveys of forecasters has been supported by a wealth of empirical studies. For example Anga et a. (2007) show that survey forecasts outperform other forecasting methods for predicting macro variables and in particular inflation. Batchelor (2000), shows greater accuracy of consensus forecasts over macroeconomic projections produced by leading multinational agencies such as the IMF or the OECD.

If surveys are important, contain useful and relevant information, then we should expect that they have an impact on the market. Surprisingly this issue has not yet been addressed by the literature. With this paper we fill this gap. We provide an assessment of the impact of the release of three major surveys of forecasters, the Survey of Professional Forecasters, the Livingstone Survey and the Blue Chip Survey of Forecasters, on the US stock market. We find a surprising empirical regularity: irrespective of the fact that these surveys are conducted with different methodologies, and with different frequencies, in approximately 30 % of the cases surveys dates have a statistically significant effect on the US stock market. The result is robust to the choice of the estimating window. The significance of the survey dates seems to be related with measures of uncertainty. When uncertainty about economic or political conditions is high surveys appear to are most useful and have the greater impact on the market.

The remainder of the paper is organised as follows: Section 2 illustrates the methodology, Section 3 describes the data, Section 4 presents the results, finally Section 5 concludes.

2 Methods

2.1 The event study methodology

The purpose of an event study is to evaluate whether movements of a time series around a certain date are consistent with Normal Returns or they can be considered "Abnormal". In fact, the event study approach relies firmly on the efficient market hypothesis, by which prices and returns incorporates all the information available,

and on the rational expectation hypothesis. The initial task of conducting an event study is to define the event of interest and identify the period over which the value of the market index is analysed: the event window. For our purposes the event is the day of the release of the forecast while the event window is taken to be 5 days centered around the event date (i.e. ± 2 days). This is done to take into account the possibility that the market anticipates the event as well as the possibility that it can take some time to process the information released.[1] The appraisal of the event's impact requires a measure of the Abnormal Return. As customary in the literature the Abnormal Return is the difference between the actual ex post return of the market index over the event window and the normal return of the market index over the same period. The normal return is defined as the expected return without conditioning on the event taking place. More formally for an event date t the Abnormal Return is:

$$AR_t = R_t - E\left(R_t | X_t\right)$$

Where R_t is the normal return and X_t is the conditioning information. There are generally two different approaches to conduct as event-study analysis: the first estimates abnormal returns as forecast errors from a benchmark market equilibrium model, while the second estimates a simple market equilibrium model augmented by dummy variables identifying the event window.

There are several alternatives for identifying a benchmark market equilibrium model, in the case of the stock market with high freqency data (as in our case) there is not a clear winner identified by the literature. We therefore adopt an agnostic approach by calculating three different models:

1. **Constant Mean Return Model.**
   Let μ_τ be the mean log-returns of the Stock Market Index. The Constant Mean Return Model is:

   $$R_t = \mu_\tau + \varepsilon_t$$

   With: $E\left(\varepsilon_t\right) = 0$; $Var\left(\varepsilon_t\right) = \sigma_t^2$. Where R_t is the period t log-return of the S&P500 Index; ε_t the time period disturbance term and τ is the length of the period prior to the release date of which the mean log-returns is calculated. We choose this period to be a month. Although the Constant Mean Return Model is probably the simplest model, Brown and Warner (1980,1985) find it often yields results similar to those of more sophisticated models.

2. **Market Model.**
   The Market Model relates the return of the S&P500 index to the return of a

[1] Our results are almost identical if we take a 3 days window.

world market portfolio:

$$R_t = \alpha + \beta R_{mt} + \varepsilon_t$$

Where R_t and R_{mt} are the period-t log-returns on S&P500 and the market portfolio, respectively, we chhose the market portfolio as the MSCI EAFE Index that includes the Europe, Australia Asia and the Far East.

3. **Autoregressive Model.**
   In this case we select a simple AR(4), often used with macroeconomic and financial data:

$$R_t = \phi_0 + \phi_1 y_{t-1} + \phi_2 y_{t-2} + \phi_3 y_{t-3} + \phi_4 y_{t-4} + \varepsilon_t$$

Once identified the benchmark market model, ambormal returns are estimated calculating rolling regressions and performing one day ahead forecasts. In the case of the market model estimated abnormal return is:

$$\hat{AR}_t = R_t - \hat{\alpha} - \hat{\beta} R_{mt}$$

Under the null hypothesis, conditional on the event window market returns, the abnormal returns will be jointly normally distributed with a zero conditional mean and conditional variance $\sigma^2\left(\hat{AR}_t\right)$ where: $\sigma^2\left(\hat{AR}_t\right) = \sigma_\varepsilon^2 + \frac{1}{L_1}\left[1 + \frac{(R_{mt} - \hat{\mu}_m)^2}{\hat{\sigma_m}^2}\right]$ From the last formula, the conditional variance has two components. One component is the disturbance variance σ_ε^2 and a second component is additional variance due to the sampling error in α and β. As the length of the estimation window $L1$ becomes large, the second term approaches zero as the sampling error of the parameters vanishes, and the abnormal return observations become independent over time. In practice, the estimation window is usually chosen large enough to make it reasonable to assume that the contribution of the second component to the variance of the abnormal return is zero. With daily data as in our case this is a condition easily met.

Finally abnormal returns are cumulated over time in order to draw overall inferences for the event of interest. The Cumulative Abnormal from t_1 to t_2 is:

$$C\hat{AR}\left(t_{1,}t_2\right) = \sum_{t=t_1}^{t_2} \hat{AR}_t$$

The test statistic is simply that the event day excess return is equal to zero. Thus:[2].

[2]These statistic are widely used in event studies see Masulis (1980), Dann (1981), Holthausen (1981), Leftwich (1981)

$$t = |AR_t \diagup \hat{S}(AR_t)| \sim T(n-1)$$

where: $AR_t = R_t - E(R_t|X_t)$; $\hat{S}(AR_t) = \sqrt{\left(\sum_{t=1}^{250}\left(AR_t - \overline{AR}\right)^2\right) \diagup 249}$; $\overline{AR} = \frac{1}{250}\sum_{t=1}^{250} AR_t$.

For tests over the (-2,+2) interval, the test statistic is the ratio of the Cumulative Excess Returns to its estimated standard deviation, and is given by:

$$\sum_{t=-2}^{2} AR_t \diagup \left(\sum_{t=-2}^{2} \hat{S}^2(AR_t)\right)^{1/2}$$

where the terms in the denominator are from the previous equation.

As an alternative abnormal returns can be modelled as prediction errors from the Market Model equation, twhere the event period is identified by a dummy variable:

$$R_t = \alpha + \beta R_{mt} + \gamma D_t + \varepsilon_t$$

Where: $D_t = \begin{cases} 1 & if\ t = event \\ 0 & if\ t \neq event \end{cases}$,

The coefficient γ is the Abnormal Return for S&P500 Index during period t and is directly estimated in the regression. In this case $\hat{\gamma}$ estimates the average effect on the 5 days of the event period, and the null hypothesis of no event's effect ($\gamma = 0$), can be verified using a simple t-test.

2.2 GARCH Model methodology

Finally these models can also be extended by modeling its variance with a GARCH model in order to verify if the "Abnormal" movement of the market occurs in mean equation or in the variance equation, thus, the new model is:

$$R_t = \alpha + \beta R_{mt} + \gamma D_t + \varepsilon_t$$

Where: $D_t = \begin{cases} 1 & if\ t = event \\ 0 & if\ t \neq event \end{cases}$, which is the Mean Equation. And:

$$\sigma_t^2 = \omega + \zeta\sigma_{t-1}^2 + \lambda D_t + \xi\varepsilon_{t-1}^2$$

Where: $D_t = \begin{cases} 1 & if\ t = event \\ 0 & if\ t \neq event \end{cases}$, which is the variance equation.

3 Data

3.1 Stock market data

For Stock Market returns, we use the daily S&P500 Index and the world index MSCI EAFE; both series are available on Bloomberg and cover the period 21/01/1970 to 23/04/2013. The world index includes a selection of stocks from 22 developed markets, but excludes those from the U.S. and Canada. Those 22 markets are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, Israel, Australia, New Zealand, Singapore, Hong Kong, and Japan.
Regarding Macroeconomic and Financial forecast releases data, we use three well known surveys.

3.2 Survey data

Survey of Professional Forecasters:
Implemented quarterly by the Federal Reserve Bank of Philadelphia, it is one of the most widely used surveys in the market. The American Statistical Association (ASA), together with the National Bureau of Economic Research (NBER), began conducting the survey, in the fourth quarter of 1968. The survey was then taken over by the Philadelphia Fed in 1990 with an average of 30 participants The results of the survey are often reported in major newspapers, including the Wall Street Journal, and on financial newswire. The final data are also available via the internet on the Philadelphia Fed's web page. The forecasters in the Survey of Professional Forecasters come largely from the business world and Wall Street. For example, out of 36 participants in a recent surveys, 13 were from Wall Street financial firms, eight from banks, five from economic consulting firms, three from university research centers, and seven from other private firms, including chief economists at many Fortune 500 companies. One important feature of the Survey of Professional Forecasters is the anonymity of the forecasters. This anonymity is designed to encourage people to provide their best forecasts, without fearing the consequences of making forecast errors. The Macroeconomic and Financial variables that SPF forecast are Nominal Gross Domestic Product; Gross Domestic Product Price Index; Corporate Profits After Tax; Unemployment Rate; Nonfarm Payroll Employment; Industrial Production Index; Housing Starts; 3-month Treasury Bill Rate; Moody's AAA Corporate Bond Yield; Moody's BAA Corporate Bond Yield; 10-year Treasury Bond Rate; Real Gross Domestic Product; Real Personal Consumption Expenditures; Real Nonresidential Fixed Investment; Real Residential Fixed Investment; Real Federeal Government

Consumption and Gross Investment; Real State and Local Government Consumption and Gross Investment; Real change in Private Inventories; Real Net Exports; CPI Inflation over the next 5 years; PCE Inflation over the next 5 years; CPI Inflation over the next 10 years; PCE Inflation over the next 10 years; Rate of Growth in Real GDP/GNP over the next 10 years; Rate of Growth in Productivity over the next 10 years; Rate of Return to Equities over the next 10 years; Rate of Return to 10-year treasury bond over the next 10 years; Rate of Return to 3-moth treasury bills over the next 10 years; CPI Inflation Rate; core CPI Inflation Rate; PCE Inflation Rate; core PCE Inflation Rate. For each variable, in every release there are forecasts for the quarter prior to the survey; for the current quarter; and from 1 to 4 quarters ahead to the day the survey is taken. Furthermore, there are also forecasts for the current year and one year ahead.

Livingstone Survey:

It is the oldest survey on financial markets, started in 1946 by Joseph A. Livingstone, then a columnist for the Philadelphia Record who began asking business economists he knew to provide him with their forecasts for important economic variables. He followed through with the survey every six months, in June and December, and wrote a lively column about the results. The survey continued to be conducted by Livingstone until 1985 when was taken over by the Federal Reserve Bank of Philadelphia. Differently from the SPF the Livingstone survey has a wide variety of participants. Currently, about 30 percent of the forecasters come from nonfinancial businesses (for example, a number are chief economists of corporations), 29 percent are from investment banking firms (many on Wall Street), 20 percent represent commercial banks around the country, 13 percent work in academic institutions, and the remaining 8 percent come from labor organization, government, and insurance companies. The number of participants in the survey has been fairly steady over time, averaging about 50 forecasters in each survey. The results of the Livingstone survey are released to the press near the end of June and December each year. Staff members in the Research and Statistics Department at the Philadelphia Fed prepare a press release and tables of the survey results, which are released on a public-relations news service. The results are also available via the internet on the Philadelphia Fed's web page. The Macroeconomic and Financial variables that Livingston Survey forecasts are Real Gross Domestic Product; Nominal Gross Domestic Product; Real Business Fixed Investment; Corporate Profits after Tax; Industrial Production Index; Total Private Housing Starts; Producer Price Index for finished goods; Consumer Price Index; Civilian Unemployment Rate; Average Weekly Earnings in Manufacturing; Retail Trade; Auto Sales, Domestic and Foreign; Prime Interest Rate; Rate on 10-year treasury bond; Rate on 3-month treasury bill; S&P500 Stock Price Index. For

each variable, in every release there is a Forecast for the month or quarter in which the survey is taken; a Forecast that is six months ahead or for the quarter that is two quarters ahead of the survey date; a Forecast for the month that is 12 months ahead or for the quarter that is four quarters ahead of the survey date.

Blue Chip Financial Forecasts:
The Blue Chip Survey provides a very useful forecast survey on a monthly basis, forecasting many important macroeconomic data series and including long-run forecasts twice a year. Blue Chip Financial Forecasts is published monthly by Aspen Publishers. The Blue Chip forecasters in 2013 are 100 (including Bank of America, Goldman Sachs and J.P.Morgan). The participants in the Blue Chip Financial Forecasts are surveyed around the 25th of each month and the results published a few days later on the 1st of the following month. The forecasters are asked to forecast the average over a particular calendar quarter, beginning with the current quarter and extending 4 to 5 quarters into the future. The Macroeconomic and Financial variables that Blue Chip financial Forecast foresees are Federal Funds Rate; 1 month Commercial Paper; Treasury Bill Yields (3-months, 6-month, 1-year); Treasury Note Yields (2-years, 5-years, 10-years); Corporate AAA Bond Yield; Real Gross Domestic Product and Consumer Price Index. Note that the Blue Chip survey does not preserve the anonymity of the forecasters.

3.3 Announcements

Every Survey is issued on different dates: Survey of Professional Forecasters is issued on February, May, August and November (from 1990 to 2005 on the last week of these months and from 2006 to 2013 on the second week of these months), the first release is on 31/08/1990 and the last one available is on 15/02/2013 for an amount of 91 releases. Livingstone survey is issued on June and December, from 1972 to 1997 on the last week of these months and from 1998 to 2012 on the second week of these months, the first release is on 03/01/1972 and the last one is on 12/12/2012 for an amount of 83 releases. Blue chips financial forecasts is issued every 1st day of the month beginning from 02/07/1984 to 01/04/2013 for an amount of 346 releases.

4 Results

Tables 1 - 3 present the results using the event study methodology.

In the case of the Survey of Professional Forecasters, out of 91 release dates, 27 are significant according to the Market Model (29,67%). Applying the AR(4)

Table 1: Survey of Professional Forecasters: significant release dates, 5 cumulative abnormal returns, 5 days window.

Year	**Market Model**	Significance
1990-2000	14	7(1%) —— 7(5%)
2000-2010	8	4(1%) —— 4(5%)
2010-2013	5	3(1%) —— 2(5%)
Total (%)	**29,67%**	
Year	**AR(4)**	Significance
1990-2000	13	8(1%) —— 5(5%)
2000-2010	9	5(1%) —— 4(5%)
2010-2013	6	5(1%) —— 1(5%)
Total (%)	**30,76%**	
Year	**CMR Model**	Significance
1990-2000	16	10(1%) —— 6(5%)
2000-2010	10	5(1%) —— 5(5%)
2010-2013	7	5(1%) —— 2(5%)
Total (%)	**36,26%**	

the significant dates are 28 while the Constant Mean Return Model identifies 33 significant releases.

In the case of the Livingstone Survey, out of 83 release dates, 26 are significant according to the Market Model, 30 according to the AR(4) model and 33 according to the Constant Mean Return Model.

Finally, considering the Blue Chip Financial Forecasters survey, out of 346 release dates, 123 are found to be significant according to the Market Model (1month t-statistics). Applying the AR(4) Model (1month t-statistics) the significant dates are 126 significant, while the Constant Mean Return Model gives 135 significant dates.

Overall, irrespective of the model used and of the survey considered, approximately 30% of the release dates are statistically significant. This is a surprising empirical regularity given that the three surveys considered are not only different in terms of methodology used but also and more importantly they differ considerably in their timing (six, three and 1 month).

4.1 Robustness

We have conducted a number of robustness checks for assessing the validity of the previous results. First all the release dates that have been found significant using

Table 2: Livingstone Survey: significant release dates, 5 cumulative abnormal returns, 5 days window.

Year	**Market Model**	Significance
1972-1980	8	5(1%) —— 3(5%)
1980-1990	3	1(1%) —— 2(5%)
1990-2000	10	8(1%) —— 2(5%)
2000-2010	5	3(1%) —— 2(5%)
2010-2012	-	-
Total (%)	**32,51%**	
Year	**AR(4)**	Significance
1972-1980	10	6(1%) —— 4(5%)
1980-1990	3	- —— 3(5%)
1990-2000	10	8(1%) —— 2(%)
2000-2010	6	3(1%) —— 3(5%)
2010-2012	1	1(1%) —— -
Total (%)	**36,14%**	
Year	**CMR Model**	Significance
1972-1980	9	6(1%) —— 3(5%)
1980-1990	5	3(1%) —— 2(5%)
1990-2000	10	9(1%) —— 1(5%)
2000-2010	7	5(1%) —— 2(5%)
2010-2012	2	2(1%) —— -
Total (%)	**39,75%**	

Table 3: Blue Chip financial Forecasters. Significant release dates, 5 cumulative abnormal returns, 5 days window.

Year	**Market Model**	Significance (1month)	(1year)
1984-1990	21 —— 16	15(1%) —— 6(5%)	15(1%) —— 1(5%)
1990-2000	46 —— 49	30(1%) —— 16(5%)	31(1%) —— 18(5%)
2000-2010	40 —— 32	16(1%) —— 24(5%)	17(1%) —— 15(5%)
2010-2013	16 —— 11	6(1%) —— 10(5%)	8(1%) —— 3(5%)
Total (%)	**26,3%**	**35,83%**	**31,21%**
Year	**AR(4)**	Significance (1month)	(1year)
1984-1990	19 —— 18	8(1%) —— 11(5%)	11(1%) —— 7(5%)
1990-2000	46 —— 46	31(1%) —— 15(5%)	32(1%) —— 14(5%)
2000-2010	44 —— 42	24(1%) —— 20(5%)	27(1%) —— 15(5%)
2010-2013	17 —— 13	13(1%) —— 4(5%)	10(1%) —— 3(5%)
Total (%)	**28,6%**	**37,28%**	**34,39%**
Year	**CMR Model**	Significance (1month)	(1year)
1984-1990	23 —— 20	13(1%) —— 12(5%)	15(1%) —— 5(5%)
1990-2000	51 —— 45	28(1%) —— 23(5%)	34(1%) —— 11(5%)
2000-2010	44 —— 39	25(1%) —— 19(5%)	27(1%) —— 12(5%)
2010-2013	17 —— 12	9(1%) —— 8(5%)	9(1%) —— 3(5%)
Total (%)	**30,05%**	**38,72%**	**33,23%**

Table 4: Regressions Market Model with GARCH

	SPF		**Livingstone**		**Blue Chip**	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
γ	-0.001566	0.0411(**)	-0.002140	0.0089(***)	0.000968	0.0523(*)
λ	2.37E-06	0.2568	3.09E-06	0.1253	7.52E-06	0.0000(***)

the methodology described in the previous section were so also using regressions augmented with dummy variables.

Second we restricted the event window to 3 days obtaining almost identical results.

Finally in table 4 we present the regression model with dummy variables and the variance modeled as a GARCH equation. Therefore, γ is the dummy coefficient in the mean equation, while λ is the dummy coefficient in the variance equation. The dummy variable in the variance equation is a shifter that captures the unconditional variance changes when the news are issued. In other words, if the estimate of the variance is interpreted as a measure of uncertainty, the dummy variable shows whether there is correlation between uncertainty and the news release.

In this case the SPF and the Livingstone Survey show a significant dummy coefficient only in the mean equation. Blue Chip Financial Forecasters has a significant coefficient both in the mean and in the variance equation showing that the news release is correlated to market uncertainty. in other words the Stock Market, on average, tends to be more volatile when there is the release of the news.

4.2 Why Forecasts affect the Market

The previous section established that in 30% of the times the release of survey of forecasts affects the market by producing abnormal returns. The subsequent question is to try to understand why. The most plausible explanation is that surveys affect the market only in periods of high uncertainty, when the market makers are most interested in assessing any valuable information that can help them gauge the direction of the markets. To test this hypothesis in this section we explain the significant survey dates with some measures of uncertainty.

We use three well known indexes of uncertainty. VIX is a popular measure of the implied volatility of S&P 500 index options, it represents one measure of the market's expectation of stock market volatility over the next 30 day period.

The daily news-based Economic Policy Uncertainty Index is based on newspaper archives from Access World New's NewBank service. The primary measure for this

Table 5: Explaining significant dates with volatility indexes

	SPF		**Livingstone**		**Blue Chip**	
	Coefficient (β)	P-value	Coefficient (β)	P-value	Coefficient (β)	P-value
Ec. Unc. I.	-4.50E-06	0.6514	-5.12E-06	0.5294	4.95E-05	0.0073 (***)
Pol. Unc. I.	4.27E-05	0.0178 (**)	-9.34E-06	0.5269	0.000151	0.0000 (***)
VIX	0.000197	0.7494	-0.000246	0.1278	0.000566	0.0985

index is the number of articles that contain at least one term from each of 3 sets of terms. The first set is 'Economic' or 'Economy'. The second is 'Uncertain' or 'Uncertainty'. The third set is 'Legislation' or 'Deficit' or 'Regulation' or 'Congress' or 'Federal Reserve' or 'White House'.

The daily Equity Market-related Economic Uncertainty index is construct through an analysis of news articles containing terms related to equity market uncertainty, using newspapers from Access World New's NewsBank service.

Therefore for each survey we take the significant events given by the four different models and we run three regressions for each survey with the series of dummy as dependent variable, and one different volatility index per time as regressor:

$$D_t = \alpha + \beta X_t + \varepsilon_t$$

Where: $D_t = \begin{cases} 1 & if\, t = significant\, event \\ 0 & otherwise \end{cases}$, and X_t are the three volatility indexes (Equity Market-related Economic Uncertainty index, Policy Uncertainty Index and VIX).

Table 5 exhibits the coefficients of the Uncertainty Indexes and their p-values. Survey of Professional Forecasters shows the Policy Uncertainty Index coefficient significant at a level of 5%, this means that SPF forecasts are useful during periods of uncertainty. Livingstone Survey shows no significant coefficients, this can be explained by the fact that this Survey is taken every six months, therefore it has a little correlation with Market Uncertainty. Blue Chip Financial Forecasts shows Equity Market-related Economic Uncertainty Index coefficient significant at a level of 1% and also the Policy Uncertainty Index coefficient (1%).

5 Conclusions

In this paper we assessed the the impact of the release of three major surveys of forecasters, the Survey of Professional Forecasters, the Livingstone Survey and the

Blue Chip Survey of Forecasters on the US stock market. Using different approaches and different methods we find a surprising empirical regularity: in approximately 30 % of the cases surveys dates have a statistically significant effect on the US stock market. The significance of the survey dates seems to be related with measures of uncertainty. When uncertainty about economic or political conditions is high surveys appear to are most useful and have the greater impact on the market.

References

[1] Anga, A. Bekaert G., Wei M., (2007) Do macro variables, asset markets, or surveys forecast inflation better?, *Journal of Monetary Economics*, Vol.54, pp.1163?1212

[2] Binder, JJ. [1998]. "*The Event Study Methodology Since 1969*". *Review of Quantitative Finance and Accounting*, 11.

[3] Brown, S., Warner, J.B. (1980). "*Measuring Security Price performance*". *Journal of Financial Economics* Vol. 8, pp. 205-258.

[4] Brown, S. Warner, J.B. (1985). "*Using Daily Stock Returns (The Case of Event Studies)*". *Journal of Financial Economics* Vol. 14, pp.3-31.

[5] Campbell S., Diebold F. X., (2009) Stock Returns and Expected Business Conditions: Half a Century of Direct Evidence, *Journal of Business & Economic Statistics* April 2009, Vol. 27, No. 2

[6] Eisenbeis, R., Waggoner, D., Zha T. (2002) Evaluating Wall Street Journal survey forecasters: A multivariate approach. *Business Economics* 37 (July): pp.11?21.

[7] Ehrmann, M., Eijffinger, S., Fratzscher, M. ?The Role of Central Bank Transparency for Guiding Private Sector Forecasts,? European Central Bank working paper no. 1146 (2010).

[8] Fama E.,Fisher L., Jensen M., Roll R., (1969). "*The Adjustment of Stock Prices to New Information*". *International Economic Review*, vol.10.

[9] Lettau, M., and Ludvigson, S. (2001b), Consumption, Aggregate Wealth, and Expected Stock Returns, *The Journal of Finance,* Vol. 56, 815?849.

[10] MacKinlay A.C., (1997). "*Event Studies in Economics and Finance*". *Journal of Economic Literature*, vol. XXXV.

[11] Rivolta G., (2013). "*An Event Study Analysis of ECB Unconventional Monetary Policy*", mimeo, University of Milan.

[12] Swanson E.T., (2011). "*Let's Twist Again: a High-Frequency Event-Study Analysis of Operation Twist and Its Implications for QE2*". *Brookings Papers on Economic Activity*.