07/RT/11

Páipéar Taighde Teicniúil
Research Technical Paper

The Impact of Macroeconomic News on Bond Yields: (In)Stabilities over Time and Relative Importance

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The Impact of Macroeconomic News on Bond Yields: (In)Stabilities over Time and Relative Importance*

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Abstract

We study the daily response of T-Bond yields to the news in a large set of macroeconomic releases over the sample running from January 1997 to September 2010. The full-sample results show that the yields react systematically to a set of news consisting of the soft data, which have very short publication lags, and the most timely hard data, with the employment report being the most important release. Further looking at sub-samples over the pre-Great Recession period reveals that parameter instability in terms of absolute and relative size of yields response to news, as well as significance, is present. The often cited dominance to markets of the employment report has been evolving over time, as the size of the yields reaction to it was steadily increasing. Over the most recent crisis period, however, there has been an overall switch in the relative importance of soft and hard data compared to the pre-crisis period, with the later becoming more important even if less timely. Moreover, the scope of hard data to which markets react to has increased and is more balanced in terms of size of the response, hence less concentrated on the employment report.

JEL classification: C22, E43, G14.
Keywords: News, Real-Time Data, Term Structure.

*I would like to thank Domenico Giannone, Lucrezia Reichlin, Catherine Dehon and Vincenzo Verardi for their valuable comments. The views expressed in this paper are those of the author and do not necessarily reflect those of the Central Bank of Ireland.

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Non Technical Summary

In real-time, there is an almost daily flow of macroeconomic releases to bond markets which provide most of the relevant information on their fundamentals, i.e. the state of the economy and inflation. Given the forward looking nature of interest rates and the efficiency of asset prices, only unanticipated news that causes revisions to macroeconomic fundamentals should move market rates.

Numerous papers have studied the impact of macroeconomic news releases on financial markets. These studies differ in terms of the panel of economic surprises considered, the financial instrument, the frequency of observation and the time period examined. Hence, findings regarding which news systematically moves markets, as well as their relative importance, are sometimes conflicting.

This paper extends the analysis of the response of U.S. Treasury bond yields to macroeconomic news releases, including monetary policy actions, in several ways. First, we look at the response of different maturities to a very large panel of news, including all the important surveys, and further investigate the relative importance of soft versus hard data. Second, we use econometric methods robust to outliers in addition to standard methods, to estimate the market response to surprises. Last, we look at a sample span of 14 years, running from January 1997 to September 2010. This long and updated sample enables us to look at parameter instability over time in the response of yields to news, as well as study the recent crisis period, issues which have not yet been addressed by the extensive news literature. The motivation of this study is indeed not only to assess whether news releases induce jumps in yields conditional mean, but also to gain some insight into the real-time macroeconomic fundamentals shaping market interest rates across the yield curve

On the basis of full-sample evidence, we find that the bond market reacts mainly to the soft data and the most timely hard data, as has been documented in the news literature. However, the analysis of pre-crisis sub-samples reveals that parameter instabiliy in terms of absolute and relative size of the yield response to news, as well as in terms of statistical significance, is present. Importantly, the often cited dominance to markets of the employment report has been evolving over time rather than been constant. The size of the yields reaction to news in nonfarm payrolls was steadily increasing over the period before the Great Recession, nearly tripling for all maturities. Over the most recent crisis period, however, there has been an overall switch in the relative importance of bond markets response to soft and hard data compared to the pre-crisis period, with the later becoming more important even if less timely. Furthermore, the scope of hard data to which markets react to has increased and is more balanced in terms of size of the response, and hence less concentrated on the employment report.

1 Introduction

In real-time, there is an almost daily flow of macroeconomic releases to bond markets which provide most of the relevant information on their fundamentals, i.e. the state of the economy and inflation. Given the forward looking nature of interest rates and the efficiency of asset prices, only unanticipated news that causes revisions to macroeconomic fundamentals should move market rates.

Several papers have studied the impact of macroeconomic news releases on financial markets. These studies differ in terms of the panel of economic surprises considered, the financial instrument, the frequency of observation and the time period examined. Hence, findings regarding which news systematically moves markets, as well as their relative importance, are sometimes conflicting.

This paper extends the analysis of the response of U.S. Treasury bond yields to macroeconomic news releases, including monetary policy actions, in several ways. First, we look at the response of different maturities to a very large panel of news, including all the important surveys, and further investigate the relative importance of soft versus hard data. Second, we use econometric methods robust to outliers in addition to standard methods, to estimate the market response to surprises. Last, we look at a sample span of 14 years, running from January 1997 to September 2010. This long and updated sample enables us to look at parameter instability over time[1] in the response of yields to news, as well as study the recent crisis period, issues which have not yet been addressed by the extensive news literature. The motivation of this study is indeed not only to assess whether news releases induce jumps in yields conditional mean, but also to gain some insight into the real-time macroeconomic fundamentals shaping market interest rates across the yield curve[2] and across time.

We find, on the basis of full-sample evidence, that the bond market reacts mainly to the soft data and the most timely hard data, as has been documented in the news literature. However, the analysis of pre-crisis sub-samples reveals that parameter instabiliy in terms of absolute and relative size of the yield response to news, as well as in terms of statistical significance, is present. Importantly, the often cited dominance to markets of the employment report has been evolving over time rather than been constant. The size of the yields reaction to news in nonfarm payrolls was steadily increasing over the period before the Great Recession, nearly tripling for all maturities. Over the most recent crisis period, however, there has been an overall switch in the relative importance of bond markets response to soft and hard data compared to the pre-crisis period, with the later becoming

[1]The only exception is Faust et al (2007) who look at recursive time-varying 5-min response of exchange rate and interest rate futures to a small panel of 10 news over the period 1987 to 2002. They find that where time-variation is present, the estimated reaction tend to fall in size, except for nonfarm payrolls.

[2]The term structure literature models all the maturities as being driven by unobserved factors which summarize the information contained in yields, i.e. level, slope, and curvature. Ang and Piazzesi (2003), Diebold, Rudebusch and Aruoba (2005), Evans and Marshall (2001), among others, further introduce macroeconomic variables, in addition to yields data, into term structure models, and find that they do improve the fit as well as the forecasting performance of the model. Lu and Wu (2009) use a panel of real-time announcements of macroeconomic variables to extract the systematic economic factors that move yields and found that they predict around 80% of the daily variation in LIBOR and swap rates from the 1-month to 10-years maturities over the period 1990 to 2004.

more important even if less timely. Furthermore, the scope of hard data to which markets react to has increased and is more balanced in terms of size of the response, and hence less concentrated on the employment report.

The finance literature has focussed at the high frequency impact, i.e. intra-day, of economic news releases on the U.S. Treasury bond market. Fleming and Remolona (1997) examine five minute price changes for the 5-year Treasury note and find that each of the largest price changes over the period 1993 to 1994 and the trading surge was preceded by a macroeconomic release. Fleming and Remolona (1999) find a hump-shaped effect of the impact of news on the yield curve over the period July 1991 - September 1995. The news effects are relatively weak for short maturities and strong for intermediate maturities of 1 to 5 years. Balduzzi et al. (1997) also report similar findings. Thereafter, studies extended the analysis by looking at other financial instruments reaction to macroeconomic news. Among others, Andersen et al. (2007) and Bartolini et al. (2008) analyze stock, bond and foreign exchange markets, Faust et al. (2007) and Gilbert et al. (2010) look at interest rates futures and exchange rates, Veredas (2002) and Hess (2001), focus on T-bond futures, Beechey and Wright (2009) further examine the impact of news on spot and forward nominal and real rates.

A general conclusion from these aforementioned papers looking at very high frequency data is that many economic news releases have an impact on interest rates, the employment report having the strongest one. Furthermore, these studies look at the effect of news releases on the level of prices (conditional mean effect) and/or on the volatility of prices (conditional volatility effect). They find that news explain a substantial fraction of price volatility in the aftermath of announcements, which remains high for a relatively long period, whereas the price adjustement generally occurs very quickly.

These studies are mostly motivated by finance microstructure issues such as markets' efficiency in processing and adjusting to new information, and by considering a small window around the announcement times one should have a cleaner measure of the response of market rates to news as this should be the only news hitting markets in the time interval considered. Daily price changes are the sum of the intra-day prices changes.[3] On any given day, many news items hit markets, some of which are noise or not relevant, possibly yielding an instantaneous market reaction but having no lasting effect. For example, if there is an economic report released on day t during a given time interval, one could expect markets to react to it. But, once markets have properly assessed its information content, they may move back to their initial level if the information is redundant or too noisy. From a macroeconomic and policymaker perspective one should not be concerned about these effects which disappear after a few minutes. However, if information contained in the releases of these reports is considered to be new and fundamental for assessing economic conditions and the future stance of monetary policy, then the impact should still be significant at the daily frequency.

[3] i.e. $\Delta p_t = \Delta p_{t_1} + \Delta p_{t_2} + ... + \Delta p_{t_n}$, where Δp_t is the daily price change on day t and Δp_{t_i} are intra-day price changes, with $E_{t_{i-1}}(\Delta p_{t_i}) = 0$.

Some papers in the news literature have looked at the effect of news releases at the daily frequency on nominal yields.[4] Krueger (1996) estimates the response of 30-year yields to the employment report over the period January 1979 to April 1996. Kearney (2002) look at the 3-month rate response to this report and to money supply over the period October 1977 to December 1997. Erhmann and Fratzscher (2004) analyze the response of the yield curve to monetary policy information and 8 news releases from 1994 to 1999. Some studies have covered a broad set of news releases using daily data by focusing on other financial instruments. For example, Kliesen and Schmid (2006) study the response of the 10-years Treasury-inflation-indexed securities to a broad set of news releases and Gürkayank et al. (2005) study the response of long-term forward interest rates.

The paper is organized as follows. In Section 2 we first highlight the link between these economic releases and bond yields fundamentals and describe the real-time data flow along which these variables are released to markets. Section 3 studies the properties of the news and expectations of the macroeconomic variables, and describes the econometric methodology used to assess bond yields response to these surprises. Section 4 reports the results and Section 5 concludes.

2 The Fundamentals: Macroeconomic Releases and FOMC Actions

In this section we briefly review the economic theory as to the fundamentals of bond yields and explain how information on these fundamentals is conveyed to markets in real-time.

2.1 Bond Markets Fundamentals

The yield Y_h of a h-year nominal generic coupon paying bond is the interest rate that will equate the present value of the cash flows accruing from holding the asset to maturity with its price P_h. More formally, the price and yield of a h-year bond, paying an annual coupon CF with maturity value M, are related according to the following formula[5]:

$$P_h = \sum_{i=1}^{h} \frac{CF}{(1+Y_h)^i} + \frac{M}{(1+Y_h)^h} \tag{1}$$

Given that CF and M are fixed in the valuation formula above, the yield of a bond changes in the opposite direction from its price, hence the fundamental factors affecting bond prices are the same as those affecting yields. Note that we use yield and rate interchangeably. Given the forward looking nature of interest rates and the efficiency of asset prices, only

[4] Studies looking at the response of daily rates to news in other countries are among others, Ehrmann and Fratzscher (2004) for the German, Euro area and U.S. money markets. Gravelle and Moessner (2001) for Canadian data.

[5] Note that for U.S. Treasury bonds the known coupons pay interest semiannually. Hence the summation index of equation (1) would run from 1 to $h^* = 2 * h$, and the market convention is to compute the yield to maturity by doubling the periodic interest rate that satisfies the equation (F.J.Fabozzi (2000)).

unanticipated news that cause revisions to bonds macroeconomic fundamentals should move yields. Hence, one can decompose the change on day t yield of maturity h, $\Delta Y_{ht,}$ as:

$$\Delta Y_{ht} = \alpha_h + \beta_h(E(F_t \mid I_t) - E(F_{t-1} \mid I_{t-1})) + \xi_{ht} \tag{2}$$

where $E(F_{t-1} \mid I_{t-1})$ is the bond market expectation or assessment of the fundamentals, F_{t-1}, given the information availabe on day $t-1$, I_{t-1} , and $E(F_t \mid I_t)$ is the expectation of F_t, given the information availabe on day t, I_t. Thus $E(F_t \mid I_t) - E(F_{t-1} \mid I_{t-1})$ is the revision of the bond market assessment of its fundamentals due to news releases on day t.

According to standard macroeconomic theory, known cash flows and risk free U.S. government bonds fundamentals are related to the state of the economy and inflation. Firstly, the Fisher decomposition views the rate for maturity h as the sum of two components, a real rate component and an expected inflation component. Hence any news releases leading to revisions of one or both of these components will lead to changes in yields. Secondly, bond rates are conventionally viewed as embodying market expectations of future short-term rates, and more precisely of the federal funds rate. The expectation hypothesis (EH) of the term structure of interest rates states that bond rates reflect the current and expected future paths of short-term rates, over the holding period of the bond, plus a risk premium. Although this simple version of the EH is rejected by the data, bond rates are forward looking, and hence embody expectations of the future course of monetary policy. These expectations, in turn, are conditioned by how the Federal Reserve (Fed) conducts its policy and how it communicates its strategy (Poole and Rasche 2003) and hence depend on the transparency of the policy process. Over the past decade, the Fed has taken many steps towards being more transparent.[6] A result of this has been the increased predictability of near-term monetary policy actions as shown by Poole and Rasche (2000, 2003), and Kuttner (2001) among others.[7] Poole and Rasche (2003) further argue that this suggests that the Fed must be acting according to some rule which financial markets understand. Extensive ex-post analysis has shown that the Fed's systematic behavior is well described by simple rules such as Taylor rules. Accordingly to which the Fed should increase (decrease) the fed funds rate whenever real GDP is above (below) its trend level and inflation is above (below) its desired level (Evans, 1998).

2.2 The Real-Time Macroeconomic Data Flow

Most of the relevant information on the state of the economy and inflation, i.e on the fundamentals of bond yields, is conveyed to markets through the release of macroeconomic reports. We have collected a real-time data set containing the headline information of most

[6]The Fed has become more transparent regarding its objectives, policy instruments, decision-making procedures and policy decisions. This move to greater transparency started in February 1994, when the Federal Open Market Committee decided to announce changes in the target for the federal funds rate directly after policy decisions were taken. Next, in 1999, it started to issue a press statement shortly after each meeting, including indication of its "policy bias". Since January 2000, it replaced the "bias"by a "balance of risks "statement.

[7]These authors find that Treasury bills and bonds react only to the unexpected component of fed funds changes, and not to fed funds changes' per se.

of the regularly scheduled macroeconomic reports for the period January 1997 - September 2010.[8] Table 1 below lists the indicators or headline information of these reports. A more detailed description is provided in Appendix A. What we mean by headline information is the aggregate indicator to which the report pertains to and on which financial market participants focus and report expectations.

The data set contains the first released or announced value for these indicators and their expectations. These expectations are the median forecasts of a panel of market participants and are compiled by Bloomberg up to the day before the actual release of the indicator. The data set can be classified in two broad categories. On the one hand, there are *soft data*, i.e. survey-based variables which measure current and future expectations of manufacturers and consumers. On the other hand, there are *hard data*, nominal and real variables. Both categories of variables provide information on the state of the economy and inflation. The bulk of these reports pertain to monthly indicators. Only two reports refer to quarterly variables, real gross domestic product (GDP) and the employment cost index, and one report, initial jobless claims, refer to a weekly one.

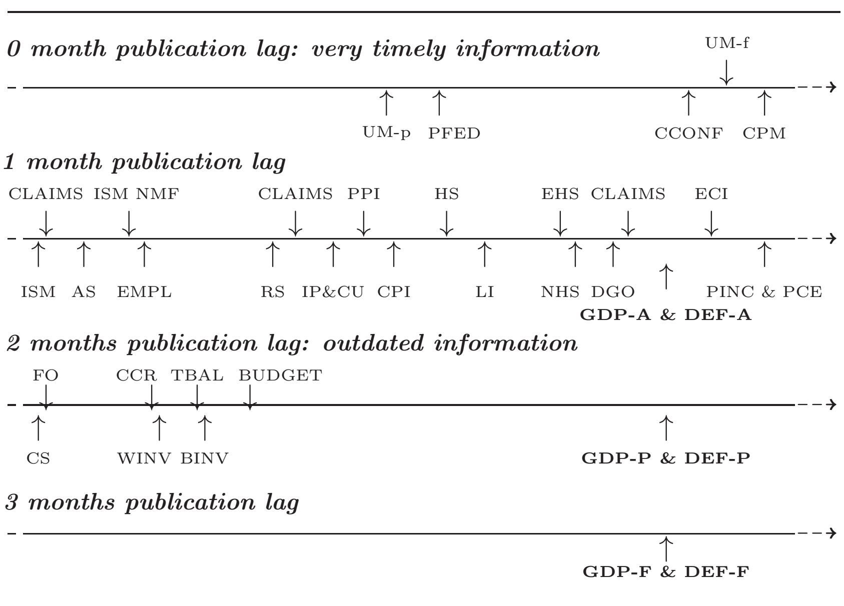
Table 1 : List of macroeconomic variables

Variables ⁄ Reports:	**Publication lag (in months)**
- University of Michigan consumer confidence, preliminary (UM-p) - survey	0
- Philadelphia Fed business outlook (PFED) - survey	0
- Conf.Board Consumer confidence (CCONF) - survey	0
- University of Michigan consumer confidence, final (UM-f) - survey	0
- Chicago purchasing mngrs business barometer (CPM) - survey	0
- Manufacturing ISM report on business (ISM) - survey	1
- Weekly initial jobless claims (CLAIMS)	0\ 1
- Auto sales (AS)	1
- Non-Manufacturing ISM report on business (ISM NMF) - survey	1
- Employment report: Total nonfarm payrolls (NFP), unemployment rate (UR) Manufacturing payrolls (NFP MF), Av. hourly Earnings (EARNINGS) Av. weekly hours (HRS)	1
- Retail sales: Total retail sales (RS), Retail sales excl.autos (RS-autos)	1
- Ind.prod & Cap.util.: Capacity utilization (CU), Industrial production (IP)	1
- PPI: Producer price index excl. food & energy (PPI core), Producer price index (PPI)	1
- CPI: Consumer price index excl. food & energy (CPI core), Consumer price index (CPI)	1
- New privately owned housing units started (HS)	1
- Leading indicator (LI)	1
- Existing home sales (EHS)	1
- New houses sold -United States (NHS)	1
- New orders for manufactured durable goods (DGO)	1
- Pers.inc. & cons.exp.: Personal income (PINC), Pers. cons. expenditures (PCE)	1\ 2
- Value of construction put in place (CS)	2
- Manufacturers' new orders (FO)	2
- Consumer credit outstanding (CCR)	2
- Inventories of merchant wholesales (WINV)	2
- Trade balance: goods and services (TBAL)	2
- Inventories: total business (BINV)	2
- Monthly budget statement (BUDGET)	2
- GDP advance: Real GDP (GDP-A), GDP deflator (DEF-A)	1
- GDP preliminary: Real GDP (GDP-P), GDP deflator (DEF-P)	2
- GDP final: Real GDP (GDP-F), GDP deflator (DEF-F)	3
- Employment cost index (ECI)	1
- FOMC scheduled & unscheduled policy actions	

[8]This sample dates refers to the release months. For a few indicators the sample starts in 1998 or 1999. The data on ISM non-manufacturing, manufacturing nonfarm payrolls, earnings and GDP deflator start in 1998, whereas those on auto sales and hours start in 1999.

In real-time, these reports are released according to a scheduled timing and most of them with a considerable delay, and thus the month m value of the different indicators are not all released at the same time. This non-synchroneous releases of data results in a daily flow of information to financial markets from which they can update their expectations on the state of the economy and inflation. Figure 1 below illustrates the average timing of the release of the different variables in a generic month m, grouped by publication lag which varies from 0 to 2 months for monthly indicators. The majority of information releases in month m refer to information pertaining to the previous month, i.e. $m-1$. Within this group of 1 month publication lag, there is a large dispersion in the reporting lag. The ISM surveys, auto sales and the employment report are released very early in the month, whereas for example personal consumption expenditures and income are released at the end of the month. The *soft data* are the more timely, as they are released during the concurrent month or at the beginning of the next month they refer to. Finally, the advance estimate of GDP, which is considered to be the "best proxy" of the state of the economy, is released in the first month following the quarter it is covers. This first estimate is based on incomplete information, and is subsequently revised as more data becomes available as well as with revisions to previously released figures. A second and third estimates[9] are released in the two following months and are based on source data for the three months of the quarter they cover and are released.

Figure 1 : The real-time data flow



[9]The second and third real-time estimates of GDP are called preliminary and final estimates respectively.

3 The Data and the Econometric Methodology

3.1 The Bond Markets Yields

The interest rates considered are 2,5,7 and 10-year yields of on-the-run- U.S. government Treasuries bonds over the sample period January 1997 to September 2010 and the frequency is daily. The total sample consists of 3441 trading days, and on 2681 of them there has been at least one macroeconomic report released.

Appendix B provides information on the empirical distribution of the daily yields changes. Firstly, on announcements and non-announcements days, as well as on the different samples, i.e. excluding and including the financial turbulences period, daily yields changes are highly concentrated in the interval [-0.1;0.1]. Secondly, on average, yields daily variation is slightly higher when there are macroeconomic releases. Lastly, there is a small proportion of extreme markets movements which are in general not due to macroeconomic releases but to systemic risk or flight to quality and liquidity effects. Indeed, our sample is rich of such events: the Asian and Russian crisis, the technology bubble burst, Enron bankruptcy, September 11 attack and of course the recent crisis. Not surprisingly, over the later period there has been a shift of mass in the distribution of daily yields changes, out of the centre into the tails, compared to the pre-crisis period. Given that regression estimation results using ordinary least squares are sensitive to such outliers[10] we also perform the analysis using a *robust to outliers* weighted least squares procedure explained in section 3.3..

3.2 The Measure of News

Bloomberg collects financial markets expectations for the headline information of these reports, i.e. the announced value of the main indicators. These expectations are the median forecasts of a panel of market participants and are compiled up to the day before the actual release of the indicator. Following others in the news literature, we use these expectations to measure the anticipated component of a data release.[11] The news component of a release is then defined as the difference between the actual released value and its survey based expected value. We denote this news or forecast error for the month m indicator i as:

$$X_{i,news}^{m} = X_{i,a}^{m} - X_{i,e}^{m}$$

where $X_{i,a}^{m}$ is the announced value of indicator i pertaining to month m and $X_{i,e}^{m}$ is its survey based expected value.

For the monetary policy shocks, we use Kuttner's (2001) market-based measure which depends on the current-month federal funds futures rate. This is a contract who settlement

[10]Even after excluding from the sample September 13, 2009 and days surrounding the Lehman bankruptcy, September 15,19,29 and 30, 2008, days where for example the 2-years yields moved by more than 40 basis points in absolute value, there are still many outliers which could distort the results.

[11]For some series there were a few missing Bloomberg expectations at the beginning of the sample. We complemented the series using Money Market Services' expectations or Barron's expectations which are the alternative source of expectations used in the news literature. All these surveys are highly correlated.

price is based on the monthly average level of the effective fed funds rate in the month of the contract. Hence, the unexpected component of a target fed funds rate change on day d of month m, can be derived from the change, up to a scale factor, in the implied rate of the current-month future on that day relative to the previous day.[12] The expected change is then computed as the difference between the actual fed funds rate change and the unexpected change.

In this section, we shortly look at the properties of the news and expectations data. We first assess the predictive content of the market-based expectations for the announced series by estimating the following regression:

$$X_{i,a}^{m} = \alpha + \beta X_{i,e}^{m} + \eta_{i}^{m} \tag{3}$$

Ordinary least squares (OLS) estimates of this equation are reported in Table C.1. of Appendix C.[13] For all indicators, the expectations are statistically significant at the 10% level, indicating that they do contain information about the announcements. However, there is a large spread in the ability of market participants to forecasts these variables, as highlighted by the adjusted R^2 which ranges from 11% to as high as 99%. Although it is standard to test the unbiasedness of expectations by testing the joint hypothesis $H_{0:}\alpha = 0, \beta = 1$ in the above equation, Holden and Peel (1990) show that this is a sufficient but not a necessary condition for unbiasedeness. They argue that correct "inference concerning unbiasedness can be obtained by testing whether the expectational error has a mean zero", i.e. $H_0 : E(X_{i,news}^{m}) = 0$. The results for this test are also reported in Appendix C, Table C.2., along with other descriptive statistics for the news. For most of the series, we do not rejected the null of unbiasedness.

3.3 The Econometric Methodology

We estimate the daily response of bond yields' of different maturities h, for $h = 2, 5, 7$ and 10-years, to macroeconomic news releases and monetary policy decisions using the standard time-series event-study methodology.

More precisely, for each macroeconomic report we estimate the following regression equation if the headline information pertains to only one variable:

$$\Delta Y_{h,t} = \alpha_{i,h} + \beta_{i,h} X_{i,t} + \sum_{j=1}^{N} \gamma_{j,h} X_{j,t}^{c} + \lambda_{h}^{S} X_{fed,t}^{S} + \lambda_{h}^{U} X_{fed,t}^{U} + \varepsilon_{h,t} \tag{4}$$

[12]Monetary policy shocks derived from the federal funds future market have been extensively used and described in the literature. For further details on the construction of these news see, among others, Kuttner (2001), Poole and Rasche (2000 and 2003) and Thornton (2009).

[13]As for some indicators there are a few large outliers, mostly associated with the period following the September 11 attack or the recent crisis period, we also present results using a weighted least square procedure, which downweights the outliers. The procedure is detailed in Appendix D.

In the case where there is more than one indicator considered as headline information for the report[14] for which market expectations are compiled, we estimate equation (5) instead:

$$\Delta Y_{h,t} = \alpha_{i,h} + \sum_{i=1}^{B} \beta_{i,h} X_{i,t} + \sum_{j=1}^{N} \gamma_{j,h} X^c_{j,t} + \lambda^S_h X^S_{fed,t} + \lambda^U_h X^U_{fed,t} + \varepsilon_{h,t} \qquad (5)$$

In both equations, $\Delta Y_{h,t}$ is the day t change in the h-year yield, $X_{i,t}$ measures the unexpected component of indicator i where we drop the news subscript to simplify the notation, $\beta_{i,h}$ is the response of the h-year yield to that news, and B is the number of variables belonging to the report which are always released at the same time. The error term, $\varepsilon_{h,t}$, accounts for all factors, other than macroeconomic news releases, that affect the yield on that day. Furthermore, on some days more than one report is issued and we control for these concurrent releases in equation (4) and (5) by including the respective news X^c_j if released at least on 10% of the days of the report of interest.[15] We also always control for fed funds rate changes by including the market-based monetary policy shocks. We further distinguish scheduled from unscheduled changes, by including two separate variables, X^S_{fed} and X^U_{fed} respectively, given the comment made in the next paragraph.

To measure the yields response to monetary policy shocks, we estimate the following baseline regression:

$$\Delta Y_{h,t} = \alpha_{i,h} + \lambda_h X_{fed,t} + \sum_{j=1}^{N} \gamma_{j,h} X^c_{j,t} + \varepsilon_{h,t} \qquad (6)$$

The inclusion of the concurrent announcements, X^c_j, enables one to control for the simultaneaous response of the fed fund futures rates and yields to other news releases, by netting-out their effect from the market-based monetary policy shocks, X_{fed}. Thornton (2009) and Barnes and Pancot (2010), have recently highlighted the importance of correcting for this “joint-response bias”in order to assess the response of yields to monetary policy actions. However, another issue when assessing market rates reaction to fed funds changes is how one deals with the scheduled versus unscheduled nature of such changes. It is standard in the literature not to differentiate between them, but as noted by Poole and Rasche (2003), since 1994, scheduled policy actions generate very little market response compared to the unscheduled ones. The analysis of the expectations information content in section 3.2. shows that the former are indeed better predicted than the later. Over

[14]This is the case for the employment report, industrial production and capacity utilization, retail sales, personal income and consumption expenditures, consumer prices and producer prices indexes and real GDP and GDP deflator.

[15]One creates a vector for X^c_j of the same lenght as X_i by putting zeros whenever X^c_j is not released on a release day of i. It is standard in the news literature to include all such concurrent announcements. However, in some cases, these regressions include a lot of sparse variables, and even sometimes highly correlated vector of mostly zeros. Hence, we used a stepwise procedure, and exclude each time the least significant concurrent announcement. We also compare the results to regressions where we keep all concurrent non-significant variables, as well as include only the same block variables. We find that the most important factor to correctly assess the impact of a given news is to control for indicators belonging to the same block.

the full-sample, there are 50 days of fed funds changes, and 6 were unscheduled rate cuts. The surprises for the unscheduled rate cuts are larger than the scheduled ones and always negative, however bond yields decreased only following 3 out of 6 such cuts, and increased in the 3 others cases. To control for these differential response, we further estimate equation (7):

$$\Delta Y_{h,t} = \alpha_{i,h} + \lambda_h^S X_{fed,t}^S + \lambda_h^{U^+} I^+ X_{fed,t}^U + \lambda_h^{U^-} I^- X_{fed,t}^U + \sum_{j=1}^{N} \gamma_{j,h} X_{j,t}^c + \varepsilon_{h,t} \tag{7}$$

where X_{fed}^S and X_{fed}^U are the monetary policy shocks referring to scheduled and unscheduled meetings respectively, I^+ and I^- are interactive dummies controlling for the bond yields asymmetric reaction following unscheduled cuts.

As units of measurement differ across macroeconomic variables, we follow the common practise in the literature to divide the news by their standard deviation, hence using standardized surprises[16] as regressors instead of the raw ones. The coefficents $\beta_{i,h}$ thus measure the response, in basis points, of the h-year yield to a one unit standard deviation in news i. For their part, monetary policy shocks are untransformed and left in basis points.

Lastly, given the aforementioned non-robustness of standard ordinary least squares (OLS) to outliers and the presence of such observations in the y-and-x-dimensions, equations (4) to (7) are estimated using *robust to outliers* weighted least squares (WLS)[17] in addition to OLS as a robustness check of the results. The WLS procedure simply downweights the observations according to their degree of outlyingness before estimation by OLS, and observations are classified as outlier or non-outlier using robust statistical methods which can resist up to 50% of outliers before breaking down.[18] The details of the WLS procedure is explained in Appendix D. However, this implies than one can only control for concurrent reports announcements, using the WLS estimation, if they occur for at least 50% of the days.

4 The Results

This section presents the estimation results over the full sample period January 1997 to September 2010, a pre-crisis sample, i.e. up to June 2007, and a so-called crisis sample which runs from July 2007 up to the present.[19] This split of the sample will enable us to have a first gauge as to whether bonds response to news has changed since the Great Recession. However, a closer look at 5-years rolling sub-samples over the pre-crisis period

[16]This standardization does not affect either the significance of the coefficients nor the fit of the regressions.

[17]We are grateful to Vincenzo Verardi for his suggestion and helpful advice on this procedure.

[18]For example if one wants to estimate the center of a data set and just one observation is a huge outlier, the mean will be strongly affected, whereas the median will not. The median can resist up to 50% of outliers before breaking down.

[19]Although turbulences in financial markets have considerably attenuated compared to 2007-2008, as of time of writing this paper, uncertainties remain as to the full impact of the crisis, as highlighted by the still weak US job and housing markets, as well as the second round of so-called quantitative easing by the Fed, we decided to define the crisis period up to September 2010.

reveals that parameter instability over time in the response of the spectrum of yields to some news is present, and hence it is also necessary to take it into account when comparing the crisis versus pre-crisis results. We do not report sub-samples results for the news to the quarterly variables nor for monetary policy actions[20], since sub-periods results would be based on too few observations for meaningful inference.

The full set of results are reported in the Tables of Appendix E and are structured as follow. Indicators are displayed according to their timeliness, i.e. moving left from right (and then downwards) means a longer publication lag. For a given indicator, the first two columns show the average response of the h-year yield to a standardized surprise, stars indicate that the coefficient is significantly different from zero at the 1%(***), 5%(**) and 10%(*) levels using White standard errors. The last two columns display the percentage of daily variation in the yield accounted for by that news releases, i.e. the adjusted R^2 from a univariate regression of yields on news of that indicator. For multi-variables reports, the R^2 refers to a regression including all variables[21] belonging to the report, and is only displayed once with the most important variable for that block. Results are shown using OLS and WLS estimation, columns (a) and (b) respectively. The main findings are summarized in Figures 2 and 3 below which show the absolute value of the yields response to statistically significant news over the full, pre-crisis and crisis samples, whereas Appendix E contains similar Figures (E.1 to E.4.) for each pre-crisis sub-sample.

The signs of the yields response to statistically significant news are economically consistent.[22] Higher than expected releases in pro-cyclical variables, such as nonfarm payrolls, results in yield increases, whereas, higher than expected outturn in counter-cyclical variables, i.e. claims and the unemployment rate, leads to yield decreases.

We start the analysis with the **full-sample** results. The following observations are made:

- there is a **set of 12 news releases** that are **significant across all maturities and estimation methods**. These are the **soft data**, which are the most timely, except the Univ.Mich. revised sentiment. Among the **hard data**, these are jobless claims, total nonfarm payrolls and earnings, retail sales, capacity utilization, existing home sales and core CPI.

- surprises to auto sales and to the unemployment rate mainly affect the short-end of the bonds' yield curve whereas surprises to core PPI, new houses sales and trade balance, affect medium to long term yields. Durable goods orders and wholesales inventories news are significant only with the WLS estimation.

- Only the 2-year yield reacts significantly to news to advance GDP and deflator.

[20] Which account for 7 news out of the 44 studied.

[21] These variables are labelled with a *block k* in brackets in addition to their identifier.

[22] Note that there are a few cases over the sub-samples with significant news but incorrect signs. These is mostly due the fact that the coefficients are multiple regressions coefficients, hence they net out the impact of the other variables included from the univariate regression coefficient, which has the correct sign. Hence in Figures 2 and 3, as well as the Figures of Appendix E we only display the coefficients when it is significant and has the correct sign.

Figure 2 : Bond markets response to macroeconomic news - OLS estimation

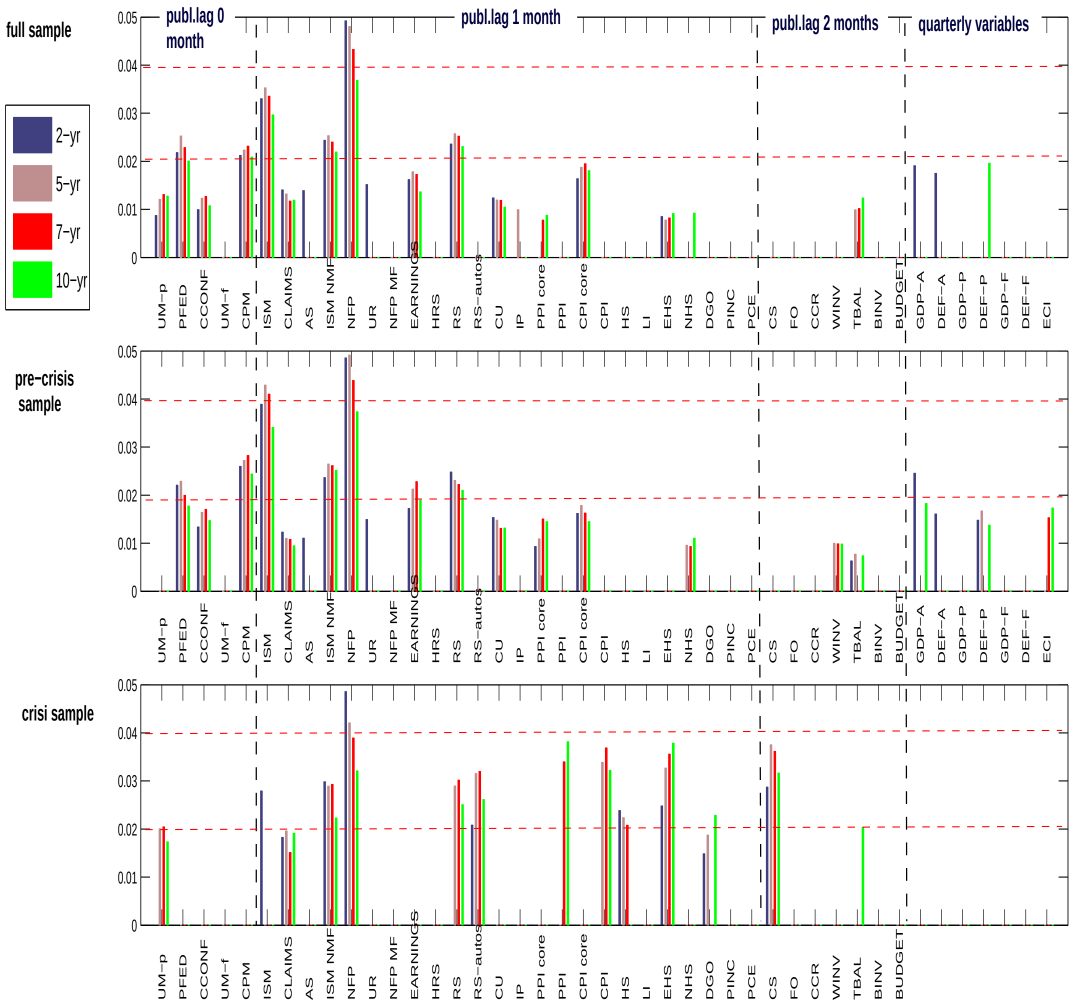
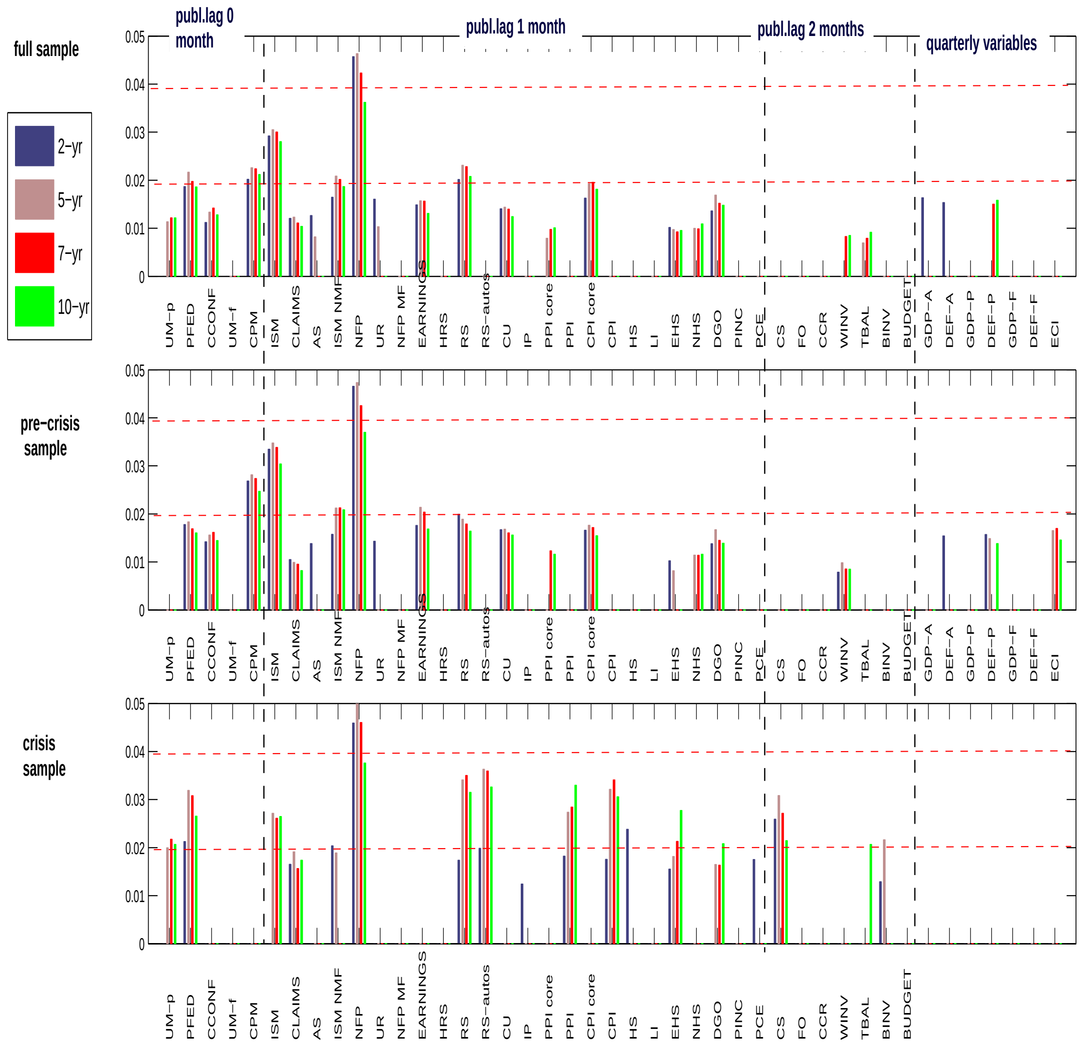


Figure 3 : Bond markets response to macroeconomic news - WLS estimation



Figures (2) and (3) further show that yields reaction to economic surprises are in general fairly uniform across maturities, whether measured in terms of the β coefficient or R^2. The only indicator which has a clear impact on the slope of the yield curve, with its effect decreasing with maturities, is total nonfarm payrolls. Moreover, news to nonfarm payrolls also dominate both in terms of the size of the yields response to it as well as in terms of percentage of daily variation in yields accounted for by its release. The ISM manufacturing survey ranks second in terms of order of importance. Note that among the soft data group, the bond market discriminate variables according to their scope rather than their timeliness. Firstly, the business surveys are less timely than the consumer surveys, but are more important, both in terms of size of the response and adjusted R^2. Secondly, the magnitude of the bonds response to news in the national business surveys (ISM and ISM NMF), which are released well after the regional ones (PFED and CPM) is stronger than the latter.

Also evident from Figures (2) and (3) is the fact that the bulk of the significant news are the ones released earlier, and that the size of the response, especially for hard data, is generally decreasing with publication lags. Hence, timeliness, that is how soon data are released after the period covered ends, is a factor at play in determining the relative importance of news. Hess (2001), who examines 5-minutes windows around announcement times in the Treasury bond futures market from January 1994 to December 1999, finds that timeliness within a class of similar indicators[23] matters. Indeed, the wide spread in reporting lags in conjunction with the fact that macroeconomic variables are highly collinear, as shown by Giannone, Reichlin and Sala (2004) implies that one should not expect markets to respond to all variables. After some time, the marginal information content of a release with respect to fundamentals will be very small, hence it should not yield a strong reaction from markets. This is confirmed by the fact that for each of the following group of highly correlated variables, durable goods and factory orders, wholesales and business inventories, Univ.Mich. preliminary and final sentiment as well as the sucessive GDP releases, it is only the timeliest one that move markets.

This link between timeliness and information content is formalized by Giannone, Reichlin and Small (2008) in the context of nowcasting GDP. They model the updating of the nowcast of GDP as indicators are released throughout the month and study the marginal contribution of a block of releases along two dimensions, timeliness and quality. The sooner a variable is released, the less information there is to predict its value [24] and hence the bigger its news information content, ceteris paribus. Quality refers to the predictive power of a block of releases for GDP, controlling for its timing. They find that the very timely soft data block consisting of the variables belonging to the Phil.Fed business survey are more important than hard data for GDP because of their timeliness. Among the hard data, the employment report is the most important block, and the marginal contribution of latter released hard data is small.

[23] He groups indicators into the following classes: overall production level, demand for consumption goods and demand in housing sector for economic activity indicators, and measures of past price changes and early inflation indicators for those relating to inflation expectations.

[24] Note that in their framework expectations are model based but the same principle applies to market based expectation which are also conditioned upon the available information.

Gilbert, Scotti, Strasser and Vega (2010) further investigate the determinants of the relative importance of news on U.S. Treasury bond using high frequency data, i.e. 5-minutes price changes. They study three factors that may affect news impact on prices: timeliness, revision noise and information content for nowcasting GDP, inflation and FOMC target rate decisions. They find that market respond more strongly to news that have information content for GDP, the reaction to nonfarm payrolls is bigger than the one to the ISM survey, but, contrary to others in the nowcasting literature, they find that the later has more information content for GDP than the former.

Lastly, yields respond significantly to unexpected fed funds changes as reported in Table E.1. in Appendix E. Consistent with other studies in this literature, we find that yields increase following a surprise monetary policy tightening, and that the size of the response decreases with maturities. As expected, not controlling for the different nature of scheduled versus unscheduled changes, overestates the results. Once these events are distinguished, using the WLS procedure or augmenting the equation with dummies, the size of the response coefficient considerably decreases, and is significant only for the shorter, 2 and 5-years, maturities. Note that in the table we did not report the estimation results for the interactive dummies for the unscheduled rate cuts to save space, but for all maturities it is I^+ that is significant. When yields decrease following unscheduled cuts, their reaction is not statistically different from their reaction following scheduled policy changes, as they generally move in the same direction. This further highlights the importance of controlling for outliers.

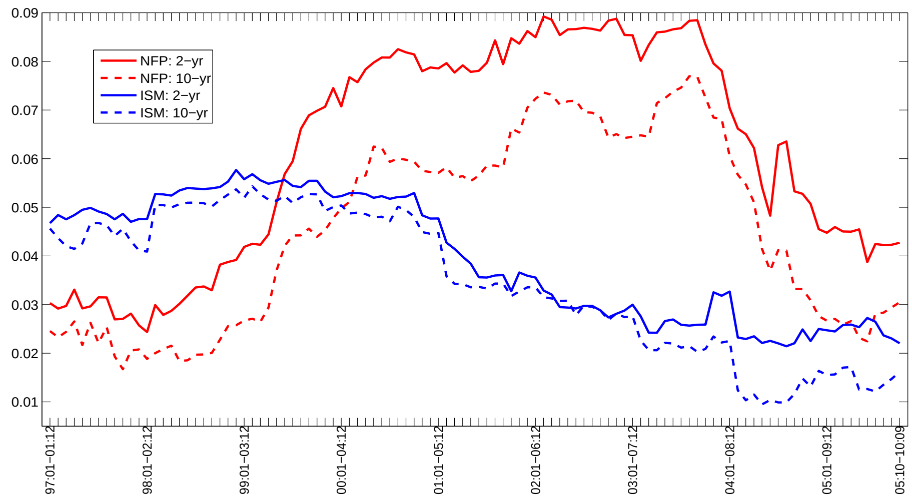
The discussion so far has focussed on full-sample results. Here after, we further investigate the **stability/instability of the results over time**, for the monthly and weekly macroeconomic reports, and we compare the full sample results to rolling 5 years pre-crisis sub-samples[25] (Figures E.1. to E.4. in Appendix E) and to the recent crisis period (Figures (2) and (3)). Some of the results about bond yields response to news, in terms of significance and order of importance, are indeed subject to time variation.

First an interesting finding is that, over the pre-crisis sub-samples, the absolute and relative size of the markets response to news in nonfarm payrolls was steadily increasing, nearly tripling for all maturities when comparing to the beginning. The often cited, in the news literature, prevalance to the markets of the employment report over retail sales, is only evident from the second sub-sample onwards, and over the ISM surveys, from the third one onwards. In order to gauge better the dating of this change, Figure (4)[26] below further plots the response coefficient for the 2-and-10-years bonds to news in nonfarm payrolls and ISM manufacturing survey over 5 years rolling samples, where the origin is moved forward by 1 month only.

[25]The sub-samples considered are 1997 to 2001, 1999 to 2003, 2001 to 2005 and 2003 to 2007, all start in January and end in December of the respective years except for the last one which ends in June. The jump between sub-samples is 2 years, using a smaller jump period between them does note change the general picture about stability/instability of the coefficients.

[26]Results using WLS estimation or for other maturities are qualitatively the same.

Figure 4 : Time-varying response to News in NFP and ISM (OLS)



The reversal in the relative importance of these two key indicators to markets seems to have occured around 1999/2000.[27] The monetary policy anticipation hypothesis, according to which markets respond to news they anticipate the Fed to react to, has often been cited by market participants and in the press as the driver for the predominance of the employment report. But, firstly, the dual mandate of the Fed to foster maximum employment and price stability was established well before that date and known to the markets.[28] Secondly, over the past decade, extensive ex-post analysis has shown that the Fed's systematic behavior is well described by Talylor rules, accordingly to which it should increase (decrease) the fed funds rate whenever real GDP is above (below) its trend level and inflation is above (below) its desired level (Evans, 1998). However, there is no clear evidence that the predictive content of nonfarm payroll and ISM for the state of the economy or inflation has changed around that time. A possible explanation could be that this was a result of the Fed greater transparency regarding its decision-making procedures, as of 1999 onwards, and of the markets reading of the Fed statements given its mandate.[29] Also interesting to note from Figure (4) is that over the later period the magnitude of the response to nonfarm payrolls has strongly decreased. We will return to this further.

For the remainder of the hard data there is a lot of time variation regarding their significance. For example, the full-sample results for capacity utilization are mostly driven by its

[27]The 2001 recession is already included in the first sub-sample which starts in 1997 and excluded from the latter ones where the coefficient for NFP is much bigger than that for ISM, hence it cannot be the factor underlying the increase in the employement report importance.

[28]Furthermore, prior to 1994, some fed funds rate changes took place on the days of the employment report releases, and as such have been considered/known as an endogeneous response to that report, see footnote 9 of Gürkaynak, Sack and Swanson (2005).

[29]Indeed it is now well known that the Fed works in a so-called data-rich environment, and hence looks at many data, others, than the employemnt report .

importance over the first part of the sample. New houses starts and wholesales inventories were significant over the first sub-sample, 1997-2001, whereas the trade balance was significant over the last sub-sample, 2003-2007. News to the core CPI index were signigificant over over sub-crisis samples, except 1999-2003, whereas, core PPI was significant only over the sample 2003-mid 2007. Furthermore, results in the news literature generaly find that the response to CPI is stronger than to PPI, which is indeed the case when looking at the full sample period, but this does not hold over the 2003-2007 sub-sample where PPI is significant. Moreover, for the most recent period, it is the headline indicators of both indices which are significant and the response of long-term yields is much stronger than that of the short-term yields.

Looking at the soft data group, the evidence in appendix E shows that the size of the markets response to consumer confidence and sentiment news, as well as the percentage of daily variation accounted for by such news, was strongly decreasing over time. The consumer confidence full sample significance is mainly driven by the first period, and more especially from 1997 to 2001, as it is significant only up to sub-samples ending in 2003 or 2005, depending on the maturity. Whereas, consumer sentiment significance is concentrate over the crisis period. Given the deterioration of the U.S. job and housing markets along with the strong contribution of private consumption to GDP growth, it is not too surprising that markets focus again on consumer confidence/sentiment indicators. Both surveys are overall quite similar and no conclusive evidence regarding their ranking and forecasting ability of future consumer spending exist in the literature, hence the conjecture is that the significance of consumer sentiment over the crisis period is due to its timeliness.

The business surveys indicators, for their part, are significant across maturities over all pre-crisis sub-samples, with the manufacturing ISM survey always dominating. Over the recent period, results are more mixed as the Chigaco purchasing manager index is not significant anymore, the Phil.Fed. and ISM manufacturing surveys are only significant with WLS estimation[30], while the ISM non-manufacturing surveys mostly affect the shorter end of the yield curve.

Lastly, over the recent **crisis period**, there has been an overall switch in the relative importance of bond markets response to soft and hard data compared to the pre-crisis sample, with the later becoming more important even if less timely, as evident from Figures (2) and (3). Furthermore the scope of hard data to which markets react to has also increased and is more balanced in terms of size of response as shown in the tables in appendix E as the response coefficient to news in claims, retail sales, housing starts, existing homes sales, construction spending and price index strongly increased, whereas that of nonfarm payrolls decreased. Note surprisingly, bond markets have focussed more on news releases relating to the state of the housing market. In normal times, i.e. the pre-crisis sample[31], given that the housing market variables are released latter, their marginal informational is weak. However, in extreme times, non linearities appear in the sense that markets view the marginal informational content of these variables also depending on their level.

[30]A closer inspection of the data indeed revealed a big negative outlier in the yields, and once excluded, the coefficients are also significant with OLS estimation.

[31]Results for this 10 years sample are mostly driven by the long expansion.

5 Conclusion

In this paper, we analyze the daily response of nominal Treasury bond yields of different maturities to a large panel of macroeconomic news releases over the sample period January 1997 to September 2010. The full-sample estimation results show that the bond market reacts systematically to a small set of news consisting of the soft data, which have very short publication lags, and the most timely hard data, with the employment report being the most important release. Looking at sub-samples over the period before the Great Recession reveals that parameter instabiliy in terms of absolute and relative size of yields response to news, as well as significance, is present. For hard data especially, there is non negligeable time-variation, and this helps explain some of the conflicting findings of the news literature. Moreover, the often cited dominance to markets of the employment report has been evolving over time rather than been constant. The size of the yields reaction to news in nonfarm payrolls was steadily increasing over the period before the Great Recession, nearly tripling for all maturities. Over the most recent crisis period, however, there has been an overall switch in the relative importance of bond markets response to soft and hard data compared to the pre-crisis period, with the later becoming more important even if less timely. Furthermore, the scope of hard data to which markets react to has increased and is more balanced in terms of size of the response, and hence less concentrated on the employment report. In particular, bond markets react more strongly to a wider scope of the less timely housing sector variables, which is not surprising given the state of that market. This suggest that the bond market views the marginal information content of these news releases as higher in such a bad state.

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Appendix A: Description of the Macroeconomic Reports

		Release month for month m variable
Name of report:	University of Michigan Consumer Sentiment - preliminary	
Reporting agency:	Reuter's -University of Michigan	
Indicator:	**Consumer Sentiment (UM-prel.)**	m
Reported as:	Level	
Name of report:	Busines Outlook Survey	
Reporting agency:	The Federal Reserve Bank of Philadelphia	
Indicator:	**Philadelphia Fed index (PFED)**	m
Reported as:	Level, seasonally adjusted	
Name of report:	The Conference Board's Consumer Index	
Reporting agency:	The Conference Board	
Indicator:	**Consumer Confidence (CCONF)**	m
Reported as:	Level	
Name of report:	University of Michigan Consumer Sentiment - final	
Reporting agency:	Reuter's -University of Michigan	
Indicator:	**Consumer Sentiment (UM-final)**	m
Reported as:	Level	
Name of report:	The Chicago Report	
Reporting agency:	National Association of Purchasing Management Chicago Inc. and Kingsbury International Ltd	
Indicator:	**Chicago Purchasing Managers Business Barometer (CPM)**	m
Reported as:	Level - 3 month average, seasonally adjusted	
Name of report:	Manufacturing ISM Report on Business	
Reporting agency:	Institute for Supply Management	
Indicator:	**Purchasing Managers index (ISM)**	$m+1$
Reported as:	Level, seasonally adjusted	
Name of report:	Initial Jobless claims	
Reporting agency:	Employment and Training Administration, U.S. Department of Labor	
Indicator:	**Initial Jobless claims (CLAIMS)**	$m/m+1$
Reported as:	Level	
Name of report:	Sales of vehicles	
Reporting agency:	Department of Transportation	
Indicator:	**Sales of domestic-made light vehicles (AS)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Name of report:	Non-Manufacturing ISM Report on Business	
Reporting agency:	Institute for Supply Management	
Indicator:	**Non-Manufacturing Purchasing Managers index (ISM NMF)**	$m+1$
Reported as:	Level, seasonally adjusted	
Name of report:	The Employment Situation	
Reporting agency:	U.S. Department of Labor: Bureau of Labor Statistics	
Indicator:	**Total Nonfarm Payrolls: All Employees (NFP)**	$m+1$
Reported as:	MoM chg , seasonally adjusted	
Indicator:	**Manufacturing Nonfarm Payrolls: All Employees (NFP MF)**	$m+1$
Reported as:	MoM chg , seasonally adjusted	
Indicator:	**Civilian Unemployment Rate (UR)**	$m+1$
Reported as:	%, seasonally adjusted	
Indicator:	**Average Hourly Earnings (EARNINGS)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Indicator:	**Average Workweek (HRS)**	$m+1$
Reported as:	hours, seasonally adjusted	

		Release month for month m variable
Name of report:	Advance Monthly Sales for Retail and Food Services	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**Retail and Food Services sales - total (RS)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Indicator:	**Retail and Food Services sales - excl. autos (RS-autos)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Name of report:	G.17 Industrial Production and Capacity Utilization	
Reporting agency:	Board of Governors of the Federal Reserve	
Indicator:	**Industrial Production (IP)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Indicator:	**Capacity Utilization: total industry (CU)**	$m+1$
Reported as:	% of capacity, seasonally adjusted	
Name of report:	Producer Price Indexes	
Reporting agency:	U.S. Department of Labor: Bureau of Labor Statistics	
Indicator:	**Producer Price Index: Finished goods, less food and energy (PPI core)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Indicator:	**Producer Price Index: Finished goods(PPI)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Name of report:	Consumer Price Indexes	
Reporting agency:	U.S. Department of Labor: Bureau of Labor Statistics	
Indicator:	**Consumer Price Index for All Urban Consumers: All items less food and energy (CPI core)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Indicator:	**Consumer Price Index for All Urban Consumers: All items (CPI)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Name of report:	Housing Starts / Building Permits - New Residential Construction	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**New Privately Owned Housing Units Started - United States (HS))**	$m+1$
Reported as:	Thousands of units, seasonally adjusted at annual rate	
Name of report:	U.S. Leading Economic Indicators and Related Composite Index	
Reporting agency:	The Conference Board	
Indicator:	**Leaing Indicator - diffusion index (LI)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Name of report:	Existing Home Sales	
Reporting agency:	National Association of Realtors	
Indicator:	**Existing Home Sales (EHS)**	$m+1$
Reported as:	Millions of units, seasonally adjusted annual rate	
Name of report:	New Home Sales - New Residential Sales	
Reporting agency:	U.S. Department of Commerce: Census Bureau and U.S. Department of Housing and Urban Development	
Indicator:	**New Houses Sold - United States (NHS)**	$m+1$
Reported as:	Thousands of units, seasonally adjusted at annual rate	
Name of report:	Advance Report on Durable Goods Manufacturers' Shipments, Inventories and Orders	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**New Orders for Manufactured Durable Godds (DGO)**	$m+1$
Reported as:	MoM %, seasonally adjusted	
Name of report:	Personal Income and Outlays	
Reporting agency:	U.S. Department of Commerce: Bureau of Economic Analysis	
Indicator:	**Personal Income - current dollars (PINC)**	$m+1/m+2$
Reported as:	MoM %, seasonally adjusted at annual rate	
Indicator:	**Personal Consumtion Expenditures - current dollars (PCE)**	$m+1/m+2$
Reported as:	MoM %, seasonally adjusted at annual rate	
Name of report:	Construction Spending	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**Value of Construction Put in Place in the US (CS)**	$m+1/m+2$
Reported as:	MoM %, seasonally adjusted annual rate	
Name of report:	Manufacturers' Shipments, Inventories and Orders	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**Manufacturers' New Orders (FO)**	$m+1/m+2$
Reported as:	MoM %, seasonally adjusted	

		Release month for month m variable
Name of report:	G.19 Consumer Credit	
Reporting agency:	Board of Governors of the Federal Reserve	
Indicator:	**Consumer Credit Outstanding - total (CCR)**	$m+1/m+2$
Reported as:	MoM chg, seasonally adjusted	
Name of report:	Monthly Wholesales Trade: Sales and Inventories	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**Inventories of Merchant Wholesales - total (WINV)**	$m+2$
Reported as:	MoM %, seasonally adjusted	
Name of report:	U.S. International Trade in Goods and Services	
Reporting agency:	U.S. Department of Commerce: Census Bureau and Bureau of Economic Analysis	
Indicator:	**Trade Balance: Goods and Services, Balance of Payments basis (TBAL)**	$m+2$
Reported as:	Billions of dollars, seasonally adjusted	
Name of report:	Manufacturing and Trade Inventories and Sales	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**Inventories: total business (BINV)**	$m+2$
Reported as:	MoM %, seasonally adjusted	
Name of report:	Monthly Treasury Statement of Receipts and Outlays of the US	
Reporting agency:	Financial Management Service (Department of the Treasury)	
Indicator:	**Deficit - Surplus of the US Government (BUDGET)**	$m+2$
Reported as:	Millions of dollars, seasonally adjusted	

		Release quarter for quarter q variable
Name of report:	Gross Domestic Product - advance estimate	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**Real GDP (GDP-advance)**	$q+1: \ 1st \ \ month$
Reported as:	QoQ % , seasonally adjusted annual rate	
Indicator:	**GDP deflator (DEF-advance)**	$q+1: \ 1st \ \ month$
Reported as:	QoQ % , seasonally adjusted annual rate	
Name of report:	Gross Domestic Product - preliminary estimate	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**Real GDP (GDP-prel.)**	$q+1: \ 2nd \ \ month$
Reported as:	QoQ % , seasonally adjusted annual rate	
Indicator:	**GDP deflator (DEF-prel.)**	$q+1: \ 2nd \ \ month$
Reported as:	QoQ % , seasonally adjusted annual rate	
Name of report:	Gross Domestic Product - final estimate	
Reporting agency:	U.S. Department of Commerce: Census Bureau	
Indicator:	**Real GDP (GDP-final)**	$q+1: \ 3rd \ \ month$
Reported as:	QoQ % , seasonally adjusted annual rate	
Indicator:	**GDP deflator (DEF-final)**	$q+1: \ 3rd \ \ month$
Reported as:	QoQ % , seasonally adjusted annual rate	
Name of report:	Employment Cost Index	
Reporting agency:	U.S. Department of Labor: Bureau of Labor Statistics	
Indicator:	**Employment Cost Index for Total Compensation (ECI)**	$q+1: \ 1st \ \ month$
Reported as:	QoQ %, seasonally adjusted	

Appendix B: Bond Yields Empirical Distribution

Table B.1.: % of daily yields changes in a given interval (in basis points)

	Total sample: Jan. 1997 to Sept. 2010										
	< -0.4	$[-0.4; -0.3[$	$[-0.3; -0.2[$	$[-0.2; -0.1[$	$[-0.1; -0.05[$	$[-0.05; 0.05]$	$]0.05; 0.1]$	$]0.1; 0.2]$	$]0.2; 0.3]$	$]0.3; 0.4]$	> 0.4
	News days (T=2681)										
2yr	0.1%	0.0%	0.6%	5.1%	12.8%	66.7%	9.4%	4.8%	0.4%	0.1%	0.0%
5yr	0.0%	0.1%	0.4%	6.5%	14.7%	60.6%	10.8%	6.1%	0.8%	0.0%	0.0%
7yr	0.0%	0.0%	0.5%	5.7%	14.8%	60.6%	11.1%	6.3%	0.9%	0.0%	0.0%
10yr	0.0%	0.0%	0.3%	5.1%	13.4%	64.2%	10.5%	5.9%	0.6%	0.0%	0.0%
	No-News days (T=760)										
2yr	0.0%	0.0%	0.0%	2.4%	10.8%	74.3%	10.8%	1.3%	0.1%	0.3%	0.0%
5yr	0.0%	0.0%	0.1%	2.8%	12.4%	69.9%	12.4%	2.1%	0.3%	0.1%	0.0%
7yr	0.0%	0.0%	0.1%	2.9%	13.2%	69.9%	10.8%	2.9%	0.3%	0.0%	0.0%
10yr	0.0%	0.0%	0.1%	2.9%	11.3%	72.5%	10.4%	2.5%	0.3%	0.0%	0.0%
	Pre-crisis sample: Jan. 1997 to June 2007										
	News days										
	< -0.4	$[-0.4; -0.3[$	$[-0.3; -0.2[$	$[-0.2; -0.1[$	$[-0.1; -0.05[$	$[-0.05; 0.05]$	$]0.05; 0.1]$	$]0.1; 0.2]$	$]0.2; 0.3]$	$]0.3; 0.4]$	> 0.4
	News days										
2yr	0.0%	0.0%	0.4%	4.5%	12.1%	68.9%	9.2%	4.6%	0.3%	0.0%	0.0%
5yr	0.0%	0.0%	0.3%	5.0%	13.7%	65.4%	10.0%	5.0%	0.6%	0.0%	0.0%
7yr	0.0%	0.0%	0.3%	4.3%	13.9%	65.6%	10.3%	4.8%	0.7%	0.0%	0.0%
10yr	0.0%	0.0%	0.2%	3.7%	12.4%	68.7%	10.0%	4.4%	0.5%	0.0%	0.0%
	No-News days										
2yr	0.0%	0.0%	0.0%	1.4%	9.4%	78.3%	9.7%	1.0%	0.2%	0.0%	0.0%
5yr	0.0%	0.0%	0.0%	1.7%	10.2%	74.9%	11.1%	1.9%	0.2%	0.0%	0.0%
7yr	0.0%	0.0%	0.0%	1.9%	11.3%	74.2%	9.7%	2.7%	0.2%	0.0%	0.0%
10yr	0.0%	0.0%	0.0%	1.7%	9.6%	76.1%	10.4%	2.0%	0.2%	0.0%	0.0%
	Crisis sample: July 2007 to Sept. 2010										
	< -0.4	$[-0.4; -0.3[$	$[-0.3; -0.2[$	$[-0.2; -0.1[$	$[-0.1; -0.05[$	$[-0.05; 0.05]$	$]0.05; 0.1]$	$]0.1; 0.2]$	$]0.2; 0.3]$	$]0.3; 0.4]$	> 0.4
	News days										
2yr	0.3%	0.0%	1.1%	7.0%	15.3%	59.6%	10.1%	5.6%	0.6%	0.3%	0.0%
5yr	0.2%	0.3%	0.8%	11.1%	17.8%	45.4%	13.3%	9.8%	1.4%	0.0%	0.0%
7yr	0.2%	0.2%	1.1%	10.3%	17.8%	44.8%	13.4%	10.9%	1.2%	0.2%	0.0%
10yr	0.2%	0.0%	0.8%	9.4%	16.4%	49.6%	12.0%	10.8%	0.9%	0.0%	0.0%
	No-News days										
2yr	0.0%	0.0%	0.0%	5.7%	15.5%	60.9%	14.4%	2.3%	0.0%	1.1%	0.0%
5yr	0.0%	0.0%	0.6%	6.3%	19.5%	52.9%	16.7%	2.9%	0.6%	0.6%	0.0%
7yr	0.0%	0.0%	0.6%	6.3%	19.5%	55.2%	14.4%	3.4%	0.6%	0.0%	0.0%
10yr	0.0%	0.0%	0.6%	6.9%	17.2%	60.3%	10.3%	4.0%	0.6%	0.0%	0.0%

Appendix C: Markets News and Expectations Properties

Table C.1.: Information content of markets expectations

	OLS α_i	β_i	$R^2_{adj,i}$	WLS α_i	β_i	$R^2_{adj,i}$
[0.03cm]						
	Weekly variables:					
CLAIMS	0.48	0.87***	23%	0.42	0.91***	23%
	Monthly variables:					
UM-prel.	-0.64**	1.28***	41%	-0.67**	1.31***	40%
PFED	-1.19*	1.59***	39%	-1.07*	1.58***	38%
CCONF	0.37	1.69***	51%	0.36	1.69***	47%
UM-final	0.21*	0.97***	89%	0.21**	0.97***	89%
CPM	0.74**	1.35***	37%	0.74**	1.34***	34%
ISM	0.12	1.16***	30%	0.11	1.20***	32%
AS	0.17***	1.33***	66%	0.13***	1.34***	54%
ISM NMF	0.63***	1.56***	39%	0.62***	1.53***	38%
NFP	-15.87**	0.98***	81%	-15.59**	0.99***	77%
NFP MF	-9.35***	1.02***	73%	-8.44***	1.03***	61%
UR	-0.02**	1.09***	35%	-0.02*	1.01***	24%
EARNINGS	0.04	0.83***	14%	0.04	0.82***	15%
HRS	-0.02**	0.81***	25%	-0.02**	0.85***	24%
RS	-0.04	1.20***	66%	-0.03	1.11***	63%
RS-autos	-0.12*	1.41***	54%	-0.10**	1.35***	44%
CU	0.00	1.14***	67%	0.00	1.18***	67%
IP	-0.06*	1.26***	72%	-0.05**	1.21***	71%
PPI core	-0.07*	1.57***	19%	-0.04	1.30***	12%
PPI	-0.09**	1.55***	75%	-0.12***	1.68***	73%
CPI core	0.05*	0.69***	12%	0.05***	0.71***	11%
CPI	-0.05***	1.20***	86%	-0.05***	1.22***	81%
HS	13.94**	1.32***	39%	13.79**	1.43***	40%
LI	-0.01	1.20***	86%	-0.01	1.19***	87%
EHS	0.06***	1.25***	42%	0.06***	1.20***	35%
NHS	9.75*	1.34***	26%	9.35*	1.39***	25%
DGO	-0.07	1.46***	46%	-0.11	1.44***	44%
PINC	0.06**	0.99***	69%	0.07***	0.88***	52%
PCE	-0.03	1.13***	86%	-0.01	1.06***	83%
CS	0.08	0.59***	10%	0.08	0.63***	11%
FO	0.02	1.06***	91%	0.02	1.07***	91%
CCR	0.06	1.00***	36%	0.29	0.97***	31%
WINV	0.04	1.14***	47%	0.04	1.14***	41%
TBAL	-0.02	1.22***	31%	-0.05	1.14***	24%
BINV	-0.01	1.12***	81%	0.00	1.10***	77%
BUDGET	1.03*	1.03***	99%	0.77**	1.02***	99%
	Quarterly variables:					
GDP-adv.	0.18	0.98***	88%	0.16	0.98***	86%
GDP-prel.	-0.01	1.02***	99%	0.02	1.01***	99%
GDP-final	0.01	0.99***	99%	-0.01	1.00***	99%
DEF-adv.	-0.26	1.09***	66%	-0.29*	1.10***	68%
DEF-prel.	0.03	0.99***	98%	0.01	1.00***	99%
DEF-final	0.11***	0.96***	97%	0.10***	0.96***	97%
ECI	0.25**	0.69***	38%	0.15**	0.78***	60%
	Monetary Policy actions:					
Fed funds rate chg	-0.04***	1.06***	89%	-0.03***	1.10***	95%
Fed funds rate chg - sched.	-0.01	1.02***	96%	na.	na.	na

Notes: The table presents the estimation results of equation (3). Stars denote significance levels at the 1%(***), 5%(**) and 10%(*) using White standard errors. The number of observations is 718 for the weekly variable, 164 or 165 for the monthly variables, except for RS-autos, EARNINGS, NFP MF, HRS and ISM NMF, where it is 159, 147, 141, 139 and 139 respectively. For the quarterly variables, there are 55 observations for the GDPs and ECI, and 50 for the GDP deflators series. Finally there are 50 fed funds rate changes, and 44 occurred at scheduled FOMC meetings.

Table C.2.: Markets news properties

[0.03cm]	min	max	mean	median
	Weekly variables:			
CLAIMS	-83.00	80.00	0.56	0.00
	Monthly variables:			
UM-prel.	-9.90	9.20	-0.54*	-0.65**
PFED	-30.70	17.40	-0.72	-0.40
CCONF	-14.00	12.35	0.08	0.40
UM-final	-4.00	4.80	0.23**	0.30***
CPM	-11.80	12.40	0.55*	0.70*
ISM	-6.00	7.40	0.12	-0.10
AS	-1.30	3.20	0.11**	0.00
ISM NMF	-7.90	8.30	0.39	0.50*
NFP	-318.00	246.00	-17.04**	-12.00
NFP MF	-91.00	57.00	-9.98***	-6.00***
UR	-0.30	0.40	-0.02	0.00
EARNINGS	-0.30	0.40	0.00	0.00
HRS	-0.50	0.20	-0.02**	0.00*
RS	-1.60	4.60	0.01	0.00
RS-autos	-1.70	1.40	0.00	0.00
CU	-1.50	0.80	-0.01	0.00
IP	-2.00	1.10	-0.02	0.00
PPI core	-1.00	1.10	0.00	0.00
PPI	-1.20	1.70	0.01	0.00
CPI core	-0.20	0.20	-0.01	0.00
CPI	-0.40	0.40	-0.01	0.00
HS	-253.00	256.00	8.56	9.00
LI	-0.50	0.50	0.01	0.00
EHS	-0.82	0.79	0.04***	0.04***
NHS	-166.00	244.00	6.64	4.00
DGO	-8.20	10.80	-0.01	0.00
PINC	-0.50	1.50	0.05***	0.00*
PCE	-0.80	0.90	0.01	0.00
CS	-2.70	2.70	0.07	0.10
FO	-2.30	1.90	0.03	0.10
CCR	-17.60	15.10	0.06	-0.10
WINV	-1.30	1.80	0.07*	0.10**
TBAL	-8.80	10.60	-0.04	-0.10
BINV	-0.80	0.60	0.01	0.00
BUDGET	-37.20	32.70	0.17	0.15
	Quarterly variables:			
GDP-adv.	-1.68	1.70	0.12	0.18
GDP-prel.	-0.85	0.58	0.04	0.03
GDP-final	-0.56	0.56	-0.01	0.00
DEF-adv.	-2.00	1.10	-0.09	-0.10
DEF-prel.	-0.30	0.60	0.01	0.00
DEF-final	-0.30	0.30	0.03	0.00
ECI	-0.40	0.50	-0.01	0.00
	Monetary Policy actions:			
Fed funds rate chg	-0.74	0.17	-0.05***	0.00
Fed funds rate chg - sched.	-0.19	0.17	-0.01	0.00

Notes: The stars next to the mean and the median refer to the following hypothesis test: $H_0 : mean(X_{m,news}) = 0$ and $H_0 : median(X_{m,news}) = 0$ respectively. Stars denote significance levels at the 1%(***), 5%(**) and 10%(*) using White standard errors. The number of observations is 718 for the weekly variable, 164 or 165 for the monthly variables, except for RS-autos, EARNINGS, NFP MF, HRS and ISM NMF, where it is 159, 147, 141, 139 and 139 respectively. For the quarterly variables, there are 55 observations for the GDPs and ECI, and 50 for the GDP deflators series. Finally there are 50 fed funds rate changes, and 44 occurred at scheduled FOMC meetings.

Appendix D: Robust to Outliers Weighting Procedure

Consider the standard Consider the standard linear regression model defined as follows

$Y_t = \alpha + X_t'\beta + \epsilon_t$ (1),

where X_t is the $K \times 1$ vector of regressors for observation t and $t = 1...T$. The presence of only one bad outlier can highly distort the results of the ordinary least squares (OLS) estimates and inference of the above equation. Rousseeuw and Leroy (1987) identify three types of outliers: vertical outliers (outliers in the y-dimension), bad and good leverage points (outliers in the x-dimension). For a detailed description of these outliers and their impact on estimation results and inference see Dehon, Gassner and Verardi (2009).

A way to circumvent (or at least attenuate) this problem is to downweight observations accordingly to their degree of outlyingness before estimating equation (1) by OLS [32]. The estimated equation then becomes

$W^{-1/2}Y = \alpha + W^{-1/2}X\beta + \epsilon$ (2),

where W is a $T \times T$ diagonal matrice with $W_{t,t} = w_t^x \times w_t^y$ [33]. The weights w_t^x and w_t^y are defined accordingly to the degree of outlyingness in the $x-$ and $y-$ dimension respectively, and are described below. The procedure to identify outliers in the $x-$ and $y-$ dimension, and hence to compute the degree of outlyingness and the weights, draws upon Dehon, Gassner and Verardi (2009).

- **degree of outlyingness in the x-dimension**

If $K = 1$, the degree of outlyingness d_t of X_t, is defined as $d_t = \frac{X_t - \overline{X}}{std(X)}$. When $K > 1$, the degree of outlyingness of X_t is defined as the square-root of the Mahalanobis distance[34], i.e. $d_t = ((X_t - \overline{X})\Sigma(X_t - \overline{X})')^{(1/2)}$ where $\overline{X}$ and Σ are respectively the mean and the covariance matrix of X. Then X_t is considered as an outlier if d_t is bigger than a given threshold.

This procedure is however misleading for identifying outliers since it relies on standard measures of location and spread which can be heavily influenced by the outliers themselves. The procedure used is similar to the one described above, but instead of using the Mahalanobis distance, one uses the minimum covariance determinant (MCD)[35] estimator of Amer (1984) to compute d_t.

The MCD is a robust method as the estimates are not unduly influenced by outliers. This estimator is given by the subset of h points with smallest covariance determinant. The MCD location and scatter estimates are then respectively the mean and covariance matrix of those h points. Using the fact that the Mahalanobis distance is distributed as a χ^2_K and that the MCD estimates of location and scatter are robust and consistent, d_t^2 converges asymptotically to a χ^2_K. Hence the following procedure is used to classify outliers in the $x-$ dimension:

if $d_t > \sqrt{\chi^2_{K;0.975}}$ then X_t is an outlier.

[32] Another way of course is to use a robust estimation method instead of OLS which is not biased by the presence of outliers. The more robust methods resist up to 50% of outliers but are less efficient.

[33] If the regression equation is $Y_t = \alpha + \epsilon_t$, the estimated equation becomes $W^{-1/2}Y = \alpha + \epsilon_t$, with $W_{t,t} = w_t^y \times w_t^y$.

[34] The Mahalanobis distance is simply the squared distance of each observation X_t from the center of the data relative to the shape of the data.

[35] Dehon et al. (2009) use the Donoho-Stahel measure of outlyingness which is an equivallent robust method to compute multivariate distance from the center.

Observations are then downweighted accordingly to their degree of outlyingness $x-$ dimension with the weights defined as follows

$w_t^X = min(1, \frac{\sqrt{\chi^2_{K;0.975}}}{d_t})$.

• **degree of outlyingness in the y-dimension**

Outliers in the y-dimension can be identified by loking at robust standardized residuals, i.e. residuals estimated with a robust method and standardized with a robust location estimator. Dehon, Gassner and Verardi (2009) suggest to use the S-estimator which is very robust and the normal approximation for the error term and classify Y_t according to the following procedure:

if $|\frac{e_t}{\hat{\sigma}}| > 2.25$ then Y_t is an outlier.

Observations are then downweighted accordingly to their degree of outlyingness $y-$ dimension with the weights defined as follows

$w_t^Y = min(1, \frac{2.25}{|\frac{e_t}{\hat{\sigma}}|})$.

Appendix E: Bond markets reaction to macroeconomic news: full-sample and sub-samples results

Table E.1.: Bond markets reaction to macroeconomic news

hor(h)	period [0.03cm]	UM-prel. $\beta_{i,h}$ (a)	UM-prel. $\beta_{i,h}$ (b)	UM-prel. $R^2_{i,h}$ (a)	UM-prel. $R^2_{i,h}$ (b)	PFED $\beta_{i,h}$ (a)	PFED $\beta_{i,h}$ (b)	PFED $R^2_{i,h}$ (a)	PFED $R^2_{i,h}$ (b)	CCONF $\beta_{i,h}$ (a)	CCONF $\beta_{i,h}$ (b)	CCONF $R^2_{i,h}$ (a)	CCONF $R^2_{i,h}$ (b)
2yr	97-10	0.009*	0.007	01%	01%	0.022***	0.019***	11%	11%	0.010**	0.011***	02%	03%
	97-07	0.009	0.008	01%	01%	0.022***	0.018***	13%	12%	0.013**	0.014***	04%	06%
	97-01	0.014	0.010	01%	01%	0.022***	0.017***	11%	10%	0.026***	0.025***	16%	18%
	99-03	0.011	0.012	01%	01%	0.026***	0.021**	13%	11%	0.015	0.014**	04%	04%
	01-05	0.008	0.008	00%	00%	0.030***	0.025***	18%	17%	0.011	0.011	02%	02%
	03-07	0.001	0.004	00%	00%	0.024***	0.021***	20%	18%	0.002	0.009	00%	02%
	07-10	0.003	0.004	00%	00%	0.017	0.021*	03%	04%	-0.001	0.001	00%	00%
5yr	97-10	0.012**	0.011**	02%	02%	0.025***	0.022***	12%	11%	0.012**	0.013***	03%	04%
	97-07	0.009	0.008	01%	01%	0.023***	0.018***	14%	12%	0.016***	0.016***	06%	06%
	97-01	0.012	0.011	01%	01%	0.025***	0.017***	14%	10%	0.028***	0.026***	19%	19%
	99-03	0.010	0.011	00%	00%	0.028***	0.015*	13%	11%	0.018*	0.015**	06%	05%
	01-05	0.008	0.007	00%	00%	0.032***	0.029***	18%	17%	0.017*	0.015*	04%	04%
	03-07	0.004	0.004	00%	00%	0.027***	0.022***	18%	17%	0.003	0.009	00%	01%
	07-10	0.020**	0.020**	04%	05%	0.028	0.032**	08%	08%	-0.002	-0.002	00%	00%
7yr	97-10	0.013***	0.012***	02%	02%	0.023***	0.020***	10%	09%	0.013**	0.014***	03%	05%
	97-07	0.009	0.009	01%	01%	0.020***	0.017***	11%	10%	0.017***	0.016***	07%	07%
	97-01	0.012	0.011	01%	00%	0.022***	0.017***	11%	09%	0.028***	0.028***	24%	23%
	99-03	0.011	0.013	01%	01%	0.022**	0.022**	09%	08%	0.018**	0.016**	07%	05%
	01-05	0.008	0.007	00%	00%	0.027***	0.025***	14%	14%	0.018**	0.017**	05%	05%
	03-07	0.005	0.005	00%	00%	0.022***	0.019***	14%	14%	0.002	0.007	00%	00%
	07-10	0.020**	0.022**	06%	06%	0.029	0.031**	07%	07%	-0.002	-0.002	00%	00%
10yr	97-10	0.013***	0.012***	02%	03%	0.020***	0.019***	09%	08%	0.011*	0.013***	03%	04%
	97-07	0.009	0.009	01%	01%	0.018***	0.016***	10%	10%	0.015***	0.014***	07%	06%
	97-01	0.013	0.013	02%	01%	0.022***	0.017***	12%	11%	0.025***	0.025***	21%	20%
	99-03	0.012	0.015	02%	02%	0.020**	0.018**	08%	08%	0.017*	0.015**	07%	05%
	01-05	0.007	0.006	00%	00%	0.023***	0.022***	11%	12%	0.015	0.016*	05%	05%
	03-07	0.002	0.004	00%	00%	0.019***	0.015***	10%	10%	0.001	0.006	00%	00%
	07-10	0.017*	0.021**	06%	06%	0.027	0.027*	05%	05%	-0.005	-0.002	00%	00%

hor(h)	period [0.03cm]	UM-final $\beta_{i,h}$ (a)	UM-final $\beta_{i,h}$ (b)	UM-final $R^2_{i,h}$ (a)	UM-final $R^2_{i,h}$ (b)	CPM $\beta_{i,h}$ (a)	CPM $\beta_{i,h}$ (b)	CPM $R^2_{i,h}$ (a)	CPM $R^2_{i,h}$ (b)	ISM $\beta_{i,h}$ (a)	ISM $\beta_{i,h}$ (b)	ISM $R^2_{i,h}$ (a)	ISM $R^2_{i,h}$ (b)
2yr	97-10	-0.001	-0.001	00%	00%	0.021***	0.020***	12%	12%	0.033***	0.029***	19%	18%
	97-07	-0.004	-0.002	00%	00%	0.026***	0.027***	18%	21%	0.039***	0.033***	27%	27%
	97-01	0.001	0.004	00%	00%	0.015*	0.016**	04%	08%	0.047***	0.036***	22%	26%
	99-03	0.017***	0.011	00%	01%	0.034***	0.038***	31%	32%	0.056***	0.042***	33%	33%
	01-05	0.000	0.000	00%	00%	0.036***	0.039***	34%	35%	0.048***	0.037***	31%	30%
	03-07	-0.012	-0.011*	02%	03%	0.030***	0.032***	28%	32%	0.029***	0.029***	32%	29%
	07-10	0.013	0.003	01%	00%	0.004	0.002	00%	00%	0.028*	0.019	05%	02%
5yr	97-10	-0.004	-0.003	00%	00%	0.022***	0.023***	12%	13%	0.035***	0.030***	17%	17%
	97-07	-0.007	-0.004	00%	00%	0.027***	0.028***	18%	20%	0.043***	0.035***	28%	26%
	97-01	0.001	0.003	00%	00%	0.015*	0.015*	02%	05%	0.050***	0.040***	25%	27%
	99-03	0.011	0.007	00%	00%	0.038***	0.038***	28%	30%	0.063***	0.047***	35%	33%
	01-05	-0.003	-0.001	00%	00%	0.037***	0.040***	32%	34%	0.052***	0.038***	29%	26%
	03-07	-0.011	-0.012**	02%	04%	0.034***	0.035***	31%	36%	0.036***	0.027***	31%	27%
	07-10	0.007	0.001	00%	00%	0.007	0.003	00%	00%	0.027	0.027*	02%	02%
7yr	97-10	-0.003	-0.002	00%	00%	0.023***	0.022***	13%	13%	0.034***	0.030***	16%	17%
	97-07	-0.004	-0.001	00%	00%	0.028***	0.027***	19%	19%	0.041***	0.034***	28%	26%
	97-01	0.002	0.005	00%	00%	0.018**	0.016*	04%	05%	0.048***	0.039***	25%	26%
	99-03	0.015**	0.010	00%	01%	0.037***	0.037***	26%	26%	0.059***	0.051***	37%	36%
	01-05	0.000	0.001	00%	00%	0.035***	0.036***	28%	28%	0.051***	0.037***	33%	29%
	03-07	-0.006	-0.008	00%	00%	0.036***	0.033***	29%	31%	0.036***	0.025***	32%	27%
	07-10	0.003	-0.003	00%	00%	0.007	0.004	00%	00%	0.024	0.026*	00%	01%
10yr	97-10	-0.002	-0.001	00%	00%	0.021***	0.021***	12%	13%	0.030***	0.028***	16%	17%
	97-07	-0.004	-0.002	00%	00%	0.024***	0.025***	16%	18%	0.034***	0.030***	26%	24%
	97-01	-0.001	0.002	00%	00%	0.014*	0.013*	02%	04%	0.046***	0.039***	27%	27%
	99-03	0.013**	0.009	00%	01%	0.033***	0.033***	24%	25%	0.052***	0.047***	34%	33%
	01-05	-0.001	0.001	00%	00%	0.031***	0.034***	26%	27%	0.045***	0.035***	30%	27%
	03-07	-0.006	-0.008	00%	00%	0.035***	0.032***	28%	35%	0.030***	0.020***	26%	21%
	07-10	0.007	0.000	00%	00%	0.012	0.007	00%	00%	0.017	0.026**	01%	03%

hor(h)	period	CLAIMS $\beta_{i,h}$ (a)	CLAIMS $\beta_{i,h}$ (b)	CLAIMS $R^2_{i,h}$ (a)	CLAIMS $R^2_{i,h}$ (b)	AS $\beta_{i,h}$ (a)	AS $\beta_{i,h}$ (b)	AS $R^2_{i,h}$ (a)	AS $R^2_{i,h}$ (b)	ISM NMF $\beta_{i,h}$ (a)	ISM NMF $\beta_{i,h}$ (b)	ISM NMF $R^2_{i,h}$ (a)	ISM NMF $R^2_{i,h}$ (b)
2yr	97-10	-0.014***	-0.012***	05%	04%	0.014***	0.013***	05%	05%	0.024***	0.016***	13%	09%
	97-07	-0.012***	-0.010***	04%	04%	0.011**	0.014***	06%	06%	0.024***	0.016***	10%	07%
	97-01	-0.016***	-0.011***	06%	04%	0.006	0.026***	22%	21%	0.034*	0.023**	19%	11%
	99-03	-0.018***	-0.016***	06%	05%	0.007	0.014*	05%	04%	0.032***	0.023***	16%	11%
	01-05	-0.017***	-0.015***	07%	06%	0.005	0.015**	05%	05%	0.025**	0.016**	10%	06%
	03-07	-0.010***	-0.011***	04%	05%	0.010*	0.009*	03%	04%	0.019***	0.011	02%	02%
	07-10	-0.018***	-0.017***	05%	05%	0.000	0.000	00%	00%	0.030***	0.020***	28%	17%
5yr	97-10	-0.013***	-0.012***	03%	03%	0.006	0.008*	01%	01%	0.025***	0.021***	12%	10%
	97-07	-0.011***	-0.010***	03%	03%	0.005	0.008	01%	01%	0.026***	0.021***	11%	10%
	97-01	-0.014***	-0.010***	04%	02%	0.002	0.021**	10%	15%	0.044***	0.039***	28%	24%
	99-03	-0.015***	-0.015***	04%	04%	0.000	0.007	00%	00%	0.039***	0.031***	17%	16%
	01-05	-0.015***	-0.014***	05%	04%	0.006	0.005	00%	00%	0.023**	0.021**	09%	07%
	03-07	-0.009***	-0.011***	03%	04%	0.006	0.005	00%	00%	0.016**	0.011	00%	01%
	07-10	-0.020***	-0.019***	04%	04%	-0.002	-0.003	00%	00%	0.029***	0.019***	16%	08%
7yr	97-10	-0.012***	-0.011***	03%	03%	0.005	0.006	00%	01%	0.024***	0.020***	11%	10%
	97-07	-0.011***	-0.010***	03%	02%	0.004	0.006	00%	00%	0.026***	0.021***	12%	11%
	97-01	-0.013***	-0.010***	03%	02%	-0.005	0.018*	04%	08%	0.043***	0.036***	25%	22%
	99-03	-0.016***	-0.014***	04%	04%	-0.002	0.005	00%	00%	0.037***	0.030***	17%	16%
	01-05	-0.016***	-0.015***	05%	05%	0.005	0.006	00%	00%	0.024**	0.022***	11%	09%
	03-07	-0.009***	-0.010***	03%	04%	0.006	0.005	00%	00%	0.017***	0.012*	02%	03%
	07-10	-0.015**	-0.016**	02%	02%	0.000	-0.002	00%	00%	0.029***	0.014	09%	03%
10yr	97-10	-0.012***	-0.010***	03%	03%	0.003	0.004	00%	00%	0.022***	0.019***	11%	10%
	97-07	-0.009***	-0.008***	02%	02%	0.001	0.003	00%	00%	0.025***	0.021***	13%	12%
	97-01	-0.012***	-0.010***	03%	02%	-0.012**	0.014	00%	04%	0.036***	0.034***	23%	20%
	99-03	-0.014***	-0.013***	03%	03%	-0.006	0.002	00%	00%	0.035***	0.028***	17%	16%
	01-05	-0.014***	-0.013***	04%	04%	0.002	0.002	00%	00%	0.023**	0.020***	11%	09%
	03-07	-0.007**	-0.008***	02%	03%	0.004	0.003	00%	00%	0.018***	0.014**	04%	05%
	07-10	-0.019***	-0.017***	04%	04%	0.001	-0.001	00%	00%	0.022***	0.011	06%	02%

hor(h)	period	NFP (block 1) $\beta_{i,h}$ (a)	NFP (block 1) $\beta_{i,h}$ (b)	NFP (block 1) $R^2_{i,h}$ (a)	NFP (block 1) $R^2_{i,h}$ (b)	UR (block 1) $\beta_{i,h}$ (a)	UR (block 1) $\beta_{i,h}$ (b)	UR (block 1) $R^2_{i,h}$ (a)	UR (block 1) $R^2_{i,h}$ (b)	NFP MF (block 1) $\beta_{i,h}$ (a)	NFP MF (block 1) $\beta_{i,h}$ (b)	NFP MF (block 1) $R^2_{i,h}$ (a)	NFP MF (block 1) $R^2_{i,h}$ (b)
2yr	97-10	0.049***	0.046***	31%	31%	-0.015***	-0.016***			0.008	0.006		
	97-07	0.049***	0.047***	33%	33%	-0.015**	-0.014**			0.006	0.005		
	97-01	0.030***	0.030***	33%	35%	-0.011	-0.010			0.030***	0.023***		
	99-03	0.042***	0.039***	24%	27%	-0.016	-0.014*			0.013	0.010		
	01-05	0.079***	0.077***	45%	48%	-0.013	-0.014			0.004	-0.001		
	03-07	0.089***	0.084***	59%	66%	-0.018*	-0.020**			-0.017**	-0.004		
	07-10	0.049**	0.046***	20%	25%	-0.013	-0.016			0.020	0.007		
5yr	97-10	0.048***	0.046***	25%	25%	-0.010	-0.010*			0.006	0.003		
	97-07	0.049***	0.047***	27%	28%	-0.007	-0.008			0.003	0.004		
	97-01	0.031***	0.029***	21%	25%	-0.008	-0.005			0.024***	0.023***		
	99-03	0.037***	0.038***	14%	17%	-0.005	-0.005			0.010	0.010		
	01-05	0.076***	0.071***	36%	37%	0.000	-0.001			-0.006	-0.008		
	03-07	0.085***	0.083***	55%	60%	-0.012	-0.014			-0.014	-0.013		
	07-10	0.042**	0.051***	12%	19%	-0.012	-0.013			0.012	-0.003		
7yr	97-10	0.043***	0.042***	22%	22%	-0.008	-0.008			0.003	0.001		
	97-07	0.044***	0.043***	24%	25%	-0.005	-0.005			0.001	0.001		
	97-01	0.030***	0.023***	16%	19%	0.001	-0.003			0.014	0.019**		
	99-03	0.032***	0.034***	10%	12%	-0.001	-0.002			0.006	0.005		
	01-05	0.068***	0.065***	32%	35%	0.004	0.003			-0.009	-0.008		
	03-07	0.082***	0.076***	50%	56%	-0.010	-0.012			-0.016*	-0.015*		
	07-10	0.039*	0.046***	10%	19%	-0.014	-0.012			0.000	-0.004		
10yr	97-10	0.037***	0.036***	20%	21%	-0.008	-0.008			0.001	0.002		
	97-07	0.037***	0.037***	21%	23%	-0.006	-0.007			0.002	0.003		
	97-01	0.025***	0.020***	11%	17%	-0.004	-0.005			0.014	0.019**		
	99-03	0.027***	0.026***	07%	11%	-0.003	-0.003			0.008	0.009		
	01-05	0.057***	0.056***	29%	33%	0.003	0.000			-0.008	-0.006		
	03-07	0.066***	0.067***	46%	50%	-0.007	-0.010			-0.011	-0.010		
	07-10	0.032**	0.038***	09%	15%	-0.013	-0.012			-0.002	-0.005		

Notes: Columns (a) refer to regressions estimated by standard ordinary least squares and columns (b) refer to regressions estimated using robust weighted least squares. Stars denote significance levels at the 1%(***), 5%(**) and 10%(*) using White standard errors. The full-sample period runs from January 1997 to September 2010. All sub-samples start in January and end in December of the years referred to except for the last two. The sub-sample 03-07 ends in June 07 and the sub-sample 07-10, which covers the crisis period, starts in July 2007 and ends in September 2010.

Table E.1.: con't

hor(h)	period [0.03cm]	EARNINGS (block 1) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	HRS(block 1) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	RS (block 2) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	RS-autos (block 2) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	CU (block 3) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	IP (block 3) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)
2yr	**97-10**	0.016***	0.015***			0.006	0.007			0.024***	0.020***	11%	10%	0.005	0.002			0.012***	0.014***	05%	06%	0.003	0.003		
	97-07	0.017**	0.018***			0.010	0.010			0.025***	0.020***	11%	11%	0.005	0.000			0.015***	0.017***	06%	09%	0.002	-0.001		
	97-01	0.005	0.013			0.023*	0.011			0.029***	0.023***	17%	16%	-0.006	-0.015*			0.022***	0.027***	15%	18%	0.001	0.008		
	99-03	0.013	0.020**			0.013	0.011			0.033***	0.024***	11%	10%	0.002	-0.006			0.024***	0.027***	11%	17%	-0.004	-0.002		
	01-05	0.020*	0.019*			0.016*	0.016*			0.021***	0.021***	11%	12%	0.017*	0.010			0.011	0.013*	01%	05%	0.009	0.010		
	03-07	0.036***	0.024***			0.001	0.000			0.016*	0.016***	03%	12%	0.014	0.015**			0.010*	0.008	00%	03%	-0.008	0.004		
	07-10	0.005	-0.002			0.002	0.000			0.016	0.017***	10%	11%	0.021**	0.020***			-0.003	0.008	00%	05%	0.009	0.012**		
5yr	**97-10**	0.018***	0.016**			0.005	0.006			0.026***	0.023***	10%	10%	0.007	0.003			0.012***	0.014***	03%	06%	0.010***	0.003		
	97-07	0.021***	0.021***			0.009	0.010			0.023***	0.019***	07%	07%	0.003	-0.003			0.015***	0.017***	06%	08%	-0.001	-0.002		
	97-01	0.018**	0.018**			0.022**	0.010			0.026***	0.031***	14%	14%	-0.015*	-0.023***			0.024***	0.028***	15%	19%	-0.001	0.006		
	99-03	0.014	0.019*			0.011	0.012			0.027***	0.023***	06%	07%	-0.002	-0.007			0.026***	0.026***	12%	17%	-0.004	-0.002		
	01-05	0.025**	0.022**			0.015	0.017			0.027***	0.019**	06%	08%	0.018	0.019**			0.006	0.013*	01%	04%	0.001	0.008		
	03-07	0.033***	0.028***			-0.004	-0.004			0.017	0.017*	02%	09%	0.015	0.016*			0.008	0.007	00%	02%	0.004	0.004		
	07-10	0.001	-0.004			0.001	-0.002			0.029**	0.034***	18%	26%	0.032***	0.036***			-0.003	0.007	00%	05%	0.006	0.013		
7yr	**97-10**	0.017***	0.016***			0.002	0.003			0.025***	0.023***	10%	10%	0.007	0.003			0.012***	0.014***	03%	05%	0.001	0.002		
	97-07	0.023***	0.020***			0.005	0.007			0.022***	0.018***	06%	07%	0.003	-0.003			0.013***	0.016***	06%	08%	-0.004	-0.003		
	97-01	0.016*	0.019**			0.023*	0.011			0.027***	0.032***	13%	15%	-0.015	-0.026***			0.023***	0.025***	11%	18%	-0.004	0.003		
	99-03	0.016	0.020**			0.007	0.007			0.027***	0.021**	04%	06%	0.001	-0.007			0.028***	0.025***	13%	15%	-0.001	-0.001		
	01-05	0.025**	0.023**			0.012	0.012			0.025***	0.016**	05%	07%	0.017	0.016*			0.009	0.014**	03%	07%	-0.010	-0.007		
	03-07	0.033***	0.023**			-0.007	-0.005			0.016	0.015*	01%	06%	0.015	0.013			0.009*	0.008	00%	04%	-0.010	-0.008		
	07-10	0.004	-0.002			-0.010	-0.005			0.030**	0.035***	17%	26%	0.032***	0.036***			0.005	0.007	00%	04%	0.006	0.012		
10yr	**97-10**	0.014**	0.013**			0.004	0.005			0.023***	0.021***	10%	09%	0.008	0.003			0.010**	0.012***	03%	05%	-0.002	-0.001		
	97-07	0.019***	0.017***			0.008	0.009			0.021***	0.016***	07%	06%	0.005	-0.002			0.013***	0.016***	07%	09%	-0.003	-0.003		
	97-01	0.016*	0.018**			0.018	0.011			0.025***	0.030***	13%	14%	-0.016**	-0.026***			0.022***	0.025***	13%	19%	-0.003	0.002		
	99-03	0.013	0.014			0.009	0.010			0.025***	0.020**	05%	06%	0.001	-0.006			0.027***	0.024***	15%	17%	-0.005	-0.001		
	01-05	0.021**	0.019**			0.015	0.015			0.023***	0.015**	06%	07%	0.019	0.015*			0.010*	0.014***	04%	07%	-0.006	-0.007		
	03-07	0.024***	0.019**			-0.001	0.000			0.016*	0.015*	03%	09%	0.017*	0.015**			0.008*	0.007	00%	04%	-0.008	0.004		
	07-10	0.002	-0.002			-0.009	-0.006			0.025***	0.031***	15%	19%	0.026***	0.033***			-0.005	0.003	00%	02%	-0.005	0.005		

hor(h)	period	PPI core (block 4) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	PPI (block 4) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	CPI core (block 5) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	CPI (block 5) $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	HS $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)	LI $\beta_{i,h}$ (a)	$\beta_{i,h}$ (b)	$R^2_{i,h}$ (a)	$R^2_{i,h}$ (b)
2yr	**97-10**	0.003	0.004	00%	01%	-0.001	0.002			0.016***	0.016***	06%	06%	0.001	0.001			-0.001	-0.002	00%	00%	0.001	0.002	00%	00%
	97-07	0.009*	0.005	00%	01%	-0.009*	-0.003			0.016***	0.017***	05%	07%	-0.002	-0.003			-0.005	-0.007	00%	01%	-0.003	-0.001	00%	00%
	97-01	-0.001	0.001	00%	03%	-0.002	-0.010			0.019	0.014*	05%	06%	-0.004	0.012			-0.016***	-0.016***	08%	09%	-0.006	-0.002	00%	00%
	99-03	-0.013*	-0.010	00%	02%	-0.013	-0.011			0.014	0.011	02%	03%	0.012	0.008			-0.010	-0.014*	03%	05%	-0.009	0.003	00%	00%
	01-05	-0.002	0.001	00%	01%	-0.004	-0.006			0.016**	0.018***	06%	10%	-0.012*	-0.005			-0.006	-0.011	01%	03%	-0.002	-0.002	00%	00%
	03-07	0.021***	0.014**	05%	07%	-0.016***	-0.008*			0.018***	0.017***	05%	10%	-0.007	-0.002			-0.004	0.000	00%	00%	-0.004	-0.002	00%	00%
	07-10	-0.010	-0.005	03%	10%	0.002	0.018**			0.014	0.017	03%	09%	0.020	0.018*			0.024**	0.024**	10%	11%	0.002	0.006	00%	01%
5yr	**97-10**	0.006	0.008*	00%	02%	0.000	0.004			0.019***	0.019***	08%	09%	0.003	0.005			-0.002	-0.003	00%	00%	0.002	0.002	00%	00%
	97-07	0.011**	0.006	01%	02%	-0.010*	-0.008			0.018***	0.018***	06%	08%	-0.004	-0.003			-0.006	-0.008	01%	02%	-0.001	0.000	00%	00%
	97-01	0.004	0.009	01%	04%	-0.001	-0.010			0.024*	0.018**	09%	08%	-0.003	0.014			-0.015***	-0.017***	09%	11%	-0.006	-0.002	00%	00%
	99-03	-0.012*	-0.007	00%	03%	-0.013*	-0.012			0.016	0.013	04%	05%	0.016*	0.011			-0.012	-0.016*	03%	05%	-0.003	0.001	00%	00%
	01-05	0.000	0.004	00%	01%	-0.005	-0.007			0.015*	0.018**	06%	09%	-0.014	-0.006			-0.008	-0.012	01%	03%	-0.001	0.000	00%	00%
	03-07	0.023***	0.015**	05%	07%	-0.017***	-0.010*			0.019***	0.016**	04%	08%	-0.010	-0.003			-0.005	0.000	00%	00%	-0.002	-0.005	00%	00%
	07-10	-0.001	0.005	13%	17%	0.020	0.027***			0.016	0.012	14%	19%	0.034***	0.032***			0.022*	0.021	07%	06%	0.005	0.006	00%	01%
7yr	**97-10**	0.008*	0.010**	01%	03%	-0.004	0.001			0.019***	0.020***	09%	09%	0.005	0.006			-0.003	-0.003	00%	00%	0.004	0.003	00%	00%
	97-07	0.015***	0.012**	03%	04%	-0.012**	-0.010**			0.016***	0.017***	07%	07%	-0.004	-0.002			-0.005	-0.008	01%	02%	0.001	0.001	00%	00%
	97-01	0.005	0.013	01%	05%	-0.002	-0.010			0.025**	0.018**	10%	08%	-0.003	0.015			-0.014***	-0.017***	08%	10%	-0.005	-0.001	00%	00%
	99-03	-0.008	-0.004	00%	02%	-0.015**	-0.011*			0.016*	0.013	04%	05%	0.017**	0.012			-0.014	-0.015*	03%	05%	-0.001	0.003	00%	00%
	01-05	0.004	0.006	01%	03%	-0.004	-0.006			0.010	0.017**	04%	07%	-0.006	-0.001			-0.008	-0.010	02%	02%	0.002	0.003	00%	00%
	03-07	0.023***	0.016***	08%	09%	-0.019***	-0.010*			0.017***	0.015**	03%	08%	-0.010	-0.002			-0.005	-0.001	00%	00%	0.001	-0.002	00%	00%
	07-10	0.001	0.007	15%	19%	0.034***	0.028***			0.016	0.012	19%	23%	0.037***	0.034***			0.021*	0.020	06%	06%	0.007	0.008	00%	01%
10yr	**97-10**	0.009**	0.010**	02%	03%	-0.001	0.002			0.018***	0.018***	08%	09%	0.002	0.003			-0.004	-0.003	00%	00%	0.006	0.005	00%	01%
	97-07	0.014***	0.012**	03%	04%	-0.010**	-0.009**			0.014***	0.015***	06%	07%	-0.004	-0.004			-0.005	-0.008	01%	02%	0.001	0.002	00%	00%
	97-01	0.004	0.010	01%	04%	-0.001	-0.009			0.020*	0.017**	09%	09%	-0.002	0.015			-0.014***	-0.017***	09%	11%	-0.003	0.000	00%	00%
	99-03	-0.006	-0.003	00%	01%	-0.009	-0.008			0.014	0.011	03%	03%	0.012	0.009			-0.012	-0.013	02%	04%	0.000	0.003	00%	00%
	01-05	0.006	0.007	01%	03%	-0.001	-0.004			0.017*	0.015**	04%	08%	-0.015*	-0.003			-0.009	-0.007	01%	02%	0.003	0.004	00%	00%
	03-07	0.023***	0.015***	08%	10%	-0.015***	-0.008*			0.017***	0.014**	04%	08%	-0.006	-0.005			-0.005	-0.001	00%	00%	0.001	-0.001	00%	00%
	07-10	0.004	0.007	22%	28%	0.038***	0.033***			0.018	0.013	20%	24%	0.032***	0.031***			0.013	0.017	03%	05%	0.012	0.012	00%	01%

Notes: Columns (a) refer to regressions estimated by standard ordinary least squares and columns (b) refer to regressions estimated using robust weighted least squares. Stars denote significance levels at the 1%(***), 5%(**) and 10%(*) using White standard errors. The full-sample period runs from January 1997 to September 2010. All sub-samples start in January and end in December of the years referred to except for the last two. The sub-sample 03-07 ends in June 07 and the sub-sample 07-10, which covers the crisis period, starts in July 2007 and ends in September 2010.

Table E.1.: con't

hor(h)	period [0.03cm]	EHS $\beta_{i,h}$ (a)	EHS $\beta_{i,h}$ (b)	EHS $R^2_{i,h}$ (a)	EHS $R^2_{i,h}$ (b)	NHS $\beta_{i,h}$ (a)	NHS $\beta_{i,h}$ (b)	NHS $R^2_{i,h}$ (a)	NHS $R^2_{i,h}$ (b)	DGO $\beta_{i,h}$ (a)	DGO $\beta_{i,h}$ (b)	DGO $R^2_{i,h}$ (a)	DGO $R^2_{i,h}$ (b)
2yr	**97-10**	0.008**	0.010***	02%	03%	0.004	0.006	00%	01%	0.008	0.014***	00%	04%
	97-07	0.006	0.010***	02%	04%	0.004	0.006	00%	01%	0.007	0.014***	00%	05%
	97-01	0.008	0.012**	01%	06%	0.020***	0.012**	03%	06%	-0.009	0.009	00%	02%
	99-03	0.013***	0.016***	07%	10%	-0.001	0.004	00%	00%	0.005	0.017**	00%	05%
	01-05	0.009**	0.015***	08%	12%	-0.002	0.004	00%	00%	0.007	0.018**	00%	07%
	03-07	0.008	0.007	00%	02%	0.003	0.005	00%	01%	0.012	0.012	01%	04%
	07-10	0.025**	0.016**	00%	04%	0.011	0.014	02%	05%	0.015*	0.013	01%	04%
5yr	**97-10**	0.008*	0.010***	01%	03%	0.008	0.010**	01%	02%	0.011	0.017***	01%	07%
	97-07	0.005	0.008**	02%	03%	0.010*	0.011**	02%	04%	0.009	0.017***	01%	08%
	97-01	0.005	0.009	00%	03%	0.023***	0.019***	08%	11%	-0.004	0.016**	00%	08%
	99-03	0.004	0.011**	03%	04%	0.010	0.015*	02%	05%	0.009	0.021***	00%	10%
	01-05	0.006	0.012**	07%	09%	0.004	0.010	00%	01%	0.015	0.019***	00%	06%
	03-07	0.008	0.006	00%	02%	0.006	0.009	01%	03%	0.008	0.012	01%	05%
	07-10	0.033***	0.018*	02%	04%	0.013	0.014	00%	03%	0.019**	0.016**	03%	05%
7yr	**97-10**	0.008*	0.009**	02%	02%	0.008	0.010**	01%	02%	0.009	0.015***	01%	06%
	97-07	0.004	0.006	01%	01%	0.009*	0.011**	02%	04%	0.009	0.014***	01%	06%
	97-01	0.009	0.009	00%	02%	0.022***	0.018***	08%	09%	-0.004	0.012*	00%	05%
	99-03	0.005	0.007	01%	02%	0.010	0.015*	03%	06%	0.010	0.017**	00%	06%
	01-05	0.005	0.011**	05%	07%	-0.001	0.010	00%	01%	0.016	0.017***	00%	06%
	03-07	0.006	0.003	00%	00%	0.007	0.009	01%	04%	0.008	0.011	00%	05%
	07-10	0.036***	0.021**	04%	05%	0.017	0.015	00%	03%	0.014	0.016*	00%	05%
10yr	**97-10**	0.009**	0.010***	02%	03%	0.009**	0.011***	02%	04%	0.010	0.015***	02%	06%
	97-07	0.003	0.005	00%	01%	0.011**	0.012***	03%	05%	0.008	0.014***	00%	07%
	97-01	0.006	0.006	00%	01%	0.022***	0.019***	09%	11%	-0.003	0.012*	00%	06%
	99-03	-0.001	0.005	00%	01%	0.011	0.015**	03%	07%	0.008	0.014**	00%	05%
	01-05	0.004	0.009*	04%	05%	0.000	0.010*	00%	01%	0.013	0.014**	00%	04%
	03-07	0.006	0.003	00%	00%	0.008	0.010*	02%	05%	0.005	0.011	00%	07%
	07-10	0.038***	0.028***	10%	11%	0.014	0.014	02%	05%	0.023***	0.021**	09%	09%

hor(h)	period [0.03cm]	PINC (block 6) $\beta_{i,h}$ (a)	PINC (block 6) $\beta_{i,h}$ (b)	PINC (block 6) $R^2_{i,h}$ (a)	PINC (block 6) $R^2_{i,h}$ (b)	PCE (block 6) $\beta_{i,h}$ (a)	PCE (block 6) $\beta_{i,h}$ (b)	PCE (block 6) $R^2_{i,h}$ (a)	PCE (block 6) $R^2_{i,h}$ (b)	CS $\beta_{i,h}$ (a)	CS $\beta_{i,h}$ (b)	CS $R^2_{i,h}$ (a)	CS $R^2_{i,h}$ (b)
2yr	**97-10**	-0.002	0.002	00%	00%	0.001	0.003			0.004	0.005	00%	01%
	97-07	0.000	0.004	00%	01%	-0.002	0.001			0.001	0.000	00%	00%
	97-01	0.004	0.000	00%	00%	-0.010*	0.001			-0.005	-0.006	00%	00%
	99-03	0.004	0.004	00%	01%	-0.017**	-0.002			-0.008	-0.008	00%	00%
	01-05	0.002	0.005	00%	01%	-0.002	-0.002			0.007	0.001	00%	01%
	03-07	0.004	0.007	00%	02%	0.004	0.002			0.005	0.006	00%	02%
	07-10	-0.006	-0.004	00%	13%	0.017	0.018*			0.029***	0.026***	05%	07%
5yr	**97-10**	-0.002	0.003	00%	00%	0.000	0.002			0.005	0.004	00%	01%
	97-07	0.003	0.007	00%	02%	-0.002	0.002			-0.001	-0.001	00%	00%
	97-01	0.011**	0.005	00%	01%	-0.014**	-0.001			-0.008*	-0.008	00%	01%
	99-03	0.005	0.007	00%	01%	-0.012	0.002			-0.013**	-0.012*	00%	00%
	01-05	0.004	0.007	00%	02%	0.002	-0.001			-0.002	-0.003	00%	00%
	03-07	0.004	0.007	00%	02%	0.005	0.003			0.001	0.003	00%	01%
	07-10	-0.009	-0.009	00%	04%	0.009	0.008			0.038**	0.031***	09%	07%
7yr	**97-10**	-0.003	0.001	00%	00%	0.000	0.002			0.003	0.001	00%	00%
	97-07	0.001	0.006	00%	01%	-0.001	0.002			-0.003	-0.004	00%	00%
	97-01	0.010*	0.006	00%	01%	-0.013**	0.000			-0.008	-0.008	00%	00%
	99-03	0.004	0.006	00%	01%	-0.012	0.001			-0.017***	-0.016**	00%	01%
	01-05	0.001	0.005	00%	01%	0.003	0.000			-0.006	-0.008	00%	01%
	03-07	0.001	0.005	00%	02%	0.005	0.004			0.001	0.002	00%	00%
	07-10	-0.010	-0.011	00%	04%	0.006	0.006			0.036**	0.027**	09%	06%
10yr	**97-10**	-0.003	-0.001	00%	00%	0.001	0.002			0.002	0.000	00%	00%
	97-07	0.000	0.005	00%	01%	0.000	0.003			-0.004	-0.004	00%	00%
	97-01	0.008	0.005	00%	01%	-0.008	0.001			-0.009	-0.008	00%	01%
	99-03	0.003	0.006	00%	01%	-0.007	0.004			-0.015***	-0.014**	00%	01%
	01-05	0.002	0.004	00%	01%	0.006	0.002			-0.006	-0.008	00%	01%
	03-07	0.002	0.005	00%	02%	0.004	0.005			0.000	0.000	00%	00%
	07-10	-0.011	-0.015*	00%	05%	0.010	0.002			0.032*	0.021**	07%	04%

hor(h)	period [0.03cm]	FO $\beta_{i,h}$ (a)	FO $\beta_{i,h}$ (b)	FO $R^2_{i,h}$ (a)	FO $R^2_{i,h}$ (b)	CCR $\beta_{i,h}$ (a)	CCR $\beta_{i,h}$ (b)	CCR $R^2_{i,h}$ (a)	CCR $R^2_{i,h}$ (b)	WINV $\beta_{i,h}$ (a)	WINV $\beta_{i,h}$ (b)	WINV $R^2_{i,h}$ (a)	WINV $R^2_{i,h}$ (b)
2yr	**97-10**	0.001	0.004	00%	01%	-0.005	-0.002	00%	00%	0.000	0.004	00%	00%
	97-07	0.000	0.005	00%	01%	-0.002	0.000	00%	00%	0.007	0.008*	01%	02%
	97-01	0.002	0.007	00%	02%	-0.004	-0.010*	01%	05%	0.008	0.014**	05%	07%
	99-03	0.007	0.012	00%	04%	-0.001	-0.001	00%	00%	0.006	0.009	01%	03%
	01-05	0.000	0.003	00%	00%	-0.010	-0.002	00%	00%	0.006	0.005	00%	01%
	03-07	-0.008	-0.005	00%	01%	-0.006	0.004	00%	00%	0.003	0.004	00%	01%
	07-10	0.000	-0.001	00%	00%	-0.002	-0.007	00%	01%	-0.012	-0.009	00%	02%
5yr	**97-10**	0.003	0.004	00%	00%	-0.006	-0.004	00%	00%	0.004	0.007	01%	01%
	97-07	0.002	0.004	00%	00%	-0.002	0.000	00%	00%	0.010**	0.010**	02%	02%
	97-01	0.001	0.006	00%	01%	-0.002	-0.009	00%	02%	0.019***	0.021***	10%	11%
	99-03	0.003	0.008	00%	01%	0.000	0.002	00%	00%	-0.001	0.004	00%	00%
	01-05	0.005	0.001	00%	00%	-0.009	-0.001	00%	00%	0.000	0.000	00%	00%
	03-07	-0.003	-0.004	00%	00%	-0.008	0.004	00%	00%	0.000	0.002	00%	00%
	07-10	0.002	0.006	00%	01%	-0.026	-0.013	00%	02%	-0.005	0.001	00%	00%
7yr	**97-10**	0.004	0.006	00%	01%	-0.007	-0.006	00%	01%	0.007	0.008*	01%	01%
	97-07	0.003	0.005	00%	01%	-0.004	-0.003	00%	00%	0.010*	0.009*	01%	02%
	97-01	0.010	0.008	00%	02%	-0.005	-0.011*	01%	04%	0.018**	0.019***	09%	09%
	99-03	0.005	0.010	00%	02%	-0.004	0.000	00%	00%	-0.001	0.003	00%	00%
	01-05	0.003	0.000	00%	00%	-0.011	-0.002	00%	00%	0.000	-0.001	00%	00%
	03-07	-0.005	-0.005	00%	01%	-0.010	0.001	00%	00%	-0.001	0.001	00%	00%
	07-10	0.004	0.011	00%	02%	-0.023	-0.014	01%	03%	0.003	0.007	00%	01%
10yr	**97-10**	0.004	0.006	00%	01%	-0.007	-0.006	00%	01%	0.007	0.008*	01%	02%
	97-07	0.004	0.005	00%	01%	-0.004	-0.002	00%	00%	0.010*	0.008*	01%	02%
	97-01	0.006	0.008	00%	02%	-0.003	-0.009	00%	02%	0.018**	0.018**	07%	07%
	99-03	0.004	0.008	00%	02%	-0.004	0.002	00%	00%	-0.002	0.002	00%	00%
	01-05	0.004	0.001	00%	00%	-0.008	0.000	00%	00%	0.003	0.001	00%	00%
	03-07	-0.002	-0.002	00%	00%	-0.009	0.001	00%	00%	0.001	0.003	00%	00%
	07-10	0.001	0.005	00%	00%	-0.021*	-0.015	01%	04%	0.003	0.007	00%	01%

hor(h)	period [0.03cm]	TBAL. $\beta_{i,h}$ (a)	TBAL. $\beta_{i,h}$ (b)	TBAL. $R^2_{i,h}$ (a)	TBAL. $R^2_{i,h}$ (b)	BINV. $\beta_{i,h}$ (a)	BINV. $\beta_{i,h}$ (b)	BINV. $R^2_{i,h}$ (a)	BINV. $R^2_{i,h}$ (b)	BUDGET $\beta_{i,h}$ (a)	BUDGET $\beta_{i,h}$ (b)	BUDGET $R^2_{i,h}$ (a)	BUDGET $R^2_{i,h}$ (b)
2yr	**97-10**	0.006	0.004	00%	01%	-0.001	0.002	00%	00%	-0.003	0.001	00%	00%
	97-07	0.006*	0.005	00%	01%	-0.007	-0.002	00%	00%	-0.003	-0.002	00%	00%
	97-01	0.002	0.000	00%	00%	-0.005	0.001	00%	00%	-0.004	-0.006	00%	01%
	99-03	-0.001	0.002	00%	00%	-0.003	0.001	00%	00%	-0.004	-0.005	00%	01%
	01-05	0.010	0.007	00%	01%	-0.022*	-0.010	02%	02%	-0.001	-0.001	00%	00%
	03-07	0.010*	0.011**	03%	06%	-0.004	-0.003	00%	00%	-0.002	0.000	00%	00%
	07-10	0.003	0.002	00%	00%	0.015	0.013*	00%	03%	0.002	0.006	00%	01%
5yr	**97-10**	0.010**	0.007*	01%	01%	-0.001	0.004	00%	00%	-0.001	0.002	00%	00%
	97-07	0.008**	0.005	00%	01%	-0.003	0.002	00%	00%	-0.003	-0.002	00%	00%
	97-01	0.000	-0.002	00%	00%	-0.006	0.000	00%	00%	-0.006	-0.006	00%	01%
	99-03	-0.001	0.002	00%	00%	-0.001	0.004	00%	00%	-0.003	-0.006	00%	01%
	01-05	0.012*	0.008	00%	02%	-0.013	-0.005	00%	01%	0.001	-0.001	00%	00%
	03-07	0.014***	0.014***	06%	08%	0.002	-0.001	00%	00%	0.003	0.003	00%	00%
	07-10	0.012	0.012	00%	02%	0.010	0.022**	00%	03%	0.005	0.011	00%	03%
7yr	**97-10**	0.010**	0.008*	01%	02%	-0.001	0.002	00%	00%	-0.002	0.002	00%	00%
	97-07	0.006	0.003	00%	01%	-0.004	0.000	00%	00%	0.000	-0.001	00%	00%
	97-01	0.001	-0.002	00%	00%	-0.008	-0.007	00%	01%	-0.007	-0.007	00%	01%
	99-03	-0.001	0.000	00%	00%	0.000	0.002	00%	00%	-0.002	-0.005	00%	01%
	01-05	0.008	0.007	00%	02%	-0.009	-0.004	00%	00%	0.007	0.001	00%	00%
	03-07	0.012**	0.011**	04%	06%	0.002	-0.001	00%	00%	0.000	0.004	00%	01%
	07-10	0.016	0.017	01%	04%	0.010	0.018	00%	03%	0.002	0.009	00%	02%
10yr	**97-10**	0.012***	0.009**	03%	03%	0.000	0.003	00%	00%	0.000	0.002	00%	00%
	97-07	0.007**	0.004	00%	01%	-0.004	0.000	00%	00%	-0.001	-0.002	00%	00%
	97-01	0.002	-0.001	00%	00%	-0.006	-0.010	00%	03%	-0.007	-0.008	00%	02%
	99-03	-0.001	0.001	00%	00%	-0.001	0.000	00%	00%	-0.002	-0.006	00%	01%
	01-05	0.010	0.009	01%	03%	-0.009	-0.004	00%	00%	0.005	-0.001	00%	00%
	03-07	0.012**	0.012**	05%	07%	0.004	0.002	00%	00%	0.004	0.004	00%	01%
	07-10	0.020*	0.021*	04%	07%	0.016	0.016	00%	01%	0.003	0.010	00%	02%

Notes: Columns (a) refer to regressions estimated by standard ordinary least squares and columns (b) refer to regressions estimated using robust weighted least squares. Stars denote significance levels at the 1%(***), 5%(**) and 10%(*) using White standard errors. The full-sample period runs from January 1997 to September 2010. All sub-samples start in January and end in December of the years referred to except for the last two. The sub-sample 03-07 ends in June 07 and the sub-sample 07-10, which covers the crisis period, starts in July 2007 and ends in September 2010.

Table E.1.: con't

hor(h)	period [0.03cm]	$\beta_{i,h}$ (a)	(b)	$R^2_{i,h}$ (a)	(b)	$\beta_{i,h}$ (a)	(b)	$R^2_{i,h}$ (a)	(b)	$\beta_{i,h}$ (a)	(b)	$R^2_{i,h}$ (a)	(b)	$\beta_{i,h}$ (a)	(b)	$R^2_{i,h}$ (a)	(b)	$\beta_{i,h}$ (a)	(b)	$R^2_{i,h}$ (a)	(b)	$\beta_{i,h}$ (a)	(b)	$R^2_{i,h}$ (a)	(b)
		GDP - advance (block 7)				**GDP deflator - adv. (block 7)**				**GDP - prel.(block 8)**				**GDP deflator - prel. (block 8)**				**GDP - final (block 9)**				**GDP deflator - final (block 9)**			
2yr	**97-10**	0.019*	0.016*	06%	05%	0.017**	0.015*			-0.006	-0.002	00%	00%	0.004	0.010			-0.002	-0.001	00%	00%	0.003	0.002		
	97-07	0.025**	0.020	06%	05%	0.016*	0.015*			-0.014*	-0.011	05%	07%	0.015*	0.016**			0.000	0.002	00%	00%	0.007	0.005		
5yr	**97-10**	0.011	0.010	00%	00%	0.017	0.014			-0.003	0.005	00%	00%	0.008	0.012			-0.006	-0.004	00%	00%	-0.001	0.000		
	97-07	0.019	0.015	01%	01%	0.006	0.012			-0.011	-0.007	02%	04%	0.017***	0.015**			-0.006	-0.001	00%	00%	0.007	0.006		
7yr	**97-10**	0.008	0.008	00%	00%	0.019	0.011			-0.001	0.005	00%	01%	0.014	0.015*			-0.008	-0.006	00%	00%	0.001	0.000		
	97-07	0.017	0.015	00%	01%	0.008	0.013			-0.015**	-0.011	01%	02%	0.008	0.013			-0.009	-0.005	00%	00%	0.008	0.007		
10yr	**97-10**	0.010	0.009	00%	00%	0.015	0.007			0.001	0.003	03%	02%	0.020***	0.016**			-0.009	-0.007	00%	00%	0.004	0.003		
	97-07	0.018*	0.013	01%	00%	0.005	0.010			-0.010	-0.004	01%	03%	0.014**	0.014**			-0.009	-0.007	00%	00%	0.008	0.005		
		ECI				**Fed rate chg - all**				**Fed rate chg (dummies for unsch.)**															
2yr	**97-10**	0.011	0.008	01%	00%	0.047***	0.035***	14%	19%	0.036***	na.	45%	na	.	.			.							
	97-07	0.017	0.015	03%	03%	0.055***	0.015	03%	06%	0.021	na.	38%	na	.	.			.							
5yr	**97-10**	0.012	0.008	01%	00%	0.035***	0.024**	06%	06%	0.022*	na.	41%	na	.	.			.							
	97-07	0.015	0.017*	06%	05%	0.043***	0.011	00%	00%	0.024*	na.	35%	na	.	.			.							
7yr	**97-10**	0.011	0.007	01%	00%	0.025*	0.017	03%	02%	0.013	na.	41%	na	.	.			.	.						
	97-07	0.015*	0.017**	06%	06%	0.025***	0.010	01%	00%	0.015	na.	37%	na	.	.			.	.						
10yr	**97-10**	0.009	0.006	00%	00%	0.016	0.011	01%	00%	0.007	na.	40%	na	.	.			.	.						
	97-07	0.017**	0.015**	05%	05%	0.017***	0.001	00%	00%	0.011	na.	40%	na	.	.			.	.						

Notes: Columns (a) refer to regressions estimated by standard ordinary least squares and columns (b) refer to regressions estimated using robust weighted least squares. Stars denote significance levels at the 1%(***), 5%(**) and 10%(*) using White standard errors. The full-sample period runs from January 1997 to September 2010. All sub-samples start in January and end in December of the referred years except for the last two. The sub-sample 03-07 ends in June and the sub-sample 07-10, which covers the crisis period, starts in July 2007 and ends in September 2010.

Figure E.1.: Bond yields response to macroeconomic news - full-sample vs sub-sample 1997 to 2001

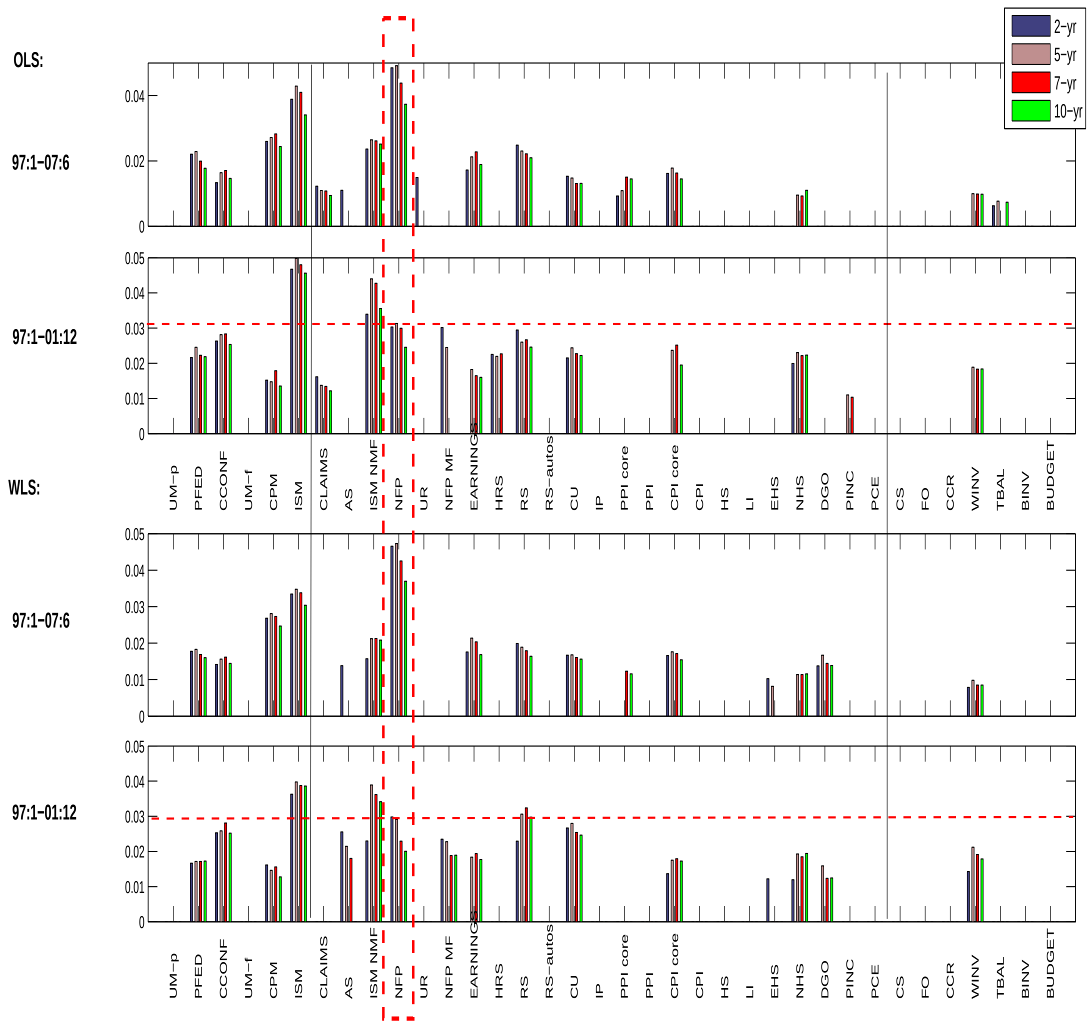

Figure E.2.: Bond yields response to macroeconomic news - full-sample vs sub-sample 1999 to 2003

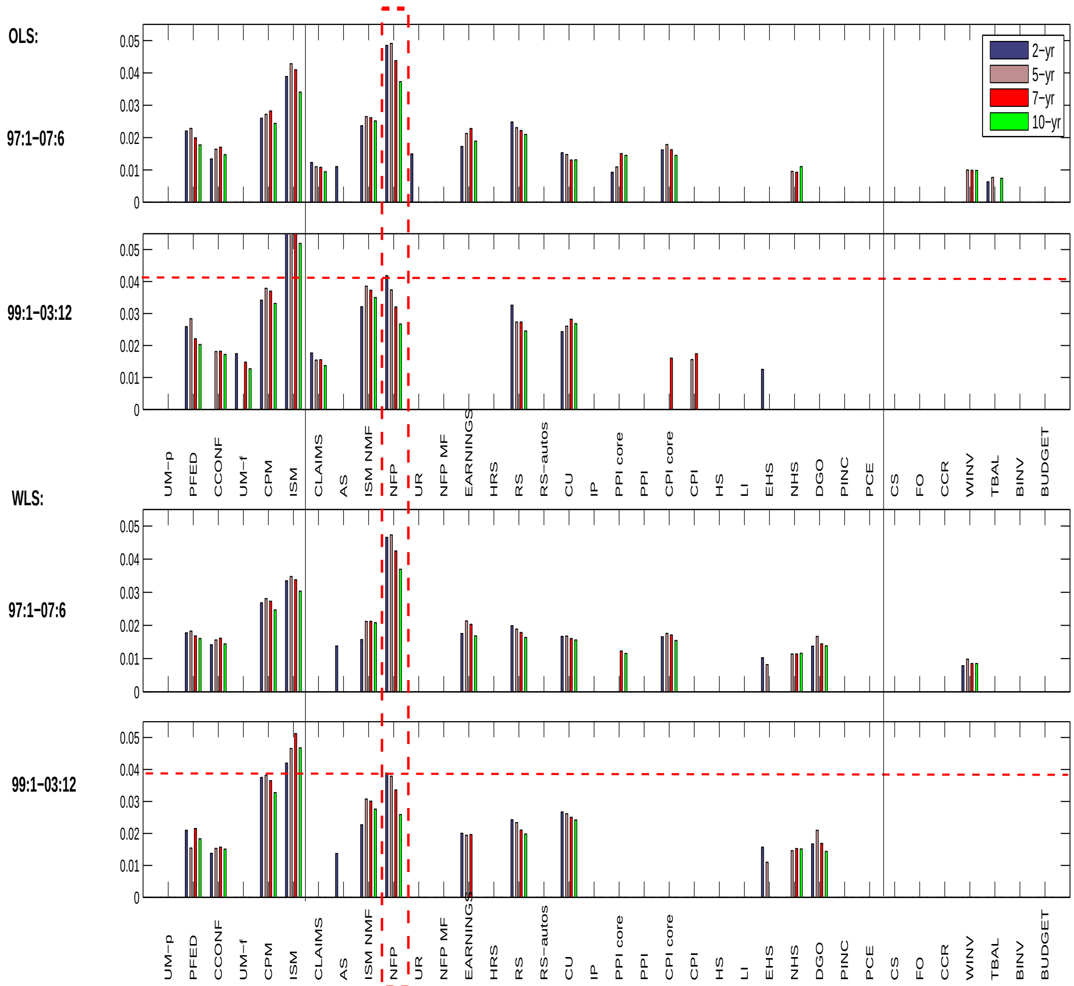

Figure E.3.: Bond yields response to macroeconomic news - full-sample vs sub-sample 2001 to 2005

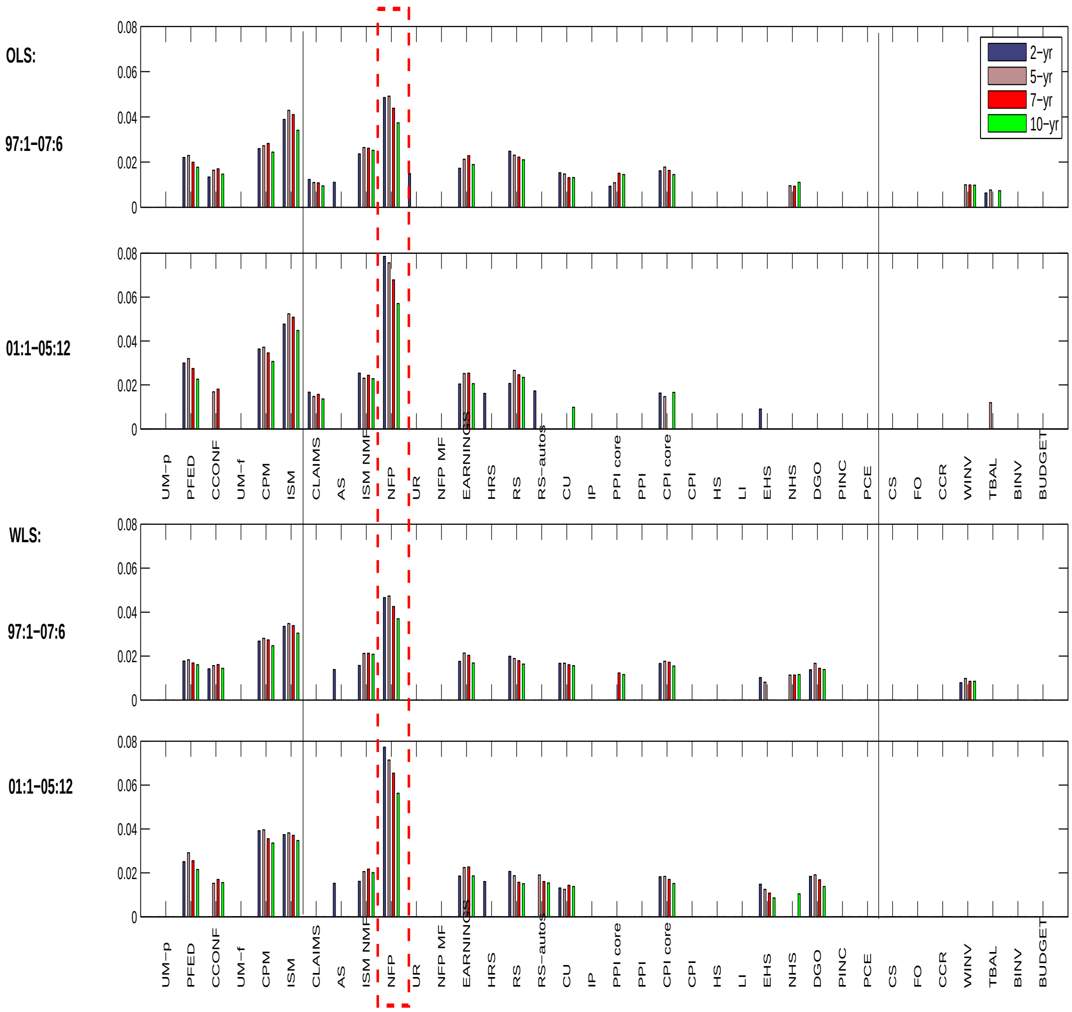

Figure E.4.: Bond yields response to macroeconomic news - full-sample vs sub-sample 2003 to 2007