

Macroeconomic News Index: A Quantitative Measure of Key U.S. Macroeconomic News¹

Ivan Medovikov

*Department of Economics, Brock University
429 Plaza Building, 1812 Sir Isaac Brock Way, St. Catharines, Ontario, L2S 3A1,
Canada.*

Tel.: +1 905 688 55 50 ext. 6148, Email: imedovikov@brocku.ca

Abstract

We provide a quantitative measure of key U.S. macroeconomic news that is based on manual textual review and classification of releases carried by leading business newswires. In a single number, our measure, termed Brock Macroeconomic News Index (MNI) quantifies intensity, polarity, and volume of news related to U.S. industrial production, the state of the labor market, housing market and construction industry, monetary conditions, and the energy policy and markets. The indexing methodology is similar to that of Michigan's Consumer Sentiment Index.

Keywords: Stock returns, Macroeconomic news, Copulas, Tail dependence, Macroeconomic News Index

1. Introduction

Macroeconomic news contains a multitude of information that can be difficult to track and process, but is it possible to summarize the daily news in

¹For full paper including results relating the impact of macroeconomic news on the stock market see Medovikov (2016).

just a single number? We develop a new comprehensive measure of macroeconomic news that is based on daily indexing of economy-related business news wires, which we call the Brock Macroeconomic News Index. In a single number, our measure quantifies polarity, intensity and volume of the entire news flow relating to U.S. employment, industrial activity, housing and construction, the energy market, and monetary conditions. Unlike other indexes of news (e.g. see Scotti and Yue (2013)) that focus solely on scheduled releases of economic statistics, our measure also includes important qualitative signals such as, for example, policy developments (e.g. a change in interest rates or signing of new trade agreements), geopolitical developments (e.g. wars or natural disasters) that may affect production, business and trade, and comments issued by business leaders or senior policy officials. The index is based on full manual review and classification of over 20,000 news releases by a team of qualified economic analysts. Section 2 of this paper reviews the data sources and the indexing methodology that we use to construct the Index, and presents the final index series. For an application of the index to the analysis of U.S. equity market returns, see Medovikov (2016).

2. Our news variable: the Brock Macroeconomic News Index

2.1. Sources of economic news

We use the Thomson Reuters Newswires (TRN) and the Dow Jones Energy Service (DJES) as the sources of public information that underpins the news variable that we construct. Thomson Reuters is one of the largest news providers in the world, and maintains several newswires that cover a variety of U.S. business and economic developments. The Dow Jones Energy Ser-

vice is a specialized source of news relating to the global energy industry, with coverage ranging from market information and significant firm-specific news to geopolitical events and energy policy. Since both are professional services, they emphasize timeliness of coverage and are usually among the first to break the story. Unlike the newspaper coverage, newswire releases tend to be highly-condensed and factual, making interpretation easier in most cases. They also contain few journalistic opinions, which substantially reduces political bias of economic coverage that has been found to exist in newspaper stories (e.g. see Mullainathan and Shleifer (2005), Groseclose and Milyo (2005), Dyck and Zingales (2003) and Lott and Hassett (2004)). Their position at the top of the news chain, breadth of coverage and unambiguous format make the newswires an excellent source of information for indexing that is comprehensive, reduces the chance of misinterpretation, and contains little noise arising from the repetition of news by multiple outlets.

Since our aim is to capture and quantify the inflow of news relating to U.S. macroeconomic conditions, we restrict attention to releases that follow five key themes usually associated with economic activity. In particular, we focus on stories covering U.S. industrial production, national and regional labor markets, housing markets and construction industry, the energy policy and markets, and monetary conditions. Industrial production, employment, and construction activity are often viewed as important indicators that carry signals about aggregate output and consumption. Monetary conditions such as, for example, the money supply and the state of bond markets have implications for the cost of capital. Energy costs can affect factor productivity, corporate profitability, and return to capital which motivates our choice of

energy news as another index component.

We use the Dow Jones Factiva as the source of all historical newswire releases. Factiva captures and stores all messages carried by TRN and DJES in full, exactly as they appeared at the time of the release, without edits or revisions that may have been made to the content at a later date. Updates and corrections to earlier releases are typically issued by TRN and DJES separately, and are also included into the index.

The overall pool of stories transmitted during our sample period is extremely large, and only a minority of wires are related to U.S. macroeconomic conditions. We utilize the Dow Jones Intelligent Indexing (DJII) service to identify relevant releases that fit one of our five selected themes.

2.2. Indexing methodology

For every month in our sample, the construction of the index proceeds as follows. First, we collect all economic stories that were carried by TRN and DJES during the month and sort them into one of the five groups based on economic theme. For example, during April 2014 DJII search yields 27 newswires relating to U.S. employment, 17 wires covering U.S. industrial production, 7 wires on housing markets and construction industry, 27 stories on energy markets and policy, and a further 15 releases focusing on monetary conditions that were carried by TRN and DJES. Once the relevant stories are identified, we review the content of every story in full and classify the release either as a “positive”, a “negative”, or a “neutral”. A story is viewed as “positive” if it contains information indicating improvement in current, or a likely improvement in future macroeconomic conditions, which for energy news is interpreted as easing of market conditions and a likely decline in price

of key carriers such as oil or liquefied natural gas, and for monetary conditions as monetary easing likely to result in lower cost of funds. “Neutral” stories are those that signal neither deterioration nor improvement. Classifications are performed by a qualified team of economic analysts at Brock University. To achieve highest degree of accuracy, each release is independently reviewed by multiple analysts.

A large portion of industrial production, employment, and housing and construction-related newswires are driven by scheduled releases of macroeconomic statistics issued, among others, by U.S. Department of Commerce, the Bureau of Labor Statistics and Federal Reserve Banks, or by revisions to their previously-released figures. When interpreting such releases, it becomes important to account for prior expectations since, for example, a sound gain of 50,000 in non-farm payrolls may in fact be viewed as negative news in times when higher growth was expected. Fortunately, in addition to the headline number, most data-related TRN releases also include a measure of expectations based on the most recent Reuters poll of forecasters. We therefore classify such releases in relation to expectations and treat the release as “positive” if it exceeds expectations, “negative” if it falls short of expectations, and “neutral” if it meets the expectations. The part of the index that is driven by scheduled releases of core macroeconomic data therefore captures “economic surprises”, or the unexpected component in macroeconomic data.

Revisions to past economic data are another major component of data-driven news. For example, growth estimates issued by the U.S. Bureau of Economic analysis tend to be revised multiple times, and revisions can be substantial and occur several months after initial issue. Many historical

macroeconomic data that are available today are therefore different from what was reported at the time of the release. The flow of such revisions represents important information that is absent from many available data, and we include all news relating to revisions into the index.

The remaining, or non data-driven industrial production, employment, and housing and construction-related stories, along with the bulk of stories covering the energy markets and monetary conditions are qualitative in nature and include comments made by senior officials and policy-makers such as, for example, members of the board of governors of the Federal Reserve System, U.S. Secretary of Commerce or the Secretary of Energy, important geo-political developments such as sanctions or energy cartel quota decisions, as well as natural disasters with potential for economic impact. We describe the content of TRN and DJES economic releases along with specific classification guidelines in detail in the rest of this section. The total number of newswire releases reviewed during the construction of the index across the five news groups is presented in Table 1.

Since our classification is similar to the grouping of responses to the University of Michigan Consumer Sentiment Index, we adopt its methodology and use the difference in percentage of positive and negative stories as the basis for the index. An analogous indexing approach is used in Birz and Lott (2011). To calculate the monthly value of the Macroeconomic News Index we first find the ratios of positive and negative stories for each of the four news groups, and then take their difference to find corresponding *sub-index* for that group. For example, Table 2 shows the raw news counts and the resulting four sub-indexes for April 2014. This yields a set of five indexes

<i>News group</i>	<i>Positive</i>	<i>Negative</i>	<i>Neutral</i>	<i>Total</i>
<i>Employment</i>	3328	3220	479	7027
<i>Housing</i>	982	830	126	1938
<i>Industry</i>	1407	946	107	2460
<i>Energy</i>	3830	3203	1281	8314
<i>Monetary</i>	334	441	1050	1827
<i>Total</i>	9881	8640	3043	21566

Table 1: Number of Reuters and Dow Jones Energy Service newswires by category, January 1999 to April 2014.

capturing polarity of U.S. employment, housing, industrial production, monetary, and energy-related news that are interesting in their own right, and are reviewed in more detail in Sections 2.3-2.7. The final value of the Macroeconomic News Index for the month is calculated by finding the average of the four sub-indexes, which amounts to -0.12 during April 2014. It is evident that positive or negative readings of the final index indicate whether the month was dominated by positive or negative news respectively, while the magnitude of the reading shows prevalence of certain type of news, with 1 and -1 representing entirely positive and negative news-months. To this end, macroeconomic news during April 2014 appears mixed but somewhat dominated by negative news.

The indexing methodology adopted here, as arguably other approaches to the building of such index, has some limitations. Here, the averaging of the four sub-indexes places equal weight on employment, housing, industry, monetary conditions, and energy-related news. Alternative weighting is clearly

	<i>Positive</i>	<i>Negative</i>	<i>Neutral</i>	<i>Sub-index</i>
<i>Employment</i>	17	10	0	0.26
<i>Housing</i>	0	5	2	-0.71
<i>Industry</i>	12	3	2	0.53
<i>Energy</i>	13	13	1	0
<i>Monetary</i>	0	2	1	-0.66

Table 2: Raw news counts and resulting news sub-indexes, April 2014.

possible. To allow for alternative index definitions, we make our disaggregated classification data available in addition to the final index series. Next, we review the four sub-indexes and the resulting macroeconomic news index in more detail.

2.3. Employment news sub-index

Nearly two thirds of employment-related wires cover scheduled releases and revisions to economic statistics by the agencies of the U.S. Department of Labor, with a large share of releases issued by the Bureau of Labor Statistics. These include statistics on national labor force, participation rates, employment and unemployment rates, non-farm payrolls, job openings and labor turnover, as well as jobless claims reports. State-level statistical releases also make a substantial part of the labor news flow and are included into the index, but their share relative to the national stories declines substantially closer to the end of our sample. Such data-driven releases contain least ambiguity, and interpretation is straightforward in most cases. For example, on August 1, 2014 Reuters wrote

“U.S. job growth slowed a bit in July and the unemployment rate unexpectedly rose, pointing to slack in the labor market ... Nonfarm payrolls increased 209,000 last month after surging by 298,000 in June, the Labor Department said on Friday. Economists had expected a 233,000 job gain”,

which we recorded as “negative” due to indication of raising unemployment and lower than expected job growth.

Most non data-driven employment-related releases contain comments by senior officials on the state of the U.S. labor market. For example, on July 15, 2014, Reuters issued a release citing the Chair of the Federal Reserve:

“Labor force participation appears weaker than one would expect based on the ageing of the population and the level of unemployment. These and other indications that significant slack remains in labor markets are corroborated by the continued slow pace of growth in most measures of hourly compensation”,

which we also classify as “negative”. While such comments clearly indicate a negative view of the labor market, they may be perceived as good news in other context. For example, financial markets may view this as signal suggesting greater likelihood of monetary easing. Interaction between market impact of employment news and other economic variables is documented in, for example, Boyd et al. (2005), where negative unemployment news is found to have a negative effect on equity prices during economic contractions, but a positive effect during expansions. Such non-linear effects can be captured using appropriate econometric models and controls, rather than by contextual

indexing of news. Here, we make particular effort to classify releases from the standpoint of underlying real economic signals, rather than its market interpretation or impact.

Figure 1 of the Appendix shows the monthly values of employment news sub-index and the total number of employment-related news releases carried by Reuters between January 1999 and April 2014. While the index remained positive during most of the past decade and a half, the two periods of time dominated by persistent negative news coincide with 2001 – 2002 and 2007 – 2009 U.S. NBER recessions. The volume of labor market news varies substantially during our sample period reaching a peak of 83 releases in October 2002, with peak volume occurring roughly in the aftermath of both recessions, and on average amounts to 38 releases per month.

2.4. Housing and construction news sub-index

As with labor market news, most housing and construction releases are data-driven, and cover statistics by the U.S. Department of Commerce, National Association of Home Builders, National Association of Realtors, the American Institute of Architecture as well as the U.S. Department of Housing and Urban Development. Such releases typically include data on new and existing home sales, new home completions, building permits and housing starts, home financing costs, mortgage issue and refinance rates, home affordability and rents, and even architectural billings. Some data, such as home sales, building permits and completions are periodically revised, and we include news of revisions into the index. A substantial number of releases cover related commodity-market news such as, for example, significant changes in the price of construction timber. The remaining, non-data driven

releases include news about major policy initiatives aimed at stimulating the construction industry and occasional extreme weather events that adversely affect home building.

The monthly values of the housing and construction news sub-index and the volume of housing-related news releases that appear in our sample are shown in Figure 3. As with the labor market news, the 1999 – 2014 period was dominated by generally positive stories, with the exception of the five year span surrounding the U.S. housing crisis. The number of housing and construction-related releases carried by Reuters declines steadily and on average amounts to only 10 releases per month, which is the lowest among the four news groups in the sample.

2.5. Industry news sub-index

The majority of signals about the U.S. industrial activity that receive news coverage are in the form of commentary, special reports, and statistical releases issued by the Federal Reserve banks, mainly of Chicago, Philadelphia and Richmond, industry associations such as the Institute of Supply Management (ISM) and the Manufacturers Alliance, as well as research circulated by major financial firms. These include data on industrial output, durable goods orders and non-farm productivity, along with a range of indexes of national and state-level manufacturing activity such as, for example, the Chicago Fed Midwest Manufacturing Index or the PMI Purchasing Managers' Index. Periodic polls of analysts expectations by Reuters as well as data revisions also receive significant attention and are frequently mentioned in the news. As with employment and construction-related news, non-data driven industry releases mostly contain commentary by senior officials on the

state of U.S. manufacturing and other industrial indicators.

The number of industry-related Reuters releases and the monthly values of the industry news sub-index are shown in Figure 2. As with employment news, periods of persistently-negative industry news appear to roughly coincide with the two most recent NBER recessions. Interestingly, the most recent span of negative industry news occurred in late 2011 and early 2012 – well past the June 2009 NBER recession end date, which supports the “double-dip” view of the latest U.S. recession.

2.6. Energy news sub-index

Among the five groups of news included into the index, energy news contains the greatest number and by far the widest range of stories. Data-driven releases represent a minority of energy news and, in addition to announcements of major price changes for energy carriers such as crude oil or liquefied natural gas, include production figures, quota assignment and compliance rates by members of the OPEC, statistics on U.S. Strategic Petroleum Reserves, petroleum balances and other items tracked by the U.S. Energy Information Administration, as well as data released by the International Energy Agency. Non-data component of energy news is also very broad and contains news of natural and man-made disasters that adversely affect energy supply such as, for example, a major hurricane in the Gulf of Mexico, oil spill, or pipeline breakdown that interrupts oil production and refining, international and regional conflicts, as well as policy developments that lead to supply restrictions or easing such as sanctions or rules that permit new extraction.

Figure 4 shows the number of energy-related DJES releases along with the values of the energy news sub-index. Set against the backdrop of steadily

raising energy prices, combined with political turmoil and military action that involved some of the largest energy producers in the world, energy news sub-index remained negative throughout most of the past fifteen years, reflecting both growing supply risks and global energy demand.

2.7. Monetary conditions news sub-index

Majority of Reuters releases relating to U.S. monetary conditions cover comments and guidance issued by the U.S. Federal Reserve System officials, staffing changes, releases of minutes, as well as significant bond market developments such as major debt issues or repurchase initiatives. Data-driven releases mostly report on money stock figures and depositary reserves. Over one third of money-related releases cover the search for the new Chairman of the Federal Reserve that dominated coverage at the end of 2005.

The total number of Reuters releases relating to monetary conditions along with the values of the monetary news sub-index is shown in Figure 5. The two rounds of monetary easing during 2001 – 2002 and from 2007 and on can be clearly seen, along with the periods of tightening in between. Interestingly, the index also seems to correctly reflect persistent talk of monetary tightening that began around the start of 2013 and presently persists.

2.8. Combined index

Final values of the Macroeconomic News Index, as well as the combined number of processed Reuters and DJIA releases, are shown in Figure 6. The index appears to correctly reflect the inflow of poor economic news during the two NBER recessions during 1999-2014 and the prevalence of good news indicating periods of growth in between.

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3. Appendix

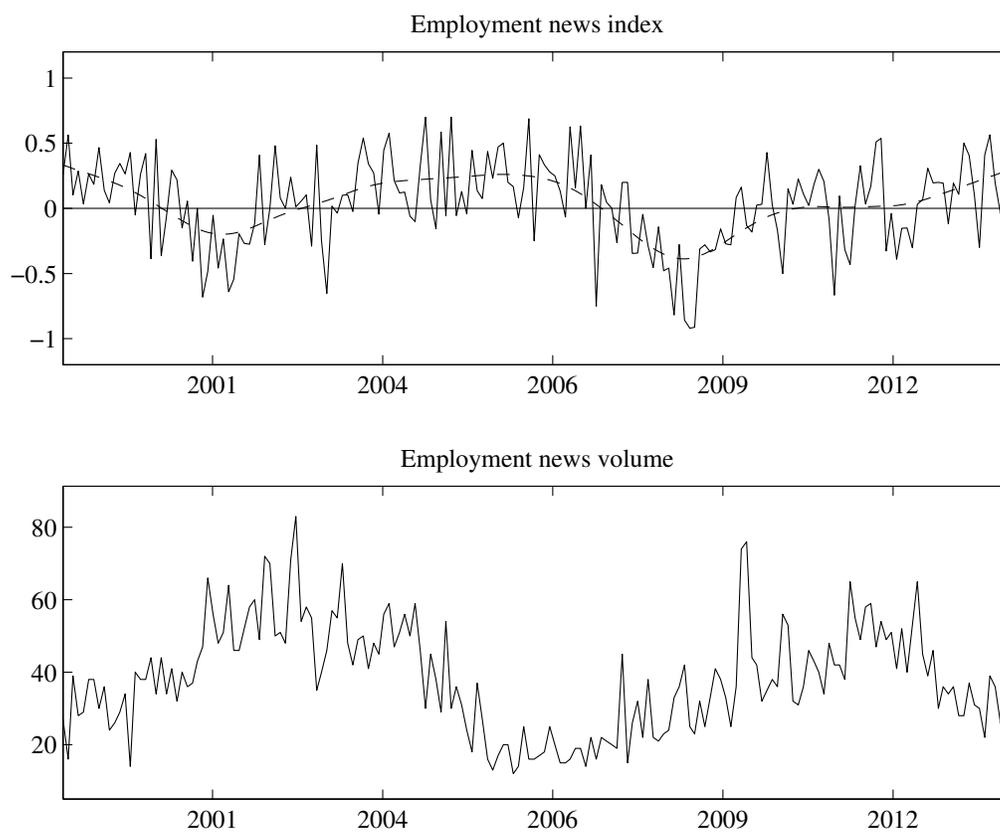


Figure 1: Monthly values of employment news index and total number of employment-related news releases carried by Reuters, January 1999 to April 2014. Dashed line shows HP-filtered trend.

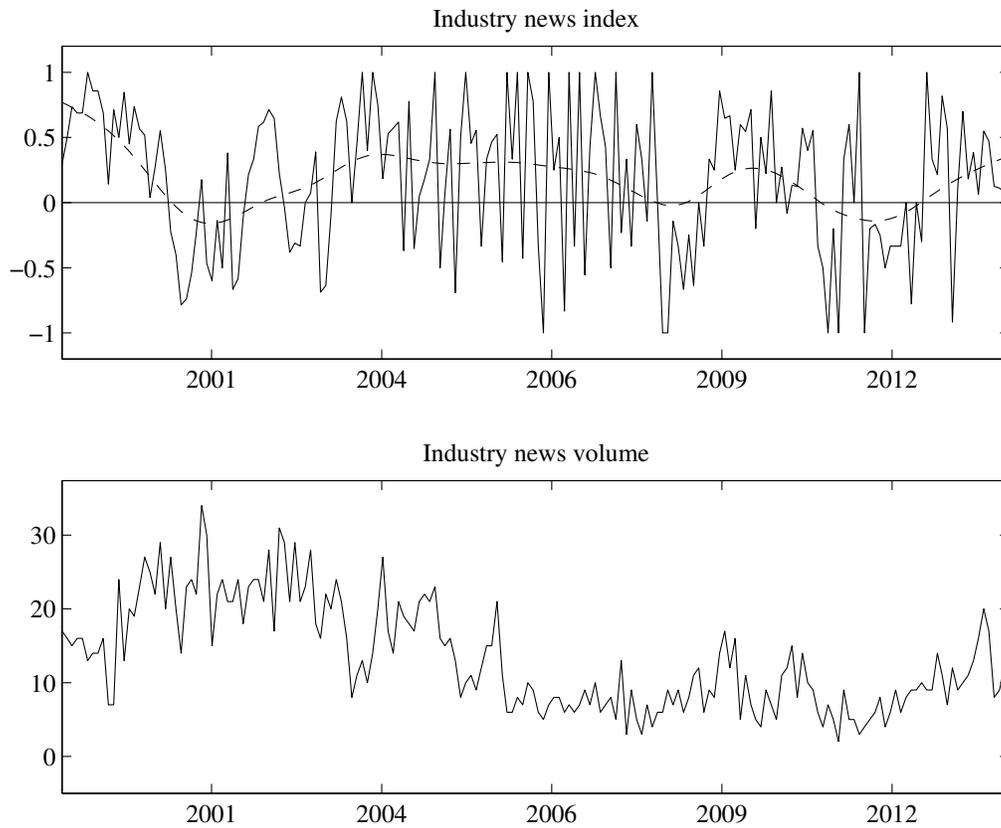


Figure 2: Monthly values of the industry news index and total number of industry-related news releases carried by Reuters, January 1999 to April 2014. Dashed line shows HP-filtered trend.

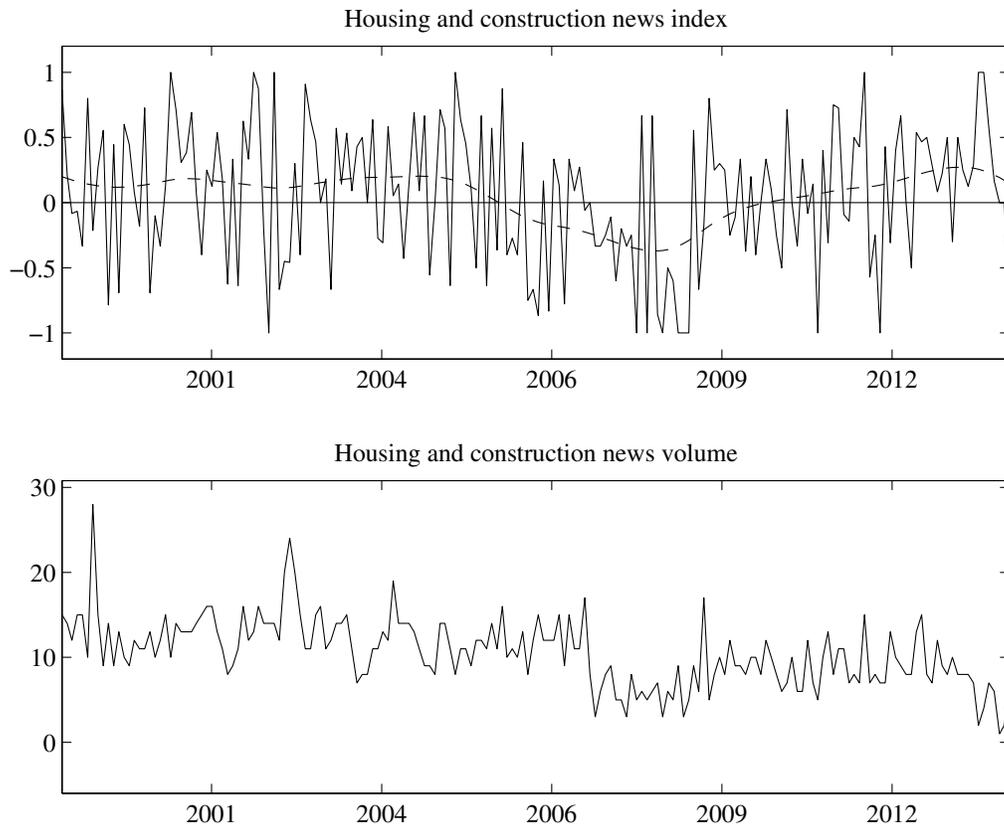


Figure 3: Monthly values of housing and construction news index and total number of housing-related news releases carried by Reuters, January 1999 to April 2014. Dashed line shows HP-filtered trend.

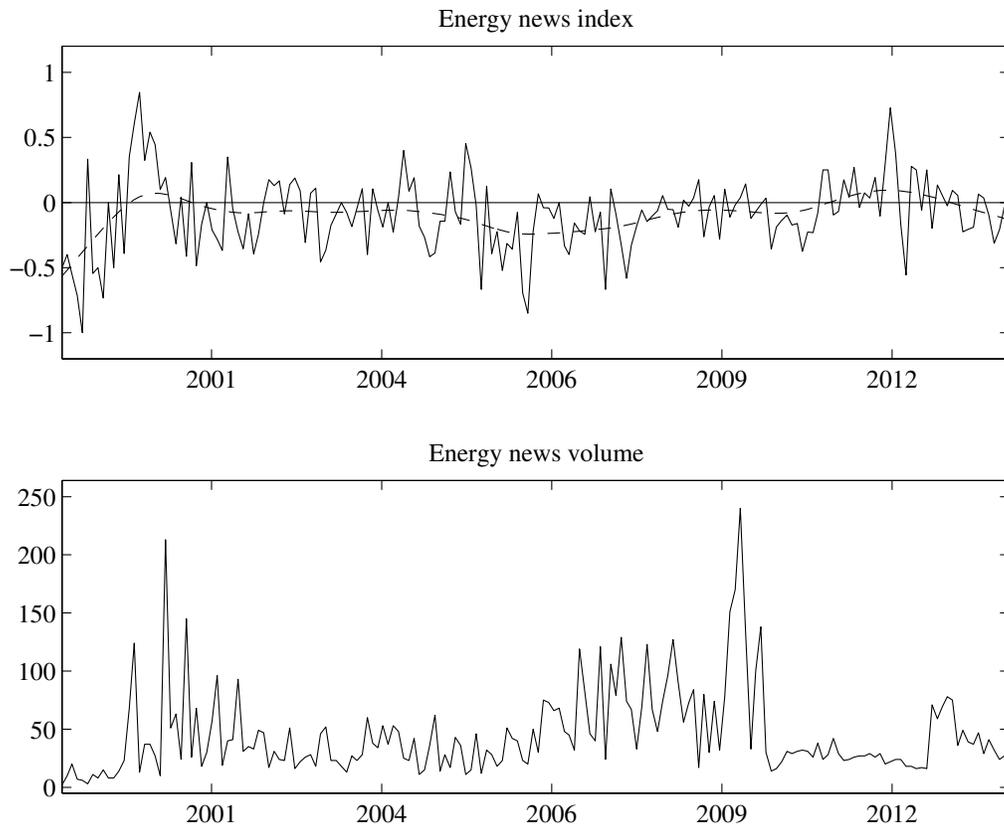


Figure 4: Monthly values of the energy news index and total number of energy-related news releases carried by Reuters, January 1999 to April 2014. Dashed line shows HP-filtered trend.

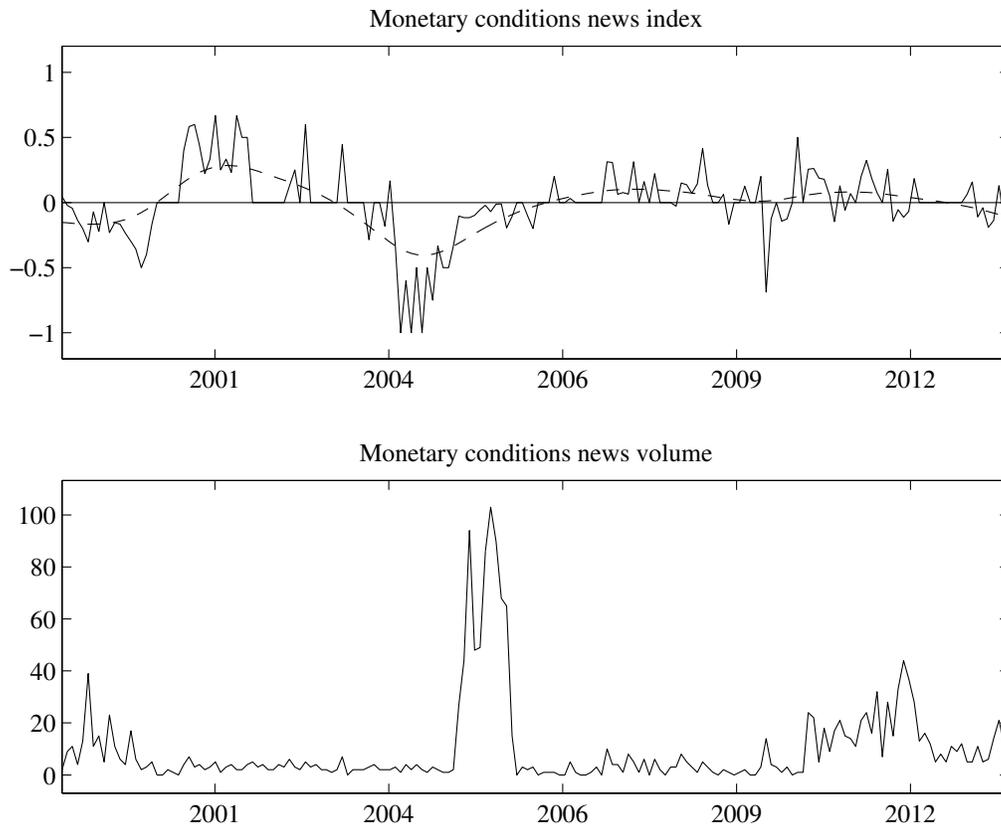


Figure 5: Monthly values of the monetary conditions news index and total number of news releases related to U.S. monetary conditions carried by Reuters, January 1999 to April 2014. Dashed line shows HP-filtered trend.

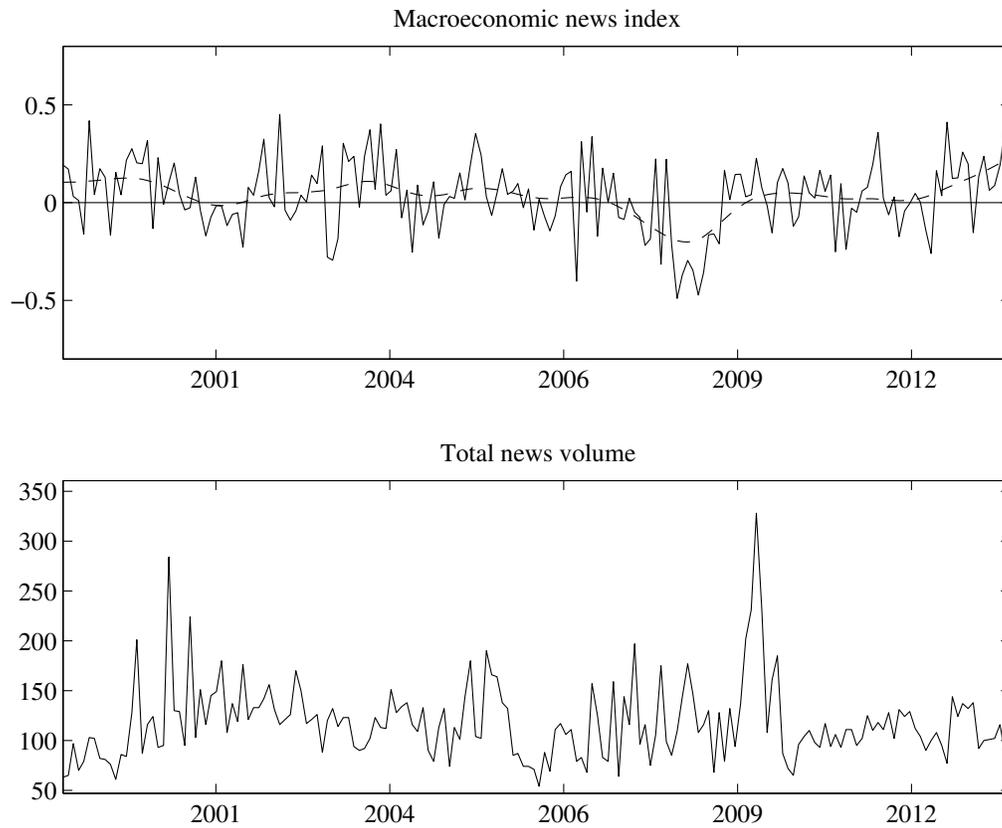


Figure 6: Monthly values of the Macroeconomic News Index and total number of treated news releases carried by Reuters and Dow Jones Energy Service during January 1999-April 2014. Dashed line shows HP-filtered trend.