THE US STOCK MARKET AT SECTOR LEVEL: INFLATION NEWS, 1990-2013

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Marta TOLENTINO
María de la O GONZÁLEZ

Abstract. This study analyses the US stock market at sector level from January 1990 to April 2013, taking into account the state of the economy. In concrete, this paper focuses on the recession periods, such as July 1990 – February 1991, April – November 2001 and January 2008 – March 2011, according to the NBER classification. Moreover, this analysis studies not only sector stock returns, but also sector trading volumes. Thus, some sectors of the US stock market show significant volatility in periods of economic turbulence, mainly during the global financial crisis (January 2008 – March 2011). In addition, this study evidences that inflation news would especially affect the US sector stock returns two days after the announcement. Lastly, according to Jareño et al. (2018), inflation announcements appear to have an impact when the state of the economy is low and when the direction of news is negative.

Keywords: US stock market; sector return; trading volume; recession; inflation news

JEL Classification: E31, G12, G3, L2

1. Introduction and literature review

This study aims to analyse the US stock market considering ten different sectors, according to the Global Industry Classification Standard (GICS). Specifically, the US stock market analysis focuses on the economic turbulence periods during the sample considered in this research: January 1990 – April 2013. Thus, this paper studies the recession periods such as July 1990 – February 1991, April – November 2001 (dotcom crisis) and January 2008 – March 2011 (recent global financial crisis), according to the NBER classification.

On one hand, a lot of previous literature studies the US stock market. Thus, for example, Campos et al. (2016), Cano et al. (2016), González et al. (2016 and 2017), Jareño et al. (2016), Jammazi et al. (2017a and 2017b) and Umar et al. (2018), among others, focus on the US stock market. Nevertheless, they analyze different aspects such as the interest rate risk of sector stock returns, the capability of US companies to transfer inflation shocks on product or service prices, and the causality between crude

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oil and stock markets. Moreover, some previous studies focus on the US stock market and macroeconomic factors (Jareño and Negrut, 2016; Jareño et al., 2016).

The study proposed in this research contributes to the literature including not only the sector stock returns but also the trading volume of US sectors, distinguishing the state of the economy. Moreover, this research tries to obtain some relevant conclusions in periods of economic turbulence, mainly in the recent global financial crisis. Finally, our results confirm that some sectors of the US stock market show significant volatility in periods of economic turbulence, mainly the sector “Financials”.

On the other hand, another branch of the literature studies the impact of inflation news on sector stock returns –Díaz et al. (2009 and 2013), Jareño (2009), Jareño and Navarro (2016)- in the context of the Spanish stock market. The same analysis on the US stock market is present in a large number of researches, such as Jones et al. (1998), Joyce and Read (1999), Nikkinen et al. (2006), Cenesizoglu (2011) and Torrecillas and Jareño (2013), among others. Furthermore, Veronesi (1999), Boyd et al. (2005), Díaz and Jareño (2009 and 2013), Cenesizoglu (2015) and Jareño and Navarro (2016) point out that the interpretation of macroeconomic announcements in different states of the economy could change the sign of the market reaction.

Finally, this study concludes that inflation news may affect the US sector stock returns, although there are actually only some statistically significant responses to inflation news two days after the announcement. Thus, according to Jareño et al. (2018), inflation announcements seem to impact on US sector returns if the state of the economy is low and the direction of news is negative.

The rest of the paper is structured as follows. Section 2 shows the data sample analysed in this paper. Section 3 studies the US stock market at sector level (return and trading volume). Section 4 collects a summary of the results about the impact of inflation news on the US stock market. Finally, Section 5 shows the main conclusions of this study.

2. Data

This paper examines the US stock market from January 1990 to April 2013 at sector level. Thus, Table 1 presents “The Global Industry Classification Standard” (GICS) developed by Morgan Stanley Capital International (MSCI) and Standard & Poor’s (S&P).

This classification intends to improve investment research and asset management outcomes for financial intermediaries all over the world. In addition, contributions from asset owners, portfolio managers and investment analysts resulted in this classification. Moreover, it aims to satisfy the global financial community’s need for an accurate, complete and standardized industry definition.

According to the GICS classification, this research analyses the following sectors: Energy, Materials, Industrials, Consumer Discretionary, Consumer Staples, Health Care, Financials, Information Technology, Telecommunication Services and

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Utilities. Specifically, to obtain daily close-to-close returns for these sectors that form the SP500 and the US stock market index, continuously compounded returns are applied. Prices and trading volumes are extracted from Bloomberg.

Table 1. The Global Industry Classification Standard (GICS)

<table>
<thead>
<tr>
<th>Code</th>
<th>Sector name</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5ENRS</td>
<td>Sector 1: Energy</td>
</tr>
<tr>
<td>S5MATR</td>
<td>Sector 2: Materials</td>
</tr>
<tr>
<td>S5INDU</td>
<td>Sector 3: Industrials</td>
</tr>
<tr>
<td>S5COND</td>
<td>Sector 4: Consumer Discretionary</td>
</tr>
<tr>
<td>S5CONS</td>
<td>Sector 5: Consumer Staples</td>
</tr>
<tr>
<td>S5HLTH</td>
<td>Sector 6: Health Care</td>
</tr>
<tr>
<td>S5FINL</td>
<td>Sector 7: Financials</td>
</tr>
<tr>
<td>S5INFT</td>
<td>Sector 8: Information Technology</td>
</tr>
<tr>
<td>S5TELS</td>
<td>Sector 9: Telecommunication Services</td>
</tr>
<tr>
<td>S5UTIL</td>
<td>Sector 10: Utilities</td>
</tr>
</tbody>
</table>

As previously said, this analysis breaks the whole sample period (January 1990 – April 2013) into three different economic turbulence periods: July 1990 – February 1991, April – November 2001 (dotcom crisis) and January 2008 – March 2011 (global financial crisis), according to the NBER classification.

Finally, this paper shows some evidences about the effect of inflation news on the US stock market and conclusions collected in Jareño et al. (2018) about the relevance of the market and news direction when analyzing the inflation news impact. In concrete, they study 280 monthly inflation announcements from the CPI (US Consumer Price Index) and PPI (US Producer Price Index) and the release of each monthly announcement, according to the US Bureau of Labor Statistics.

3. The US stock market: 1990-2013

This section studies the US stock market from 1990 to 2013 at a sector level, taking into account the state of the economy. In addition, this analysis focuses on the sector trading volume and the sector stock return.

3.1. Analysis of the sector trading volume

First, according to the information about mean sector trading volume (in percentages) during the sample period (Figure 1), the most popular sectors –according to investors– are: Information Technology (28% of the total trading volume, on average), Consumer Discretionary (15%) and Financials (14%). On the contrary, Utilities have the lowest percentage of the total trading volume (3%).

As regards the dispersion of the sector trading volume, the standard deviation values show the following results collected in Figure 2. The same popular sectors (Information Technology, Financials and Consumer Discretionary) show the highest variability during the whole sample period. Furthermore, Utilities shows the lowest dispersion in the trading volume.
Once the most popular sectors are identified, Figure 3 shows the evolution of the trading volume by sector all sample period round. Moreover, shaded areas in this figure indicate recession periods based on the NBER dating. Thus, the dotcom crisis,
between April – November 2001, shows turbulence periods in terms of trading volume in sectors such as Information Technology, Financials and Industrials, and, to a lesser extent, in Consumer Discretionary, Health Care, Telecommunication Services and Utilities. This persistent effect is consistently observed in sector Information Technology. On the other hand, the recent global financial crisis seems to impact on sectors such as Financials (mainly), Information Technology, and, to a lesser extent, Energy, Consumer Staples and Consumer Discretionary. These evidences appear anticipate in the results compiled in Figures 1 and 2.

**Figure 3.** Evolution of the sector trading volume between 1990 and 2013
Note: Shaded areas in this figure indicate recession periods based on the NBER dating.

3.2. Analysis of the sector stock returns

Figure 4. Mean sector stock return

Second, with regard to the sector stock return, the average return obtained during the sample period (Figure 4) shows the highest values for sectors Health Care and Information Technology. However, Telecommunication Services exhibits the lowest mean sector stock return.
Figure 5. Standard deviation of the sector stock return

Figure 5 collects the standard deviation of the sector stock returns between 1990 and 2013. Thus, the most volatile sectors are Financials and Information Technology. So, the latter corroborates the traditional trade-off between risk and return, according to the classical portfolio management. Nevertheless, Financials show a modest average return, but it exhibits a disturbing volatility. On the other hand, Consumer Staples show the lowest dispersion in this sample period, accompanied by high mean returns.

Figure 6. Evolution of the sector stock return between 1990 and 2013
Jareño, F., Tolentino, M., Gonzalez, M.O.  *The US Stock Market At Sector Level, 1990-2013*
Finally, Figure 6 exhibits the evolution of the stock returns by sector along the whole sample period, including shaded areas that show recession periods according to the NBER information. Consistent results are clearly observed. All sectors—without exceptions—present high turbulence during the recent global financial crisis. Additionally, sectors exhibit high volatility during the other two crises included in this analysis, mainly in the dotcom crisis and for the sector Information Technology—as previously observed.-

Thus, these results confirm and corroborate preceding evidences obtained with the analysis of the trading volume during the sample period of this study.

4. The impact of inflation news on the US stock market

As commented formerly, many previous studies examine the impact of macroeconomic news on stock returns, such as Gallagher and Taylor (2002), Nikkinen et al. (2006), Jareño (2009), Díaz and Jareño (2009 and 2013) and Jareño and Navarro (2016).

Particularly, this paper studies the impact of unexpected inflation news on the US stock market at sector level 2-days before the announcement, the announcement day and 2-days after, by applying the seemingly unrelated regression estimation.

<table>
<thead>
<tr>
<th>Sectors</th>
<th>2-days before</th>
<th>Announcement</th>
<th>2-days after</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5ENRS</td>
<td>0.1132</td>
<td>0.2831</td>
<td>-0.3776***</td>
</tr>
<tr>
<td>S5MATR</td>
<td>0.3619**</td>
<td>0.1612</td>
<td>-0.4230***</td>
</tr>
<tr>
<td>S5INDU</td>
<td>0.2437*</td>
<td>0.0970</td>
<td>-0.4879***</td>
</tr>
<tr>
<td>S5COND</td>
<td>0.2867*</td>
<td>0.0340</td>
<td>-0.5886***</td>
</tr>
<tr>
<td>S5CONS</td>
<td>0.1533</td>
<td>-0.0228</td>
<td>-0.3691***</td>
</tr>
<tr>
<td>S5HLTH</td>
<td>0.2081</td>
<td>0.1777</td>
<td>-0.4401***</td>
</tr>
<tr>
<td>S5FINL</td>
<td>0.5008**</td>
<td>0.3096</td>
<td>-0.8392***</td>
</tr>
<tr>
<td>S5NFT</td>
<td>0.3306</td>
<td>-0.1393</td>
<td>-0.2118</td>
</tr>
<tr>
<td>S5TELS</td>
<td>0.4232***</td>
<td>-0.0794</td>
<td>-0.5793***</td>
</tr>
<tr>
<td>S5UTIL</td>
<td>0.0516</td>
<td>0.2790</td>
<td>-0.2976**</td>
</tr>
</tbody>
</table>

*Note:* As usual, *, **, and *** denotes statistical significance at the 10%, 5% and 1% level, respectively.
Table 2 shows that the most relevant impact of inflation news on US stock market focuses on 2-days after the announcement. In addition, these results exhibit a negative and statistically significant impact in all sectors except in Information Technology. 2-days before the announcement, the estimated impact is positive, although it only presents statistically significance in some sectors. Finally, the inflation news effect on US sector stock returns on the announcement day is largely irrelevant.

Thus, McQueen and Roley (1993), Veronesi (1999), Boyd et al. (2005) and Cenesizoglu (2015) confirm that the arrival of new information depends on the state of the economy — expansion or recession — and the direction of the news — positive or negative news —.

Table 3. Summary of the main results of Jareño et al. (2018)

<table>
<thead>
<tr>
<th>State of the Economy (NBER) and direction of inflation news</th>
<th>Sectors</th>
<th>Event window</th>
<th>Estimation model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Discretionary</td>
<td>Before the announcement (+) in expansion and negative news</td>
<td>Mean-adjusted return model and Market Model</td>
<td></td>
</tr>
<tr>
<td>Consumer Staples</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telecommunication Services</td>
<td>Before the announcement (+) in recession and negative news</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Discretionary</td>
<td>After the announcement (-) in recession and negative news</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All sectors</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Jareño et al. (2018) analyses the US stock market to inflation news, considering the market and the inflation news direction. In concrete, they study Consumer Price Index (CPI) and Producer Price Index (PPI) announcements in an event window (two days before and after), according to Díaz and Jareño (2009 and 2013). In addition, sector abnormal returns are obtained using two alternative models: the “Mean-adjusted return model” and the “Market Model”, in order to get robust results. According to the previous literature, positive inflation news is interpreted as “bad news,” and negative inflation news is considered as “good news” by investors. Thus, the state of the economy and direction of surprises are two relevant factors that may affect investors.

Assuming this framework, Jareño et al. (2018) exhibits that market reactions are mainly robust two days after a negative announcement during contraction periods. Thus, according to Díaz and Jareño (2013), positive inflation surprises during periods of contraction may be considered good news among investors, as investors notice that the economy is expanding more than expected. Nevertheless, as negative inflation news delivered during contraction periods is considered bad news, investors may believe that the economy is declining more than anticipated in these circumstances.

Moreover, some other relevant results are obtained before the announcement, because some sectors interpret as good news a negative announcement in expansion, such as Consumer Discretionary, Consumer Staples and Health Care. By contrast, other sectors (Telecommunication Services, Materials, Industrials, Financials and
Consumer Discretionary) consider as good news a negative announcement in recession.

5. Summary and concluding remarks

This research analyses the US stock market at sector level according to the Global Industry Classification Standard (GICS). The sample covers the period January 1990 – April 2013, considering the state of the economy (NBER classification). In particular, this paper focuses on some economic turbulence periods. Specifically, it studies three different recessions: (1) July 1990 – February 1991, (2) April – November 2001 (dotcom crisis) and (3) January 2008 – March 2011 (recent global financial crisis).

In this context, this analysis contributes studying not only sector stock returns, but also sector trading volumes, emphasizing recession periods with shaded areas in figures. In addition, this paper would obtain some interesting conclusions in recession periods, mainly in the recent global financial crisis. Thus, as far as the sector trading volume is concerned, some sectors exhibit high volatility around the dotcom crisis, such as Information Technology, Financials and Industrials, mainly. Besides, the recent global financial crisis may largely affect Financials and Information Technology.

As regards the sector stock return, all sectors present consistently high volatility during the recent global financial crisis. Moreover, sector Information Technology show great instability during the other two crises included in this analysis, mainly in the dotcom crisis. Therefore, these results validate outcomes found in the sector trading volume analysis.

Finally, this study concludes that inflation news may affect the US sector stock returns, although there are actually only some statistically significant responses to inflation news two days after the announcement. Moreover, according to Jareño et al. (2018), inflation announcements may have an impact when the state of the economy is low and when the direction of inflation news is negative. So, the course of the market and of the inflation news would be crucial to study the US stock market.

References


