

THE EFFECTS OF LABOR MARKET NEWS ON INTERNATIONAL FINANCIAL MARKETS

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Abstract

The dynamics of financial markets tends to be influenced by the launch of news. This new information generates a series of effects that ripple through the markets on all kinds of levels. In this paper we consider a series of announcements specific to the labor market and aim to test their potential impact on a basket of financial assets. We employ three volatility models and observe the fact that labor market announcements induce solid reverberations on a large set of financial assets.

Keywords: labour market, volatility, event study

Rezumat

Dinamica piețelor financiare tinde să fie influențată de lansarea de știri. Această nouă cantitate de informație generează o serie de efecte care se propagă în piață într-o multitudine de aspecte. În prezenta lucrare sunt observate o serie de anunțuri specifice pieței muncii cu scopul de a testa impactul acestora asupra unui coș de active financiare. Folosind trei modele de volatilitate observăm faptul că anunțurile ce țin de piața muncii induc reverberații semnificative asupra unui set important de active.

Cuvinte-cheie: piața muncii, volatilitate, studiu de eveniment

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1. Introduction

Financial literature has shown that information has a complex impact on the dynamics of financial markets. This is a normal conclusion, given the fact that the efficient market hypothesis stipulates that financial markets incorporate the existing level of information available. In this context, a strong and fast growing body of academic attention has been oriented to the study of the effects generated by news. This literature germinates according to some from the study of Cutler et al (1989) and considers various areas of the financial environment. Fleming and Remolona (1999), Anderson et al. (2002), Simpson et al. (2005), Vega (2006), Engelberg et al (2008), Swanson and Williams (2014), just to mention a few, represent relevant contributions to a the prolific block of

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research that considers the effects of macroeconomic news on financial data.

Despite this abundance of studies that consider news related to macroeconomic fundamentals, less attention has been given to the impact of news specific to labor market variables.

This paper contributes to the existing literature by aiming to determine if a large set of labor market announcements impact the volatility of a selection of financial assets that is grouped in three main categories: currencies, commodities, and indices. We use an event study approach which incorporates three volatility models in order to obtain abnormal variances and provide a procedure that reports the results as a volatility index. We find that the studied announcements have a powerful impact on the dynamics of the volatility of the considered assets.

The reminder of this paper is organized in the following way: section II reviews the literature on the impact of news on financial markets. Section III describes the data used and our methodological setup. Section IV discusses the results obtained and section V concludes.

2. Literature review

As previously stated, the financial literature has demonstrated that news in the form of macroeconomic announcements have a solid impact on assets prices and volatilities. In addition to this, it has been shown that it is possible to methodologically isolate this impact through quantitative instruments. These facts led to the arrival of an abundant literature that seeks to determine the nature of the above suggested impact.

Ederington and Lee (1993) focus on short-run volatility in an approach that is highly relevant to the present study. Using 5-minute frequencies for series of returns for USD – DEM and USD – JPY and announcements regarding elements such as: GNP, trade deficit, employment, PPI, the authors document on abnormal volatility patterns.

Andersen et al (2007) concentrate on the reaction of the stock, bond and currency markets belonging to three states (U.K., US and Germany) to American macroeconomic news. The authors discover that information generates conditional mean jumps. Moreover, the results show the fact that equity markets exhibit different behaviors to news according to the phase of the business cycle.

Arezki et al (2011) test the spillover effects that derive from news regarding sovereign ratings for European Markets. The result demonstrate such spillover effects across countries and markets. In addition to this, the study observes that the effects depend on variables such as: type of announcement, country for which a downgrade is issued and rating agency that releases the information. Other similar contributions in this direction can be traced to Gande and Parsley (2005) or Ferreira and Gama (2007).

Lillo et al (2014) study trading behavior in relation to a series of endogenous and exogenous factors. As exogenous factors they use news articles and a variable that describes the sentiment of the analysis deriving from the news. The authors determine through a VAR approach that the stream of news of the previous day affects trading patterns and activity.

Lupu and Călin (2014 a, b) discuss the impact of quantitative easing announcements issued by the Bank of Japan and Bank of England on CDSs and respectively currency pairs. Both studies detect a clear influence generated by the news about unconventional monetary policy.

Garcia - Herrero et al (2015) study the way in which Brazilian financial markets react to actions specific to monetary policy, considering both the dynamics of the policy rate and the communications of the central bank. They find that futures interest rate reflect both considered elements and that the communications of the central bank have a high impact in future rates and reduce volatility. Călin (2015 c) also explores the impact of monetary policy news by investigating the influence of Federal Reserve's tapering actions on the US real estate market. The results indicate cases of abnormal variance resulting from the tapering announcements, but all together a limited influence.

Gilbert et al (2015) observe that certain announcements generate a higher influence on asset prices than others. In this context, the authors try to estimate the intrinsic value of an announcement through nowcasting methodologies. They notice that for the 1998 – 2013 interval a large proportion of the impact of announcements on the bond futures market can be linked to differences in intrinsic value.

Omranea and Hafner (2015) exploit the connection between exchange rate volatility and macroeconomic variables. Using an impulse response analysis, the authors decompose the effects of macroeconomic news on the currency market and determine the existence of a direct effect and an indirect volatility spillover.

As stated above, the literature that focuses on the effects of labor market news on financial market is not as abundant. Studies like McQueen and Roley (1993), Fleming and Remolona (1999) or Kim et al (2014) investigate the relationship between financial elements and several macroeconomic fundamentals including also specifications for labor market announcements.

In an early work, Krueger (1996) tries to detect if the bond market responds to surprise announcements that derive from the availability of better and revised data. The author concludes that prices are clearly influenced by the unemployment news.

Krueger and Forson (2003) observe that the dynamics of labor market data has a solid effect on the yields of 30 year Treasury bonds and bills. The authors argue that a surprise increase of 200000 jobs is connected to an increase that ranges from 4 to 8 basis points for long term bond yields.

Boyd et al (2005) study the stock market's feedback in relation to unemployment news. The authors observe that a negative announcement about unemployment has either a positive or negative effect on stocks depending on the phase of the economic cycle.

3. Data and methodology

Our modeling approach relies on two large data blocks: closing prices for financial assets and dates on which labor market news was launched.

For the first type of data we focused on 114 financial assets that can be divided into three main categories: currency pairs, indices and commodities. A full list of these assets is provided in Appendix 1. Our data set is observed at a five-minute frequency and the investigation period ranges from October 2014 to February 2015.

In addition to this we are using a list of dates on which news related to the labor market have been launched. These announcements dates correspond to 13 categories of events that describe the nature of the announcement made on a specific date. Among these, the most representative are: *Jobseekers Net Change*, *Hourly Wages YoY*, *Unemployment Rate*, *Formal Job Creation Total*, *Labor Cash Earnings YoY*, or *Non-Farm Payrolls QoQ*.

The data are representative for a series of 13 countries, namely: Brazil, Canada, France, Greece, Italy, Japan, Mexico, Norway, New Zealand, South Africa, Singapore, Sweden, and the US.

The methodology builds on the setup put forward by Călin (2015) and relies on an event study approach³. In a similar way to the above mentioned work, we are using three volatility models. We thus also employ RiskMetrics but after this point rely on the estimations of the A-PARCH and NAGARCH models.

The Asymmetric Power ARCH model was introduced originates from the work of Ding et al (1993) and has the following parametric form:

$$\begin{aligned}
 y_t &= \mu + a_t \\
 a_t &= \sigma_t \epsilon_t \\
 \sigma_t^\delta &= \omega + \sum_{i=1}^m \beta_i \sigma_{t-i}^\delta + \sum_{j=1}^s \alpha_j (|a_{t-j}| - \gamma_j a_{t-j})^\delta
 \end{aligned}$$

where:

$$\begin{aligned}
 \omega &> 0, \delta \geq 0 \\
 \beta_i &\geq 0 \\
 \alpha_j &\geq 0 \\
 -1 &< \gamma_j < 1
 \end{aligned}$$

The non-linear asymmetric GARCH (NGARCH) was introduced by Engle and Ng (1993) and relies on the following formulation:

$$\sigma_{t+1}^2 = \omega + \alpha R_t^2 + \beta' a_t^2 - 2\alpha\delta z_t \sigma_t^2$$

Where

$$\beta' \equiv \beta + \alpha\delta^2 > \beta' \text{ for } \alpha > 0$$

Given the fact that we are using intra-day data we must formulate an adjustment for common volatility dynamics as observed for example in Călin (2015 b). Therefore, before running the event study procedure, we apply the procedure of Boudt, Croux and Laurent (2011) in order to compensate for periodicity.

In the event study approach we exploit the nature of our input data and focus on twelve 5 minute intervals that follow the launch of a certain event. In this time frame of one hour we observe the number of abnormal returns computed by our methodology. On these values we build a volatility index that captures the response of a specific financial asset to the labor market related announcement.

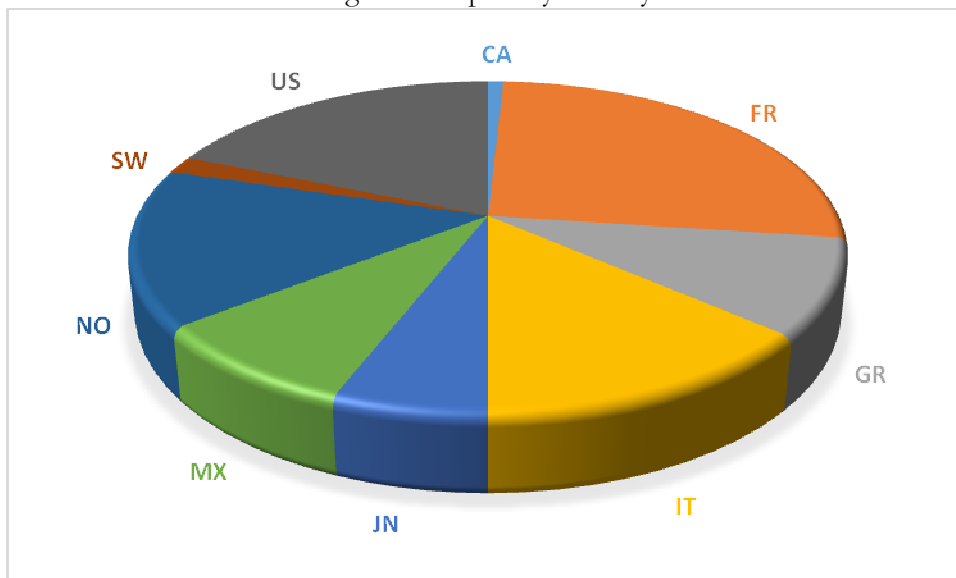
³ For a full description of the typical event study setup see for example Albu et al (2014a).

4. Results:

After the computations described in the above section we obtain 848 cases in which we investigate the impact of a certain event on a certain financial asset. Out of this total number of event studies, we observe significant values for the volatility index in 119 cases.

Firstly, we notice the fact that the labor market announcements of nine out of the 13) countries (Canada, France, Greece, Italy, Japan, Mexico, Norway, Sweden and the US) generate abnormal returns. Figure 1 shows the number of assets for which we detected significant values for the volatility index divided by country.

Figure 1: Impact by country



Source: Authors' calculation

The results for the case of Canada show that the announcement about the level of the *labor productivity* generated abnormal volatilities for the S&P/TSX 60 Index Standard Futures. The impact in this case is however one of the weakest reported in this investigation.

For France we detect a much larger activity. News about *jobseekers net change* and *non-farm payrolls* determine abnormal volatilities in 79 cases. We observe that these two categories of events have a strong influence on the currency market. For example, the results indicate abnormal volatilities in 30% of the studied intervals for the EUR – CNY currency pair with reference to the announcement of the dynamics of the French *non-farm payrolls QoQ* event. Similar effects are observed for EUR-ILS, EUR-ZAR.

In addition to this, a relevant influence is observed for the Generic EUR France government bills and bonds, and mild impacts are detected on EUSA 10 and EUSA 5.

The announcements on *unemployment rate* represent the only events that trigger abnormal dynamics for Greece. The largest effects are observed again for the currency market, with strong impacts for the EUR – ILS, EUR – INR, and EUR – NOK currency pairs. Greek unemployment announcements also determine abnormal

volatilities for other financial assets such as STOXX Europe 600 Index (SXXP Index) or Athens Stock Exchange General Index.

Only the announcement regarding the *quarterly unemployment rate* launched on 29.08.2014 succeeds in creating abnormal volatilities in the case of Italy. Similarly to the previous cases, the highest values for the volatility index are found for currencies, high responses being observed for: EUR – CNY, EUR – RBL, EUR – CNH and EUR – ZAR. For example, we notice abnormal returns for the last currency pair in almost half of the number of intervals in the established time frame.

Besides this, the volatility index has significant but lower values for a series of indices among which we mention: SXXP Index, Euro Stoxx 50 Index (SX5E), FTSEMIB Index (which consists of the 40 most liquid stocks listed on the Italian stock market), and the VG1 Index (Euro STOXX 50 Futures).

In the case of Japan, we observe that the announcements made in the fall of 2014 regarding the *labor Cash Earnings YoY* generated several cases of abnormal volatilities. The impact measured by the volatility index is observed for two financial assets: the KRW – JPY currency pair and the TPX Index (Tokyo Stock Price Index).

Despite the tendencies observed for the other countries, for Mexico we find significant values of the volatility index only for indices. The only category of events that generates effects is the *formal job creation total*. The highest value for the volatility index was found for the MEXBOL Index, also known as the Mexican IPC index or *Indice de Precios y Cotizaciones* in the original form. We also detect an important value of the volatility index for the ISA Index.

Two types of Norwegian labor market-related announcements generate abnormal volatilities and both characterize the evolution of the local unemployment rate. We thus observe high values of the volatility index for currency pairs that relate the Norwegian Krone with important currencies such as the USD or the EUR. In addition to this, the results show significant effects on two indices: OBX Index (Oslo Stock Exchange index) and the OSEAX Index (Oslo All-Share Index).

For Sweden, we identify only two events with significant results, both concerning the *unemployment rate trend*. They generate a minor impact in terms of abnormal volatilities for the QC1 Index (Stockholm 30 Futures).

The last state included in our analysis is the US, and in this case we found the largest number of assets that exhibit abnormal volatilities due to labor market news. These volatilities are caused by two announcements about the dynamics of the employment cost index. The largest values for the volatility index are found for the following currency pairs: USD – TRY, USD – BRL, USD – NOK, USD – PLN, USD – RUB, USD – SEK, and USD – HUF.

We also observe relevant abnormal volatility scores for the USGG30YR Index (Generic United states government bond index) and CCMP Index (NASDAQ Composite Index).

5. Conclusions:

In this paper we tried to observe if a large set of announcements regarding several variables of the labor market generates influences on the international financial markets in the form of an abnormal quantity of volatility.

We found that the investigated announcements lead to abnormal volatilities in a substantial number of cases and we tried to quantify this influence through a volatility index. We observe that in general, the most relevant impact is on the currency market, for almost every announcement with significant values for the volatility index.

In addition to this, the vast majority of labor market-related announcements tend to generate significant abnormal volatilities for the stock market index of the country in which it was issued.

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Appendix 1

GFRN10 Index	CAC Index	EURCNY Curncy
EUSA10 Curncy	SBF120 Index	EURJPY Curncy
EUSA5 Curncy	VG1 Index	EURNZD Curncy
OAT1 Comdty	VGA Index	EURBRL Curncy
OATA Comdty	CF1 Index	EURCAD Curncy
SXXP Index	EURAUD Curncy	EURGBP Curncy
SX5E Index	EURCNH Curncy	EURILS Curncy

EURINR Curncy	BBDXY Curncy	RTY Index
EURMXN Curncy	DX1 Curncy	INDU Index
EURNOK Curncy	DXA Curncy	DJA Index
EURPLN Curncy	DXY Curncy	ND1 Index
EURRUB Curncy	USDCAD Curncy	NDA Index
EURSEK Curncy	USDCHF Curncy	RTA1 Index
EURTRY Curncy	USDHUF Curncy	RTAA Index
EURUSD Curncy	USDILS Curncy	GNZGB10 Index
EURZAR Curncy	USDINR Curncy	GNZGB5 Index
GBTPGR10 Index	USDMXN Curncy	GCAN10YR Index
BTS1 Comdty	USDPLN Curncy	CN1 Comdty
IK1 Comdty	USD RUB Curncy	CNA Comdty
IKA Comdty	USDSEK Curncy	SPTSX Index
FTSEMIB Index	USDTRY Curncy	SPTSX60 Index
SGDJPY Curncy	USDZAR Curncy	PT1 Index
USDSGD Curncy	INT1 Curncy	PTA Index
USDNOK Curncy	INTA Curncy	ASE Index
GNOR10YR Index	KU1 Curncy	FTASE Index
NKSW10 Curncy	USGG10YR Index	TOP40 Index
OBX Index	USGG30YR Index	AI1 Index
OSEAX Index	USSW10 Curncy	AIA Index
USDBRL Curncy	USSW2 Curncy	GMXN10YR Index
IBOV Index	USSW30 Curncy	MEXBOL Index
KRWJPY Curncy	FV1 Comdty	MEXBOLD Index
USDJPY Curncy	FVA Comdty	IS1 Index
GJGB10 Index	WN1 Comdty	ISA Index
TPX Index	WNA Comdty	GSGB10YR Index
NZDUSD Curncy	CCMP Index	GSGB5YR Index
USDCNH Curncy	NDX Index	OMX Index
USDCNY Curncy	SPX Index	SAX Index
USDKRW Curncy	RAY Index	QC1 Index