NONFARM EMPLOYMENT REPORT TRADING WITH BINARY OPTIONS & TEMPORAL FUNCTIONALITIES

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ABSTRACT: *The main target of this paper is to discuss a short-term strategy for trading the monthly USA Nonfarm Employment Reports (NFP; Non-Farm Payrolls), by incorporating binary options and temporal warning dynamics & triggering trading functionalities (TTF). The proposed trading strategy is not a fully documented trading system, because it is derived, as well as it has been back-tested on USA Markets sample data (2000-2016) with an initial formal definition and documentation. The nonfarm employment reports are well known to create market volatility fostering short-term trading. Hence, a strategy based on binary options and these TTF functionalities offer great profit opportunities. The current paper contributes to corporate finance literature by examining, analyzing and defining these TTF functionalities. For this purpose, four categories of shareholders are regarded: The long-term investors, the short-term swing traders, the short-term momentary speculators, and the intraday speculators. Paper concludes that, in daily and intraday NFP trading, the short-term swing traders -if they incorporate binary options and apply the proposed TTF in their trading plans and strategies- are benefit at the expense of momentary and intraday speculators, while the long-term investors are not actually affected by the NFP release reports trading*.

Keywords: *Equity issue timing, Binary options, Liquidity, Market timing, Nonfarm employment reports, Temporal Trading Functionalities (TTF)*

JEL Classification: *E44, G32, M20, M41*

Introduction

The main target of the current paper is to discuss a short-term (daily and intraday) trading strategy for those USA monthly reports named as Nonfarm Employment Reports (NFP; Non-Farm Payrolls) and released the first Friday of the month, just one hour before market opening (08:30 am New York EST). NFP is an influential statistic and economic indicator released monthly by the United States Department of Labor as part of a comprehensive report on the state of the labor market. The financial assets most affected by the NFP data include the US dollar, equities, crude oil (WTI) and gold (GC). The markets react very quickly and most of the time in a very volatile fashion around the time the NFP data is released. The short-term market moves indicate that there is a very strong correlation between the NFP data and the strength of the US dollar. Historical price movement data shows a small negative correlation between the NFP data and the US dollar Index.

NFP offers great trading opportunities for gold, crude oil and USD/CAD Forex pair trading. In this domain, a number of trading instruments are used to trade the NFP; and these instruments use a combination of derivatives and binary options to double (2x) or triple (3x) the movement of the relative underlying asset or index that they tracks. Obviously, trading the volatile NFP market can be incredibly dangerous and risky, resulting in a margin call if you are on the wrong side of the market.

The proposed NFP strategy could also be applied to a multitude market reports; for instance:

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Crude Oil Inventory API and EIA reports, released every Tuesday at 05:00 pm EST and Wednesday at 10:30 am EST, respectively). The introduced strategy is actually just a trading "plan" and not a documented trading system, because it is derived, as well as it has been back-tested on USA Markets sample data (2000-2016) with a primitive formal definition and an initial documentation. Security and instrument trading could be regarded as a time-based historical living system with a number of trading functions (e.g. open/close position), price action patterns (e.g. gaps, cups), temporal warning dynamics signals (e.g. on-open gaps, morning cups), triggering signals (e.g. pivotal breakouts, bullish candlestick patterns); all of them incorporating temporal functionalities related to the particular security or Forex pair.

In this paper, a temporal (timing) warning dynamics functionality for the daily time-domain and with a number of "short" time-frames ([2-min], [5-min], [10-min]) is introduced (NFP trading). This functionality is regarded as a 2nd level function (i.e. functions of functions; because of the timing involved) with great trading opportunities, and it is defined –for the first time in the corporate finance literature- as a Temporal Trading Functionality (TTF). The NFP and other market reports trading, with this TTF functionality offer great trading opportunities for the institutions, the individual (non-commercial) swing traders, and the momentary and intraday speculators. Data analysis shows that during the first 30 minutes of the NFP release reports, shareowners significantly increase their security shareholding; hence, the involved trading volatility is increased, offering great trading and profit opportunities.

Paper contributes to corporate finance literature by examining and defining this TTF functionality for NFP release reports. For this purpose, four categories of shareholders are regarded: The long-term investors, the short-term swing traders, the short-term momentary speculators, and the intraday speculators. Paper concludes that, in daily and intraday leveraged ETF (Exchange-Traded Fund) trading, the short-term swing traders -if they apply the proposed TTF in their plans- are benefit at the expense of momentary and intraday speculators, while the long-term investors are not actually affected.

Literature review

Trading is regarded as a temporal historical living system (Styliadis, 2007; Styliadis and Vassilakopoulos, 2005) with a number of leveraged TTFs and time-based company initiatives operating as trading functions (Hovakimian and Hu 2016; Hao, 2014; Demiralp et al., 2011), resulting in excellent trading strategies with great profit opportunities (Ogden and Wu, 2013; Basdekidou, 2015; Ulum et al., 2016; Edelen et al., 2015).

In their studies, Myers *et al.* (1984), Jensen (1986), Baker *et al.* (2002), Baker *et al.* (2003) and Hartzell *et al.* (2003) argue that trading "time" is regarded only as a function of a well-designed long-term trading strategy. While, Cesari *et al.* (2012) argues on the effects of share-holding and stock liquidation on the timing transactions on opening and closing positions and Demiralp *et al.* (2011) state that old-issue security returns and passive trading, are both strongly connected to the coexisting old-issue changes in corporate holding for a time period up to 3 years after the IPO time. Chemmanur *et al.* (2009) and Gipson *et al.* (2014) support that long-term passive-trading investors (as opposed to non-commercial short-term investors and traders) are able to receive more security portions hoping on better future returns (profit) and their post-transactions somewhat greatly exceed a passive "*Buy-and-Hold*" trading planning by the shareholding investors. Cenar and Turcas (2014) discuss, under the prism of a comparative analysis, profitability indicators involved in investments. Alti and Sulaeman (2012), Anghel and Man (2014), and Zaman (2015) point to how company issuing initiative is influenced by corporate and non-commercial trading. In their paper, they support the position that high stock returns and profit trading trigger equity derivation only if it is connected with a great pre-issue corporate investor demand, as it is regarded consistent by new corporate holdings (swing momentary traders). The Alti and Sulaeman clarify their results as logical and dependable with company initiatives using the corporate investor demand as a gauge of

market's interest. In the above articles and, generally, in corporate finance literature review, no more details for short-term TTF functionalities were given.

In contrast to the above papers, the current article agrees that the trading data are consistent particularly in nowadays IT era, and produce profit with such expectations, as far as the "timing", for market reports releases like NFP, is regarded as intraday TTF functionality. Obviously, nowadays, trading equities (stocks), as well as instruments (leveraged ETFs) or non-equities (options, warrants, Forex, etc.), must obey the swing and volatile securities markets rules; and in this domain trading "timing" is very important even for the "*buy-and-hold*" investors (trading leveraged 3x ETFs; Gold, Silver, WTI Oil, and Natural Gas ETNs; etc.).

In this domain, the main target of the current article is to investigate the influence of "timing", as a TTF functionality, in NFP trading (Mercer, 2016). Actually, I investigate that TTF "timing" in conjunction with a number of warning dynamics signals like on-open gup-ups, bullish price action patterns (uprising triangles, cups), etc., would result in a profitable trade. It is notable that, the TTF "timing" could be regarded as a 2-d function. For instance, in intraday trading 3x leveraged ETFs: 1-d for the morning "timing" and the other 1-d for the price action's breakout "timing" during the trading session. This 2-d TTF "timing" could be regarded as a not lagging technical analysis indicator, because all news and price action trends have been already incorporated.

The rest of the article is organized as follows: the next section ("*Data & Research Methodology*") describes the shareholding data as the corporate shareholding variables for the TTF-based methodology. Following, the section "*The Temporal Trading Functionality (TTF)*" tries an initial definition of the TTF term by examining the relation between leveraged ETF "timing" and institutional & non-commercial security purchases, as well as the impact of corporate & non-commercial holdings on TTF functionality. Finally, the section "*Conclusions & Discussion*" summarizes the conclusions and discusses paper's innovations and contributions.

Data & Research Methodology

For the current paper, the shareholding information, the changes in insider holdings & some sample profit/losses trading data (1990-2016) -used in this paper as the shareholding & profit variables- came from many resources: The Barron's information databases and sources, a Wall Street Journal affiliate (Barron's, 2016); The StockCharts.com initiative; The Securities & Exchange Commission/SEC notices, releases & announcements; The Commitments of Traders (CoT) / CFTC speculative net positions reports; The Yahoo! Finance insiders data feed; the SEC EDGAR database; The individual filings at: http://www.sec.gov/cgi-bin/srch-edgar; The SEC's Forms 4 (CEO) & 14a (Directors & Officers); and The Thomson Financial corporate holdings SEC's Form 13f database.

The United States SEC requires that all institutions with a total position greater than $100 million of securities or equities positions greater than 10,000 shares or positions in individual shares greater than $200,000, must report their holdings, using the SEC's Form 13f, quarterly. In this paper, these numbers were used to estimate total corporate holdings and position changes in a sample four-day period.

Also, current paper identifies long- and short-term corporate investors, traders and speculators, based on their average "*NFP release reports turnover*" portfolio, into a four-day period. The term "*NFP release reports turnover*" is defined, for the purpose of this paper, as a measure of stock liquidity; calculated by dividing the total number of shares traded over this four-day period by the average number of shares outstanding for that period). Obviously, the higher the "*NFP release reports turnover*" number, the more liquid the trading instrument in the last four days (Yan and Zhang, 2009).

The presented analysis is based on a four-day period (sample statistics); and the traders involved in trading were sorted into four categories according to their temporal (time-based)

corporate holdings as the percentage of total shares outstanding at the end of each of these four days.

Therefore, in the first category, the institutions ranked in the bottom fourth after having the lowest "*NFP release reports turnover*" were placed; they are classified as long-term investors (LT investors). In the second category, the institutions ranked in the top fourth after having the highest "*NFP release reports turnover*" were placed; they are classified as short-term swing-trading traders (ST_1 traders). Then, the rest domain is divided into two equal categories (third & fourth category). In the third category, the short-term momentary traders were placed (ST_2 short-term speculators); and finally, in the forth category, the detected intraday individual or institution speculators were placed (ST_3 intraday speculators).

The back-tested statistics for the sample four-day period are presented in the following table no. 1, which displays the summary numbers of 3x leveraged ETF NFP trading and Non-ETF NFP trading from 1st January 2000 to 30th June 2016 (ETF data were obtained from SEC/SDC).

Table 1

Sample Shareholding Statistics

	3x Leveraged ETF NFP Trading				**Non-ETF NFP Trading**				**Differences**
	Obs.	Mean	Median	St. dev.	Obs.	Mean	Median	St. dev.	
A. Shareholding Dynamics Data									
Size	3105	4.44	4.54	1.92	90,005	4.60	4.87	2.05	−0.16*
Return	3105	0.50	0.35	1.24	90,005	0.15	0.04	0.87	0.35*
Market-to-book	3105	2.31	1.89	1.59	90,005	1.70	1.25	1.22	0.61*
Total shareholding (%)									
(1) LT investors	3105	8.45	7.92	7.28	90,005	9.40	8.47	9.72	−0.95**
(2) ST_1 traders	3105	12.29	11.46	10.48	90,005	10.10	8.05	11.58	2.19**
(3) ST_2 speculators	3105	14.80	12.41	12.54	90,005	11.35	8.57	12.30	3.45**
(4) ST_3 speculators	3105	16.67	12.10	17.40	90,005	12.88	9.02	13.66	3.80**

B. Shareholding Dynamics Cases

Continuing cases		Liquidation cases	Initiation cases
Old LT investors	1,095	20	0
ST_1 traders	0	85	0
ST_2 speculators	0	290	0
ST_3 speculators	0	360	0
New LT investors	0	0	70

*Changes significantly different from zero at 5% level
**Changes significantly different from zero at 1% level

Source: Author's processing of SEC/SDC market data

Where:

Size – Here, the natural logarithm of Sales, instead of the actual sales number, is used; as the appropriate for the irregular price action chart smoothing *transformation*. In stock market data statistical analysis, the log(sales) *transformation* is preferred instead of other ones like *inverse(sales)* and $(sales)^2$.

Return - The Stock return measured over the ETF four-day period.

Market-to-Book is (total assets − book equity + market equity) / total assets.

LT – is the corporate shareholding with a clear Long-term horizon (Investors). Corporate investors' horizon identification is based on their portfolio "*security turnover*" over the last four days.

ST – is the momentary corporate ownership with a clear Short-term horizon (Traders and Speculators). The Short-term traders were divided in three categories: ST_1 are the swing Traders; ST_2 are the short-term speculators; and ST_3 are the intraday speculators.

Continuing Shareholding – This term is referred to corporate investors, as shareowners both at the beginning and at the end of the ETF four-day period.

Liquidations – This term is referred to ownership cases where old LT investors and ST traders own shares at the beginning of the ETF four-day period, but liquidate their holdings by the end of this period.

Initiations – This term is referred to cases where new LT investors –i.e. owning no shares at the beginning of the four-day period- establish new positions during this ETF four-day period and continue their shareholding and after this period.

Difference - The difference in *Means* between leveraged ETF trading and Non-ETF trading.

The result is a statistically unbalanced panel, covering the sample time period from January 1st 2000 to June 30th 2016, with up to 95,000 observations, including a number of more than 4,000 ETFs. The sample period starts from 2000 because from this year the data (shareholding, transaction, etc.) are available in a digital format with a relatively low cost. While weekly data could allow better and more accurate association of the shareholding ETF changes; time shorter (daily) data were used in particular for two reasons. Firstly, because they help to understand better the changes in ETF ownership during the four-day period; and secondly, they provide flexibility in trading leveraged ETFs without serious throwbacks, which are usually occur in time longer (e.g. weekly) data.

The Temporal Trading Functionalities (TTFs)

In this section, the innovative term *Temporal (timing) Trading Functionality* (TTF) is introduced and analyzed. Chen *et al.* (2007) and Hao (2014) argue that long-term institutions tend to be passive traders not interested therefore for the ETF/TTF functionalities. On the other hand, short-term momentary, swing, and intraday trading institutions (and speculators as well) are better informed and tend to trade actively the leveraged ETFs to exploit their own informational convenience asset position. Trading these leveraged ETFs is a risky and time sensitive procedure that requires to have and to obey a strict time-based strategy. Hence, in trading, the need for a 2nd level timing function of the ETF trading opportunities is obvious and this is the existential definition of the TTF functionality.

The innovative term "*Temporal Trading Functionalities*" (TTFs) is defined as an array of temporal (timing) functionalities applied to volatile markets like NFP, WTI API and EIA reports releases, etc. These functionalities include "temporal" price action patterns like "gaps" ("Windows" in technical analysis terminology) appearing at a particular period during the daily session; and price action "temporal" pivotal point and lines breakouts completing these temporal price action patterns. Even more, these TTFs temporal functionalities could be documented by time-targets in trading instruments and securities (ETFs, stocks, options, futures, Forex) as follows: define swing, momentary & intraday trading strategies based on specific time-targets; and open/close long/short positions at a specific time-target.

These time-targets could be the Fed/FOMC rate hike announcement time; the Fed/FOMC

rate hike actual time; the first/last 5 minutes in a daily trading session (09:30-09:35 am EST, 03:55-04:00 pm EST); the Fed/FOMC meetings decision announcement at 02:00 pm EST, the Fed/FOMC conferences at 02:30 pm EST; the Fed/FOMC minutes timing; the Non-Farm Payrolls reports (NFP) on the first Friday each month at 08:30 am EST; the API and EIA reports on WTI inventories on 04:30 pm EST (on Tuesdays for API data) and 10:30 am EST (on Wednesdays for EIA data) respectively, etc.

Market report releases create volatility, which can fuel the Securities, Futures, Commodities and Forex markets. Table no. 2 summarized the average movement in the first [30-minute] bar just after the NFP release, for a number of trading instruments for the sample period 2000-2016.

Table 2

Nonfarm Employment Reports: Average movement just after the NFP release (Period: 2000-2016)

Instrument	Average Movement: first [30-min] bar after the NFP release	St. Dev.
GC – Gold cfd futures	141 %	2.34
CL – Crude oil cfd futures	65 %	2.20
DAX – Index (Germany)	110 %	2.22
YM – Dow Index futures	80 %	2.22
ES – S&P 500 Index futures	45 %	2.23
NQ – Nasdaq Index	73 %	2.31
USD/CAD – Forex pair	83 pips	2.45
USD/JPY – Forex pair	81 pips	2.45

Source: Author's processing of SEC/SDC market data

Following, table no. 3 presents a small number of initiatives (functions) and the related warning dynamics temporal (timing) TTF functionalities acting actually as time-targets in leveraged ETF short-term, swing and intraday trading.

Table 3

Company Initiatives, Fed Meetings, Reports & Time-Targets

Fed Meetings, Reports, etc.	Time-Targets (trading)
USD rate hike trading	Rate hike announcement time & rate hike actual time
Day Trading	first/last 5-minutes in a daily trading session (09:30-09:35 am EST, 03:55-04:00 pm EST)
Fed/FOMC monetary policy meetings	Fed/FOMC meetings decision announcement at 02:00 pm EST
Fed/FOMC monetary policy meetings	Fed/FOMC conferences at 02:30 pm EST
Fed/FOMC monetary policy meetings	Fed/FOMC meetings minutes announcement at 01:00 pm EST
Fed Members Speeches	at 10:00 am EST; at 01:00 pm EST
Non-Farm Payrolls reports	first Friday each month at 08:30 am EST
API reports for WTI (USO) inventories	On Tuesdays at 04:30 pm EST
EIA reports for WTI (USO) inventories	On Wednesdays at 10:30 am EST

Source: Author's data

Binary Options

Incorporating binary options in NFP trading plans has as a result limited risk and reward, as well, on every trade. Traders, on the expenses of $100, choose their risk on entry and at the end they cannot suffer more lose than they pay on entry. For the high–volatility NFP trading (release "time" of reports), binary options are ideal tools by limiting risk on trade entry. Also, traders and speculators can limit their risk, on trading volatile market reports releases, even further by using the more sophisticate out-of-money (OTM) and at-the-money (ATM) binary options.

Comparative analysis shows that, for the volatile market report releases, binary options and TTF temporal functionalities apply better to the following four categories of shareowners:

- Long-term investors ("*LT Investors*")
- Short-term swing traders ("*ST_1 Traders*")
- Short-term momentary traders ("*ST_2 Speculators*")
- Intraday traders ("*ST_3 Speculators*")

Table no. 4 presents, in summary, the ownership (no.) and the shareholding position (%), as well as the trading results (profit %) for these four categories of traders. The numbers resulted from the table no. 1 sample statistics data (3x leveraged ETF).

As it was expected, the short-term swing traders (ST_1) got the best returns, in NFP trading, thanks to the TTF functionalities (time-based warning dynamics signals and time-based triggering signals) incorporated in their trading plans and strategies. For instance, the [2-min] (time-frame) on-open price action gaps (usually the gap-ups and in some cases and the gap-downs) and the [30-min, time-frame] uprising triangles & cups bullish price action patterns for the warning dynamics signals; and the [2-min] (time-frame) time-based pivotal points and pivotal lines breakouts accompanied by volume sectional increase, and the morning/noon/evening price action breaks (accompanied by volume increase as well) for the triggering signals.

Table 4

Ownership (No.), Shareholding Position (%) & Trading Results (%)

Ownership & (Shareholding Position %) Trading Results (%)

	Before NFP date	**@NFP date (time)**	**After NFP date**	**Profit**
Long-term Investors (LT Investors)	1,095 (100%)	1,165 (78.19%)	1,145 (100%)	0%
Short-term Swing Traders (ST_1 Traders)	0 0%	40 (2.68%)	0 (0%)	+65%
Short-term Momentary Traders (ST_2 Speculators)	0 0%	110 (7,38%)	0 (0%)	-25%
Intraday Traders (ST_3 Speculators)	0 0%	175 (11.75%)	0 (0%)	-40%
Total	1,095	1,490		

Source: Author's processing of data presented in Table no. 1

~~Where:~~ 1,095 = No. of the old LT investors (shareowners)$_{\text{before NFP time}}$; 1,165 = 1,095 (old LT investors) + 70 (new LT investors); 1,490 (total No. of shareowners$_{@\text{NFP time}}$) = 1,165 ($LT_{@\text{NFP time}}$) + 40 ($ST_{1@\text{NFP time}}$) + 110 ($ST_{2@\text{NFP time}}$) + 175 ($ST_{3@\text{NFP time}}$); and 1,145 = 1,165 – 20 (old LT investors liquidations.

Conclusions & Discussion

Nowadays, with the internet-based trading era and the advancement of time series data (Salahuddin *et al.*, 2015), the NFP reports releases offer great temporal trading opportunities for both traders and speculators.

The current paper follows Zaman (2015), Gaspar et al. (2005) and Yan and Zhang (2009), to categorize corporate shareowners according to their income, short or long positions, and investment & trading attitudes, in four categories: long-term investors, short-term swing traders, short-term momentary speculators, and intraday speculators.

The best way to trade NFP release reports is to incorporate TTF functionalities and binary options in your trading plans and to use 3x leveraged ETF as trading "vehicles" (instruments). Leverage is a double-edged sword, with a bigger move down being just as possible as a bigger move up. Data analysis shows that even the overnight position in leveraged ETF is risky. Since they use financial derivatives, leveraged ETFs are inherently riskier than their unleveraged counterparts. The additional risks come in the form of counterparty risk, liquidity risk, and increased correlation risk. Meanwhile, traders also have to consider external factors such as the impact of leverage on portfolio volatility. Hence, leveraged ETFs are not appropriate for long-term investors and retirement portfolios trying to maintain a low beta coefficient.

In paper's back-tested sample data for NFP release reports, the long-term investors enjoy no return of their capital (table no. 4). Also, data analysis applied found that short-term swing traders incorporating in their strategies the TTF functionalities (intraday warning dynamics signals, triggering signal) are benefit (+65%) at the expense of short-term momentary and intraday speculators (table no. 4). Obviously, this excellent return (+65%) is risky and uncertain and will be much lower if binary options are incorporated for a more safely NFP trading.

Paper contributes to corporate finance literature by: (i) the introduction of the innovative term "*Temporal (timing) Trading Functionality*" (TTF) as a 2nd level timing function of the NFP release reports trading; and (ii) the application of TTF functionalities (long/short trading session: 09:30 am – 04:00 pm EST, swing & intraday time-based trading strategies) to leveraged ETF trading.

Conflicts of Interest

The author has not declared any conflict of interests with the Barron's Market Data and trading strategies discussed herein. What is presented in the article is as balanced, objective and evidence-based as possible.

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