

1. IMPACT OF FOREIGN INVESTMENT NEWS ON THE RETURN, COST OF EQUITY AND CASH FLOW ACTIVITIES

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Abstract

The print and electronic media are progressively renowned as a significant player in the prediction of business, especially firms' activities. We investigate whether foreign investment news can be one of the interesting news factors to determine the firm's activities, including the portfolio return, cost of equity and cash flow activities. This study adopts the lexicon-based approach via python's natural language toolkit to extract the news sentiment for each specific news day over the period 2009-2018. Through the panel regression and instrumental technique, we find that it is probable to develop a method to extract the information from foreign investment news that is valuable to predict the portfolio, cost of equity, and cash flow activities.

Keywords: foreign investment news; news sentiments; stock return; cost of equity; cash flow activities

JEL Classification: C58, C17, O4

1. Introduction

Why is qualitative information important? It is a thought-provoking research question in the finance literature. Day-to-day commentaries in business media propose that the asset's values are incredibly related to text news and "Big Data" which attracts the intention of the investors and play a pivotal role in the rise and fall of the firm' stock position (Funke & Matsuda, 2006; Subrahmanyam, 2019). Ye and Li (2017) theoretically narrate the

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importance of "Big Data" and its impact on the capital market. Financial prognosticators frequently elucidate the stock position with surprise broadcasts from the local and global media releases. The previous work connecting text news and the stock movement have eventually introduced various dimensions of textual data. For example, Boyd *et al.* (2005) demonstrate the impact of unemployment news on the stock movement. In their view, the unemployment news contains information about the interest rate, equity risk premium, and dividends, which further could be linked to the asset valuation process.

Similarly, the textual data is an additional source of important information (Mitchell and Mulherin 1994) which contributes to the market efficiency (Peress, 2014) and plays a vital role in the return predictability (Maheu and McCurdy, 2004). Interestingly the textual data is given an economic value (Sun *et al.* 2015) and that textual blog predicts the trading and market activities Oliveira *et al.* (2017). Even though the textual information is imperfect but provides a reasonably observable proxy to predict the firm's activities.

This study investigates the response of the firm's activities to the arrival of foreign direct investment news, an unexplored dimension in the context of Pakistani stock market. We pick some firm's indicators, including portfolio return, cost of equity, and cash flow activities, to investigate the pattern of those indicators in the presence of foreign direct investment news. We begin our work by collecting foreign direct investment news data, and the very next part is to convert the textual information into the numerals, which is again a very technical part of the study. The main reason for choosing one of the major emerging economies is that the contemporary topic in Pakistan remains unexplored. Pakistani analysts are also considering the role of the media in stock forecasting, and our findings can be extrapolated to other similar emerging economies.

In brief, this study observes the non-financial companies listed on the Pakistan stock exchange over the period 2009-2018 for our empirical analysis. We use Bloomberg⁴ to collect the news about a foreign direct investment where firm-specific information (portfolio, cost of equity and cash flow activities) is obtained from the Pakistan Stock Exchange (PSX)⁵ and State Bank of Pakistan (SBP)⁶. We use valence aware dictionary for sentiment reasoning via python's NLTK package and get the news intensity in the form of the negative, positive and compound polarity. We employ the panel regression, two-stage least square regression and portfolio approach for the empirical analysis. Our results confirm the predictive role of foreign direct investment news and provide a clear indication that the firm's activities change in response to such important foreign investment news in the context of Pakistan. The principal rationale for selecting the Pakistani market is that it is a rising market, and China is investing in the Belt and Road Initiative, which is a major draw for the rest of the globe. However, such an area of interest remains unexplored in the context of Pakistan, which would be beneficial to policymakers, financial analysts, and academics. Traders may make financial decisions based on the news data, and we see that news data has a comparable big influence on the developing economy as it does in the advanced economy.

This study contributes to several streams of research. First and foremost, this study contributes to the existing literature on the role of foreign direct investment news in the firm's activities as previous literature examining the association between news and business activities (Atkins *et al.*, 2018; Bollen *et al.*, 2011; Gotthelf *et al.*, 2018; Gregori and Sacchi,

⁴ <https://www.bloomberg.com>

⁵ www.psx.com.pk

⁶ www.sbp.org.pk

2019; Ho *et al.*, 2013; Boyd *et al.*, 2005; Okimoto and Hirasawa, 2014; Peress, 2014; Shen *et al.*, 2019). We provide the evidence consistent with previous literature in different identification strategies and extend with one of the new dimensions, such as foreign direct investment news. Second, we implement the lexicon-based method to measure the news polarity and investigate whether such news matters to predict the portfolio return, cost of equity, and cash flow activities. The preceding literature discusses and argues that modern methods are effective ways to measure news (Baker *et al.* 2016; Calomiris and Mamaysky, 2019; Salminen *et al.*, 2019). Likewise, Zhong and Enke (2019) narrate the importance of the modern computer based approach in handling the big data. Similarly, Selvamuthu *et al.* (2019) use the machine learning approach to predict the stock market. Third, we examine the long term average impact of the foreign direct investment news in our empirical analysis following the idea of (Heston *et al.* 2017; Sinha, 2016). Further, we use an instrumental approach to remove the model's endogeneity, and our results are consistent, confirming that news sentiment plays an important role in predicting firm level indicators.

The rest of the study unfolds as follows; Section 2 briefly overviews the previous work related to the text news. Section 3 sheds light on the methodology and data collection procedure of the study. Moreover, results and conclusion are covered in section 4 and section 5, respectively.

2. Literature Review and Testable Hypothesis

The text news not only catches the investor's attention (Wang, 2017) but also predicts the public mood (Li *et al.*, 2014) and displays the commercial portrait (Atkins *et al.*, 2018). Surprisingly, news data is now one of the causes of market stability and instability (Zhang *et al.*, 2018). However, in trading activities, local news is given more weight than global news (Zhang *et al.*, 2018). Thus investor's decisions without considering the news story are inefficient (Okimoto and Hirasawa, 2014). Investors categorise news information as negative or positive and prefer to invest in stocks with a positive dimension (Depken, 2001; Katayama and Tsuda, 2018; Huynh and Smith, 2017; Wu *et al.*, 2018). Therefore the traders' return-chasing actions always prefer good news in the bull-market phenomenon (Krishnamurti *et al.* 2013).

There is a link between the stock market, text news (Gillam *et al.*, 2002) and in particular, economic announcements (Papakyriakou *et al.*, 2019). News modelling has become a powerful strategy in the prediction of stock performance (Beetsma *et al.*, 2017; Tetlock, 2007; Leuz and Schrand, 2009). Subsequently, the news has not only an association with stock but it also has a link with fixed income securities. Likewise, the study of Gotthelf *et al.* (2018) examines the predictive role of qualitative information in the U.S. bond market.

The news about macroeconomic fundamentals attracts the investors (Ayadi *et al.*, 2020). For example, there exist a relation between high-risk premium and interest rate news (Funke and Matsuda, 2006), GDP and unemployment news (Birz and Lott, 2011), stock return and political news (Rehman *et al.*, 2021), stock return and financial news (Wei *et al.*, 2015), news and portfolio return (Lu and Wei, 2013). Similarly, unanticipated news about the economic indicators hurts the product markets and stock markets (Vortelinos *et al.*, 2017).

Foreign direct investment plays a vital role in economy. It brings expertise that may increase efficiency (Desmet *et al.*, 2008), upsurge the total factor productivity (Altomonte and Pennings, 2009; Fukao and Murakami, 2005), escalates the level of economic growth

(Gunby *et al.*, 2017; Hille *et al.*, 2019). However, the economic benefits of the FDI depend upon the government policy design and quality of infrastructure (Tang and Zhang, 2016). Interestingly, FDI inflow attracts the domestic financiers to invest in the local sectors, and FDI not only plays a positive role in boosting the growth of the manufacturing but also enhance the growth of the services sectors too (Shah *et al.*, 2020). The financial news also boosts up the investor's confidence (Daniel *et al.*, 1998).

Foreign investment flow is significant because it not only improves informational efficiency but also has a significant impact on the liquidity and market capitalization (Todea and Pleşoianu, 2013). Foreign investment news is also one of the important stories which also attract the investors and market traders. For example, Semiromi *et al.*, (2020) observe that news story-based stock market prediction is a more efficient method of stock trading than the traditional model. Likewise, Hussain and Omrane (2021) monitor the impact of US economic news on the Canadian stock market. They observe that economic news in the US media has a strong correlation with Canadian stock prices, demonstrating the importance of foreign economic news.

The traditional method does not fully reveal the risk-return relationship. The financial and economic events play an important role in the market, and if this is true, the main question of interest in this study is the news impact of those economic events. Therefore, financial and economic news are the new fundamentals in forecasting the risk-return relationship. According to the previous literature, textual news about economic events is important and influences investor behaviour. As follows, we properly develop our hypothesis;

Hypothesis 1: Foreign investment news has a substantial impact on the portfolio return.

Foreign investors also play an important role in forecasting firm activity. For example, Wanjere *et al.* (2021) investigate whether foreign investment has a significant impact on the performance of Kenya's manufacturing sector. Similarly, da Silva *et al.* (2022) show a strong relationship between monetary policy news and financial assets. Contrary to this, Likitwongkajon and Vithessonthi (2020) use the Japanese firm to investigate the insignificant relationship between foreign investment and firm efficiency. In the meantime, Likitwongkajon and Vithessonthi (2021) discover a significant relationship between foreign investment and firm performance in the Asian market. As a result, news about a single economic event, such as foreign investment, can have a significant impact on firm-level indicators. We propose the following hypothesis in this regard;

Hypothesis 2: Foreign investment news has a substantial impact on the cost of equity and cash flow.

3. Data, Variable Definition, and Methodology

For the practical evaluation, this study makes use of foreign investment news, business level data, and macroeconomic indicators. Our foreign investment news level data is sourced from Bloomberg, and we focus on foreign investment news stories published in English. Between 2009 and 2018, all non-financial listed firm-level statistics were acquired from the State Bank of Pakistan and Pakistan stock exchanges. The data on firm-specific and macroeconomic control variables is acquired from the State Bank of Pakistan. Firms having fewer than 10 years of data or with missing data are omitted from the empirical study. The enterprises in

the financial sector are likewise omitted from the empirical investigation. We use macroeconomic variables since Pearce and Roley (1985), Rangel, (2011) and Steeley (2004) all use them in their empirical analyses.

Why is foreign investment important? The significance of the foreign investment is unavoidable as it increases the productivity level (Desmet *et al.*, 2008; Altomonte and Pennings, 2009), stimulates the growth (Gunby *et al.*, 2017; Shah *et al.*, 2020; Vu *et al.*, 2008) of the host country. Our primary objective is to explore the impact of foreign investment news (hereafter; *fdi_ns*) on the portfolio return, cost of equity and cash flow activities. The previous literature sheds light on the importance of different news, but the *fdi_ns* dimension is still unexplored in the context of Pakistani market. With the discussed literature, we can argue that if FDI has a significant impact on the firm's economic position, then *fdi_ns* may also have a substantial effect on the firm's activities.

3.1. Foreign Investment News Measurement

The *fdi_ns* on Pakistan is collected from Bloomberg over the period 2009-2018. Following the idea of Funke and Matsuda (2006), Mangee (2017), Rangel (2011), and Tetlock (2007) who employ different methods for text analysis, we implement the lexicon method with the NLTK package proposed by Hutto and Gilbert (2014) which also classifies the negative, positive and compound news polarity separately. They match the news narrative with specified dictionary terms, where distinct positive and negative words are provided with their intensity. In this regard, when we enter a new news story into the system, the process returns a positive, negative, and overall score for the particular news story. We constructed a foreign news score utilising such positive, negative, and compound scores after obtaining the positive, negative, and compound scores. The process is detailed in further depth in the next paragraph.

First, we extract the news data via python's NLTK package using valence aware dictionary for sentiment reasoning, and further, the data is pre-processed with the list of philological topographies. Second, we divide the data into tokens, and each token comprises one word of the whole text. Third, we eliminate the meaningless words from the text news. Fourth, we take out the punctuation from the text because such punctuations are worthless for further procedure. In the next step, we get the positive, negative, and compound polarity of the *fdi_ns*. Finally, we measure a comprehensive *fdi_ns* *t* file-level news score as shown in the following equation.

$$fdi_nscr_t = \frac{p_t - n_t}{cmp_t} \quad (1)$$

where cmp_j , p_j and n_j illustrate the compound, positive and negative polarity of the foreign investment news story at time t . We follow the idea of Calomiris and Mamaysky (2019) who employ the same methodology to measure the news score of the entire article. Further, we aggregate the news sentiment score quarterly, as revealed in the following equation (2).

$$fdi_nscr_q = \frac{1}{T} \sum_{t=1}^T fdi_nscr_t \quad (2)$$

where fdi_nscr_q shows an average quarterly news score. We follow the idea of Pifeiro-Chousa *et al.* (2016), Heston *et al.* (2017) and Sinha (2016) who argue the importance of long term impact of the news and also use the aggregate long-horizon news data into their work. Thus we test the quarterly effects of *fdi_nscr* to observe whether the results remain persistent with previous literature or not.

3.2. Summary Statistics and Variable Construction

Table 1 demonstrates the definition of the variables used in the pragmatic analysis, while Table 2 reviews the quarterly summary statistics about the data over the period 2009-2018. We display the number of observations, mean and standard deviation for each variable in column (1-4), respectively while minimum and maximum are shown in the rest of the columns. The positive mean values of *fdi_nscr* (0.033), *CFF* (-0.013), *CFO* (0.149), *CFI* (-0.539) with standard deviation about (0.018), (0.309), (0.803) and (3.674) is shown in Table 2, respectively. The mean value of *KE* (0.067) and *RET* (0.307) with a standard deviation of (0.018) and (10.05) is also shown correspondingly on the bottom of Table 2.

Table 1. Variable Definition Summary

Variable	Definition
<i>CFO</i>	Cash flow from operating activities
<i>CFI</i>	Cash flow from investing activities
<i>CFF</i>	Cash flow from financing activities
<i>K.E.</i>	Cost of equity calculated by using the CAPM model
<i>fdi_nscr</i>	Foreign direct investment news score
<i>NCA</i>	The non-current asset of the firm
<i>NFIF</i>	Difference between investment outflow and investment inflow
<i>M_SPY</i>	The money supply of the country
<i>Gold</i>	Gold reserve monthly
<i>RES</i>	Foreign exchange reserves of the country
<i>NCL</i>	Non-current liabilities
<i>ROCE</i>	Return on capital employed
<i>Q.R.</i>	Quick ratio
<i>SALES</i>	Revenue of the Firm
<i>INT</i>	Interest rate
<i>INF</i>	Inflation
<i>EX_R</i>	Exchange rate
<i>RIB</i>	Retention in business
<i>LTI</i>	Long term investment
<i>DEP</i>	Depreciation on the asset

Note: Table 1 displays the variable's name along with the definition collected from three sources; Bloomberg, State Bank of Pakistan, and Pakistan stock exchange. More detail on the construction of the important variable available in the methodology.

Overall, positive mean values of quarterly control variables are also shown in column 2 of Table 2. About 80% of the variables are with a positive minimum value. On the maximum side, the majority of the variables are positive, as shown in the last columns of Table 2.

Table 2. Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	SD	MIN	MAX
<i>fdi_nscr</i>	120	0.032	0.018	-0.021	0.062
<i>INF</i>	119	8.362	4.441	1.667	20.23
<i>INT</i>	129	9.790	2.655	5.869	13.40
<i>EX_RATE</i>	120	95.61	8.937	79.59	106.9

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	SD	MIN	MAX
M_SPY	120	16.18	0.334	15.58	16.71
RES	119	15,460	3,872	7,413	22,294
D/E	7,343	4.053	24.42	0.001	795.7
ITR	7,343	51.82	453.4	-0.289	12,836
NCA	7,391	8.977e+06	2.849e+07	0	3.350e+08
Q/R	7,343	1.158	10.63	0	274.0
RIB	7,343	585,652	4.864e+06	-8.494e+07	8.413e+07
SALES	7,343	1.895e+07	7.192e+07	-476,405	1.190e+09
KE	7,391	0.066	0.018	0.037	0.126
RET	7,354	0.307	10.05	-1.000	660.4
CFF	7,391	-0.013	0.309	-3.795	6.368
CFO	7,343	0.149	0.803	-6.237	18.60
CFI	7,391	-0.539	3.674	-85.45	4.281

Note: Table 2 shows the data summary using country-monthly and quarterly observations from January 2008 to January 2018 (the original time frame for our analysis). The Table shows a number of observations, mean, standard deviation, minimum, and maximum of the pool observations.

4.1. Empirical Design

4.1.1. Portfolio Return and Foreign Investment News

To test our coefficient of interest, we assume that foreign investment news sentiment is important in determining the stock return, and equation (3) states the connection between stock returns and news sentiment.

$$RET_{it} = \beta_0 + \beta_1 fdi_nscr_t + \varepsilon_{it} \quad (3)$$

We created a monthly 5 × 5 portfolio of stocks that were weighted equally by their B/M and size ratio following the idea proposed by Fama and French (1992) while RET_{it} represents the excess return for each stock. Furthermore, we created a value weighted and equally weighted portfolio and tested the influence of foreign investment news on portfolio return.

Where: $RET_{it} = (Closing\ price_{it} - Closing\ price_{i(t-1)}) / Closing\ price_{i(t-1)} \quad (4)$

In equation (4), we use the closing price to measure the portfolio return. Subsequently, i and t show an individual firm and a quarter, respectively. We follow the idea of Glasserman and Mamaysky (2019), Heston *et al.* (2017) and Sinha (2016) who observe a long term impact of the news for several months even.

4.1.2. Cost of equity and foreign investment news

We assume that fdi_nscr may increase or decrease the firm's cost of equity, as shown in equation (5).

$$KE_{it} = \beta_0 + \beta_1 fdi_nscr_t + \beta_n \sum_{n=2}^N Z_{it} + \gamma_t + \varepsilon_{it} \quad (5)$$

Where:

$$KE_{it} = Rf + \beta_{it}(Rm - Rf) \quad (6)$$

We employ the capital asset pricing model (CAPM), a very famous method as discussed by Fama and French (2004), to measure the cost of equity as shown in equation (6), where i

and t show an individual firm and time respectively. Subsequently, a set of control variables (Z_{it}), firm effect (γ_t) and error term (ε_{it}) are also employed, as shown in equation (5).

4.1.3. Cash Flow Activities and Foreign Investment News

We assume that fdi_nscr has a strong association with cash flow activities the proposed model is shown in equation (7).

$$CFA_{it} = \beta_0 + \beta_1 fdi_nscr_t + \beta_n \sum_{n=5}^N Z_{it} + \gamma_t + \varepsilon_{it} \quad (7)$$

Here, CFA (*CFO*, *CFE*, and *CFI*) narrate cash flow from the operation, cash flow from finance, and cash flow from investment, respectively. Likewise, Z_{it} represents a set of control variables (firm-specific and macroeconomic), firm effect (γ_t) and ε_{it} an error term of the model, as shown in equation (7), where, i and t show individual firm and a quarter, respectively.

4.1.4. Endogeneity

We implement two-stage least square regression to remove the endogeneity. We use the net investment flow as an instrument which is relevant to the firm's activities and not related to the error term of the model. Net investment flow and fdi_nscr may have a strong relation to each other because the fdi_nscr is about that investment coming from the outside to the host country. In the first stage, we regress the fdi_nscr on the instruments (net foreign investment flow) along with a set of control variables and after getting the fitted value of fdi_nscr from the first stage, we regress the variables of interest (cost of equity and cash flows activities) on fdi_nscr with a set of control variables excluding the instruments used in the first stage, as shown in the following equations.

$$fdi_nscr_t = \gamma A + \delta Z + u_{it}, \quad (8)$$

$$H_{itj} = \beta f\widehat{di_nscr}_t + \delta Z + v_{it}, \quad (9)$$

where, H_{itj} and $f\widehat{di_nscr}_t$ exhibit the variables of interest j (cost of equity and cash flows activities) and predicted foreign direct investment news score, respectively. While A, Z, u_{it} and v_{it} narrate the instruments, control variables and error term of the empirical model correspondingly as shown, in equations (8) and (9).

5. Empirical Findings and Discussion

5.1. Coefficient 'response toward the foreign direct investment news score

On the one hand, Table 3 offers the results of the impact of the fdi_nscr on the equally and value weighted portfolio return.

Table 3. Impact of foreign investment news on equally and value weighted portfolio

Size Quintile	B/M quintile									
	Low	2	3	4	High	Low	2	3	4	High
Panel A: Value Weighted Portfolio										
	B					t(B)				
Small	-0.072	-0.457	-0.582	0.020	-0.059	-0.646	-0.886	-1.494	0.087	-0.288
2	0.001	0.175	-0.087	0.175	-0.097	0.001	0.313	-0.407	0.942	-1.036
3	-0.167	-0.040	0.061	-0.126	0.135	-0.811	-0.018	0.350	-1.283	0.443

Size Quintile	B/M quintile									
	Low	2	3	4	High	Low	2	3	4	High
Panel A: Value Weighted Portfolio										
	B					t(B)				
4	0.059	0.056	0.074	-0.294	-0.001	0.213	0.497	0.755	-1.045	-0.002
Big	0.017	0.199	-0.272	0.003	1.72	0.132	0.715	-0.654	-0.008	2.132
Panel B: Equally Weighted Portfolio										
	Λ					t(Λ)				
Small	0.006	-0.012	0.020	-0.003	0.034	0.123	-0.350	0.390	-0.003	0.825
2	0.064	-0.091	-0.022	0.047	0.031	0.492	-0.724	-0.399	-0.707	0.656
3	0.005	0.103	0.021	0.030	-0.018	0.053	1.681	0.599	0.574	-0.227
4	0.107	0.009	0.046	-0.003	-0.072	1.169	0.238	1.059	-0.066	-0.557
Big	0.016	0.053	0.002	0.040	0.577	0.486	1.201	0.024	0.649	1.780

Note: Table 3 displays the foreign investment news impact on an equally and value weighted (5x5) portfolio return on the basis of size and value.

Only the Big-High strategy is significant in both cases (equally and value weighted portfolio), which shows that investment news has a positive significant impact on the stock return.

On the other hand, Table 4 shows the cost of equity and cash flow activities' reaction to the *fdi_nscr* which has a significant positive impact in the case of *KE* (0.069) and *CFO* (0.079) with a standard error of (0.007) and (0.036), correspondingly. The coefficients of *CFF* (0.189) and *CFI* (0.108) with the standard error of (0.200) and (0.186), respectively, are insignificantly different from zero. The produced R^2 from the model (1-4) is (0.81), (0.34), (0.67) and (0.62), respectively as shown at the bottom of Table 2. The sign ***, ** and * represent 1%, 5% and 10% significance level.

Table 4. Impact of foreign investment news on cost of equity and cash flow activities

	(1)	(2)	(3)	(4)
VARIABLES	KE	CFF	CFO	CFI
<i>fdi_nscr</i>	0.069*** (0.007)	0.189 (0.200)	0.079** (0.036)	0.108 (0.186)
<i>RES</i>		-2.15e-06 (1.43e-06)	8.18e-07 (2.61e-06)	
<i>EX_RATE</i>	0.001*** (3.70e-05)	-0.003* (0.001)	0.011*** (0.003)	0.015 (0.010)
<i>M_SPY</i>	-0.048*** (0.001)	0.056 (0.054)	-0.522*** (0.099)	-0.246 (0.321)
<i>QR</i>		-1.54e-05 (0.0003)	8.03e-05 (0.001)	
<i>ITR</i>	1.12e-06*** (2.53e-07)			
<i>D/E</i>	2.99e-06 (5.15e-06)			-0.013*** (0.001)
<i>INF</i>	0.001*** (5.54e-05)			0.017 (0.0154)
<i>LTI</i>	0.000 (0.000)			
<i>INT</i>		-0.002 (0.003)	-0.024*** (0.006)	

VARIABLES	(1) KE	(2) CFF	(3) CFO	(4) CFI
SALE		5.14e-09*** (2.04e-10)	-3.87e-10 (3.72e-10)	
NCA		-9.44e-09*** (3.32e-10)	1.11e-08*** (6.06e-10)	-1.71e-07*** (3.41e-09)
RIB		7.81e-10 (1.14e-09)	1.45e-08*** (2.07e-09)	1.47e-07*** (9.97e-09)
DEP				-1.07e-06*** (5.37e-08)
CONS.	0.773*** (0.016)	-0.568 (0.734)	7.602*** (1.339)	2.769 (4.615)
OBS.	7,343	7,343	7,343	7,343
FIRM EFFECT	Yes	Yes	Yes	Yes
R ²	0.81	0.34	0.67	0.62

Note: Table 4 demonstrates the cost of equity reaction to the specific *fdi_nscr*, as shown in column (1). Table 4 also displays CFF, CFO and CFI reaction to the specific *fdi_nscr* as shown from column (2) to column (4) respectively, along with a set of control variables. The symbol *** and ** denote 1% and 5% significance level, respectively.

5.2. Two-stage Least Square (2SLS) Regression Results

We present the simple panel regression results in the previous Table 4 of which the coefficients of CFF and CFI are insignificantly different from zero. We apply the two-stage least square (2SLS) regression to test whether the insignificance is due to endogeneity or not. Table 5 (col 1-5) reports empirical results from the second stage reaction of the cost of equity, and cash flow activities due to *fdi_nscr* along with a set of control variables.

Table 5. Impact of foreign investment news on cost of equity and cash flow activities (2SLS)

VARIABLES	(1) KE	(2) CFI	(3) CFI	(4) CFI
<i>fdi_nscr</i>	0.071*** (0.005)	0.154** (0.072)	0.059*** (0.012)	0.082*** (0.015)
RES		-1.94e-06 (1.46e-06)	-6.45e-06*** (1.60e-06)	
EX_R	0.0003*** (5.55e-05)	-0.003* (0.001)		-0.023* (0.013)
M_SPY	-0.076*** (0.002)	0.038 (0.056)	-0.570*** (0.090)	-4.657*** (0.914)
QR		-1.84e-05 (0.0003)	0.000144 (0.001)	
ITR	7.93e-07** (3.80e-07)			
D/E	-2.29e-06 (7.72e-06)			-0.014*** (0.001)
SALE		5.24e-09*** (2.09e-10)	-2.62e-10 (3.85e-10)	

VARIABLES	(1) KE	(2) CFI	(3) CFI	(4) CFI
NCA		-9.36e-09*** (3.40e-10)	1.09e-08*** (6.25e-10)	-1.70e-07*** (3.79e-09)
RIB		1.11e-09 (1.15e-09)	1.42e-08*** (2.11e-09)	1.39e-07*** (1.12e-08)
INT			-0.055*** (0.008)	
INF				-0.255*** (0.0547)
DEP				-1.08e-06*** (5.96e-08)
CONS.	1.257*** (0.0259)	-0.355 (0.724)	9.676*** (1.504)	.776*** (15.16)
OBS.	7,343	7,114	7,112	7,343
FIRM EFFECT	Yes	Yes	Yes	Yes
R ²	0.57	0.34	0.66	0.53

Note: Table 5 displays two-stage least square regression results. In the first pass, *fdi_nscr* is regressed on the net flow of foreign investment. Secondly, the estimated effects were used to get the final coefficient of interest as presented from column (1) to column (4). The efficiency of the coefficient of interest has been improved, as shown on the top of the Table. Consequently, the overall model predictability has also been enhanced, as shown on the bottom of the Table. The symbol *** and ** denote 1% and 5% significance level, respectively.

After the instrumental approach, the efficiency of the coefficients is improved, which further confirms the predictive power of the *fdi_nscr*. From Table 5 column (1-5), *KE* (0.071), *CFF* (0.154), *CFO* (0.059) and *CFI* (0.082) are significant at 1%, 5%, 1% and 1% level with estimated error of (0.005), (0.072), (0.012) and (0.015), respectively. The overall directional efficiency is improved, as shown at the bottom of Table 5 and the association of *fdi_nscr* remains persistent to the baseline empirical model.

5.3. Discussion

This study examines the influence of *fdi_nscr* on the portfolio return, cost of equity, and cash flow activities. We scrutinize a quarterly impact of the textual news following Glasserman and Mamaysky (2019), Heston *et al.* (2017), Sinha (2016), who observe the short and long term impact of textual news on the market activities and our results are persistent. Similarly, Molchanov and Stangl (2018) observe the short term positive and long term negative impact of the investor sentiment on the market performance. We observe that *fdi_nscr* has a significant effect on the portfolio return, cost of equity, and cash flow activities in the long run as also observed by Heston *et al.* (2017). Our empirical findings exhibit that *fdi_nscr* has a positive significant impact on the firm's activities in the case of the Pakistani economy as Shah *et al.* (2020) narrate the effects of foreign direct investment on the manufacturing and services sectors of Pakistan. We observe that *fdi_nscr* has also a positive impact on the firm's activities because the local firms increase their efficiency and performance as discuss by Orlic *et al.* (2018). However, the previous literature does not shed light on the qualitative aspect of the FDI news, and our study is also persistent to the previous study (Hille *et al.*, 2019).

6. Conclusion

The present study adopts the lexicon-based approach via python's natural language toolkit package to extract the sentiment polarity for each specific news day over the period 2009-2018. We find that it is probable to develop an approach to extract the information from *fdi_nscr* that is valuable to predict the portfolio return, cost of equity, and cash flow activities. Our results suggest that the textual information about foreign direct investment has a significant positive impact on the firm's activities. Our study also develops a piece of knowledge about the effect of foreign direct investment news, and the results may apply to similar other economies. We perform panel regression and two-stage least square regression methods to examine our hypothesis that *fdi_nscr* plays a significant role in predicting the firm's activities. Our results are essential for the financial analysts, market traders and researchers to the extent that foreign investment news could be considered as a new dimension in trading and business activities.

Our results are consistent and conclude that the sense of news can be captured in a proficient way to predict the return, cost of equity, and cash flow activities. This paper focuses on one of the emerging economies; however, the regional comparison could be one of the interesting topics for future research.

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