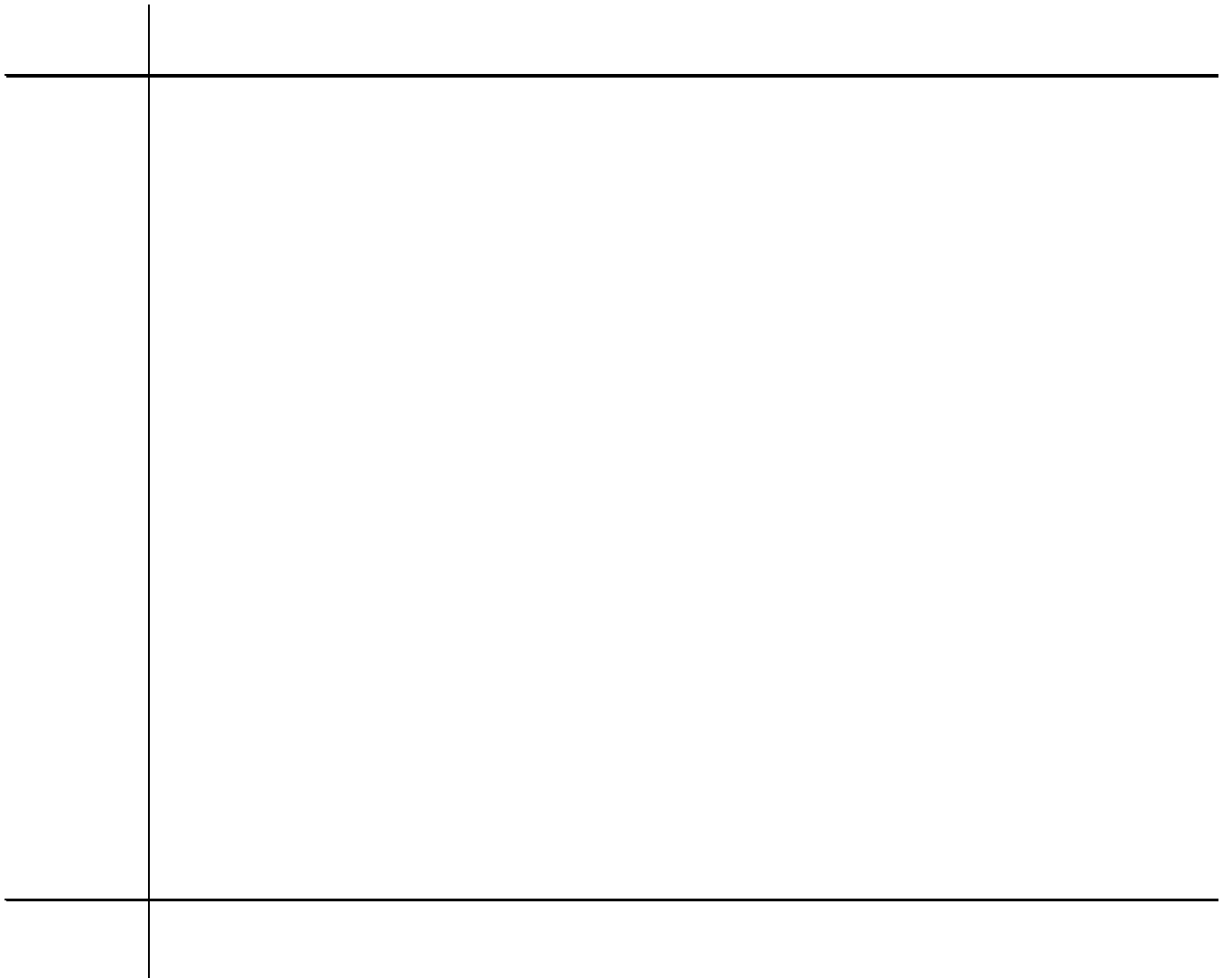




Department of
Economics and Finance



Cross-border Portfolio Flows and News Media Coverage

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February 6, 2020

Abstract

This paper investigates the dynamic linkages between portfolio flows and various news indices (based on both “positive” and “negative” news headlines collected from Bloomberg), whilst also controlling for a comprehensive set of push and pull factors. The monthly panel examined comprises 49 developed and developing countries in addition to the US (the “home economy”) and covers the period from January 2007 to October 2017; the econometric model includes fixed effects. The empirical results document the important role played by the news variables. More specifically, news pessimism and intensity affect bond flows more than equity flows, and US news appears to play a leading role in these portfolio flow dynamics. By contrast, changes in news pessimism and intensity have a more significant impact on equity flows, and again US news tend to have more sizeable effects. News sentiment is generally found to be an important driver of portfolio flows, whilst only US news disagreement has a significant effect, and only on bond inflows into the US. Most results are robust to the exclusion of the six financial centres from the full sample. As for push and pull factors, most of them (equity return differentials, interest rate spreads, the VIX index, capital controls, exchange rate regimes, CDS spreads, QE episodes, financial development and commodity prices) are significant and with the expected signs.

Keywords: Bloomberg, Bond flows, Equity flows, News.

JEL Classification: F31, F32, G15

1 Introduction

Cross-border (equity and bond) portfolio flows have increased sharply in recent years. Whilst they amounted to only 4% of GDP in 1975, they had risen to 100% by the 1990s and reached 245% by the beginning of the current millennium (see Hau and Rey, 2006; IMF, 2012; Sarno et al., 2016). Their decline following the global financial crisis of 2007-08 was only short-lived, and soon they reverted to their upward trend (see Milesi-Ferretti and Tille, 2011), stimulating economic growth in the post-crisis period. However, their increasing volatility with its adverse effects on the world economy has raised concerns that international organisations and central banks have tried to address. In particular, following the global financial crisis, the IMF introduced “capital-flow management” measures to reduce volatility, and more recently the Bank of England has developed a “Capital Flows-at-Risk” framework for capital outflows in the case of a severe, low-probability event with the aim of assessing policy options.

The existing literature has identified a variety of push (global or common) and pull (country-specific) factors as possible determinants of portfolio flows. The former drive capital from the US, the main hub for international portfolio investment, to the rest of the world, and include low US interest rates and industrial growth, low global risk aversion, etc. The latter, on the other hand, pull capital into an economy, and include high domestic interest rates and economic growth, low domestic inflation, better quality of institutions, low political risk, etc. As Mark Carney, the Governor of the Bank of England, puts it, “push factors determine global risk appetite and financial conditions, particularly the level and prospects for US monetary policy and financial stability, whereas pull factors are reflected in domestic conditions and institutions that affect the relative attractiveness of investing in an individual country”.¹

funds is not the same. Following Forbes and Wanock (2012) and other recent related work, our analysis focuses on gross capital flows and outflows, and distinguishes between foreign and domestic investors, since these two categories may react differently to news and other shocks. We obtain news from Bloomberg News, which includes extensive news media coverage of the economic and business outlook, the stock market, corporate bonds, and unemployment for each country in our sample over the period from January 2007 to October 2017 (for a total of 6,165,103 news stories); these are classified as “positive” or “negative” on the basis of an algorithm developed by Bloomberg. Various news media sentiment indicators are then calculated (specifically, news pessimism, news intensity, changes in news pessimism and intensity, news (average) sentiment and news disagreement) and used to analyze the impact of news media coverage on cross-border portfolio flows. Besides, the estimated model includes an extensive set of push (global or common) and pull (country-specific) factors. In brief, the results provide extensive evidence that portfolio flows are driven by news media coverage in addition to other well-known economic factors.

Our study contributes to the literature on the impact of news media coverage on cross-border portfolio flows.

Section 3 describes the data and provides some descriptive statistics; Section 4 outlines the empirical

Interest Parity (UIP). The role of liquidity was examined by estimating VAR models by Vagias and van Dijk (2010), who found differences between regions (America, Europe and Asia/Pacific).

2018a,b) estimated multivariate GARCH models to investigate the impact of macro news headlines on variables such as stocks, bonds, exchange rates and commodity prices and provided evidence on both mean and volatility spillovers as well as the asymmetric impact of positive and negative headlines. Market-wide attention-grabbing events (such as record levels for stock indices and front-page market news) were shown to be useful predictors of trading behaviour and returns by Yuan (2015).

In recent years, indicators extracted from Internet search data or from content that was posted on social media platforms have also gained popularity. For example, an increase in the search frequency

suggests that both inflows into and outflows from the US vis-a-vis the counterpart countries exhibit significant fluctuations over the sample period. Several recent studies have attributed them to pull and push factors (see, e.g., Fratzscher, 2012; Sarno et al., 2016, among others), as well as to the unconventional monetary policy adopted in the developed world during the post-crisis period (see, e.g., Lim and Mohapatra, 2016; Fratzscher et al., 2018, among others). In this paper, we explore the role of news media coverage as a driver of portfolio flows, while also taking into account the wide range of other factors considered by previous studies.

3.2.4 News Sentiment Index

To gain additional insights into the impact of news media coverage on cross-border portfolio flows we also construct an average sentiment measure, as in Antweiler and Frank (2004), by aggregating (positive and negative) news during a given time interval w . Specifically, we classify each positive headline as +1 and each negative one as -1 and construct a monthly news Sentiment Index at the country level as follows:

$$V_{h,q,w} = \frac{1}{w} \sum_{t=q}^{q+w-1} \left(\frac{1}{n} \sum_{i=1}^n h_{i,t}^{positive} - \frac{1}{n} \sum_{i=1}^n h_{i,t}^{negative} \right)$$

3.3 Pull and Push Control Variables

We consider the following set of pull and push factors as control variables:

Return or yield chasing measures: (i) the stock return differential, which is the spread between the log changes of the S&P500 and of the main local stock price index of each of the other countries, and (ii) the interest rate differential, which is the spread between the 3-month US Treasury bill rate and the 3-month money market rate of each of the other countries.

Macroeconomic variables: (i) economic growth differential, which is the spread between the log changes of industrial production in the US and in each of the other countries, and (ii) unemployment rate differential, which is the spread between the unemployment rate in the US and in each of the other countries.

Global risk aversion: this is proxied by the changes in the Chicago Board Options Exchange

full sample and that excluding the financial centres, are small for all countries. Their volatilities, on the other hand, are significantly lower in the US than elsewhere.

worldwide news. This is reflected in their having the largest impact on equity and bond flows. Further, US positive and negative news intensity both have a similar effect on portfolio flows.

It also appears that bond inflows are negatively affected by US news pessimism (-1.195), whereas outflows are only driven by worldwide news pessimism (-1.136). As for the news intensity index, US positive intensity affects positively bond inflows whilst worldwide positive intensity has a positive impact on bond outflows. Worldwide negative intensity has a negative impact on bond outflows. When excluding the financial centres, the same pattern emerges although the parameters are even more significant (at the 1% level) and the point estimates are considerably higher (in absolute value), often twice as big compared to those for the whole sample. In addition, an effect of US negative intensity on bond inflows is detected, and with a large point estimate (-1.775). Equity inflows (see Table 7) do not appear to be affected by news pessimism, whereas outflows are affected by worldwide pessimism (-0.661) and US news pessimism (1.445). As for the news intensity index, US negative intensity has a negative effect on inflows. Further, the impact of US positive news on equity outflows is almost three times larger (in absolute value) than that of worldwide positive news; a similar pattern emerges in the subsample without the financial centres.

[Please Insert Table 8-9 about here]

4.3 News Sentiment and Disagreement

Tables 10 and 11 present the results concerning the effects of news sentiment on bond and equity flows, respectively; the left (right) panel in both tables refers to the full sample (the sample without the financial centres).

The estimated coefficients suggest that news sentiment in the US and the other countries affect their bond flows (Table 10). Specifically, an increase in the US (other countries') news sentiment index results in an increase in inflows to (outflows from) the US vis-a-vis the counterpart countries.

the impact on inflows is significant only in the full sample. The effect on bond flows, by contrast, is insignificant. The VIX volatility index is considered an important push factor in capital flows dynamics. Overall, this finding is broadly in line with the empirical findings of Fratzscher (2012) and Rey (2015), although the latter also reports a negative association between VIX movements and portfolio debt in flows.

As for the effects of capital controls, they appear to be sensitive to the chosen sample of countries:

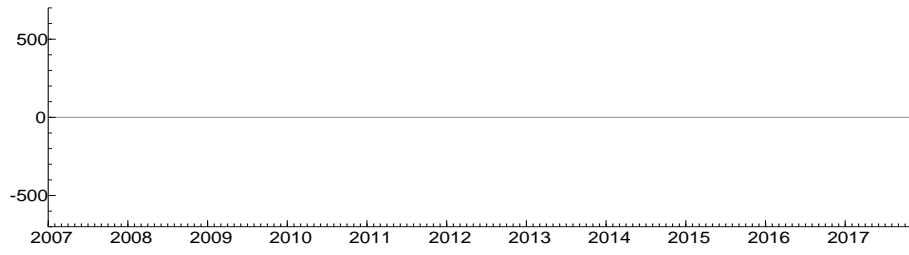
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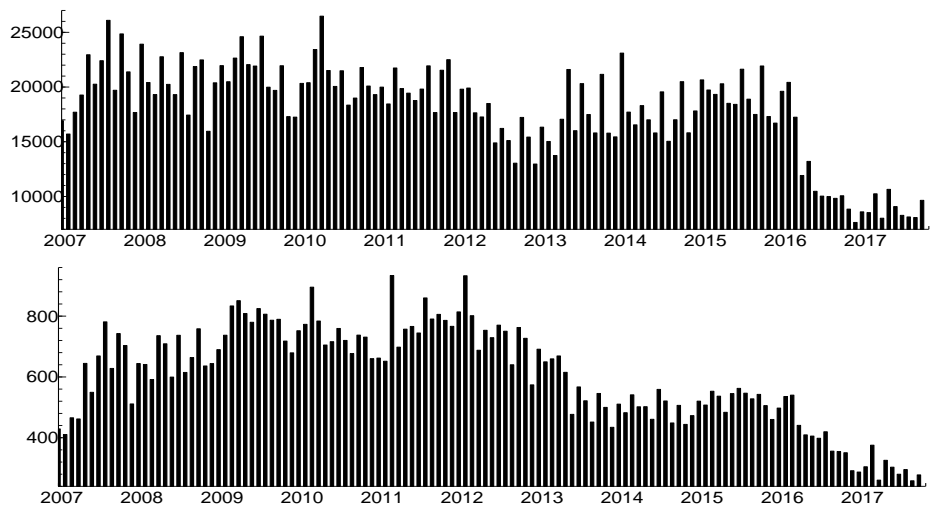
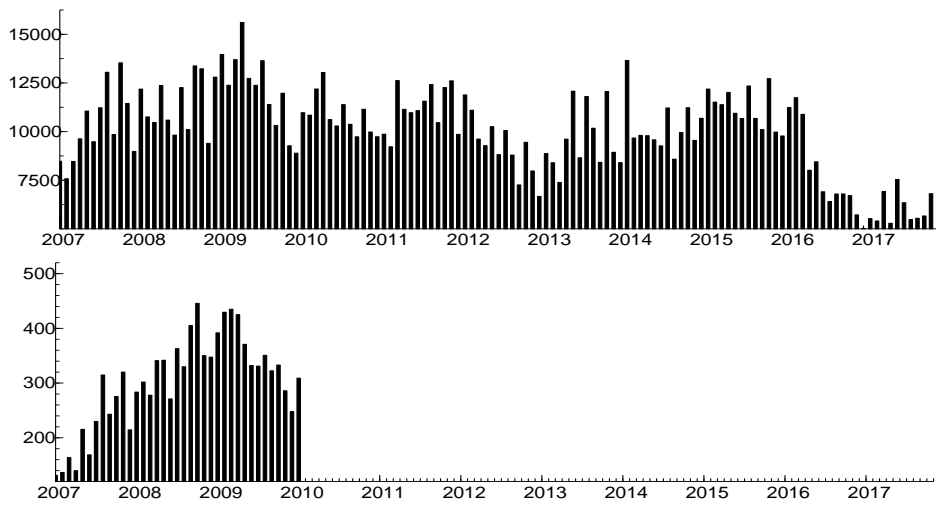
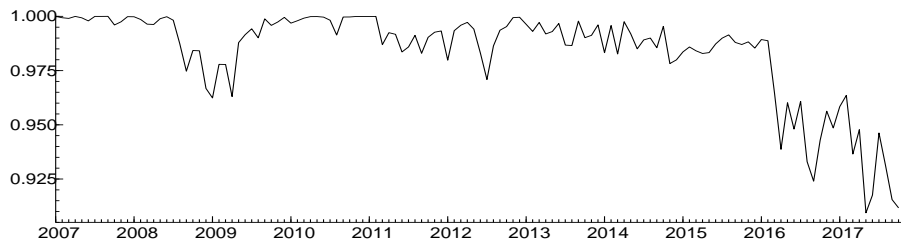
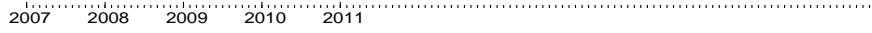


Figure 3. Monthly total number of news headlines for the US (upper panel) and 49 other countries (lower panel, presented as an average).





2010



2010

Table 1: List of Countries

	Full Sample	Reduced Sample		Full Sample	Reduced Sample
Argentina	x	x	Luxemburg	x	
Australia	x	x	Malaysia	x	x
Austria	x	x	Mexico	x	x
Belgium	x	x	Morocco	x	x
Brazil	x	x	Netherlands	x	x
Canada	x	x	New Zealand	x	x
Chile	x	x	Norway	x	x
China	x	x	Pakistan	x	x
Czech Republic	x	x	Peru	x	x
Colombia	x	x	Philippines	x	x
Denmark	x	x	Poland	x	x
Egypt	x	x	Portugal	x	x
Finland	x	x	Russia	x	x
France	x	x	Singapore	x	
Germany	x	x	South Africa	x	x
Greece	x	x	South Korea	x	x
Hong Kong	x		Spain	x	x
Hungary	x	x	Sweden	x	x
India	x	x	Switzerland	x	
Indonesia	x	x	Taiwan	x	x
Ireland	x	x	Thailand	x	x
Israel	x	x	Turkey	x	x
Italy	x	x	UK	x	
Japan	x		Venezuela	x	x
Lebanon	x	x			
			Total number of countries	49	43

Note: The series used are monthly and span the period 2007:01 - 2017:10 for 49 countries, a total of 6370 observations. The US is considered the domestic or home economy. Full sample refers to all 49 countries considered in our sample. The reduced sample leaves

Table 2: News Stories Counts per Country

	Total News	Classified as			Total News	Classified as	
		Positive	Negative			Positive	Negative
Argentina	16,401	7,921	8,480	Luxemburg	25,397	13,080	12,317
Australia	37,578	22,922	14,656	Malaysia	64,223	40,288	23,935
Austria	43,550	23,853	19,697	Mexico	40,280	17,352	22,928
Belgium	49,446	27,477	21,969	Morocco	2,710	1,193	1,517
Brazil	99,166	48,462	50,704	Netherlands	85,533	45,792	39,741
Canada	196,237	109,976	86,261	New Zealand	32,491	19,360	13,131
Chile	25,161	13,594	11,567	Norway	46,088	30,247	15,841
China	340,149	177,042	163,107	Pakistan	29,483	6,711	22,772

Table 3: Variables Definition

Variables	Definition	Unit	Source
Portfolio Flows			
Bond			
Inflows	Gross bond inflows towards the US from other countries	Scaled by previous 12 months average	TIC System
Outflows	Gross bond outflows from the US towards other countries	Scaled by previous 12 months average	TIC System
Equity			
Inflows	Gross equity inflows towards the US from other countries	Scaled by previous 12 months average	TIC System
Outflows	Gross equity outflows from the US towards other countries	Scaled by previous 12 months average	TIC System
News Media Indices			
Media Pessimism			
Pessimism Index	Negative news stories count divided by the total number of news	Percentage (%)	Bloomberg
News Media Intensity			
Intensity Index ^{negative}	Natural Log of negative news stories count	Logarithm	Bloomberg
Intensity Index ^{positive}	Natural Log of positive news stories count	Logarithm	Bloomberg
Changes in Media Pessimism			
Pessimism Changes	Monthly % change in pessimism index	Percentage (%)	Bloomberg
Changes in News Intensity			
Intensity Changes ^{negative}	Monthly % change in negative news intensity index	Percentage (%)	Bloomberg
Intensity Changes ^{positive}	Monthly % change in positive news intensity index	Percentage (%)	Bloomberg
Media Sentiment and Disagreement			
Sentiment Index	Net news signal as % of total news	Percentage (%)	Bloomberg
Disagreement Index	Variance of sentiment index	Percentage (%)	Bloomberg
Control Variables			
Return/yield chasing measure			
Stock Returns Di .	Relative returns of stock market indexes, between the US and the other countries	Stock returns differential (%)	Datastream
Interest Rate Di .	3-months interest rate spread, between the US and the other countries	Rates differential (%)	IMF, OECD
Macroeconomic Indicators			
Unemp. Rate Di .	Relative unemployment rates, between the US and the other countries	Unemp. Rates differential (%)	IMF, OECD
GDP Growth Di .	Relative industrial production growth rates, between the US and the other countries	GDP Growth differential (%)	IMF, OECD
Global Risk Aversion			
VIX	VIX volatility index	In 1st difference	Datastream
Current Account Position			
Current Account	Current account to GDP ratio for other countries	% of GDP	IMF, OECD
FX arrangement	FX regime index, higher index for more flexible FX	Index (1-15)	Iizetzki et al.
Capital Controls	Dummy = 1 for capital account restrictions periods	0/1 Dummy	Iizetzki et al.
Institutional Quality Measure			
ICRG	Political risk index, higher number=better institutions	Index (0 - 100)	PRS Gr00al.

Table 4: News Indices Summary Statistics

Table 5: Portfolio Flows and Pull - Push Control Variables Summary Statistics

Variables	Mean	Full Sample			Mean	Reduced Sample		
		S.D.	Min	Max		S.D.	Min	Max
Portfolio Flows								
Bond Inflows Outfl	0.019	2.043	-38.212	42.002	-0.001	2.094	-38.212	42.002

Table 6: Bond Portfolio Flows and Ne

Table 8: Bond Portfolio Flows and Changes in News Pessimism and Intensity Indices

	Full Sample				Reduced Sample			
	Inflows		Outflows		Inflows		Outflows	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Intercept	-0.081 (- 0.88)	-0.083 (- 0.90)	-0.266 (- 1.49)	-0.271 (- 1.51)	-0.014 (- 0.44)	-0.012 (- 0.42)	-0.446 (- 1.51)	-0.455

Table 9: Equity Portfolio Flows and Changes in News Pessimism and Intensity Indices

	Full Sample				Reduced Sample			
	Inflows		Outflows		Inflows		Outflows	
	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4	Model 3	Model 4
Intercept	0.039 (0 32)	0.035 (0 29)	0.371 (4 47)	0.367 (4 42)	0.036 (0 26)	0.033 (0 25)	0.308 (3 44)	0.302 (3 37)
Lag(y_{t-1})	0.038 (2 29)	0.037 (2:88)	0.127 (9 21)	0.127 (9 21)	0.031 (2 23)	0.031 (2 23)	0.122 (9 41)	0.122 (9 41)
Monthly % Changes in Pessimism and Intensity Indices								
Pessimism Changes	-0.363 (- 0 21)		-0.260 (- 0 26)		-0.325 (- 0 24)		-0.477 (- 1 23)	
US Pessimism Changes	2.377 (1 49)		4.597 (3 43)		2.385 (1 43)		3.822 (2 23)	
Intensity Changes ^{negative}		-0.238 (- 0 29)		-0.048 (- 0 45)		-0.136 (- 0 31)		-0.272 (- 0 23)
US Intensity Changes ^{negative}		4.356 (1 21)		8.081 (3 24)		3.707 (0 27)		6.783 (2 28)
Intensity Changes ^{positive}		-0.140 (- 0 20)		0.374 (1 47)		-0.027 (- 0 26)		0.326 (1 45)
US Intensity Changes ^{positive}		-2.018 (- 0 24)		-7.506 (- 2 29)		-2.481 (- 0 22)		-6.195 (- 2 26)
Pull and Push Control Variables								
Return/yield measures								
Stock Returns Di .	-1.475 (- 4 27)	-1.428 (- 3 47)	0.373 (0 25)	0.393 (1 20)	-1.589 (- 2 29)	-1.554 (- 2 22)	0.362 (0 23)	0.385 (0 29)
Interest Rate Spread	0.035 (1 29)	0.034 (1 27)	0.001 (0 44)	0.001 (0 42)	0.033 (1 27)	0.033 (1 25)	0.009 (0 22)	0.008 (0 20)
Macro Indicators								
Unemp. Rate Dif.	-0.001 (- 0 29)	-0.001 (- 0 27)	0.001 (0 22)	0.001 (0 20)	-0.001 (- 0 41)	-0.001 (- 0 29)	0.002 (0 24)	0.002 (0 23)
GDP Growth Di .	0.399 (0 26)	0.402 (0 27)	0.476 (1 28)	0.502 (1 24)	0.428 (0 23)	0.423 (0 22)	0.409 (0 21)	0.416 (0 23)
Global Risk Aversion								
VIX	0.008 (1 22)	0.008 (1 21)	-0.013 (- 4 44)	-0.013 (- 4 28)	0.005 (1 24)	0.006 (1 20)	-0.012 (- 3 21)	-0.012 (- 3 24)
Current Account								
CA (% GDP)	-0.001 (- 0 26)	-0.001 (- 0 21)	-0.001 (- 1 23)	-0.001 (- 1 21)	-0.003 (- 0 23)	-0.003 (- 0 23)	-0.016 (- 1 29)	-0.015 (- 1 28)
FX arrangement	-0.174 (- 0 29)	-0.169 (- 1 27)	0.022 (2 23)	0.020 (2 23)	-0.016 (- 1 25)	-0.016 (- 1 23)	0.027 (2 22)	0.027 (2 23)
Capital Controls	0.177 (0 25)	0.174 (0 29)	-0.934 (- 2 28)	-0.931 (- 2 27)	0.970 (2 25)	0.971 (2 24)	-0.095 (- 0 24)	-0.095 (- 0 24)
Institutional Quality								
ICRG	0.001 (1 26)	0.001 (1 27)	-0.001 (- 0 23)	-0.001 (- 0 23)	0.002 (0 22)	0.002 (0 22)	-0.001 (- 0 24)	-0.001 (- 0 27)
Unconv. Mon. Pol.								
US-QE1	0.170 (1 29)	0.160 (1 27)	0.071 (0 23)	0.068 (0 27)	0.092 (0 26)	0.086 (0 21)	0.069 (0 27)	0.067 (0 24)
US-QE2	0.032 (0 23)	0.038 (0 27)	-0.035 (- 0 28)	-0.033 (- 0 25)	-0.082 (- 0 25)	-0.077 (- 0 22)	-0.067 (- 0 28)	-0.064 (- 0 26)
US-QE3	0.128 (1 23)	0.127 (1 23)	0.108 (1 22)	0.108 (1 22)	0.128 (1 23)	0.127 (1 23)	0.041 (0 26)	0.042 (0 27)
ECB-QE	-0.09 (- 0 29)	-0.094 (- 0 29)	0.003 (0 23)	0.003 (0 23)	-0.122 (- 0 29)	-0.122 (- 0 29)	0.009 (0 29)	0.011 (0 20)

the decade up to 2008, productivity growth-the most important indicator determining long-term prosperity-was among the lowest in the OECD. This was partly because of high growth in employment, much of it low-skilled

Country India
Source Bloomberg
8. Date January 13, 2016
News Business/Economy
Title India economy: Industrial output drops in November

"According to the Central Statistical O

denotes a contraction) - with demand weakening in the domestic and export markets. A significant worsening