International portfolio investment: does the uncertainty matter?

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Abstract

Purpose – This study investigates the effect of global and domestic uncertainty on the dynamics of portfolio investment in 21 economies (mostly advanced and larger emerging economies) from 2001–2016.

Design/methodology/approach – Specifically, the evolution of the net portfolio equity investment inflows (FPI net inflows) and the evolution of net portfolio investment (FPI net) are investigated in a context in which the degree and the volatility of domestic economic policy uncertainty (EPU) and world uncertainty index (WUI) varied. The authors provide an empirical analysis through the sequential (two-stage) estimation of linear panel data models for unbalanced panel data.

Findings – An increase in the degree and volatility of domestic EPU has a significant negative influence on FPI net inflows, while an increase in WUI has a significant positive one. Notably, a simultaneous increase in the domestic EPU and WUI enhances the net inflows of FPI, whereas a simultaneous increase in the volatility of these indicators reduces the net inflows of FPI. An increase in the degree and volatility of both domestic EPU and WUI have a significant positive effect on the net portfolio investment, implying that a significant net portfolio investment is going out of the country.

Research limitations/implications – The results of this study encourage international investors to consider uncertainty indicators (and, more specifically, their variations) in their portfolio strategy to optimize their position on the international markets. The findings of this study invite policy-makers from large countries to reduce the perceived domestic uncertainty since this parameter can influence international investors' sensitivity and willingness to diversify their position out of the country.

Originality/value – The authors' approach focuses on the variations of uncertainty (existing literature mainly works with the indicators). While the results confirm the role played by large markets in international portfolio investment management, it nuances the changes in the portfolio management behaviors toward other markets when facing a changing uncertainty.

Keywords Economic policy uncertainty, World uncertainty index, FPIs, Risk, Portfolio diversification

Paper type Research paper

1. Introduction

Uncertainty characterizes a situation in which there is no epistemic basis to form any calculable probability about the potential outcomes. In such context, economic agents become more reserved and less keen to act (Lawson, 1985). In an uncertain environment, one does not

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have enough knowledge to make a rational (i.e., probabilistically assessed) decision. Such environment results from the intrinsic complexity of the economic world in which all features cannot be captured. Due to its absence of epistemic basis to estimate a probability for a particular situation, measuring uncertainty is really tricky. A decade ago, Bloom (2009) contributed to this matter by developing the new database of economic policy uncertainty (EPU); which was fully achieved by Baker *et al.* (2016). These new studies generated lively debates in many empirical works devoted to the importance and role played by EPU in our societies (Nguyen and Schinckus, 2022a, b; Nguyen *et al.*, 2022a; Nguyen, 2022).

There is an implicit agreement in the literature that an increase in uncertainty could understandably exert negative impacts on economic activities (Bloom, 2009; Colombo, 2013) and would also increase investment risk. Consequently, uncertainty could discourage the flow of international investments. Canh *et al.* (2020) documented an increase in domestic uncertainty would significantly reduce FDI inflows in a sample of 21 economies between 2003 and 2014. Nguyen and Lee (2021) have a similar conclusion in a sample of 116 economies between 1996 and 2017. On this topic, Chen *et al.* (2019) indicated that the uncertainty during national elections could discourage FDI inflows in a sample of 126 countries for the period going from 1996 to 2015.

This article will contribute to this matter by extending the current knowledge related to the potential influence of uncertainty on contemporary economies. This paper investigates how international portfolio management can be affected by changes in domestic and world uncertainty. In this context, this article studies the impact of the latter on the net portfolio investment flowing into the 21 largest economies in the world. To investigate this aspect, we apply the sequential (two-stage) estimation of linear panel data model that allows us to deal with potential endogeneity in our data – our study estimates the influence of both domestic and world uncertainty (and their association) on foreign portfolio investment flows (FPI). The study also integrates a time component by estimating the short-term and long-term effects.

Our results are statistically robust and they show that: (1) domestic uncertainty appears to reduce net inflows of FPI, while the world uncertainty has opposite effects; (2) the effects of domestic and world uncertainty are consistent in the long run; (3) the coexistence of domestic and world uncertainties can enhance would inflows of FDI; (4) at last, both domestic and world uncertainty increase the net FDI into advanced and large emerging economies.

The study is structured as follows. The next section provides a literature review of our topic while the third section deals with the presentation of our empirical model. The fourth section discusses our results whereas our last section concludes this research with some recommendations.

2. Literature review

There is extensive literature dealing with the effects of EPU on economic factors (e.g., see Ftiti and Hadhri, 2019, for a good review). Several studies examined the influence of EPU on economic activities such as investment (Nguyen *et al.*, 2022c), consumption (Nguyen *et al.*, 2020b, 2022b; Canh *et al.*, 2021), entrepreneurship (Nguyen *et al.*, 2021), informal economic activities (Nguyen and Su, 2022), economic output (Demir and Gozgor, 2018) or financial markets (Nguyen Quang *et al.*, 2022; Nguyen *et al.*, 2020a, c); Creal and Wu (2017) documented that uncertainty contributes negatively to the economic activity; Caggiano *et al.* (2017) unveiled that the effects of EPU shock on the volatility of unemployment are larger in recession period in the US; Demir and Gozgor (2018) documented the negative effect of EPU on tourism demand. According to these studies, an increase in the EPU has a significant negative impact on the economic activities (Caggiano *et al.*, 2017).

The effect of EPU on financial markets has also been extensively investigated in the literature (Chi and Li, 2017), especially in stock markets (Raza *et al.*, 2018). Ko and Lee (2015) found a negative relationship between EPU and stock prices. Liu and Zhang (2015) explained that an increase in the EPU leads to a significant increase in the stock market volatility. Fang *et al.* (2018) found that the EPU has a significant positive influence on the long-run oil-stock correlation in the US, while Li *et al.* (2015) documented that variations in the EPU have a negative and asymmetric impact on stock-bond correlations in the US. At the international level, Christou *et al.* (2017) observed a negative effect of the increase in policy uncertainty levels on stock market returns in Australia, Canada, China, Japan, Korea and the US between 1998 and 2014. In the same vein, Raza *et al.* (2018) noticed a negative association between equity premiums and the EPU in all G7 countries. Meanwhile, Yu *et al.* (2018) claimed that the global EPU has a positive and significant influence on the volatility of the Chinese stock market reflecting the fact that Chinese stock market has been gradually integrated into the global economy. Interestingly, Mei *et al.* (2018) emphasized that the US EPU index can provide useful forecasting information for the European stock markets during the recession period. All these studies showed that an increase in EPU appears to generate a harmful shock for the financial markets (Christou *et al.*, 2017).

The influence of EPU on international capital flows also attracted the interest of economists. Choi *et al.* (2021) found that the EPU robustly reduces FDI inflows in 16 OECD countries from 1985 to 2013. Zhu *et al.* (2019) showed that FDI would be more vulnerable under uncertainty if bankruptcy costs are high. Polat and Payaslıoğlu (2016) observed that, the uncertainty in exchange rate can also negatively impact FDI inflows in Turkey. Although all existing studies (Canh *et al.*, 2020; Nguyen and Lee, 2021) agree that all forms of uncertainty would discourage inflows of FDI, the latter are still considered the most stable flows (Choi *et al.*, 2021). Interestingly, the influence of the EPU on international portfolio investment flows is still under-investigated in the literature which mainly assumes that a higher EPU would induce a negative effect on financial markets (domestic and international ones). There is no study investigating the sensitivity of inflow FDI to the variation of the EPU. This raises the question of how international investors behave when facing some changes in uncertainty (EPU). This paper deals with this matter. It is worth mentioning that this research only focuses on the largest economies in the world simply because these markets represent an important percentage of the investment flows and appear to be trustable channel for investors.

A growing literature on the topic documented the negative impact of the domestic EPU on stock returns (Christou *et al.*, 2017) leading to a higher risk for the stability of financial system (Chi and Li, 2017). An increase in the EPU decreases the expected returns of stock markets while it increases the risk for portfolio investment (interesting empirical consequence since it contrasts with the theoretical relationship between risk and return). Furthermore, such an increase in the EPU also appears to be harmful for economic activities (Bloom, 2009), so it induces a higher risk and a lower prospect for investment in the domestic country (Karnizova and LI, 2014). Consequently, a higher EPU would lower the investment attractiveness for an inward international portfolio. In this context, we can assume that an increase in the domestic EPU would have a negative effect on international portfolio investment inflows. This is the first hypothesis of our empirical study:

H1. The domestic uncertainty has a negative impact on net inflows of FPI.

At the global level, the world uncertainty can also be harmful to markets inducing a stronger effect on the dynamics of international portfolio investment flow than domestic EPU (Colombo, 2013). Colombo (2013), for instance, noticed that the US EPU has a stronger negative spillover effect on the industrial production and the prices in EU than the effect of the domestic EPU in EU countries. Cheng (2017) added that both foreign and domestic policy

uncertainty shocks generate a negative and significant impact in South Korea, but foreign EPU shocks are found to be more dominant than domestic EPU shocks in influencing the Korean output. In such context, we have to observe the dynamics of international portfolio investment under the light of the portfolio investment management. Since the global uncertainty influences financial markets worldwide, international investors have to balance and re-balance their portfolios in terms of risk and returns (Froot *et al.*, 2001). In the past, French and Poterba (1991) showed that, even though, the benefits of international diversification have been recognized for decades, most investors hold almost all of their wealth in domestic assets (as a result of investor's choice rather than institutional constraints) – they showed that more than 98% of the equity portfolio of Japanese investors, 94% for the US and 82% for Britain is held domestically.

In the recent years, the development of financial markets around the globe provided several opportunities to get higher potential returns affecting the ways classical diversification can be made by international investors (Farooq and Ahmed, 2018). Miralles-Marcelo *et al.* (2015) documented that uncertainty in the global markets could benefit US investors if they apply a dynamic diversifying strategy while Bergin and Pyun (2016) found that international investors do seek the diversification benefits from low cross-country correlations. In this context, the increase in global uncertainty might have two opposite effects on the international portfolio investment flows. The first trend refers to the fact that advanced and large economies with higher development stages of financial markets (and less country risk) can be an ideal and safe place for portfolio inflows to face global uncertainty shocks (Ben Nasr *et al.*, 2018). However, recent years have witnessed a wired trend of investment from large emerging economies, especially China, to developed markets (You and Solomon, 2015). Therefore, the negative effect of global uncertainty on stock returns (stock prices) could create more opportunities for international investors to buy good stocks in developed markets at a good price. Based on the rationale above, the second hypothesis of our research is proposed hereafter:

H2. The world uncertainty has a positive impact on net inflows of FPI.

The second trend characterizes the fact that the negative influence of global uncertainty on the global stock markets could induce a more active role for international investors diversifying their portfolios toward other markets that are less correlated (Canh *et al.*, 2018) so that they have a better fit for diversification and risk-return tradeoffs. This trend is supported by a higher dynamics in the international financial markets in line with the growing economic, financial and institutional development in many low and middle-income economies. Notably, the development of technology in the recent decades also created better methods for trading faster and cheaper across borders. In this context, the home bias or regional sector's importance tend to become less important in international investment diversification. We can therefore assume that, in case of global uncertainty, the total net portfolio investment flow increases to diversify the investment outside of the (large) economies. Our third hypothesis can therefore be formulated as follows.

H3. The uncertainty has a positive impact on net flows of FPI

The next section presents our methodology and introduces the data we used to examine the effect of the domestic EPU and the global uncertainty on the flows of international portfolio investment. The results are documented and discussed in Section 3. Finally, our conclusion ends this research by proposing some recommendations for investors and policy-makers.

3. Methodology and data

To examine the influence of the domestic EPU and the global uncertainty on the international portfolio investment flows, this study mobilizes the international finance theory on

internationally diversified portfolios (see Grubel, 1968; Levy and Sarnat, 1970; Solnik, 1974; Grauer and Hakansson, 1987). According to this theory, investors invest across countries to diversify their portfolios for the purpose of higher returns. As such, there are classical determinants of portfolio investment flows, including the economic growth, the return and the market capitalization of stock market, the inflation risk, the exchange rate risk and the trade balance (Garg and Dua, 2014). Based on this theory and the works evoked above, our baseline model estimating the FPI in 21 advanced and large emerging markets can be written as follows:

$$\mathrm{FPI}_{it} = \alpha_0 + \beta_1 \mathrm{FPI}_{it-1} + \beta_2 \mathrm{GDPg}_{it} + \beta_3 \mathrm{Sreturn}_{it} + \beta_4 \mathrm{Scap}_{it} + \beta_5 \mathrm{REER}_{it} + \beta_6 \mathrm{Inf}_{it} + \beta_7 \mathrm{TB}_{it} + \varepsilon_{it} \quad (1)$$

in which i, denotes the country i and t is the year; FPI is the proxy for the international portfolio investment flows (including net equity portfolio investment inflows (FPIin) and net portfolio investment flows (FPInet)); GDPg is the real GDP growth rate to proxy the economic growth; Sreturn is the annual stock return to proxy the stock market return; Scap is the market capitalization to GDP ratio capturing the stock market size; REER is the annual change in real effective exchange rate to proxy the exchange rate risk; Inf is the annual change in the GDP deflator index to proxy the inflation risk; TB is the ratio of total export to total import value to proxy the trade balance; α and β are the usual coefficients while ε is residual term. In this context, the uncertainty factor is added as an additional determinant of international portfolio investment flows in equation (2):

$$\mathrm{FPI}_{it} = \alpha_0 + \beta_1 \mathrm{FPI}_{it-1} + \beta_2 \mathrm{GDPg}_{it} + \beta_3 \mathrm{Sreturn}_{it} + \beta_4 \mathrm{Scap}_{it} + \beta_5 \mathrm{REER}_{it} + \beta_6 \mathrm{Inf}_{it} + \beta_7 \mathrm{TB}_{it} + \beta_8 \mathrm{Uncertainty}_{it} + \varepsilon_{it} \quad (2)$$

We investigate the effect of domestic and global uncertainty on portfolio investment flows by recruiting the domestic EPU and the world uncertainty index from www.policyuncertainty.com (provided by Baker *et al.*, 2016). It is worth mentioning that it exists other proxies for uncertainty (e.g., the economic uncertainty from the World Uncertainty database [1], or the geopolitical risk index [2]), but this study focuses on how EPU would affect FPI. We believe that the uncertainty in economic policy would have more crucial effects on flows of FPI as it would play important roles in overall economic activities and related policies toward capital flows. The EPU of each country is collected through monthly time series. At the same time, the World Uncertainty index is given quarterly through another time series – in this context, we follow the way of measuring economic policy from the previous studies (e.g., Canh *et al.*, 2020) – precisely, we calculate the yearly mean and yearly standard deviation to proxy the degree as well as the volatility of domestic and global uncertainty. Afterward, we take their difference expressed in logarithms to measure their variations in degree and the volatility. All variables and calculations are presented in Table 1 (see Table A2 in the Appendix for primary data) hereafter,

Table 2 shows the correlation matrix of our variables [3].

Some studies documented the different effects of the global EPU and the domestic EPU on economic activities and stock returns (Yu *et al.*, 2018). They all showed that international investors respond to global uncertainty by rebalancing their portfolios while they associate the domestic EPU with country-specific risk. In this context, we use the multiple between changes in the domestic EPU, the ones of world uncertainty index and the ratio of these changes to investigate the marginal influence of the domestic EPU compared to the world uncertainty on international portfolio capital flows.

Variable	Calculations	Obs	Mean	Std. Dev	Min	Max
FPIin	$= \left[\frac{\text{Portfolio equity, net inflows (BoP, current US\$)}}{\text{GDP (current US\$)}}\right] * 100$	336	3.019	11.709	−16.80	89.11
FPInet	$= \left[\frac{\text{Portfolio investment, net (BoP, current US\$)}}{\text{GDP (current US\$)}}\right] * 100$	332	−0.304	8.054	−53.77	52.23
GDPg	= GDP growth (annual %)	336	2.673	3.493	−9.132	25.557
Sreturn	= Stock market return (%, year-on-year)	335	4.940	22.84	−44.35	159.99
Scap	= Stock market capitalization to GDP (%)	326	77.06	44.40	11.28	260.41
REER	= ΔLog[Real effective exchange rate index (2010 = 100)]	315	0.003	0.060	−0.246	0.200
Inf	= ΔLog[GDP deflator (base year varies by country)]	315	0.029	0.034	−0.051	0.212
TB	$= \frac{\text{Goods, Value of Exports, Free on board(FOB), US Dollars}}{\text{Goods, Value of Imports, Cost, Insurance, Freight(CIF), US Dollars}}$	336	1.050	0.335	0.294	2.457
EPU	= ΔLog[Economic Policy Uncertainty – Yearly mean]	311	0.030	0.292	−0.832	1.047
EPUvo	= ΔLog[Economic Policy Uncertainty – Yearly Standard deviation]	311	0.025	0.593	−1.555	1.874
WUI	= ΔLog[World Uncertainty Index – Yearly mean]	315	0.044	0.114	−0.173	0.246
WUIvo	= ΔLog[World Uncertainty Index – Yearly Standard deviation]	315	0.072	0.739	−1.793	0.730

Note(s): Portfolio equity includes net inflows from equity securities other than those recorded as direct investment and including shares, stocks, depository receipts (American or international) and direct purchases of shares in local stock markets by foreign investors. Portfolio investment covers transactions in equity securities and debt securities, where data are based on the sixth edition of the IMF's Balance of Payments Manual (BPM6) and are only available from 2005 onwards. In BPM6, the headings of the financial account have been changed from credits and debits to net acquisition of financial assets and net incurrence of liabilities; i.e., all changes due to credit and debit entries are recorded on a net basis separately for financial assets and liabilities thus financial account balances are calculated as the change in assets minus the change in liabilities; signs are reversed from previous editions (Definitions from World Development Indicators, World Bank). That is, the positive value of net portfolio investment means the change in financial assets (domestic investors invest in foreign financial assets) is larger than the change in financial liability (the international investors invest in domestic financial assets) of a country, or the total net portfolio investment is flowed out that country

Table 1.
Variables, calculations and description

Our sample includes data related to 21 economies and has been collected for a relatively short time (2001-2016, i.e. T = 16 years), so we first needed to examine the potential existence of cross-sectional dependence through the Pesaran's CD test (Pesaran, 2004). The results (in Table 3 below) show the existence of cross-sectional dependence for most of our variables except for trade balance and net FPI flows. Consequently, we use Im–Persaran–Shin unit root test (Im *et al.*, 2003) and Fisher based on Phillips–Perron type (*Z*(Inverse normal)) unit root test (Choi, 2001) to examine the data stationary. Results in Table 3 hereafter also show that most of our variables (except trade balance) are consistently stationary.

Our next step is to estimate the Granger-causality tests (developed by Dumitrescu and Hurlin, 2012) for the domestic EPU and world uncertainty index in relation to FPIs. Results are exhibited in Table 4 and show that the changes (in degree and volatility) of world uncertainty index have a significant Granger-causality on FPI net inflows, while the latter shows a significant Granger causality on changes of domestic EPU. Meanwhile, there is no Granger causality between the changes (in degree and volatility) of domestic EPU\world uncertainty index and the net FPI flows. It is worth mentioning that the net of FPI flows is the result of inflows and outflows of FPI. Therefore, the uncertainties might have no significant

Table 2. Correlation matrix

Correlation	FPIin	FPInet	GDPg	Sreturn	Scap	REER	Inf	TB	EPU	EPUvo	WUI	WUIvo
FPIin	1											
FPInet	−0.320***	1										
p-value	0.000											
GDPg	0.227***	−0.113**	1									
p-value	0.000	0.038										
Sreturn	0.064	−0.053	0.446***	1								
p-value	0.246	0.329	0.000									
Scap	−0.107*	0.231***	0.156***	0.032	1							
p-value	0.053	0.000	0.005	0.570								
REER	−0.016	0.121**	0.204***	0.144***	0.134**	1						
p-value	0.781	0.032	0.000	0.010	0.019							
Inf	−0.090	−0.026	0.328***	0.315***	−0.173***	0.154***	1					
p-value	0.110	0.645	0.000	0.000	0.002	0.006						
TB	0.340***	0.040	0.248***	0.201***	−0.146***	0.137**	0.404***	1				
p-value	0.000	0.465	0.000	0.000	0.008	0.015	0.000					
EPU	−0.016	0.016	−0.064	−0.313***	0.019	−0.081	0.031	0.029	1			
p-value	0.783	0.776	0.258	0.000	0.738	0.155	0.581	0.616				
EPUvo	−0.025	−0.004	0.020	−0.129**	0.049	−0.045	0.047	0.016	0.669***	1		
p-value	0.664	0.938	0.730	0.023	0.401	0.432	0.407	0.781	0.000			
WUI	0.002	0.024	−0.131**	−0.241***	−0.034	−0.087	−0.097*	−0.017	0.279***	0.270***	1	
p-value	0.971	0.668	0.020	0.000	0.553	0.125	0.086	0.768	0.000	0.000		
WUIvo	0.047	−0.008	−0.060	−0.137**	−0.015	−0.090	−0.068	−0.003	0.165***	0.211***	0.625***	1
p-value	0.407	0.888	0.291	0.015	0.798	0.110	0.232	0.964	0.004	0.000	0.000	

Note(s): *, **, *** are significant levels at 10, 5 and 1%, respectively

Test	CD-test		Im–Pesaran–Shin test		Fisher unit root test	
Variables	CD-test statistic	*p*-value	*Z-t*-tilde-bar statistic	*p*-value	Inverse chi-squared	*p*-value
FPIin	5.091***	0.000	−6.621***	0.000	202.8***	0.000
FPInet	1.148	0.251	−4.713***	0.000	157.8***	0.000
GDPg	28.48***	0.000	−5.597***	0.000	151.5***	0.000
Sreturn	36.35***	0.000	−5.653***	0.000	132.5***	0.000
Scap	15.23***	0.000	−2.446***	0.007	69.63***	0.000
REER	5.698***	0.000	−5.038***	0.000	106.0***	0.000
Inf	10.72***	0.000	−3.565***	0.000	95.93***	0.000
TB	0.24	0.810	0.535	0.703	46.27	0.300
EPU	26.28***	0.000	−7.206***	0.000	229.7***	0.000
EPUvo	22.57***	0.000	−9.571***	0.000	593.0***	0.000
WUI	56.12***	0.000	−7.057***	0.000	180.7***	0.000
WUIvo	56.12***	0.000	−8.230***	0.000	272.3***	0.000

Note(s): In CD test: the null hypothesis of cross-section independence, CD ~ $N(0,1)$, *p*-values close to zero indicate data are correlated across panel groups. In Im–Pesaran–Shin unit-root test: Ho: All panels contain unit roots and Ha: Some panels are stationary. In Fisher-type unit-root test (Based on Phillips–Perron tests): Ho: All panels contain unit roots, Ha: At least one panel is stationary. *, **, *** are significant levels at 10, 5 and 1%, respectively

Table 3.
Cross-sectional Dependence test and Stationary tests

	EPU does not granger-cause *FPI net inflows*		*FPI net inflows* does not granger-cause *EPU*	
Variable	*Z*-bar	*p*-value	*Z*-bar	*p*-value
EPU	−0.016	0.987	2.637***	0.008
EPUvo	−0.394	0.693	2.682***	0.007
WUI	−1.736*	0.082	−0.216	0.829
WUIvo	−2.018**	0.043	−0.900	0.367
	EPU does not granger-cause *FPI net*		*FPI net* does not granger-cause *EPU*	
Variable	*Z*-bar	*p*-value	*Z*-bar	*p*-value
EPU	2.837	0.004	−0.734	0.462
EPUvo	−0.188	0.850	−0.413	0.679
WUI	−0.686	0.492	1.161	0.245
WUIvo	−0.347	0.728	0.809	0.418

Note(s): In Granger causality test: H0: *X* does not Granger-cause *Y*, H1: *X* does Granger-cause *Y* for at least one panelvar (country). *, **, *** are significant levels at 10, 5 and 1%, respectively
Source(s): Dumitrescu and Hurlin (2012)

Table 4.
Granger causality tests

causality on net flows of FPI since uncertainty might negatively impact both inflows and outflows – therefore, the net flows might be independent of uncertainty.

Equations (1) and (2) are presented as dynamic panel estimations with lagged dependent variable in explanatory variables introducing endogeneity into the model under consideration. The system generalized method of moments (GMM) estimators is actually the most appropriate technique for panel data with endogenous problems (Nickell, 1981), as is the case for our sample. Furthermore, this endogeneity is enhanced by the fact that the FPIs may affect the economic growth causing a mutual causal effect between dependent and independent variables (De Vita and Kyaw, 2009). Arellano and Bond (1991) proposed the

GMM method to deal with this kind of methodological situation. However, the Arellano–Bond difference GMM estimator presents an asymptotical bias for unbalanced panel data (Roodman, 2006). In this context, the system GMM estimator has been extended by Blundell and Bond (1998) and Blundell and Bond (1998) to make the method more robust: a two-step system GMM estimator is more asymptotically efficient than the one-step estimator (which uses a sub-optimal weighting matrix), but it produces a bias of uncorrected standard errors when the instrument count is high, implying that the number of instruments should be less than the individual dimension (Windmeijer, 2005). To deal with that problem, Kripfganz (2017) proposed a new method labeled "Sequential (two-stage) estimation of linear panel-data models" (SELPDM) in which conventional standard errors are no longer valid in sequential estimation when the residuals from the first stage are regressed on another set of (often time-invariant) explanatory variables at a second stage. SELPDM computes the analytical standard-error correction introduced by Kripfganz and Schwarz (2013) correcting the first-stage estimation error. In the rest of this paper, we use the SELPDM as the major framework for our estimations. The following section presents and discusses our empirical results.

4. Results and discussions

This section is structured into two parts. The first sub-section discusses our results regarding the relationship between the domestic\global uncertainty and FPI net inflows whereas the second sub-sections will present our findings for the analysis of the link between these two levels of uncertainty and FPI net flows.

4.1 Uncertainty and FPI net inflows

The results for the case of FPI net inflows are presented in Tables 5a and b discussed in this section.

The insignificant AR(2) test and Hansen test indicate that our results are consistent and unbiased. With regard to the influence of control variables, the significant positive effect of the real GDP growth means that a higher economic growth could attract higher inward FPIs. This observation implies that one of the most important motivation for countries using FPIs as a channel for development is to focus on real economic growth. This result is consistent with previous results and theoretical framework (Agarwal, 1997). Meanwhile, the significant positive effect of stock returns and the significant negative effect of the market capitalization implies that the markets with higher returns and smaller market capitalization would attract a higher level of FPI inflows. This finding suggests that nations could have incentives to keep their financial markets at a particular scale to attract foreign investors (who hope to get a higher return). Such results confirmed the first observations made by Garg and Dua (2014). The significant negative effect of the inflation and the real exchange rate suggests the existence of a negative effect of these parameters on the FPI net inflows in line with what is expected by the literature and theory on this matter (Portes and Rey, 2005). The ratio of export to import has a significant positive effect on FPI net inflows indicating that the latter flow easier to a country with a better trade balance position. This makes sense since this ratio also indicates how a country is opened to others and global investment – this observation is consistent with the existing literature on this topic (Canh *et al.*, 2020).

With regard to our main variables (the changes in the degree\volatility of domestic EPU and world uncertainty index), we observe an opposite trend. On the first hand, the changes in the degree and volatility of domestic EPU have a significant negative effect on FPI net inflows implying that a higher volatility of domestic EPU reduces the net FPI inflows; consistent with our assumption according to which a higher domestic EPU could decrease the prospect of domestic economic activities (and then, therefore, the expected returns on the stock

Table 5.
The Uncertainty and FPI net inflows

(a) Dep. Var: *FPIin*	Sequential (two-stage) estimation of linear panel data models			
Indep. Var	EPU	EPUvo	WUI	WUIvo
FPIin(−1)	0.702*** [0.003]	0.699*** [0.003]	0.703*** [0.004]	0.702*** [0.003]
GDPg	0.220*** [0.015]	0.229*** [0.016]	0.208*** [0.017]	0.202*** [0.014]
Sreturn	0.012*** [0.003]	0.014*** [0.004]	0.015*** [0.004]	0.021*** [0.003]
Scap	−0.010*** [0.003]	−0.012*** [0.002]	−0.012*** [0.002]	−0.014*** [0.002]
REER	−11.051*** [1.736]	−10.460*** [1.844]	−9.375*** [1.817]	−10.143*** [1.806]
Inf	−42.579*** [3.167]	−44.434*** [3.081]	−41.054*** [3.084]	−41.175*** [2.447]
TB	4.742*** [0.340]	4.678*** [0.328]	4.608*** [0.294]	4.535*** [0.320]
EPU	−0.664** [0.320]	−0.407*** [0.058]		
WUI			1.344** [0.535]	0.570*** [0.080]
Constant	−2.649*** [0.666]	−2.353*** [0.567]	−2.496*** [0.515]	−2.179*** [0.515]
Long-run effect				
GDPg	0.738*** [0.047]	0.761*** [0.051]	0.700*** [0.053]	0.679*** [0.045]
Sreturn	0.039*** [0.009]	0.045*** [0.013]	0.052*** [0.013]	0.071*** [0.011]
Scap	−0.034*** [0.01]	−0.041*** [0.007]	−0.042*** [0.007]	−0.046*** [0.007]
REER	−37.11*** [6.135]	−34.801*** [6.391]	−31.55*** [6.292]	−34.08*** [6.335]
Inf	−142.9*** [10.80]	−147.8*** [10.43]	−138.1*** [10.07]	−138.3*** [8.347]
TB	15.92*** [1.092]	15.56*** [1.035]	15.51*** [0.901]	15.24*** [0.995]
EPU	−2.229** [1.069]	−1.353*** [0.191]		
WUI			4.522** [1.83]	1.916*** [0.275]
N	301	301	305	305
No. of Country	21	21	21	21
No. of IVs	19	19	19	19
AR(2) test – *p*-value	0.268	0.276	0.271	0.261
Hansen test – *p*-value	0.189	0.156	0.208	0.113

(*continued*)

Table 5.

(b) Dep. Var: *FPIin*	Sequential (two-stage) estimation of linear panel data models					
FPIin(−1)	0.702*** [0.003]	0.700*** [0.003]	0.699*** [0.003]	0.700*** [0.003]	0.701*** [0.003]	0.745*** [0.003]
GDPg	0.214*** [0.015]	0.219*** [0.016]	0.223*** [0.014]	0.219*** [0.016]	0.222*** [0.016]	0.187*** [0.013]
Sreturn	0.013*** [0.003]	0.012*** [0.003]	0.012*** [0.003]	0.017*** [0.004]	0.020*** [0.004]	0.021*** [0.003]
Scap	−0.010*** [0.003]	−0.012*** [0.003]	−0.009** [0.004]	−0.013*** [0.002]	−0.013*** [0.002]	−0.013*** [0.002]
REER	−10.73*** [1.767]	−11.15*** [1.772]	−11.18*** [1.724]	−10.07*** [1.913]	−10.47*** [1.950]	−10.23*** [1.841]
Inf	−40.28*** [2.653]	−42.30*** [2.742]	−41.54*** [2.522]	−41.17*** [2.418]	−42.02*** [2.398]	−43.66*** [2.709]
TB	4.801*** [0.313]	4.834*** [0.300]	4.796*** [0.312]	4.647*** [0.329]	4.449*** [0.340]	3.801*** [0.334]
EPU	−0.676** [0.294]	−0.944*** [0.320]	−0.772** [0.334]			
WUI	1.437*** [0.416]	1.164*** [0.438]	1.097*** [0.407]			
EPU*WUI		4.914*** [1.351]				
EPU/WUI			0.012*** [0.004]			
EPUvo				−0.559*** [0.075]	−0.623*** [0.069]	−0.296* [0.154]
WUIvo				0.642*** [0.067]	0.523*** [0.079]	0.475*** [0.112]
EPUvo*WUIvo					−0.450*** [0.130]	
EPUvo/WUIvo						−0.134** [0.059]
Constant	−2.909*** [0.620]	−2.762*** [0.580]	−2.792*** [0.671]	−2.373*** [0.545]	−2.053*** [0.563]	−1.625*** [0.593]
Long-run effect						
GDPg	0.72*** [0.047]	0.731*** [0.052]	0.741*** [0.045]	0.729*** [0.05]	0.744*** [0.048]	0.734*** [0.049]
Sreturn	0.043*** [0.009]	0.041*** [0.011]	0.040*** [0.01]	0.057*** [0.013]	0.066*** [0.012]	0.081*** [0.011]
Scap	−0.033*** [0.01]	−0.039*** [0.009]	−0.031** [0.012]	−0.043*** [0.007]	−0.045*** [0.007]	−0.049*** [0.009]
REER	−36.04*** [6.213]	−37.21*** [6.215]	−37.18*** [6.004]	−33.56*** [6.639]	−35.05*** [6.825]	−40.12*** [7.556]
Inf	−135.2*** [8.991]	−141.1*** [9.348]	−138.1*** [8.429]	−137.2*** [8.068]	−140.5*** [7.923]	−171.1*** [10.73]
TB	16.12*** [0.982]	16.13*** [0.934]	15.94*** [0.993]	15.48*** [1.021]	14.88*** [1.065]	14.90*** [1.287]
EPU	−2.269** [0.984]	−3.151*** [1.065]	−2.566** [1.103]			
WUI	4.827*** [1.417]	3.885*** [1.474]	3.646*** [1.368]			
EPU*WUI		16.39*** [4.507]				
EPU/WUI			0.041*** [0.012]			
EPUvo				−1.863*** [0.255]	−2.082*** [0.228]	−1.159* [0.609]
WUIvo				2.138*** [0.234]	1.749*** [0.269]	1.862*** [0.433]
EPUvo*WUIvo					−1.505*** [0.441]	
EPUvo/WUIvo						−0.524** [0.228]
N	301	301	301	301	301	301
No. of country	21	21	21	21	21	21
No. of IVs	20	21	21	20	21	22
AR(2) test – *p*-value	0.266	0.268	0.263	0.266	0.267	0.261
Hansen test – *p*-value	0.204	0.132	0.172	0.123	0.117	0.234

Note(s): Standard errors are in [ ]. *, **, *** are significant levels at 10, 5 and 1%, respectively

markets). On the other hand, the changes in the degree and volatility of world uncertainty index have a positive effect on FPI net inflows. This result implies that a higher world uncertainty induces higher inflows of FPI into advanced and large emerging countries. This observation shows that, in case of an increasing uncertainty at the global level, international investors look for national stability so that they rebalance their portfolio investment with more positions in countries where the stability is guaranteed (i.e., where the domestic uncertainty did not increase, implying that these countries become safer in case of a growing global uncertainty). To investigate the marginal importance of the domestic EPU and the world uncertainty on FPI inflows, these two proxies and their ratio are put into equation (2). The results are reported in Table 5b below.

All findings for our variables are similar to our previous ones, indicating our results' consistency and robustness. It is worth mentioning that the multiple and the ratio of the degree of domestic EPU\world uncertainty have a significant effect on FPI net inflows. This finding means that a simultaneous increase in the domestic EPU and in the world uncertainty induces higher FPI inflows into our country sample. This fact is interesting because it highlights the important role played by advanced and large emerging markets perceived as a haven for international investment in case of global crisis/uncertainty. Meanwhile, the multiple and the ratio of the volatility of domestic EPU and world uncertainty have a negative effect of FPI inflows. This finding suggests that, as expected, one can observe lower FPI inflows into large markets in a context of high volatile uncertainty in both domestic and global economies. In line with the existing works (Bloom, 2009), our study confirms that international investors find large markets safe for their investment in a context of increasing global uncertainty (because these markets appear more stable); it also identifies a particular trend that has not been mentioned in the specialized literature: international investors are reluctant to invest in large economies in case of a situation characterized by a high volatile (changing) uncertainty. In other words, from the international investors' perspective, advanced and large emerging markets have a better capability to absorb a particular global shock/uncertainty but, in a period of sustained high volatile global uncertainty, these markets might be hit more severely explaining that international investors rather decide to disinvest in these countries in such context. This finding is the first contribution of our empirical study. We also estimated the long-run effects of our variables in relation to FPI net inflows – our findings confirm the existence of a stronger effect in the long-run for all observations above.

4.2 Uncertainty and net FPI flows

Due to the availability of data on the FPI outflows, our study investigates the effect of uncertainty on the net FPI flows (FPI outflows minus FPI inflows that we investigated in the previous section). The results are reported in Tables 6a and b, presented in this section.

Concerning our control variables, the real GDP growth has a significant negative effect on market return, capitalization and the inflation. The real exchange rate and the trade balance have a positive effect; remember that the net FPI flows are the differences between the change in financial assets a country holds and the change in its financial liabilities (IMF definition). In this perspective, a positive value of net FPI flows means that net outflows of FPI are higher than FPI net inflows (resp. a negative value means that net inflows are higher than net outflows). So, the negative effects of the real GDP growth, stock return, stock market capitalization and inflation on net FPI flows suggest that countries with a higher economic growth, a higher stock return, a large stock market capitalization and with a higher inflation attract more FPIs generating a higher net inflow of FPI. This confirms the existing works on the topic (Chen *et al.*, 2019) and can be easily understood since investors want to bring their money to a booming economic context. Meanwhile, a higher real exchange rate

Table 6.
The Uncertainty and FPI net

(a) Dep. Var: *FPInet*	Sequential (two-stage) estimation of linear panel data models			
Indep. Var	EPU	EPUvo	WUI	WUIvo
FPInet(−1)	0.415*** [0.068]	0.400*** [0.065]	0.406*** [0.051]	0.449*** [0.069]
GDPg	−0.150*** [0.056]	−0.140*** [0.053]	−0.126** [0.056]	−0.105* [0.063]
Sreturn	−0.005 [0.009]	−0.005 [0.010]	−0.006 [0.010]	−0.008 [0.011]
Scap	−0.015*** [0.005]	−0.016*** [0.004]	−0.012*** [0.005]	−0.013*** [0.004]
REER	10.127*** [2.533]	9.567*** [2.534]	9.029*** [2.331]	8.899*** [2.604]
Inf	−9.068** [3.817]	−10.701*** [3.084]	−6.642** [3.371]	−6.338* [3.451]
TB	1.404** [0.609]	1.418** [0.600]	1.419** [0.590]	1.136* [0.627]
EPU	1.171* [0.682]	0.954*** [0.319]		
WUI			2.653** [1.321]	0.508*** [0.169]
Constant	−0.018 [0.640]	0.054 [0.627]	−0.443 [0.623]	−0.068 [0.620]
Long-run effect				
GDPg	−0.256*** [0.082]	−0.233*** [0.078]	−0.211** [0.087]	−0.190* [0.105]
Sreturn	−0.009 [0.016]	−0.008 [0.017]	−0.010 [0.018]	−0.015 [0.021]
Scap	−0.025*** [0.009]	−0.027*** [0.008]	−0.021** [0.008]	−0.024*** [0.009]
REER	17.31*** [4.869]	15.94*** [4.667]	15.19*** [4.16]	16.13*** [5.19]
Inf	−15.50** [7.367]	−17.83*** [6.048]	−11.17* [5.925]	−11.49* [6.595]
TB	2.401*** [0.899]	2.363*** [0.889]	2.388*** [0.914]	2.060** [1.018]
EPU	2.002 [1.312]	1.590*** [0.572]		
WUI			4.466* [2.333]	0.922** [0.372]
N	224	224	224	224
No. of Country	18	18	18	18
No. of IVs	17	17	17	17
AR(2) test – *p*-value	0.260	0.285	0.267	0.255
Hansen test – *p*-value	0.180	0.171	0.226	0.235

(*continued*)

Table 6.

(b) Dep. Var: *FPInet*	Sequential (two-stage) estimation of linear panel data models					
FPInet(−1)	0.425*** [0.056]	0.411*** [0.061]	0.511*** [0.102]	0.456*** [0.072]	0.476*** [0.079]	0.399*** [0.129]
GDPg	−0.143*** [0.052]	−0.167 [0.109]	−0.121** [0.058]	−0.122** [0.059]	−0.122 [0.099]	−0.067 [0.100]
Sreturn	−0.005 [0.008]	−0.004 [0.008]	−0.011 [0.010]	−0.006 [0.010]	−0.009 [0.009]	−0.014* [0.008]
Scap	−0.014*** [0.005]	−0.014** [0.007]	−0.019*** [0.007]	−0.015*** [0.004]	−0.016*** [0.005]	0.001 [0.013]
REER	10.02*** [2.383]	10.76*** [2.564]	34.35** [14.157]	9.694*** [2.615]	10.29*** [2.725]	4.214 [12.778]
Inf	−7.842** [3.639]	−2.823 [29.519]	−14.07** [5.634]	−8.188** [3.287]	−7.869 [20.69]	52.69 [51.11]
TB	1.318** [0.550]	1.300 [1.101]	0.663 [0.498]	1.113* [0.578]	1.064 [0.937]	−0.834 [2.723]
EPU	1.065 [0.775]	0.698 [0.863]	1.010 [1.009]			
WUI	2.587** [1.238]	3.427*** [1.305]	1.283 [1.428]			
EPU*WUI		20.80*** [5.143]				
EPU/WUI			0.007 [0.019]			
EPUvo				0.759** [0.369]	0.826** [0.416]	−0.099 [0.391]
WUIvo				0.462*** [0.170]	0.591*** [0.183]	0.697*** [0.187]
EPUvo*WUIvo					0.640*** [0.219]	
EPUvo/WUIvo						0.302*** [0.092]
Constant	−0.153 [0.614]	−0.490 [0.629]	0.989 [0.738]	0.195 [0.577]	0.187 [0.636]	−1.268 [1.078]
Long-run effect						
GDPg	−0.249*** [0.078]	−0.283 [0.173]	−0.247** [0.120]	−0.225** [0.097]	−0.232 [0.176]	−0.111 [0.168]
Sreturn	−0.008 [0.015]	−0.007 [0.013]	−0.022 [0.025]	−0.011 [0.019]	−0.017 [0.019]	−0.023 [0.017]
Scap	−0.024*** [0.009]	−0.024** [0.012]	−0.040*** [0.012]	−0.028*** [0.008]	−0.030*** [0.011]	0.002 [0.022]
REER	17.44*** [4.528]	18.27*** [5.202]	70.21** [28.314]	17.82*** [5.42]	19.63*** [6.199]	7.017 [20.115]
Inf	−13.641** [6.925]	−4.793 [50.353]	−28.75*** [10.078]	−15.058** [6.586]	−15.004 [40.175]	87.75 [102.797]
TB	2.293*** [0.853]	2.207 [1.925]	1.355 [0.905]	2.047** [0.929]	2.028 [1.774]	−1.389 [4.808]
EPU	1.852 [1.437]	1.185 [1.492]	2.064 [1.99]	1.397** [0.672]	1.575** [0.783]	−0.164 [0.669]
WUI	4.501** [2.275]	5.818** [2.305]	2.621 [3.088]			
EPU*WUI		35.32*** [8.009]				
EPU/WUI			0.013 [0.042]			
EPUvo				0.850** [0.381]	1.126*** [0.434]	1.160** [0.47]
WUIvo					1.221*** [0.391]	
EPUvo*WUIvo						0.504*** [0.17]
EPUvo/WUIvo				0.85** [0.381]	1.126*** [0.434]	1.160** [0.47]
N	224	224	224	224	224	224
No. of country	18	18	18	18	18	18
No. of IVs	18	19	19	18	19	20
AR(2) test – *p*-value	0.261	0.257	0.264	0.268	0.252	0.235
Hansen test – *p*-value	0.165	0.115	0.411	0.159	0.147	0.713

Note(s): Standard errors are in [ ]. *, **, *** are significant levels at 10, 5 and 1%, respectively

as well as a better trade balance induces a higher net FPI outflows. In other word, a strong currency combined with a clear window on global trade favors national investors to invest abroad. This observation also confirms what we know from the literature (Polat and Payaslıoğlu, 2016).

Our main variables (the change in degree and volatility of domestic EPU\world uncertainty index) have a positive effect on net FPI flows implying that an increase in the domestic EPU and the world uncertainty induce a higher flow of international investment out of the country. A higher world uncertainty has a positive effect on FPI net inflows, but such change also has a stronger positive effect on FPI outflows so the combined effect shows a net FPI flows out of the country. This result implies that international investors may consider the advanced and large emerging markets as a safe place for their investment when facing the world uncertainty. This finding is in line with the major works on the matter (Colombo, 2013). However, and this is the key contribution of this article, domestic and international investors appear to have different views by diversifying their investments out of large countries when these economies face a significant global world uncertainty. This observation nuances international investment dynamics usually analyzed in the existing literature by limiting the extent to which international investors consider large economies as a safe place to invest.

The last step of our analysis is to study how FPI flows react when the domestic and the world uncertainties evolve in the same direction. Table 6b below reports the results when we incorporate both the multiple and the ratio of domestic EPU with world uncertainty index.

The results show that the effect of the domestic EPU and the world uncertainty on net FPI flows is stronger when both uncertainties increase simultaneously. This observation confirms that the net FPI flows to other markets would even be stronger in the case of higher uncertainty in both domestic and global economies. These findings confirm the abovementioned results and appear to be strengthened in the long-term (as the long-run effects of our variables confirm the observation above).

5. Conclusion

This article investigates the effects of uncertainty on the dynamics of international portfolio investment in 21 economies (mostly advanced and larger emerging economies) over the period 2001–2016 by using the sequential (two-stage) estimation of linear panel data models for unbalanced panel data. Several situations have been examined: the effects of changes in degree and the volatility of domestic EPU (as well as in world uncertainty index) on the net portfolio equity investment inflows (FPI net inflows) and net portfolio investment (FPI net). Our empirical results exhibit interesting findings.

Firstly, an increase in the degree and the volatility of domestic EPU has a significant negative influence on FPI net inflows, while such an increase in the world uncertainty index (WUI) has a significant positive impact on the FPI net inflows. A simultaneous increase in the degree of domestic EPU and WUI enhances the net inflows of FPI, while a simultaneous increase in the volatility of EPU and WUI reduces the net inflows of FPI. *Secondly*, an increase in the degree and volatility of both domestic EPU and WUI have a significant positive effect on the net portfolio investment, meaning that a large net portfolio investments go out of these countries. Interestingly, the simultaneous increase in both indices induces a stronger positive effect.

Our study provides some nuances in the field of international investment by documenting an interesting difference between domestic and non-domestic international investors – while both categories consider that advanced/large emerging markets are relatively safe in case of global uncertainty, the domestic international investors feel the urge to diversify their activities out of their national market when this world uncertainty is rising. This observation is a key contribution of this research since it implies that, from a macroscopic perspective

(i.e. our sample of 21 countries) the rest of the world (i.e., smaller countries out of our sample) appears to become more attractive in case of a high level of world uncertainty. In terms of portfolio management, our results encourage international investors to consider uncertainty indicators (and more specifically their variations) in their portfolio strategy since these parameters can help them to foreseen the markets' trends as well as the way other investors tend to react when they face with increasing and changing uncertainty – if used adequately, such information can even help some investors to develop a particular timing strategy to optimize their position on the international markets.

Regarding policy recommendations, our findings invite policy makers from large countries to reduce the perceived domestic uncertainty since this parameter can influence international investors' sensitivity and willingness to diversify their position out side of the country. Our study also suggests that a high world uncertainty context probably provides the best timing for policy-makers from smaller economies to implement an attractive policy for international investment since investors will be keener to reduce their position in large markets.

This article can be seen as the first step of more extensive research – indeed, our study is limited to 21 countries (mostly advanced and large emerging economies) – this limitation needs to be overcome with further future analysis on the effect of uncertainty on FPI flows among advanced economies and developing countries. Such research would certainly provide further nuances on the topic as the differences in economic development and financial stability can affect the impact of uncertainty in various country groups.

Notes

1. See https://www.policyuncertainty.com/wui_quarterly.html
2. See https://www.policyuncertainty.com/gpr.html
3. It is worth ng that some variables have high correlations; for instance, the correlation between TB and Inf is 0.404. The study estimated variance inflation factors (VIFs) which showed that there is no potential issue of multicollinearity among variables. The results of VIFs can be provided on request. Authors thank the associate editor for the relevant comments on this matter.

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Appendix

Australia	France	Korea, rep	Sweden
Brazil	Germany	Mexico	The United Kingdom
Canada	Greece	The Netherlands	The United States
Chile	Ireland	Russian Federation	
China	Italy	Singapore	
Colombia	Japan	Spain	

Note(s): There are 23 economies with country's economic policy uncertainty index. India and Hong Kong are excluded in the final sample due to the lack of data for economic factors (Real Effective Exchange rate)

Table A1. Country list

Variable	Sources	Obs	Mean	Std. Dev	Min	Max
Portfolio equity, net inflows (BoP, current US$)	WDI – World Bank	336	2E+10	5E+10	−2E+11	3E+11
Portfolio investment, net (BoP, current US$)	WDI – World Bank	332	−3E+10	1E+11	−8E+11	3E+11
GDP (current US$)	WDI–World Bank	336	2E+12	3E+12	7E+10	2E+13
GDP growth (annual %)	WDI – World Bank	336	2.67	3.49	−9.13	25.56
Stock market return (%, year-on-year)	GFDD – World Bank	335	4.94	22.84	−44.35	159.99
Stock market capitalization to GDP (%)	GFDD – World Bank	326	77.06	44.40	11.28	260.41
Real effective exchange rate index (2010 = 100)	WDI – World Bank	336	97.69	12.92	55.32	145.42
GDP deflator (base year varies by country)	WDI – World Bank	336	99.34	34.80	17.18	355.93
Goods, Value of Exports, Free on board (FOB), US Dollars	DOT – IMF	336	4E+11	4E+11	1E+10	2E+12
Goods, Value of Imports, Cost, Insurance, Freight (CIF), US Dollars	DOT – IMF	336	4E+11	5E+11	1E+10	2E+12
Economic Policy Uncertainty – Yearly mean from monthly data	www.policyuncertainty.com	332	120.54	55.31	27.00	542.77
Economic Policy Uncertainty – Yearly Standard deviation from monthly data	www.policyuncertainty.com	332	37.48	24.25	6.05	242.73
World Uncertainty Index – Yearly mean from quarterly data	www.policyuncertainty.com	336	128.24	32.73	97.61	206.05
World Uncertainty Index – Yearly Standard deviation from quarterly data	www.policyuncertainty.com	336	11.90	8.32	3.07	33.46

Table A2.
Primary data

Note(s): WDI is World Development Indicators database (2018 version) and GFDD is Global Financial Development Database (2018 version) of World Bank; DOT is Direction of Trade database of IMF. The data from www.policyuncertainty.com is provided by Scott R Baker *et al.* (2016)

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