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Does Global Economic Uncertainty Affect Foreign Direct Investment? Evidence From Asian Emerging Markets

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In this paper, we examine the impact of global economic uncertainty on foreign direct investment (FDI) in Asian emerging markets using the new world uncertainty index (*WWUI*). The results show an insignificant and indirect impact of global uncertainty on FDI inflows in Asian emerging markets.

I. Introduction

Foreign direct investment (FDI) is sought by economies because it is the source of economic development, income growth, and employment (OECD, 2002). However, the flow of *FDI* can be threatened by global uncertainties and domestic economic conditions (see for example Rashid et al., 2017; Sabir et al., 2019).

There are two strands of empirical literature explaining recent determinants of *FDI* flows in Asia. The first strand of literature explains the determinants of *FDI* to be the result of pandemics: in Indonesia (Syarifuddin & Setiawan, 2022), in Europe, America, and Asia (Fang et al., 2021), and particularly in Asia-pacific and emerging economies (Ho & Gan, 2021).

The second strand of literature emphasizes the role played by institutions in attracting *FDI*. In South-East Asia and South Asia, an important determinant of *FDI* is government assistance to the private sector, while aid is found to be negatively related to *FDI* (Rao et al., 2020). In the Asia-Pacific, significant determinants of long-run *FDI* are political stability (Rashid et al., 2017), gender inequality (Bui et al., 2018), skilled labour, and low wages (Le & Tran-Nam, 2018), whilein South Asia and the Pacific region, political institutions, low level of corruption, sound legal system, and good regulation are significant determinists of inward *FDI* (Shah, 2017; White et al., 2015; Yerrabati & Hawkes, 2016), including in developed and developing countries. In resource-rich countries, institutions are not relevant determinants of inward Chinese *FDI*, but they are in resource-poor countries (Kamal et al., 2019, 2020).

Thus, this paper contributes to the existing literature on the determinants of *FDI* in Asia by consideringthe possible effects of global uncertainties using the smoothed[1] version of the new *WUI* from Ahir et al. (2018). The *WUI* is used in Nguyen et al. (2019) and Avom et al. (2020). In our study, instead of using the normalized version of uncertainty, we adopt the smoothed version of *WUI* to remove the seasonality and irregularity of all events. Previous studies have been largely silent and capture only a narrow definition of global uncertainties on *FDI* inflows given that unpattern and unseasonal global uncertainties have the capacity to influence the direction of capital (see C. P. Nguyen & Lee, 2021). Our new measures of uncertainty are seasonal- and cyclical-free from events related to pandemics, global financial crisis (GFC), and trade conflicts that may have concerning effect on *FDI* inflows. The choice of Asia for this study is due to its increasing integration into the global economy, particularly at a time of uncertainties (Armstrong & Westland, 2018). While some economies have enough buffer to withstand such uncertainties, others do not. Standing on the *Location based theory*, which is premised on the fact that the social, economic, and political conditions of the host country determine *FDI* (Makoni, 2016), we show that rising global uncertainties reduces inward *FDI* in Asia emerging economies but not significantly.

Following the introduction, in Section II, we describe the data and methodology adopted for the study and present the results and discussion in Section III. Section IV concludes the paper.

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1 The smoothed version of the index is the three-quarter weighted moving average of the global uncertainty index. This is converted to annual data by averaging the three-quarter weighted moving average of the index. The normalized version is the aggregate of all uncertain events in EIU country reports. This is converted to annual data by averaging the aggregate of all uncertain events.

Table 1. Variable definition

Variable		Definition
FDI	FDI	Foreign direct investment net inflows (% of GDP)
WUI	WUI	World Uncertainty Index (country level, three-quarter average)
WWUI	WWUI	Weighted World Uncertainty Index (country level, three-quarter of three-quarter weighted moving average)
GDP growth	GDPgr	GDP growth (annual %)
Domestic Investment	GCFC	Gross fixed capital formation (% of GDP)
Human capital	Senroll	Secondary school enrolment (% gross)
Environmental factor	Co2	CO2 emission (metric tons per capita)
Energy security	Tnrr	Total natural resource rents (% of GDP)
Trade openness	Tradeop	Sum of exports and imports of goods and services (% of GDP)

Data obtained from the World Bank World Development Indicators (accessed on February 2022); and *WUI* data obtained from Ahir et al. (2018) and *WUI* (2022) (accessed on April, 2022). Finally, *WWUI* is used for robustness check.

II. Data and Methodology

A. Data

We use unbalanced panel data of eight Asian emerging markets (classification according to MCSI Asian emerging markets) from 1990 to 2019. The *WUI* is available for the eight countries including Philippines and Bangladesh from 1990 to 2019 (WUI, 2020). However, data from the World Bank's World Development Indicators are insufficient for Philippines and Bangladesh within the specified period. Therefore, the total sampled countries aresix Asian emerging economies instead of eight economies. Except for *WUI*, data for domestic investment and financial development are unavailable for Philippines and Bangladesh from 1990 to 2019. Hence, we use the panel data for six Asian emerging economies from 1990 to 2019 to investigate the impact of global economic uncertainty on *FDI* inflows.

B. Methodology

To investigate the impact of global economic uncertainty on *FDI* inflows, the following dynamic panel model is used following Ho & Gan (2021):

$$FDI_{it} = \alpha_0 + \alpha_1 FDI_{i,t-1} + \beta WUI_{it} + \lambda_j Y_{j,it} + \varepsilon_{it} \quad (1)$$

where FDI_{it} is the foreign direct investment net inflows (% of GDP) of country i in year t; WUI is the global economic uncertainty index at the country level; Y_j is a vector of control variables j; ε is the error term; and α, β, and λ are the parameters to be estimated.

Equation (1) is a dynamic balanced panel datamodel with a lagged dependent variable in the form of an explanatory variable. This type of dynamic model may face endogeneity problems but due to short panel data, dynamic ordinary least squares (DOLS) and Fully-modified ordinary least squares (FMOLS) estimators, developed by Philips and Hansen (1990) and Stock and Watson (1993), will solve the endogeneity problem and support the stationarity level of variables. Having established stationarity in the variables across countries and cointegration, we proceed to estimate the short panel data that are stationary at both level [I(0)] and first difference [I(1)]. The short panel data are esti-

mated with DOLS and FMOLS estimators due to their statistical power over other estimators.

III. Results and Discussions

Table 2 contains the results on the impact of global uncertainties on *FDI* inflows in Asia. The DOLS and FMOLS model results with the normalized *WUI* are presented,while therobustness testresults usingthe weighted *WUI (WWUI)*, instead of *WUI*, as a measure of global uncertainty is presented in Table 3.

The summary statistics show that Malaysia, China, and Thailand have net *FDI* inflows above the pooled average *FDI,* and Korea has the lowest *FDI* net inflow among the Asian emerging markets. The statistics show that Thailand, India, and Korea have the highest level of uncertainty,based on the two proxies of global economic uncertainty index. These three economies also have the largest*FDI* net inflows, while Korea has the lowest *FDI* net inflow.

The estimation resultsshow that the impact of global uncertainty on *FDI* inflows in Asia isnegative and significant (OLS), positive (DOLS), and negative (FMOLS), but not statistically significant. The positive result contradicts the findings of Avom et al. (2020), where global uncertainty negatively affects *FDI* in developing and emerging countries. It is possible that the positive effect of *FDI* in the selected Asian countries can be attributed to the increases in *FDI* in countries with low policy uncertainties experience, relative to their home country (see Q. Nguyen et al., 2018). The non-statistical significance of the coefficient suggeststhat emerging Asian markets, though able to attract inward *FDI* in uncertain times, cannot do so significantly. This positive effect may also be attributable to favourable domestic conditions of these economies, in terms of economic growth and human capital investment, to attract inward *FDI*.

The FMOLS results indicate that global uncertainty exertsa negative effect on inward *FDI* in Asia. This indicates that the higher the level of global economic uncertainty, the smaller the *FDI* inflows. This finding points to a possible resilience of the Asian market to withstand global eco-

Table 2. OLS, DOLS and FMOLS Elasticities result (*FDI* as the dependent variable) and summary statistics of each series

Variable	OLS	DOLS	FMOLS	Summary Statistics			
	Coefficient			Mean	StdDev	Pre-GFC	Post-GFC
WUI	-2.15[a]	0.72	-0.63	0.15	0.12	0.15	0.14
GDPgr	0.13 [a]	0.75 [b]	0.09 [a]	5.98	3.57	6.54	5.13
Gfcf	0.06 [a]	-0.23 [b]	0.01	30.37	4.51	30.14	30.71
Secroll	-0.007	0.08 [a]	-0.004	72.41	20.33	63.30	86.08
Tnrr	0.05 [b]	9.22 [a]	-0.40	4.46	4.39	4.81	3.93
tradeop	0.02 [a]	-0.07[a]	0.01 [b]	81.12	51.07	80.07	82.70
CO2	-0.09 [a]	-	-	4.33	3.27	3.56	5.48
WWUI	-	-	-	0.05	0.04	0.05	0.05

This table contains results obtained from the summary statistics, OLS, DOLS and FMOLS analysis. [a], [b], and [c] represent 1%, 5%. 10% significant levels, respectively.

Table 3. Robustness test results

Variable	OLS	DOLS	FMOLS
	Coefficient	Coefficient	Coefficient
WWUI	-6.54***	0.42	-2.11
GDPgr	0.13***	0.63**	0.08***
Gfcf	0.06***	-0.16*	0.01
Secroll	-0.007	0.05**	-0.004
Tnrr	0.05*	9.01**	-0.42
Tradeop	0.02***	-0.06*	0.01*
Co2	-0.08**	-	
Adj R	0.45		
F-stat (**p**-value)	22.36 (0.000)		

Note: This table contains robustness check results when we use weighted *WUI, WWUI*, as a proxy for WUI. [a], [b], and [c] represent 1%, 5%. 10% significant levels, respectively.

nomic uncertainties without experiencing significant loss of inward *FDI*.

Overall, the effect of global economic uncertainty on inward *FDI* to Asia is negative. Global uncertainties have the potential to slow down the flow of *FDI* into Asia but insignificantly when endogeneity is accounted for using the FMOLS estimation method.

The results of the robustness check, presented in Table 3, also follow a similar pattern as the main estimation results. In the robustness check, we proxy global economic uncertainty with the weighted moving average of *WUI*. The results show that, depending on the proxy used for global uncertainty,it does not exert significant direct or indirect impact on the net *FDI* inflows to Asian emerging economies.

IV. Conclusion

The impact of global economic uncertainty on Asia-Pacific economies have been documented in the literature. In response to the acceleration of global economic uncertainty in 2020, using different uncertainty proxies, this study investigates,for the first time, the impact of global economic uncertainty on net *FDI* inflows for Asian emerging markets from 1990 to 2019. Our findings show that the uncertainty caused by global happenings leads to a decrease in net *FDI* inflows to the Asian emerging markets. Using the two proxies of global economic uncertainty,weshow that global economic uncertainty has a negative (but insignificant) impact on net *FDI* inflows to these Asian economies.

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