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FDI commitments increase when uncertainty is resolved: Evidence from Asia[☆]

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ABSTRACT

How do foreign investors deviate from plans in response to new information? Prior literature shows that how utilized foreign direct investment (FDI) is affected by uncertainty depends on the type of FDI. We examine how utilized FDI differs from planned investments by studying the commitment ratio, defined as the ratio of the two FDI flows, in the context of China, Indonesia, the Philippines and Thailand over 1996–2013. First, we find that the commitment ratio exceeds 1 in China and Indonesia but is lower than 1 in the Philippines and Thailand. Second, we find a higher commitment ratio, which means investments are likely to be a larger fraction of what was proposed, when economic uncertainty regarding the destination country is reduced after a project is proposed and the destination environment is politically stable and financially open.

1. Introduction

According to real options theory, planned corporate investments could be cheap talk that firms do not plan to implement. Still, Block (2007) found that only 10% of *Fortune 1000* CEOs rely on real options theory. This theory proposes that firms incorporate ex ante valuations of modifications or flexibility in their investment decisions so that they know ahead of time how investments could be modified in response to new information. Thus, in practice planned investments are likely to be implemented unless there are unexpected events. Otherwise, informational frictions and uncertainty may cause planned investments to be modified prior to implementation. In the case of foreign direct investment (FDI), Aizenmann and Marion (2004) develop a theory to illustrate that increased uncertainty encourages horizontal FDI where a firm replicates existing investments in new locations but discourages vertical FDI where a firm acquires suppliers or customers. Similarly, Jardet et al. (2022) find that the impact on FDI flows of uncertainty and financial openness vary by type of country.

Empirically, it is difficult to find planned investments data at the firm-level but planned FDI data at the country-level are available. The reason is that FDI projects are submitted by foreign firms to be reviewed and approved by the host government.[1] The values of

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[1] As our data are aggregated at the national level, we use the term 'government' to refer collectively to national, regional, and local governments.

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approved FDI are non-binding, disclosed by investment authorities in very few countries, and infrequently employed in the literature. ,[23] We fill the gap in the literature by analyzing how investment plans evolve from announcement to implementation, using an unbalanced panel dataset of 25 high-income source countries and four middle-income host countries in Asia.

Nonetheless, our dataset covers the period in which the approved FDI data was available: 1996–2006 for China, 1996–2007 for Indonesia, 2006–2013 for the Philippines, and 1997–2013 for Thailand.[4] These countries consistently receive large values of FDI. So, we extend the literature on determinants of FDI, such as Blonigen (2005), to examine approved FDI. To understand how investment plans evolve after approval, we examine the commitment ratio, which is defined as the ratio of bilateral utilized FDI inflows to the average of approved FDI inflows in the current and preceding years (Hornstein, 2011). The average of the commitment ratio in our dataset is 1.90, implying that investors invest 90% more than the approved amount. We interpret it as a de facto market evaluation of the extent to which investors respond to uncertainty or the degree to which macro conditions resemble what investors have anticipated.

Petri (2012) shows that FDI in Asia tends to flow to medium-level technology destinations while FDI elsewhere tends to flow to high-level technology destinations. As FDI inflows in Asia follow slightly different patterns than FDI inflows elsewhere, and Asian countries are the only countries that consistently disclose data on approved FDI, it is useful to understand why FDI in Asia may follow different guiding principles. For example, Liu et al. (2021) analyze Chinese FDI and find that local ideologies are a barrier to inflows. We embrace the guiding spirit of these studies and argue that these technology and ideology differences, along with other differences, pose greater uncertainty to investors, particularly those who are from outside the region, and thus raise the expected risk of informational shortfalls. Accordingly, our analysis of the commitment ratio helps reveal how companies adjust to changes in the operating environment, whether actual or perceived.

Unexpected changes in information, or a decrease in the incompleteness of information, may lead to changes in investment plans. We focus on how the commitment ratio is affected by information that may stem from uncertainty regarding costs, institutions, capital mobility, and regulation. Jinjarak (2007) and Russ (2007) show that FDI is affected more by exchange rate volatility than by actual changes in exchange rate which we term ex ante and ex post uncertainty, respectively.[5] Ex ante uncertainty is proxied by lagged exchange rate volatility as in Cevik et al. (2017), whereas ex post uncertainty is proxied by the bilateral exchange rate depreciation.[6] On a positive side, exchange rate volatility may reflect currency risk premium and excess returns on foreign assets, as in Brandt et al. (2006), Chien et al. (2020), and Dahlquist and Pénassé (2022). On a negative side, exchange rates may also reflect costly uncertainty regarding a country's economic and political outlook. For this reason, many emerging economies manage their exchange rates to increase price competitiveness of exports (Yang & Mallick, 2014).

We find three main results regarding the commitment ratio. First, there are systematic differences across the host countries. The average and the median commitment ratio are both above 1 in China and Indonesia, and both below 1 in the Philippines and Thailand. This variation reflects persistent country-specific variation in how each government regulates and incentivizes FDI, and the scope for investors in a country to alter projects after investment approval has been secured.[7] Our results suggest FDI commitments are more likely to be expanded after approval in China and Indonesia, but more likely to be reduced after approval in the Philippines and Thailand.

Second, we have a complementary test of our hypothesis: how is the commitment ratio affected by ex post exchange rate volatility. Exchange rate volatility promotes FDI commitment as it provides opportunities to earn excess returns on foreign assets. Our results are new, since the empirical literature finds that exchange rate volatility has negative impacts on FDI (Anderson & van Wincoop, 2004). Our results complement the findings of Russ (2007), who argues that the impact of exchange rate depreciation depends on whether the shocks driving exchange rate movements are domestic or foreign. Our finding regarding the positive effect of exchange rate depreciation on the commitment ratio suggests that investors likely view a monetary expansion in the host country as favorable; exchange rate depreciation reduces cost of investment, and thus increases expected returns on foreign assets. Hence, exchange rate uncertainty in our study behaves like supply shocks, similar to the case of emerging economies in Kumar et al. (2021). This finding is in line with Aman et al. (2022), who provide evidence that exchange rate regimes affect competitiveness among developing countries.

Our final result is that the commitment ratio is significantly higher when the host country is more financially open and when the host country enjoys political stability. It has been previously established that bilateral FDI and trade flows are also positively related to

[2] China officially calls such FDI "contracted FDI" while the other governments that release comparable data use the term "approved". We use the term "approved FDI", as the word "contracted" often carries legal connotations not associated with the word "approved".

[3] Exceptions include Henley et al. (1999), Schaumburg-Müller (2002), Zhang (2002), Banga (2003), Zhang (2005), and Hornstein (2011, 2017).

[4] While China and Indonesia have also disclosed approved FDI data for earlier years, our control variables are available only from 1996 on. Also, several other countries such as India and Vietnam have disclosed incomplete data on approved inflows. We believe we are using the entire universe of disclosed data on bilateral approved FDI data.

[5] It is increasingly common for economic uncertainty to be proxied by the Economic Policy Uncertainty Index constructed by Baker, Bloom, and Davis, and available online at http://www.policyuncertainty.com. We are unable to use this measure as it is not available at all for three of our four host countries.

[6] Exchange rates are often incorporated in the FDI literature as cost shocks. However, our structure would also be appropriate if we focus on FDI sales or demand when FDI revenues and profits are repatriated to the source country.

[7] Alternatively, one could argue that a different mix of source country investors are interested in opportunities in each host country or across time periods. If this were the case, then there could indeed be reverse causality. However, there is minimal variation within each host country: investing countries remain relatively constant over time. We also include year fixed effects in all regressions to capture potentially unobserved characteristics that might affect investments only in a specific year.

these factors (Blonigen, 2005, Busse & Hefeker, 2007), and our results make clear that firms increase their level of investment – beyond what was previously disclosed – when a country enjoys greater financial openness and political stability. These results are robust to inclusion of measures of tax rates, equity market capitalization, institutional policies, past bilateral investments and trade openness, political events, and cultural frictions.

It is important to emphasize that our findings are specific to these four Asian countries. Hence, our work contributes to the large body of literature of FDI in these countries. Although the literature has long focused on utilized FDI, it has uncovered the important roles of policy and cultural variables. Liu et al. (2021) document the evidence that ideologies can become barriers impeding FDI in China.

Our work has important implications for policy. Policymakers often struggle with understanding how investor signals translate into subsequent actions, and our results provide guidance. First, our results suggest that many findings regarding the determinants of FDI flows can be directly extended to understand the commitment ratio. Government regulators can therefore use FDI approvals to better understand and forecast actual utilized inflows. Second, if a factor has similar effects on both the approved and utilized FDI inflows, then we should find no significant relationship between the commitment ratio and the factor. To the contrary, when we find that a factor is significantly associated with the commitment ratio, in essence that the factor has different impacts on the approved and utilized FDI flows.[8] Thus, we help policymakers understand the limitations of designing policy based only on studies of utilized FDI inflows while providing guidance regarding how approved FDI flows can be understood.

The remaining sections of this study are organized as follows. How uncertainty and informational frictions affect FDI investment plans and implementation is discussed in Section 2. We then describe the data in Section 3. We analyze the determinants of approved and utilized FDI flows in Section 4 to motivate joint analysis of these flows. Then we introduce the commitment ratio and examine determinants of the commitment ratio in Section 5. Section 6 concludes.

2. Theoretical literature

Corporate investment announcements, irrespective of planned location and novelty (such as expansions of firm scope or scale), are often skeletal in nature and routinely include as little information as the firm thinks is necessary to disclose to meet regulatory and investor expectations. This is also a deliberate move by companies to avoid revealing what they do not know or are uncertain about. That means initial announced investments must be understood as initial plans that will be modified prior to implementation as the investor overcomes hurdles caused by uncertainty.

In theory, uncertainty might affect both ex ante announcements of approved FDI and ex post utilized FDI. The theoretical literature on uncertainty and investments is large, and it is based on studies of ex post utilized FDI (Akinci et al., 2022; Bloom, 2009). For open economies, the theoretical literature on exchange rate fluctuations on FDI is highly relevant to our work (Russ, 2007). In addition, the literature on exchange rates and portfolio choices emphasizes the positive effect of exchange rate volatility on returns on foreign assets (Brandt et al., 2006; Chien et al., 2020). To the contrary, the literature on uncertainty and announcements of approved FDI is quite small.

There are three types of uncertainty: global uncertainty that affects all projects irrespective of investor or location, localized uncertainty that might affect only particular locations or industries, and investment specific uncertainty that could be idiosyncratic to the implementation of a particular project by certain actors in a location. Jardet et al. (2022) examine the first two types of uncertainty and find that global but not local host country uncertainty affect FDI flows. We extend this framework to examine the impact of bilateral uncertainty that is unique to each pair of host and source countries, and the aggregation of individual project uncertainty.

Investors are typically compensated for uncertainty through expected risk premiums, which in turn is reduced by the greater availability and reliability of relevant information. Hence, the effects of uncertainty in many instances interact with information frictions. Firms may acquire greater information or tools for better understanding existing information in the interval between announcing and implementing investments. This decrease in informational frictions might cause firms to enthusiastically proceed with planned investments, either as is or on an expanded scale.

Furthermore, informational frictions may cause prospective investors to misidentify sources of value or risk, and also to misinterpret data that would affect corporate planning. These informational frictions could arise within the investor firm as different managers may possess different information or disagree about how to interpret common information. Accordingly, these informational frictions would bias the formation of initial investment plans. After these initial investment plans are approved by the corporate and governmental authorities, the investor might gain access to more accurate or credible information that lead to modifications of investment plans.

For example, Julio and Yook (2016) show that FDI inflows drop just before an election and increase subsequently, which is consistent with firms having fewer informational frictions with regards to the local political and economic outlook. Similarly, Busse and Hefeker (2007) show that FDI inflows are significantly higher in countries with greater political stability using a sample of 83 countries that were then classified by the World Bank as 'developing', including all four of our host countries. Thus, if there is any political instability, we might expect approved FDI to be downward biased as companies might defer investment announcements, which would translate into higher estimated commitment ratios if the firms later increase investments to reflect the reduced uncertainty regarding the investment environment.

[8] In robustness tests that are not reported in this paper, we obtain the expected results when our baseline models (shown in Table 3) are estimated with log of utilized FDI as the dependent variable in lieu of the commitment ratio.

If investors subsequently obtain information that mitigates their uncertainty regarding project attributes, they may revise upwards their estimates for project profitability, and vice versa. Thus, utilized FDI flows could be higher or lower than approved FDI depending on whether the investors' ex ante uncertainty was mitigated or confirmed by the information acquired. For this reason, our observed commitment ratio might be higher or lower than 1.

An example is the case of exchange rate uncertainty. Investors may hedge against uncertainty by expecting a constant local currency value for the investment project irrespective of subsequent exchange rate changes. Nonetheless, observed exchange rate may or may not cause the approved and actual US dollar values of FDI to diverge. This could lead to the observed commitment ratio being lower or higher than 1.

Strategically, investors may intend for their initial investment announcements to serve as a bargaining chip for extracting preferential concessions from the local government or to scare off competitors. In those instances, the approved FDI could be downwards or upwards biased depending on how the company wanted others to react. Similarly, the subsequently utilized FDI could also be higher or lower than the approved FDI depending on how well the company achieved its initial goals. This would lead to an ambiguous effect on the commitment ratio.

Alternatively, the host government might assume that firms are wedded to announced investment plans and announce policies or change the enforcement regime for existing policies that meaningfully alter the investment climate. In such instances, firms might then re-estimate the perceived profitability of the investment and then might decrease the utilized investment relative to the approved. This would lead to an observed commitment ratio below 1.

Also, uncertainty may differ significantly in magnitude over time, as emphasized by Bloom (2009). When the approved and utilized FDI flows are strongly correlated, the commitment ratio will be relatively stable, and vice versa.

We obtain empirical measures for each of the theoretical factors that prior studies show may affect FDI inflows and examine how these determinants affect the FDI commitment ratio. Thus, we provide a cross-country examination of the generalizability of the findings of prior studies as discussed in this section. We examine four Asian countries that are classified as emerging economies (Jardet et al., 2022) and are both among the world's largest recipients of FDI in terms of magnitude of FDI inflows and growth rates of FDI inflows. While the four countries we examine differ tremendously on numerous dimensions, they share much in common with emerging economies worldwide.

3. The data

Our sample of host and source country data are the bilateral country-pairs and years for which we can obtain data on the approved FDI flows, utilized FDI flows, and control variables. We use data for 1996–2006 for China, 1996–2007 for Indonesia, 2006–2013 for the Philippines, and 1997–2013 for Thailand. These four countries are all classified as emerging economies, which suggests that it is reasonable to compare them, as we do in this study, and yet these four countries have had different economic trajectories in recent decades both in terms of aggregate economic growth and FDI. Nonetheless, the observed variation in FDI inflows among and within these four countries makes them a good context for our study as all of these countries chose to systematically disclose the approved FDI data.

For all four host countries, we obtain approved FDI series from CEIC.[9] For the utilized FDI inflows series, we use FDI outflows values from the OECD FDI Database of FDI outflows by partner country. Fig. 1 shows that the approved and utilized FDI inflows are positively correlated, albeit with substantial variation.[10]

During the years we examine, FDI flows world-wide tended to grow, albeit at uneven rates. In our sample, China saw a near tripling of FDI inflows, both approved and utilized, while flows were uneven and less volatile in each of the three other destination countries. In Table 1 we report the average values of approved and utilized FDI for each source-destination pair. But, viewed in aggregate, China's total approved FDI rose from \$44bn to \$144bn while utilized rose form \$36bn to \$165bn. Meanwhile, Indonesia's approved FDI ranged from \$21bn to \$45bn and utilized FDI ranged from \$15bn to \$44bn; the Philippines saw approved FDI range from \$17bn to \$80bn and utilized FDI ranged from \$9bn to \$55bn; and Thailand had approved FDI range from \$21bn to \$96bn while utilized FDI ranged from \$20bn to \$90bn.

There are two potential causes of measurement errors in the FDI data. The first cause is the definition of FDI as followed by statistical agencies. As a rule, small investments of no more than 10% of a firm's value are labeled portfolio investments, which are regulated differently and reported in the balance of payments statistics. In practice, most equity investments, as included in approved and utilized FDI data, are for majority stakes in a firm. Accordingly, it is unlikely that our data on both series are downward biased due to the exclusion of small investments.

The other cause is the source of funds for FDI. Long-term investors may finance new investments using funds from anywhere in the world, including from the source and/or host country and utilized FDI flows reflect *net* investment inflows from a source country. On the other hand, approved FDI inflows reflect the value of all proposed investment projects from a source country, irrespective of where the funds originate. If this is the case, then our estimated values of approved FDI may be upwards biased.

The summary statistics of both series of FDI and the commitment ratio, which is the ratio of utilized FDI to approved FDI, are reported in the top block of Table 1 for our host countries (Panel A) and across all source countries (Panel B). There is considerable

[9] The CEIC aggregates the original approved FDI values from the investment promotion agency of each country: China's Board of Investment Promotion, Indonesia's Investment Coordinating Board, and the Philippines' and Thailand's Boards of Investment.

[10] The levels of approved and utilized FDI are measured as the logarithm of 1 plus the actual value.

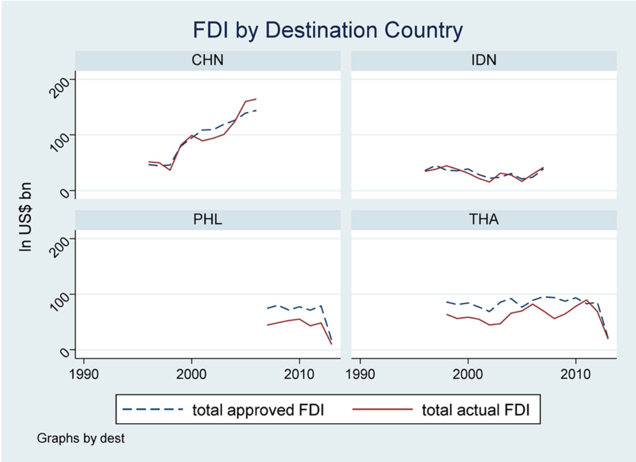

Fig. 1. FDI by Destination Country.

variation in the commitment ratio across host country and time, which reflects the heterogeneity among both utilized and approved FDI.[11] Based on the Chinn-Ito index of financial openness, we observe that Indonesia is markedly more open than our other three host countries. The four countries have lower degree of political stability and larger populations when compared with their source countries. We note that the sample size varies greatly across the four host countries. The sample size is sufficiently small for two of our four countries (Indonesia and the Philippines) that it is not appropriate for us to analyze the data on a source country basis. Accordingly, all of our empirical tests pool the data from the four source countries.[12]

Other blocks in Table 1 report summary statistics of our explanatory variables, which are motivated by the gravity model of FDI. We augment the gravity variables with two measures of exchange rate uncertainty.[13] First, ex ante uncertainty is measured by the lagged bilateral exchange rate volatility, which is calculated as the standard deviation of monthly depreciation in each year. Empirical studies, such as Engel and Rogers (2001), Kawai and Naknoi (2017), and many studies surveyed in Blonigen and Piger (2014) use this measurement without lag. However, lagged exchange rate volatility is used by Cevik et al. (2017) to avoid endogeneity. We follow the latter approach because foreign investors need to observe this type of volatility prior to making investment commitment. Second, ex post uncertainty is the actual exchange rate depreciation, which is calculated as the change in the average exchange rate in each year. The exchange rate volatility reveals that countries that experience greater volatility in exchange rates tend to do so persistently across time.

As for other control variables, Blonigen and Piger (2014) use a Bayesian model selection technique and find that economy size and distance are robust explanatory measures. Capital allocation is more efficient when countries have more developed financial markets (Wurgler, 2000) as financing constraints are an aspect of the business environment that most affect corporate growth (Ayyagari et al., 2008). In addition, higher quality of institutions is associated with higher FDI inflows in general (Busse & Hefeker, 2007), in ASEAN countries (Kawai & Naknoi, 2017), and in China (Du et al., 2008; Ang et al., 2015).

Consequently, our set of control variables includes the Chinn-Ito index of financial openness, the distance, the host and source country's institutional quality, and host and source country macroeconomic characteristics. The Chinn and Ito (2006) index, updated through 2015, measures a country's degree of capital account openness based on binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions.* The higher degree of financial openness for both inflows and outflows is captured by the higher level of the Chinn-Ito index.

Measures of institutional quality are obtained from the World Bank's *Worldwide Governance Indicators*. In our baseline models we include the indicator of political stability, which is constructed such that a higher level implies greater political stability. Political stability increases the likelihood of policy continuity and predictability, which are both viewed positively by the business community (Azzimonti, 2019; Busse & Hefeker, 2007; Durnev et al., 2015). In robustness tests we use the rule of law indicator as an alternative measure.

We include several macroeconomic indicators that are known to help explain FDI inflows such as real GDP, GDP growth, and gross fixed capital formation. These capture both the current level of economic activity, rate of growth, and the public infrastructure that supports economic activity (. such asroads and telecommunications). In some specifications we also control for the quality of the labor force by including the fraction of the population that is enrolled in secondary school.

In some models, we also include measures of tax rates and equity market capitalization to better capture firms' financial incentives and abilities to invest abroad. Corporations may respond to the tax rates of the home and host countries. The OECD has panel data on

[11] The commitment ratio is measured as the ratio of the level of current year utilized FDI to the average of current and prior year approved FDI.
[12] We note that our results are consistent with those of only China as reported by Hornstein (2017).
[13] Foreign exchange futures are not available for most of our data sample, and thus cannot be used as a measure.

Table 1
Descriptive Statistics.

Panel A. Host Country Characteristics

	China			Indonesia			The Philippines			Thailand		
Variable	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**
Commitment ratio	2.793	5.142	180	4.307	10.358	59	0.155	0.843	55	0.548	0.972	153
Utilized FDI, ln USDmn	6.385	3.104	157	7.704	1.247	48	7.192	1.543	42	7.374	1.878	132
Approved FDI, ln USDmn	5.713	2.136	178	6.317	1.433	59	8.562	1.84	55	8.306	1.822	153
Exchange rate volatility	0.026	0.015	174	0.086	0.117	58	0.030	0.012	53	0.031	0.021	147
Currency depreciation	-5.439	18.275	180	-0.770	22.823	59	5.244	7.320	55	-1.663	14.401	153
Political stability index	-0.407	0.119	180	-1.630	0.342	59	-1.532	0.229	55	-0.615	0.758	153
Chinn-Ito index of financial openness	-1.195	0	180	1.256	0.367	59	-0.599	0.612	55	-0.52	0.514	153
Population, ln mn	20.971	0.019	180	19.185	0.048	59	18.352	0.031	55	17.994	0.029	153
Market capitalization, ln USDmn	27.074	0.420	93	24.699	0.741	59	25.513	0.499	55	25.469	0.772	153
Int'l investment agreements (IIA)	0.906	0.293	180	0.695	0.464	59	0.655	0.480	55	0.484	0.501	153
Preferential trade agreements (PTA)	0.044	0.296	180	0.051	0.391	59	0.660	1.239	53	0.377	0.998	151
Event, narrow	0.117	0.322	180	0	0	59	0	0	55	0.072	0.259	153
Event, broad	0.117	0.322	180	0.288	0.457	59	0.164	0.373	55	0.333	0.473	153
Stock of FDI, ln USDmn	6.019	2.645	158	7.347	1.211	56	7.355	1.071	50	7.185	1.400	141
FDI concentration ratio	0.080	0.145	180	-1.213	7.888	59	0.989	2.142	55	0.785	2.485	153
FDI openness	0.003	0.001	180	0	0	59	0	0	55	0.001	0.001	153
Total bilateral trade, ln USDbn	16.007	1.586	180	15.766	0.845	59	15.006	1.299	55	15.653	1.037	153
Trade concentration ratio	0.067	0.055	180	0.030	0.027	59	0.013	0.008	55	0.021	0.017	153
Trade openness	0.038	0.012	180	0	0	59	0.012	0.001	55	0.040	0.013	153
Inflation surprise, current year	-0.312	0.547	158	-0.229	3.212	37	0.503	1.496	52	0.064	0.822	137
GDP surprise, current year	10.274	3.061	158	12.826	6.350	37	6.894	4.867	52	7.565	3.583	136

Panel B. Source Country Characteristics

Variable	**Mean**	**SD**	**Min**	**Max**	**N**
Commitment ratio	1.900	5.202	-33.641	48.401	447
Utilized FDI, ln USDmn	6.986	2.434	-1.661	11.55	379
Approved FDI, ln USDmn	7.037	2.291	-0.128	12.761	445
Political stability index	0.809	0.429	-0.870	1.670	447
Population, ln mn	17.421	1.216	13.008	19.564	447
Distance, ln 1000 miles	8.908	0.492	6.862	9.692	447
Statutory tax rates	31.682	6.115	12.500	40.870	370
Market capitalization, ln USDmn	27.417	1.663	19.500	30.623	437
Int'l investment agreements (IIA)	0.702	0.458	0	1	447
Preferential trade agreements (PTA)	0.233	0.789	0	3	443
Stock of FDI, ln USDmn	6.773	2.026	0	10.466	405
FDI concentration ratio	0.262	3.350	-43.721	28.232	447
FDI openness	0.100	0.220	-0.043	1.996	447
Total bilateral trade, ln USDbn	15.731	1.331	11.564	19.716	447
Trade concentration ratio	0.040	0.044	0.003	0.240	447
Trade openness	0.512	0.522	0	3.228	447
Uncertainty avoidance index (UAI)	66.3	21.62	23	112	447
Power distance index (PDI)	45.217	13.468	11	68	447
Inflation surprise, current year	-0.041	0.407	-1.423	1.274	175
GDP surprise, current year	1.552	5.869	-25.474	22.539	169

statutory tax rates but not on effective marginal and average tax rates. Accordingly, we use the source country's statutory tax rates in our empirical analyses, which are upward biased estimators of the effective tax rates. We do not include the host country's tax rates as there is little variation in statutory rates within each of the host countries in the sample years. We include the market capitalization of both the source and host countries to proxy for the ability of firms to raise capital to fund investments, including FDI, in the two locations, and thus also capture general economic sentiment.

Our robustness tests involve additional variables. First, we include three types of frictions that could affect investor behavior: international agreements, cultural distance, and unexpected events. We construct an international investment agreement (IIA) dummy from the bilateral agreements that are listed in the UNCTAD's Database of IIAs. When a bilateral country pair of countries i and j have an effective IIA in place or have signed an IIA in year t, the IIA dummy becomes 1, and 0 otherwise. Alternatively, we use the number of effective or signed preferential trade agreements (PTA) for country pair i and j in year t as obtained from the Database on Economic Integration Agreement by Bergstrand (2017). We note that there are more IIAs than PTAs in three host countries. However, the levels of such agreements are similar in the Philippines. China has more IIAs than the average source country while the Philippines and Thailand have more PTAs than the average source country. Nonetheless, we find that the trade openness is highest in China and Thailand while the stock of FDI is highest in China and Thailand.

Second, we include two Hofstede culture measures, which are often used to proxy the corporate managerial perspective. Just one set of Hofstede surveys were conducted in each country, albeit at various times, and yet these are believed to capture time-invariant characteristics of each country (Hofstede et al., 2010). We use the uncertainty avoidance index to capture the willingness of individuals to handle ambiguous or unknown situations. The power distance index captures beliefs that societal power is distributed unevenly, raising the expectation that governments may offer advantageous concessions (such as tax breaks) to more aggressive investors.

Third, we consider two measures of political events. First, we define narrow events as being either China's entry into the WTO or Thailand's 2006 military coup. Second, we use listings of national elections in each destination country and define change in government as years in which there were national elections in Indonesia (1997, 1999, and 2004), the Philippines (2010), and Thailand (2001, 2005, 2006, 2007, and 2011). Thus, the broad event is defined as the union of these two narrower definitions of events (i.e., narrow events or change in government).

Next, to examine macroeconomic surprises. We obtain from the IMF's *World Economic Outlook* forecasts of inflation and GDP growth rate for the current and the subsequent years. For our purposes, we use the latest forecast published for the current year as an explanatory variable in the regressions. We note that the current and subsequent year forecasts of inflation are strongly correlated (0.85) and the current and subsequent year forecasts of GDP are virtually identical (correlation 0.9998). We then estimate the GDP growth and inflation surprises as the difference between the actual and forecast levels of GDP growth or inflation in a year.

GDP growth surprises and inflation surprises are observed in all host and source countries, with the surprises larger in the host countries than in the source countries, which is consistent with the relative levels of these countries' economic development. Inflation surprises are smallest in China and largest in the Philippines while GDP growth surprises are largest in China and smallest in the Philippines. However, we note that the inflation surprises are never statistically significantly different from zero, whereas the GDP growth surprises are often statistically significantly different from zero. This suggests that firms can make accurate cost forecasts ex ante but future market potential for these markets may be harder to predict.

In the third round of robustness tests, we include measures of bilateral FDI and trade links. The stock of past FDI from a source country in a destination country is the sum of all past bilateral FDI flows reported by the OECD. To capture path dependence among bilateral pairs, we estimate the FDI concentration ratio as the flows of FDI from the source country to the host country scaled by total FDI inflows received by the host country in the same year. We find that this ratio has an average value slightly above 0 in all host countries. FDI openness of the source and destination countries are estimated as the ratio of total FDI flows, inbound and outbound, to GDP. Our measures of total trade, trade concentration, and trade openness are measured analogously using total bilateral trade instead of total bilateral FDI flows.

4. Determinants of approved FDI

We begin by examining whether approved and utilized FDI inflows share similar determinants. We focus on capital market factors that may affect FDI flows as they are more likely to also affect the propensity of FDI approvals to be fulfilled. Utilized FDI may be more sensitive to supply shocks (or "push factors") from the source country reflecting firms' abilities to invest abroad. The supply shocks that we include in our analyses reflect the lagged stock of utilized FDI from the source country in the host country, the source country's real GDP, and the financial openness of the source country.

However, approved FDI may be more sensitive to demand shocks (or "pull factors") from the host country that would affect the ability of firms to make cross-border capital flows with minimal impediments. Demand shocks would affect the types of FDI that a host government wishes to attract or that investors think are most likely to succeed in the host environment. Thus, we classify as demand factors the following characteristics of the host country: the lagged stock of bilateral utilized FDI in the host country, real GDP, the bilateral exchange rate, the volatility of the bilateral exchange rate, the financial openness, political stability, and whether there was a change in government due to elections.

We show in Table 2 that the approved and utilized FDI inflows are both strongly explained by the three source country supply factors. These results indicate that host country firms invest in locations that they already understand from past investments and occur when the source country has good economic conditions and looser capital controls.

There are two types of host country demand factors for FDI included in our models. The first are exchange rate and volatility, which are idiosyncratic to the source country – host country dyad. These have no significant effects on either type of FDI flows. Second, we include demand factors that would affect how foreign firms operate. We find that approved FDI inflows are highly sensitive to economic opportunities in the host country (real GDP) and are substantially higher when the host has looser capital controls, reflecting fewer hurdles to a firm repatriating funds. These results confirm that demand factors are incorporated into FDI investment plans and that supply factors affect both the initial announced plans and how they are subsequently implemented.

Thus, we conclude that capital market factors explain both utilized and approved FDI inflows. First, we find that both the source and host country's financial openness are strongly significant determinants of utilized and approved FDI inflows. Second, factors that would affect the cost and riskiness of investments do not explain utilized and approved FDI inflows.

5. The commitment ratio

Since approved FDI is an imperfect predictor of utilized FDI, we analyze the commitment ratio to better understand how investment plans are implemented. The commitment ratio is calculated as the ratio of utilized FDI inflows to approved FDI inflows averaged over the current year and the previous year for each pair of source and host countries.[14] While government and industry officials focus on

[14] We dropped nine country-year observations that had an estimated commitment ratio more than three standard deviations away from the destination country's average value of the ratio. The commitment ratio is estimated in levels so as to preserve the sign of the negative values.

Table 2
Determinants of FDI flows – Approved FDI (1–4) and Utilized FDI (5–8).

	Approved FDI flows				Utilized FDI Flows			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FDI stock, t-1	0.532 * **	0.672 * **	0.684 * **	0.538 * **	0.926 * **	0.992 * **	1.002 * **	0.944 * **
	(0.046)	(0.035)	(0.036)	(0.040)	(0.040)	(0.034)	(0.036)	(0.042)
Source's real GDP	0.248 * **			0.252 * **	0.021			0.028
	(0.043)			(0.040)	(0.036)			(0.039)
Source's fin. openness	0.284 * **			0.175 * *	0.275 * **			0.233 * **
	(0.099)			(0.087)	(0.081)			(0.085)
Distance	0.264	-0.369 * *	-0.416 * **	0.214	-0.322 *	-0.211	-0.214	-0.326 *
	(0.203)	(0.149)	(0.160)	(0.190)	(0.168)	(0.135)	(0.145)	(0.186)
Host's real GDP		-0.604 * **	-0.586 * **	-0.596 * **		-0.040	-0.024	-0.029
		(0.050)	(0.070)	(0.048)		(0.048)	(0.067)	(0.048)
Bilateral exchange rate		0.000	0.000	-0.000		-0.000	-0.000	-0.000
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
Exchange rate vol., t-1		-0.764	-0.862	-0.499		-1.046	-0.876	-1.068
		(1.869)	(1.962)	(1.786)		(1.748)	(1.851)	(1.734)
Host's fin. openness		1.087 * **	1.134 * **	0.939 * **		0.053	0.058	0.055
		(0.119)	(0.128)	(0.116)		(0.111)	(0.122)	(0.114)
Host's pol. stability			0.090				0.081	
			(0.224)				(0.219)	
Broad event in host			0.019				0.043	
			(0.218)				(0.212)	
Constant	-10.350 * **	22.986 * **	25.282 * **	10.606 * **	1.389	3.500	4.093	3.147
	(2.811)	(2.301)	(2.782)	(3.007)	(2.334)	(2.172)	(2.579)	(2.996)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.567	0.660	0.663	0.690	0.735	0.739	0.740	0.743
Sample size	469.000	438.000	399.000	438.000	392	367	333	367

Note: Standard errors in parentheses. * **p < 0.01, * *p < 0.05, *p < 0.1

the headline figures of approved or utilized FDI flows, we argue that the likelihood that FDI approvals are fulfilled may contain useful and new information (Banga, 2002). The approved FDI may be more sensitive to demand-side factors from the host government, and utilized FDI may be more sensitive to supply-side factors from the source country. As demand- and supply-side factors have dissimilar origins, we conclude that an additional advantage of the commitment ratio is that it reflects both supply and demand-side factors in equilibrium.

If utilized and approved FDI are highly correlated, then the commitment ratio should be close to 1. However, we find that there is considerable heterogeneity among the commitment ratio within each host nation and across source countries. The estimated commitment ratio can be interpreted based on whether the value falls into one of four ranges: below or close to 0, between 0 and 1, exactly 1, or greater than 1. We observed all cases in our dataset.

First, a commitment ratio below or close to 0 indicates the coexistence of positive values of approved FDI and values of utilized FDI that are negative or close to 0.[15] Negative values of utilized FDI imply net FDI outflows, which may reflect either new understandings of the host country's investment climate or revised understandings of investment opportunities elsewhere. 17% of our estimated values of the commitment ratio are zero or lower.

Second, the commitment ratio varies between 0 and 1 when values of utilized FDI are smaller than those of approved FDI. This could happen even if there are FDI outflows and net FDI inflows are smaller than the pledged values. We find that 42% of the estimated values of the commitment ratio are in this range. The first and second cases together suggest that nearly 60% of the estimated values of the commitment ratio correspond to source country firms investing less than anticipated in the host country. This is consistent with a possibility that multinational firms may raise funds in the host country to finance new investments, and thus the total value of the investment may be as expected even as the approved FDI data may overstate the future utilized FDI inflows.

Third, the commitment ratio is 1 when utilized and approved FDI are identical. It is possible that some investors may bring less than promised while some bring more than promised, resulting in the utilized and approved FDI values being similar. Roughly 2% of observed values of the commitment ratio are in the 0.9–1.1 range, which were quite uniformly distributed around 1.

Finally, the commitment ratio is greater than 1 when utilized FDI is greater than approved FDI. In practice, it is possible that approved projects are expanded. This scenario is compatible with investors bringing higher than expected levels of new cash inflows into the host country, even when they also partially finance investments by using funds in the country.

Fig. 2 shows that the commitment ratio for China and Indonesia has a wider range than that for the Philippines and Thailand. The median commitment ratio is 2.03 for China, 2.10 for Indonesia, 0.10 for the Philippines, and 0.25 for Thailand; and the average commitment ratio is 2.70 for China, 4.31 for Indonesia, 0.15 for the Philippines, and 0.55 for Thailand. The fraction of observations with values greater than 1 is 63% for China, 66% for Indonesia, 9% for the Philippines and 20% for Thailand. (Fig. 3).

The comparatively strong GDP growth in China vs. the Philippines might lead to a higher commitment ratio in the former than in

[15] Negative values of approved FDI are contractually not possible.

the latter. Accordingly, a large share of FDI projects may appear in only the utilized FDI data, particularly in China and Indonesia where commitment ratio is on average greater than 1. Similarly, if approved FDI data are upwards biased then the estimated commitment ratio would be downwards biased.

The commitment ratio is generally stable over time for many of the source-host country pairs. This could mean that source and/or host country characteristics, whether visible policy constraints or hidden characteristics, may exhibit persistent effects, as hypothesized in our empirical framework. Many of these patterns persist across time, implying that there may be fixed, or slow moving, characteristics of the source and/or host country that affect the relative magnitudes of these two FDI. This is consistent with a business cycle timing story whereby patterns of FDI flows persist during an economic expansion in the source and host countries. On the other hand, there are some country-years for which the estimated commitment ratio differs substantially in value from prior and subsequent years.[16]

In theory, the degree to which companies implement previously announced investments should be analyzed using only firm-level data. However, such data are generally not available due to disclosure requirements and expectations. Accordingly, there is only a very thin literature that uses firm-level data, which is often proprietary to the researchers. For example, Glaser et al. (2013) show that in multinational firms the degree to which projects are completed after being funded varies according to the internal power of the manager.

Corporate growth often requires firms to invest in new or expansion projects, and the investment budgets are rarely disclosed publicly. As firms that accelerate investments may face higher costs (Dierickx & Cool, 1989), real options theory suggests that firms may value the option to delay investments. Surveys of firms have found both that few firms report using real options theory at all, and it is usually as a supplemental approach (Graham & Harvey, 2001; Baker et al., 2011), and real options are rarely used to evaluate FDI (Block, 2007).

A growing literature suggests that diseconomies of delay are greater than potential higher costs associated with speedier investments. Chang and Rhee (2011) use data on Korean investments abroad to show that firms move rapidly to capture first mover advantages and quickly reach a suitable scale. Hawk and Pacheco-de-Almeida (2018) and Décaire et al. (2020) each show that firms learn from their peers and design investment plans that are carried out quickly. Thus, speed of FDI is likely to be increased as firms aim to implement investments quickly once internal and external approvals have been obtained. Moreover, multinationals tend to appoint more internally connected managers to oversee important investments and give them preferential access to corporate resources (Glaser et al., 2013).

If firms are contracting with imperfect information, then both approved and utilized FDI flows may be observed with uncorrelated errors. The observed commitment ratio would thus be a noisy estimate of the true commitment ratio, but it is unclear whether the observed commitment ratio would be an upwards or downwards biased estimator of the true ratio. However, if the firms are subject to informational frictions that affect both their investment planning and execution, it is probable that the frictions are correlated over time. In that case, the observed commitment ratio would be a biased estimator of the true commitment ratio. However, the direction of the bias in the ratio would not be clear ex ante as the information frictions could lead to both lower and higher estimated values of the FDI flows.

5.1. Estimating equation

We examine the impact on the commitment ratio of uncertainty, government institutions, and capital mobility by exploiting the observed cross-economy-pair variations over time to estimate the following baseline model:

$$CR_{ijt} = \alpha + \beta W_{ijt} + \gamma X_{ij} + \delta Y_{it} + \theta Z_{jt} + \tau_t + \varepsilon_{ijt} \tag{1}$$

CR_{ijt} denotes the commitment ratio, defined as the utilized FDI outflows from source country i to host country j in year t relative to the average of approved FDI in years t and t-1. The vector W_{ijt} contains time-varying bilateral variables such as exchange rate volatility or depreciation, and the vector X_{ij} denotes the time-invariant bilateral variables, namely log of distance. The elements of vector Y_{it} are the source country-time specific variables, which are quality of institutions and log of population. The elements of vector Z_{jt} are host country-time specific variables, which are quality of institutions, financial openness and log of population. The time fixed effects are captured by τ_t, and the error term is denoted by ε_{ijt}, which is clustered by host country.

Our model includes economic concepts observed at the country-year level that may have asymmetric impacts on utilized and approved FDI flows. Thus, we include national policy measures such as the quality of institutions but not sub-national policies that might explain why some locations within a country have stronger or weaker institutions. Similarly, we do not include domestic investment as such investment is often overly concentrated in sectors that are governmental priorities such as infrastructure.

5.2. Empirical analysis of the commitment ratio

We begin by estimating our baseline model (Table 3) separately with two measures of exchange rate uncertainty. This uncertainty is included in Models 1–3 as the volatility of the lagged bilateral exchange rate to proxy for ex ante uncertainty, and in Models 4–6 as

[16] We are unable to comment on whether this reflects idiosyncratic project characteristics that led to changes in investment plans as the FDI data is available at the annual source-host country pair level, not at the level of the individual project.

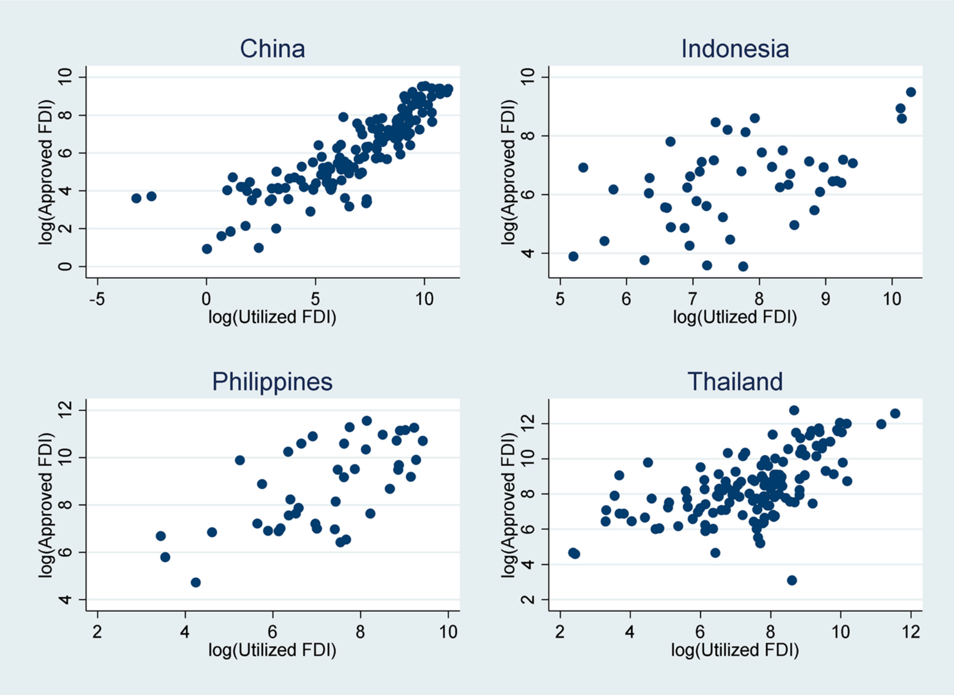

Fig. 2. Approved and utilized FDI inflows, in logarithm.

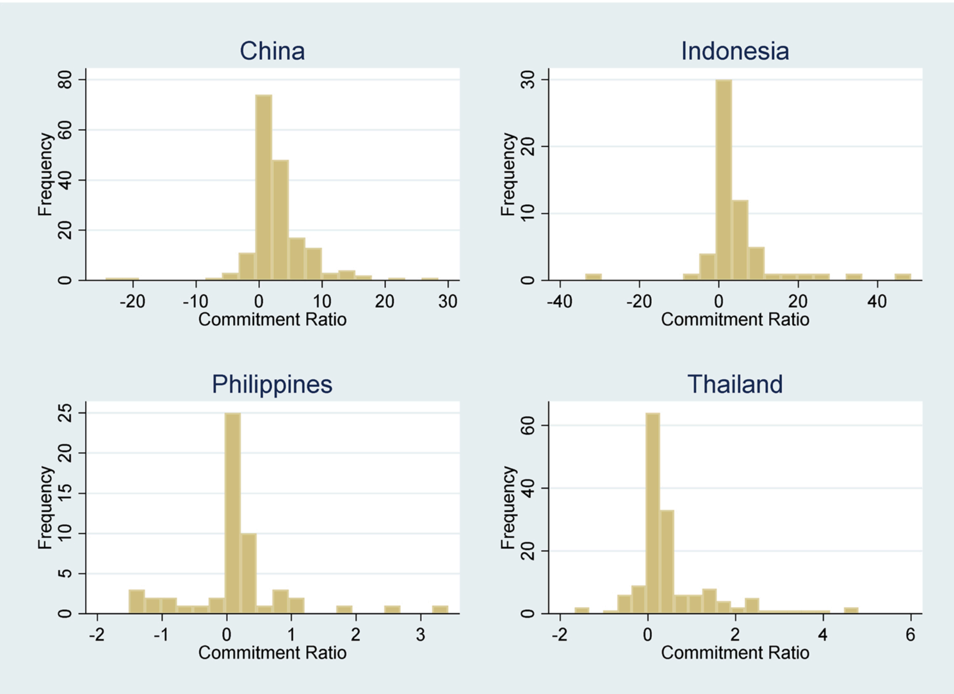

Fig. 3. Histograms of FDI commitment ratio, in percent.

the actual annual bilateral depreciation rate to proxy for ex post uncertainty.[17] We find mixed evidence regarding the relationship of the commitment ratio with uncertainty. First, ex ante uncertainty, captured as exchange rate volatility, has a positive, statistically significant effect on the commitment ratio in two of the three models. This finding is different from the negative impact of exchange rate volatility on utilized FDI commonly identified in the empirical literature as surveyed by Anderson and van Wincoop (2004). Our finding is in line with the empirical literature that documents evidence for currency risk premium and excess returns on foreign assets, such as Dahlquist and Pénassé (2022). It may reflect how multinationals use foreign currencies to manage exchange rate exposure. We therefore also test whether the effect of uncertainty is moderated by the political stability of the host and source countries.

By contrast, ex post uncertainty occurs after investment commitments were made, and is also positively and significantly associated with the level of the commitment ratio in only one of the three models. Intuitively, exchange rate depreciation reduces investment costs in terms of the source country's currency, which is particularly valuable if the majority of FDI is vertical but reduces profits to be repatriated to the shareholders in the source countries, which may be of interest in both vertical and horizontal FDI. Hence, the overall effect will be positive if foreign investors reinvest a large fraction of profits in the host country. We thus argue that host country political stability might be a de facto protection against ex post surprises, and as currency depreciations may be anticipated in advance, the actual depreciation of a currency has no effect per se on the commitment ratio.

More politically stable countries tend to have companies that have stronger growth (Beck et al., 2006). Companies with stronger growth would have a greater financial ability to make, and fulfil, investment promises, at home or abroad, and this would be particularly true when the exchange rate movements are both predictable and favor the investor. Russ (2007) argues that the impact of ex post exchange rate uncertainty depends on the source of the shocks driving the observed depreciation. If it comes from the host country, this could be positive for FDI, as it would reflect a monetary expansion phase; if it comes from the source country, this could be negative, as it means a monetary contraction phase in the source country. We find confirmation that political stability has parallel effects on both approved and utilized FDI flows as the commitment ratio is unaffected by the political stability of the source and host countries in all models except Model 1.

We find that the commitment ratio is higher when the host country is more open to capital flows as captured by the Chinn-Ito index. While trade theory suggests that the volume of trade or investment flows would be positively affected by both the source and host country populations, we find that the commitment ratio is not affected by the source's population and is higher for larger host countries. This suggests that the observed variation in the commitment ratio may reflect new information or new understandings of previously known information regarding the host country.

A general finding in the FDI literature, such as Blonigen and Piger (2014), is that physical distance between countries is generally inversely related to the volume of bilateral trade or investment flows. We confirm this stylized finding as our results show that distance has no effect on the commitment ratio as distance has a parallel dampening effect on both the approved and utilized FDI.

Firms' ability, or desire, to invest abroad may reflect whether there is a larger supply of investor capital at home or abroad (Models 2 and 5). We capture the domestic investment through domestic market capitalization. We find that the commitment ratio is affected by the source country's market capitalization only in the presence of ex post uncertainty (Model 5), which confirms that firms frequently use external capital to finance their growth and that they act differently when costs adjust. Similarly, the commitment ratio is higher when the host's market capitalization is higher (Models 2 and 5), which confirms that the commitment ratio is affected by the host's level of financial development.[18]

Finally, we examine how uncertainty might be moderated by the source or host country's political stability (Models 1, 3, 4, and 6). We find no statistically significant effect with either measure of uncertainty and either country's stability, which suggests that uncertainty per se matters.

These results show consistently that the commitment ratio reflects companies acting with imperfect information. First, companies do not respond consistently or significantly to uncertainty that is either known (Models 1–3) or unknown (Models 4–6). This suggests that firms either do not see a connection between their investment commitment follow-through and these measures of uncertainty or that these measures are sufficiently noisy as to be imperfect guides. Second, we show that the trade variables that are often used to explain FDI inflows do not explain the FDI commitment ratio. Thus, commitments may be noisy guides to future actions.

5.2.1. Frictions

We now examine how three types of frictions affect the commitment ratio. First, we examine expected frictions that are observed by all market participants such as bilateral government agreements. Second, unexpected frictions that are observed by all participants such as elections and big political events. Finally, frictions that all participants acknowledge may exist but yet are unobservable are longstanding cultural attributes.

First, we examine whether the commitment ratio is affected by the presence of IIAs and PTAs. As firms generally engage in FDI only

[17] The values of both utilized and approved FDI flows would reflect the contemporaneous exchange rate. Accordingly, we use the lagged exchange rate to mitigate potential concerns of endogeneity.

[18] Similarly, home country tax rates may affect the local perception of whether it is optimal for firms to invest abroad. Statutory and effective tax rates may diverge due to idiosyncratic characteristics of individual taxpayers, particularly when a country has different tax rates for domestic and overseas earnings, whether or not repatriated, and firms thus have incentives to exploit tax havens and other loopholes (Torslov et al., 2021). Thus, in robustness tests we included statutory tax rates as they are only available for 2000-onwards. Our results show that this variable is consistently statistically insignificant, which suggests that taxes have a parallel effect on both approved and utilized FDI flows, which is why no effect is observed in analysis of the commitment ratio.

Table 3
Baseline analysis of the Commitment Ratio.

	(1)	(2)	(3)	(4)	(5)	(6)
Exchange rate volatility	15.063 * **	4.491	11.037 * **			
	(1.102)	(4.793)	(1.196)			
Depreciation				0.031 * **	0.033	0.039
				(0.005)	(0.016)	(0.021)
Source's pol stability	2.660		2.859	2.531		2.537
	(1.290)		(1.377)	(1.132)		(1.132)
Host's pol stability	1.334 *		1.716 *	-0.015		0.056
	(0.536)		(0.549)	(0.378)		(0.354)
Host's fin. openness	1.801 * *	3.399 * *	1.915 * *	1.010 * *	1.879 * **	1.056 * **
	(0.531)	(0.942)	(0.534)	(0.184)	(0.245)	(0.158)
Source's population	0.851	-0.412	0.858	0.764	-0.790	0.761
	(0.467)	(0.463)	(0.469)	(0.528)	(0.440)	(0.525)
Host's population	1.861 * *	0.367	1.851 * *	1.323 * **	1.299 * *	1.330 * **
	(0.496)	(0.314)	(0.468)	(0.156)	(0.317)	(0.153)
Distance	0.316	-0.113	0.214	0.192	-0.816 * *	0.211
	(0.383)	(0.499)	(0.320)	(0.249)	(0.145)	(0.244)
Source's tax rate						
Source's market cap		0.941			1.302 * **	
		(0.454)			(0.207)	
Host's market cap		3.629 *			1.415 *	
		(1.322)			(0.539)	
Constant	-51.240 *	-121.317 *	-54.773 *	-41.285 *	-74.488 * *	-41.424 *
	(19.782)	(38.397)	(21.118)	(15.065)	(13.817)	(15.150)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.171	0.198	0.163	0.217	0.271	0.218
Sample size	447	345	432	292	221	292

Note: Standard errors in parentheses. * **$p < 0.01$, * *$p < 0.05$, *$p < 0.1$

after engaging in foreign trade, it is possible that FDI may be related to PTAs, and a PTA may include provisions related to FDI. In fact, PTAs are associated with higher FDI inflows worldwide (Dee & Gali, 2005; Medvedev, 2012), only in developed nations such as Japan (Urata, 2015), and only in developing nations (Büthe & Milner, 2008). Jang (2011) reports that there is a negative relationship between bilateral FDI and PTAs among developed country pairs but a positive relationship among other pairs of countries. Hence, a positive impact from the PTA or IIA variables suggests that further liberalization of the host's capital account would promote higher commitment of investment pledges.

We show in Table 4 that IIAs and PTAs generally have no effect on the commitment ratio (Models 1–2). That IIAs are statistically insignificant suggests that the presence, or absence, of an IIA is well known and thus has parallel effects on approved and utilized FDI. This is consistent with the finding of Liu, Lu et al. (2021) that previous FDI may affect the likelihood these investment agreements are subsequently established. On the other hand, PTAs are generally designed to affect trade flows, not FDI flows, and thus the statistically insignificant coefficients are consistent with theory.

Second, unexpected political events in a host country may affect FDI flows as they can change the relative cost/benefit analysis of planned investments such that investors would prefer to significantly alter planned deals. In Columns 3–6 of Table 4 we show that the commitment ratio is consistently largely unaffected by political events, whether they are characterized as narrow or broad. There is weak evidence suggesting that narrow events (i.e., China's entry to WTO, or Thailand's 2006 military coup, and changes in governments in election years) in the host country have a positive effect (Panel A Model 5). These results suggest that these events were unanticipated and had asymmetric effects on approved and utilized FDI flows.

Past business exposure of a source country to a destination country might generate greater knowledge of the destination country market or reduce the uncertainties source country businesses might feel regarding the destination country. Thus, the level of business exposure the source country has to the destination country might also affect the commitment ratio. We proxy the past business exposure using prior FDI and trade connections between the pair of countries. We examine the FDI and trade concentration ratio, which are the fraction of total FDI or trade in the destination country that is derived from the source country. We find limited evidence that the concentration ratio and events may have effects when analyzed jointly (Panel A Model 6, and Panel B Models 5–6). This is broadly consistent with the literature on elections and political uncertainty (Azzimonti, 2019; Durnev et al., 2015), which shows that firms respond positively to the resolution of political uncertainty, as captured by our narrow events measure, and negatively to increased levels of political uncertainty, as captured by our broad events measure.[19]

[19] Alternatively, in our sample, the consensus forecast GDP growth for the current and subsequent years are each highly correlated with the current year's market capitalization (0.89), and thus market capitalization may be a proxy for economic sentiment. Thus, we also examine whether the impact on the commitment ratio of political events is moderated by the level of the equity markets. We find that the commitment ratio is higher in country-years with higher host market capitalization and a narrow event. However, we find that the interaction of an event measure and market capitalization is statistically insignificant in all models.

Table 4
Role of Frictions in Explaining the Commitment Ratio – Policy Agreements (1–2), Events (3–6), Culture (7–8)[a].

Panel A: Ex ante uncertainty								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exchange rate volatility	15.050 * **	15.097 * **	15.070 * **	14.758 * **	13.065 * **	11.617 * **	15.293 * **	15.411 * **
	(1.149)	(1.156)	(1.029)	(0.552)	(1.644)	(1.771)	(1.000)	(1.077)
IIA Dummy	0.220							
	(0.490)							
PTA Count		-0.181						
		(0.193)						
Narrow event in host			0.919		1.314 *			
			(0.599)		(0.551)			
Broad event in host				0.158		0.006		
				(0.698)		(0.688)		
Source's FDI concentration ratio (t-1)					-0.053	0.011		
					(0.030)	(0.053)		
Event in host * Source's FDI concentration ratio (t-1)					-1.378	-0.127 *		
					(0.746)	(0.045)		
Uncertainty avoidance							-0.012	
							(0.014)	
Power distance								-0.031
								(0.034)
Constant	-52.111 *	-54.675 *	-51.957 *	-51.654 *	-52.485 *	-51.580	-47.305 *	-46.153 *
	(18.002)	(22.507)	(19.738)	(21.031)	(21.337)	(22.785)	(17.881)	(17.779)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.171	0.171	0.172	0.171	0.174	0.174	0.172	0.175
Sample size	447	443	447	447	427	427	447	447

Panel B: Ex Post Uncertainty								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Depreciation	0.032 * **	0.031 * **	0.032 * **	0.033 * *	0.028 * *	0.026 * *	0.031 * **	0.030 * **
	(0.005)	(0.004)	(0.005)	(0.006)	(0.005)	(0.007)	(0.005)	(0.004)
IIA Dummy	-0.170							
	(1.470)							
PTA Count		-0.068						
		(0.173)						
Narrow event in host			-0.369		0.159			
			(0.819)		(1.050)			
Broad event in host				-0.614		-0.949		
				(0.522)		(0.590)		
Source's FDI concentration ratio (t-1)					-0.055 * *	-0.005		
					(0.015)	(0.039)		
Event in host * Source's FDI concentration ratio (t-1)					-1.440	-0.122 *		
					(0.931)	(0.042)		
Uncertainty avoidance							-0.014	
							(0.010)	
Power distance								-0.037
								(0.033)
Constant	-40.340 * *	-38.680 *	-41.068 *	-39.770 *	-41.158 *	-38.601 *	-39.308 *	-38.979 *
	(6.914)	(15.844)	(15.720)	(15.852)	(15.846)	(15.955)	(13.512)	(13.619)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.217	0.215	0.217	0.219	0.221	0.226	0.222	0.226
Sample size	292	288	292	292	278	278	292	292

aThe control variables are included in all subsequent regressions but not reported for space considerations. The control variables are the political stability of source and host, the financial openness of the host, the population of source and host, and distance.
Note: Standard errors in parentheses. * **p < 0.01, * *p < 0.05, *p < 0.1

Third, we examine cultural characteristics of the source country. As the Hofstede measures of culture are time invariant and country specific, it is commonplace to use either a distance or Hofstede cultural measure. We find that the commitment ratio is unaffected when the source country is characterized by greater uncertainty or power distance (Models 7–8). Siegel et al., (2011, 2012) find that actual bilateral investment flows, in aggregate or broken out by type, are higher when the source country has higher levels of uncertainty avoidance, power distance, and are more egalitarian.[20] Our results confirm the Siegel et al., (2011, 2012) findings are true of both approved and utilized FDI, leading to no observed relationship of these cultural measures with the commitment ratio. On the other hand, Hornstein (2017) uses Chinese data to find that countries have lower commitment ratios when they have greater uncertainty avoidance, power distance, and egalitarianism. Our results differ from Hornstein (2017) due to our usage of additional destination countries, which suggests that China may be different from other countries.

5.2.2. Macroeconomic surprises

The inclusion of economic surprises is motivated by the finding that cross border capital flows are affected by macroeconomic uncertainty and volatility (Aizenmann, 2003; Jinjarak, 2007). Investment decisions are forward-looking by nature and thus we interpret forecasts of inflation and GDP growth as proxies of investors' expectations about aggregate shocks. Intuitively, aggregate shocks in both source and host countries can influence the expected relative rate of returns on investment at home and abroad. Rising rate of returns in the source country, all else equal, may cause investors to reduce investment in the host country and divert funds for domestic investment.

We find that host country economic surprises in inflation and/or GDP growth, have a significant and negative effect on the commitment ratio in Models 1–4 and 6 of Table 5. The negative impact is plausible when firms increase planned investment more than actual investment in response to surprise inflation and GDP growth in the host country which could be interpreted as indicators for an expansion of future demand in future years. These results support a consistent story: firms adjust investment plans in the presence of economic uncertainty or shocks.

These results are consistent with companies investing for the long-term, such that their investment decisions are contingent on changes to expected economic activity as the surprises suggest that long-term trends may not have been properly forecast previously. To the extent that firms are investing in a destination country in order to produce goods or services for exports to other markets, whether the source or destination country has GDP growth in line with expectations may simply not affect how the newly established FDI projects will operate. Thus, our finding that economic growth surprises can affect the commitment ratio suggests that FDI in our samples are often aimed at selling in the host market rather than exporting to the world market.

5.2.3. Past experience

The willingness of corporations to plan or implement investments abroad could reflect what these firms have learned from their past experiences. Corporate experiences in other countries could reflect actual investments made previously (i.e., stock of FDI in the host country) or past foreign trade with partners (i.e., bilateral trade). We therefore examine multiple measures of foreign experience that could affect the commitment ratio (see Table 6) with FDI measures discussed in Panel A and trade measures in Panel B. We use two source-destination country pair measures that focus on the experiences of the source country firms in the destination country to capture the intensive margin of past experiences. Next, we use two broader source or destination country measures to capture the extensive margin of each country's total exposure to the world.

First, we analyze the FDI knowledge models reported in Panel A. We report in Models 1–2 and 4–5 the results from using two different narrow measures of bilateral FDI that are unique to each source-destination pair. First, we use the stock of FDI from the source country in the host country, and second, we use the FDI concentration ratio. We find that the commitment ratio is positively associated with the stock of past FDI (Model 4). This result is consistent with the stylized findings that most firms first export and then invest abroad (Conconi et al., 2016), which means firms have a lengthy history of working in the destination market. However, we show in Models 1, 2 and 5 that the relative importance of FDI from a source country does not lead to a higher commitment ratio for firms. That is, firms are responding to knowledge per se, not knowledge acquired only by firms from the same home country.

We then examine the impact on the commitment ratio of the source and host country's FDI openness (Models 3 and 6).[21] The commitment ratio is not affected by the FDI openness of the source or host country. This suggests that the representative firm that engages in FDI may not be representative of all firms in a country, and that openness is not informative regarding the availability and attractiveness of FDI opportunities or the supply of investable capital.

Second, in Panel B we examine measures of bilateral trade. We begin with two measures of the source's knowledge of the host: the commitment ratio is weakly positively associated with the lagged value of total bilateral trade (Model 4) and the trade concentration measure (Model 2). These results indicate that source countries with greater experiences in the host country may be more likely to honor commitments in the host country and that this is an aggregate effect not driven by the source's relative importance vis-à-vis alternative source countries. As the bilateral trade flows may be a narrow measure and reflect historical attributes of individual host countries, we next turn to the broad measures of the trade openness of the source and the host countries. We find that the commitment ratio is weakly higher due to source country openness and is significantly higher due to host country openness (Models 3 and 6).

The result above suggests that firms from a relatively more open source country are more accustomed to and better at managing

[20] Power distance and egalitarianism are inverse measures. Siegel et al., (2011, 2012) use the Schwartz Social Values (2009) measure of egalitarianism, and we use this in unreported robustness tests that showed no relationship with the commitment ratio.

[21] Results are similar if we include measures of just the source or host country in Models 3 and 6 in both panels.

Table 5
Inflation and Output Growth Surprises in Explaining the Commitment Ratio.

	(1)	(2)	(3)	(4)	(5)	(6)
Exchange rate volatility	-10.900	19.009 * **	-5.697			
	(10.711)	(1.835)	(7.577)			
Depreciation				0.079	0.104 *	0.066
				(0.065)	(0.033)	(0.041)
Surprise: source's inflation	-0.188		-1.003	-1.356		-1.324
	(0.399)		(0.685)	(1.033)		(0.972)
Surprise: host's inflation	-1.084 * *		-0.982 * *	-0.325 * *		-0.594 * *
	(0.299)		(0.254)	(0.071)		(0.123)
Surprise: source's growth		0.030	0.034		-0.006	0.015
		(0.035)	(0.033)		(0.048)	(0.045)
Surprise: host's growth		-0.276 * *	-0.292 * *		-0.046	-0.084
		(0.081)	(0.088)		(0.118)	(0.128)
Constant	-81.389 *	-85.157 *	-80.721 *	-65.778 *	-58.924	-60.557
	(32.325)	(28.600)	(28.892)	(25.108)	(25.934)	(26.416)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.376	0.401	0.416	0.427	0.413	0.446
Sample size	170	164	164	117	112	112

Note: Standard errors in parentheses. * **p < 0.01, * *p < 0.05, *p < 0.1

Table 6
Past Experience in Explaining the Commitment Ratio.

Panel A: FDI						
	(1)	(2)	(3)	(4)	(5)	(6)
Exchange rate volatility	17.157 * **	13.209 * **	15.318 * **			
	(1.505)	(1.800)	(1.123)			
Depreciation				0.021 *	0.027 * *	0.030 * **
				(0.007)	(0.005)	(0.004)
FDI stock (t-1)	0.534			0.553 * *		
	(0.282)			(0.169)		
Source's FDI concentration ratio (t-1)		-0.054			-0.056 * *	
		(0.030)			(0.016)	
Source's FDI openness(t-1)			0.641			3.328
			(0.710)			(8.033)
Host's FDI openness(t-1)			654.204 * *			488.457 *
			(149.890)			(184.799)
Constant	-50.835	-52.318 *	-52.621 *	-36.578	-43.415 *	-31.939 * *
	(23.273)	(21.625)	(22.192)	(17.702)	(16.143)	(7.156)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.206	0.172	0.174	0.248	0.219	0.222
Sample size	405	427	446	276	278	292
Panel B: Foreign trade						
	(1)	(2)	(3)	(4)	(5)	(6)
Exchange rate volatility	14.619 * **	14.692 * **	13.578 * **			
	(0.933)	(1.049)	(0.745)			
Depreciation				0.031 * **	0.025 * *	0.032 * **
				(0.004)	(0.005)	(0.004)
Bilateral trade (t-1)	0.459			0.380 *		
	(0.208)			(0.129)		
Source's trade concentration ratio (t-1)		-14.440 *			-20.578	
		(5.803)			(9.098)	
Source's trade openness(t-1)			1.030 *			1.406
			(0.381)			(2.202)
Host's trade openness(t-1)			32.353 *			44.145 * **
			(10.621)			(7.034)
Constant	-50.612 *	-46.364	-55.665 *	-40.408 *	-34.918	-46.954 *
	(20.578)	(21.654)	(19.457)	(15.840)	(18.039)	(14.934)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-sq	0.175	0.178	0.179	0.221	0.241	0.235
Sample size	447	447	447	292	292	292

currency risk. Also, a relatively more open host country stands to gain more from improvement of competitiveness following currency depreciation, because exports account for a large fraction of its GDP. So, a relatively more open economy also experiences a larger increase in demand for intermediate inputs following an export expansion due to currency depreciation. Our interpretation implies that the majority of FDI in our sample are likely made by producers of intermediate inputs rather producers of final goods. This result reinforces the established finding that knowledge is transferred within a company and a country, as firms expand most at the extensive margins (Garetto et al., 2019).

Both measures of exchange rate uncertainty are strongly statistically significant in both panels of Table 6. Given that FDI is a long-term commitment by a firm to a location and may be cost sensitive, this result is not surprising. That is, we conclude that the commitment ratio is affected by the knowledge the source country firms may have of the host country, and that uncertainty regarding proposed FDI is incorporated into both ex ante and ex post valuations of FDI.

5.2.4. Robustness tests

We conducted two rounds of robustness tests involving sample composition and construction, and a third round to examine the effect of including alternative variables.[22] First, our sample is restricted to observations where approved or utilized FDI flows did not change by more than 300% from the prior year. That is, our sample now includes only data on source-destination pairs that have relatively stable FDI flows. In this case, we have eliminated the outliers that may be more sensitive to changes in the information set or make fewer overseas investments. These pairs of countries generally have much less (or much greater) experience abroad and may make substantially less (or more) informed investment decisions, which would lead to a greater concordance of proposed and actual investments.

Second, we drop the 17% of our observations that have a negative estimated commitment ratio in order to exclude country-year observations in which bilateral outflows from the host country were greater than the bilateral inflows. These results are qualitatively similar to those of our earlier tests. We report results using OLS for greater comparability with prior results; however, the results obtained using the Tobit procedure are qualitatively similar. Finally, we examined the effect of using rule of law instead of political stability, and all results were robust to this change.[23]

6. Conclusion

Four Asian countries have systematically released detailed data on approved FDI. This data is unique as it is disaggregated by source country, which thus permits analysis of how approved FDI is affected by characteristics of the source and host countries. Furthermore, this data set can be analyzed in conjunction with data on utilized FDI inflows to understand how intended FDI is actually implemented. Our first contribution is to show that the commitment ratio can be estimated for four host countries, which have consistently regulated the entry of foreign investors, and systematically collected and released data on the value of approved foreign investments. Our second contribution is to show that there is persistent variation in this ratio across both source and host countries. The commitment ratio is higher in Indonesia and China than in Thailand and the Philippines, and the ratio is consistently different from 1. This means that many firms from various source countries systematically do not fulfill previously approved investment plans, while some firms, potentially from the same source countries, systematically invest beyond previously announced plans.

This raises the third question we address: is this variation in the commitment ratio consistent with FDI theory? We find that the observed variation in the commitment ratio can be explained using variables common to the FDI literature. However, in our expanded models we find that there is no effect on the commitment ratio of investment and trade agreements or political events, which speaks to the long-term planning intrinsic to FDI. That is, these agreements were anticipated prior to implementation and investors are cognizant that political events may alter the investment environment. Moreover, our goodness of fit measures are consistently low, which speaks to the difficulty of using aggregated annual data at the country-level to analyze continuous time firm-level data. Our results are consistent with prior literature on utilized FDI flows alone (Siegel et al., 2011, 2012) and on the commitment ratio in China (Hornstein, 2017). We thus complement and extend the literature on FDI and the commitment ratio by showing cross-country results.

Many countries have established investment promotion agencies (IPAs) to attract and retain foreign investors. The World Bank's Investment Promotion group (2018) reports that roughly 90% of national IPAs focus on attracting investments. However, slightly more than half of IPAs provide support for entry and establishment of foreign companies, and fewer still provide any support for retention and expansion of foreign investors. The World Bank has thus encouraged countries to establish a subnational institutional framework to focus on what happens after foreign companies pledge investments. Thus, while our analysis of the observed variation in the commitment ratio reflects host and source country market characteristics, it may also reveal variation in the quality of a host country's IPA. If that is the case, then we are actually picking up on the quality of post-investment support provided by the host country, or a sub-national, IPA. Unfortunately, there is limited data available on national IPAs and no data available on such sub-national IPAs.

Our results thus help us understand how investment plans are modified when implemented. The systematic variation between ex ante and ex post data is of interest to government planners due to the positive spillovers of FDI on local economy. Our results suggest that host governments can make policy changes, such as increased financial openness, to better support foreign investors.

Declaration of Competing Interest

None.

[22] These results are not reported due to space considerations.

[23] The rule of law and political stability are highly correlated (0.57 for source countries, 0.55 for destination countries).

Data Availability

The authors do not have permission to share data.

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