# Economic Growth and Foreign Direct Investment in Asia:

# When Investors Imperfectly Fulfil Approved Investment Plans

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**Abstract**

Foreign direct investment (FDI) may represent an expansion in the domestic capital supply, which could thus increase GDP growth through the investment and consumption sectors and generate productivity increases. We examine this hypothesis by looking earlier in the investment process and use little-known data on FDI approvals from ten Asian countries that have routinely required advance approval of FDI and have also disclosed this data. We show that the approved FDI predicts actual FDI inflows, and that on average more FDI is approved than realized. The approved FDI is used to create an FDI commitment ratio and gap, which are thus absolute and relative measures of how FDI pledges are fulfilled. We then examine how the host economy is affected by the FDI commitment ratio and gap using an Arellano-Bond dynamic panel estimator to examine an unbalanced dataset spanning 1967-2022. We find GDP growth forecasts are significantly affected by both FDI measures. However, actual GDP growth is affected positively only by the FDI gap, our relative measure. Thus, we show that FDI initially displaces domestic capital before expanding the domestic capital supply.

**Keywords:** Foreign Direct Investment, Economic Growth, Household Consumption, Productivity, Financial Development

**JEL Classification:** F21, F23, G18, G31

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## 1. Introduction

The evidence of the impact of foreign direct investment (FDI) on domestic growth is mixed. One possible explanation is that countries do not always know how far in advance the FDI inflows can be predicted. However, FDI inflows can be predicted in those countries that require foreign investors to obtain advance approval for proposed projects. We examine how economic activity in the host country is affected by the degree to which foreign investors fulfil their investment pledges. Eleven countries, including ten in Asia, have routinely required foreign investors to obtain government approval for FDI during the period 1967-2022, mostly in the 1980s-onwards.[1]

Data on approved and actual FDI inflows are used to construct two measures of FDI: the FDI commitment ratio and the gap. The approved FDI is an ex ante measure of investor expectations for the host market, while the actual FDI is the standard ex post measure used in the economics literature. Our first contribution is to use the FDI gap to complement the FDI commitment ratio, developed previously by Hornstein (2011), as explanatory variables that are ex post measures of how investor expectations or the investment environment may have changed. The FDI commitment ratio is the ratio of approved to actual FDI while the FDI gap scales the difference between approved and actual FDI by GDP. We show that forecast and actual GDP growth are affected by each of these FDI measures and that this effect can also be seen within the economy at the sectoral level and through productivity.

The countries that require advance approval of FDI have varied their regulatory regimes over time regarding the scale and scope of government approvals, and the frequency of disclosure of this

[1] We use data from CEIC, a data platform, on Cambodia (1995-2006), China (1983-2006), India (1992-2003 and 2007-2022), Indonesia (1967-2007), Laos (2000-2021), Malaysia (2006-2022), the Philippines (1996-2022), Sri Lanka (1978-2022), Thailand (1985-2022), and Vietnam (1991-2000). We note that the countries that disclosed the data in 2021-2022 have all announced that they will continue to disclose this data, albeit with varying time lags. In addition, FDI data is available for Turkey (1980-2003) but is not included in the dataset because Turkey is the only one of the eleven countries not in Asia, and Turkey's FDI and economy are significantly more volatile than the other economies examined.

data. The commonalities regarding these approvals across countries and time is that the host country government wishes to retain a high level of control over how, when, and where investment occurs domestically. The propensity of foreign investors to implement announced projects varies across time and host country and is higher in host countries with reduced economic uncertainty and stable political environments (Hornstein and Naknoi, 2023). At least eight of the ten countries analyzed in this study continue to track FDI approval data, with six continuing to disclose this data regularly as of 2023.

The impact on growth of FDI flows has been examined previously using only the widely available data on actual FDI inflows such as can be obtained at the source or host country level from the World Bank or the bilateral FDI flows for individual pairs of countries such as can be obtained from the OECD. If regulation of approved FDI is helpful to the host government, then the subsequent actual FDI inflows should be highly predictable and there should be similar effects on growth from both expected and actual FDI inflows. Moreover, if approved FDI is a good predictor of actual FDI inflows then the commitment ratio would be 1 and the FDI gaps would have an expected value of 0. In this case variations in the estimated gaps would be idiosyncratic with no predictable effects on growth. That many countries continue to track FDI approvals suggests government regulators find the advance approval process may be valuable for economic planning.

As all of the FDI measures are recorded at national levels, it is possible that the observed variation in the FDI commitment ratio and FDI gap exist only because of changes, both expected and unexpected, in the economic conditions, operating environment, or political environment of the source or destination countries. FDI flows may be less volatile than other types of cross-border capital flows (Albuquerque, 2003) but they are affected by the origin country's domestic stock market capitalization (Di Giovanni, 2005). FDI flows are higher in countries with higher growth rates, larger markets, and greater openness to trade (Blonigen, 2005).

Benhima and Cordonier (2022) find that shocks related to expectations, whether what they call "news" or "sentiment", explain most of the observed variation in cross-border FDI flows, and thus the variation in FDI flows may reflect or reveal the existence of asymmetric information between foreign and domestic agents. Similarly, Julio and Yook (2016) find that FDI outflows from a source country drop when domestic uncertainty is higher (e.g., before an election) and increase when uncertainty is resolved, with institutional quality mitigating the impact of uncertainty. These factors could lead to approved and actual FDI inflows having different effects on the economy, where what we will explicitly identify as the net effect due to the gap may have been previously attributed, at least in part, to the FDI inflows.

Endogenous growth models such as were used by Borensztein et al. (1998) argue that direct and indirect effects of FDI are means of GDP growth. However, there is mixed empirical evidence regarding the impact of FDI on host country growth. Edison et al. (2002) was one of the earliest papers to question whether FDI and financial integration would always have positive effects on GDP growth. More recently, Amighini et al. (2017) report that the impact of FDI on growth is mixed in developing countries where FDI may sometimes crowd out domestic investment. A related literature on how FDI enters a host market finds that economic growth is higher when FDI entry is via mergers and acquisitions (M&A) while greenfield entry does not always generate statistically significant impacts (Wang and Wong, 2009).

Our first contribution is to show approved FDI differs systematically from actual FDI. Approved FDI exceeds actual FDI in most years in all of the ten host countries. While there is no legal requirement in most countries for approved FDI projects to be implemented at all or on a strict time frame, corporate finance theory suggests implementation is likely to occur quickly (Chang and Rhee, 2011; Décaire et al., 2020; and Hawk and Pacheco-de-Almeida, 2018) and that the foreign investors will honor their pledges due to reputational concerns. Thus, the more centralized governments found in the countries we study

may face greater incentives to collect this data. This may also partially explain why some of these governments might not want to release the data to the public even as they continue to track it.[2]

Our second contribution is to examine the impact on economic growth of the FDI commitment ratio and the FDI gap. We find consistent evidence that the forecast GDP growth rates from the World Economic Outlook (IMF, various years) are systematically related to the FDI commitment ratio and gap in a manner that is not fully consistent with how actual GDP growth rates over 1, 3- and 5-year horizons are affected by these FDI measures. That is, economic growth is higher when the gap is greater despite the fact that the government had tried to obtain an estimate ex ante of the value of FDI inflows. Thus, we argue that analysis of the impact on growth of FDI should begin not with data from when the FDI was received but with earlier data from when the FDI was approved. Figure 1 illustrates how GDP growth, approved FDI, and actual FDI have varied over time in the countries we study. There are some years in which actual FDI exceeds approved FDI in India, Indonesia, and the Philippines, but generally approved FDI is higher than actual FDI in all countries we study.

[INSERT FIGURE 1 HERE]

Third, we examine how the headline GDP growth rates are affected by the FDI commitment ratio and gap because FDI is the largest source of external capital for most countries (UNCTAD, 2023), which is consistent with the role of multinationals as stock market arbitrageurs (Baker, Foley and Wurgler, 2009) whose actions are affected by investor sentiment (Montone and Zwinkels, 2020; Montone, Poti, and Zwinkels, 2022). On average, the FDI commitment ratio is less than 1 and the FDI gap is negative across countries and years. Thus, the FDI gap may be interpreted as being an unanticipated change in the

[2] For example, China stopped disclosing this data on a systematic basis in 2006. However, the Chinese Ministry of Commerce regularly release headline figures for approved FDI as part of short articles that they post on their website most months of the calendar year. For example, see a November 28, 2023 post, http://english.mofcom.gov.cn/article/statistic/foreigntradecooperation/202401/20240103464798.shtml, which is shown as Appendix A.

expected supply of capital available in a host country. If FDI complements domestic capital, then a negative FDI gap will dampen economic growth through the multiplier channel. However, if FDI displaces domestic capital, then a negative FDI gap should lead to reduced displacement and thus not have a negative effect on growth.

On the other hand, if the FDI gap exists only because of idiosyncratic changes in corporate interests, our models will not capture these effects. Marin and Schnitzer (2011) find that the corporate investment needs of multinationals are generally financed locally when managerial incentive problems are large. Thus, investment flows will be smaller into countries with larger local corporate governance problems. This finding may be generalizable to our sample of developing countries as Marin and Schnitzer (2011) examined developed country firms investing in developing countries.

To identify potential explanations for why there is a positive relationship between GDP growth and the FDI gap we turn first to fixed asset investment or domestic gross fixed capital formation (GFCF) and then to household consumption and net exports before looking into four measures of productivity. We obtain consistent evidence throughout all tests that the outcomes are largely unrelated to the commitment ratio which captures the absolute level of how approved investment pledges are fulfilled, and yet the outcomes are consistently significantly related to the FDI gap which captures the relative level of the FFDI to the economy. These findings are collectively suggesting that the host country economy is not affected by the degree to which foreign investors operationalize their approved investments unless the FDI is a large fraction of the host country's economy.

## 2. FDI: expectation vs. reality

FDI inflows represent the agglomeration of individual corporate investment decisions in a location. Individual companies are likely to make investment plans that are, on average, accurate and

realistic. Charoenwong et al. (2024) find that less efficient firms realize gains from investment planning while more efficient firms gain from information acquisition. Companies find that speedy implementation of investment decisions maximizes the expected long-term value (Chang and Rhee, 2011; Hawk and Pacheco-de-Almeida, 2018; Décaire et al., 2020). If the approved value of FDI is a reasonable proxy for the net present value of investor expectations for the host market, then absent agency and informational asymmetry problems, multinationals' investment plans are likely to be implemented with a minimal and predictable time lag and in an efficient manner (Greene et al., 2009).

Corporate disclosures enable investors to make more efficient and informed decisions regarding stock valuations and thus make prices more informative and markets more efficient (Gelb and Zarowin, 2002; Haggard et al., 2008). Similarly, companies have higher future performance after the disclosure of negative corporate news (Chance et al., 2015), even when there have been fraudulent activities (e.g., Dyck et al., 2010). As many companies grow through international investments, non-completion of corporate announcements of FDI are likely to be viewed negatively by investors who will assume that the non-completion reflects on poor company-specific factors (Chance et al., 2015). This is consistent with the survey evidence that only 10% of *Fortune 1000* CEOs use real options theory in FDI planning (Block, 2007), which means that roughly 90% of these companies are disclosing investment plans that they believe to be accurate and realistic, and will be implemented as written.

The host country government might view foreign investors as being either repeat investors or first-time investors. Repeat investors could be judged by their track record and assumed to follow historical trends in fulfilling future investment plans. Same country first-time investors might be assumed to mimic same country repeat investors. In that light, a host government may assume all investors from a source country will fulfil approved investment plans in a time consistent manner that can be modeled using historical data such as was examined in Hornstein and Naknoi (2023).

When the corporate and host government perspectives are reconciled there are two clear takeaways: host country characteristics may affect the proportion of approved FDI that is fulfilled, and actual FDI inflows may be predictable ex ante given the data on approved FDI. On the other hand, host governments may have time-varying FDI approval regimes and individual companies may also have time- and location-varying disclosure and investment patterns. Accordingly, we interpret the ex ante disclosed data on approved FDI as being an imperfect noisy signal of the expected value of actual FDI inflows. As there is no requirement that FDI inflows be implemented within a timeframe, we draw on the finance literature finding that firms tend to prefer speedy implementation of investment decisions.

Data on approved FDI has been systematically disclosed to the public by eleven countries worldwide, of which ten are in Asia. Each country's approval process begins with the implicit assumption that the government's ability to be an effective central planner requires advance knowledge of individual investors' plans to the extent possible. That is, each government will monitor foreign investors only to the point where the perceived marginal benefit of such monitoring exceeds associated marginal costs. Accordingly, each country has included in their approval process a different subset of the total foreign investor population over time. For example, some countries have varied the mix of industries subject to the approval regime while others required it only for investments above a minimum threshold where the threshold varied on different dimensions such as monetary value or number of employees. The governments have not committed to completing the approval process in a prespecified amount of time. However, it is reasonable to assume that an equilibrium exists whereby governments try to maximize economic growth by helping businesses grow with minimal delays, which are inversely related to growth (Djankov et al., 2002).

There is also temporal variation regarding when and how governments disclosed this data. For example, India reports this data monthly and continues to do so while China used to report this data monthly but now has only historical annual data available on government websites. Some countries

report the U.S. dollar value of the FDI inflows while others use the local currency. We use this data as reported by a data aggregator, CEIC, to make sure that all data are collected as consistently as possible within and across countries.

Most of the literature on FDI drops the term "actual" or "utilized" from the phrase "FDI" as it is assumed that there is no data on FDI prior to the actual cross-border flows of the money. Actual, or utilized, FDI is used as reported by the World Bank in a systematic manner across countries and over time. Accordingly, the literature on FDI that uses data on approved FDI is very limited due largely to the lower profile of such data releases with Schaumburg-Muller (2002) and Hornstein (2011) being among the few studies that use the approved FDI data.

Approved and actual FDI inflows are highly correlated and thus they cannot be used in tandem in the same empirical analysis. Instead, the difference between the approved and actual FDI inflows is used to construct two empirical measures. First, the difference can be used to develop the commitment ratio, which reflects the proportion of approved FDI that is implemented, and can serve as a proxy of the effectiveness of capital markets to properly value investments and then implement them. The commitment ratio is higher in locations with better market and regulatory institutions (Hornstein, 2011), and is higher from origin countries with less uncertainty avoidance and egalitarianism (Hornstein, 2017). Hornstein and Naknoi (2023) extended this measure to find that there is time- and country- variation in the tendency of foreign investors to implement previously approved FDI plans in four Asian countries.

To show this theoretically, we use the commitment ratio definition of Hornstein (2011):

$$CR_{c,t} = \frac{lnAct\_FDI_{ct}}{\frac{1}{2}(lnApp\_FDI_{ct}+lnApp\_FDI_{ct-1})}, \quad [1]$$

which says that the commitment ratio of a host country *c* at date *t* is the ratio of actual FDI inflows scaled by the average value of approved FDI in the current and preceding year. Hornstein (2011) showed that

this ratio was robust to usage of varying numbers of observations and dates in the numerator and denominator of this ratio.

If the investment environment is stable, then there exists a steady-state commitment ratio:

$$\overline{CR_c} = \overline{\frac{lnAct\_FDI_{ct}}{\frac{1}{2}(lnApp\_FDI_{ct}+lnApp\_FDI_{ct-1})}}. \quad [2]$$

In any individual year the actual FDI inflow is thus then measured as $lnAct\_FDI_{ct} = lnApp\_FDI_{ct} \times CR_{ct}$, and the unanticipated FDI inflows are $lnApp\_FDI_{ct} \times (CR_{ct} - \overline{CR_c})$. However, a steady-state commitment ratio might exist if and only if the investment environments in the source and host countries are unchanging, and that is unlikely especially in the countries and time period examined in this study. Accordingly, we expect that there will not be a true steady-state commitment ratio in practice, which is consistent with the findings of prior studies of the commitment ratio.

As companies find that the long-term value of a new project is inversely related to the length of implementation, and investors reward companies for honest disclosures, on average approved FDI should be equal to actual FDI. Similarly, governments should make appropriate investment approval decisions and thus their approved and actual FDI should also be similar. In that light, the commitment ratio should average 1 and yet the average value of the commitment ratio has been observed to be well below 1 using only Chinese data (Hornstein, 2011, 2017) and above 1 using data on four Asian countries (Hornstein and Naknoi, 2023). The commitment ratio might deviate from the benchmark value of 1 if economic or firm-specific fundamentals change meaningfully between the initial approval of a project and its implementation.

Second, the approved and actual FDI data are used to construct the FDI gap, which is the approved FDI that is not received by the host country scaled by the country's GDP. This measure sheds light on how unrealized cross border capital flows affect the host country. If FDI is believed to have a

positive effect on growth, despite the mixed empirical record, then a positive (negative) FDI gap should always have positive (negative) effects. That is, the impact of actual FDI inflows and the gap could be meaningfully different depending on how the FDI inflows affect the domestic capital supply.

The commitment ratio is transformed to obtain the FDI gap. The FDI gap is the difference between actual FDI obtained in a year and the average value of approved FDI from that year and the year prior which is then scaled by nominal GDP. Thus, the gap, like the commitment ratio, is not mechanically larger or smaller based on the size of the host economy. The FDI gap is defined as:

$$Shortfall_{ct} = \frac{lnAct\_FDI_{ct} - \frac{1}{2}(lnApp\_FDI_{ct} + lnApp\_FDI_{ct-1})}{lnNomGDP_{ct}}. \quad [3]$$

If the commitment ratio were 1 then the gap should be exactly 0. The gap is a stochastic measure that is truly exogenous to current economic conditions in the host country.

Thus, we examine separately two perspectives on FDI. First, the commitment ratio to capture the propensity of foreign investors to fulfil approved investment plans. Second, the gap to capture the magnitude of the unfulfilled investment plans. The two measures may provide complementary evidence on how much approved FDI is received by a host country and yet they are likely to be only weakly correlated as the commitment ratio varies meaningfully across countries.

## 3. FDI data

FDI data are recorded at the bilateral level as flows from country *i* to country *j*. However, the origin country that would be recorded for the FDI inflows might not be the true origin country if the funds represent investments from MNEs who want to transfer funds from country *i* to country *j* vs. repatriating the funds to the home country, *k*, or investing it in any other country (including in country *i*). The approved FDI data is obtained from CEIC for nine of the ten countries in our dataset while data for the

tenth country, Vietnam, was obtained from Schaumburg-Müller (2002)[3]. The data on actual FDI inflows are obtained from the World Bank. All FDI variables are recorded at the host country-year level.

There is no information available regarding the source countries or industries for the approved FDI. The FDI flows thus cannot be classified as potentially being horizontal or vertical FDI, or as greenfield, brownfield or acquisitions. Rather, we can rely on the stylized facts that vertical FDI is often implemented as greenfield investment, and vertical FDI is the dominant type of FDI received by each of the host countries in our dataset. Multinationals with higher levels of intangible capital are more likely to invest through greenfields (Takayama, 2024) and make more efficient capital budgeting decisions (Greene et al., 2009) which would translate into commitment ratios closer to 1 and FDI gaps closer to 0.

There are three types of host countries in our sample. First, there are countries that continue to disclose this data systematically: India (from 1992), Laos (from 2000), Malaysia (from 2006), the Philippines (from 1996), Sri Lanka (from 1987), and Thailand (from 1985). Second, there are countries that regularly announce FDI inflows in a manner that reveals this data is still tracked internally even as it is not released publicly. These countries are China (disclosed from 1983-2006) and Vietnam (1991-2000)[4]. Finally, three countries have officially discontinued data collection: Cambodia (disclosed from 1986-2006), Indonesia (1970-2007), and Turkey (1980-2003). We use the longest time series of data available per country to assemble an unbalanced panel dataset.

The approved and actual bilateral FDI data do not contain any information on the mix of companies or industries contained in each country's flows. There is some evidence that the source country and industry mix may be robust in all countries with the exceptions of Cambodia, Laos, Vietnam and Sri Lanka (Freeman, 2002). FDI in Cambodia, Laos, and Vietnam is concentrated in a small number of sectors

[3] CEIC has spotty data on Vietnam which is consistent with this more complete series. Our results are also robust to excluding Vietnam from all analyses as this is a different data source that may not be strictly comparable.
[4] Vietnam has continued to release the count of FDI projects approved but not the approved monetary value.

such as garment production and energy generation, with the investor population also dominated by investors from a small number of regional countries (e.g., Malaysia and Thailand). Finally, the long civil war in Sri Lanka has dissuaded many investors.

### 3.1 Descriptive data

The FDI inflows, both approved and actual, are highly right-skewed due to the heterogeneity in the size of host markets in our dataset (e.g., China and India at one extreme vs. Cambodia and Laos at the other). The average value of approved FDI (log US$mn) is 8.704 while the average value of actual FDI (log US$mn) is 7.332. The average value of the FDI commitment ratio, as shown in Equation 1, is 0.758, and the FDI gap is estimated as shown in Equation 3 and has an average value (log US$mn) of -1.3.

If host countries require advance approval of only some types of investments, then approved FDI would be a downward biased measure. This would cause our estimated FDI commitment ratio and gaps to be upwards biased. Nonetheless, as most countries have higher levels of approved FDI than actual FDI, the commitment ratio is upwards biased towards 1 while the gap is upwards biased towards 0.

[INSERT TABLE 1 HERE]

### 3.2 Baseline analysis

First we examine how actual FDI inflows are affected by past FDI inflows on a recursive basis, whether the past FDI is actual or approved. Both actual and approved FDI are measured in logs of USD million. This analysis motivates our future examinations of how FDI affects the domestic economy of the host country. We begin with a dynamic panel Arellano-Bond model with robust standard errors:

$$lnAct\_FDI_{ct} = \beta_0 + \beta_1 lnAct\_FDI_{ct-1} + \beta_2 lnApp\_FDI_{ct} + \beta_3 lnApp\_FDI_{ct-1} + \varepsilon_{ct}. \quad [4]$$

As seen in Table 2, actual FDI inflows are strongly and significantly affected by the prior year's actual FDI inflows and reflect current year approved FDI inflows at more than twice the rate of prior year's

approved FDI inflows. These results confirm that actual FDI inflows incorporate information available to past decision makers as seen in both lagged actual and approved FDI. These baseline results also suggest that FDI decision-makers regularly update their beliefs to incorporate up-to-date information as actual FDI inflows are strongly predicted by current year FDI approvals. FDI in general is inversely related to uncertainty (Nguyen and Lee, 2021).

[INSERT TABLE 2 HERE]

### 3.3 FDI gaps

The FDI gap represents expected FDI inflows that did not materialize. The FDI gaps are left-skewed due in large part to the impact of larger investment projects in countries with more volatile FDI flows. As most country-years saw FDI inflows falling below FDI approvals, we call this concept the "FDI gap". The FDI commitment ratio is highly correlated with the gap (0.65), and the FDI commitment ratio is lower when investors face greater uncertainty regarding the host market after controlling for economic and political conditions in the source and host market (Hornstein and Naknoi, 2023). The FDI gaps are larger in the countries that reportedly have more concentrated types of FDI inflows. For example, while the average gap is -1.3 (sd 1.8), the average gap in Laos is -4.61 (sd 1.2). The FDI gap is scaled by GDP in the current year. Thus, this measure captures the impact on the aggregate economy of the gap between actual and expected FDI.

[INSERT FIGURE 2 HERE]

## 4. Empirical specification and other data

We examine how the aggregate GDP growth, both forecast and actual, and various sectors of the economy are affected by FDI. This empirical analysis of how these outcomes are impacted by FDI uses a

dynamic panel Arellano-Bond model with robust standard errors. The Arellano-Bond dynamic panel estimator uses the generalized method of moments (GMM), which is an efficient estimator in the presence of potential concerns of endogeneity and omitted variable bias. This estimator is typically used in panels with a relatively small number of time periods and many cross-sectional units.

Our focal independent variable in each model is one of two measures of FDI: the commitment ratio (defined in Equation 1) or the FDI gap (defined in Equation 3). The empirical model is

$$Outcome_{ct+s} = \beta_0 + \beta_1 Outcome_{ct} + \beta_2 FDI_{ct} + \beta_3 Macro_{ct} + \beta_4 Instit_{ct} + \varepsilon_{ct}. \quad [5]$$

We use three values of $s$: 1, 3 and 5 to estimate the geometric growth rate of our outcome variable over 1-, 3- and 5-year horizons. As anomalous short-term events (e.g., an election or a weather disaster) may have outsized impacts on the 1-year growth rates, we emphasize the results from the 3- and 5- year horizons, consistent with most of the growth literature. These 3- and 5-year horizons are often used as many of the explanatory variables are slow-changing. FDI is long-term cross-border capital inflows, and it can take considerable time for the FDI to be fully implemented and for the FDI to generate spillovers on the domestic economy. FDI is operationalized as either the commitment ratio or the gap.

The Arellano-Bond estimator uses lagged values of the dependent variables and potentially endogenous regressors as instruments. The lagged values may be correlated with the endogenous variables but are uncorrelated with the error terms in the first-differenced equation, and thus satisfy the requirements for instruments. One, three, and five year lagged values are used consistent with the grown horizons examined herein.

### 4.1 Outcomes

The first outcome we examine is forecast real GDP growth. The World Economic Outlook forecasts are released by the IMF in April and October for multiple time horizons (varies by country and

year). Timmerman (2007) and Celasun et al. (2021) argue that these forecasts have close to zero average error for current year forecasts in advanced economies and are more accurate in the latest period examined (from 2004). Each forecast is made by an individual country research team. To maximize our sample size we use only the latest forecast from year *t* for the current and subsequent years, *t* and *t+1*. Next, we turn to the actual GDP growth. Summary statistics for these variables are presented in the top panel of Table 3. The average forecast for GDP growth in the current year is 5.1% (sd 3.5%) and in the subsequent year is 5.7% (sd 1.8%) while the actual real GDP growth is 5.9% (sd 3.8%). The 3- and 5-year real GDP growth rates average 6.0% and 6.1% respectively (with sd of 3.0% and 2.5% respectively).

[INSERT TABLE 3 HERE]

To better understand why we observe different impacts on expected and real GDP growth of FDI, we look inside the economy to identify whether the impact stems from productive investment or domestic consumption. Our first outcome is the geometric growth rate of real gross fixed capital formation or fixed asset investment growth over 1-, 3- and 5-year horizons. Our second outcome is the geometric growth rate of household consumption, to capture the household sector of the economy, again over 1-, 3- and 5-year horizons. While we focus on the 3- and 5-year horizons in analyzing headline growth, the shorter-term outcomes reflect the dynamics of how companies and individuals react immediately to the FDI inflows. The 1-, 3- and 5- year growth rates of GFCF are all lower than aggregate GDP while the growth rate of household consumption is the same or higher.

In the next round of analysis we examine four measures of productivity to identify the process by which the real economy is affected by FDI inflows. The measures are total factor productivity, capital deepening, GDP per hour, and GDP per hour growth. These allow us to better understand the means by which FDI, which may include intangible investments, is absorbed by local employees.

FDI could represent an increase in the domestic capital supply and thus trigger changes in how a country monitors cross-border capital flows. Thus, we then look at how the host country's growth is affected by FDI after controlling for capital markets, and similarly how the equity markets are directly affected by FDI. We then re-examine real GDP growth over 1, 3 and 5 year horizons after controlling for financial development and characteristics of listed firms.

### 4.2 Control Variables

We include in all analyses two vectors of control variables to capture the macroeconomic and institutional characteristics of the host country that might affect FDI planning and implementation. All of these variables are obtained from the World Bank. The first vector contains macroeconomic characteristics of the host country that are known to affect the outcome of interest" the rate of inflation, depreciation, population growth, and gross fixed capital formation as a percentage of total GDP (although this latter variable is excluded in analyses of fixed asset investments).[5] All of these variables are measured 1, 3 or 5 years prior to the real growth measure used as the dependent variable.

The second vector contains institutional characteristics of the host country. We use the rule of law in all models, and other variables from the World Bank's Worldwide Governance Indicators in robustness tests. This set of controls is parsimonious in large part because the model is an autoregressive (1) structure for all outcomes we examine. Summary statistics for these variables are presented in the middle panel of Table 3.

In many of our tests we include one of three additional characteristics of the host country to control for financial conditions. First, we include the direct investment controls on FDI that is a component of the capital controls restrictions dataset developed by Fernández et al. (2015) to examine if

[5] Hornstein and Naknoi (2023) found that the FDI commitment ratio of source country – host country pairs is insignificantly affected by currency depreciation.

there are impediments to cross-border capital flows. In robustness tests we use other components of the index instead: the direct investment controls on FDI inflows and the direct investment controls on FDI outflows. As qualitatively similar results are obtained with these sub-indexes we report only the results with broad direct investment controls. In additional tests we obtain qualitatively similar results using the IMF Financial Development Index (FD) in aggregate and separated into the two constituents, financial inclusion index (FI) and financial markets index (FM), or the Chinn Ito index (Chinn and Ito, 2006).

Second, we use the log of total market capitalization for the largest stock exchange in a country to capture the local financial markets. The market capitalization data was obtained from the World Bank and supplemented, when missing, with data from the World Federation of Exchanges. The World Uncertainty Index is obtained from Ahir et al. (2022).

Finally, we use Compustat Global data for all publicly listed firms in each country-year to estimate various measures of corporate financial constraints. The specific measures we estimate are the average levels of long term total liabilities, the imputed cost of capital which is defined as total expenditures on interest and related expenses scaled by total liabilities, and net working capital. These variables are included to allow direct examination of whether FDI represents an expansion of the domestic supply of investable capital, and to see if FDI is affected by local corporate conditions.

Summary statistics for these variables are presented in the bottom panel of Table 3.

## 5. Aggregate GDP

Most FDI to the countries in this dataset is concentrated in the manufacturing sector and is greenfield FDI. While this type of FDI is generally believed to generate higher real GDP growth in the host country, it is not clear a priori whether the real GDP growth rate should be positively or negatively

related to the FDI commitment ratio and FDI gap. These measures of FDI, unlike the levels of actual FDI, shed light on how actual inflows may differ from what host governments and companies had expected.

If the FDI inflows expand the pool of investable capital, then the expected and actual GDP growth rate should respond positively to the FDI commitment ratio and the FDI gap. However, if FDI substitutes for and crowds out domestic capital then the expected and actual GDP growth rate will respond negatively to the FDI commitment ratio and positively to the FDI gap. It is also possible that the impact on growth of FDI might vary across different time horizons. To the extent that FDI can be thought of as having both short- and long-term components, the short-term effects observed in the 1-year window might be similar to those of portfolio investments. Meanwhile, the long-term effects observed in the 3- and 5-year windows might reflect changes to the domestic capital supply of the host country or may reflect the process of FDI agglomeration in the host country.

### 5.1 Expected growth

The World Economic Outlook forecasts of real GDP growth for the current and subsequent year are used as our dependent variables in this round of analysis.[6] This analysis examines the impact on expected economic activity of the FDI commitment ratio or FDI investment gap (see Table 4). First, we look at the GDP forecast for the current year and see that it is inversely related to both the commitment ratio and the FDI gap. That is, the forecast growth rate for the current year is lower when investors fulfil a higher fraction of the investments approved in the current and prior years (Models 1 and 2) and it is lower when the FDI gap is positive (i.e., more FDI is received than expected) (Models 3 and 4). These four results suggest that it is possible that the FDI displaces domestic capital, which leads mechanically to

[6] The World Economic Outlook does not contain GDP growth forecasts for all country-years in our overall sample. Specifically, Cambodia, Laos, Sri Lanka, and Vietnam are all excluded from this round of analysis but included in all subsequent rounds of analysis. We note that all results reported in this paper are qualitatively unchanged if these four countries are excluded from all analyses.

lower GDP in the current year. If that GDP is only displaced temporarily then longer-term growth, both forecast and actual, will be higher.

[INSERT TABLE 4 HERE]

Thus, we now turn to forecast growth for real GDP in the subsequent year. The real GDP growth rate is forecast to be higher when the commitment ratio is higher (Models 5 and 6) and yet lower when the FDI gap is positive (Models 7 and 8). These results are complementary: when foreign investors are more inclined to fulfil their investment approvals from the current and past year, GDP growth is expected to be higher due to an influx of capital. However, the absorptive capacity of the economy may be relatively inelastic in the short-term which causes economic growth to be inversely related to the FDI gap. If this hypothesis is correct, then real GDP growth will be negatively affected by the two FDI measures in the shorter term before turning positive as the economy learns to absorb effectively the FDI.

In this analysis we also control for the impact of policy uncertainty on GDP growth in the presence of FDI inflows along the lines of Choi et al. (2020) and Nguyen and Lee (2021). The current year economic forecast is unrelated to current period uncertainty (Models 3-4) while the subsequent year forecast is positively related to current period uncertainty (Models 7-8). To differentiate between the short- and long-term components of uncertainty, we also decompose the level of uncertainty into a base effect from the prior period and the current period change in the level, and we find that only the base level is statistically significant which suggests that changes in uncertainty are anticiapted.[7]

The control variables also generate results that are consistent with economic theory: the GDP growth rates are forecast to be lower when inflation is higher, and higher when there is greater depreciation and domestic fixed asset investment. In addition, population growth has a strong effect on

[7] This specification is omitted from the tables for brevity.

current period GDP but a mixed effect on the subsequent year's production. Finally, the rule of law has no effect on GDP growth in either year. All of these control variables are included in all subsequent models.[8]

### 5.2 Real economic growth

Table 5 presents the results of analysis of the real GDP growth rate. First, the 1-year real GDP growth rate appears to be unrelated to both measures of FDI (Models 1 and 2), which contradicts the forecast expectations discussed in the prior section. We then find that the 3-year real GDP growth rate is inversely related to the commitment ratio but positively related to the FDI gap. Meanwhile the 5-year growth rate is unrelated to the commitment ratio and more strongly positively related to the FDI gap.

[INSERT TABLE 5 HERE]

The commitment ratio shows that FDI may displace domestic capital, with this effect strongest at the 3-year mark. This suggests that some FDI may act as short-term portfolio investments, and thus not generate real benefits for the host economy. However, when the FDI accounts for a larger fraction of the domestic economy, the positive effect on GDP intensifies over time. This suggests that the larger FDI projects may generate spillovers in the host economy that grow over time. Alternatively, as FDI often includes intangibles, it may take time for the host economy to fully absorb the innovations.

Cross-border capital controls might impede the FDI transfers by multinationals and lead to a mismatch between the approved and actual FDI. In that case there are numerous possible explanations such as less efficient FDI might displace more productive but capital-starved domestic investors, or more efficient FDI might lead to future capital repatriation by multinationals that reduces the long-term capital supply in the host country. We test these hypotheses by asking whether GDP growth is moderated by FDI

[8] These variables are not reported in the tables for space considerations.

inflows in the presence of hurdles to capital inflows as codified by the Fernández et al. (2015) measures for capital controls on direct investment flows, both inflows and outflows. We find that real GDP growth is positively affected in the 1-year horizon but not at longer horizons. Qualitatively similar results are obtained using the Chinn-Ito index of capital controls (Chinn and Ito, 2006). Jardet et al. (2022) report complimentary evidence that the impact of financial openness on FDI flows varies by country. The Fernández et al. (2015) direct investment flows variable is included in all subsequent analyses (except those reported in Table 9) but is not reported for brevity.

### 5.3 Sectoral Growth

We now examine separately three sectors of the economy: fixed asset investments, consumption and net exports, and final consumption. Fixed asset investments is measured as gross fixed capital formation (GFCF) to capture domestic investments in fixed assets that will generate long term growth while consumption and net exports is measured as the complement of fixed asset investments. Final consumption expenditure proxies total domestic demand for goods and services.

[INSERT TABLE 6 HERE]

First, the growth rate of fixed asset investments is significantly lower at the 1 year horizon when the commitment ratio and FDI gap are larger (Panel A Models 1-2). However, at longer-time horizons there is no relationship between the growth of fixed asset investment and the commitment ratio while the 3-year growth rate is positively related to the FDI gap but the 5-year growth rate shows no relationship. This suggests that the growth rate of fixed asset investments is generally affected in parallel fashion by both the ex ante expected FDI inflows and the ex post actual flows. Amighini et al. (2017) found that fixed asset investment is positively affected by FDI only if multinationals engage in manufacturing production, and that the impact on total investment of FDI is weakest in developing countries. All the

countries in our empirical study are classified as developing countries by Amighini et al. (2017) where vertical FDI dominates FDI inflows.

Second, consumption and net exports represent the portion of GDP not accounted for by fixed asset investments (see Panel B). The growth rate of this sector shows the same pattern of effects from FDI as we saw with the aggregate economy (Table 4). The growth rate is unaffected by the commitment ratio at the 1- and 5- year horizons and is negatively affected by the ratio at the 3-year horizon (Models 1, 3 and 5). However, the growth rate is positively affected by the FDI gap at the 3- and 5-year horizons (Models 2, 4 and 6). Finally, we look at the growth rate of final consumption expenditures (see Panel C). Final consumption expenditure growth is unrelated to both measures of FDI at the 1-year horizon (Models 1-2). However, 5-year growth is higher in the presence of the commitment ratio (Model 6) and the 3- and 5-year final consumption expenditure growth is strongly and significantly positively related to the FDI gap.

These three sets of results suggest that approved FDI displaces capital that would otherwise go into fixed asset investment and consumption at all time horizons and that it has a positive effect on final consumption expenditure only at longer time horizons after the economy may have absorbed the FDI. The FDI gap is a positive factor for growth in all three sectors of the economy.

## 6. Productivity

A stylized finding in the theoretical FDI literature is that foreign invested enterprises are more productive than domestic firms, and thus will generate productivity spillovers in the host country. Using Indonesian data, Blalock and Gertler (2008) found that FDI leads to productivity gains among local firms that supply foreign entrants. The broader empirical literature, however, reports mixed results on the productivity impacts of FDI as seen in the Busse and Groizard (2008) survey. While these prior studies

used a large set of countries, we examine only those countries that also regulate and disclose information about FDI approvals. Thus, our sample of countries may include countries that are more reliant on FDI for growth. We look at four measures of productivity at the 1-, 3- and 5-year horizons to identify how FDI inflows may affect domestic productivity. While FDI could be a proxy for investor sentiment, Benhima and Cordonier (2022) find that sentiment does not affect future productivity. Thus, if FDI affects productivity, it is through direct impacts on the domestic economy.

[INSERT TABLE 7 HERE]

First, total factor productivity is the "secret sauce" in the economy as it measures how well an economy can use its resources to generate income. We find that TFP is inversely related to the commitment ratio at all time horizons and positively related to the FDI gap at the 3- and 5-year horizons. This result is consistent with Ashraf et al. (2016) who find that TFP is unaffected by greenfield FDI and positively affected by M&A. Second, we show that capital deepening is unrelated to the FDI commitment ratio while the relationship to the FDI gap reverses from the 1- to 3-year horizons.

Third, we examine the level and growth rate of GDP per hour. The level of GDP per hour is unrelated to the commitment ratio until the 5-year horizon while the growth rate of GDP per hour is positively related to the commitment ratio at the 3- and 5-year horizons. Meanwhile the level of GDP per hour and growth rate are both positively related to the FDI gap across all time horizons.

These four sets of results are consistent with the type of FDI that is approved and realized more quickly (e.g., at the 3-year horizon) being meaningfully different from that which arrives more slowly. Nocke and Yeaple (2007) find that cross border M&A can involve the most efficient and the least efficient firms. Davies et al. (2018) find that M&A may reflect corporate integration of skills or arbitrage across national borders while greenfield investments reflect the firms' existing attributes. M&A deals are likely to be completed more quickly than greenfield investments, especially in Asia (Moghadam et al., 2019;

Zhou et al., 2021). We obtained consistent evidence that these measures of productivity generally respond to the FDI gap which suggests strongly that the absence of investable funds is not an explanation for the observed outcomes. Rather, it is the direct expansion of the domestic capital base that generates all of the observed outcomes.

## 7. Capital markets

### 7.1 Stock markets

FDI may be a proxy for foreign investor sentiment towards the domestic economy, and sentiment shocks affect local economic activity when local asset valuations are noisier (Constantinides et al., 2023). We therefore examine two separate but related questions: how does the local equity market moderate the effect of FDI on real GDP growth, and then how does the FDI affect the level of the local equity market. To the extent that FDI is simply increasing the pool of investable capital, then there should be no relationship between GDP growth and the domestic stock market capitalization of the host country. Indeed, we show in Panel A of Table 8 that the GDP growth rate has the same relationship with both the FDI commitment ratio and FDI gap at all time horizons even after controlling for the domestic stock market capitalization of the host country and that the market capitalization is insignificant in nearly all models.

[INSERT TABLE 8 HERE}

However, when we look at how the domestic equity market is affected by FDI (Panel B) we observe no relationship between the market and the FDI commitment ratio but a positive relationship with the FDI gap. As the countries we examine enjoyed tremendous equity market growth during the period we study, we look only at the immediate subsequent year's equity activity. To the extent that FDI might generate domestic economic spillovers, a fraction of the FDI may be short-term portfolio return

chasing and thus the long-term impact on economic activity of FDI and foreign portfolio investments depends on the absorptive capacity of the host economy (Durham, 2004).

**7.2 Financial development**

The level of a country's financial development may affect both the capacity to absorb FDI and the growth rate of aggregate GDP. We show in Table 9 the results from including the IMF's aggregate financial development index in lieu of the Fernández et al. (2015) index of direct investment restrictions.[9] The observed relationship between the real GDP growth rate and the FDI gap is now larger in magnitude at all time horizons. This is additional evidence that the FDI expands the domestic capital base.

[INSERT TABLE 9 HERE]

**7.3 Listed firms**

The preceding two rounds of analyses used aggregate country-year data. By contrast, our next round of analyses uses the average value for each country-year of all company-year level accounting data on publicly listed firms included in Compustat Global. We now capture economic characteristics of a host country based only on the firms from that country that are listed on a stock exchange, and thus represent the most productive public firms in their markets.[10] We now examine how GDP growth in the host country is affected by financial characteristics of domestic firms (see Table 10). The characteristics we examine capture financing constraints that could affect the growth of local firms: leverage – long-term debt issuance or total liabilities; the cost of capital – the implied or real interest rates; or the need to keep cash freely accessible – working capital. The results shown in Table 10 are similar to those reported in prior analyses of real GDP growth at the 1-, 3- and 5-year time horizons.

[9] We do not show the results, which hare qualitatively similar, from when we used instead separately the two sub-indexes.

[10] Compustat Global has selective coverage of firms in each market, representing roughly 90% of the firms in most markets by capitalization.

[INSERT TABLE 10 HERE]

When firms can access more capital through long-term debt issuance or total liabilities, the aggregate GDP growth rate is higher. We find that GDP growth is higher when firms can service their debt even in the face of higher real or nominal costs. Finally, we find no effect on GDP of working capital except at the 5-year horizon. These results are consistent with generally accepted principles of corporate finance regarding the role of leverage and cashflow. These results are strong evidence that FDI is aimed at long-term investments and does not displace domestic capital.

## 8. Conclusion

Conventional wisdom suggests that economic growth should follow mechanically from an increased supply of investable capital, and that foreign invested enterprises tend to be more productive than domestic companies. As a result, it is generally the case that economic growth is higher in the presence of greater FDI. However, there is evidence that shows this is not always the case in developing countries (Amighini et al., 2017; Busse and Groizard, 2008). Our first contribution is to examine whether the impact of FDI can be observed due to deviations in how a project is implemented vs. how it is approved through use of the FDI commitment ratio and the FDI gap. These measures allow analysis of how investments deviate from expected levels.

Our second contribution is an analysis of how economic activity is affected by the FDI inflows. We began by examining the relationship between expected growth and FDI and we found that even in our sample of developing countries, professional economic forecasters expected real economic growth to be systematically related to the FDI commitment ratio and gap. However, we show that economic growth is generally unaffected by the FDI commitment ratio and is consistently higher in the presence of greater positive FDI gaps.

Our third contribution is that we then look further to identify the mechanism behind this observed effect on growth from FDI. We find that each of four measures of productivity are consistently affected by the FDI commitment ratio and gap in a manner that is consistent with prior literature on FDI in developing countries. That is, even as FDI may be intrinsically more productive than extant domestic capital, there is a displacement effect such that the net effect may be null at some time horizons. The consistent finding in this paper is that countries that regulate FDI inflows through an ex ante approval process nonetheless benefit from FDI inflows that exceed the expected level, particularly when these inflows account for a larger fraction of the host country's economy. Thus, FDI inflows expand the domestic capital base of the host country.

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Figure 1: Approved and actual FDI flows vs. GDP growth by destination country

This figure shows approved FDI inflows per year (red line), actual FDI inflows per year (green line), and real GDP growth rate per year (gray background). FDI inflows are in log of USD millions (right axis) while real GDP growth rate is measured in percentage points (left axis).

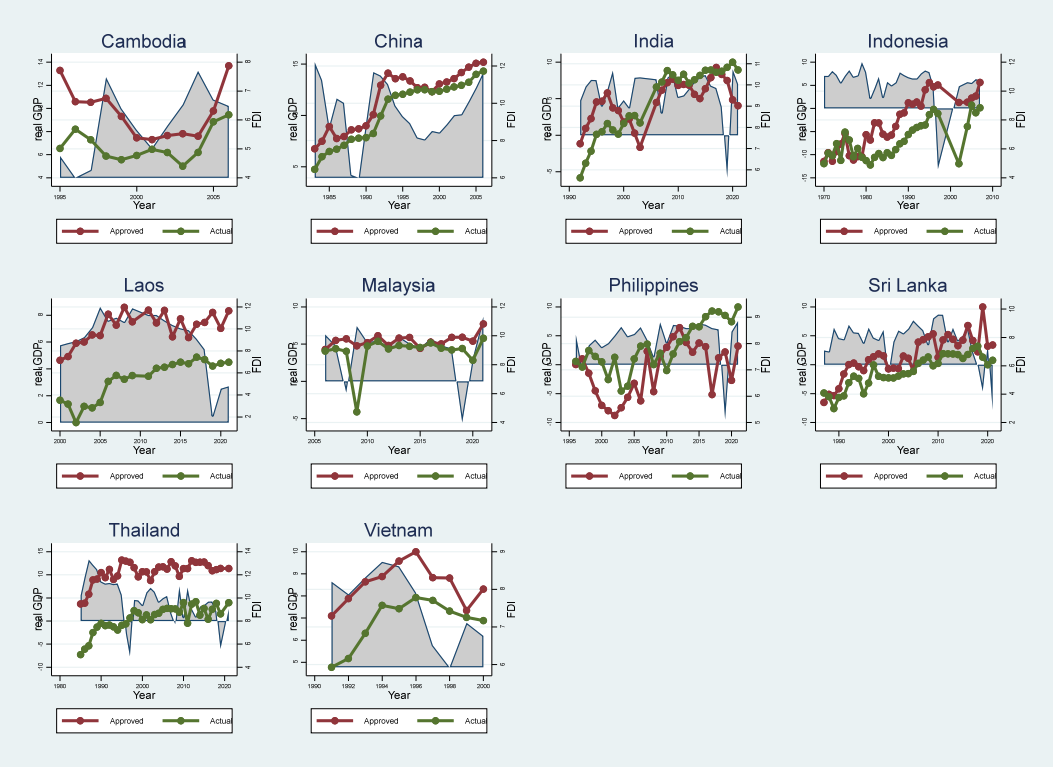


Figure 2: Histogram of FDI gap, or the difference between actual (utilized) FDI in a year and the 2 year moving average of approved (contracted) FDI scaled by the logarithm of nominal GDP.

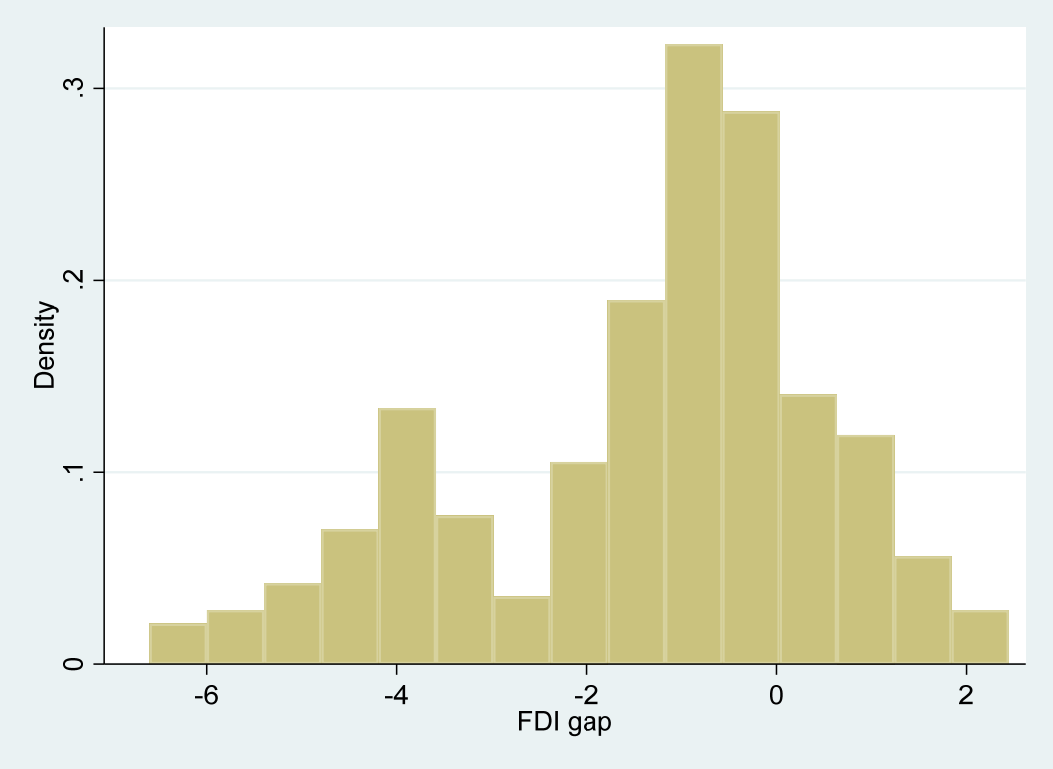


Table 1: FDI Summary statistics

| Variable | Mean | SD | Min | Max | N |
|---|---|---|---|---|---|
| Approved FDI (ln US$mn) | 8.887 | 2.284 | 3.418 | 13.271 | 255 |
| Actual FDI (ln US$mn) | 7.467 | 1.975 | 1.493 | 11.729 | 247 |
| Commitment ratio | 0.785 | 1.338 | -0.338 | 9.214 | 244 |
| FDI Gap | -1.35 | 1.884 | -6.602 | 2.446 | 236 |

Table 2: Determinants of actual FDI inflows.

Robust standard errors are reported in parentheses; * p<.10, ** p<.05, *** p<.01.

| | **Model 1** | **Model 2** | **Model 3** |
|---|---|---|---|
| **Actual FDI (t-1)** | 0.784*** | 0.536*** | 0.477*** |
| | (0.073) | (0.098) | (0.103) |
| **Approved FDI (t)** | | 0.330*** | 0.276*** |
| | | (0.070) | (0.063) |
| **Approved FDI (t-1)** | | | 0.116** |
| | | | (0.048) |
| **Intercept** | 1.721*** | 0.602* | 0.514 |
| | (0.572) | (0.364) | (0.433) |
| **Chi2** | 116.750 | 568.446 | 481.212 |
| **N** | 220 | 218 | 217 |

Table 3: Summary statistics for all other variables

Panel A: Dependent variables

| Variable | Mean | SD | N | Mean | SD | N | Mean | SD | N |
|---|---|---|---|---|---|---|---|---|---|
| | year t | | | year t+1 | | | | | |
| GDP forecast | 5.072 | 3.522 | 218 | 5.727 | 1.771 | 218 | | | |
| | 1 year horizon | | | 3 year horizon | | | 5 year horizon | | |
| Real GDP growth | 5.895 | 3.786 | 256 | 5.902 | 2.979 | 245 | 5.972 | 2.593 | 233 |
| Fixed asset inv growth | 1.054 | 1.851 | 236 | 1.063 | 1.294 | 222 | 1.067 | 1.104 | 208 |
| Cons & net exp growth | 5.905 | 3.811 | 236 | 5.914 | 3.005 | 222 | 5.978 | 2.631 | 208 |
| Final cons growth | 8.764 | 11.673 | 240 | 8.623 | 7.599 | 226 | 8.933 | 6.411 | 212 |
| TFP | -26.57 | 842.437 | 191 | 14.801 | 66.844 | 124 | 5.365 | 30.419 | 109 |
| Capital deepening | -290.878 | 4375.832 | 191 | 10.079 | 40.148 | 155 | 4.611 | 24.901 | 144 |
| GDP per hour | 6.135 | 4.599 | 211 | 6.236 | 3.398 | 201 | 6.362 | 2.988 | 191 |
| GDP per hour growth | -5.218 | 438.452 | 210 | 4.163 | 44.041 | 175 | 2.33 | 24.207 | 167 |
| Market cap growth | -0.554 | 3.908 | 121 | | | | | | |

Panel B: Independent variables

| Variable | Mean | SD | N |
|---|---|---|---|
| Inflation | 7.744 | 12.209 | 247 |
| Depreciation | -0.017 | 0.088 | 123 |
| Population growth | 1.447 | 0.571 | 256 |
| GFCF/GDP | 0.255 | 0.061 | 238 |
| Rule of Law | -0.275 | 0.509 | 179 |
| Uncertainty | 0.14 | 0.104 | 256 |
| Direct investment controls | 0.838 | 0.235 | 142 |
| Market cap (level) | 11,589 | 1,726 | 127 |
| Chinn Ito index | 0.360 | 0.255 | 241 |
| Fin Development | 0.343 | 0.17 | 238 |
| Fin Inclusion | 0.331 | 0.155 | 238 |
| Fin Markets | 0.342 | 0.196 | 238 |
| Long-term debt issuance | 3130.66 | 4326.758 | 173 |
| Interest rate - imputed | 5.302 | 5.356 | 172 |
| Working capital | 2883.021 | 4074.266 | 173 |

Table 4: Determinants of forecast real GDP growth

Robust standard errors are reported in parentheses; * p<.10, ** p<.05, *** p<.01. All control variables included in this round of tests are also included in all subsequent tests.

| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** | **Model 7** | **Model 8** |
|---|---|---|---|---|---|---|---|---|
| **Date of dependent variable** | **t** | **t** | **t** | **t** | **t+1** | **t+1** | **t+1** | **t+1** |
| **Commitment ratio** | -0.420*** | -0.428*** | | | 0.062** | 0.058** | | |
| | (0.163) | (0.161) | | | (0.025) | (0.026) | | |
| **FDI Gap** | | | -1.7e+06*** | -1.8e+06*** | | | -5.1e+05*** | -5.4e+05*** |
| | | | (4.2e+05) | (3.8e+05) | | | (1.7e+05) | (1.5e+05) |
| **Uncertainty index** | | 2.301 | | 2.851 | | 0.743* | | 0.828** |
| | | (2.248) | | (2.799) | | (0.388) | | (0.342) |
| **GDP forecast for t (t-1)** | -0.131 | -0.124 | -0.096 | -0.086 | | | | |
| | (0.092) | (0.091) | (0.081) | (0.078) | | | | |
| **GDP forecast for t+1 (t)** | | | | | 0.334*** | 0.329*** | 0.365*** | 0.361*** |
| | | | | | (0.090) | (0.088) | (0.062) | (0.061) |
| **Inflation** | -0.338*** | -0.335*** | -0.332*** | -0.327*** | -0.099*** | -0.098*** | -0.099*** | -0.097*** |
| | (0.057) | (0.055) | (0.063) | (0.062) | (0.015) | (0.015) | (0.015) | (0.015) |
| **Depreciation** | 6.206** | 6.318** | 7.322*** | 7.577*** | 2.336* | 2.356* | 1.915 | 1.973 |
| | (2.571) | (2.721) | (2.275) | (2.348) | (1.261) | (1.318) | (1.535) | (1.582) |
| **Population growth yoy** | 3.579*** | 3.489*** | 4.828*** | 4.798*** | -0.743*** | -0.765*** | -0.736 | -0.739 |
| | (0.652) | (0.706) | (0.993) | (0.982) | (0.270) | (0.268) | (0.577) | (0.583) |
| **GFCF** | 46.136*** | 47.890*** | 51.244*** | 54.250*** | 11.120*** | 11.897*** | 9.248*** | 10.310*** |
| | (6.156) | (6.972) | (6.742) | (9.617) | (3.895) | (3.678) | (3.185) | (2.875) |
| **Rule of law** | -1.994 | -1.902 | -0.675 | -0.413 | 0.324 | 0.348 | 0.424 | 0.490 |
| | (1.426) | (1.420) | (1.443) | (1.367) | (0.583) | (0.595) | (0.650) | (0.663) |
| **Intercept** | -9.579*** | -10.318*** | -12.459*** | -13.652*** | 2.223* | 1.961 | 2.747** | 2.377* |
| | (1.603) | (1.873) | (1.972) | (2.777) | (1.228) | (1.214) | (1.344) | (1.282) |
| **Chi2** | 230.716 | 81.318 | 82.232 | 103.986 | 770.635 | 2072.229 | 297.029 | 129.948 |
| **N** | 102 | 102 | 99 | 99 | 102 | 102 | 99 | 99 |

Table 5: Determinants of actual real GDP growth

Robust standard errors are reported in parentheses; * p<.10, ** p<.05, *** p<.01. All control variables are included in all models.

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | -0.026 | | -0.150** | | -0.042 | |
| | (0.156) | | (0.073) | | (0.039) | |
| **FDI Gap** | | -2.1e+06 | | 1.7e+06*** | | 5.9e+05*** |
| | | (1.3e+06) | | (4.6e+05) | | (1.9e+05) |
| **Direct investment restrictions** | 5.321*** | 6.617*** | -1.003 | -2.903** | 0.387 | -0.344 |
| | (1.505) | (1.422) | (1.090) | (1.165) | (0.438) | (0.626) |
| **Chi2** | 202.473 | 52.556 | 191.360 | 31.005 | 167.433 | 60.880 |
| **N** | 94 | 91 | 94 | 91 | 90 | 87 |

Table 6: Sectoral growth

Robust standard errors are reported in parentheses; * p<.10, ** p<.05, *** p<.01. All control variables are included in all models.

Panel A: Fixed asset investment

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | -0.036** | | -0.027 | | 0.004 | |
| | (0.014) | | (0.020) | | (0.007) | |
| **FDI Gap** | | -1.5e+06*** | | 3.9e+05** | | 1.7e+05 |
| | | (5.6e+05) | | (1.6e+05) | | (1.0e+05) |
| **Chi2** | 159.592 | 1125.037 | 55.390 | 4300.608 | 1106.869 | 2399.129 |
| **N** | 93 | 90 | 93 | 90 | 89 | 86 |

Panel B: Consumption and net exports

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | -0.024 | | -0.140** | | -0.037 | |
| | (0.161) | | (0.071) | | (0.039) | |
| **FDI Gap** | | -1.9e+06 | | 1.6e+06*** | | 5.5e+05*** |
| | | (1.3e+06) | | (4.6e+05) | | (1.9e+05) |
| **Chi2** | 252.048 | 36.301 | 1833.961 | 54.535 | 114.639 | 34.031 |
| **N** | 93 | 90 | 93 | 90 | 89 | 86 |

Panel C: Final consumption expenditure

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | 0.103 | | 0.032 | | 0.247*** | |
| | (0.240) | | (0.176) | | (0.082) | |
| **FDI Gap** | | -6.3e+06 | | 2.5e+06*** | | 1.8e+06** |
| | | (4.3e+06) | | (5.4e+05) | | (7.9e+05) |
| **Chi2** | 1246.258 | 284.481 | 32.078 | 836.188 | 316.715 | 33.854 |
| **N** | 94 | 91 | 94 | 91 | 90 | 87 |

Table 7: Productivity

This table reports only the coefficient of interest for each of 24 regressions involving a dependent variable, listed in the first column, at the time horizon specified in the second column, for the FDI measure shown in the next two columns.

Robust standard errors are reported in parentheses; * p<.10, ** p<.05, *** p<.01. All control variables are included in all models.

| Outcome | Time horizon | Commitment Ratio | FDI Gap |
|---|---|---|---|
| **TFP** | 1 | -50.451*** | -5.8e+07 |
| | | (5.258) | (9.3e+07) |
| | 3 | -33.245*** | 7.7e+07*** |
| | | (4.853) | (1.4e+07) |
| | 5 | -16.982*** | 1.2e+07** |
| | | (3.432) | (5.2e+06) |
| **Capital deepening** | 1 | -87.281 | 5.4e+09*** |
| | | (65.390) | (5.3e+08) |
| | 3 | 11.828* | -7.9e+07** |
| | | (6.743) | (3.7e+07) |
| | 5 | -4.768 | -1.7e+07 |
| | | (5.917) | (1.5e+07) |
| **GDP per hour** | 1 | -0.033 | -1.7e+06 |
| | | (0.133) | (1.7e+06) |
| | 3 | 0.056 | 1.1e+06*** |
| | | (0.149) | (4.3e+05) |
| | 5 | 0.145*** | 1.2e+06*** |
| | | (0.029) | (1.4e+05) |
| **GDP per hour growth** | 1 | -28.509 | 1.2e+08*** |
| | | (32.139) | (3.6e+07) |
| | 3 | 9.096*** | 4.0e+07*** |
| | | (3.468) | (1.2e+07) |
| | 5 | 3.921*** | 2.6e+07*** |
| | | (0.698) | (2.2e+06) |

Table 8: Financial markets

Robust standard errors are reported in parentheses; * p<.10, ** p<.05, *** p<.01. All control variables are included in all models.

Panel A: GDP growth rate

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | 0.024 | | -0.178*** | | -0.064 | |
| | (0.074) | | (0.051) | | (0.049) | |
| **FDI Gap** | | -2.1e+06* | | 1.4e+06*** | | 5.2e+05** |
| | | (1.2e+06) | | (5.2e+05) | | (2.4e+05) |
| **Market capitalization (level)** | 0.955 | 0.822 | -0.432** | -0.166 | -0.106 | 0.031 |
| | (0.604) | (0.848) | (0.215) | (0.296) | (0.137) | (0.136) |
| **Chi2** | 1373.231 | 5683.514 | 297.861 | 103.803 | 445.973 | 1096.988 |
| **N** | 79 | 77 | 79 | 77 | 76 | 74 |

Panel B: market capitalization 1 year growth rate

| | **Model 1** | **Model 2** |
|---|---|---|
| **Commitment Ratio** | -0.061 | |
| | (0.165) | |
| **FDI Gap** | | 1.6e+06** |
| | | (6.9e+05) |
| **Chi2** | 576.442 | 5089.297 |
| **N** | 95 | 94 |

Table 9: Financial development indexes

Robust standard errors are reported in parentheses; * p<.10, ** p<.05, *** p<.01. All control variables are included in all models.

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | 0.002 | | -0.083 | | -0.025 | |
| | (0.186) | | (0.071) | | (0.043) | |
| **FDI Gap** | | -2.6e+06*** | | 1.1e+06*** | | 3.8e+05** |
| | | (8.0e+05) | | (3.5e+05) | | (1.8e+05) |
| **Financial development index** | -3.675 | -13.157 | -10.149*** | -12.243*** | -3.645** | -5.772*** |
| | (9.820) | (12.943) | (3.770) | (4.179) | (1.634) | (1.447) |
| **Chi2** | 103.249 | 240.598 | 123.403 | 210.662 | 8.772 | 116.779 |
| **N** | 94 | 91 | 94 | 91 | 90 | 87 |

Table 10: Listed firms

Robust standard errors are reported in parentheses; * p<.10, ** p<.05, *** p<.01. All control variables are included in all models.

Panel A: Long -term debt

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | -0.087 | | -0.179*** | | -0.064 | |
| | (0.131) | | (0.065) | | (0.046) | |
| **FDI Gap** | | -2.2e+06* | | 1.6e+06*** | | 5.1e+05** |
| | | (1.2e+06) | | (4.6e+05) | | (2.1e+05) |
| **Long-term debt** | 0.001** | 0.001* | 0.000** | 0.000** | 0.000*** | 0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| **Chi2** | 1750.696 | 22.577 | 459.379 | 36.982 | 324.004 | 67.966 |
| **N** | 94.000 | 91.000 | 94.000 | 91.000 | 90.000 | 87.000 |

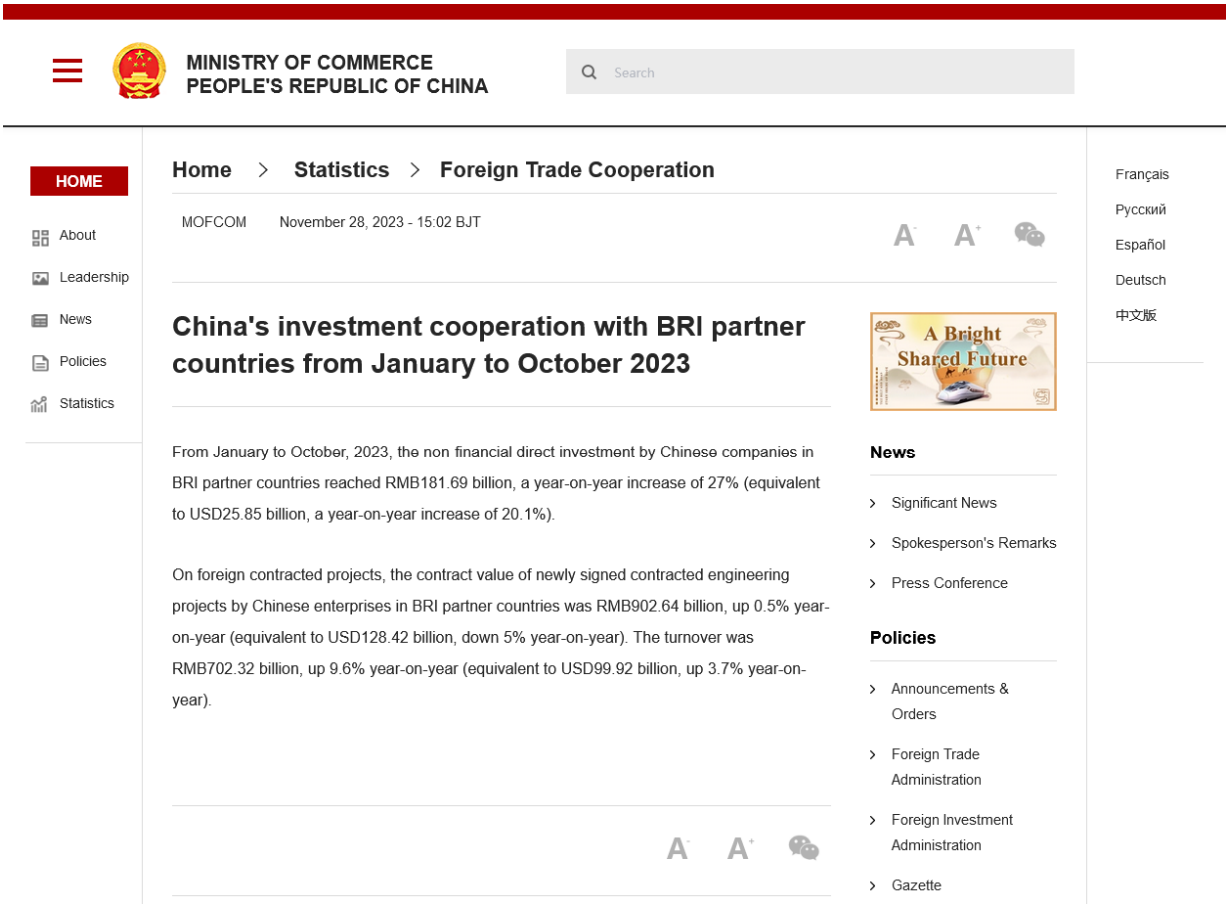
Panel B: Interest expenses

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | -0.036 | | -0.158** | | -0.042 | |
| | (0.141) | | (0.064) | | (0.038) | |
| **FDI Gap** | | -2.3e+06* | | 1.6e+06*** | | 6.0e+05*** |
| | | (1.3e+06) | | (4.7e+05) | | (1.9e+05) |
| **Interest expenses** | 0.051*** | 0.062*** | 0.026*** | 0.018*** | 0.001 | -0.001 |
| | (0.018) | (0.018) | (0.008) | (0.006) | (0.005) | (0.006) |
| **Chi2** | 416.145 | 57.691 | 203.301 | 36.458 | 163.251 | 63.625 |
| **N** | 94.000 | 91.000 | 94.000 | 91.000 | 90.000 | 87.000 |

Panel C: Net Working Capital

| **Forecast horizon** | **1 year** | | **3 years** | | **5 years** | |
|---|---|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** | **Model 5** | **Model 6** |
| **Commitment Ratio** | -0.041 | | -0.166** | | -0.063 | |
| | (0.160) | | (0.066) | | (0.045) | |
| **FDI Gap** | | -2.1e+06 | | 1.6e+06*** | | 5.3e+05*** |
| | | (1.3e+06) | | (4.6e+05) | | (2.0e+05) |
| **Net working capital** | 0.000 | 0.000 | 0.000** | 0.000 | 0.000*** | 0.000*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| **Chi2** | 168.409 | 33.392 | 610.613 | 41.852 | 211.524 | 63.157 |
| **N** | 94.000 | 91.000 | 94.000 | 91.000 | 90.000 | 87.000 |

Appendix A.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MOFCOM November 28, 2023 - 15:02 BJT
China's investment cooperation with BRI partner countries from January to October 2023
From January to October, 2023, the non financial direct investment by Chinese companies in BRI partner countries reached RMB181.69 billion, a year-on-year increase of 27% (equivalent to USD25.85 billion, a year-on-year increase of 20.1%).
On foreign contracted projects, the contract value of newly signed contracted engineering projects by Chinese enterprises in BRI partner countries was RMB902.64 billion, up 0.5% year-on-year (equivalent to USD128.42 billion, down 5% year-on-year). The turnover was RMB702.32 billion, up 9.6% year-on-year (equivalent to USD99.92 billion, up 3.7% year-on-year).
A Bright Shared Future
News
Significant News
Spokesperson's Remarks
Press Conference
Policies
Announcements & Orders
Foreign Trade Administration
Foreign Investment Administration
Gazette
Français
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