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Bilateral Lucas Paradox

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Abstract

Using the bilateral international investment data across countries for 2009-2018, we find that the returns on international investments are lower for rich countries than for poor countries, seemingly consistent with the Lucas Paradox. However, when we look at the excess returns on international investments relative to domestic investments, rich countries are investing more wisely than poor countries. A puzzle arises: Why do poor countries invest mostly in rich countries where relative returns are negative? We investigate the effects of institutional qualities of investor countries, in addition to recipient countries' characteristics, which the literature has been focusing on. We find that investor countries' institutional qualities do matter for participating in a wider set of investment destinations, but that they do not affect return sensitivity in allocating funds across participating markets.

JEL codes: F21, F34, F36, F65

Keywords: Lucas Paradox, international investments, return on capital, globalization

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1 Introduction

“Why doesn’t capital flow from rich to poor countries?” Lucas (1990) questioned the apparent lack of arbitrage in the international capital market between the capital-scarce developing countries (with high marginal product of capital (MPK)) and the capital-abundant advanced economies (with low MPK). Lucas (1990) shows that it is the case, even after correcting for the differences in human capital accumulations. With a typical production function, $Y = F(A, K, H)$, after correcting for human capital H , the differences in MPK must be attributed to the differences in A . Since the production knowledge could be freely moved (or at most with patent royalties or license fees), many researchers have shown that total factor productivity A is influenced largely by institutions, rather than technologies.

In this paper, we identify which side of institutions matter, investor or recipient countries. We are able to do so because we analyze bilateral capital-flow data compiled by the IMF for 2009-2018, that is, international investment positions with its originations and destinations. This contrasts to most past papers which are based on capital-flow data from, or to, the rest of the world. Interestingly, the bilateral data shows that there are lots of zero capital flows for many pairs of countries. This participation decision of an investor country to a specific recipient country’s market may follow a different mechanism than just an arbitrage decision by an investor among participating markets.

We find that the institutions of both investor and recipient countries matter in participation decisions. Importantly, rich countries are wiser, in that they invest in both rich and poor countries. On the contrary, poor countries invest mostly in rich countries whose returns are lower than those of the poor countries themselves. This is a deeper Lucas Paradox: why do poor countries invest in rich countries?

Moreover, among the countries where a country invests, arbitrage opportunities appear to remain. We do not find that the investors’ institutions influence the relative return, that is, the degree of non-arbitrage, though recipients’ institutions mitigate the paradox. Here, another deeper Lucas Paradox remains among the participating markets, even considering institutional differences and correcting for macroeconomic risks: why doesn’t rich countries arbitrage more wisely?

Note that, in contrast to our study, the literature on the Lucas Paradox has focused on the recipient side issues. For example, Alfaro, Kalemli-Ozcan, and Volosovych (2008) show that the paradox can be explained by institutional qualities in recipient countries. Gourinchas and Jeanne (2013) find that, even among developing countries, capital does not flow into the high MPK countries, and that the pattern of the investments follows national saving behaviors and foreign reserve accumulation. In response to the finding of Gourinchas and Jeanne (2013), Aguiar and Amador (2011) and Alfaro, Kalemli-Ozcan,

and Volosovych (2014) show that private capital flows into developing countries with the high MPK. Araujo, Lastauskas, and Papageorgiou (2017) examine the recent evolution of capital flows to low-income countries and attribute it to both intensive and extensive margins of international investments. They find that market-entry costs (non-production costs) hinder the capital flows into low-income countries. As in Araujo, Lastauskas, and Papageorgiou (2017), we consider both intensive and extensive margins of international investments by two-stage estimation.

The literature on estimating the MPK at the country level is also relevant to our paper. Caselli and Feyrer (2007) argue that, if correcting for natural resources, the MPK of developing countries are not so high since many of them are rich in natural resources. This seemed to solve the Lucas Paradox. However, Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019) argue that Caselli and Feyrer (2007) do not include the urban land value, which is a good proxy for the natural resource utilized by city-based activities. Once Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019) include them, the Lucas Paradox comes back. We, therefore, use the MPK defined by Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019) throughout our paper.

There are a few studies that examine the investor side issues on international investments. In particular, Ju and Wei (2010) analyze theoretically how the financial development and corporate governance affect international capital flows. In countries like China, people would like to invest in the U.S. because the domestic interest rate is low, due to the poor financial development, even if the MPK is high.¹ Leuz, Lins, and Warnock (2008) explore the effects of institutional qualities of countries and firms on international investments by the U.S. investors using firm-level data. They find that both country- and firm-level institutional qualities affect investments. Ananchotikul, Piao, and Zoli (2015) investigate the recent trends of financial integration in Asia, and the determinant of capital flows, in particular, the portfolio investment and bank loans. Similar to our paper, they take into account the institutional qualities of investor countries, such as the degree of investor protection, quality of insolvency framework and contract enforcement, but study only Asian countries, and without risk adjustment. Fratzscher and Imbs (2009) show that the degree of consumption risk sharing depends on international assets (e.g., bonds, equity, and the FDI). Country's holdings of those assets are determined by transaction costs specific to each asset class.

Other related literature examine the common characteristics of a pair of countries that determine

¹They find that the financial system efficiency and corporate governance may have opposite effects. An improvement in corporate governance increases both the expected MPK of the FDI and the financial returns on the portfolio investments, while the financial system efficiency matters for a gap between the MPK and financial returns.

international trade and investments. For example, Portes and Rey (2005) find that distance and proxies of information asymmetry determine the pattern of bilateral equity flows. The proxy of social ties, such as networks of race or migrants (Rauch and Trindade 2002; Burchardi, Chaney, and Hassan 2018), language, and religion (Head, Mayer, and Ries 2010; Head and Ries 2008; Hoshi and Kiyota 2019; Pellegrino, Spolaore, and Wacziarg (2021)) are also key determinants of international trade and investments. We include these variables as controls, to estimate the effect of institutions of both investor and recipient countries on international capital flows.

Let us reiterate our results: In terms of arbitrage decision, investors' institutions do not matter, while in terms of participation decision, investors' institutions do matter. For both decisions, recipients' and commonality matter.

2 Stylized Facts

We start to look casually at the bilateral investments (i.e., the foreign direct investments and the portfolio investments), and show the pattern somewhat consistent with the Lucas Paradox, that is, poor countries tend to invest in rich countries. Moreover, we look at the relationship between the returns on investments and the log of real GDP per capita. Also, consistent with the Lucas Paradox, we find that the simple returns on investments, represented by the MPK, are lower for rich countries than for poor countries. In other words, rich countries do not seem to be investing in developing countries where returns are high.

However, the relative returns show the opposite picture. We find that the excess returns on international investments (i.e., the MPK of recipient countries), relative to the returns on domestic investments (i.e., the MPK of originated countries), are higher for the rich than the poor. This tendency is confirmed even after correcting for macroeconomic risks. In other words, rich countries are investing abroad more wisely than poor countries. The paradox lies in poor countries, not in rich countries.

Here, we first look at the extensive margin of foreign investments. Figure 1 and Figure 2 are the colored tables show the extensive margins. X-axis and y-axis represent investor and recipient countries, respectively. The investor and recipient countries are sorted by the GDP per capita. Each blue cell of the table means that an investor country in each column (x-axis) of that cell invests positive amounts in a recipient country in each row (y-axis) of the same cell. Similarly, each red cell means that an investor country in the column (x-axis) does not invest in a recipient country in a row (y-axis). If the data that country i invests in country j is not available from 2009 to 2018, (i, j) element of the table is colored

as white. We can see that for both FDI and portfolio investment, rich countries invest broadly, but poor countries tend to invest only in rich countries.

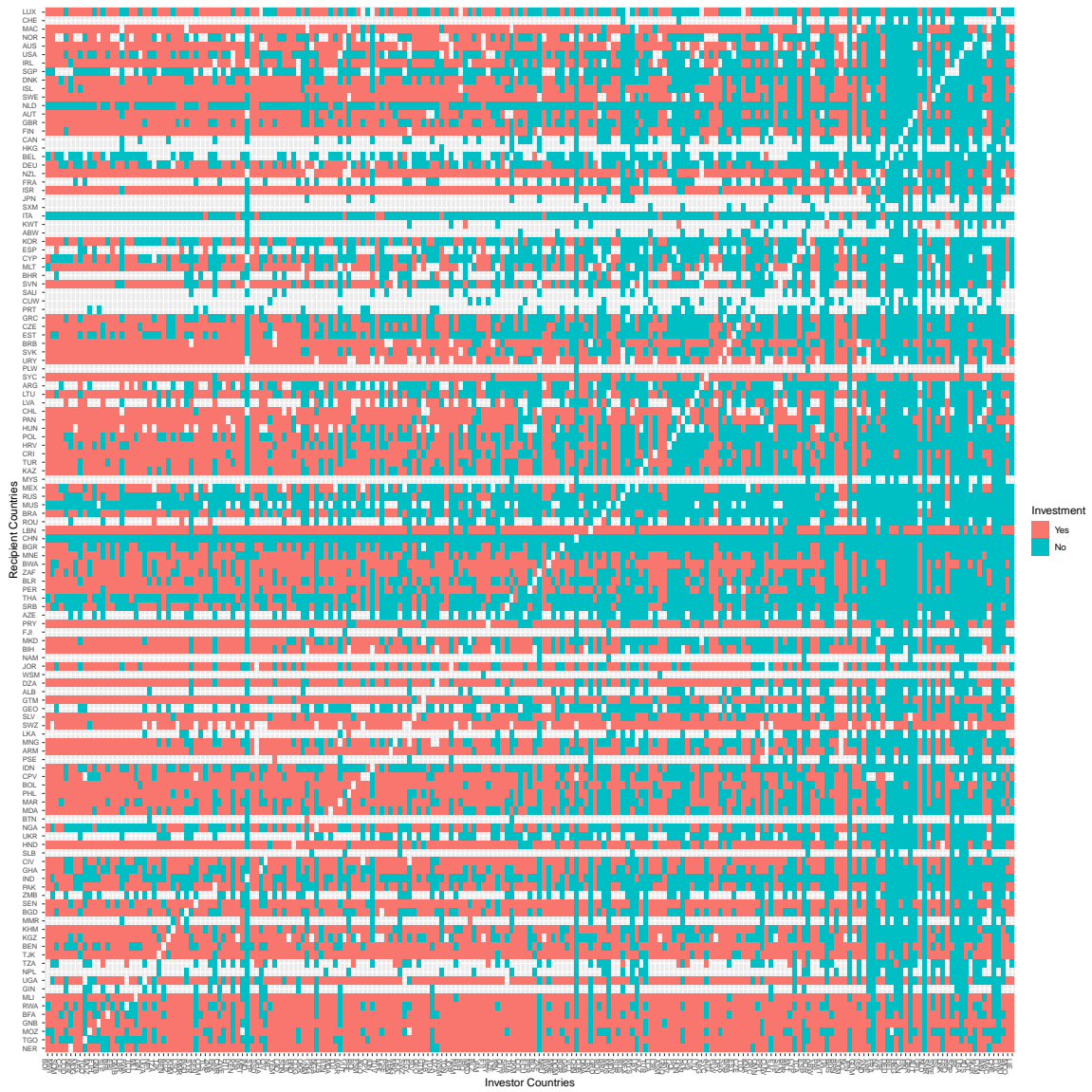


Figure 1: Extensive Margin of the FDI from 2009 to 2018

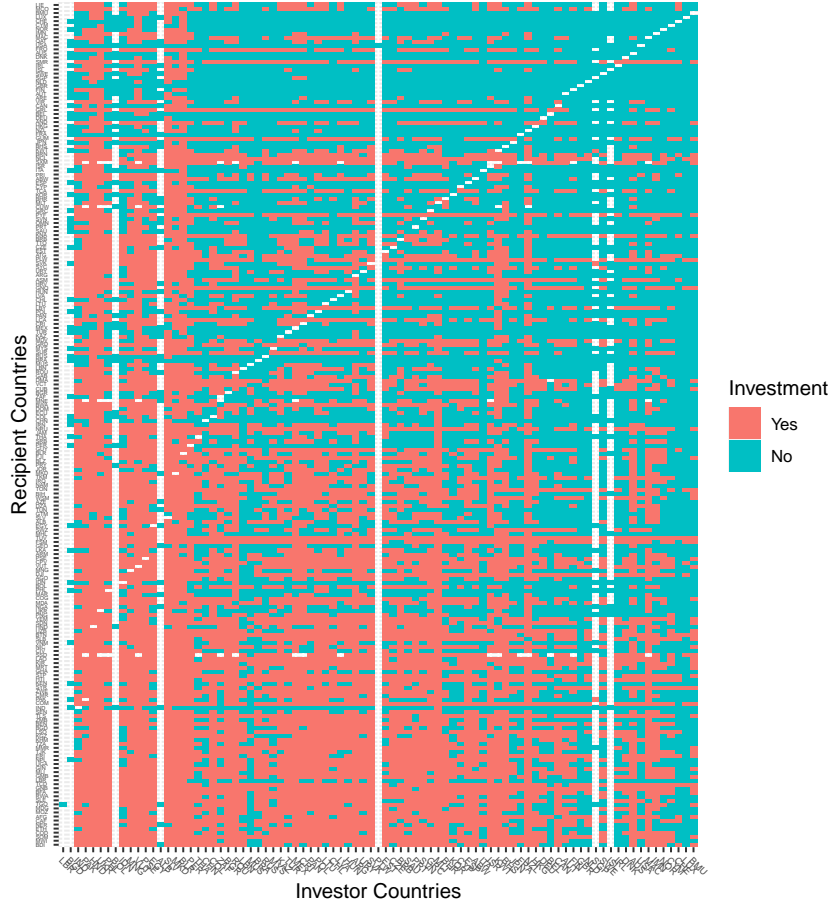


Figure 2: Extensive Margin of the Portfolio Investments from 2009 to 2018

Next, we look at the relationship between the returns on international investments and the log of real GDP per capita. We define *basket returns* of country i from investing in a basket of countries at time t , normalized by the aggregate investments, as

$$Basket\ Returns_{i,t} = \frac{\sum_j a_{i,j,t} r_{i,j,t}}{\sum_j a_{i,j,t}}, \quad (1)$$

where $a_{i,j,t}$ is the gross investment position in US dollars of country i to country j at time t , and $r_{i,j,t}$ is the return on investments to country j from country i at time t .²

²Note that we use gross investment data instead of net investment data.

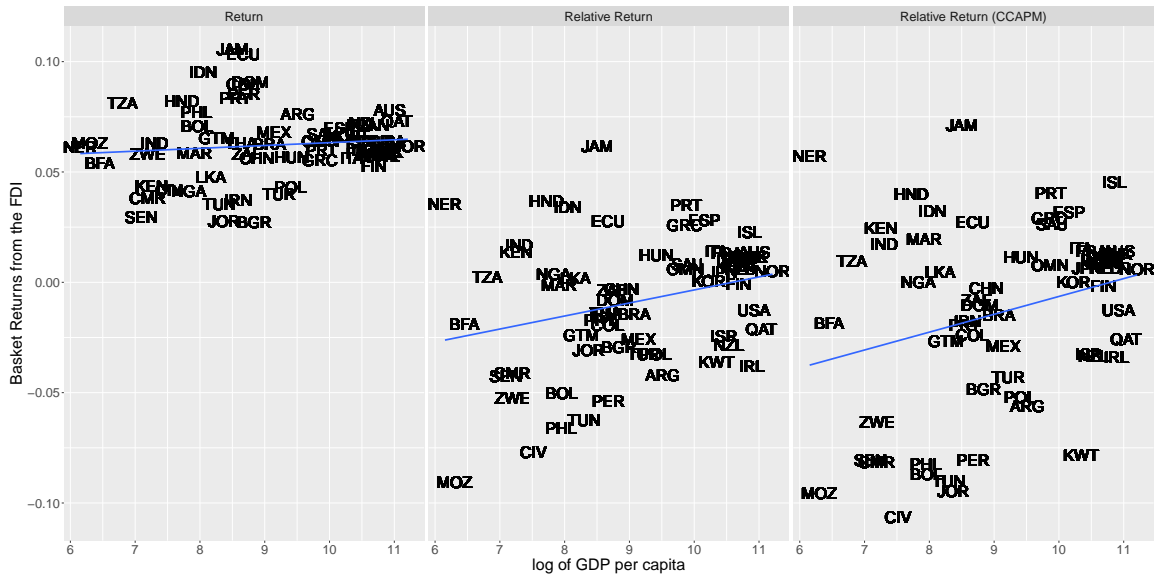


Figure 3: The Average Returns from the FDI from 2009 to 2018

This figure plots the relationship between the log of real GDP per capita and the 2009-18 average of basket returns from the FDI defined in three different ways. In the left panel, the returns refer to MPK of recipient countries correcting for natural resources. In the middle panel, relative returns are used. The right panel presents the relative returns correcting for correlation of marginal utilities, based on the consumption-based capital asset pricing model (CCAPM).

Figure 3 plots the 2009-2018 average of the basket returns from the foreign direct investment (FDI), based on three different definitions of the returns. In the left panel of Figure 3, $r_{i,j,t}$ is defined as the MPK, calculated based on the national accounts for each recipient j -th country, which does not depend on i -th domestic assets return. In the middle panel of Figure 3, we report the relative returns, that is, the MPK of each j -th recipient country in excess of i -th domestic returns. The right panel of Figure 3 presents the returns relative to the domestic returns with correcting for the correlation of marginal utilities, based on the consumption-based capital asset pricing model (CCAPM).³ Figure 4 shows the same plot for the portfolio investments.

The left panel of Figure 3 shows that the average returns on the FDI by poor countries are about the same as those by rich countries. The left panel of Figure 4 shows the same picture for portfolio investments, but perhaps also shows that the poor seem to invest slightly more wisely than the rich.

However, because they should have highly profitable opportunities inside their borders, poor countries may be better off by investing more in domestic projects. Here, we calculate the relative returns on foreign investments compared with domestic investments, and show this in the middle panels of Figure 3

³The details of our data and the derivation of the relative returns are explained later. The number of observations in the three panel are the same.

and Figure 4. Now, the opposite picture appears: The poor turn out to invest less wisely as their relative returns are negative.

Moreover, if investor countries engage in arbitrage, we should observe that the relative returns on investments would be zero (at least nonnegative), after correcting for their risk preferences. The risk adjusted relative returns by CCAPM are shown in the right panels of Figure 3 and Figure 4. The international portfolio investments by advanced countries seem arbitrated well but not by developing countries, which seem to suffer from negative returns.

This implies that capital flows excessively from poor countries to richer countries. This may indicate that developing countries seek safe assets more or just invest unwisely. On the other hand, capital does flow from the rich to the poor adequately, unlike Lucas Paradox suggests. Below, we investigate the factors behind these capital flows in detail more by looking at the characteristics of both investor and recipient countries, in particular institutional qualities.

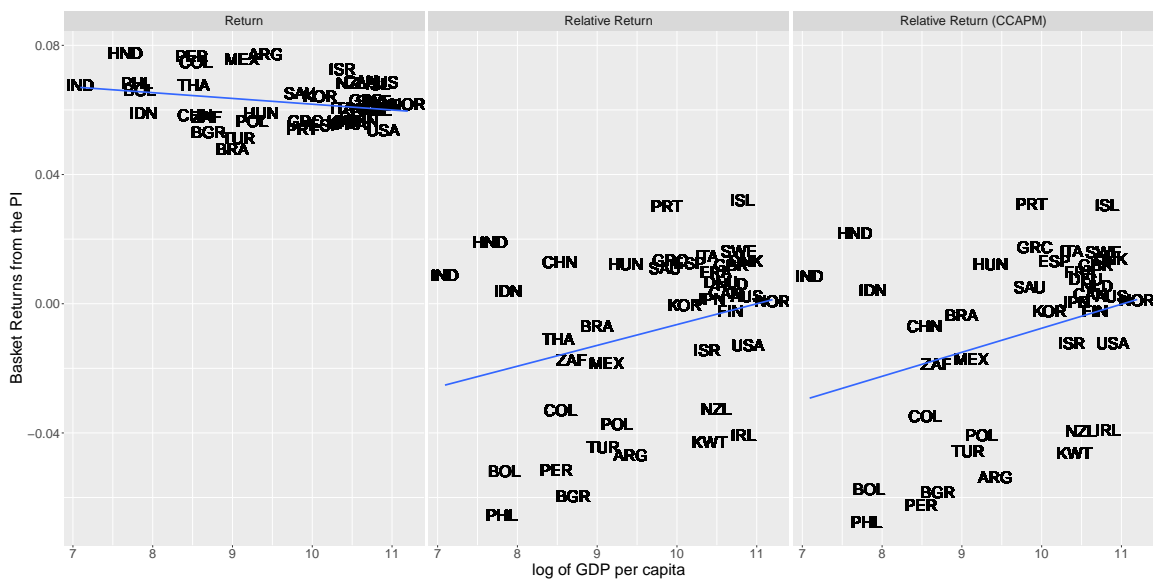


Figure 4: The Average Returns from the Portfolio Investments from 2009 to 2018

This figure plots the relationship between the log of GDP per capita and the 2009-18 average of basket returns the portfolio investments from defined in three different ways. In the left panel, the returns refer to MPK of recipient countries correcting for natural resources. In the middle panel, relative returns are used. The right panel presents the relative returns correcting for correlation of marginal utilities, based on the consumption-based capital asset pricing model (CCAPM).

3 Data

3.1 Data Description

We construct variables regarding returns on investments by ourselves, based on publicly available data sources, while we use often-used characteristics of countries, such as institutional qualities, financial openness, religion, geography, and language. Since these variables do not change much over time, we conduct a cross-country analysis, not a panel data analysis.

The sample period covers from 2009 to 2018, since the data on bilateral foreign direct investments are available only from 2009. There are stock, not flow, variables and we use the average over the sample periods. Data sources are explained below. Table 1 shows the country coverage. In the benchmark, we exclude the countries regarded as offshore financial centers, such as Switzerland and the Cayman Islands, according to the classification of Johannesen and Zucman (2014). Later, as a robustness check, we also exclude financial centers classified with a slightly different definition used by Garcia-Bernardo et al. (2017).

Table 2 summarizes the data definition and sources. Tables 3 to 6 show the descriptive statistics and the correlation tables of the variables used for our regressions.

Capital Flows

The data on bilateral foreign direct investments (FDI) and bilateral portfolio investments come from the Coordinated Direct Investment Survey (CDIS) and the Coordinated Portfolio Investment Survey (CPIS), both compiled by the IMF. The definitions of the foreign direct investments and the portfolio investments are given by the Balance of Payments and International Investment Position Manual 6th edition (BPM6) of the IMF (2009). The foreign direct investments are defined as the investments with which foreign investors can control or influence significantly on firms' management. Practically, BPM6 (IMF) defines the FDI as a 10 percent or higher voting rights in an enterprise. The portfolio investments are defined as cross-border investments in the form of debt or equity securities, which are not classified as foreign direct investments or official reserve assets. For a robustness check, we also use refined bilateral external portfolios constructed by Coppola et al. (2021), who track original investor countries behind investment funds.

To maximize the coverage of our sample countries for the FDI, we use the data on inward investments of the receiving countries, instead of outward investments of investors. This is because participants of

the CDIS always report the positions of inward direct investments but not always the outward positions. The capital flows are measured in the current US dollar. However, the currency unit does not matter in our analysis because in the second-step regressions, we use the share of the bilateral investment position of country i to another country j in the total investments of country i to the rest of the world. And, in the first step, the dependent variable is binary participation decision.

Return on Investment

As our benchmark measure of the return on investments, we correct the traditional MPK by adjusting for natural resources, since natural resources are important production inputs in developing countries (Caselli and Feyrer 2007). We use the data from Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019), who separate and calculate the shares of capital and of natural resources. The coverage of their data is from 1970 to 2005, and we take the average over 1990 to 2005 for estimating the capital share.

For an alternative measure, we use the traditional MPK, that is, the ratio of the real GDP to capital multiplied by the estimated share of capital. We use the GDP and the capital stock at constant national prices in US dollars as of 2011, from the Penn World Table, version 10.0 (PWT 10.0). Also, we estimate the capital share of outputs calculated as 1 minus the labor share reported in PWT 10.0, for each year and each county.

Yet another measure of the return on investment is the price, that is, the real interest rate, which is taken from the World Bank database.⁴ The World Bank calculates the real interest rate as the lending interest rate adjusted for inflation measured by the GDP deflator. Note that the interest rate and MPK are often different (see, e.g., Reis (2021)), likely because the loan rates are often subject to regulations and monetary policies, as well as financial developments. Appendix A includes equivalents to Figure 3 based on these alternative measures, as well as robustness of regression results using them.

Consumption Growth Rates, Human Capital, and the Parameter of Relative Risk Aversion

The aggregate consumption growth data is taken from the World Economic Outlook Database of the IMF. The data on human capital is from PWT 10.0. The parameter of relative risk aversion is set as 2.0 for the benchmark, which is a typical value used in the literature.

⁴<https://data.worldbank.org/indicator/FR.INR.RINR?view=chart>

Country Characteristics

General Institutions We use the rule of law, the property rights, and the political stability and absence of violence/terrorism (hereafter political stability) as general institutional qualities. The rule of law and the political stability are from the Worldwide Governance Indicators, 2017, originally constructed by Kaufmann, Kraay, and Mastruzzi (2011). The rule of law “captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.” Also, the political stability index “measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.” The indicators take a value from -2.5 (weak) to 2.5 (strong).

The property rights is from the Global Competitiveness Report 2017-2018 of the World Economic Forum. The index of the property rights describes the extent to which property rights, including financial assets, are protected. The range is 1 (not at all) to 7 (to a great extent).

Financial Sector Institutions We use the corporate governance and the borrower-creditor rights from the Doing Business (2018) of the World Bank as financial sector institutional qualities. For corporate governance, we use the strength of investor protection index, which represents the strength of minority shareholder protection. The index takes a value from 0 (weak) to 10 (strong).

For borrower rights, we use the strength of legal rights index from the Doing Business of the World Bank. It is an index from 0 (weak) to 10 (strong), and measures “the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending.” Note that this indicator put more weights on borrower rights compared to creditor rights. We also use resolving insolvency as a measure that put more weights on creditor rights. It is also from Doing Business (2018) of the World Bank, defined as “the time, cost and outcome of insolvency proceedings involving domestic entities, as well as the strength of the legal framework applicable to judicial liquidation and reorganization proceedings.” The range of the indicator is between 0 (weak) and 100 (strong).

Financial Openness We use Chinn and Ito (2006) index, which measures the easiness (i.e., less restrictions) of cross border financial transactions for each country. It covers 182 countries and the period of our sample. The index is the first principal derived from the principal component analysis, based on four binary variables of the Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER,

2018) of the IMF. The four variables are restrictions on current account, capital account transactions, the existence of multiple exchange rates, and the requirements of surrendering export proceeds. The minimum and the maximum values of the index are -1.91 and 2.36, respectively. Countries with high value of the index have high degree of capital account openness.

External Conditions The data on foreign reserves, exchange rates, and tariff rates are taken from the World Development Indicators of the World Bank. The dummy variable for legal origin is from La Porta, Lopez-de-Silanes, and Shleifer (2008)

Natural and Quasi-Natural Characteristics We use the distance between a pair of countries, language, and religion from GeoDist (2015) of CEPII. Distance is calculated by the great-circle formula, based on latitudes and longitudes of the most important cities or agglomerations in terms of population. For language, we construct the dummy variable indicating whether two countries have the same official or primary language. We use the religion proximity index, which is “calculated by adding the products of the shares of Catholics, Protestants and Muslims in the exporting and importing countries” (CEPII, 2015). The range of this index is from 0 to 1.

3.2 CCAPM-Based Correction for Business Cycle Risk

We use a standard consumption-based capital asset pricing model (CCAPM) to correct relative risks for i -th country to invest in j -th country. We articulate the portfolio allocation problem between domestic and foreign assets based on the returns on assets, and the correlations among them, correcting for marginal utilities.

For a case with J countries, recipient country $j \in \{1, \dots, J\}$ has an asset A_j that pays the dividends $\{d_{j,t}\}_{t=0}^{\infty}$. Country i maximizes its life-time utility by choosing the sequence of its consumption $\{c_{i,t}\}_{t=0}^{\infty}$ and asset holding on j th asset, $\{a_{i,j,t+1}\}_{t=0}^{\infty}$, given price $\{q_{j,t}\}_{t=0}^{\infty}$ and the initial holding of assets $\{a_{i,j,0}\}_{j=1}^J$. The output by country i at t is denoted by $y_{i,t}$. Then, the utility maximization problem of country i is expressed as

$$\max_{\{c_{i,t}, \{a_{i,j,t+1}\}_{j=1}^J\}_{t=0}^{\infty}} E_0 \left[\sum_{t=0}^{\infty} \beta^t u(c_{i,t}) \right] \quad (2)$$

subject to

$$c_{i,t} + \sum_{j=1}^J q_{j,t} a_{i,j,t+1} \leq y_{i,t} + \sum_{j=1}^J (q_{j,t} + d_{j,t}) a_{i,j,t}, \quad (3)$$

for all t , where β is the discount factor, which is assumed to be the same for all countries for the sake of simplicity.⁵ The market clearing conditions are, for each j 's asset market,

$$\sum_{i=1}^J a_{i,j,t} = A_j \quad (4)$$

and for the world

$$\sum_{i=1}^J c_{i,t} = \sum_{i=1}^J y_{i,t}. \quad (5)$$

The first order conditions are, for all investor country $i = 1, \dots, J$,

$$u'(c_{i,t}) = \beta E_t [u'(c_{i,t+1}) R_{j,t+1}] \quad (6)$$

where $R_{j,t+1} = (q_{j,t+1} + d_{j,t+1})/q_{j,t}$ is the one-period gross return realized by j -th country's asset at time $t + 1$. We can derive the Euler equation for country i with respect to any foreign asset j as

$$\begin{aligned} 1 &= E_t \left[\beta \frac{u'(c_{i,t+1})}{u'(c_{i,t})} R_{j,t+1} \right] \\ &= E_t [m_{i,t+1} R_{j,t+1}] \\ &= \text{Cov}(m_{i,t+1}, R_{j,t+1}) + E_t [m_{i,t+1}] E_t [R_{j,t+1}], \end{aligned} \quad (7)$$

where $m_{i,t+1} \equiv \beta \frac{u'(c_{i,t+1})}{u'(c_{i,t})}$ is the stochastic discount factor of country i .

Because this Euler equation holds for each recipient j -th country, including investor's domestic investment,

$$\begin{aligned} \text{Cov}(m_{i,t+1}, R_{i,t+1}) &+ E_t [m_{i,t+1}] E_t [R_{i,t+1}] \\ &= \text{Cov}(m_{i,t+1}, R_{j,t+1}) + E_t [m_{i,t+1}] E_t [R_{j,t+1}], \end{aligned} \quad (8)$$

that is,

⁵As we will explain in equation 10 below, this assumption on the discount rate does not affect the key implications.

$$E_t [R_{j,t+1}] - E_t [R_{i,t+1}] = \frac{1}{E_t [m_{i,t+1}]} [\text{Cov}(m_{i,t+1}, R_{i,t+1}) - \text{Cov}(m_{i,t+1}, R_{j,t+1})]. \quad (9)$$

Since $m_{i,t+1} \equiv \beta \frac{u'(c_{i,t+1})}{u'(c_{i,t})}$,

$$E_t [R_{j,t+1}] - E_t [R_{i,t+1}] = E_t \left[\frac{u'(c_{i,t+1})}{u'(c_{i,t})} \right]^{-1} \text{Cov} \left(\frac{u'(c_{i,t+1})}{u'(c_{i,t})}, R_{i,t+1} - R_{j,t+1} \right). \quad (10)$$

In the perfect market, the investment decision should be determined by this equation. The relative return on foreign asset j should be arbitrated with domestic investment after correcting essentially for its correlation with marginal rate of substitutions.

However, if the simple arbitrage condition were to fail with a home bias, then $E_t [m_{i,t+1} R_{i,t+1}] < E_t [m_{i,t+1} R_{j,t+1}]$ would hold for some j at time t . This implies the right hand side of equation 10 is smaller than the left hand side, or

$$E_t [R_{j,t+1}] - E_t [R_{i,t+1}] + E_t \left[\frac{u'(c_{i,t+1})}{u'(c_{i,t})} \right]^{-1} \text{Cov} \left(\frac{u'(c_{i,t+1})}{u'(c_{i,t})}, R_{j,t+1} - R_{i,t+1} \right) > 0. \quad (11)$$

In other words, the relative return correcting for risks is positive. In this case, investors in i -th country should invest more on j -th asset. Hence, this (11) is the Lucas Paradox in a more general form, defined bilaterally for $i - j$ pair countries.

Here, we denote the left-hand-side of (11) as $RR_{i,j,t}$, that is, the relative return correcting for risks on foreign asset j with respect to domestic asset i

$$RR_{i,j,t} \equiv E_t [R_{j,t+1}] - E_t [R_{i,t+1}] + E_t \left[\frac{u'(c_{i,t+1})}{u'(c_{i,t})} \right]^{-1} \text{Cov} \left(\frac{u'(c_{i,t+1})}{u'(c_{i,t})}, R_{j,t+1} - R_{i,t+1} \right). \quad (12)$$

As is often assumed in the international macroeconomics literature, we further assume a constant relative risk aversion (CRRA) utility function $u(c_t) = \frac{c_t^{1-\sigma}}{1-\sigma}$, where σ represents the relative risk aversion. Then, the return on asset j relative to i can be written as

$$RR_{i,j,t} = E_t [R_{j,t+1}] - E_t [R_{i,t+1}] + E_t \left[g_{i,t+1}^{-\sigma} \right]^{-1} \text{Cov}(g_{i,t+1}^{-\sigma}, R_{j,t+1} - R_{i,t+1}), \quad (13)$$

where $g_{i,t+1} = c_{i,t+1}/c_{i,t}$ is the consumption growth rate of country i . We define external assets weighted average of (13) for each country i as the Lucas Paradox Index, which are shown in the right panels of

Figures 3 and 4. Note that, unlike the original Lucas Paradox (1990), this index shows mostly negative.

4 Estimation

In the data, many country do not invest in all other countries. Naturally, participation to a specific foreign market and portfolio balance among participating markets should be related, though somewhat separate decisions. We, thus, use the Heckman (1977) two-step model to correct for selection bias and to find out possibly different key factors to determine the extensive and intensive margins of foreign investments.⁶

The first step is the probit estimation for participation of i -th country in investing j -th country:

$$\Pr(S_{i,j} = 1) = \Phi(\mathbf{Z}'_i \boldsymbol{\gamma}_1 + \mathbf{Z}'_j \boldsymbol{\gamma}_2 + \mathbf{Z}'_{i,j} \boldsymbol{\gamma}_3), \quad (14)$$

where \Pr denotes probability and Φ is the standard normal cumulative distribution function. The indicator function $S_{i,j}$ equals to 1, if the amount of investments is positive, and takes 0 otherwise. A vector \mathbf{Z}_i represents the characteristics of investor i , including the indices of general and financial institutions. Similarly, a vector \mathbf{Z}_j consists of the characteristics for recipient j . We also include the vector of common characteristics $\mathbf{Z}_{i,j}$, which are the distance between country i and j , the dummy if country i and j share a common language, and the index that represents how much country i and j share common religion.⁷

The second step is the regression to estimate determinants of the investment share of j -th country in i -th country's portfolio, with the correction for participation margin by the inverse mills ratio ($IMR_{i,j}$) obtained from the first step:

$$\begin{aligned} \ln Y_{i,j} = & \beta_0 + \mathbf{X}'_{i,j} \boldsymbol{\beta}_1 + RR_{i,j} \beta_2 \\ & + RR_{i,j} \mathbf{X}'_i \boldsymbol{\beta}_3 + RR_{i,j} \mathbf{X}'_j \boldsymbol{\beta}_4 + RR_{i,j} \mathbf{X}'_{i,j} \boldsymbol{\beta}_5 \\ & + IMR_{i,j} \beta_6 + \alpha_i + \alpha_j + \varepsilon_{1,i,j}, \end{aligned} \quad (15)$$

⁶In the literature on the determinants of capital flows, researchers often use the gravity model (e.g., Portes and Rey 2005), and use Poisson pseudo maximum likelihood estimation suggested by Silva and Teneyro (2006). In these methods, logarithm is not taken and zero investment are used in estimation. However, since we would like to explain the shares of foreign investments, not levels, and consider the participation decision for foreign investments, we do not use the Poisson pseudo maximum likelihood estimation. Also, we would like to know how country's characteristics affect its participation in specific foreign markets.

⁷We do not include investor and recipient fixed effects in the first step estimation because an estimation of the probit model with fixed effects suffers from the incidental parameter problem.

where α_i and α_j are investor and recipient fixed effects, respectively. Vectors $\mathbf{X}'_i, \mathbf{X}'_j$ and $\mathbf{X}'_{i,j}$ represent the relevant characteristics of investor i , recipient j , and i - j pair respectively. Vectors $\mathbf{X}'_i, \mathbf{X}'_j$ and $\mathbf{X}'_{i,j}$ are the same as $\mathbf{Z}'_i, \mathbf{Z}'_j$, and $\mathbf{Z}'_{i,j}$ used in the first step estimation, respectively, except that \mathbf{Z}_i contains an additional variable, that is, log of real GDP per capita of investor countries.⁸ Note that this regression investigates underlying factors (i.e., X_i, X_j , and X_{ij}) to determine investment allocation among the foreign markets a country participates in.⁹

We would especially like to see how investors respond to the returns on investments and, thus, our key parameter of interest is the coefficient vectors of the interaction terms, in particular, β_3 .

The dependent variable $Y_{i,j}$ is the time average (from year 2009 to 2018) of the share of investment from country i to country j , to the overall investments of country i , adjusted by the number of countries that country i invests, J_i , that is,

$$Y_{i,j} \equiv \frac{1}{T} \sum_{t=1}^T \frac{a_{i,j,t} / \sum_{j \neq i} a_{i,j,t}}{1/J_i}, \quad (16)$$

where $a_{i,j,t}$ is the investment position of country i to country j at time t . This allocation measure $Y_{i,j}$ represents the j 's share in the i 's fund allocation relative to hypothetical random allocation, $1/J_i$. Note that, because some countries allocate funds to many destinations while the others to only a few, a bilateral share within a well-diversified portfolio becomes mechanically lower. The allocation measure $Y_{i,j}$ corrects for this problem too.

$RR_{i,j}$ is the relative return correcting for risks on assets in country j with respect to country i , constructed from the data based on the CCAPM model we discussed in the previous section, that is, (13):

$$RR_{i,j} = \bar{R}_j - \bar{R}_i - \frac{1}{\bar{g}_{i,t} T} \sum_{t=1}^T (g_{i,t} - \bar{g}_i) [(R_{i,t} - \bar{R}_i) - (R_{j,t} - \bar{R}_j)], \quad (17)$$

where $\bar{R}_i = T^{-1} \sum_t R_{i,t}$ is the time mean of a return $R_{i,t}$ and $\bar{g}_i = T^{-1} \sum_t g_{i,t}$ is the time mean of a consumption growth rate. High $RR_{i,j}$ means that return from other countries is higher than the domestic return. As the benchmark regression, we use the relative return based on MPK correcting for the share of natural resources obtained from Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019).

⁸We included the log of real GDP per capita of investor countries in the participation decision. This is because, if there is any small fixed cost to participate in a specific country's market, richer countries are expected to participate a larger number of countries.

⁹Since we take logarithm of the dependent variable, we treat non-positive investment as missing value. Note that we exclude observations with negative outward investment in data (e.g., due to negative retained earnings) so that the range of $Y_{i,j}$ is between 0 and 1. The number of observations of negative outward investments is few and the total amount is small.

5 Benchmark Results

5.1 First Step Estimation

Column (1) and column (5) in Table 7 are the results of the first-step regressions, which explain the participation decision for foreign investments, that is, the FDI and the portfolio investments, respectively. Most importantly, the coefficients on the relative returns are negative and statistically significant for the FDI but not for the portfolio investment. This confirms that the Lucas Paradox exists in terms of the extensive margin for the FDI. Capital flows with lower returns, that is, richer countries. Note that, as the benchmark, we pick the rule of law for general institutional quality, the strength of legal rights index for borrower-creditor rights, and the Chinn and Ito Index for financial openness.

As for other factors regarding the FDI, investor countries with higher levels of general institutions, legal right index, or investor protection invest in more countries. The estimate for foreign reserves is negative, but the estimate for their square term is positive and bigger, suggesting that investor countries with sufficient foreign reserves are more likely to invest abroad and vice versa. The flipping threshold is, however, relatively small. Regarding the recipient side, countries with high investor protection and foreign reserves are more likely to receive the FDI. Strangely, countries with low levels of rule of law and legal right index are more likely to receive the FDI. Note that higher legal right index suggests relatively better borrower protection and so it may discourage investments.

Results are essentially the same for the portfolio investments. However, the sign is flipped for the legal right index of the investor countries and so more borrower-protected investor country have higher FDI investments but lower portfolio investments.¹⁰ A key sign is opposite for the recipient countries, with a better rule of law attracting more the portfolio investments. Also, recipient countries with better corporate governance and higher foreign reserves, similar to the FDI case, are more likely to receive the portfolio investments. However, the legal right index has no effect.

Moreover, consistent with the literature, commonalities of two countries matter. For the FDI and the portfolio investments, the estimates of the geographical distance between two countries show that investor countries do not invest in distant countries in terms of extensive margin. On the other hand, investor countries are more likely to invest in countries that have similar religion composition. Language does not matter, though.

¹⁰We find a slightly opposite phenomenon compared to Ju and Wei (2010). Ju and Wei (2010) look at the FDI and the other investments as dependent variables. Also, Ju and Wei (2010) do not focus on the share of the investments.

5.2 Second Step Estimation

The results tell us that the arbitrage is affected by the recipient countries' institutional quality, as well as commonalities, but not by the investor countries' institutions. In Table 8, Column (1) for the FDI and (5) for the portfolio investments show the results of the second-step of the benchmark regressions, controlling for both investor and recipient country fixed effects.

We find that the difference in MPK (RR_{ij}) itself does not matter for the asset allocation (or even negative for the FDI but only at 10% level of significance). We also find that there are essentially no institutional effects regarding the return arbitrage as for the investor country side. However, we find that the cross term of the relative returns with legal rights for recipient countries is positive and statistically significant for the FDI only. Also, the estimate of the cross term between the relative returns with corporate governance (investor protection) of recipients is positive and statistically significant for the FDI only. The distance of two countries, language dummy, and religion dummy also affect as predicted intensive margin for both the FDI and portfolio investments, but only the language cross term matters for arbitrage only for the FDI. Other factors do not matter.

Overall, the first step shows that institutions of both investors and recipients matter as expected, when investors decide to participate in the recipients' markets. However, once participated, the second step shows that only recipients' institutions affect the arbitrage in the asset allocation across countries. Good institutions of investors do not solve the lack of arbitrage. These results confirm that the recipient institutions are the key reason for the Lucas Paradox in the second step. The results also deepen the Lucas Paradox from the investor side: (1) Why doesn't the poor participate more widely and wisely in the international markets? (2) Why doesn't the rich arbitrage more wisely across participating markets?

6 Robustness Check

6.1 Different Measure of Institutional Qualities

As a robustness check, we estimate our model with alternative variables for the institutional qualities of investors and recipients.

In Table 7 (the first step) and Table 8 (the second step), instead of the rule of law, we estimate our model with the property rights in columns (2) and (6), and with the political stability index in columns (3) and (7). Moreover, instead of the legal right index, we use the resolving insolvency index, which leans

toward creditor rights, in columns (4) and (8). Results do not change much. Exceptions are investors' political stability index that have negative effects on the participation for the FDI (column 3), contrary to the effect of rule of law index. Columns (4) and (8) show that better resolving insolvency of investor and recipient countries have positive effects on the participation for both the FDI and portfolio investments, respectively. These are clearer effects than legal rights index in the benchmark.

As for the second step, for the recipient countries, property rights are significantly negative for receiving the FDI. More interestingly, political stability of investor countries negatively affects portfolio investments, that is, people invest abroad more if their countries are politically unstable. This is consistent with Ju and Wei (2010).

6.2 Subsample Analysis: Financial Centers, the US, and Crises

Foreign investments are often distorted by the existence of financial centers, which attract foreign investments, due to lower tax rates or less regulations. Moreover, the capital flows, especially portfolio investments, might not flow directly to the final destination, but indirectly via financial centers. Therefore, we did estimate our benchmark regression after excluding the financial centers defined by Johannesen and Zucman (2014).

Here, we use another definition of financial centers by Garcia-Bernardo et al. (2017). Garcia-Bernardo et al. (2017) classified offshore financial centers based on the value of foreign investments, which Johannesen and Zucman (2014) relies on qualitative assessment. Garcia-Bernardo et al. (2017) divide offshore financial centers (OFCs) into two categories; sink-OFCs, which retain foreign investments, and conduit-OFCs, which are attractive intermediate destinations of foreign investments. We exclude these two types of countries from our sample. Star superscript * in Table 1 shows the countries that we additionally exclude from our sample.

Moreover, we exclude the US from our recipient country sample since international investors have incentive to hold US dollar assets, which are recognized as the key currency for international transactions.

The results are almost identical as those of the benchmark. Columns (1) and (6) in Tables 9 and Table 10 show the results for the FDI and portfolio investments in the sample excluding financial centers, and column (2) and (7) in Tables 9 and Table 10 show the results excluding the US. Only a few differences come up. For the extensive margin (first step), the effect of foreign reserves of recipients of the FDI are still negative for those with the low level and positive for those with the high level but the flipping threshold becomes very high. On the other hand, the effect of foreign reserves becomes insignificant for

portfolio investment. Regarding the arbitrage behavior in the second step, in columns (1) and (2) in Table 10, foreign reserves of recipients is now almost always positive for the FDI, except for very high level of reserves. Also, for the portfolio investment, columns (6) and (7) in Table 10 show that the cross terms of the rule of law in investor countries with the relative return has negative effect, though at a 10 percent level.

Moreover, we use the data from Coppola et al. (2021) that associates the universe of traded equity and debt securities in portfolio investment with their issuer's ultimate parent, including those issued in tax havens. Column (8) in Tables 9 and 10 show that the results remain essentially the same. A few exceptions appears in the first step. For investor countries, financial openness becomes positive and statistically significant and foreign reserves become insignificant. For the recipient countries, legal rights become positive and significant and financial openness becomes positive and significant.

Furthermore, to eliminate the effects from the global financial crisis and the European debt crisis, we conduct the analysis using the dates only from 2014 to 2018 to check robustness. Again, results remain essentially the same (columns (3) and (9) in Table 9 and Table 10).

6.3 Alternative Definitions of Returns on Investments

Columns (4) and (10) in Table 9 and Table 10 show the results of regressions in which the relative returns on assets are based on the traditional marginal products of capital without natural resource correction and with the capital share constructed by 1 minus the labor share. Separately, in columns (5) and (11) in Table 9 and Table 10, we use the real interest rates to construct the relative returns.

Note that the real interest rates does not necessarily reflect MPK, as they are influenced by distortions in financial markets. Figure 5 shows the correlation between MPK, correcting for natural resources and real interest rates. We can see that they are not well correlated. Also, while the real interest rate may be a good measure for the portfolio investments, it is less so for the FDI. However, as explained in below, results do not change much with either measure of the return.

Results are almost the same as those of the benchmark with a few differences. In the first step, the coefficient of the relative return is not significant for the FDI for the traditional MPK, but is negative and significant for the portfolio investment for both the traditional MPK and the real rate. In the first step of the FDI, rule of law of investors and recipients are no longer significant for both the traditional MPK and the real rates. Also, investors' foreign reserves are not significant for the real rates, while recipients' foreign reserves turn negative for both the traditional MPK and the real rates. In the first step of the

portfolio investments, legal right of investors become insignificant for the real rate, while legal right of recipients become significant for the traditional MPK.

In the second step, the differences are as follows. Relative returns ($RR_{i,j}$) is no longer significant for the FDI. Cross term with foreign reserves of recipient countries become positive for the FDI for traditional MPK. Cross term with corporate governance of investor countries become positive for the portfolio investments for the traditional MPK. Cross terms with foreign reserve of investor countries, as well as cross term with rule of law of recipient countries, are no longer significant for the portfolio investment for real rates.

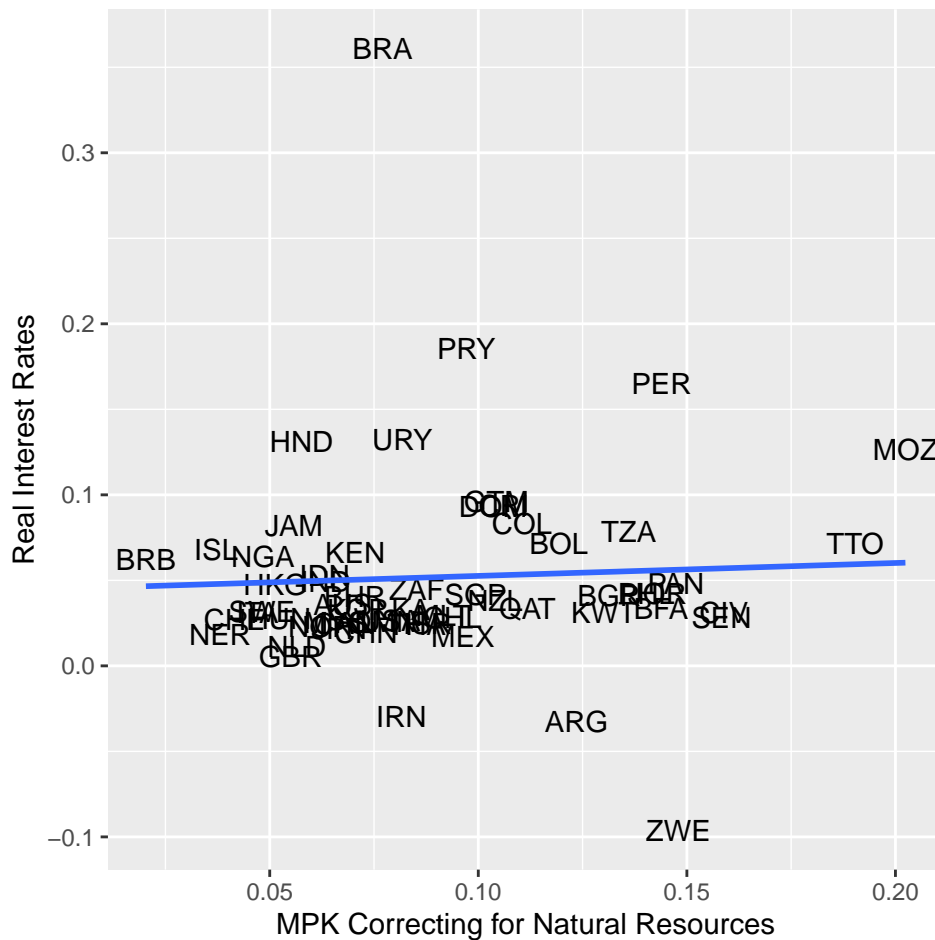


Figure 5: The Correlation between MPK and Real Interest Rates from 2009 to 2014

This figure shows the relationship between the 2009-14 average of the marginal product of capital by adjusting for natural resources and real interest rates. The data on the natural resource share is from Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019). The real interest rates are the lending interest rate adjusted for inflation measured by the GDP deflator, obtained from the World Bank.

6.4 Additional Variables

Here, we include human capital in our benchmark model, since Lucas (1990) points out the human capital as a possible factor solving the Lucas Paradox. Also, we add tariff rates, coefficients of variation of nominal exchange rates (i.e., exchange rate volatility), and the legal origin index (a proxy for financial sector institutional quality). We use the human capital index from PWT 10.0 which is based on years of schooling and returns to education. Data on tariff rate is from WDI. Nominal exchange rate is measured by investor country's currency per recipient country's currency. Data on the nominal exchange rate is from the IMF International Financial Statistics. The legal origin index is from La Porta, Lopez-de-Silanes, and Shleifer (2008). These estimation results are in Tables 11 and 12.

With all these additions, coefficients for variables in benchmark regressions essentially remain the same.

The results of first-step estimation with human capital are shown in columns (1) and (5) in Table 11. All estimates are consistent with (predicted) better decision. The human capital of investor and recipient countries has a positive and significant effect on their decision on the FDI and the portfolio investment. In the second-step estimation for the FDI, human capital of recipient countries has a positive and statistically significant effect on the arbitrage decision. For the portfolio investments, human capital of investor countries has a negative and statistically significant effect on the arbitrage decision.

As for tariff, in columns (2) and (6) in Table 11, we find that the tariff in investor and recipient countries has no significant effects on the extensive margin of the FDI, but have significant effects in the first-step estimation for the portfolio investments, positive for investor countries and negative for recipient countries. Also, in the second step, in columns (2) and (6) in Table 12, the cross terms of the tariff in investor countries with the relative return has positive effects and is statistically significant for both the FDI and the portfolio investments. The cross term of the tariff and relative return in recipient countries has negative and statistically significant effect only for the portfolio investments.

In columns (3) and (7) in Table 11, we find that the bilateral exchange rate volatility has a positive and statistically significant effect on the extensive margin for the FDI but a significantly negative effect for the portfolio investment. In columns (3) and (7) in Table 12 for the second step, we find that exchange rate volatility itself affects negatively, but the cross-terms of exchange rate with the relative return is not significant.

Finally, for the legal origin index, we find that the French legal origin of investor countries and the German legal origin of both investor and recipient countries have positive and statistically significant

effects on the extensive margin of the FDI (against the base, English legal origin countries). The Scandinavian legal origin of both investor and recipient countries has a negative and statistically significant effect on the extensive margin of the FDI. For the extensive margin of the portfolio investment, the French legal origin of investor countries has a negative effect, but the French legal origin of recipient countries has a positive effect. The German legal origin of both investor and recipient countries has a positive effect. The Scandinavian legal origin of investor countries only has a positive and statistically significant effect. For the arbitrage behavior, the French and the German legal origin of investor countries have negative and statistically significant effects on both FDI and the portfolio investments. The Scandinavian legal origin index of investor countries has a negative and significant effect on the portfolio investments. Also, the French and the German legal origin of recipient countries have positive and statistically significant effects on the arbitrage for the FDI returns. Overall, the German legal origin, with more bank-based capitalism and stronger creditor rights, seems associated with broader investment participation but with less arbitrage. Also, the German legal origin is good for recipient countries to attract investments. The French origins are similar to the German origin countries with less robust evidences.

7 Conclusion

By looking casually at bilateral international investment data across countries for 2009-2018, we find that the poor countries invest poorly. Although the returns on foreign investments are higher for poor countries than rich countries, the excess returns relative to own MPK show the opposite picture.

We then investigate the underlying factors. Our focus is the institutional qualities of investor countries, in contrast to the literature, which mainly focuses on the characteristics of recipient countries. Since many countries do not invest in all other countries, we use Heckman's two-step estimation to separately investigate (i) participation in foreign markets and (ii) fund allocations across participated markets.

For the participation, general institutional quality, creditor rights, and corporate governance of investor countries increase a number of investment destinations. That is, the investor countries' institutions matter for the extensive margin. Also, the recipient countries' institutions matter, consistent with the literature.

As for the second step, that is, the intensive margin, we find no evidence of effects of investor countries' institutions. On the other hand, the recipient countries' institutions remain to matter. For both the extensive and intensive margins, commonalities (distance, language, and religion) affect the investment

flows strongly.

Overall, by investigating bilateral capital flows, we learn more about the Lucas Paradox. The rich countries do invest in many countries that include developing countries. The rich countries, however, do not allocate funds effectively across participated markets. A key paradox is that the poor countries invest in a smaller number of countries and earn lower returns than the domestic investments. In the end, the Lucas paradox is deepened: (1) Why doesn't the poor participate more widely and wisely in the international markets? (2) Why doesn't the rich arbitrage more wisely across participating markets?

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Table 1: The List of Investor and Recipient Countries in the Benchmark Regression

Country Name	ISO Code	Country Name	ISO Code	Country Name	ISO Code
Argentina ^I	ARG	Honduras ^{I,R}	HND	New Zealand ^{I,R}	NZL
Armenia, Republic of ^R	ARM	Hungary ^{I,R}	HUN	Nigeria ^R	NGA
Australia ^{I,R}	AUS	Iceland ^{I,R}	ISL	Norway ^{I,R}	NOR
Azerbaijan, Republic of ^R	AZE	India ^{I,R}	IND	Paraguay ^R	PRY
Benin ^R	BEN	Indonesia ^{I,R}	IDN	Peru ^R	PER
Bolivia ^{I,R}	BOL	Ireland ^{I,R}	IRL*	Philippines ^{I,R}	PHL
Bosnia and Herzegovina ^R	BIH	Israel ^{I,R}	ISR	Poland ^{I,R}	POL
Botswana ^R	BWA	Italy ^{I,R}	ITA	Portugal ^{I,R}	PRT
Brazil ^{I,R}	BRA	Japan ^{I,R}	JPN	Russian Federation ^{I,R}	RUS
Bulgaria ^{I,R}	BGR	Jordan ^R	JOR	Rwanda ^R	RWA
Burkina Faso ^R	BFA	Kazakhstan ^{I,R}	KAZ	Saudi Arabia ^{I,R}	SAU
Canada ^{I,R}	CAN	Korea, Republic of ^{I,R}	KOR	Senegal ^R	SEN
China, P.R.: Mainland ^R	CHN	Kuwait ^R	KWT	Slovak Republic ^{I,R}	SVK
Colombia ^I	COL	Kyrgyz Republic ^R	KGZ	Slovenia ^{I,R}	SVN
Croatia ^R	HRV	Latvia ^{I,R}	LVA	South Africa ^{I,R}	ZAF
Czech Republic ^{I,R}	CZE	Lebanon ^{I,R}	LBN	Spain ^{I,R}	ESP
Denmark ^{I,R}	DNK	Lithuania ^{I,R}	LTU	Sri Lanka ^R	LKA
Egypt ^I	EGY	Macedonia, FYR ^R	MKD	Sweden ^{I,R}	SWE
Estonia ^{I,R}	EST	Mauritius ^{I,R}	MUS*	Tanzania ^R	TZA
Finland ^{I,R}	FIN	Mexico ^{I,R}	MEX	Thailand ^{I,R}	THA
France ^{I,R}	FRA	Moldova ^R	MDA	Turkey ^{I,R}	TUR
Georgia ^R	GEO	Mongolia ^R	MNG	Ukraine ^{I,R}	UKR
Germany ^{I,R}	DEU	Morocco ^R	MAR	United Kingdom ^{I,R}	GBR*
Greece ^{I,R}	GRC	Mozambique ^R	MOZ	United States ^{I,R}	USA
Guatemala ^R	GTM	Netherlands ^{I,R}	NLD	Venezuela ^R	VEN

Notes: Superscript I and R indicate investor and recipient countries, respectively. Countries with * are the offshore financial centers excluded from our sample of a robustness check, based on Garcia-Bernardo et al. (2017)

Table 2: Data Definition and Source

Variable	Definition and (or) Source
Foreign Direct Investment	Coordinated Direct Investment Survey, IMF
Portfolio Investment	Coordinated Portfolio Investment Survey, IMF
Gross Domestic Product	GDP at constant 2017 national prices (in million 2017 US dollar), Penn World Table 10.0
Capital Stock	Capital stock at constant 2017 national prices in million 2017 US dollar, Penn World Table 10.0
The Share of Labor Compensation	Penn World Table 10.0
The Share of Reproductive Capital	Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019)
Real Interest Rate	Lending Interest Rate adjusted for GDP Deflator, World Bank
Aggregate Consumption Growth	Growth Rate of Final Consumption Expenditure, World Economic Outlook Database, IMF
Foreign Reserves	Reserves/(Imports/12), IFS (IMF)
Human Capital	Years of schooling and returns to education, Penn World Table 10.0
Exchange rates	Official exchange rate (LCU per US\$, period average). IFS (IMF)
Tariff rates	Tariff rate, applied, simple mean, all products (%)
General Institution Quality	
Rule of Law	Kaufmann, Kraay, and Mastruzzi (2011)
Property Right	The Global Competitiveness Report 2017-2018, World Economic Forum
Political Stability	Kaufmann, Kraay, and Mastruzzi (2011)
Borrower/Creditor Rights	
Strength of Legal Right Index	Doing Business, World Bank
Resolving Insolvency	Doing Business, World Bank
Legal Origin Index	
Corporate Governance	
Strength of Investor Protection Index	Doing Business, World Bank
Financial Openess Index	Chinn and Ito (2006)
Distance	Simple Distance/GeoDist, CEPII
Common Language Dummy	GeoDist, CEPII
Common Religion Index	GeoDist, CEPII

Table 3: Descriptive Statistics for FDI Regressions

	count	mean	sd	min	p50	max
log of the Share of the FDI	10184	-3.02	3.42	-41	-2.69	4.45
1{FDI > 0}	23005	.443	.497	0	0	1
RR _{<i>i, j</i>}	4627	-.00242	.053	-.172	-.00248	.198
RR _{<i>i, j</i>} (1 - Labor Share)	11654	-.0167	.111	-.463	-.0127	.667
RR _{<i>i, j</i>} (Real Interest Rate)	8736	-.0121	.103	-.602	-.00604	.489
Rule of Law	21576	.0447	.995	-2.37	-.102	2
Legal Right Index	19202	5.62	2.36	0	5	10
Political Stability	21576	.0345	.961	-2.69	.126	1.87
Investor Protection	19202	5.08	1.61	1	5.3	9.7
Financial Openness	18285	.389	1.57	-1.92	.0925	2.33
Foreign Reserve	17934	5.35	5.5	.0314	4.16	48.4
(Foreign Reserve) ²	17934	62.1	224	.00105	18.5	2585
log of GDP per capita	21681	8.8	1.48	5.73	8.73	12
French Legal Origin	19246	2.51	.5	2	3	3
German Legal Origin	19246	2.11	.316	2	2	3
Scandinavian Legal Origin	19246	2.03	.167	2	2	3
Human Capital	15347	2.61	.683	1.19	2.66	3.73
Tariff	19114	7.89	5.22	0	7	29.4
Rule of Law _{<i>j</i>}	24676	.244	.988	-1.92	.0405	2
Legal Right Index _{<i>j</i>}	24405	5.92	2.3	0	6	10
Political Stability _{<i>j</i>}	24676	.0437	.86	-2.54	.0413	1.41
Investor Protection _{<i>j</i>}	24405	5.4	1.57	2	5.42	9.7
Financial Openness _{<i>j</i>}	23701	.685	1.54	-1.92	1.06	2.33
Foreign Reserve _{<i>j</i>}	22921	5.24	4.57	.0314	4.42	31.4
(Foreign Reserve) ² _{<i>j</i>}	22921	50.4	112	.00105	19.6	995
French Legal Origin _{<i>j</i>}	24185	2.54	.498	2	3	3
German Legal Origin _{<i>j</i>}	24185	2.17	.38	2	2	3
Scandinavian Legal Origin _{<i>j</i>}	24185	2.05	.214	2	2	3
Human Capital _{<i>j</i>}	22478	2.77	.674	1.19	2.87	3.73
Tariff _{<i>j</i>}	24592	6.01	4.17	0	4.25	15
Distance	21632	7.87	4.53	.0596	7.53	20
Language	21632	.138	.345	0	0	1
Religion	20147	.169	.248	0	.0472	.993
Exchange Rate Volatility	20440	.175	.202	0	.108	1.93
Observations	24914					

Table 4: Descriptive Statistics for Portfolio Investment Regressions

	count	mean	sd	min	p50	max
Log of the Share of the Portfolio Investment	9729	-4.01	3.65	-27.3	-3.8	4.76
1{PI > 0}	20372	.478	.5	0	0	1
RR _{<i>i, j</i>}	3979	.01	.0506	-.131	.00799	.184
RR _{<i>i, j</i>} (1 - Labor Share)	9616	.0279	.116	-.422	.017	.711
RR _{<i>i, j</i>} (Real Interest Rate)	6768	.00996	.105	-1.02	.0089	.869
Rule of Law	19034	.616	.927	-1.69	.782	1.98
Legal Right Index	17607	6.04	2.32	0	6	10
Political Stability	19034	.31	.871	-2.29	.56	1.41
Investor Protection	17607	5.7	1.57	2.3	5.68	9.7
Financial Openness	17605	1.03	1.38	-1.92	1.41	2.33
Foreign Reserve	18798	4.71	4.11	.0269	3.85	23.9
(Foreign Reserve) ²	18798	43.2	91.4	.000809	15.3	688
Log of GDP per capita	19039	9.6	1.12	6.49	9.69	11.6
French Legal Origin	18796	2.46	.499	2	2	3
German Legal Origin	18796	2.2	.403	2	2	3
Scandinavian Legal Origin	18796	2.05	.227	2	2	3
Human Capital	16886	2.93	.481	1.72	2.99	3.68
Tariff	18800	6.12	5.26	0	4.15	29.3
Rule of Law _{<i>j</i>}	17719	.0275	.985	-2.32	-.0907	1.98
Legal Right Index _{<i>j</i>}	15705	5.39	2.33	0	5	10
Political Stability _{<i>j</i>}	17719	.0391	.945	-2.75	.154	1.87
Investor Protection _{<i>j</i>}	15705	4.96	1.57	1	5.01	9.7
Financial Openness _{<i>j</i>}	15209	.338	1.53	-1.92	.157	2.33
Foreign Reserve _{<i>j</i>}	14595	4.94	4.76	.0269	3.85	40.9
(Foreign Reserve) ² _{<i>j</i>}	14595	52.2	170	.000809	16.6	1908
French Legal Origin _{<i>j</i>}	15716	2.52	.5	2	3	3
German Legal Origin _{<i>j</i>}	15716	2.11	.313	2	2	3
Scandinavian Legal Origin _{<i>j</i>}	15716	2.03	.164	2	2	3
Human Capital _{<i>j</i>}	12435	2.51	.68	1.17	2.56	3.68
Tariff _{<i>j</i>}	16060	8.78	5.37	0	8.68	29.3
Distance	17129	8.16	4.59	.0596	7.99	19.9
Language	17129	.139	.346	0	0	1
Religion	15673	.173	.253	0	.042	.991
Exchange Rate Volatility	15326	.291	.288	0	.19	2.44
Observations	20470					

Table 5: Correlation Table (FDI)

	Log of the Share of the FDI	1	0	1
1 {FDI > 0}				
RR _{<i>i,j</i>}	-0.127	0.0928	1	
RR _{<i>i,j</i>} (1 - Labor Share)	-0.0979	0.121	0.849	1
RR _{<i>i,j</i>} (Real Interest Rate)	-0.0715	0.0722	0.0617	0.149
Rule of Law	-0.0407	0.295	0.387	0.183
Legal Right Index	-0.0364	0.127	0.174	0.163
Political Stability	-0.0395	0.0944	0.281	0.144
Investor Protection	-0.0685	0.228	0.130	0.124
Financial Openness	-0.0281	0.248	0.273	0.278
Foreign Reserve	-0.0150	0.0180	-0.0528	-0.122
Log of GDP per capita	-0.0521	0.315	0.383	0.322
Distance	-0.240	-0.265	0.0194	0.0278
Language	0.197	0.0603	-0.0224	0.00801
Religion	0.163	0.0383	0.0125	0.0431
Exchange Rate Volatility	-0.0881	0.0233	-0.0295	-0.0178
			0.0410	-0.0741
			0.00805	0.00526
			-0.142	0.0238
			-0.0658	0.0553
			-0.0335	-0.104
			0.0469	-0.0326
			-0.0381	-0.0326
			-0.0241	-0.0361
			-0.0129	-0.00219
			-0.0174	1
			0.586	0.427
			-0.0996	-0.159
			0.321	1
			0.440	0.440
			-0.262	-0.0996
			0.668	0.427
			0.230	0.668
			0.0958	0.144
			0.0750	-0.0222
			-0.0129	-0.00219
			-0.0361	-0.0381
			0.0284	-0.0241
			0.0182	0.0284
			-0.0658	-0.0658
			-0.0438	-0.0438
			-0.0717	-0.0717
			-0.0645	-0.0645
			-0.0879	-0.0879
			-0.0720	-0.0720

Table 6: Correlation Table (Portfolio Investment)

	0	1
Log of the Share of the Portfolio Investment	0	1
$1\{PI > 0\}$	-0.243	-0.0424
$RR_{i,j}$	-0.246	-0.0983
$RR_{i,j} (1 - \text{Labor Share})$	-0.0681	-0.0937
$RR_{i,j} (\text{Real Interest Rate})$	-0.0999	0.256
Rule of Law	-0.00527	0.0634
Legal Right Index	-0.0786	0.164
Political Stability	-0.0470	0.129
Investor Protection	-0.0909	0.173
Financial Openness	0.0229	-0.0234
Foreign Reserve	-0.139	0.267
Log of GDP per capita	-0.208	-0.210
Distance	0.0498	0.0364
Language	0.101	0.0536
Religion	-0.0937	-0.100
Exchange Rate Volatility		
	0.0288	0.115
	0.201	0.188
	0.0288	0.115
	0.454	1
	0.339	0.339
	0.788	0.339
	0.386	0.458
	-0.0378	0.158
	0.647	0.166
	-0.0629	0.495
	-0.191	-0.399
	-0.370	-0.191
	0.837	0.236
	0.0881	0.699
	-0.0163	-0.0109
	0.0144	0.107
	-0.0457	-0.174
	-0.0860	-0.110
	0.133	-0.116
	0.0391	-0.0821
	0.0260	0.0260
	-0.0829	-0.0829
	-0.123	-0.111
	0.0470	-0.0798
	0.00120	-0.0410
	0.152	0.152
	0.0765	0.0765
	0.234	0.234
	-0.00708	-0.00708
	0.609	0.609
	-0.227	-0.227
	0.0720	0.0720
	-0.0688	-0.0688
	0.0490	0.0490
	-0.00990	-0.00990
	0.0208	0.0208
	-0.129	-0.129
	-0.0928	-0.0928
	-0.124	-0.124
	0.000177	0.000177

Table 7: First-Step Estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1{FDI > 0}				1{PI > 0}			
	Benchmark	Property Rights	Political Stability	Resolving Insolvency	Benchmark	Property Rights	Political Stability	Resolving Insolvency
Rule of Law	0.301*** (0.0606)			0.283*** (0.0664)	0.531*** (0.0765)			0.328*** (0.0733)
Legal Right Index	0.0529*** (0.0136)	0.0614*** (0.0134)	0.0668*** (0.0133)		-0.0617*** (0.0170)	-0.0342** (0.0159)	-0.0227 (0.0159)	
Investor Protection	0.0832*** (0.0260)	0.0910*** (0.0258)	0.105*** (0.0251)	0.113*** (0.0247)	0.0831*** (0.0250)	0.0507* (0.0260)	0.0997*** (0.0245)	-0.0174 (0.0251)
Financial Openness	-0.106*** (0.0284)	-0.0980*** (0.0284)	-0.0887*** (0.0286)	-0.0858*** (0.0279)	-0.0438 (0.0343)	-0.00117 (0.0335)	-0.00401 (0.0332)	-0.0632* (0.0347)
Foreign Reserve	-1.095** (0.427)	-1.257*** (0.425)	-0.944** (0.419)	-1.040** (0.428)	-1.160* (0.593)	-1.037* (0.589)	-1.935*** (0.573)	-0.998 (0.618)
(Foreign Reserve) ²	1.186** (0.489)	1.154** (0.480)	0.943** (0.468)	1.249** (0.497)	1.900*** (0.706)	1.306* (0.688)	2.418*** (0.681)	2.426*** (0.768)
Log of GDP per capita	0.318*** (0.0512)	0.387*** (0.0446)	0.563*** (0.0447)	0.248*** (0.0486)	0.0402 (0.0624)	0.107** (0.0521)	0.259*** (0.0520)	0.00762 (0.0626)
Rule of Law _j	-0.190*** (0.0431)			-0.306*** (0.0571)	0.438*** (0.0453)			0.372*** (0.0560)
Legal Right Index _j	-0.0445*** (0.0139)	-0.0439*** (0.0140)	-0.0470*** (0.0137)		-0.0214 (0.0138)	-0.0171 (0.0138)	-0.0151 (0.0135)	
Investor Protection _j	0.151*** (0.0227)	0.150*** (0.0221)	0.120*** (0.0214)	0.105*** (0.0217)	0.203*** (0.0268)	0.237*** (0.0265)	0.260*** (0.0248)	0.185*** (0.0265)
Financial Openness _j	-0.0233 (0.0243)	-0.0255 (0.0229)	-0.0414* (0.0224)	-0.0273 (0.0243)	0.0394 (0.0257)	0.0627** (0.0253)	0.122*** (0.0244)	0.0380 (0.0260)
Foreign Reserve _j	-8.325*** (0.949)	-8.444*** (0.955)	-8.021*** (0.943)	-8.223*** (0.960)	-2.210*** (0.557)	-2.334*** (0.550)	-2.320*** (0.543)	-1.919*** (0.563)
(Foreign Reserve) _j ²	17.81***	17.80***	17.01***	17.72***	2.054***	1.867***	2.224***	1.818**

	(2.235)	(2.234)	(2.227)	(2.252)	(0.715)	(0.697)	(0.707)	(0.729)
Distance	-0.0705***	-0.0722***	-0.0694***	-0.0714***	-0.0463***	-0.0509***	-0.0566***	-0.0504***
	(0.00648)	(0.00645)	(0.00635)	(0.00644)	(0.00696)	(0.00685)	(0.00666)	(0.00703)
Language	0.142	0.140	0.112	0.170*	-0.0348	-0.114	-0.0958	-0.0824
	(0.0967)	(0.0965)	(0.0965)	(0.0959)	(0.0996)	(0.0994)	(0.0960)	(0.0987)
Religion	0.580***	0.564***	0.615***	0.585***	0.290**	0.407***	0.0637	0.373***
	(0.115)	(0.117)	(0.114)	(0.114)	(0.120)	(0.122)	(0.115)	(0.117)
RR _{<i>i,j</i>}	-2.589***	-2.891***	-1.730***	-1.454**	-1.089	-1.406**	-1.924***	-1.843***
	(0.690)	(0.685)	(0.647)	(0.686)	(0.676)	(0.687)	(0.619)	(0.702)
Property Rights		0.223***				0.482***		
		(0.0484)				(0.0558)		
Property Rights _{<i>j</i>}		-0.246***				0.381***		
		(0.0415)				(0.0436)		
Political Stability			-0.176***				0.105*	
			(0.0530)				(0.0540)	
Political Stability _{<i>j</i>}			-0.182***				0.168***	
			(0.0395)				(0.0421)	
Resolving Insolvency				0.00344*				0.0126***
				(0.00179)				(0.00198)
Resolving Insolvency _{<i>j</i>}				0.00525***				0.00237
				(0.00201)				(0.00197)
Constant	-2.182***	-2.724***	-4.470***	-1.839***	-0.150	-4.656***	-2.403***	-0.314
	(0.491)	(0.384)	(0.422)	(0.469)	(0.616)	(0.516)	(0.520)	(0.610)
Observations	3411	3411	3411	3411	3387	3387	3387	3387

Notes: This table shows the results of the first step estimation by Probit. The dependent variables are binary variables which takes 1 if a country *i* invest in a country *j* as the FDI in column (1), (2), and (3); and if a country *i* invest in a country *j* as the portfolio investments in column (4), (5), and (6). We use the capital share derived from Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019). Column (1) and (4) show the benchmark results. We estimate our model by the property rights in column (2) and (5) instead of the rule of law used in other columns, the resolving insolvency in (3) and (6) instead of the legal right index. Standard errors are reported in the parenthesis. *p < 0.1, **p < 0.05, ***p < 0.01.

Table 8: The Second-Step Estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	log of the Share of FDI				log of the Share of Portfolio Investment			
	Benchmark	Property Rights	Political Stability	Resolving Insolvency	Benchmark	Property Rights	Political Stability	Resolving Insolvency
Distance	-0.233*** (0.0156)	-0.238*** (0.0154)	-0.233*** (0.0158)	-0.229*** (0.0159)	-0.182*** (0.0112)	-0.180*** (0.0114)	-0.183*** (0.0125)	-0.186*** (0.0111)
Language	1.471*** (0.138)	1.490*** (0.137)	1.461*** (0.137)	1.445*** (0.139)	1.127*** (0.118)	1.199*** (0.118)	1.130*** (0.117)	1.120*** (0.118)
Religion	1.796*** (0.212)	1.838*** (0.210)	1.778*** (0.214)	1.792*** (0.213)	0.919*** (0.166)	0.921*** (0.168)	0.892*** (0.163)	0.940*** (0.166)
RR _{i,j}	-27.53* (14.73)	-14.65 (17.74)	-23.95 (14.62)	-28.13* (14.86)	-3.839 (9.590)	-6.276 (12.33)	-7.413 (9.289)	-0.532 (9.507)
Rule of Law × RR _{i,j}	0.0449 (1.856)			-0.672 (2.401)	-3.048 (1.978)			1.470 (2.141)
Legal Right Index × RR _{i,j}	0.361 (0.587)	0.255 (0.582)	0.433 (0.579)		0.435 (0.589)	-0.227 (0.543)	0.472 (0.530)	
Investor Protection × RR _{i,j}	-1.579* (0.942)	-1.768* (0.938)	-1.661* (0.915)	-1.458 (0.919)	-0.586 (0.776)	-0.388 (0.773)	-0.871 (0.779)	0.495 (0.732)
Financial Openness × RR _{i,j}	-0.901 (1.193)	-1.412 (1.063)	-0.361 (1.136)	-0.844 (1.192)	-0.483 (1.158)	-2.210** (0.973)	0.326 (1.075)	-0.205 (1.150)
Foreign Reserve × RR _{i,j}	-17.10 (16.57)	-15.81 (16.51)	-19.18 (16.51)	-15.17 (16.69)	28.46* (17.23)	42.90** (17.15)	33.73** (16.87)	27.20 (16.90)
(Foreign Reserve) ² × RR _{i,j}	13.45 (16.89)	11.08 (16.85)	16.12 (16.81)	12.79 (16.96)	-30.66 (19.08)	-45.36** (19.26)	-34.97* (18.89)	-34.35* (18.91)
Rule of Law _j × RR _{i,j}	-2.869 (2.132)			-3.648 (2.666)	3.120* (1.748)			2.245 (2.092)
Legal Right Index _j × RR _{i,j}	1.792*** (0.638)	1.805*** (0.636)	1.736*** (0.636)		0.616 (0.570)	1.141** (0.558)	0.754 (0.552)	
Investor Protection _j × RR _{i,j}	3.521***	3.728***	2.964***	4.696***	1.381	1.762**	1.814**	1.416*

	(1.119)	(1.101)	(1.069)	(1.073)	(0.869)	(0.868)	(0.845)	(0.848)
Financial Openness _j × RR _{i,j}	-1.153	-1.027	-2.434**	-1.095	-1.891*	0.0100	-1.602	-2.158*
	(1.193)	(1.028)	(1.117)	(1.207)	(1.137)	(1.052)	(1.084)	(1.135)
Foreign Reserve _j × RR _{i,j}	-11.46	-18.58	-1.082	-12.34	-22.86	-36.53**	-23.10	-17.98
	(21.33)	(21.29)	(20.85)	(21.37)	(18.70)	(18.60)	(18.53)	(18.75)
(Foreign Reserve _j) ² × RR _{i,j}	-8.875	1.941	-19.86	-6.424	14.30	28.15	12.82	11.50
	(26.89)	(27.18)	(26.63)	(27.02)	(20.48)	(20.51)	(20.41)	(20.45)
Distance × RR _{i,j}	-0.203	-0.222	-0.160	-0.308	0.0563	0.00725	0.0623	0.0789
	(0.232)	(0.232)	(0.233)	(0.234)	(0.188)	(0.188)	(0.187)	(0.188)
Language × RR _{i,j}	5.519**	6.002**	5.525**	6.082**	-2.240	-2.479	-2.610	-2.643
	(2.780)	(2.779)	(2.784)	(2.779)	(2.406)	(2.399)	(2.404)	(2.402)
Religion × RR _{i,j}	-2.493	-2.837	-1.992	-4.029	2.351	1.730	2.434	1.731
	(3.554)	(3.568)	(3.536)	(3.480)	(2.924)	(2.945)	(2.893)	(2.873)
Property Rights × RR _{i,j}		1.766				1.126		
		(1.682)				(1.595)		
Property Rights _j × RR _{i,j}		-4.740***				-1.505		
		(1.795)				(1.587)		
Political Stability × RR _{i,j}			-1.290				-5.949***	
			(1.861)				(1.677)	
Political Stability _j × RR _{i,j}			0.902				2.946*	
			(2.057)				(1.648)	
Resolving Insolvency × RR _{i,j}				0.0369				-0.168***
				(0.0787)				(0.0631)
Resolving Insolvency _j × RR _{i,j}				0.0604				0.0583
				(0.0863)				(0.0668)
Constant	-2.070	-2.455*	-1.874	-2.220	-7.250***	-7.623***	-7.327***	-7.263***
	(1.492)	(1.489)	(1.443)	(1.508)	(0.698)	(0.691)	(0.648)	(0.677)
lambda	-0.689	-0.520	-0.635	-0.847**	0.0658	-0.319	-0.140	0.291
	(0.422)	(0.413)	(0.439)	(0.432)	(0.428)	(0.403)	(0.483)	(0.390)
Observations	3411	3411	3411	3411	3387	3387	3387	3387

Notes: We control for investors and recipient fixed effects. The dependent variables are log of the share of the FDI and the portfolio investments defined as in equation (16). We use the capital share derived from Monge-Naranjo, Sánchez, and Santaaulalia-Llopis (2019). Estimates in column (1) and (4) are the benchmark results. We estimate our model by the property rights in column (2) and (5) instead of the rule of law used in other columns, and the resolving insolvency in (3) and (6) instead of the legal right index. Standard errors are reported in the parenthesis. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Robustness the First-Step Estimation: Subsample Analysis and Alternative MPK

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1{FDI > 0}					1{PI > 0}					
	Ex. OFC	Ex. US	2014-19	1 - labor share	Real rate	Ex. OFC	Ex. US	Coppola et al. (2021)	2014-19	1 - labor share	Real rate
Rule of Law	0.332*** (0.0611)	0.342*** (0.0612)	0.380*** (0.0695)	0.0314 (0.0360)	0.00696 (0.0396)	0.625*** (0.0773)	0.627*** (0.0773)	0.454*** (0.109)	0.629*** (0.0927)	0.410*** (0.0457)	0.396*** (0.0475)
Legal Right Index	0.0606*** (0.0135)	0.0613*** (0.0136)	0.0460*** (0.0144)	0.0556*** (0.00822)	0.0469*** (0.00963)	-0.0450*** (0.0171)	-0.0445*** (0.0171)	-0.0705*** (0.0232)	-0.0860*** (0.0180)	-0.0275*** (0.00947)	-0.0140 (0.0111)
Investor Protection	0.0707*** (0.0259)	0.0680*** (0.0259)	0.0831*** (0.0290)	0.0824*** (0.0143)	0.0935*** (0.0154)	0.0567*** (0.0254)	0.0576** (0.0254)	0.0902*** (0.0324)	0.0638** (0.0293)	0.0465*** (0.0144)	0.0618*** (0.0153)
Financial Openness	-0.0738** (0.0287)	-0.0742** (0.0288)	-0.0677** (0.0337)	-0.0491*** (0.0145)	-0.0456*** (0.0154)	-0.0179 (0.0349)	-0.0171 (0.0350)	0.0885** (0.0426)	-0.0552 (0.0378)	0.0431** (0.0183)	0.00975 (0.0201)
Foreign Reserve	0.0322** (0.0151)	0.0290* (0.0151)	0.0358** (0.0166)	0.0354*** (0.00928)	0.0148 (0.0113)	0.0559*** (0.0205)	0.0536*** (0.0204)	0.0173 (0.0260)	0.0873*** (0.0199)	0.0957*** (0.0112)	-0.0566*** (0.0191)
(Foreign Reserve) ²	-0.000142 (0.000573)	-0.0000432 (0.000574)	-0.000243 (0.000678)	-0.000402 (0.000389)	0.000185 (0.000456)	-0.000403 (0.000808)	-0.000324 (0.000807)	-0.000133 (0.000818)	-0.00221*** (0.000706)	-0.00206*** (0.000463)	0.00729*** (0.00110)
log of GDP per capita	0.281*** (0.0511)	0.282*** (0.0514)	0.266*** (0.0580)	0.452*** (0.0256)	0.436*** (0.0268)	0.0594 (0.0623)	0.0597 (0.0624)	-0.0701 (0.0825)	0.322*** (0.0830)	0.225*** (0.0340)	0.0776** (0.0345)
Rule of Law _j	-0.147*** (0.0437)	-0.136*** (0.0435)	-0.114** (0.0529)	-0.00204 (0.0247)	0.0531* (0.0273)	0.456*** (0.0454)	0.461*** (0.0453)	0.514*** (0.0645)	0.492*** (0.0626)	0.483*** (0.0265)	0.381*** (0.0286)
Legal Right Index _j	-0.0434*** (0.0137)	-0.0454*** (0.0137)	-0.00504 (0.0147)	-0.0110 (0.00815)	0.00787 (0.00958)	-0.0118 (0.0141)	-0.0117 (0.0141)	0.117*** (0.0203)	-0.0169 (0.0150)	-0.0202** (0.00888)	0.00904 (0.0103)
Investor Protection _j	0.181*** (0.0222)	0.168*** (0.0223)	0.174*** (0.0276)	0.151*** (0.0137)	0.172*** (0.0153)	0.189*** (0.0272)	0.184*** (0.0272)	0.268*** (0.0406)	0.191*** (0.0303)	0.195*** (0.0156)	0.120*** (0.0161)
Financial Openness _j	0.0110 (0.0239)	0.00869 (0.0238)	0.0313 (0.0314)	-0.0103 (0.0144)	-0.0590*** (0.0152)	0.0399 (0.0261)	0.0400 (0.0260)	0.148*** (0.0365)	0.0346 (0.0312)	0.0317** (0.0143)	0.0857*** (0.0146)
Foreign Reserve _j	-0.119*** (0.0237)	-0.112*** (0.0236)	-0.167*** (0.0303)	-0.0490*** (0.0121)	0.0280*** (0.0108)	0.0203 (0.0194)	0.0206 (0.0194)	0.124*** (0.0325)	0.0331* (0.0190)	0.0730*** (0.0120)	0.0899*** (0.0129)
(Foreign Reserve) _j ²	0.00778*** (0.000252)	0.00750*** (0.000274)	0.0142*** (0.000274)	0.00265*** (0.000274)	-0.00104** (0.000274)	-0.0000252 (0.000274)	-0.0000274 (0.000274)	-0.00167 (0.000274)	-0.000543 (0.000274)	-0.00212*** (0.000274)	-0.00256*** (0.000274)

	(0.00142)	(0.00142)	(0.00207)	(0.000658)	(0.000416)	(0.000827)	(0.000826)	(0.00179)	(0.000784)	(0.000536)	(0.000525)
Distance	-0.0723***	-0.0725***	-0.0814***	-0.0837***	-0.0781***	-0.0468***	-0.0467***	-0.0365***	-0.0408***	-0.0568***	-0.0560***
	(0.00639)	(0.00641)	(0.00723)	(0.00379)	(0.00431)	(0.00697)	(0.00698)	(0.0100)	(0.00831)	(0.00399)	(0.00439)
Language	0.203**	0.198**	0.332***	0.401***	0.264***	-0.00112	-0.00303	-0.0103	0.280**	0.166***	-0.0565
	(0.0942)	(0.0950)	(0.111)	(0.0602)	(0.0595)	(0.0989)	(0.0989)	(0.138)	(0.123)	(0.0628)	(0.0589)
Religion	0.604***	0.610***	0.520***	0.362***	0.403***	0.476***	0.480***	0.384**	0.362***	0.426***	0.499***
	(0.114)	(0.114)	(0.128)	(0.0707)	(0.0870)	(0.120)	(0.119)	(0.175)	(0.138)	(0.0742)	(0.0921)
RR _{<i>i,j</i>}	-2.440***	-2.496***	-2.491***	0.0804	-0.527***	-1.119*	-1.125*	0.0513	-2.759***	-0.885***	-1.510***
	(0.671)	(0.672)	(0.803)	(0.172)	(0.197)	(0.676)	(0.674)	(0.985)	(0.916)	(0.155)	(0.187)
Constant	-2.696***	-2.630***	-2.671***	-4.643***	-4.986***	-1.127*	-1.108*	-0.968	-3.464***	-3.269***	-1.694***
	(0.484)	(0.485)	(0.560)	(0.255)	(0.267)	(0.610)	(0.610)	(0.864)	(0.825)	(0.342)	(0.352)
Observations	3334	3349	2973	8177	5666	3300	3337	2485	3062	7564	5245

Notes: The dependent variables are binary variables which takes 1 if a country *i* invest in a country *j* as the FDI in column (1) to (5); and if a country *i* invest in a country *j* as the portfolio investments in column (6) to (10). In column (1) and (6), we exclude the financial centers classified by not only Johannesen and Zucman (2014), used in the benchmark regressions, but also Garcia-Bernardo et al. (2017). In column (2) and (7), we exclude the U.S. from our recipient country sample. In column (3) and (8), the relative returns on assets are based on the traditional MPK with the capital share constructed by 1 minus the labor share. In column (4) and (9), we use the real interest rates to construct the relative returns. In column (5) and (10), we add human capital in our benchmark regressions. Standard errors are reported in the parenthesis. *p < 0.1, **p < 0.05, ***p < 0.01.

Table 10: Robustness the Second-Step Estimation: Subsample Analysis and Alternative MPK

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	log of the Share of FDI					log of the Share of PI					
	Ex. OFC	Ex. US	2014-19	1 - labor share	Real rate	Ex. OFC	Ex. US	Coppola et al. (2021)	2014-19	1 - labor share	Real rate
Distance	-0.247*** (0.0182)	-0.246*** (0.0180)	-0.239*** (0.0167)	-0.316*** (0.0218)	-0.341*** (0.0310)	-0.186*** (0.0117)	-0.182*** (0.0115)	-0.153*** (0.0117)	-0.185*** (0.0112)	-0.238*** (0.0119)	-0.272*** (0.0225)
Language	1.491*** (0.145)	1.518*** (0.145)	1.448*** (0.145)	1.603*** (0.152)	1.372*** (0.186)	1.135*** (0.122)	1.160*** (0.120)	1.210*** (0.142)	1.055*** (0.128)	1.344*** (0.114)	0.788*** (0.173)
Religion	1.886*** (0.225)	1.839*** (0.222)	1.849*** (0.214)	1.777*** (0.199)	1.862*** (0.328)	0.893*** (0.175)	0.912*** (0.172)	1.436*** (0.215)	1.139*** (0.175)	1.007*** (0.163)	2.666*** (0.340)
RR _{i,j}	-26.86* (14.52)	-27.61* (14.28)	8.628 (24.95)	-5.117 (4.322)	-2.733 (4.962)	0.496 (9.740)	-0.751 (9.518)	-0.235 (13.83)	37.28* (22.32)	-3.981 (3.424)	3.696 (4.041)
Rule of Law × RR _{i,j}	-0.450 (1.909)	-0.251 (1.887)	0.202 (2.195)	-1.028 (0.698)	-0.282 (1.000)	-3.930* (2.027)	-3.659* (1.986)	2.590 (1.787)	-2.896 (2.208)	0.478 (0.705)	1.059 (0.983)
Legal Right Index × RR _{i,j}	0.352 (0.600)	0.285 (0.594)	1.011 (0.644)	0.0641 (0.217)	0.306 (0.348)	0.846 (0.595)	0.829 (0.582)	-0.505 (0.578)	0.669 (0.664)	-0.0983 (0.193)	-0.0308 (0.345)
Investor Protection × RR _{i,j}	-1.053 (0.964)	-1.333 (0.945)	-2.015* (1.060)	-0.201 (0.355)	-0.00901 (0.537)	-0.931 (0.792)	-1.003 (0.770)	-1.338* (0.802)	-0.603 (0.921)	0.572** (0.265)	-0.695 (0.459)
Financial Openness × RR _{i,j}	-0.747 (1.224)	-0.787 (1.216)	-1.279 (1.449)	-0.773* (0.412)	-0.0169 (0.564)	-1.082 (1.192)	-1.192 (1.174)	-1.321 (1.045)	-0.281 (1.366)	-0.971** (0.414)	-1.296** (0.573)
Foreign Reserve × RR _{i,j}	-0.456 (0.602)	-0.364 (0.594)	-0.666 (0.665)	0.0356 (0.215)	0.116 (0.384)	-0.680 (0.581)	-0.702 (0.566)	-1.440** (0.569)	-0.833 (0.548)	0.429** (0.205)	0.568 (0.510)
(Foreign Reserve) ² × RR _{i,j}	0.0182 (0.0232)	0.0154 (0.0230)	0.0276 (0.0272)	-0.000887 (0.00852)	0.00189 (0.0165)	0.0442* (0.0232)	0.0451** (0.0227)	0.0406** (0.0178)	0.0460** (0.0205)	-0.0153* (0.00840)	-0.0259 (0.0298)
Rule of Law _j × RR _{i,j}	-1.240 (2.211)	-1.404 (2.181)	0.342 (2.414)	0.445 (0.805)	-0.746 (1.083)	3.658** (1.799)	3.487** (1.762)	-1.920 (1.991)	1.286 (2.267)	1.979*** (0.698)	-0.801 (0.788)
Legal Right Index _j × RR _{i,j}	1.681** (0.654)	1.661** (0.649)	1.136* (0.643)	0.202 (0.229)	0.227 (0.344)	0.525 (0.589)	0.579 (0.579)	0.979 (0.640)	-0.333 (0.675)	0.235 (0.220)	-0.123 (0.292)
Investor Protection _j × RR _{i,j}	2.631**	2.208**	1.896	0.239	0.0127	1.181	1.576*	0.972	1.516	0.148	-0.0714

	(1.108)	(1.106)	(1.192)	(0.405)	(0.558)	(0.882)	(0.869)	(1.017)	(0.975)	(0.355)	(0.404)
Financial Openness _j × RR _{i,j}	-0.959	-1.258	-1.737	-0.358	0.375	-1.805	-1.599	-1.835	-0.729	0.473	0.450
	(1.224)	(1.217)	(1.417)	(0.451)	(0.573)	(1.156)	(1.139)	(1.146)	(1.415)	(0.419)	(0.430)
Foreign Reserve _j × RR _{i,j}	1.520**	1.553**	1.791	0.712***	-0.158	-0.178	-0.347	0.616	-0.469	-0.255	-0.318
	(0.764)	(0.757)	(1.177)	(0.267)	(0.430)	(0.665)	(0.654)	(0.699)	(0.670)	(0.267)	(0.340)
(Foreign Reserve _j) ² × RR _{i,j}	-0.0693**	-0.0707**	-0.0776	-0.0269***	0.00597	-0.00432	0.00115	-0.0336	-0.0143	0.0109	0.00720
	(0.0294)	(0.0292)	(0.0685)	(0.0105)	(0.0187)	(0.0273)	(0.0269)	(0.0253)	(0.0273)	(0.0113)	(0.0130)
Distance × RR _{i,j}	-0.212	-0.262	-0.268	-0.278***	-0.300**	0.0765	0.0353	0.0937	0.0555	-0.0683	0.0181
	(0.236)	(0.238)	(0.247)	(0.0989)	(0.142)	(0.194)	(0.193)	(0.197)	(0.221)	(0.0809)	(0.105)
Language × RR _{i,j}	5.478*	4.987*	5.066*	-2.291*	-0.712	-2.616	-2.942	-1.367	-1.750	-0.889	-0.740
	(2.831)	(2.828)	(2.960)	(1.348)	(1.743)	(2.517)	(2.422)	(2.666)	(2.774)	(1.008)	(1.633)
Religion × RR _{i,j}	0.139	-0.679	-0.852	-1.315	-1.494	2.572	2.656	-1.382	3.968	0.0328	-1.492
	(3.618)	(3.573)	(3.869)	(1.511)	(2.318)	(3.006)	(2.942)	(3.875)	(3.315)	(1.391)	(1.799)
Constant	-1.588	-1.954	1.587	-4.063***	-4.008***	-7.040***	-7.100***	-7.196***	-12.98***	-7.426***	-10.26***
	(1.554)	(1.531)	(2.722)	(0.922)	(0.940)	(0.776)	(0.765)	(1.018)	(2.513)	(0.672)	(0.945)
lambda	-0.152	-0.248	-0.668	0.241	1.164	0.0480	0.0441	-0.948*	0.331	1.059***	3.051***
	(0.525)	(0.515)	(0.447)	(0.495)	(0.711)	(0.449)	(0.441)	(0.554)	(0.414)	(0.316)	(0.602)
Observations	3334	3349	2973	8177	5666	3300	3337	2485	3062	7564	5245

Notes: The dependent variables are log of the share of FDI and portfolio investments defined as equation (16). We control for investor and recipient fixed effects. In column (1) and (6), we exclude the financial centers classified by not only Johannesen and Zucman (2014), used in the benchmark regressions, but also Garcia-Bernardo et al. (2017). In column (2) and (7), we exclude the U.S. from our recipient country sample. In column (3) and (8), the relative returns on assets are based on the traditional MPK with the capital share constructed by 1 minus the labor share. In column (4) and (9), we use the real interest rates to construct the relative returns. In column (5) and (10), we add human capital in our benchmark regressions. Standard errors are reported in the parenthesis.

*p < 0.1, **p < 0.05, ***p < 0.01.

Table 11: Robustness of the First-Step Estimation: Additional Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1{FDI > 0}				1{PI > 0}			
	Human Capital	Tariff	Exchange Rate Volatility	Legal Origin	Human Capital	Tariff	Exchange Rate Volatility	Legal Origin
Rule of Law	0.308*** (0.0617)	0.335*** (0.0611)	0.350*** (0.0631)	0.438*** (0.0661)	0.558*** (0.0794)	0.653*** (0.0787)	0.581*** (0.0795)	0.397*** (0.0851)
Legal Right Index	0.0465*** (0.0139)	0.0604*** (0.0135)	0.0629*** (0.0138)	0.0903*** (0.0182)	-0.0963*** (0.0205)	-0.0368** (0.0173)	-0.0444** (0.0173)	-0.146*** (0.0243)
Investor Protection	0.0730*** (0.0261)	0.0677*** (0.0259)	0.0653** (0.0259)	0.0700** (0.0290)	0.0786*** (0.0261)	0.0515** (0.0257)	0.0580** (0.0257)	0.133*** (0.0289)
Financial Openness	-0.0648** (0.0294)	-0.0829*** (0.0304)	-0.0604** (0.0299)	-0.121*** (0.0304)	-0.0425 (0.0365)	0.0366 (0.0374)	-0.0428 (0.0374)	0.0393 (0.0384)
Foreign Reserve	0.0306** (0.0153)	0.0282* (0.0150)	0.0222 (0.0159)	0.0118 (0.0168)	0.0332 (0.0212)	0.0339 (0.0214)	0.0602*** (0.0209)	-0.00496 (0.0224)
(Foreign Reserve) ²	-0.000166 (0.000578)	-0.0000249 (0.000572)	0.000219 (0.000599)	0.000562 (0.000624)	0.000272 (0.000823)	0.000270 (0.000831)	-0.000590 (0.000829)	0.000630 (0.000883)
log of GDP per capita	0.219*** (0.0567)	0.272*** (0.0519)	0.265*** (0.0527)	0.302*** (0.0535)	-0.0754 (0.0683)	0.0649 (0.0633)	0.120* (0.0672)	0.0310 (0.0630)
Rule of Law _j	-0.295*** (0.0552)	-0.139*** (0.0439)	-0.130*** (0.0444)	-0.0713 (0.0540)	0.342*** (0.0517)	0.382*** (0.0476)	0.446*** (0.0470)	0.507*** (0.0517)
Legal Right Index _j	-0.0483*** (0.0139)	-0.0435*** (0.0138)	-0.0457*** (0.0139)	-0.0537*** (0.0181)	-0.0190 (0.0144)	-0.00557 (0.0143)	-0.00843 (0.0144)	0.0660*** (0.0195)
Investor Protection _j	0.166*** (0.0226)	0.181*** (0.0223)	0.175*** (0.0224)	0.205*** (0.0249)	0.169*** (0.0279)	0.168*** (0.0278)	0.190*** (0.0273)	0.253*** (0.0295)
Financial Openness _j	-0.0403 (0.0264)	0.0192 (0.0276)	0.0243 (0.0245)	-0.0312 (0.0272)	0.00343 (0.0285)	-0.0424 (0.0314)	0.0263 (0.0266)	-0.0155 (0.0277)
Foreign Reserve _j	-0.143*** (0.0241)	-0.123*** (0.0237)	-0.120*** (0.0239)	-0.0997*** (0.0257)	0.0202 (0.0195)	0.0266 (0.0193)	0.00771 (0.0210)	-0.0258 (0.0208)
(Foreign Reserve) _j ²	0.00808*** (0.000214)	0.00795*** (0.000397)	0.00788*** (0.000374)	0.00553*** (0.000216)**	-0.000214 (0.000397)	-0.000397 (0.000374)	0.000374 (0.000374)	0.00216** (0.000374)

	(0.00141)	(0.00142)	(0.00144)	(0.00158)	(0.000814)	(0.000826)	(0.000879)	(0.000877)
Distance	-0.0750***	-0.0723***	-0.0718***	-0.0735***	-0.0513***	-0.0521***	-0.0441***	-0.0418***
	(0.00655)	(0.00640)	(0.00645)	(0.00677)	(0.00720)	(0.00715)	(0.00709)	(0.00733)
Language	0.228**	0.206**	0.220**	0.347***	0.00990	0.0139	0.000651	0.229**
	(0.0950)	(0.0951)	(0.0967)	(0.101)	(0.0992)	(0.101)	(0.101)	(0.105)
Religion	0.547***	0.606***	0.599***	0.452***	0.338***	0.395***	0.510***	0.297**
	(0.116)	(0.114)	(0.115)	(0.119)	(0.121)	(0.121)	(0.122)	(0.130)
RR _{i,j}	-1.622**	-2.522***	-2.592***	-2.535***	-0.808	-0.995	-1.040	-1.533**
	(0.683)	(0.674)	(0.711)	(0.688)	(0.687)	(0.682)	(0.693)	(0.698)
Human Capital	0.231***				0.619***			
	(0.0870)				(0.122)			
Human Capital _j	0.421***				0.422***			
	(0.0864)				(0.0862)			
Tariff		-0.00888				0.0510***		
		(0.0102)				(0.0129)		
Tariff _j		0.00638				-0.0508***		
		(0.0114)				(0.0101)		
Exchange Rate Volatility			0.512**				-0.469***	
			(0.256)				(0.175)	
French Legal Origin				0.265**				-0.414***
				(0.103)				(0.142)
German Legal Origin				0.390***				0.476***
				(0.123)				(0.125)
Scandinavian Legal Origin				-0.558***				1.295***
				(0.152)				(0.272)
French Legal Origin _j				0.170				0.810***
				(0.116)				(0.114)
German Legal Origin _j				0.920***				0.756***
				(0.122)				(0.135)
Scandinavian Legal Origin _j				-0.309***				0.111
				(0.119)				(0.177)

Constant	-3.476*** (0.520)	-2.553*** (0.523)	-2.554*** (0.490)	-5.073*** (1.065)	-2.085*** (0.646)	-0.859 (0.634)	-1.549** (0.638)	-7.465*** (1.343)
Observations	3359	3411	3364	3411	3338	3387	3338	3387

Notes: The dependent variables are binary variables which takes 1 if a country i invest in a country j as the FDI in column (1) to (5); and if a country i invest in a country j as the portfolio investments in column (6) to (10). In column (1) and (6), we exclude the financial centers classified by not only Johannesen and Zucman (2014), used in the benchmark regressions, but also Garcia-Bernardo et al. (2017). In column (2) and (7), we exclude the U.S. from our recipient country sample. In column (3) and (8), the relative returns on assets are based on the traditional MPK with the capital share constructed by 1 minus the labor share. In column (4) and (9), we use the real interest rates to construct the relative returns. In column (5) and (10), we add human capital in our benchmark regressions. Standard errors are reported in the parenthesis. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Robustness the Second-Step Estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	log of the Share of FDI				log of the Share of PI			
	Human Capital	Tariff	Exchange Rate Volatility	Legal Origin	Human Capital	Tariff	Exchange Rate Volatility	Legal Origin
Distance	-0.249*** (0.0173)	-0.242*** (0.0177)	-0.244*** (0.0178)	-0.250*** (0.0156)	-0.183*** (0.0112)	-0.178*** (0.0115)	-0.169*** (0.0113)	-0.176*** (0.0104)
Language	1.467*** (0.141)	1.479*** (0.141)	1.498*** (0.141)	1.499*** (0.143)	1.100*** (0.118)	1.119*** (0.118)	1.077*** (0.118)	1.117*** (0.120)
Religion	1.772*** (0.217)	1.861*** (0.219)	1.916*** (0.218)	1.918*** (0.208)	0.851*** (0.170)	0.938*** (0.168)	0.861*** (0.171)	0.888*** (0.166)
RR _{i,j}	-50.20*** (17.60)	-37.13** (15.39)	-23.42 (14.52)	-64.27 (45.76)	24.46 (15.06)	2.724 (10.70)	0.432 (10.48)	90.15** (39.12)
Rule of Law × RR _{i,j}	1.403 (2.299)	1.136 (1.984)	0.531 (1.928)	-0.335 (2.127)	-0.888 (2.199)	-3.332* (1.990)	-3.796* (1.983)	-4.306* (2.224)
Legal Right Index × RR _{i,j}	0.293 (0.600)	0.345 (0.592)	0.162 (0.596)	-1.246 (0.861)	1.496** (0.623)	1.083* (0.581)	0.731 (0.583)	-0.384 (0.783)
Investor Protection × RR _{i,j}	-1.350 (0.938)	-1.209 (0.946)	-1.290 (0.941)	-2.294** (1.068)	-1.201 (0.770)	-1.054 (0.765)	-1.029 (0.776)	-3.372*** (0.925)
Financial Openness × RR _{i,j}	-0.687 (1.274)	0.436 (1.318)	-0.891 (1.237)	0.104 (1.269)	0.224 (1.258)	0.764 (1.302)	-0.559 (1.195)	0.485 (1.242)
Foreign Reserve × RR _{i,j}	-0.224 (0.603)	-0.545 (0.594)	-0.234 (0.603)	0.0818 (0.668)	-0.335 (0.579)	-1.306** (0.593)	-0.676 (0.564)	0.625 (0.652)
(Foreign Reserve) ² × RR _{i,j}	0.0121 (0.0231)	0.0221 (0.0230)	0.0107 (0.0232)	-0.00746 (0.0251)	0.0342 (0.0230)	0.0647*** (0.0235)	0.0404* (0.0226)	-0.0119 (0.0258)
Rule of Law _j × RR _{i,j}	-7.364*** (2.588)	-1.346 (2.180)	-1.911 (2.248)	1.289 (2.487)	3.810* (2.051)	2.365 (1.822)	3.706** (1.790)	3.780* (1.963)
Legal Right Index _j × RR _{i,j}	1.523** (0.645)	1.679** (0.657)	1.766*** (0.676)	3.955*** (0.843)	0.398 (0.593)	0.488 (0.575)	0.479 (0.579)	0.861 (0.792)
Investor Protection _j × RR _{i,j}	1.835* (1.089)	2.619** (1.084)	2.499** (1.123)	4.476*** (1.263)	1.064 (0.854)	0.983 (0.858)	1.099 (0.854)	1.716* (0.995)

Financial Openness _j × RR _{i,j}	-3.476***	-1.301	-2.543*	-3.896***	-1.768	-3.174**	-2.038*	-2.113*
	(1.316)	(1.459)	(1.298)	(1.326)	(1.192)	(1.294)	(1.151)	(1.188)
Foreign Reserve _j × RR _{i,j}	0.414	1.456*	0.791	0.839	-0.0397	-0.0163	-0.0355	-0.400
	(0.781)	(0.767)	(0.778)	(0.840)	(0.653)	(0.650)	(0.666)	(0.708)
(Foreign Reserve) _j ² × RR _{i,j}	-0.0394	-0.0679**	-0.0489*	-0.0364	-0.00959	-0.0108	-0.00958	0.00703
	(0.0295)	(0.0295)	(0.0296)	(0.0310)	(0.0269)	(0.0268)	(0.0271)	(0.0290)
Distance × RR _{i,j}	-0.202	-0.199	-0.299	-0.269	0.0829	0.00945	0.114	0.0319
	(0.233)	(0.234)	(0.242)	(0.235)	(0.191)	(0.192)	(0.191)	(0.192)
Language × RR _{i,j}	6.636**	5.109*	5.789**	5.557**	-2.915	-3.250	-3.236	-4.586*
	(2.809)	(2.783)	(2.882)	(2.826)	(2.416)	(2.409)	(2.400)	(2.458)
Religion × RR _{i,j}	-1.668	-0.234	-1.165	-2.346	2.925	1.962	3.254	4.297
	(3.557)	(3.558)	(3.567)	(3.675)	(2.951)	(2.929)	(2.920)	(3.030)
Human Capital × RR _{i,j}	-2.966				-10.81***			
	(3.851)				(3.643)			
Human Capital _j × RR _{i,j}	16.77***				0.969			
	(3.815)				(3.528)			
Tariff × RR _{i,j}		1.163**				1.432***		
		(0.505)				(0.473)		
Tariff _j × RR _{i,j}		-0.0752				-0.975**		
		(0.572)				(0.425)		
Exchange Rate Volatility			-1.472*				-2.852***	
			(0.858)				(0.520)	
Exchange Rate Volatility × RR _{i,j}			-11.19				-2.886	
			(10.33)				(6.117)	
French Legal Origin × RR _{i,j}				-12.92***				-17.00***
				(4.968)				(4.360)
German Legal Origin × RR _{i,j}				-7.563*				-17.97***
				(4.549)				(3.866)
Scandinavian Legal Origin × RR _{i,j}				-7.671				-10.47***
				(5.022)				(4.008)
French Legal Origin _j × RR _{i,j}				22.89***				4.146

				(4.815)				(4.520)
German Legal Origin _j × RR _{i,j}				12.11**				3.987
				(4.770)				(4.224)
Scandinavian Legal Origin _j × RR _{i,j}				5.150				4.708
				(6.653)				(4.750)
Constant	-1.958	-1.439	0.455	-1.426	-6.931***	-6.845***	-1.069***	-6.807***
	(1.517)	(1.532)	(0.475)	(1.540)	(0.724)	(0.763)	(0.390)	(0.746)
lambda	-0.0980	-0.271	-0.0580	-0.0140	-0.0476	0.0173	-0.417	-0.247
	(0.500)	(0.506)	(0.510)	(0.420)	(0.408)	(0.414)	(0.436)	(0.350)
Observations	3359	3411	3364	3411	3338	3387	3338	3387

Notes: The dependent variables are log of the share of FDI and portfolio investments defined as equation (16). We control for investor and recipient fixed effects. In column (1) and (6), we exclude the financial centers classified by not only Johannesen and Zucman (2014), used in the benchmark regressions, but also Garcia-Bernardo et al. (2017). In column (2) and (7), we exclude the U.S. from our recipient country sample. In column (3) and (8), the relative returns on assets are based on the traditional MPK with the capital share constructed by 1 minus the labor share. In column (4) and (9), we use the real interest rates to construct the relative returns. In column (5) and (10), we add human capital in our benchmark regressions. Standard errors are reported in the parenthesis.

*p < 0.1, **p < 0.05, ***p < 0.01.

Appendix

A Figures

Figure A.1: The Average Returns from the FDI from 2009 to 2014 Based on the Traditional MPK Estimates Assuming the Capital Share of Outputs as 1 Minus the Labor Share

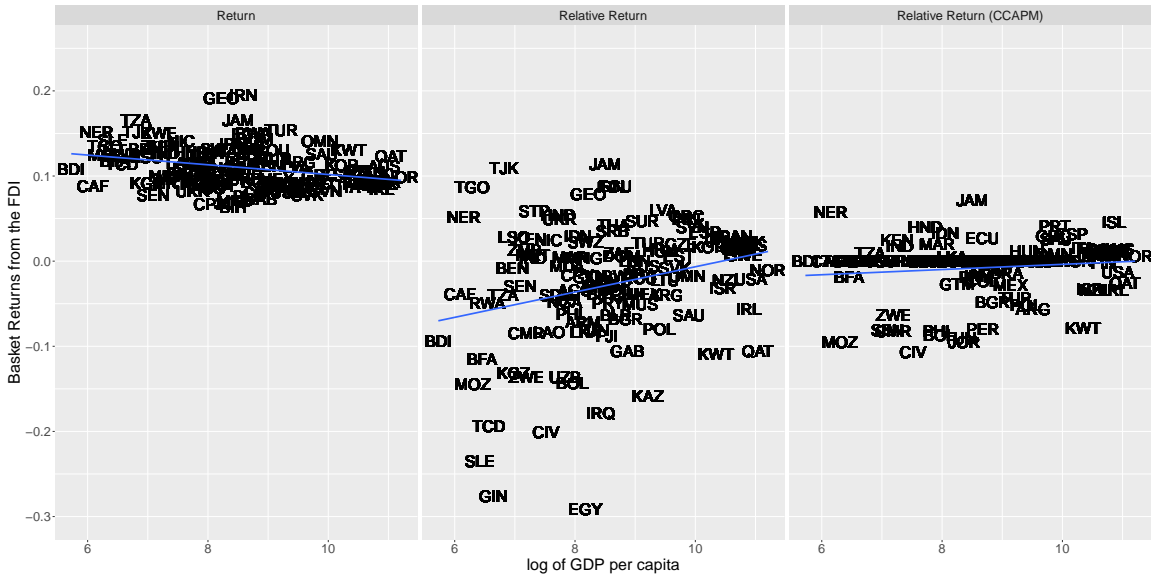


Figure A.2: The Average Earnings from the FDI from 2009 to 2014 based on Real Interest Rate

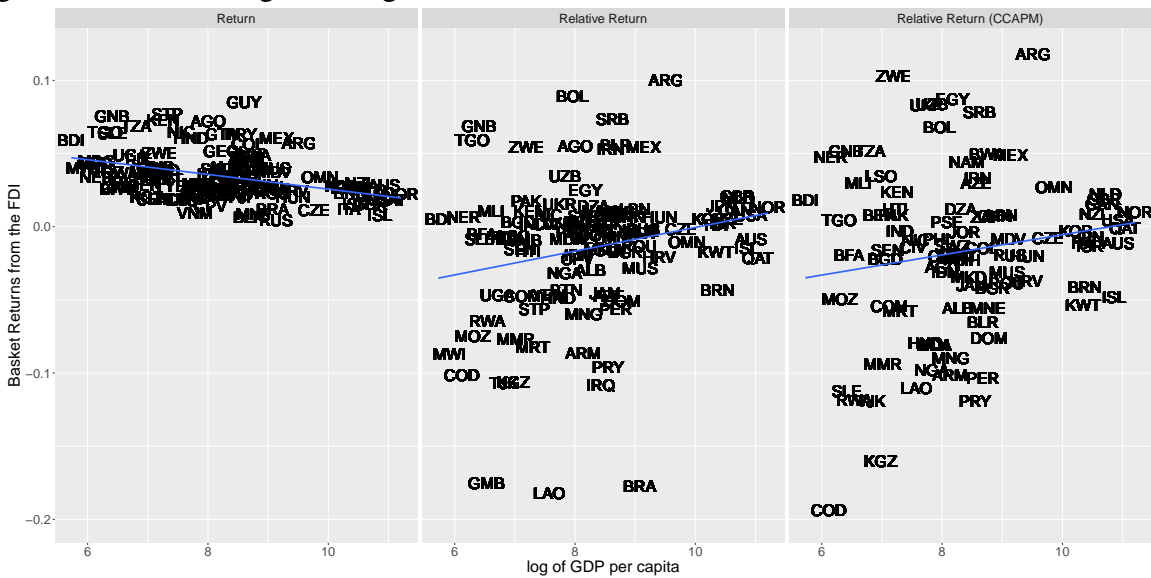


Figure A.3: The Average Earnings from the Portfolio Investments from 2009 to 2014 Based on the Traditional MPK Estimates Assuming the Capital Share of Outputs as 1 Minus the Labor Share

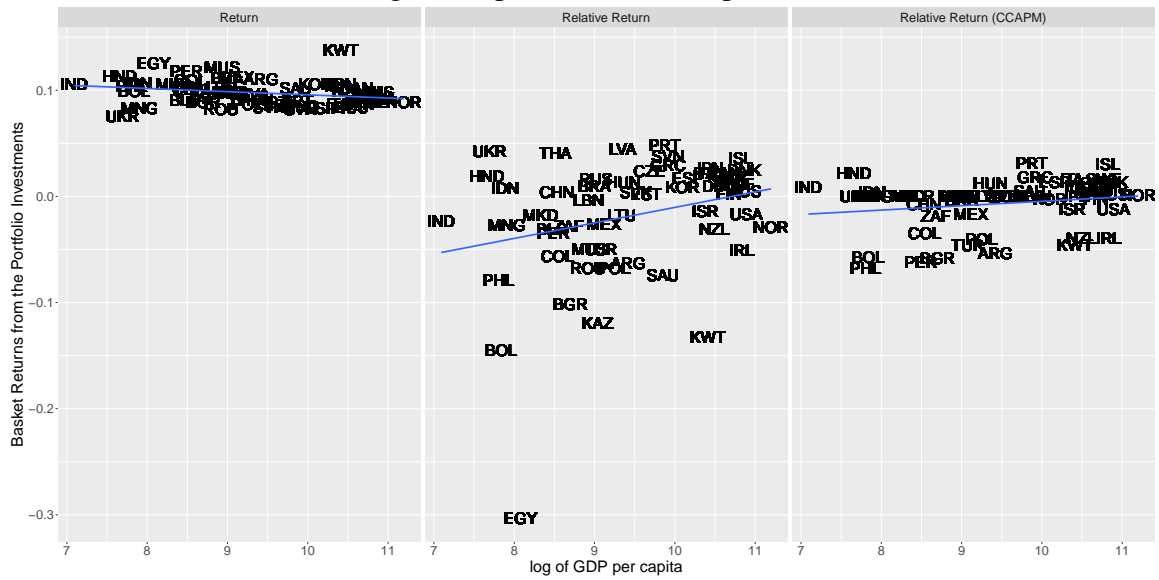


Figure A.4: The Average Earnings from the Portfolio Investments from 2009 to 2014 Based on Real Interest Rate

