Does Financial Development Matter for International Portfolio Composition?

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Abstract

In this document we explore whether differentials in financial development across countries are relevant to induce suboptimal portfolio allocations of the type characterized by home bias and poor portfolio diversification. In particular we would like to study what is the mechanism that leads to a reluctance to take advantage of arbitrage opportunities present in acquiring assets issued by countries with higher returns to capital and productivity growth. We include a financial friction in a model of international portfolio decisions and derive the equilibrium share of domestic assets in the agents' portfolios. We obtain that in the presence of such distortion the model departs further from a purely diversified portfolio, intensifying the home bias in equity.

Introduction

Since the seminal work by Bernanke et al. [1996] the role played by the financial sector in shaping the macroeconomic variables fluctuations have been noticed widely in the literature. In such sense, current modeling approaches take into account the amplification effects of the financial markets in the monetary policy effects or in the savings-investment decisions made by liquidity holders and project managers (e.g. banks and firms). Furthermore, the extent in which financial markets access can lead agents to make use of available arbitrage opportunities when reallocating his resources may play a central role in international macroeconomic models.

On the other hand, the uncovered interest parity formulation, present in most of the international macroeconomics literature, assumes perfect capital mobility between the domestic country and the rest of the world. Such result assumes that the degree of access to financial markets is perfect for the implied parties, i.e., a household in the domestic country that is willing to hold an asset, would be able to acquire it in any market, even if foreign, that would provide the highest return.

In such sense, in equilibrium, there are no further arbitrage opportunities, interest rates equalize after adjusting for the expected depreciation, consumption levels growth is equalized across countries and capital is allocated all over the world in diversified portfolios. However, in reality such scenario lacks empirical support and different puzzling results emerge to contradict several of these expected outcomes, for example, for the UIP this can be seen in Hodrick [2014].

Different reasons have been proposed to explain such discrepancies between theory and empirics, for example, the presence of non tradable goods, the ommited role of risk in the UIP (Engel [1996]) or price frictions.

In this document, we take that direction and explore the mechanisms explaining the home bias in assets, a puzzle posed by French and Poterba [1991] and that has been discussed extensively in the literature. In particular, departing from a microfounded model of portfolio composition, we study the effect played by the degree of financial development in shaping the portfolio decisions made by agents in an integrated international financial market.

Our findings suggest that risk hedging motives for biases in assets demand are amplified by a factor that increases in the degree of the friction implied for under developement financial markets. Intuitively, *ceteris paribus*, the more developed the market, the closer the perfect capital mobility assumption to be satisfied and the easier to allocate efficiently resources across the world markets. More technically, a higher degree of friction implies that perfect diversification is less likely to hedge against real shocks and exchange rate shocks and then an additional home bias is generated.

Finally, additional dimensions in which the model may be further amplified are mentioned, leaving space for future research on unpuzzling the home bias in assets to a greater extent.

Literature review

The relevance of including the financial development in the models is pointed out in Gourinchas et al. [2014] who surveys a strand of modeling approaches where financial development can help to explain the disproportionate capital flows from Emerging Markets (EM) to developed countries as United States. Similarly, Mendoza et al. [2009] pose the global imbalances as a result of differentials in financial development in a framework of incomplete information, in which the contracts enforcement is affected directly by the degree of financial development of a country that they define as the share of output that a country can divert when defaulting its obligations.

On the other hand, Antras and Caballero [2009] study interactions between trade and financial frictions, the latter represented by differentials in financial development across countries. His results, derived from a two sector, two countries model, point to disproportionate capital flows towards countries with higher financial capacity, even under different degrees of openness of trade and degrees of capital flows. Maggiori [2013], develops a microfounded model to explain asymmetries in risk aversion driven by heterogeneous financial development, his findings, are consistent with empirical evidence pointing to developed countries taking longer positions in

relative riskier assets in comparison to emerging economies. In his model, countries have a less developed financial market when its financial intermediaries have tighter credit constraints.

With the similar motivation, Angeletos and Panousi [2011] develop a Bewley type of model, in which agents face an idiosyncratic risk that can be partially insured. The financial development there, is captured as the degree in which such risk can be hedged. The result is that, when facing non insurable risks, the agents will increase their precautionary savings and depress the interest rate at an extent that reverts the capital flows from underdeveloped to financially developed countries.

Finally, in a more standard framework, Caballero et al. [2008] include the financial development in a OLG model with demographic features, the degree of development is defined as the capacity that a country has to capitalize streams of future income into real assets, i.e., it is captured as the ratio of financial to non financial income in the economy, the result is a model in which capitals may flow across countries even under unfavorable interest rate differentials, but driven for safer havens and by safe assets shortages across markets.

In most of these articles, the common element is to add financial frictions (e.g., asymmetries in financial development), which lead to results that depart from the perfect risk sharing, complete markets benchmark, and that ultimately, help explain the puzzling outcomes observed empirically to some degree.

The main definition of financial development and the associated friction considered by the aforementioned part of the literature is summarized in the table 1. It is worth mentioning that most definitions are consistent with each other and even can share some features, being the main difference the way in which it is reflected in the modelling approach. This document follows the definition and treatment of Caballero et al. [2008] and Gourinchas et al. [2014].

Table 1: Financial Development friction in the literature

Study	Definition	Treatment in the model
Mendoza et al. [2009]	Limited verifiability of idiosyncratic country level shocks that implies imperfect debt contracts enforcement.	Income can be diverted at a given proportional cost, the larger the cost, the lower the friction.
Antras and Caballero [2009]	Different degree of financial dependence by sectors in the economy and across countries that potentially binds investment, also potential rebate to lenders if entrepreneur abandons the project after an investment.	Borrowing constraint multiplier as factor of capital holdings in a sector. The higher, the more developed the financial sector (less constrained investment).
Angeletos and Panousi [2011]	Uninsurable idosyncratic country risk that affects investment and depresses interest rate	Financial Development is negatively proportional to the variance of the capital income in the capital accumulation equation.
Caballero et al. [2008] and Gourinchas et al. [2014]	Capacity of the financial sector in a country to capitalize streams of future income into real assets. Supply of safe assets or storesof value.	Multiplicative factor of the returns to capital, the larger the lower the distortion.
Maggiori [2013]	Higher capacity by financial intermediaries to raise funding for investment which leads to less concerns about taking riskier asset positions.	Credit constraints reflected in the ability to divert assets by defaulting. The less able, the more developmed. The friction implies a different valuation of financial capital which is reflected in a different marginal value of net worth.

On the other hand, the second big topic in the literature that this document is closely related to is the portfolio diversification puzzle, i.e., the home bias in assets. Several documents have tried to explain the lack of diversification in the portfolio composition observed in reality. The typical approach has been to add some new assumption or distorting element to the analysis, for example Pesenti and van Wincoop [2002] link portfolio home bias to non tradable consumption and leisure, they find that the presence of non tradables explains a sizable but still small amount of home bias in assets.

In a similar fashion van Wincoop and Warnock [2010], take a broader approach and study the impract of trade costs in the home bias. They mention that the usual link in theory is that an increase in the trade costs will lead to different consumption bundles across countries that generates fluctuations in the real exchange rate and that a natural response by agents to insure such risk is to generate additional home bias in their equity assets.

However, despite how reasonable that explanation could be, their findings suggest that the generated home bias by this mechanism is close to zero. The explanation is that the relation between equity returns and the exchange rate is very weak.

More importantly, while surveying the literature they mention that there is no consensus in how this type of modifications to home bias models is relevant to explain the puzzle or not. The conclusions are very sensitive to the specific assumptions of the models and still fail to capture a significant degree of bias.

A moral from this studies is that an explanation of home bias based mainly on changes in preferences (like using home bias in consumption as the origin of the bias) would yield a mild degree of home bias in comparison to the empirical evidence. That is how it becomes crucial to consider additional sources of risk that would like to be hedged when forming a portfolio. This provides additional motivation to the inclusion of a distortion like the financial one, among others.

In the same spirit, Engel and Matsumoto [2009] include additional assets to the modelling framework. They develop a DSGE model where the households can choose between home and foreign equities, and also a forward in exchange rates. Simultaneously the allow for nominal rigidities in the form of sticky prices to capture the real consequences of nominal exchange rate fluctuations.

Similarly, Coeurdacier and Rey [2013] offer an modeling framework, to study home bias, also from a general equilibrium perspective but focusing in a locally complete markets solution to derive a portfolio that replicates an efficient allocation. Starting with a two country model with equity holdings, they obtain a microfounded higher share of domestic assets in optimal portfolios in countries trying to hedge real exchange and labor income risks.

The authors explain that the model displays home bias in either the equity version and the version that includes bonds to hedge for exchange rate risk. However, in any case there is still space for explaining a larger degree of home bias. They mention that the approximation can be improven by implementing additional frictions in the model. Such frictions may come in the form of limited participation of countries in international financial markets, inefficiencies in process of intermediation, different sovereign debt risks among others, that may lead to outcomes that are closer to the inefficient risk sharing portfolios observed.

Motivated in this potential opportunity for improving the understanding of home bias and with an additional interest in understanding cross differences between countries, that may dif-

fer in the structures and sizes of their financial markets, in this document we consider a particular definition of financial development and build on the home bias modelling approach of Coeurdacier and Rey [2013]. As mentioned, the explored literature in financial development focuses mainly in explaining global imbalances, but still, a related effect that can be explored is its role in shaping the international portfolio decisions.

Methodology

The departing point is the framework developed by Coeurdacier and Rey [2013]:

Model with equities only:

Assumptions:

Two countries, home and foreign. Each produces a differentiated good in competitive markets. There are two goods and preferences are biased towards domestic goods, then the agents will want to hedge against real exchange rate risk. Additionally, the labor income is non-diversifiable, and therefore, agents will try to hedge against risk in human wealth (labor returns associated with the performance of the economy), the capital stock is fixed.

Preferences: The agents will maximize the present value of their lifetime utility given by,

$$E_0 \sum_{t=0}^{\infty} \beta^t \left(\frac{C_{i,t}^{1-\sigma}}{1-\sigma} - \frac{l_{i,t}^{1+\omega}}{1+\omega} \right)$$

with $\omega > 0$ and $\sigma > 0$.

the consumption will be an CES aggregate of the final goods produced in each country,

$$C_{i,t} = \left[a^{\frac{1}{\phi}} (c_{i,t}^i)^{\frac{\phi-1}{\phi}} + (1-a)^{\frac{1}{\phi}} c_{j,t}^{\frac{\phi-1}{\phi}} \right]^{\frac{1}{1-\phi}}$$

where $c_{j,t}^i$ is the country i's consumption of the good produced by j at t. Given there is a preference bias for local goods $1/2 < a < 1$.

the price level of country i is,

$$P_{i,t} = \left[a p_{i,t}^{1-\phi} + (1-a) p_{j,t}^{1-\phi} \right]^{\frac{1}{1-\phi}} \tag{1}$$

where $p_{i,t}$ is the price of good i, and a will be the weight in in the consumption basket given by each country to its own produced good, consistent with home bias in consumption.

Technology:

The final good $y_{i,t}$ is produced according to a Cobb Douglas function ($0 < \alpha < 1$),

$$y_{i,t} = \theta_{i,t} k_0^{\alpha} l_{i,t}^{1-\alpha}$$

k_0 is the initial capital stock and $\phi_{i,t} > 0$ is the stochastic total factor productivity.

the function implies that a share $1-\alpha$ of output is paid to the workers: $w_{i,t} l_{i,t} = (1-\alpha) p_{i,t} y_{i,t}$ and a share α is paid as dividends to capital.

In the model without financial development this implies $d_{i,t} = \alpha p_{i,t} y_{i,t}$, which is the functional form assumed in Coeurdacier and Rey [2013]. However, we include the financial development as either the fraction of financial income that cannot be diverted (Mendoza et al. [2009]), or as the adjusted return after frictions (Gourinchas et al. [2014]), that is, $d_{i,t} = (1-\delta_i)\alpha p_{i,t} y_{i,t}$, where $\delta \in [0,1]$ is a term denoting the distortion to returns, being lower and close to zero for fully developed, or frictionless, financial markets.

Budget constraint:

There is international trade in stocks, the country i firm issues a stock that represents a claim to its stream of dividends. The supply of shares is normalized to one. At first, each household owns the total share of the domestic stock and therefore has zero foreign assets, then it holds that:

$$P_{i,t} C_{i,t} + p_{i,t}^S S_{i,t+1}^i + p_{j,t}^S S_{j,t+1}^i = w_{i,t} l_{i,t} + (d_{i,t} + p_{i,t}^S) S_{i,t}^i + (d_{j,t} + p_{j,t}^S) S_{j,t}^i \tag{2}$$

where $S_{j,t}^i$ is the share of stock j held by country i at the end of t and $p_{i,t}^S$ is the price of the stock i.

Optimal allocations of consumption spending and labor supply decisions are,

$$\begin{aligned} c^i_{i,t} &= a\left(\frac{p_{i,t}}{P_{i,t}}\right)^{-\phi} C_{i,t} \\ c^i_{j,t} &= (1-a)\left(\frac{p_{j,t}}{P_{i,t}}\right)^{-\phi} C_{i,t} \\ l^{\omega}_{i,t} &= \left(\frac{w_{i,t}}{P_{i,t}}\right) C^{-\sigma}_{i,t} \end{aligned} \tag{3}$$

the Euler Equation for each stock is:

$$1 = E_t\left[\beta\left(\frac{C_{i,t+1}}{C_{i,t}}\right)^{\sigma}\frac{P_{i,t}}{P_{i,t+1}}\frac{p^S_{j,t+1}+d_{j,t+1}}{p^S_{j,t}}\right] \tag{4}$$

for $j = H, F$

where the real interest rate is obtained using the Fisher's parity.

Additionally, the market clearing conditions are:

$$\begin{aligned} c^H_{H,t} + c^F_{H,t} &= y_{H,t} \\ c^H_{F,t} + c^F_{F,t} &= y_{F,t} \\ S^H_{H,t} + S^F_{H,t} &= S^H_{F,t} + S^F_{F,t} = 1 \end{aligned} \tag{5}$$

The model can be log-linearized, let $z_t \equiv \frac{z_{H,t}}{z_{F,t}}$ be the ratio of domestic to foreign variables and $\hat{z}_t \equiv \frac{z_t - z}{z}$ the relative deviation of z with respect to its steady state. The home country real exchange rate is $RER_t = \frac{P_{H,t}}{P_{F_t}}$.

Linearizing the RER and using the price equation (1), as well as the definition of terms of trade $q_t = p_{H,t}/p_{F,t}$,

$$\widehat{RER}_t = \widehat{P_{H,t}} - \widehat{P_{F,t}} = (2a-1)\hat{q}_t$$

this is a known result in the literature, that indicates that with home bias in consumption, the real exchange rate will follow the movements of the terms of trade, notice that without home bias ($a = \frac{1}{2}$) the real exchange rate is zero and PPP holds.

Also, in equilibrium the ratio of home and foreign aggregate consumption is proportional to the real exchange rate. After linearization:

$$-\sigma\left(\widehat{C_{H,t}} - \widehat{C_{F,t}}\right) = (2a-1)\widehat{q}_t \tag{6}$$

Using the first order conditions (3) and market clearing conditions (5) for consumption, together with (6), we obtain that relative world consumption demand is $y_t = y_{H,t}/y_{F,t} = (c^H_{H,t} + c^F_{H,t})/(c^F_{F,t} + c^H_{F,t})$ and satisfies:

$$\hat{y} = -\left[\phi(1-(2a-1)^2) + (2a-1)^2\frac{1}{\sigma}\right]\hat{q}_t = -\lambda\hat{q}_t \tag{7}$$

where $\lambda = \phi(1-(2a-1)^2) + \frac{(2a-1)}{\sigma} > 0$.

Given the ex-ante symmetry between countries, it will hold that the portfolios will satisfy $S = S^H_H = S^F_F = 1 - S^F_H = 1 - S^H_F$, where S is the equilibrium equity portfolio share of domestic stocks. Examining the home bias in equities implies obtaining the equilibrium value of S, we will solve for it by using this condition in the budget constraint (2).

Assuming stock holdings don't change between one period and the other, e.g., after reaching the steady state, we obtain a simplified static budget constraint:

$$P_{i,t}C_{i,t} = w_{i,t}l_{i,t} + Sd_{i,t} + (1-S)d_{j,t}, \qquad for\ \ i = H, F \tag{8}$$

Now, subtracting the static budget (8) of country F from that of country H, we obtain after log-linearization:

$$\widehat{P_{H,t}C_{H,t}} - \widehat{P_{F,t}C_{F,t}} = (1-\alpha)\widehat{w_t l_t} + (2S-1)\alpha\hat{d}_t + (2S-1)\alpha\Omega \tag{9}$$

where the last term arises because of the financial frictions implied by imperfect financial development and $\Omega = \delta_F \hat{d}_{F,t} - \delta_H \hat{d}_{H,t}$, without such frictions $\delta_i = 0$ for $i = H, F$ and the result is identical to that of Coeurdacier and Rey [2013].

where $\widehat{w_t l_t} = \widehat{w_{H,t} l_{H,t}} - \widehat{w_{H,t} l_{H,t}}$ is the relative labor income and $\hat{d}_t = \hat{d}_{H,t} - \hat{d}_{F,t}$ is the relative dividend. Also, $\widehat{RER_t} = (2a-1)\hat{q}_t$.

On the other hand, considering (6) we obtain,

$$\widehat{P_{H,t}C_{H,t}} - \widehat{P_{F,t}C_{F,t}} = \left(1 - \frac{1}{\sigma}\right)\widehat{RER_t} \tag{10}$$

Now we can derive the equilibrium portfolio as a function of the second order moments between the dividends and sources of risk. Taking covariances of the left hand sides of the equations (9) and (10) with $\hat{d}$ we get

$$\begin{aligned}\left(1 - \frac{1}{\sigma}\right) Cov(\hat{d}_t, \widehat{RER_t}) &= Cov(\hat{d}, (1-\alpha)\widehat{w_t l_t} + (2S-1)\alpha\hat{d}_t + (2S-1)\alpha\Omega) \\ &= (1-\alpha)Cov(\hat{d}_t, \widehat{w_t l_t}) + (2S-1)\alpha Var(\hat{d}_t) - \alpha(2S-1)\tilde{\delta}Var(\hat{d}_t)\end{aligned} \tag{11}$$

where $\tilde{\delta} = \delta_H \varphi_H + \delta_F(1-\varphi_H)$ is a weighted average of the financial friction in each country and φ_H is fraction of variance of $\hat{d}$ corresponding to the variance of the dividends in the home country $Var(\hat{d}_H)$.

We assume that $Cov(d_{H,t}, d_{F,t}) = 0$, so that $Var(\hat{d}) = Var(\hat{d}_{H,t}) + Var(\hat{d}_{F,t})$ and the following holds:

$$\begin{aligned}Cov(\hat{d}_t, \alpha(2S-1)\Omega) &= \alpha(2S-1)\left[-\delta_H Var(\hat{d}_{H,t}) - \delta_F Var(\hat{d}_{F,t})\right] \\ Cov(\hat{d}_t, \alpha(2S-1)\Omega) &= -\alpha(2S-1)[\delta_H\varphi_H + \delta_F(1-\varphi_H)]Var(\hat{d}_t) \\ &= -\alpha(2S-1)\tilde{\delta}Var(\hat{d}_t)\end{aligned}$$

Finally from (11) we solve for the share of domestic investment in equities S:

$$S = \frac{1}{2} - \frac{1}{2}\frac{(1-\alpha)}{\alpha(1-\tilde{\delta})}\frac{cov(\hat{w_t l_t}, \hat{d}_t)}{var(\hat{d}_t)} + \frac{1}{2}\frac{(1-\frac{1}{\sigma})}{\alpha(1-\tilde{\delta})}\frac{cov(R\hat{E}R, \hat{d}_t)}{var(\hat{d}_t)} \tag{12}$$

Here the first covariance-variance ratio term, denotes the non-tradable income risk, which, if assumed procyclical, implies the agents are hedging on the performance of the domestic economy. This term depends on the relative weight of labor income in the output captured by $(1-\alpha)/\alpha$, such weight strengthened in the version of the model that includes financial development.

The second covariance term, represents the real exchange risk, which given it is countercyclical, would imply that we are diversifying for bad performance of the economy too as with the former term, and in line with the usual asset pricing result that agents pursue assets that are negatively correlated with the business cycle. The latter is captured by the fact that if the covariance of real exchange rate and excess dividends is positive then after observing more expensive home goods (increase in RER) it would be preferable for agents to increase the demand for assets that yield higher returns when home goods are more costly.

Notice two features of the equation: First, in absence of any risk, i.e., when the covariances are zero, the share is exactly one half and the economy does not display home bias. Second, the departure terms from home bias implied by each type of risk is amplified in a scale of $\frac{1}{1-\tilde{\delta}} > 1$ with respect to the financial frictionless case with fully developed markets.

The equation can be further simplified by considering that after loglinearization: $\hat{w_t l_t} = \hat{d}_t = \hat{q}_t + \hat{y}_t = (1-\lambda)\hat{y}_t$

$$S = \frac{1}{2} - \frac{1}{2}\frac{(1-\alpha)}{\alpha(1-\tilde{\delta})} - \frac{1}{2}\frac{(1-\frac{1}{\sigma})}{\alpha(1-\tilde{\delta})}\frac{(2a-1)}{(\lambda-1)} \tag{13}$$

By construction, this equation is consistent with (12) implying that without risk there is no biases in equity. Furthermore, in this simplyfied equation it can also be seen that without home bias in consumption ($a = \frac{1}{2}$) or with logaritmic agents ($\sigma = 1$) the second term dissapears implying lesser deviations from a pure asset diversification situation.

It can also be noticed that the hedging on real exchange rate depends on λ, the linkage between output and terms of trade (equation (7)). If $\lambda > 1$ the agents will display foreing equity bias, this is explained by the fact that upon a negative productivity shock the terms of trade with react strongly to the decrease in output, increasing the real exchange rate and also the excess dividend (since $\hat{d}_t = (1-\lambda)\hat{q}_t$), leading to a preference for adquisition of foreign assets. Conversely, if $\lambda < 1$ there is going to be home bias. The same negative shock in productivity will imply a higher excess return attracting demand for domestic stocks.

Finally, if $\lambda = 1$ we go back to a knife edge solution, depicted in Cole and Obstfeld [1991], where there is zero effect since any increase in local output after productivity shocks will be perfectly offset by a decrease in the terms of trade.

Extensions and future research

Empirical exercise

Whenever possible if would be good to evaluate the model insights in the light of available data. In order to do it, we would need to look for home bias determinants and check if the financial development differentials is one of them. A measure of financial development should be found in such case, a feasible option is the one developed by the IMF used in Mendoza et al. [2009].

Amplified model

This work provided initial insights on the link between financial development and home bias in portfolio decisions, we depart from a microfounded model developed in Coeurdacier and Rey [2013] and Coeurdacier [2009] and include frictions in financial markets, naturally, there are potential modifications that could be applied to the model to enrich the analysis of home bias.

In particular, equation (12) describes how the share of local stocks depends on the sources of risk. However, as mentioned in the first sections of this document, it can be argued that equities are not a good hedge for real exchange rate risk, instead, bonds are assets more commonly used to insure such risk. Therefore a natural modification for this model would be include bonds as well. A result from such amplification is that inevitably, under the setup of this model, equity home bias will be observed, i.e., $S > \frac{1}{2}$. That extension, clearly without the differetial in financial development, is also considered in Coeurdacier and Rey [2013] where the home bias result was exacerbated. We would expect that under financial frictions of the kind explored in this document, the degree of home bias would be amplified even more than it was in the case

explored in the current version of this document where there is only equities.

On the other hand, related questions that might be explored within a more complex version of the model (in terms of types of assets and goods, for example) are:

- What is the role played by Financial Development in determining portfolio decisions?
- How it can differ from the point of view of the bond issuer or holder and which matters the most to explain puzzling results?, for example, Mendoza et al. [2009] mention that developed countries take riskier positions when forming their portfolios.
- Does the type of asset (bond, equity) imply any difference or is relevant in any way when considering the effects financial market development differentials across countries?.
- What is a good measure of financial development[1]
- Does the financial development play any role in the amplification mechanism of financial markets?

Conclusion

In this article, we build on the home bias in equity model developed by Coeurdacier and Rey [2013] and Coeurdacier [2009] by including financial development frictions as those used in Gourinchas et al. [2014] and Caballero et al. [2008] to explain global imbalances. As result, we find that the degree of financial underdevelopment is important in amplifying the agents' hedging motives for departure from a perfectly diversified portfolio.

It is important to clarify that, the set up of the model relies in key assumptions for generating equity home bias, such as home bias in consumption, fairly high degree of risk aversion and law of one price, as well as complete markets.

Even with such assumptions, the degree of home bias is mild with comparison to what may be observed in reality. In such sense, by including the financial frictions we are able to imply a larger departure from diversification in the model.

The main message is that including different sources of risks and frictions may have important effects on the decisions of the agents when constructing their portfolios, which reflects their endeavors in hedging such perceived risks. In the same way, such rationale may imply that

[1] In particular, Gourinchas et al. [2014] mention that there is no consensus about what is a good measure of financial development and indicate that measures like the ratio credit-to-GDP don't take into account the funding structure of the financial market.

financial development by itself is probably insufficient to fully explain a puzzling result like home bias in assets. However, it seems to be an additional step in the right direction towards a more complete identification of the factors that explain this bias.

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