

# Financial Openness and Inequality\*

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## Abstract

We conduct a comprehensive empirical investigation of the link between inequality and financial openness. We document that the relationship varies considerably not only over time, but also across the main components of total external liabilities, which have been largely overlooked by the existing literature. In emerging market economies (EMEs), an increase in a country's external liabilities is associated with an initial rise and a subsequent fall in inequality. This appears to be driven by the fact that the channels through which financial openness increases inequality tend to be active immediately, while the inequality-decreasing channels tend to operate with a lag. The link between financial openness and inequality tends to be substantially weaker in advanced economies than in EMEs.

**JEL Codes:** F30, F40, O11

**Keywords:** Financial openness; Gini-based inequality measures; Foreign direct investments; External liabilities

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# 1 Introduction

The increase in within country inequality that has taken place over the past few decades in large parts of the world has placed questions related to income distribution in the limelight of a public debate (Atkinson (2015), Stiglitz (2012), Piketty and Zucman (2014)). As a consequence, studying inequality has moved to the forefront of policy-makers' priorities and researchers' agendas. In particular, there is great interest in gaining better understanding of the main drivers of inequality and the key determinants of income distributions in both, advanced economies (AEs) and emerging market economies (EMEs).

The existing literature on the topic suggests that inequality has both domestic and international determinants. According to most studies, the main drivers of the recent increases in inequality have been on the domestic side. Technology appears to have been the most important factor in most countries. The returns to skilled labour, which uses technology more intensely, have increased considerably over the past couple of decades (Pereira da Silva et al. (2022), Bank for International Settlements (2017a), Jaumotte et al. (2013), International Monetary Fund (2007), Milanović (2005)). Other important domestic determinants of income inequality include education, redistributive tax-and-transfer policy, the relative influence of trade unions and pay norms (Atkinson (2015)).

On the international side, the literature has examined the role of external factors, such as international trade (real) openness and financial openness (Das and Mohapatra (2003), Jayadev (2007), Furceri and Loungani (2018), de Haan and Sturm (2017), Bourguignon (2015), Lakner and Milanović (2013)). Most of the empirical evidence points to a moderately positive relationship, which tends to be stronger for financial openness than for trade openness (Furceri et al. (2019), Heimberger (2020)). That said, the majority of the empirical research on the link between financial openness and inequality has examined de-jure measures of financial openness (Gräbner et al. (2021)), such as the capital account liberalization index of Chinn and Ito (2008). The few existing studies that have investigated the link between de-facto measures of financial openness and inequality have focused either on total external assets and liabilities (without a breakdown of their main components) or solely on Foreign Direct Investment (while ignoring other major

components, such as portfolio equity, portfolio debt and other investment).

In this paper, we conduct a systematic investigation of the relationship between inequality and external financial openness for a sample of 48 countries between 1991 and 2013. More concretely, we examine the link between inequality and several de-facto measures of financial openness - gross external liabilities and its main components: foreign direct investment (FDI), portfolio equity (PE), portfolio debt (PD) and other investment (OI).

We focus on de-facto, as opposed to de-jure, measures of financial openness for two reasons. First, this allows us to examine the effects not only of overall financial openness (through total external liabilities), but also of its main components (FDI, portfolio equity, portfolio debt and other investment). Second, as documented in Furceri et al. (2019), the estimated impact of de-jure measures on inequality appears to be largely driven by de-facto measures. More concretely, the positive relationship between de-jure measures of financial openness and inequality is primarily due to episodes in which changes in de-jure measures are followed by significant changes in de-facto measures (i.e. episodes in which capital flows increase significantly in the years following a capital account liberalisation).

From a theoretical perspective, the overall effect of financial openness on inequality could go in either direction (Bumann and Lensink (2016)). On the one hand, financial openness could increase income inequality through several channels. Similarly to trade openness, financial openness can raise inequality by boosting income from capital sources. The international mobility of goods and capital, relative to labour, can reduce the price of labour and therefore wages. This could constrain taxing capital and may lead to higher taxes on labour income (Autor et al. (2017)), leading to an increase of inequality as lower-income individuals rely mainly on labour income. Furthermore, financial openness, and in particular FDI, could increase capital intensity and the returns to skill, which could be beneficial to higher-income individuals. Last but not least, if the domestic institutions are not strong enough to prevent groups with special interests from acquiring the gains, financial openness could lead to an increase in income inequality (Claessens and Perotti (2007)).

On the other hand, there are also several channels through which financial openness could decrease inequality. First, an inflow of FDI into a given country is likely to spur a broad increase in productivity in that country, as the newly imported technologies spread through the recipient economy in a diffusion-like process. As that happens, the share of the population employed in the high-skilled industries is likely to increase (Aghion and Howitt (1998)), which would ultimately lead to a decline in inequality. Second, greater external financial openness can increase the ability of low-income individuals to borrow, which can, in turn, increase their income-generating opportunities (Beck et al. (2007), Ben Naceur and Zhang (2016), Beck et al. (2010)). Finally, greater inflows of capital into a given country would, all else the same, tend to increase the value of that country's currency, which could in turn improve the creditworthiness of currency-mismatched borrowers in that country. Since low-income individuals tend to own fewer foreign-currency assets, and are therefore more likely to have currency mismatched balance sheets, a capital flow-induced domestic currency appreciation is likely to reduce inequality.

Our results reveal that the impact of increasing external financial openness on inequality in EMEs varies considerably over time. More concretely, an increase in a country's external liabilities is associated with an initial rise in inequality (which lasts for a couple of years), followed by a subsequent decline (which becomes statistically significant about five years after the initial increase in external liabilities). We document considerable heterogeneity among the main components of financial openness. While the effects of FDI and portfolio debt appear to follow similar dynamic patterns to those of overall external liabilities, there are notable differences in terms of both, economic magnitude and statistical significance. In contrast to FDI and portfolio debt, the relationship between portfolio equity and inequality is insignificant for almost all periods we examine. Meanwhile, an increase in an EME's OI liabilities, which primarily consist of cross-border bank loans, tends to be associated with a fall in inequality, albeit after a lag of a couple of years. The estimated impact of financial openness on inequality tends to be considerably smaller in AEs than in EMEs. This suggests that the key channels through which the various components of external financial openness impact inequality tend to be weaker in AEs than

in EMEs.

The rest of this paper is organised as follows. In the next section, we review the existing literature. In Section 3, we describe the data that we use for our empirical analysis. We discuss the possible channels through which external financial openness can impact inequality in Section 4. We present our empirical methodology in Section 5. In Section 6, we go over our main results and discuss the intuition behind them. We conclude in Section 7.

## 2 Literature review

There is a large body of theoretical literature on the relationship between financial development and inequality. In their review of this literature, Demirgüç-Kunt and Levine (2009) conclude that theory provides contradicting predictions about the relationship between finance and inequality.

On the one hand, there are several papers according to which finance would lead to declines in income inequality, especially for individuals with lower income. For example, Aghion and Bolton (1997) show that more finance may make it easier for poorer individuals to finance profitable projects, which would lead to a reduction in income inequality. Becker and Tomes (1979) and Greenwood and Jovanovic (1990) find that financial development is beneficial for the disadvantaged groups.

On the other hand, some theoretical models predict that more finance could widen income inequality. Matsuyama (2004) concludes that in a world in which economic agents' ability to borrow abroad is constrained by their domestic collateral, financial globalization might make some countries richer only at the expense of making the rest of the world poorer. Greenwood and Jovanovic (1990) find that improving financial services could widen inequality. An extensive overview with summary of papers on the relationship between financial development and inequality are provided by de Haan and Sturm (2017). They analyse the relationship between finance and inequality and find that all finance variables they consider, increase income inequality. Furthermore, the quality of political institutions conditions the impact of financial liberalization on income inequality, in

contrast to the quality of economic institutions.

The existing empirical literature on the relationship between financial openness and inequality has focused exclusively on Foreign Direct Investments (FDI) as a measure of external financial openness. As in the case of the theoretical literature, the empirical results are not uniform. Figini and Görg (2011) find that for developing countries wage inequality increases with FDI, but this effect diminishes with further increases in FDI. For developed countries, wage inequality decreases with FDI, and there is no robust evidence to show that the effect is nonlinear. Jaumotte et al. (2013) find that, while trade globalization is associated with a reduction in inequality, FDI increases income inequality. Their estimates also suggest that technological progress has had a greater impact on inequality than globalization. Cabral et al. (2016) conclude that the stock of cross-border equity positions has a large impact on top income shares, suggesting that the channel through which globalization affects income concentration is through FDI and portfolio equity flows. Gimet and Lagoarde-Segot (2011) discover a significant causality running from financial sector development to income distribution. In addition, they find that the banking sector seems to exert a stronger impact on inequality, and that the relationship depends more on the characteristics of the financial sector than on its size. Milanović (2005) concludes that foreign direct investment has no effect on income distribution.

In a broader sense, our paper is also related to the literature on the link between trade openness and inequality (Cabral et al. (2016), Figini and Görg (2011), International Monetary Fund (2007), Jaumotte et al. (2013) and Denk and Cournède (2015)). The net effect of trade openness on inequality is uncertain in most existing studies (Bank for International Settlements (2017a)). While some papers find that trade openness tends to reduce inequality (Jaumotte et al. (2013), International Monetary Fund (2007)) and unemployment (Görg (2011)), this contrasts with the review of country studies by Goldberg and Pavcnik (2007). These contradicting conclusions may reflect that other factors influence the relationship between trade and inequality. For example, Milanović (2005) finds that trade openness increases the income share of the poor in low-income countries, but decreases it in high-income countries. Trade also leads to relative price falls for

goods disproportionately consumed by lower-income households, boosting their relative purchasing power Milanović (2005).

### 3 Data

We conduct our benchmark empirical exercise using a panel of annual data for 48 countries (30 Advanced Economies (AEs) and 18 Emerging Market Economies (EMEs)) between 1991 and 2013 <sup>1</sup>.

We measure inequality in each country using the Gini coefficient from Solt (2016)'s Standardized World Income Inequality Database (SWIID) Version 5.1. This is the one of the most comprehensive datasets available on income inequality. It incorporates data from several sources, including the World Bank's PovcalNet and the United Nations University's World Income Inequality Database, and employs the Luxembourg Income Study data as the standard. We use the net Gini index, which is an estimate of the Gini index in equivalized (square root scale) household disposable post-tax and post-transfer income.

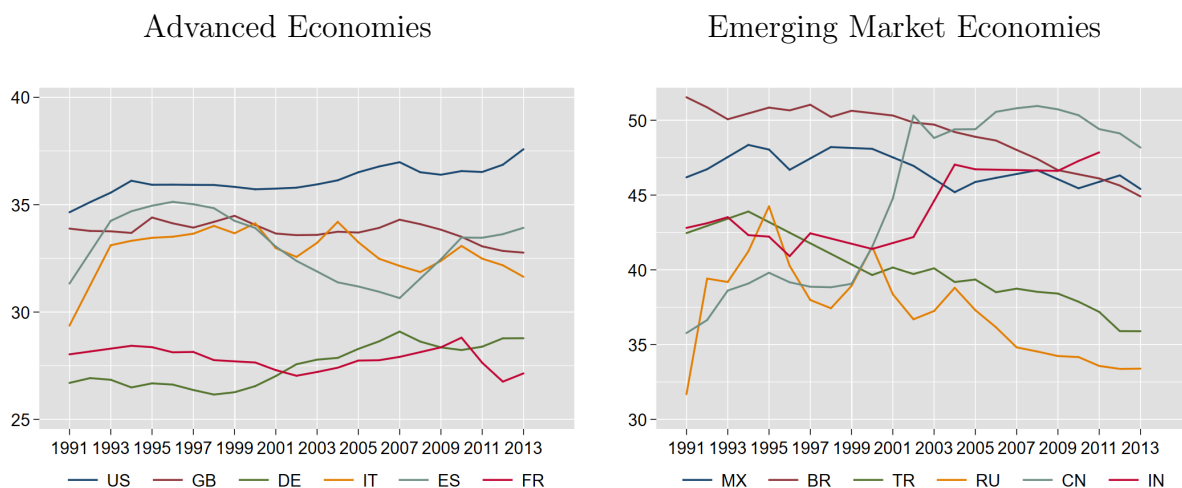
Figure 1 shows the Gini coefficients over the observed time period for selected countries. On average, inequality has increased over the past two decades for the observed AEs and decreased for the EMEs except for India and China. That said, there is considerable heterogeneity in the evolution of inequality across countries.

To measure external financial openness, we use the updated and extended External Wealth of Nations Mark II dataset constructed by Lane and Milesi-Ferretti (2017). It contains annual data for the period 1970 - 2015 and for 211 countries and territories, plus the euro area as a whole. In our benchmark empirical exercise, we use five measures for external financial openness - total external liabilities (Liabilities), foreign direct investments (FDI), portfolio equity liabilities (PE), portfolio debt liabilities (PD) and other investment liabilities (OI). We scale each of the above measures by the GDP of the respective country.

Total external liabilities are defined as all liabilities that the residents of a given country have to residents of other countries in the world. Foreign Direct Investment (FDI)

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<sup>1</sup>The list with all the included countries is available in Appendix B. Additional tables



BR = Brazil, CN = China, DE = Germany, ES = Spain, FR = France, GB = Great Britain, IN = India, IT = Italy, MX = Mexico, RU = Russia, US = United States, TR = Turkey. Source: Solt (2016).

Figure 1: Gini coefficients in selected countries.

is defined as cross-border investment that is associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy (International Monetary Fund (2009)). It includes controlling stakes in acquired foreign firms, as well as Greenfield investments<sup>2</sup>. Portfolio equity positions measure cross-border ownership of shares of companies and mutual funds below the 10 % threshold that distinguishes portfolio from direct investment. Portfolio debt positions are defined as cross-border positions involving debt securities, other than those included in foreign direct investment or reserve assets. Other investment is a residual category that includes positions and transactions other than those included in direct investment, portfolio investment, financial derivatives and employee stock options, and reserve asset. For the overwhelming majority of countries in the world, cross-border banks loans and deposits represent the largest component of other investment liabilities.

In order to prevent the external financial positions of financial centers from influencing our results, we exclude two sets of countries from our benchmark empirical analysis: (i) countries defined as offshore centers in the BIS International Banking statistics and (ii) countries for which the sum of external assets and liabilities exceeds 6000 % of GDP.

In addition, we include several additional variables, which have been demonstrated to

<sup>2</sup>Formally, controlling stakes are defined as those amounting to at least 10 % of an entity's equity. In practice, however, most FDI holdings reflect majority control.



Table 1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Median	Max
<hr/> Emerging Market Economies <hr/>						
Gini	408	40.057	8.822	20.020	39.790	59.759
TEL <sup>1</sup>	410	0.724	0.448	0.186	0.635	3.810
FDI <sup>1</sup>	411	0.265	0.307	0.008	0.199	2.457
PE <sup>1</sup>	410	0.090	0.084	0.000	0.063	0.372
PD <sup>1</sup>	386	0.095	0.079	0.001	0.077	0.426
OI <sup>1</sup>	386	0.254	0.154	0.000	0.229	1.270
GDPpCap <sup>2</sup>	410	0.711	0.623	0.032	0.508	3.641
credit <sup>1</sup>	397	0.732	0.419	0.144	0.612	1.850
capital <sup>1</sup>	358	10.353	7.286	2.851	8.111	58.978
trade <sup>3</sup>	414	0.677	0.419	0.138	0.560	2.204
unemployment	414	0.083	0.055	0.006	0.072	0.271
<hr/> Advanced Economies <hr/>						
Gini net	658	28.978	4.403	17.599	28.668	38.162
TEL <sup>1</sup>	679	2.375	3.420	0.150	1.416	28.905
FDI <sup>1</sup>	665	0.711	1.966	0.002	0.326	20.912
PE <sup>1</sup>	673	0.283	0.726	-0.008	0.115	8.784
PD <sup>1</sup>	650	0.460	0.549	0.000	0.333	4.091
GDPpCap <sup>2</sup>	657	2.923	1.682	0.063	2.693	10.257
credit <sup>1</sup>	483	1.516	0.477	0.352	1.489	3.240
capital <sup>1</sup>	573	6.824	7.767	2.142	5.193	117.291
trade <sup>3</sup>	651	0.862	0.482	0.159	0.728	3.245
unemployment	667	0.081	0.042	0.015	0.072	0.275

Note: TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. Std. Dev. = standard deviation, Obs = Number of observations. <sup>1</sup> Scaled by GDP. <sup>2</sup> In 10,000 of US dollars. <sup>3</sup> trade = (exports + imports)/GDP.

be major determinants of the level of inequality in individual countries, as controls on the right-hand side of our benchmark equation. First, we include the Gross Domestic Product (GDP) per capita (obtained from the International Monetary Fund (2017)) as a proxy for the level of economic development. Second, we use the ratio of private credit to GDP (Bank for International Settlements (2017b)) in a given country (Beck et al. (2007)), as a measure of the country’s financial development. Third, in order to control for unemployment, we use data from the World Development Indicators (WDIs) of the World Bank (The World Bank (2017)). A reduction in unemployment will lead to decreases in income inequality. Low-skilled workers at the bottom of the distribution are more vulnerable to unemployment, which is found to increase income inequality (Heathcote et al. (2010)). Furthermore, we control for trade openness, defined as the sum of exports and imports, scaled by GDP. We obtain data on exports and imports from the World Bank’s WDIs. Last but not least, we also control for the level of the aggregate capital stock (at constant national prices) in a given economy. We obtain those data series from the Penn World Table database (Feenstra et al. (2015)). Table 1 displays summary statistics for the variables we employed in our analysis.

## 4 Theoretical predictions and channels

External financial openness can impact inequality through a number of channels. While many of the relevant channels affect multiple components of external financial openness, each component ultimately impacts inequality through a unique set of channels. This highlights the importance of examining separately the impact of each component of external financial openness on inequality (as opposed to examining their overall joint impact) and motivates the design of our benchmark empirical exercise.

Table 2 displays a summary of the channels associated with each component of external financial openness, along with the respective directional impact associated with each channel. We go over the theoretical explanations underpinning each of those channel in the rest of this section.

FDI flows could lead to a rise in inequality through the skilled premium (SP) channel.

Table 2: Channels through which the main components of financial openness could impact inequality

Channel	External Liability Component			
	FDI	PE	PD	OI
Access to Credit		↓		↓
Capital Gains		↑		
Funding Conditions			↓	↓
Foreign Exchange	↓	↓	↓	↓
Special Interest Groups	↑	↑	↑	↑
Skilled Premium	↑			
Technology Diffusion	↓			

Note: ↑ = increase in inequality, ↓ = decrease in inequality. FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment.

An inflow of FDI into a given economy is typically associated with the introduction of new production technologies in that economy. Since such technologies are likely to increase capital intensity and the returns to skill, the benefits tend to accrue to higher-income individuals, who are likely to own more capital and to be more highly skilled than the rest of the population (Aghion and Howitt (1998) and Figini and Görg (2011)).

All else the same, the skilled premium channel should be stronger for EMEs than for AEs, since the former tend to have lower initial technology levels and are, therefore, more likely to experience greater technological advances as a result of FDI inflows. Importantly, the effect of this channel should be most powerful contemporaneously and in the immediate aftermath of (i.e. the first few years after) the increase in FDI since that is when the skilled premium in compensation is likely to grow the most.

FDI flows could eventually lead to a fall in inequality through the technological diffusion (TD) channel. This channel is generated by the same mechanism as the one driving the skilled premium channel. Nevertheless, it typically takes longer to materialise and goes in the opposite direction. As the improved technology brought about by the influx of FDI spreads through the recipient economy in a diffusion-like learning process, the share of the population employed in the high-skilled industries increases (Aghion and Howitt (1998), Firebaugh and Goesling (2004), Hilbert (2014)). This ultimately results in a decline in inequality as the wage distribution starts to converge towards the new,

higher-level, equilibrium. As in the case of the skilled premium channel, the impact of the technological diffusion channel should be more powerful in the case of EMEs due to their generally lower initial technology levels.

It is important to note that the combination of the above two (SP and TD) channels results in a clear set of predictions about the evolution of the impact of FDI on inequality over time. Namely, the initial impact is expected to be positive, as the skilled premium channel should operate on its own in the initial periods following the increase in FDI. As the technological diffusion channel starts to operate, several years after the initial increase in FDI, the impact on inequality is expected to gradually turn negative.

Greater external financial openness could lead to a fall in inequality through the funding conditions (FC) channel. International financial inflows into a given economy increase the availability of funding in that economy. This eases credit conditions, boosts consumption and investment, and ultimately increases employment. Since unemployed individuals are (by definition) more likely to have lower incomes, the resulting drop in unemployment would lead to a fall in inequality.

Another related, but distinct, channel through which external financial openness could decrease inequality is the access to credit (AC) channel. All else the same, the easing of funding conditions generated by an increase in external financial inflows is likely to increase the access to credit of low-income individuals. In turn, this greater access to credit can enhance their opportunities for income generation (Beck et al. (2007)). In theory, the access to credit channel could operate for any of the major external financial flows components we examine. In practice, however, it should be strongest in the case of other investment (which mainly consist of cross-border bank lending) since low-income individual are most likely to access credit through bank lending. Furthermore, this channel is likely to be more powerful in EMEs, where the share of the population with limited or no access to credit is larger than in AEs.

The foreign exchange rate (FX) channel could also lead to a negative relationship between external financial openness and inequality. External financial flows into a given country tend to lead to an appreciation of that country's exchange rate. This tends to

improve the creditworthiness of borrowers with currency mismatches on their balance sheets (Bruno and Shin (2015a), Bruno and Shin (2015b) and Hofmann et al. (2016)). In turn, this improves their access to credit, which, as discussed above, expands their income-generating opportunities. Since low-income individuals tend to own virtually no foreign-currency assets, they tend to have larger currency mismatches (relative to the sizes of their balance sheets). Thus, the foreign exchange rate channel would mostly benefit them, and consequently result in a decline in inequality. As in the case of the access to credit channel, the foreign exchange rate channel is likely to be stronger for EMEs, where currency mismatches tend to be larger and exchange rate fluctuations greater in magnitude than in AEs.

External financial openness could increase inequality through the special interest group (SIG) channel. If the quality of institutions in a given country is low, special interest groups could capture (all or most of) the financial gains stemming from international financial openness (Claessens and Perotti (2007)). In theory, this channel could operate through each of the main external financial openness components that we examine (FDI, portfolio equity, portfolio debt and other investment). Since institutional quality is generally lower in EMEs than in AEs, the special interest group channel should be more powerful in the former group of countries.

Portfolio equity flows could increase inequality through the capital gains (CG) channel. All else the same, an inflow of portfolio equity into a given country would increase the value of (both publicly-traded and privately-held) equity in that country. Equity holdings in most economies tend to be concentrated in wealthy individuals, who are already in the top part of the income distribution. As a consequence, the capital gains triggered by the influx of foreign portfolio equity flows, would end up increasing inequality.

## **5 Empirical methodology**

When designing our empirical investigation on the link between financial openness and inequality, we allow for the possibility that all major components of external liabilities could influence inequality in a given country. In the context of the above theoretical

background, this implies that we explore the relationship between all of external financial openness measures (described in the Data Section 3) and the income inequality.

In our benchmark empirical exercise, we use the Gini coefficient computed for income inequality rather than a measure of wage inequality. We choose to do that due to two main reasons. First, focusing on income inequality measures allows us to explore a much larger set of countries over a considerably longer period of time. Second, the correlation between income inequality and wage inequality tends to be very high both, across countries and over time (Galbraith and Kum (2005)).

More concretely, we estimate the following regression specification :

$$GINI_{it} = \beta_0 + \beta_1 * FO_{it-j} + \beta_2 * X_{it} + \mu_i + \lambda_t + \epsilon_{it} \quad (1)$$

where  $GINI_{it}$  is the (post-tax and post-transfer) inequality index in country  $i$  at time  $t$ ,  $FO_{it-j}$  is a measure of the de-facto financial openness<sup>3</sup> of country  $i$  at time  $t - j$ ,  $j \in [0, \dots, 8]$ ,  $\hat{X}_{it}$  is a vector of control variables,  $\mu_i$  is a country fixed effect,  $\lambda_t$  is a time fixed effect and  $\epsilon_{it}$  is the error term.<sup>4</sup>

## 6 Key results

As discussed in Section 4, there are several channels through which a country's external financial openness could impact its degree of inequality. Since not all of the above channels go in the same direction, we expect that the overall impact of financial openness on inequality would depend on the relative strengths of those channels. In turn, the relative strengths of those channels could vary over time and across countries, depending on their overall level of economic development and the phase of the business cycle they are in. Furthermore, each component of external financial openness impacts inequality through a unique set of channels. That is why, we examine the impact of each component separately,

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<sup>3</sup>As discussed in the Introduction, we examine five measures of financial openness: (i) total external (TE) liabilities, (ii) foreign direct investment (FDI) liabilities, (iii) portfolio equity (PE) liabilities, (iv) portfolio debt (PD) liabilities and (v) other investment (OI) liabilities (all as a percentage of country  $i$ 's GDP).

<sup>4</sup>We induce stationarity by detrending all variables used in our benchmark empirical exercise.

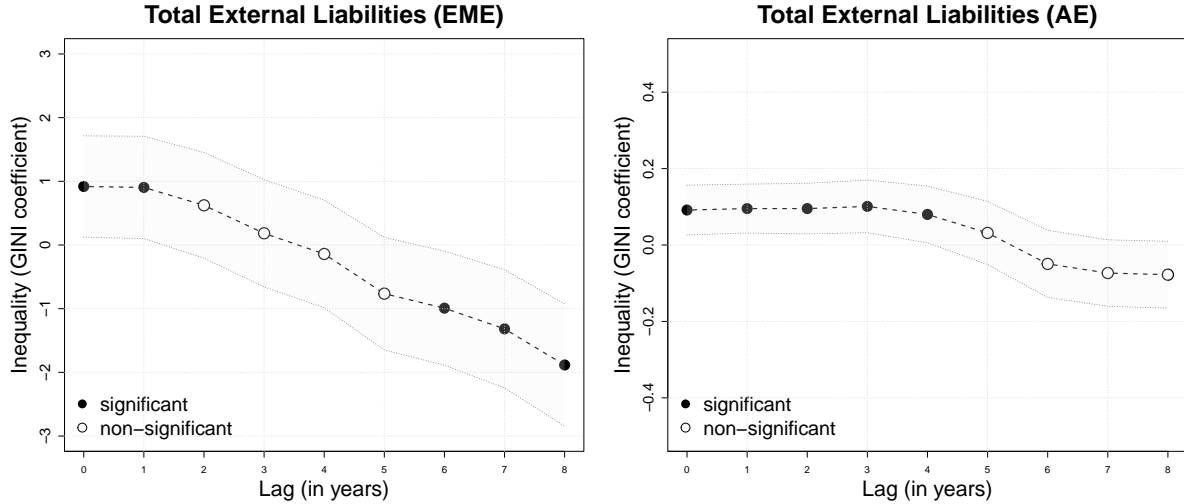


Figure 2: Aggregate financial openness and inequality.

Note: Dots represent estimated coefficient obtained using the specification in equation (1). A filled dot denotes that the respective coefficient is statistically significant at the 10% level. Dotted lines represent 90% confidence bands.

while also allowing it to vary over time.

## 6.1 Benchmark results

In our benchmark empirical exercise, we estimate the impact of external financial openness and each of its key components on inequality by using the panel regression specification presented in equation (1). Each panel regression that we estimate includes country and time fixed effects. We estimate separate specifications for contemporaneous and lagged (for up to eight years) values of total external liabilities and each of its four main component. The main results from those regressions are summarised in Tables 3 and 4. The key coefficients of the regressions are plotted in Figures 2-4.

Our benchmark results for EMEs suggest that the impact of increasing external financial openness on inequality varies considerably over time (Figure 2, left-hand panel; Table 3, top panel). More concretely, an increase in a country's external liabilities (as a share of its GDP) is associated with a rise in inequality in the year in which it occurs and in the subsequent year. The impact then becomes insignificant between the second and the fourth year after the increase in external liabilities. Finally, it turns negative and statistically significant from the sixth year onwards.

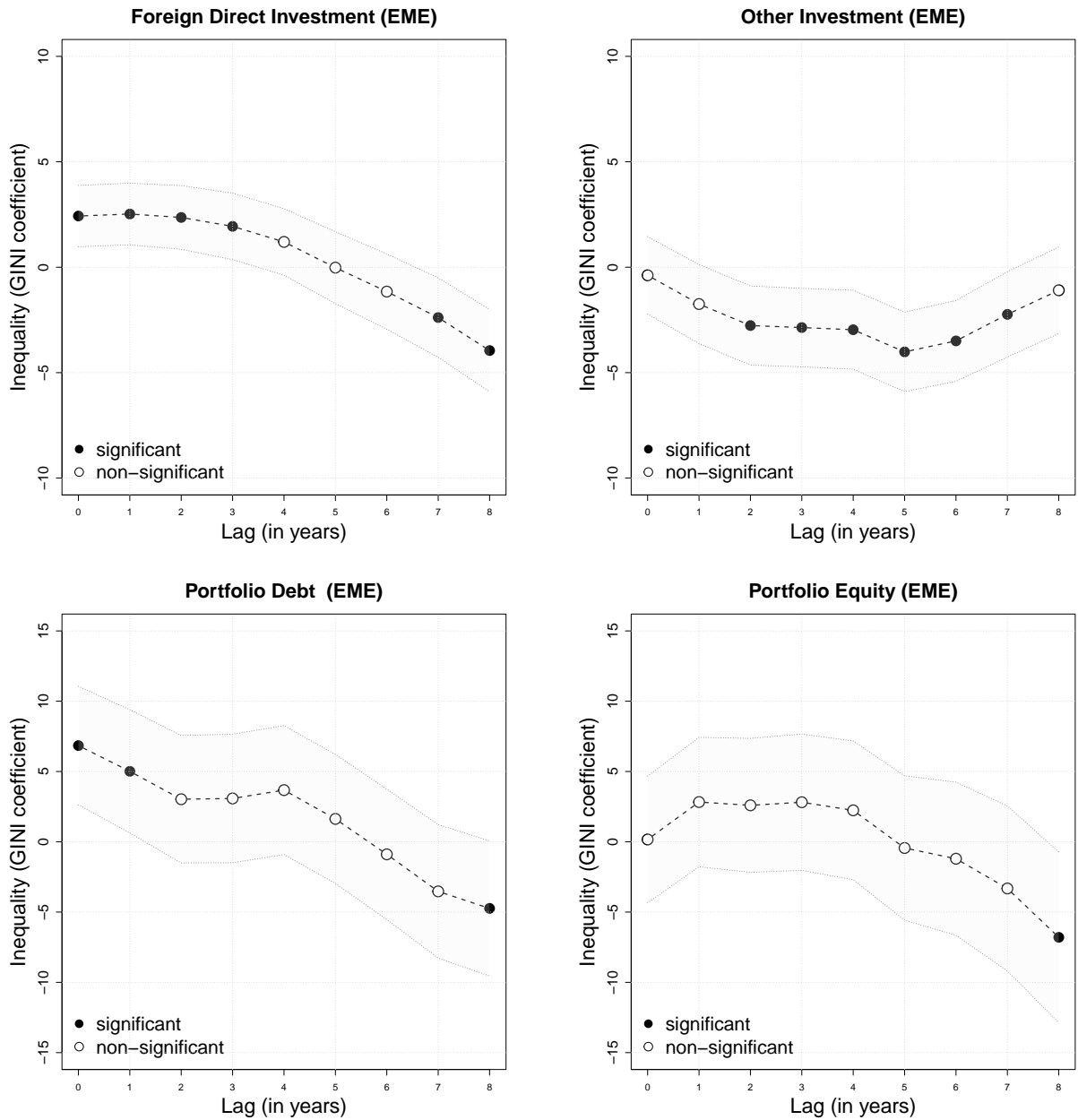


Figure 3: Component-specific financial openness and inequality (EMEs).

Note: Dots represent estimated coefficient obtained using the specification in equation (1). A filled dot denotes that the respective coefficient is statistically significant at the 10% level. Dotted lines represent 90% confidence bands.



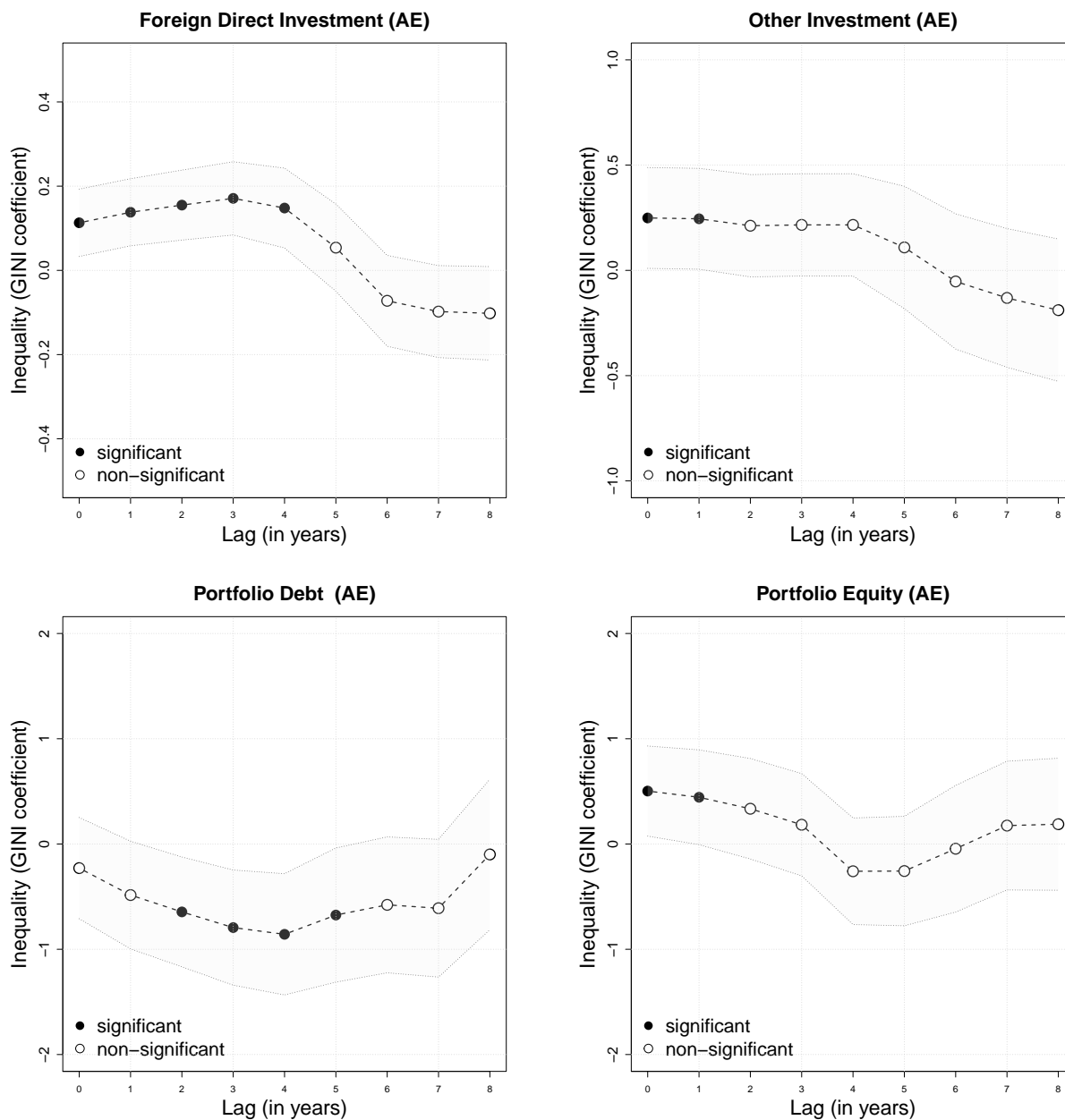


Figure 4: Component-specific financial openness and inequality (AEs).

Note: Dots represent estimated coefficient obtained using the specification in equation (1). A filled dot denotes that the respective coefficient is statistically significant at the 10% level. Dotted lines represent 90% confidence bands.

The regressions for the individual components of external liabilities reveal the above aggregate pattern in EMEs conceal considerable heterogeneity among the main components of financial openness (Figure 3 and Table 3). An increase in the FDI stock is associated with an initial increase (between years 0 and 3) and a subsequent decline in inequality, which becomes statistically significant from the seventh year onward. The estimated dynamics of the impact of FDI on inequality is in line with the theoretical predictions generated by the combination of the skilled premium channel and the technological diffusion channel, discussed in Section 4. As predicted by the theoretical model of Aghion and Howitt (1998), the skilled premium (SP) channel, begins to operate immediately. The entry of foreign capital and know-how into an EME through FDI initially raises inequality by increasing the wages of skilled workers relatively to those of unskilled workers. After several years, as the technological diffusion (TD) channel gathers momentum, the wider spread of more productive technology increases the share of the population employed in the high-skilled industries. This ultimately results in a decline in inequality.

While the overall dynamic patterns for portfolio debt (PD) are similar to those for FDI, there are notable differences in terms of both, economic magnitude and statistical significance. More concretely, the initial increase and the subsequent decline in inequality associated with a PD increase tend to be larger in magnitude than their FDI counterparts. However, they tend to be significant for a smaller number of periods. Intuitively, the SIG channel (which leads to an increase in inequality) tends to operate immediately, while the FC channel (which leads to a decline in inequality) tends to work with a lag.

In contrast to FDI and PD, the relationship between portfolio equity (PE) and inequality is insignificant for almost all periods we examine. This implies that the CG and the SIG channels (which are associated with increases in inequality) are largely offset by the AC and FX channels (which are associated with declines in inequality). The relationship between PE and inequality becomes negative and statistically significant only with a lag of eight years, as the effects of the former two channels fade off while those of the latter two channels persist.

In contrast to the other three components, an increase in other investment liabilities

tends to be associated with a statistically significant fall in inequality, albeit with a lag of a couple of years. The decline tends to be fairly persistent, lasting for seven years. This set of results implies that, in the case of other investment liabilities, the AC, FC and FX channels, all of which should lead to a decline in inequality, dominate the SIG channel, whose effects go in the opposite direction.

The relationship between overall financial openness and inequality tends to be considerably weaker in AEs than in EMEs (Figure 2, right-hand panel; Table 4, top panel). An increase in the stock of external financial liabilities in AEs is associated with a statistically significant, but small increase in inequality. The relationship becomes insignificant afterwards. The most likely explanation for that set of results is that, as discussed in Section 4, the key channels through which the various components of external financial openness impact inequality tend to be weaker in AEs than in EMEs.

As in the case of EMEs, there is considerable heterogeneity among the main components of financial openness (Figure 4 and Table 4). Namely, the relationship between FDI and inequality is positive and statistically significant up to the fourth lag. By contrast, the corresponding coefficients for portfolio equity and other investment are statistically significant only up to the first lag. The above FDI result is most likely a manifestation of the skilled premium channel, which is associated with an increase in inequality due to an increase in the gap between the wages of skilled and unskilled workers. Meanwhile, the fact that the estimated coefficients on FDI for AEs do not turn negative and significant as the number of lags grows (as in the case of EMEs) suggests that the technology diffusion channel is weaker in AEs than in EMEs (which is fully in line with the theoretical predictions outlined in Section 4).

In contrast to the other three components, an increase in an AE's portfolio debt liabilities, tends to be associated with a statistically significant fall in inequality, albeit with a lag of a couple of years. This set of results implies that, in the case of portfolio debt liabilities, the FC and FX channels (which should lead to a decline in inequality) dominate the SIG channel (whose effects go in the opposite direction).

Table 3: Financial openness and inequality, Benchmark regressions;  
Emerging Market Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	0.919** (0.457)	0.904* (0.462)	0.623 (0.477)	0.184 (0.484)	-0.141 (0.486)	-0.764 (0.508)	-0.992* (0.515)	-1.317** (0.534)	-1.884*** (0.551)
GDPpCap	-1.911*** (0.677)	-1.851*** (0.682)	-1.878*** (0.699)	-2.048*** (0.710)	-2.170*** (0.703)	-2.322*** (0.701)	-2.327*** (0.709)	-2.053*** (0.729)	-1.639** (0.766)
N	402	385	368	350	332	314	296	278	260
R <sup>2</sup>	0.125	0.121	0.111	0.106	0.110	0.123	0.139	0.153	0.180
FDI	2.428*** (0.836)	2.523*** (0.841)	2.360*** (0.869)	1.938** (0.906)	1.200 (0.906)	-0.0197 (0.980)	-1.156 (1.025)	-2.387** (1.083)	-3.952*** (1.122)
GDPpCap	-2.040*** (0.654)	-1.936*** (0.659)	-1.752** (0.677)	-1.669** (0.707)	-1.858*** (0.701)	-2.106*** (0.704)	-2.251*** (0.713)	-2.111*** (0.727)	-1.948** (0.761)
N	403	386	369	351	333	315	297	279	261
R <sup>2</sup>	0.136	0.134	0.127	0.123	0.116	0.116	0.130	0.149	0.183
PE	0.163 (2.592)	2.826 (2.646)	2.593 (2.738)	2.813 (2.787)	2.236 (2.837)	-0.444 (2.953)	-1.206 (3.130)	-3.321 (3.373)	-6.799* (3.491)
GDPpCap	-2.258*** (0.659)	-2.217*** (0.662)	-2.143*** (0.670)	-2.148*** (0.670)	-2.130*** (0.677)	-2.103*** (0.689)	-2.148*** (0.709)	-2.084*** (0.737)	-2.003*** (0.768)
N	402	385	368	350	332	314	296	278	260
R <sup>2</sup>	0.115	0.114	0.109	0.109	0.112	0.116	0.127	0.135	0.151
PD	6.843*** (2.424)	5.012** (2.520)	3.026 (2.605)	3.082 (2.629)	3.676 (2.636)	1.627 (2.639)	-0.894 (2.666)	-3.530 (2.730)	-4.739* (2.763)
GDPpCap	-1.464** (0.690)	-1.768** (0.699)	-2.069*** (0.708)	-2.140*** (0.712)	-2.112*** (0.712)	-2.188*** (0.710)	-2.194*** (0.718)	-2.058*** (0.736)	-1.963** (0.763)
N	378	361	344	326	308	290	272	254	236
R <sup>2</sup>	0.132	0.128	0.122	0.121	0.126	0.135	0.152	0.165	0.173
OI	-0.384 (1.054)	-2.117* (1.077)	-2.766** (1.079)	-2.861*** (1.069)	-2.965*** (1.076)	-4.015*** (1.083)	-3.495*** (1.102)	-2.237* (1.162)	-1.094 (1.178)
GDPpCap	-2.109*** (0.686)	-2.422*** (0.697)	-2.638*** (0.701)	-2.650*** (0.696)	-2.417*** (0.693)	-2.235*** (0.683)	-1.993*** (0.698)	-1.790** (0.741)	-1.950** (0.782)
N	378	361	344	326	308	290	272	254	236
R <sup>2</sup>	0.112	0.128	0.137	0.138	0.143	0.179	0.186	0.172	0.164

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

Table 4: Financial openness and inequality, Benchmark regressions;  
Advanced Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	0.0915** (0.0383)	0.0953** (0.0377)	0.0953** (0.0390)	0.101** (0.0405)	0.0800* (0.0437)	0.0316 (0.0486)	-0.0495 (0.0518)	-0.0734 (0.0512)	-0.0777 (0.0514)
GDPpCap	0.465*** (0.140)	0.469*** (0.138)	0.453*** (0.138)	0.433*** (0.139)	0.400*** (0.142)	0.384*** (0.147)	0.405*** (0.150)	0.426*** (0.150)	0.408*** (0.151)
N	645	620	593	566	538	510	482	454	426
R <sup>2</sup>	0.133	0.124	0.135	0.147	0.147	0.142	0.145	0.152	0.149
FDI	0.113** (0.0471)	0.138*** (0.0469)	0.155*** (0.0489)	0.171*** (0.0512)	0.148*** (0.0558)	0.0540 (0.0609)	-0.0723 (0.0635)	-0.0979 (0.0643)	-0.102 (0.0653)
GDPpCap	0.434*** (0.140)	0.426*** (0.137)	0.405*** (0.136)	0.384*** (0.137)	0.368*** (0.141)	0.376** (0.147)	0.409*** (0.150)	0.422*** (0.150)	0.396*** (0.151)
N	645	620	593	566	538	510	482	454	426
R <sup>2</sup>	0.134	0.127	0.141	0.155	0.154	0.142	0.146	0.153	0.149
PE	0.503** (0.252)	0.444* (0.265)	0.335 (0.281)	0.183 (0.286)	-0.259 (0.298)	-0.257 (0.306)	-0.0448 (0.354)	0.175 (0.360)	0.188 (0.369)
GDPpCap	0.496*** (0.144)	0.469*** (0.139)	0.428*** (0.138)	0.396*** (0.139)	0.385*** (0.142)	0.391*** (0.147)	0.401*** (0.150)	0.405*** (0.150)	0.377** (0.152)
N	645	620	593	566	538	510	482	454	426
R <sup>2</sup>	0.131	0.119	0.127	0.137	0.143	0.142	0.143	0.148	0.144
PD	-0.229 (0.283)	-0.485 (0.301)	-0.645** (0.307)	-0.794** (0.322)	-0.858** (0.339)	-0.675* (0.375)	-0.578 (0.380)	-0.610 (0.385)	-0.0993 (0.421)
GDPpCap	0.383*** (0.136)	0.407*** (0.137)	0.364*** (0.140)	0.293** (0.147)	0.246 (0.151)	0.289* (0.155)	0.314** (0.155)	0.333** (0.154)	0.334** (0.155)
N	623	598	570	542	514	486	458	430	402
R <sup>2</sup>	0.118	0.124	0.136	0.150	0.160	0.158	0.155	0.152	0.144
OI	0.249* (0.141)	0.245* (0.141)	0.212 (0.143)	0.216 (0.143)	0.216 (0.143)	0.109 (0.171)	-0.0527 (0.189)	-0.131 (0.194)	-0.189 (0.199)
GDPpCap	0.425*** (0.138)	0.484*** (0.142)	0.485*** (0.143)	0.467*** (0.142)	0.415*** (0.141)	0.386*** (0.145)	0.387** (0.151)	0.395** (0.155)	0.367** (0.159)
N	623	598	570	542	514	486	458	430	402
R <sup>2</sup>	0.122	0.125	0.133	0.144	0.151	0.152	0.150	0.147	0.146

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

## 6.2 Robustness tests

In the next step of our empirical investigation, we test the robustness of our benchmark results by including additional explanatory variables as controls into our benchmark panel regression specification. More concretely, we sequentially control for several country-level variables, which have been shown to be correlated with inequality by previous empirical studies - trade openness (measured as the sum of exports and imports, scaled by GDP), unemployment, financial depth (measured as the ratio of credit to the private non-financial sector over GDP) and the aggregate capital stock.

Tables 5 and 6 contain summaries of the results (for EMEs and AEs, respectively) from the alternative specifications that we estimate. They reveal that our main results are robust to the inclusion of the above additional control variables. The key dynamic patterns for the relationships between inequality and each of the financial openness measures we examine remain intact in all alternative specifications we examine. More concretely, in all the robustness checks we conduct, an increase in a country's external liabilities continues to be associated with an initial rise and an eventual decline in inequality. Furthermore, in each of the alternative specifications, the estimated dynamics for all the main components of external liabilities (FDI, PE, PD and OI) also remain very similar to their counterparts from the benchmark estimations.

The only minor exception is that, once we control for financial depth and capital, the estimated coefficients on lag 7 are no longer statistically significant but the ones for lag 8 are still statistically significant. Interestingly, the counterparts to those coefficients in the case AEs, which are not significant in the benchmark estimations, do become negative and statistically significant once we control for the level of financial development. The combination of those results could be interpreted as an indication that financial development interacts with the technology diffusion channel in both EMEs and AEs.

Table 5: Financial openness and inequality, Robustness checks;  
Emerging Market Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
Controlling for trade openness									
TEL	0.964** (0.463)	0.914** (0.464)	0.623 (0.479)	0.185 (0.485)	-0.135 (0.487)	-0.763 (0.508)	-1.026** (0.516)	-1.376** (0.537)	-1.943*** (0.553)
FDI	2.427*** (0.837)	2.521*** (0.843)	2.368*** (0.872)	1.957** (0.910)	1.219 (0.907)	-0.0344 (0.982)	-1.263 (1.031)	-2.624** (1.101)	-4.411*** (1.154)
PE	0.633 (2.603)	2.070 (2.650)	0.0525 (2.814)	0.0313 (2.904)	-0.136 (2.933)	-2.514 (2.998)	-2.541 (3.127)	-4.284 (3.346)	-7.727** (3.435)
PD	7.258*** (2.513)	5.337** (2.612)	3.238 (2.647)	3.305 (2.650)	3.826 (2.653)	1.665 (2.647)	-0.933 (2.677)	-3.722 (2.785)	-5.174* (2.853)
OI	-0.397 (1.159)	-2.279** (1.123)	-3.029*** (1.115)	-3.075*** (1.087)	-3.000*** (1.079)	-4.011*** (1.085)	-3.495*** (1.107)	-2.240* (1.168)	-1.084 (1.193)
Controlling for unemployment									
TEL	0.706 (0.479)	0.785* (0.472)	0.571 (0.480)	0.183 (0.484)	-0.125 (0.488)	-0.737 (0.517)	-0.924* (0.530)	-1.255** (0.555)	-1.865*** (0.576)
FDI	2.122** (0.868)	2.331*** (0.864)	2.255** (0.882)	1.880** (0.909)	1.206 (0.907)	0.0473 (0.991)	-1.003 (1.054)	-2.233* (1.140)	-4.019*** (1.207)
PE	0.272 (2.581)	2.878 (2.640)	2.563 (2.737)	2.766 (2.788)	2.174 (2.847)	-0.615 (2.972)	-1.529 (3.146)	-3.620 (3.381)	-6.974** (3.492)
PD	6.008** (2.527)	4.520* (2.563)	2.816 (2.613)	3.186 (2.632)	4.012 (2.672)	2.043 (2.693)	-0.428 (2.727)	-3.141 (2.801)	-4.117 (2.849)
OI	-0.487 (1.051)	-2.115* (1.076)	-2.690** (1.082)	-2.798*** (1.074)	-2.934*** (1.085)	-3.982*** (1.089)	-3.472*** (1.104)	-2.279* (1.163)	-1.172 (1.177)
Controlling for financial depth									
EL	0.483 (0.511)	0.575 (0.472)	0.516 (0.474)	0.409 (0.484)	0.287 (0.502)	-0.291 (0.539)	-0.514 (0.561)	-0.909 (0.576)	-1.573*** (0.563)
FDI	1.860** (0.875)	2.064** (0.852)	2.161** (0.863)	2.255** (0.898)	1.967** (0.921)	0.994 (1.024)	-0.158 (1.095)	-1.593 (1.148)	-3.433*** (1.138)
PE	0.633 (2.603)	2.070 (2.650)	0.0525 (2.814)	0.0313 (2.904)	-0.136 (2.933)	-2.514 (2.998)	-2.541 (3.127)	-4.284 (3.346)	-7.727** (3.435)
PD	5.871** (2.466)	4.642* (2.511)	3.170 (2.585)	3.610 (2.608)	3.995 (2.609)	1.573 (2.608)	-0.606 (2.638)	-2.848 (2.716)	-3.888 (2.750)
OI	-2.208* (1.161)	-2.601** (1.076)	-2.622** (1.075)	-2.345** (1.094)	-2.354** (1.123)	-3.445*** (1.136)	-2.894** (1.152)	-1.556 (1.200)	-0.503 (1.186)
Controlling for aggregate capital stock									
TEL	2.020*** (0.506)	1.451*** (0.487)	1.016* (0.523)	0.251 (0.531)	-0.392 (0.529)	-0.970* (0.529)	-1.081** (0.546)	-1.090* (0.585)	-1.532** (0.640)
FDI	2.350*** (0.840)	2.478*** (0.849)	2.692*** (0.951)	2.053** (1.035)	0.686 (1.072)	-0.809 (1.079)	-1.897 (1.206)	-2.186 (1.349)	-2.991* (1.530)
PE	0.152 (2.726)	2.128 (2.746)	2.417 (2.827)	4.329 (2.948)	4.199 (3.211)	1.796 (3.319)	-0.265 (3.434)	-4.144 (3.556)	-8.481** (3.576)
PD	8.423*** (2.553)	6.097** (2.606)	4.054 (2.657)	3.429 (2.654)	3.303 (2.646)	1.673 (2.645)	-0.430 (2.619)	-2.455 (2.682)	-3.295 (2.790)
OI	4.367*** (1.420)	-0.565 (1.188)	-2.079* (1.154)	-2.670** (1.116)	-3.051*** (1.090)	-3.926*** (1.063)	-3.174*** (1.073)	-1.747 (1.132)	-0.948 (1.203)

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

Table 6: Financial openness and inequality, Robustness checks;  
Advanced Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
Controlling for trade openness									
EL	0.077*	0.085**	0.088**	0.097**	0.079*	0.036	-0.046	-0.071	-0.075
	(0.041)	(0.039)	(0.040)	(0.041)	(0.044)	(0.049)	(0.052)	(0.051)	(0.052)
FDI	0.095*	0.126**	0.147***	0.168***	0.148***	0.061	-0.067	-0.094	-0.097
	(0.050)	(0.049)	(0.050)	(0.051)	(0.056)	(0.061)	(0.064)	(0.065)	(0.066)
PE	0.470*	0.439*	0.334	0.175	-0.266	-0.264	-0.0657	0.146	0.149
	(0.252)	(0.265)	(0.281)	(0.286)	(0.298)	(0.306)	(0.355)	(0.364)	(0.375)
PD	-0.226	-0.479	-0.640**	-0.797**	-0.861**	-0.679*	-0.581	-0.609	-0.0791
	(0.282)	(0.301)	(0.308)	(0.322)	(0.340)	(0.376)	(0.381)	(0.385)	(0.421)
OI	0.207	0.203	0.190	0.213	0.189	0.108	-0.0537	-0.121	-0.169
	(0.144)	(0.147)	(0.149)	(0.147)	(0.151)	(0.172)	(0.190)	(0.195)	(0.201)
Controlling for unemployment									
TEL	0.089**	0.097***	0.104***	0.106***	0.078*	0.027	-0.044	-0.067	-0.076
	(0.038)	(0.037)	(0.038)	(0.040)	(0.042)	(0.047)	(0.050)	(0.049)	(0.050)
FDI	0.120***	0.149***	0.174***	0.180***	0.143***	0.0414	-0.0722	-0.102	-0.114*
	(0.046)	(0.046)	(0.047)	(0.049)	(0.054)	(0.059)	(0.061)	(0.062)	(0.063)
PE	0.372	0.392	0.378	0.322	-0.0844	-0.125	0.0636	0.273	0.274
	(0.249)	(0.260)	(0.272)	(0.277)	(0.288)	(0.295)	(0.343)	(0.348)	(0.357)
PD	-0.244	-0.548*	-0.742**	-0.934***	-1.046***	-0.790**	-0.575	-0.486	0.0770
	(0.275)	(0.292)	(0.299)	(0.311)	(0.326)	(0.360)	(0.366)	(0.373)	(0.410)
OI	0.198	0.188	0.189	0.207	0.198	0.198	0.0661	-0.0432	-0.150
	(0.138)	(0.138)	(0.139)	(0.138)	(0.143)	(0.143)	(0.184)	(0.189)	(0.194)
Controlling for financial depth									
TEL	0.576***	0.474***	0.384***	0.270*	0.047	-0.009	-0.118	-0.287*	-0.307*
	(0.148)	(0.140)	(0.140)	(0.141)	(0.146)	(0.152)	(0.159)	(0.165)	(0.167)
FDI	1.232***	1.008***	0.594**	0.233	-0.217	-0.577**	-0.857***	-1.006***	-0.751**
	(0.279)	(0.277)	(0.276)	(0.278)	(0.283)	(0.282)	(0.284)	(0.295)	(0.307)
PE	0.302	0.229	0.150	0.00379	-0.323	-0.122	0.232	0.431	0.402
	(0.247)	(0.262)	(0.276)	(0.277)	(0.287)	(0.291)	(0.338)	(0.340)	(0.347)
PD	-0.330	-0.0881	0.300	0.722	0.763	0.602	0.209	-0.189	-0.442
	(0.378)	(0.447)	(0.464)	(0.472)	(0.473)	(0.489)	(0.520)	(0.574)	(0.640)
OI	0.580*	0.613*	0.680*	0.486	0.354	0.398	0.192	-0.679	-1.257**
	(0.312)	(0.327)	(0.347)	(0.355)	(0.364)	(0.398)	(0.434)	(0.508)	(0.560)
Controlling for aggregate capital stock									
TEL	0.056	0.076*	0.103**	0.123**	0.092	0.074	0.043	0.011	0.002
	(0.043)	(0.045)	(0.050)	(0.058)	(0.058)	(0.059)	(0.059)	(0.059)	(0.060)
FDI	0.065	0.112*	0.157**	0.157**	0.177**	0.139*	0.080	0.041	0.034
	(0.055)	(0.058)	(0.064)	(0.064)	(0.075)	(0.077)	(0.079)	(0.078)	(0.079)
PE	0.373	0.301	0.270	0.353	-0.055	0.018	0.319	0.608*	0.639*
	(0.301)	(0.291)	(0.285)	(0.328)	(0.334)	(0.340)	(0.346)	(0.340)	(0.338)
PD	-0.058	-0.307	-0.399	-0.330	-0.687*	-1.021***	-1.126***	-1.206***	-0.990**
	(0.309)	(0.304)	(0.331)	(0.345)	(0.359)	(0.378)	(0.377)	(0.375)	(0.401)
OI	0.270*	0.316**	0.342**	0.235	0.139	0.136	0.149	0.0564	-0.00240
	(0.143)	(0.147)	(0.164)	(0.177)	(0.180)	(0.185)	(0.192)	(0.200)	(0.210)

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.



## 7 Conclusions

In this paper, we conduct a comprehensive empirical investigation of the link between inequality and financial openness. We use an annual panel of 48 countries between 1991 and 2013 to estimate regressions of Gini-based inequality measures on total external liabilities and its main components, while controlling for country heterogeneity and time trends.

Our results indicate that the relationship between external financial openness and inequality varies considerably not only over time, but also across the main components of total external liabilities, which have been largely overlooked by the existing literature. More concretely, we document that while an increase in an EME's financial openness is associated with an initial rise in inequality (in line with the findings in the existing literature), the relationship reverses and eventually becomes negative and statistically significant (which is a novel finding). The key dynamic patterns that we document appear to be driven by the fact that the channels through which financial openness increases inequality tend to be active almost immediately, while the inequality-decreasing channels tend to operate with a lag.

Turning to the main external liability components, the effects of FDI appear to follow similar dynamic patterns to those of overall external liabilities. While the estimated relationships for PD are similar to those for FDI, there are notable differences in terms of both, economic magnitude and statistical significance. In contrast to FDI and PD, the relationship between PE and inequality is largely insignificant. Meanwhile, an increase in other investment liabilities tends to be associated with a statistically significant fall in inequality, in contrast to the other three components of external liabilities.

Last but not least, our results also suggest that the impact of external financial openness on inequality in AEs tends to be smaller than in EMEs. This is most likely due to the fact that the key channels through which the various components of external financial openness impact inequality tend to be weaker in AEs than in EMEs.

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# Appendices

## A. Robustness tests

Table A.1: Panel regression results controlling for trade openness;  
Emerging Market Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	0.964** (0.463)	0.914** (0.464)	0.623 (0.479)	0.185 (0.485)	-0.135 (0.487)	-0.763 (0.508)	-1.026** (0.516)	-1.376** (0.537)	-1.943*** (0.553)
GDPpCap	-2.016*** (0.698)	-1.907*** (0.709)	-1.881** (0.731)	-2.005*** (0.747)	-2.048*** (0.745)	-2.179*** (0.744)	-2.098*** (0.750)	-1.790** (0.773)	-1.365* (0.811)
trade	-0.643 (1.007)	-0.304 (1.042)	-0.0194 (1.111)	0.220 (1.172)	0.606 (1.217)	0.713 (1.226)	1.181 (1.259)	1.336 (1.309)	1.425 (1.387)
N	402	385	368	350	332	314	296	278	260
R <sup>2</sup>	0.126	0.121	0.111	0.106	0.111	0.124	0.142	0.157	0.184
FDI	2.427*** (0.837)	2.521*** (0.843)	2.368*** (0.872)	1.957** (0.910)	1.219 (0.907)	-0.0344 (0.982)	-1.263 (1.031)	-2.624** (1.101)	-4.411*** (1.154)
GDPpCap	-2.104*** (0.678)	-1.945*** (0.691)	-1.716** (0.714)	-1.603** (0.750)	-1.734** (0.744)	-1.954*** (0.744)	-2.017*** (0.752)	-1.798** (0.773)	-1.487* (0.810)
trade	-0.339 (0.934)	-0.0461 (1.027)	0.175 (1.102)	0.315 (1.181)	0.609 (1.210)	0.772 (1.224)	1.238 (1.264)	1.575 (1.321)	2.313 (1.429)
N	403	386	369	351	333	315	297	279	261
R <sup>2</sup>	0.136	0.134	0.127	0.124	0.116	0.117	0.134	0.154	0.193
PE	0.633 (2.603)	2.070 (2.650)	0.0525 (2.814)	0.0313 (2.904)	-0.136 (2.933)	-2.514 (2.998)	-2.541 (3.127)	-4.284 (3.346)	-7.727** (3.435)
GDPpCap	-1.999*** (0.664)	-1.910*** (0.665)	-1.776*** (0.672)	-1.777*** (0.675)	-1.788*** (0.682)	-1.799*** (0.688)	-1.829** (0.709)	-1.711** (0.739)	-1.545** (0.766)
trade	2.428*** (0.786)	2.810*** (0.825)	3.019*** (0.887)	2.872*** (0.920)	2.645*** (0.935)	2.744*** (0.935)	2.652*** (0.952)	2.996*** (1.083)	3.791*** (1.190)
N	389	376	362	346	330	314	296	278	260
R <sup>2</sup>	0.132	0.141	0.140	0.136	0.135	0.143	0.153	0.162	0.188
PD	7.258*** (2.513)	5.337** (2.612)	3.238 (2.647)	3.305 (2.650)	3.826 (2.653)	1.665 (2.647)	-0.933 (2.677)	-3.722 (2.785)	-5.174* (2.853)
GDPpCap	-1.302* (0.737)	-1.643** (0.746)	-1.953*** (0.751)	-1.965*** (0.754)	-1.972*** (0.754)	-2.116*** (0.753)	-2.141*** (0.759)	-1.967** (0.778)	-1.789** (0.813)
trade	0.666 (1.055)	0.538 (1.113)	0.545 (1.159)	0.853 (1.207)	0.701 (1.238)	0.363 (1.244)	0.287 (1.288)	0.499 (1.367)	0.906 (1.451)
N	378	361	344	326	308	290	272	254	236
R <sup>2</sup>	0.133	0.129	0.122	0.123	0.127	0.136	0.152	0.165	0.175
OI	-0.397 (1.159)	-2.279** (1.123)	-3.029*** (1.115)	-3.075*** (1.087)	-3.000*** (1.079)	-4.011*** (1.085)	-3.495*** (1.107)	-2.240* (1.168)	-1.084 (1.193)
GDPpCap	-2.105*** (0.701)	-2.334*** (0.718)	-2.466*** (0.725)	-2.428*** (0.726)	-2.284*** (0.731)	-2.187*** (0.722)	-1.991*** (0.739)	-1.797** (0.781)	-1.937** (0.816)
trade	0.0303 (1.133)	0.582 (1.119)	1.099 (1.169)	1.297 (1.205)	0.712 (1.221)	0.253 (1.211)	0.00865 (1.262)	-0.0379 (1.340)	0.0787 (1.430)
N	378	361	344	326	308	290	272	254	236
R <sup>2</sup>	0.112	0.129	0.139	0.142	0.144	0.179	0.186	0.172	0.164

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

Table A.2: Panel regression results controlling for trade openness;  
Advanced Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
EL	0.077* (0.041)	0.085** (0.039)	0.088** (0.040)	0.097** (0.041)	0.079* (0.044)	0.036 (0.049)	-0.046 (0.052)	-0.071 (0.051)	-0.075 (0.052)
GDPpCap	0.488*** (0.144)	0.500*** (0.142)	0.486*** (0.142)	0.465*** (0.143)	0.442*** (0.147)	0.427*** (0.152)	0.435*** (0.155)	0.446*** (0.156)	0.427*** (0.156)
trade	0.690 (0.675)	0.625 (0.655)	0.658 (0.636)	0.594 (0.639)	0.745 (0.655)	0.737 (0.676)	0.517 (0.703)	0.353 (0.719)	0.364 (0.747)
N	637	615	591	566	538	510	482	454	426
R <sup>2</sup>	0.135	0.126	0.136	0.148	0.149	0.144	0.146	0.153	0.149
FDI	0.095* (0.050)	0.126** (0.049)	0.147*** (0.050)	0.168*** (0.051)	0.148*** (0.056)	0.061 (0.061)	-0.067 (0.064)	-0.094 (0.065)	-0.097 (0.066)
GDPpCap	0.460*** (0.144)	0.456*** (0.142)	0.438*** (0.141)	0.418*** (0.142)	0.413*** (0.146)	0.420*** (0.152)	0.437*** (0.155)	0.440*** (0.155)	0.412*** (0.156)
trade	0.666 (0.680)	0.546 (0.654)	0.603 (0.632)	0.604 (0.634)	0.780 (0.653)	0.771 (0.678)	0.487 (0.705)	0.308 (0.722)	0.316 (0.751)
N	637	615	591	566	538	510	482	454	426
R <sup>2</sup>	0.135	0.129	0.142	0.156	0.156	0.145	0.147	0.153	0.150
PE	0.470* (0.252)	0.439* (0.265)	0.334 (0.281)	0.175 (0.286)	-0.266 (0.298)	-0.264 (0.306)	-0.0657 (0.355)	0.146 (0.364)	0.149 (0.375)
GDPpCap	0.537*** (0.147)	0.523*** (0.144)	0.478*** (0.142)	0.438*** (0.144)	0.431*** (0.147)	0.433*** (0.152)	0.435*** (0.156)	0.429*** (0.157)	0.402** (0.158)
trade	1.008 (0.640)	0.986 (0.632)	0.903 (0.628)	0.736 (0.639)	0.791 (0.657)	0.714 (0.675)	0.578 (0.703)	0.397 (0.726)	0.436 (0.755)
N	637	615	591	566	538	510	482	454	426
R <sup>2</sup>	0.135	0.123	0.131	0.139	0.145	0.144	0.145	0.149	0.145
PD	-0.226 (0.282)	-0.479 (0.301)	-0.640** (0.308)	-0.797** (0.322)	-0.861** (0.340)	-0.679* (0.376)	-0.581 (0.381)	-0.609 (0.385)	-0.0791 (0.421)
GDPpCap	0.450*** (0.141)	0.461*** (0.142)	0.397*** (0.145)	0.311** (0.151)	0.256 (0.156)	0.296* (0.159)	0.329** (0.161)	0.362** (0.159)	0.372** (0.161)
trade	1.149* (0.646)	0.939 (0.645)	0.566 (0.648)	0.331 (0.659)	0.178 (0.683)	0.130 (0.706)	0.277 (0.746)	0.557 (0.783)	0.752 (0.811)
N	622	598	570	542	514	486	458	430	402
R <sup>2</sup>	0.123	0.127	0.138	0.151	0.160	0.158	0.155	0.153	0.146
OI	0.207 (0.144)	0.203 (0.147)	0.190 (0.149)	0.213 (0.147)	0.189 (0.151)	0.108 (0.172)	-0.0537 (0.190)	-0.121 (0.195)	-0.169 (0.201)
GDPpCap	0.474*** (0.142)	0.514*** (0.144)	0.499*** (0.146)	0.470*** (0.145)	0.414*** (0.146)	0.387** (0.151)	0.401** (0.157)	0.421*** (0.159)	0.397** (0.163)
trade	0.964 (0.658)	0.706 (0.670)	0.354 (0.676)	0.0641 (0.681)	-0.0233 (0.696)	0.0183 (0.709)	0.253 (0.748)	0.526 (0.787)	0.674 (0.815)
N	622	598	570	542	514	486	458	430	402
R <sup>2</sup>	0.125	0.126	0.133	0.144	0.151	0.152	0.151	0.148	0.147

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.



Table A.3: Panel regression results controlling for unemployment;  
Emerging Market Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	0.706 (0.479)	0.785* (0.472)	0.571 (0.480)	0.183 (0.484)	-0.125 (0.488)	-0.737 (0.517)	-0.924* (0.530)	-1.255** (0.555)	-1.865*** (0.576)
GDPpCap	-1.729** (0.687)	-1.671** (0.698)	-1.693** (0.720)	-1.863** (0.738)	-2.086*** (0.739)	-2.253*** (0.743)	-2.196*** (0.749)	-1.961** (0.762)	-1.619** (0.788)
unemp	6.370 (4.324)	5.272 (4.425)	4.814 (4.559)	4.261 (4.689)	1.803 (4.862)	1.496 (5.240)	3.013 (5.508)	2.442 (5.763)	0.672 (5.969)
N	402	385	368	350	332	314	296	278	260
R <sup>2</sup>	0.130	0.125	0.114	0.109	0.110	0.123	0.140	0.154	0.180
FDI	2.122** (0.868)	2.331*** (0.864)	2.255** (0.882)	1.880** (0.909)	1.206 (0.907)	0.0473 (0.991)	-1.003 (1.054)	-2.233* (1.140)	-4.019*** (1.207)
GDPpCap	-1.841*** (0.672)	-1.775*** (0.680)	-1.627** (0.699)	-1.524** (0.732)	-1.768** (0.733)	-1.991*** (0.742)	-2.097*** (0.753)	-2.010*** (0.764)	-1.979** (0.787)
unemp	5.458 (4.231)	4.216 (4.387)	3.284 (4.561)	3.641 (4.733)	2.083 (4.826)	2.569 (5.190)	3.483 (5.475)	2.563 (5.815)	-0.951 (6.178)
N	403	386	369	351	333	315	297	279	261
R <sup>2</sup>	0.140	0.136	0.129	0.125	0.116	0.116	0.132	0.150	0.183
PE	0.272 (2.581)	2.878 (2.640)	2.563 (2.737)	2.766 (2.788)	2.174 (2.847)	-0.615 (2.972)	-1.529 (3.146)	-3.620 (3.381)	-6.974** (3.492)
GDPpCap	-1.914*** (0.678)	-1.924*** (0.686)	-1.914*** (0.697)	-1.966*** (0.701)	-2.058*** (0.710)	-1.983*** (0.722)	-1.926*** (0.741)	-1.834** (0.769)	-1.743** (0.799)
unemp	8.306** (4.135)	6.886 (4.335)	5.332 (4.539)	4.178 (4.683)	1.681 (4.848)	2.942 (5.201)	5.540 (5.409)	6.347 (5.623)	6.759 (5.799)
N	402	385	368	350	332	314	296	278	260
R <sup>2</sup>	0.125	0.121	0.113	0.111	0.112	0.117	0.131	0.140	0.157
PD	6.008** (2.527)	4.520* (2.563)	2.816 (2.613)	3.186 (2.632)	4.012 (2.672)	2.043 (2.693)	-0.428 (2.727)	-3.141 (2.801)	-4.117 (2.849)
GDPpCap	-1.328* (0.700)	-1.610** (0.715)	-1.891*** (0.729)	-1.955*** (0.739)	-1.935** (0.746)	-1.997*** (0.751)	-1.989*** (0.760)	-1.910** (0.773)	-1.793** (0.787)
unemp	5.051 (4.345)	4.746 (4.531)	4.805 (4.695)	4.503 (4.812)	3.990 (5.048)	4.307 (5.473)	4.750 (5.729)	3.783 (5.942)	5.440 (6.044)
N	378	361	344	326	308	290	272	254	236
R <sup>2</sup>	0.136	0.131	0.125	0.124	0.128	0.137	0.155	0.166	0.176
OI	-0.487 (1.051)	-2.115* (1.076)	-2.690** (1.082)	-2.798*** (1.074)	-2.934*** (1.085)	-3.982*** (1.089)	-3.472*** (1.104)	-2.279* (1.163)	-1.172 (1.177)
GDPpCap	-1.793** (0.702)	-2.172*** (0.719)	-2.455*** (0.728)	-2.518*** (0.725)	-2.366*** (0.724)	-2.167*** (0.715)	-1.818** (0.730)	-1.571** (0.774)	-1.663** (0.810)
unemp	8.088* (4.205)	6.198 (4.449)	4.328 (4.656)	3.152 (4.783)	1.246 (4.971)	1.730 (5.258)	4.486 (5.493)	5.650 (5.769)	7.852 (5.886)
N	378	361	344	326	308	290	272	254	236
R <sup>2</sup>	0.122	0.133	0.139	0.140	0.144	0.179	0.189	0.176	0.172

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

Table A.4: Panel regression results controlling for unemployment;  
Advanced Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	0.089** (0.038)	0.097*** (0.037)	0.104*** (0.038)	0.106*** (0.040)	0.078* (0.042)	0.027 (0.047)	-0.044 (0.050)	-0.067 (0.049)	-0.076 (0.050)
GDPpCap	0.641*** (0.142)	0.648*** (0.139)	0.660*** (0.138)	0.640*** (0.138)	0.616*** (0.141)	0.599*** (0.145)	0.601*** (0.149)	0.616*** (0.149)	0.606*** (0.151)
unemp	10.82*** (2.117)	11.05*** (2.088)	12.70*** (2.083)	12.95*** (2.104)	13.92*** (2.198)	14.23*** (2.269)	13.30*** (2.346)	12.95*** (2.361)	12.67*** (2.439)
N	645	620	593	566	538	510	482	454	426
R <sup>2</sup>	0.170	0.165	0.190	0.205	0.212	0.209	0.204	0.211	0.205
FDI	0.120*** (0.046)	0.149*** (0.046)	0.174*** (0.047)	0.180*** (0.049)	0.143*** (0.054)	0.0414 (0.059)	-0.0722 (0.061)	-0.102 (0.062)	-0.114* (0.063)
GDPpCap	0.615*** (0.141)	0.608*** (0.138)	0.611*** (0.136)	0.590*** (0.137)	0.585*** (0.140)	0.593*** (0.146)	0.606*** (0.149)	0.616*** (0.149)	0.598*** (0.151)
unemp	11.06*** (2.115)	11.32*** (2.084)	12.97*** (2.075)	13.04*** (2.092)	13.87*** (2.190)	14.20*** (2.269)	13.34*** (2.343)	13.07*** (2.358)	12.85*** (2.438)
N	645	620	593	566	538	510	482	454	426
R <sup>2</sup>	0.172	0.171	0.199	0.214	0.218	0.209	0.205	0.212	0.207
PE	0.372 (0.249)	0.392 (0.260)	0.378 (0.272)	0.322 (0.277)	-0.0844 (0.288)	-0.125 (0.295)	0.0636 (0.343)	0.273 (0.348)	0.274 (0.357)
GDPpCap	0.651*** (0.144)	0.641*** (0.140)	0.631*** (0.138)	0.608*** (0.139)	0.600*** (0.141)	0.602*** (0.146)	0.595*** (0.149)	0.596*** (0.149)	0.573*** (0.152)
unemp	10.56*** (2.135)	10.89*** (2.098)	12.56*** (2.093)	13.04*** (2.123)	13.89*** (2.216)	14.18*** (2.275)	13.36*** (2.351)	13.12*** (2.367)	12.77*** (2.447)
N	645	620	593	566	538	510	482	454	426
R <sup>2</sup>	0.166	0.159	0.182	0.196	0.207	0.209	0.203	0.208	0.202
PD	-0.244 (0.275)	-0.548* (0.292)	-0.742** (0.299)	-0.934*** (0.311)	-1.046*** (0.326)	-0.790** (0.360)	-0.575 (0.366)	-0.486 (0.373)	0.0770 (0.410)
GDPpCap	0.565*** (0.136)	0.601*** (0.137)	0.546*** (0.140)	0.481*** (0.144)	0.433*** (0.148)	0.487*** (0.151)	0.528*** (0.154)	0.564*** (0.155)	0.575*** (0.159)
unemp	11.88*** (2.103)	12.60*** (2.129)	12.30*** (2.166)	13.51*** (2.171)	14.52*** (2.205)	14.29*** (2.273)	13.68*** (2.377)	13.09*** (2.513)	12.66*** (2.692)
N	623	598	570	542	514	486	458	430	402
R <sup>2</sup>	0.165	0.177	0.187	0.213	0.231	0.227	0.218	0.208	0.194
OI	0.198 (0.138)	0.188 (0.138)	0.189 (0.139)	0.207 (0.138)	0.198 (0.143)	0.198 (0.143)	0.0661 (0.184)	-0.0432 (0.189)	-0.150 (0.194)
GDPpCap	0.594*** (0.138)	0.660*** (0.141)	0.664*** (0.143)	0.667*** (0.141)	0.626*** (0.140)	0.598*** (0.143)	0.590*** (0.149)	0.606*** (0.155)	0.597*** (0.162)
unemp	11.66*** (2.105)	12.25*** (2.136)	11.91*** (2.173)	13.00*** (2.180)	13.93*** (2.217)	14.21*** (2.285)	13.79*** (2.399)	13.25*** (2.523)	12.53*** (2.682)
N	623	598	570	542	514	486	458	430	402
R <sup>2</sup>	0.167	0.174	0.180	0.202	0.218	0.221	0.214	0.205	0.195

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

Table A.5: Panel regression results controlling for financial depth;  
Emerging Market Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	0.483 (0.511)	0.575 (0.472)	0.516 (0.474)	0.409 (0.484)	0.287 (0.502)	-0.291 (0.539)	-0.514 (0.561)	-0.909 (0.576)	-1.573*** (0.563)
GDPpCap	-1.854*** (0.682)	-1.690** (0.681)	-1.563** (0.698)	-1.568** (0.716)	-1.661** (0.716)	-1.921*** (0.715)	-1.999*** (0.722)	-1.809** (0.737)	-1.406* (0.766)
credit	2.068** (0.869)	2.649*** (0.840)	2.959*** (0.857)	2.977*** (0.884)	2.787*** (0.936)	2.370** (0.975)	2.145** (1.031)	2.144* (1.165)	2.731** (1.216)
N	389	376	362	346	330	314	296	278	260
R <sup>2</sup>	0.134	0.144	0.143	0.138	0.136	0.142	0.153	0.165	0.198
FDI	1.860** (0.875)	2.064** (0.852)	2.161** (0.863)	2.255** (0.898)	1.967** (0.921)	0.994 (1.024)	-0.158 (1.095)	-1.593 (1.148)	-3.433*** (1.138)
GDPpCap	-1.882*** (0.662)	-1.707** (0.662)	-1.453** (0.677)	-1.195* (0.710)	-1.316* (0.710)	-1.631** (0.711)	-1.870** (0.723)	-1.845** (0.735)	-1.695** (0.763)
credit	1.938** (0.813)	2.522*** (0.827)	2.872*** (0.851)	3.144*** (0.882)	3.098*** (0.918)	2.886*** (0.959)	2.476** (1.015)	2.279** (1.145)	2.652** (1.213)
N	389	376	362	347	331	315	297	279	261
R <sup>2</sup>	0.143	0.155	0.157	0.159	0.148	0.144	0.150	0.163	0.200
PE	0.633 (2.603)	2.070 (2.650)	0.0525 (2.814)	0.0313 (2.904)	-0.136 (2.933)	-2.514 (2.998)	-2.541 (3.127)	-4.284 (3.346)	-7.727** (3.435)
GDPpCap	-1.999*** (0.664)	-1.910*** (0.665)	-1.776*** (0.672)	-1.777*** (0.675)	-1.788*** (0.682)	-1.799*** (0.688)	-1.829** (0.709)	-1.711** (0.739)	-1.545** (0.766)
credit	2.428*** (0.786)	2.810*** (0.825)	3.019*** (0.887)	2.872*** (0.920)	2.645*** (0.935)	2.744*** (0.935)	2.652*** (0.952)	2.996*** (1.083)	3.791*** (1.190)
N	389	376	362	346	330	314	296	278	260
R-squared	0.132	0.141	0.140	0.136	0.135	0.143	0.153	0.162	0.188
PD	5.871** (2.466)	4.642* (2.511)	3.170 (2.585)	3.610 (2.608)	3.995 (2.609)	1.573 (2.608)	-0.606 (2.638)	-2.848 (2.716)	-3.888 (2.750)
GDPpCap	-1.326* (0.691)	-1.533** (0.697)	-1.740** (0.709)	-1.774** (0.715)	-1.760** (0.714)	-1.876*** (0.712)	-1.850** (0.723)	-1.723** (0.741)	-1.666** (0.763)
credit	2.387*** (0.825)	2.772*** (0.859)	2.850*** (0.888)	2.701*** (0.909)	2.632*** (0.930)	2.500*** (0.948)	2.551** (0.996)	2.771** (1.161)	3.131** (1.266)
N	370	356	341	324	307	290	272	254	236
R <sup>2</sup>	0.151	0.153	0.150	0.147	0.151	0.158	0.175	0.186	0.197
OI	-2.208* (1.161)	-2.601** (1.076)	-2.622** (1.075)	-2.345** (1.094)	-2.354** (1.123)	-3.445*** (1.136)	-2.894** (1.152)	-1.556 (1.200)	-0.503 (1.186)
GDPpCap	-2.058*** (0.679)	-2.197*** (0.691)	-2.311*** (0.703)	-2.322*** (0.707)	-2.136*** (0.703)	-2.041*** (0.691)	-1.790** (0.705)	-1.568** (0.744)	-1.703** (0.778)
credit	3.422*** (0.909)	3.134*** (0.863)	2.715*** (0.883)	2.184** (0.925)	1.983** (0.969)	1.577 (0.981)	1.777* (1.031)	2.470** (1.199)	3.248** (1.287)
N	370	356	341	324	307	290	272	254	236
R <sup>2</sup>	0.146	0.159	0.163	0.155	0.157	0.187	0.196	0.188	0.190

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

Table A.6: Panel regression results controlling for financial depth;  
Advanced Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	0.576*** (0.148)	0.474*** (0.140)	0.384*** (0.140)	0.270* (0.141)	0.047 (0.146)	-0.009 (0.152)	-0.118 (0.159)	-0.287* (0.165)	-0.307* (0.167)
GDPpCap	0.310** (0.154)	0.269* (0.152)	0.189 (0.150)	0.134 (0.151)	0.07 (0.152)	0.058 (0.157)	0.077 (0.162)	0.097 (0.160)	0.1 (0.160)
credit	-0.568 (0.449)	-0.369 (0.442)	-0.328 (0.449)	-0.146 (0.455)	-0.195 (0.470)	-0.166 (0.479)	-0.173 (0.491)	-0.110 (0.494)	0.0721 (0.495)
N	480	460	439	418	397	376	355	334	313
R <sup>2</sup>	0.118	0.097	0.102	0.112	0.117	0.117	0.119	0.129	0.131
FDI	1.232*** (0.279)	1.008*** (0.277)	0.594** (0.276)	0.233 (0.278)	-0.217 (0.283)	-0.577** (0.282)	-0.857*** (0.284)	-1.006*** (0.295)	-0.751** (0.307)
GDPpCap	0.126 (0.146)	0.089 (0.148)	0.060 (0.149)	0.060 (0.149)	0.080 (0.152)	0.075 (0.156)	0.063 (0.160)	0.038 (0.159)	0.021 (0.163)
credit	-0.032 (0.434)	-0.028 (0.440)	-0.134 (0.449)	-0.132 (0.462)	-0.293 (0.473)	-0.298 (0.473)	-0.207 (0.476)	0.005 (0.474)	0.312 (0.486)
N	480	460	439	418	397	376	355	334	313
R <sup>2</sup>	0.126	0.101	0.096	0.105	0.118	0.128	0.142	0.153	0.139
PE	0.302 (0.247)	0.229 (0.262)	0.150 (0.276)	0.00379 (0.277)	-0.323 (0.287)	-0.122 (0.291)	0.232 (0.338)	0.431 (0.340)	0.402 (0.347)
GDPpCap	0.188 (0.155)	0.168 (0.152)	0.110 (0.149)	0.076 (0.149)	0.071 (0.151)	0.064 (0.158)	0.075 (0.162)	0.089 (0.161)	0.077 (0.162)
credit	-0.174 (0.444)	-0.148 (0.445)	-0.168 (0.453)	-0.194 (0.461)	-0.272 (0.465)	-0.171 (0.472)	-0.0898 (0.481)	0.126 (0.481)	0.263 (0.490)
N	480	460	439	418	397	376	355	334	313
R <sup>2</sup>	0.090	0.074	0.086	0.104	0.119	0.118	0.118	0.124	0.124
PD	-0.330 (0.378)	-0.0881 (0.447)	0.300 (0.464)	0.722 (0.472)	0.763 (0.473)	0.602 (0.489)	0.209 (0.520)	-0.189 (0.574)	-0.442 (0.640)
GDPpCap	0.110 (0.148)	0.117 (0.147)	0.104 (0.149)	0.128 (0.153)	0.132 (0.158)	0.116 (0.162)	0.098 (0.167)	0.078 (0.165)	0.066 (0.164)
credit	-0.229 (0.453)	-0.280 (0.458)	-0.373 (0.473)	-0.413 (0.469)	-0.275 (0.463)	-0.073 (0.467)	0.004 (0.492)	0.034 (0.526)	0.021 (0.553)
N	470	450	429	408	387	366	345	324	303
R <sup>2</sup>	0.082	0.080	0.097	0.117	0.127	0.127	0.125	0.124	0.123
OI	0.580* (0.312)	0.613* (0.327)	0.680* (0.347)	0.486 (0.355)	0.354 (0.364)	0.398 (0.398)	0.192 (0.434)	-0.679 (0.508)	-1.257** (0.560)
GDPpCap	0.141 (0.148)	0.172 (0.150)	0.152 (0.150)	0.109 (0.151)	0.064 (0.151)	0.056 (0.156)	0.071 (0.162)	0.125 (0.163)	0.157 (0.166)
credit	-0.499 (0.456)	-0.484 (0.453)	-0.420 (0.454)	-0.230 (0.455)	-0.115 (0.466)	-0.006 (0.475)	0.009 (0.492)	-0.067 (0.501)	-0.082 (0.516)
N	470	450	429	408	387	366	345	324	303
R <sup>2</sup>	0.088	0.088	0.104	0.116	0.123	0.126	0.125	0.129	0.137

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

Table A.7: Panel regression results controlling for aggregate capital stock;  
Emerging Market Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	2.020*** (0.506)	1.451*** (0.487)	1.016* (0.523)	0.251 (0.531)	-0.392 (0.529)	-0.970* (0.529)	-1.081** (0.546)	-1.090* (0.585)	-1.532** (0.640)
GDPpCap	-1.598** (0.747)	-1.601** (0.764)	-1.512* (0.792)	-1.643** (0.801)	-1.645** (0.800)	-1.562* (0.809)	-1.349 (0.836)	-0.977 (0.879)	-0.772 (0.933)
capital	-0.148*** (0.030)	-0.116*** (0.029)	-0.095*** (0.030)	-0.066** (0.030)	-0.050 (0.031)	-0.048 (0.032)	-0.032 (0.033)	-0.030 (0.035)	-0.082* (0.047)
N	354	337	320	302	284	266	248	230	212
R <sup>2</sup>	0.177	0.152	0.130	0.115	0.127	0.158	0.189	0.213	0.252
FDI	2.350*** (0.840)	2.478*** (0.849)	2.692*** (0.951)	2.053** (1.035)	0.686 (1.072)	-0.809 (1.079)	-1.897 (1.206)	-2.186 (1.349)	-2.991* (1.530)
GDPpCap	-1.862** (0.745)	-1.827** (0.752)	-1.489* (0.773)	-1.340* (0.802)	-1.410* (0.800)	-1.387* (0.810)	-1.253 (0.836)	-1.013 (0.880)	-1.114 (0.956)
capital	-0.079*** (0.024)	-0.096*** (0.028)	-0.090*** (0.028)	-0.079*** (0.029)	-0.054* (0.030)	-0.038 (0.031)	-0.017 (0.033)	-0.013 (0.034)	-0.049 (0.046)
N	355	338	321	303	285	267	249	231	213
R <sup>2</sup>	0.151	0.151	0.145	0.137	0.128	0.146	0.182	0.209	0.239
PE	0.152 (2.726)	2.128 (2.746)	2.417 (2.827)	4.329 (2.948)	4.199 (3.211)	1.796 (3.319)	-0.265 (3.434)	-4.144 (3.556)	-8.481** (3.576)
GDPpCap	-2.128*** (0.753)	-2.065*** (0.762)	-1.887** (0.773)	-1.781** (0.773)	-1.540** (0.781)	-1.296 (0.802)	-1.102 (0.835)	-0.756 (0.880)	-0.394 (0.937)
capital	-0.092*** (0.027)	-0.088*** (0.028)	-0.082*** (0.029)	-0.067** (0.029)	-0.054* (0.031)	-0.045 (0.032)	-0.022 (0.033)	-0.013 (0.034)	-0.034 (0.045)
N	354	337	320	302	284	266	248	230	212
R <sup>2</sup>	0.135	0.129	0.121	0.122	0.131	0.146	0.174	0.204	0.252
PD	8.423*** (2.553)	6.097** (2.606)	4.054 (2.657)	3.429 (2.654)	3.303 (2.646)	1.673 (2.645)	-0.430 (2.619)	-2.455 (2.682)	-3.295 (2.790)
GDPpCap	-1.309* (0.767)	-1.439* (0.795)	-1.612* (0.819)	-1.624** (0.824)	-1.438* (0.826)	-1.305 (0.821)	-1.038 (0.827)	-0.693 (0.854)	-0.469 (0.905)
capital	-0.100*** (0.028)	-0.092*** (0.029)	-0.081*** (0.030)	-0.063** (0.030)	-0.054* (0.031)	-0.049 (0.031)	-0.034 (0.032)	-0.024 (0.034)	-0.056 (0.044)
N	330	313	296	278	260	242	224	206	188
R <sup>2</sup>	0.158	0.151	0.142	0.145	0.166	0.208	0.263	0.296	0.307
OI	4.367*** (1.420)	-0.565 (1.188)	-2.079* (1.154)	-2.670** (1.116)	-3.051*** (1.090)	-3.926*** (1.063)	-3.174*** (1.073)	-1.747 (1.132)	-0.948 (1.203)
GDPpCap	-1.316* (0.770)	-1.840** (0.803)	-2.088** (0.814)	-2.021** (0.806)	-1.623** (0.805)	-1.297* (0.785)	-0.852 (0.797)	-0.447 (0.847)	-0.335 (0.913)
capital	-0.162*** (0.037)	-0.079** (0.031)	-0.062** (0.030)	-0.048 (0.030)	-0.055* (0.030)	-0.066** (0.031)	-0.055* (0.032)	-0.038 (0.035)	-0.067 (0.048)
N	330	313	296	278	260	242	224	206	188
R <sup>2</sup>	0.154	0.135	0.145	0.160	0.189	0.256	0.295	0.303	0.303

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

Table A.8: Panel regression results controlling for aggregate capital stock;  
Advanced Economies

Variables	FO <sub>t</sub>	FO <sub>t-1</sub>	FO <sub>t-2</sub>	FO <sub>t-3</sub>	FO <sub>t-4</sub>	FO <sub>t-5</sub>	FO <sub>t-6</sub>	FO <sub>t-7</sub>	FO <sub>t-8</sub>
TEL	0.056 (0.043)	0.076* (0.045)	0.103** (0.050)	0.123** (0.058)	0.092 (0.058)	0.074 (0.059)	0.043 (0.059)	0.011 (0.059)	0.002 (0.060)
GDPpCap	0.562*** (0.160)	0.611*** (0.158)	0.595*** (0.157)	0.557*** (0.159)	0.535*** (0.165)	0.549*** (0.177)	0.627*** (0.184)	0.722*** (0.182)	0.722*** (0.182)
capital	-0.034** (0.014)	-0.022 (0.021)	-0.019 (0.022)	-0.025 (0.022)	-0.023 (0.023)	-0.014 (0.025)	-0.007 (0.028)	-0.003 (0.030)	-0.012 (0.032)
N	560	535	508	481	453	425	397	369	341
R <sup>2</sup>	0.153	0.142	0.168	0.196	0.212	0.223	0.248	0.285	0.310
FDI	0.065 (0.055)	0.112* (0.058)	0.157** (0.064)	0.157** (0.064)	0.177** (0.075)	0.139* (0.077)	0.080 (0.079)	0.041 (0.078)	0.034 (0.079)
GDPpCap	0.541*** (0.159)	0.574*** (0.157)	0.544*** (0.156)	0.496*** (0.158)	0.491*** (0.165)	0.524*** (0.177)	0.617*** (0.184)	0.718*** (0.183)	0.717*** (0.181)
capital	-0.034** (0.014)	-0.023 (0.021)	-0.020 (0.022)	-0.027 (0.022)	-0.025 (0.023)	-0.016 (0.025)	-0.008 (0.028)	-0.004 (0.030)	-0.013 (0.032)
N	560	535	508	481	453	425	397	369	341
R <sup>2</sup>	0.153	0.144	0.171	0.200	0.218	0.227	0.249	0.286	0.311
PE	0.373 (0.301)	0.301 (0.291)	0.270 (0.285)	0.353 (0.328)	-0.055 (0.334)	0.018 (0.340)	0.319 (0.346)	0.608* (0.340)	0.639* (0.338)
GDPpCap	0.577*** (0.161)	0.605*** (0.158)	0.574*** (0.157)	0.545*** (0.160)	0.517*** (0.166)	0.548*** (0.177)	0.637*** (0.184)	0.730*** (0.181)	0.720*** (0.180)
capital	-0.035** (0.014)	-0.023 (0.021)	-0.019 (0.022)	-0.022 (0.022)	-0.022 (0.023)	-0.013 (0.025)	-0.005 (0.028)	-0.001 (0.030)	-0.010 (0.032)
N	560	535	508	481	453	425	397	369	341
R <sup>2</sup>	0.153	0.139	0.162	0.190	0.207	0.220	0.249	0.292	0.318
PD	-0.058 (0.309)	-0.307 (0.304)	-0.399 (0.331)	-0.330 (0.345)	-0.687* (0.359)	-1.021*** (0.378)	-1.126*** (0.377)	-1.206*** (0.375)	-0.990** (0.401)
GDPpCap	0.499*** (0.154)	0.571*** (0.157)	0.578*** (0.162)	0.580*** (0.170)	0.504*** (0.177)	0.509*** (0.179)	0.577*** (0.180)	0.668*** (0.177)	0.664*** (0.179)
capital	-0.019 (0.023)	-0.023 (0.023)	-0.020 (0.024)	-0.013 (0.026)	-0.015 (0.028)	-0.022 (0.031)	-0.032 (0.034)	-0.058 (0.036)	-0.090** (0.039)
N	538	513	485	457	429	401	373	345	317
R <sup>2</sup>	0.142	0.157	0.186	0.219	0.261	0.298	0.325	0.355	0.376
OI	0.270* (0.143)	0.316** (0.147)	0.342** (0.164)	0.235 (0.177)	0.139 (0.180)	0.136 (0.185)	0.149 (0.192)	0.0564 (0.200)	-0.00240 (0.210)
GDPpCap	0.564*** (0.157)	0.675*** (0.161)	0.700*** (0.163)	0.669*** (0.163)	0.639*** (0.164)	0.653*** (0.172)	0.670*** (0.179)	0.701*** (0.180)	0.663*** (0.181)
capital	-0.019 (0.023)	-0.020 (0.023)	-0.017 (0.024)	-0.010 (0.026)	-0.008 (0.028)	-0.012 (0.031)	-0.022 (0.034)	-0.050 (0.036)	-0.086** (0.039)
N	538	513	485	457	429	401	373	345	317
R <sup>2</sup>	0.149	0.164	0.191	0.221	0.255	0.285	0.308	0.333	0.363

Note: The table reports coefficients obtained using the specification in equation (1). Standard Errors in parentheses. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ . TEL = Total External Liabilities, FDI = Foreign Direct Investment, PE = Portfolio Equity, PD = Portfolio Debt, OI = Other Investment. N = Number of observations.

## B. Additional tables

Table B.1: AEs (Advanced Economies, 30 countries)

AD	Andorra	ES	Spain	LV	Latvia
AT	Austria	FI	Finland	MT	Malta
AU	Australia	FR	France	NL	Netherlands
BE	Belgium	GB	United Kingdom	NO	Norway
CA	Canada	GR	Greece	NZ	New Zealand
CH	Switzerland	IE	Ireland	PT	Portugal
CY	Cyprus	IS	Iceland	SE	Sweden
DE	Germany	IT	Italy	SI	Slovenia
DK	Denmark	JP	Japan	SK	Slovakia
EE	Estonia	LT	Lithuania	US	United States

Table B.2: EMEs (Emerging Market Economies, 18 countries)

AR	Argentina	HU	Hungary	RU	Russia
BR	Brazil	ID	Indonesia	MX	Mexico
CL	Chile	IL	Israel	MY	Malaysia
CN	China	IN	India	TH	Thailand
CO	Colombia	KR	South Korea	TR	Turkey
CZ	Czech Republic	PL	Poland	ZA	South Africa

Table B.3: Data sources

Variable	Data sources
Gini net	SWIID Version 5.1, Solt (2016)
TEL	Lane and Milesi-Ferretti (2017)
FDI	Lane and Milesi-Ferretti (2017)
PE	Lane and Milesi-Ferretti (2017)
PD	Lane and Milesi-Ferretti (2017)
GDPpCap	World Economic Outlook, International Monetary Fund (2017)
capital	Feenstra et al. (2015), PWT 9.0
credit	Bank for International Settlements (2017b)
trade	World Development Indicators, The World Bank (2017)
unemployment	World Development Indicators, The World Bank (2017)