

# Asymmetric effect of financial liberalization on firm growth, market concentration and income inequality

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## Abstract

We study the firm level evidence of the effect of financial liberalization on the host country economic performance. Specifically, we examine the asymmetrical effect of financial liberalization at the firm level on growth rate, market concentration, and wage mediated by firm size. We conduct firm-year level panel regression analysis where we use 25 country panels for the 1990-2011 period. The firm-level analysis based on a comprehensive global dataset shows that financial liberalization favors larger firms, which attract greater foreign capital and grow faster; financial liberalization favors larger firms which achieve product market competitiveness due to easier access to capital markets, leading to an increasing industrial concentration; the resulting market concentration leads to income inequality; the asymmetric growth of larger firms relative to smaller firms disappears as the information environment of the host country improves.

Key words: financial liberalization, firm growth, market concentration, income inequality, information environment

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## **I. Introduction**

The objective of this paper is to shed additional light on the debate surrounding the effect of financial liberalization on the economic performance of the host country by investigating the mediating effect of firm size. We explore the notion that firm size matters in the way financial liberalization affects firm growth, and the resulting market concentration and income inequality. Due to the great importance of the topic the finance profession has devoted much effort to learn about the effect of financial liberalization.

A substantial body of literature examines the financial liberalization effects on the growth and the volatility. The literature that has highlighted the growth effect has argued that capital flows from the rich to the poor countries and it reduces the cost of capital and increases investment in the host nation. The empirical evidence seems to support this view that financial liberalization favors economic growth and that equity market liberalization seems to have a bigger impact than does the debt market liberalization. The literature that has studied the volatility effect has highlighted two opposing theoretical arguments. Diversification story holds that financial liberalization leads to diversification reducing volatility. On the other hand specialization argument holds that financial liberalization leads to specialization increasing volatility in the host nation. The empirical evidence is unclear as to which effect on volatility is more dominant. It has also been argued that financial liberalization leads to consumption smoothing via the deepening of financial markets.

We examine whether financial liberalization favors larger firms and leads to asymmetric growth in terms of firm size. Specifically, we examine whether larger firms with less information asymmetry due to greater familiarity and visibility attract more foreign capital and grow faster. Next, we consider the effect of asymmetric growth on the market concentration. We examine whether larger firms with easier access to capital markets achieve product market competitiveness, which leads to the increasing industrial concentration. We examine whether

the resulting market concentration leads to income inequality. Next, we examine the effect of the information environment on the asymmetric growth of firm. To the extent that information environments improves after financial liberalization, we can expect that the asymmetric growth between bigger and smaller firms should disappear as the information environment improves.

We find that the firm-level analysis based on the global database supports all four hypotheses consistently. We find that larger firms attract greater foreign capital and grow faster. We find that larger firms with easier access to capital markets achieve product market competitiveness, which leads to the increasing industrial concentration. We find that the resulting market concentration leads to income inequality. Next, we find that the unequal growth rate between bigger and smaller firms disappears as the information environment improves.

This paper is organized as follows. In section II, we review relevant literature and generate research hypotheses. In section III, we explain samples, data, regression models, and the variables which are used in this paper. In section IV, we report and discuss the results empirical analysis. Lastly, in section V, we briefly summarize the results of this research.

## **II. Literature review and hypothesis development**

A large body of papers exist that investigate the relationship between financial liberalization and economic growth (Bumann et al., 2013; Kose et al., 2009; Gupta and Yuan, 2009; Quinn and Toyoda, 2008; Bekaert et al., 2001, 2005; Levine, 2001). The effect of financial liberalization on growth and volatility has received much attention. The literature that has highlighted the growth effect has argued that capital flow from rich to poor countries and it reduces cost of capital and increases investment in the host nation. The empirical evidence points to the fact that financial liberalization favors economic growth and that equity market liberalization seems to have a bigger impact. The literature that has highlighted the volatility

effect has two opposing theoretical arguments. Diversification story holds that that financial liberalization leads to diversification reducing volatility. On the other hand specialization argument holds that financial liberalization leads to specialization reducing volatility in the host nation. The empirical evidence is unclear as to which effect on volatility is more dominant. It has also argued that financial liberalization leads to consumption smoothing via the deepening of financial markets.

The extant literature comprises mostly macro and country-level analyses. Gupta and Yuan (2009) finds that industries with greater financial dependence grows faster after liberalization. They find also that industries with greater financial dependence benefit from greater growth opportunities, albeit the effect is weaker. Especially, in various studies, it shows that financial liberalization reduces the cost of equity and increases investment (Chari and Henry 2004, 2008; Henry 2000a). Bekaert and Harvey (2000) examine the degree to which liberalization affected the equity return generating process in 20 emerging markets, focusing primarily on the cost of equity capital. Kim and Singal (2000) find similar results using different methodologies and slightly different samples of countries. Edison and Warnock (2003) find that the decrease in the cost of capital is greater for those countries that experienced more complete liberalizations. Mitton (2006) finds that financial liberalization leads to higher growth, greater investment, greater profitability, greater efficiency, and lower leverage. Henry (2000b) documents that aggregate domestic investment growth increases significantly after liberalization, potentially stimulating economic growth. Bae and Goyal (2010) report that the growth effect of financial liberalization is greater for better-governed firms in Korea.

These studies assume generally perfect markets and symmetric effects across all firms in the host country. In reality, however, foreign investors face a challenging task of the understanding individual firms in the host country as the firm level information is less accessible. Rather than trying to understand all firms of the host country foreign investors will

gravitate to larger firms, which are visible and for which public information is more readily available. An example of the study that examines the size effect is Christoffersen et al. (2006) who find that stock returns grow more for larger firms after equity market liberalization. We find that the asymmetric (conditional) effect has not been carefully addressed in the literature yet. To remedy this deficiency in the literature we propose to investigate the asymmetric (conditional) effect by conducting firm-level analysis.

Larger firms face less information asymmetry due to their greater familiarity and visibility, which allow them to attract greater foreign capital and grow faster as countries open their economy to foreign capital. As a result, financial liberalization favors larger firms and leads to asymmetric growth in terms of size. This observation leads to the following hypothesis.

Hypothesis 1: Larger firms grow faster than smaller firms once capital markets open up to foreign capital.

We expect that asymmetric growth leads to market concentration as larger firms with easier access to capital markets are able to improve product market competitiveness, which in turn leads to deepening of industrial concentration. We examine various measures of market concentration and profit margin. This consideration leads to the following hypothesis.

Hypothesis 2: Financial liberalization increases market concentration using the following regression model.

We expect that market concentration, which is enhanced by financial liberalization, leads to greater income inequality. As market concentration accelerates, large firms hire more skilled labor and pay higher wages than smaller firms. As a result wage gap across firm size

increases as large firms become more dominant in product markets. This consideration leads to the following hypothesis.

Hypothesis 3: Financial liberalization increases income inequality.

Next, we examine the effect of the information environment on the asymmetric growth of firm over time. Bae et al. (2006) find that information environment improves after financial liberalization. If this is true, we expect that the information problem that we are highlighting should be alleviated as time passes after liberalization. This means that the asymmetric growth between bigger and smaller firms should disappear as the information environment improves. This observation leads to the following hypothesis.

Hypothesis 4: The asymmetric growth of larger firms relative to smaller firms disappears over time as the information environment in the host country improves.

### **III. Data and regression models**

We construct the sample using the Worldscope database. All financial variables are converted into US dollars. The sample period is from 1990 to 2011. We apply the following filtering process: (1) We delete financial, transportation and public utilities industry; (2) We exclude firm-years for which the asset growth rate is unavailable; (3) We exclude firm-years for which we cannot calculate openness measures; (4) We remove country-years with fewer than 10 firms. Variable definitions and data sources are shown in Appendix A.

We propose four hypotheses that elaborate on the asymmetric effect of financial liberalization on host country. We construct the regression models that test the four size based

asymmetric effect hypotheses. We conduct a comprehensive globally based empirical analysis. We conduct firm-year level panel regression analysis where we use 25 country panels for the 1990-2011 period (22 years of observation).

We test Hypothesis 1 that predicts that the financial liberalization leads to firm size based asymmetric growth using the following regression model.

$$\text{Growth} = \alpha \text{ Liberalization} + \beta \text{ Liberalization} \times \text{Size} + \gamma \text{Control}$$

We estimate the regression model using the firm growth rate as the dependent variable. The main independent variables are financial openness measures and the interaction terms between financial openness measures and firm size measures. We control for the firm level effects, industry level effects, country level effects and world level effects.

Next we identify firms which are familiar to foreign investors even before financial liberalization. The first group of firms that we consider as those familiar to foreign investors even before financial liberalization are large firms. The other group of firms that foreign investors are likely to be familiar with even before financial liberalization are cross-listed firms. The third group of firms that we consider foreign investors are likely to feel more familiar with are firms with greater exports. We replace the firm size in the regression model by cross listed firms dummy as well as firm exports as a proxy for low information asymmetry. In summary, we use large firms, cross-listed firms and export-oriented firms as firms which are familiar to foreign investors even before financial liberalization.

We test Hypothesis 2 that predicts that financial liberalization increases market concentration using the following regression model.

$$\text{Market concentration} = \alpha \text{ Liberalization} + \beta \text{ Liberalization} \times \text{Size} + \gamma \text{Control}$$

We estimate the regression model using the country-level market concentration as the dependent variable. We estimate the country-level market concentration using the average of industry-level Herfindahl indices. As a related measure of market concentration, we use the gross profit margin. The main independent variables are openness measures and the interaction terms between openness measures and size measures. We control for the firm level effects, industry level effects, country level effects and world level effects.

We test Hypothesis 3 that predicts the firm size based asymmetric effect of financial liberalization on income inequality in the host country using the following two regression models.

$$\text{Average wage} = \alpha \text{ Liberalization} + \beta \text{ Liberalization} \times \text{Size} + \gamma \text{Control}$$

$$\text{Income inequality} = \alpha \text{ Liberalization} + \beta \text{ Liberalization} \times \text{Size} + \gamma \text{Control}$$

We estimate the income inequality regression model using the firm level average wage as well as industry level income inequality as the dependent variable. The main independent variables are financial openness measures and the interaction terms between financial openness measures and firm size measures. We control for the firm level effects, industry level effects, country level effects and world level effects. We measure firm level average wage by the ratio of the log of salaries and benefits expenses to the number of employees. We measure industry level income inequality by the ratio of the log of the wage of college graduates to the wage of high-school graduates. All the variables are winsorized to remove the effects of outliers:

remove top 1% and bottom 1%.

Variable constructions are as follows. As financial openness measures we use the Chinn-Ito index ( $ka\_open$ ) as well as international balance sheet measures ( $equity\_gdp$ ,  $all\_gdp$ ,  $fdi\_gdp$ , and  $financial\_gdp$ ). Chinn-Ito index ( $ka\_open$ ) is initially introduced by Chinn and Ito (2006).<sup>4</sup> It takes on higher values as the more open the country is to cross-border capital transactions. The international balance sheet data are obtained from Lane and Milesi-Ferretti (2006).<sup>5</sup>  $Equity\_gdp$  is computed by the sum of portfolio equity assets and portfolio equity liabilities divided by  $gdp$ .  $All\_gdp$  is calculated by the sum of total assets and total liabilities divided by  $gdp$ .  $FDI\_gdp$  is calculated by the sum of equity investment of FDI and debt investment of FDI divided by  $gdp$ . Similarly,  $financial\_gdp$  is computed by the sum of portfolio equity assets, portfolio equity liabilities, debt assets, debt liabilities, financial derivatives assets and financial derivatives liabilities divided by  $gdp$  (US\$).

We measure the firm size using (1) sales, (2) the book value of assets, which reflects capital investment, (3) market capitalization (the market value of equity), which reflects the future growth. We calculate sales by  $\log$  of total assets+1; assets by  $\log$  of total assets +1; market capitalization by  $\log$  of market capitalization+1.

We measure the growth rate using the asset growth rate, the sale growth rate, the market capitalization growth rate and the capital financing. Asset growth rate is the rate of change of the firm's total asset, which is calculated as the  $\log$  of the current year total asset divided by the previous year total asset. Sales growth rate is the rate of change of the firm's sales, which is calculated as the  $\log$  of the current year sales divided by the previous year sales. Market cap growth rate is the rate of change of the firm's market capitalization growth, which is calculated as the  $\log$  of the current year market capitalization divided by the previous year

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<sup>4</sup> It is found at [http://web.pdx.edu/~ito/Chinn-Ito\\_website.htm](http://web.pdx.edu/~ito/Chinn-Ito_website.htm)

<sup>5</sup> It is found at <http://www.philiplane.org/EWN.html>.

market capitalization. We measure capital financing as the sum of equity financing and debt financing scaled by total assets where the equity financing is calculated by log of total equity in year t divided by the total equity in year t-1 and the debt financing calculated by log of total debt in year t divided by the total debt in year t-1

We control for the firm level effects, industry level effects, country level effects and world level effects. At the firm level we control for Tobin's Q, leverage, firm age, R&D, firm size, gross profit margin (gross profit /sales), financial constraint (Hadlock and Pierce, 2010). At the country-level we control for GDP, private credit, human capital, trade openness (World Development), accounting standard (Rajan and Zingales, 1998), creditor right, rule of law, financial system. At the industry-level we control for financial dependence (Rajan and Zingales). At the world level we control for the year fixed effect using the year dummy. As for the firm and year fixed effects, we use firm dummies.

Firm-level control variables are calculated as follows. Leverage is calculated as total debt (t-1) / total asset (t-1); Operating performance as EBITDA (t-1) / sales (t-1); Market-to-Book ratio as market value of equity / book value of equity; Intangible asset as intangible asset (t-1) / total asset (t-1).

Country-level control variables are openness to trade (t-1); log of per capita GDP (t-1); OECD growth estimate (t); human capital formation (t-1); and private credit to GDP (t-1). The common control variables used throughout are firm dummies, which serve as a control for unobservable time-invariant firm fixed effects; year dummies, which control for unobservable macro factors. Standard errors are corrected for firm level clustering.

We test Hypothesis 4 that predicts that the asymmetric growth between bigger and smaller firms caused by financial liberalization weakens as the information environment improves. We test Hypothesis 4 by analyzing the impulse response of the ratio of growth rates between big firm and small firms to one unit shock (increase) in openness measure over time

since the introduction of capital market liberalization.

#### IV. Empirical findings

Table 1 presents the official liberalization dates and the dates of the first country fund based on Bekaert and Harvey (2000) and Bekaert, Harvey and Lundblad (2005). ISO is country codes used in the International Standards Organization. This table also reports the first year in which data is available for each country in Worldscope.

[Table 1 about here]

Table 2 reports descriptive statistics of variables we use in this research. The mean and standard deviations of independent and dependent variables for 25 countries are presented in Panel A. For financial openness measures we show Chinn-Ito index (ka\_open) as well as international balance sheet based measures. The openness measures show a wide variation across the sample countries. For example, the average Chinn-Ito index ranges from 0.112 for Zimbabwe to 0.8917 for Puerto Rico. On the other hand, Sri Lanka has the lowest average equity\_gdp of 0.9%; Israel, the highest average equity\_gdp of 25.96%.

Panel B shows the mean value of control variables. We compute leverage (total\_lev), operating performance (opr\_inc), market-to-book ratio (mb), intangible asset (lag\_iasset) as  $total\_lev_t = total\_debt_{t-1}/total\_asset_{t-1}$ ,  $opr\_inc_t = EBIT_{t-1}/total\_sales_{t-1}$ ,  $mb_t = market\_cap_t/BV\ of\ equity_t$ ,  $lag\_iasset = intangible_{t-1}/total\_asset_{t-1}$ , respectively. As additional control variables that capture size effects, we use lag\_asset, lag\_sales, lag\_mcap, which are one year lagged total asset, total sales and market cap for each case. As country-specific control variables, openness to trade (open\_tr), annual per capita real GDP (per\_cap\_gdp), human capital (human\_cap), private credit GDP (prv\_credit\_gdp) are used. Open\_tr is the annual ratio of export and imports to real GDP and per\_cap\_gdp is computed by

log(real GDP/population). Human\_cap is the annual ratio of secondary school enrollment to total enrollment and prv\_credit\_gdp is the annual ratio of private credit to GDP. Industry-level Herfindahl index based on sales and gross profit margin (gro\_inc) are used as a proxy for the market concentration measure. Gross profit margin (gro\_inc) is computed by gross profit divided sales. Only mean values are presented for control variable for brevity. .

[Table 2 about here]

Table 3 presents the regression estimation results of the firm growth model which tests the size-based asymmetric effect of financial liberalization. We first consider liberalization variable and accounting control variables and the country-specific control variables to look at how a country's degree of openness impacts the firm growth. Next, the interaction terms of liberalization x size are added to investigate whether the firm size brings about the asymmetric growth after financial liberalization. Standard errors are corrected for firm-level clustering.

In Table 3 we use five measures of financial openness (ka\_open, equity\_gdp, all\_gdp, fdi\_gdp and financial\_gdp) and four measures of size (assets, sales, market capitalization and capital raising). As the financial openness measure, we use Chinn-Ito index (ka\_open) in Panel A; equity\_gdp in Panel B; all\_gdp in Panel C; fdi\_gdp in Panel D; and financial\_gdp in Panel E.

In all panels we obtain similar results suggesting that the effect of financial openness is asymmetrical favoring larger firms (Hypothesis 1). In Panel A we find that the coefficient of the openness-size interaction variable, which measures the size-based asymmetric effect, is positive and significant for asset growth, market capitalization growth and capital raising showing that the effect of financial openness is asymmetrical favoring larger firms. In Panel B we find that the coefficient of the size-based asymmetric effect term is positive and significant for asset growth and capital raising. The result in Panel C is identical to the result in Panel A.

In Panel C we find that the coefficient of the size-based asymmetric effect term is positive and significant for asset growth, market capitalization growth and capital raising. The results in Panel D and E are the most conclusive in that financial openness shows asymmetric effect favoring larger firms based on all four measures of growth.

[Table 3 about here]

Table 4 presents the results from panel regressions of the asymmetric impact of liberalization on firm growth. We replace the size variable with the cross listing dummy to measure the asymmetric effect of financial openness. As in Table 3 we use four different measures of financial openness: *ka\_open*, *equity\_gdp*, *all\_gdp*, *financial\_gdp*, *fdi\_gdp*. The control variables are also as in Table 3. The size based asymmetric effect hypothesis (Hypothesis 1) is confirmed in most models. The coefficient of the interaction term between financial openness and cross-listing dummy is positive and statistically significant when *ka\_open*, *all\_gdp*, *financial\_gdp*, and *fdi\_gdp* are used as a measure of financial openness. However, the coefficient of the interaction term between financial opens and cross listing dummy is negative and statistically significant when *equity\_gdp* is used to measure financial openness.

[Table 4 about here]

Table 5 presents the results from panel regressions that tests the asymmetric impact of liberalization on growth using export variable. The interaction terms of *lib\_exp* are added to examine whether firms with greater exports achieve higher growth after financial liberalization. We use five different measures of financial openness: *ka\_open*, *equity\_gdp*, *all\_gdp*, *financial\_gdp*, and *fdi\_gdp*. The signs of the interaction terms of *lib\_exp* are positive and

statistically significant in Models 2, 4, 6, 8 and 10 corresponding to the regressions using `ka_open`, `equity_gdp`, `all_gdp`, `financial_gdp`, and `fdi_gdp` as a measure of financial openness, respectively. The results indicate that firms with greater exports achieve higher growth after financial liberalization in support of the Hypothesis 1.

[Table 5 about here]

Next we investigate the asymmetric impact of liberalization on market concentration. Table 6 presents the estimation results of regression models that test the asymmetric impact of financial liberalization on market concentration. The interaction terms of liberalization x size are added to test whether firm size affects the effect of financial liberalization on market concentration. Panel A reports the regression results using Herfindahl index as the dependent variable. In Panel B, gross profit margin is used as the dependent variable.

In Panel A we report the estimation results of the 15 regression models based on 15 different measures of the interaction terms (liberalization x size) corresponding to five measures of financial openness and three measures of size. Five measures of financial openness are `ka_open`, `equity_gdp`, `all_gdp`, `financial_gdp`, `fdi_gdp` and three measures of size are assets, sales and market capitalization. In all fifteen models the coefficients of the interaction term are positive and statistically significant suggesting that the effect of financial liberalization on market concentration is larger for larger firms (Hypothesis 2).

[Table 6 about here]

Next, we test Hypothesis 3 that holds that the effect of financial liberalization on income is greater for larger firms leading to income inequality in host countries. Table 7 presents the estimation results of regression models that test the impact of asymmetric growth

brought about by financial liberalization on income inequality. The interaction terms of liberalization x size are added to find out how the asymmetric growth in firm-size after financial liberalization affects income inequality. Standard errors are corrected for firm-level clustering. First, we use average wage as a measure of income. Average wage is calculated by salaries and benefits expenses divided by the number of employees. We then take the logarithm of this variable and use this as a proxy for income. We use five different measures of financial openness and one income measure leading to five basic regression models (Models 1, 3, 5, 7 and 9) and five models augmented with country level controls (Models 2, 4, 6, 8 and 10) as reported in Table 7.

We find that the coefficients of the interaction terms of liberalization x size are positive and significant in all models shown in Table 7. The result indicates that larger firms pay more than smaller firms leading to income inequality in the host society as financial liberalization deepens supporting Hypothesis 3. With deepening of the financial liberalization of the host country, the income gap of employees between the large firms and the small firms increases. As the capital flows into larger firms, larger firms grow faster, increase market concentration, and increase pay for their workforce leading to income inequality in the host country labor market. This is consistent with the growing income inequality after World War II noted by a number of authors.

[Table 7 about here]

We test Hypothesis 4 that predicts that asymmetric growth rate between bigger and smaller firms gradually disappears as the information environment improves using the impulse response function method. We find evidence that indeed the asymmetric growth rate between bigger and smaller firms gradually disappears as the information environment improves.

Figure 1 presents the results of the impulse response functions using the ratio between the growth of the big firm portfolio and the growth of small firm portfolio based on five different openness measures. The graphs present the response of the ratio to one standard deviation shock in openness measure in a panel VAR model. The time scale on the horizontal axis is in years. For each impulse response function, 95% confidence intervals are computed using the 500 times by Monte-Carlo simulation.

In Panel A, we show the impulse response to a shock to Chinn-Ito index and equity\_gdp; in Panel B, we show the impulse response to a shock to all\_gdp and fdi\_gdp; and in Panel C, we show the impulse response to a shock to financial\_gdp. The asymmetric growth rate rises in year 2 after one unit shock to Chinn-Ito index, but it declines gradually toward the baseline. The impulse response of the asymmetric growth rate using other measures of financial liberalization shocks shows a similar pattern rising by year 2, then declining gradually thereafter.

[Figure 1 about here]

## **V. Conclusion**

The finance profession has devoted much effort to learn about the effect of financial liberalization on the host country. The empirical evidence seems to support this view that financial liberalization favors economic growth. The objective of this paper is to shed some additional light on the debate surrounding the effect of financial liberalization on the economic performance of the host country by investigating the mediating effect of firm size.

We explore the notion that firm size intermediates the way financial liberalization affects firm growth, and the resulting market concentration and income inequality. First, we explore the effect of financial liberalization on host country economy conditional on firm size. We test the hypothesis that financial liberalization favors larger firms and leads to asymmetric

growth in terms of size. First, we examine whether larger firms with less information asymmetry due to greater familiarity and visibility attract more foreign capital and grow faster. Next, we consider the effect of asymmetric growth on the market concentration. We examine whether larger firms with easier access to capital markets achieve product market competitiveness and whether this effect leads to the increasing industrial concentration. We examine whether the resulting market concentration leads to income inequality. Next, we examine the effect of the information environment on the asymmetric growth of firm. To the extent that information environments improves after financial liberalization, we can expect that the asymmetric growth between bigger and smaller firms would disappear as the information environment of the host country improves.

We find that the firm-level analysis based on the global database supports all four hypotheses. We find that larger firms attract greater foreign capital and grow faster than smaller firms as financial liberalization progresses. We also find that, as financial liberalization progresses, larger firms with easier access to international capital markets achieve product greater market competitiveness than smaller firms, which leads to the increasing industrial concentration. Furthermore, the resulting market concentration leads to income inequality as workers of larger firms are paid more than the workers of smaller firms. Finally, we find that the asymmetric growth between bigger and smaller firms gradually disappears as the information environment in the host country improves.

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**Table1. Years of official capital market liberalization and years of the introduction of country funds**

This table presents the official liberalization years and the years of introduction of the first country fund based on Bekaert and Harvey (2000) and Bekaert, Harvey and Lundblad (2005). ISO is the country code used in the International Standards Organization. The last column shows the first year when data are available for a given country in Worldscope.

Liberalizing countries	FIC	Liberalization year (legally)	Introduction of the first country fund	First year available in dataset
Argentina	ARG	1989	1991	1987
Bangladesh	BGD	1991		2006
Brazil	BRA	1991	1992	1988
Chile	CHL	1992	1989	1987
Egypt	EGY	1992		1998
Greece	GRC	1987	1988	1986
Indonesia	IDN	1989	1989	1985
India	IND	1992	1986	1990
Israel	ISR	1993	1992	1993
Jamaica	JAM	1991		2006
Jordan	JOR	1995		1998
Kenya	KEN	1995		2001
Korea	KOR	1992	1984	1981
Sri Lanka	LKA	1991		1994
Morocco	MAR	1988		1998
Mexico	MEX	1989	1981	1981
Malaysia	MYS	1988	1987	1981
Nigeria	NGA	1995		2003
Pakistan	PAK	1991	1991	1989
Philippines	PHL	1991	1987	1989
Portugal	PRT	1986	1987	1986
Thailand	THA	1987	1985	1988
Turkey	TUR	1989	1989	1988
Venezuela	VEN	1990		1988
Zimbabwe	ZWE	1993		1994

**Table 2. Descriptive statistics**

The means and standard deviations of independent and dependent variables for 25 countries are presented in Panel A. As an openness measure we use *KAOPEN* (*Chinn-Ito index*) as well as international balance sheet based measures following Lane and Milesi-Ferretti (2006). *Equity GDP* is computed by the sum of portfolio equity assets and portfolio equity liabilities divided by gdp. *All GDP* is calculated by the sum of total assets and total liabilities divided by gdp. *FDI GDP* is calculated by the sum of FDI assets and FDI liabilities divided by gdp. Similarly, *Financial GDP* is computed by the sum of portfolio equity assets, portfolio equity liabilities, debt assets, debt liabilities, financial derivatives and financial derivatives divided by gdp. The dependent variable, *Asset Growth*, is computed by  $\log(\text{Asset}_t/\text{Asset}_{t-1})$ , and the other growth rates (*Sales Growth* and *Market Cap Growth*) are similarly calculated. The other dependent variable, capital financing, is calculated by the sum of equity financing and debt financing divided by total asset, where equity financing is  $\log(\text{total equity}_t/\text{total equity}_{t-1})$  and debt financing is  $\log(\text{total debt}_t/\text{total debt}_{t-1})$ . *Herfindahl Index* is calculated by the sum of squared of market share based on sales for each firm relative to the total industry sales within the same industry based on the Fama-French's 12 industries. *Gross Profit Margin* is computed by Gross profit/Sales. *Log wage* is calculated by the log of salaries and benefits expenses divided by the number of employees.

Panel B shows the mean values of control variables. *Leverage*, *Operating income*, *Market-to-book* and *Intangible asset* are computed as  $\text{Leverage}_t = \text{total debt}_{t-1}/\text{total asset}_{t-1}$ ,  $\text{Operating income}_t = \text{EBIT}_{t-1}/\text{total sales}_{t-1}$ ,  $\text{Market-to-book}_t = \text{market cap}_t/\text{book value of equity}_t$ ,  $\text{Intangible asset} = \text{intangible asset}_{t-1}/\text{total asset}_{t-1}$ . *Lag asset*, *Lag sales*, and *Lag market cap* are lagged values of  $\log(\text{total asset})$ ,  $\log(\text{total sales})$  and  $\log(\text{total market capitalization})$ , respectively. Country-specific control variables are *Openness to trade*, *Annual per capita GDP*, *Human capital*, *Private credit*. *Openness to trade* is the annual ratio of export and imports to real GDP and *Annual per capita GDP* is computed by  $\log(\text{real GDP}/\text{population})$ . *Human capital* is the annual ratio of secondary school enrollment to total enrollment and *Private credit* is annual ratio of private credit to GDP. Industry-level *Herfindahl Index* based on sales and *Gross profit margin* are used as a proxy for the market concentration measure. *Gross profit margin* is computed by gross profit divided by sales. Only mean values are presented for control variables for brevity. .

**Panel A. Descriptive statistics of independent and dependent variables**

Variable	FIC			ARG			BGD			BRA			CHL			EGY			GRC					
	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median
<i>KAOPEN</i>	22	0.4569	0.2916	0.3276	22	0.1705	0.0908	0.1629	22	0.2433	0.2229	0.1629	22	0.4835	0.4351	0.644	22	0.6589	0.3803	0.7965	22	0.7216	0.2983	0.7538
<i>Equity GDP</i>	22	0.0524	0.0224	0.0545	22	0.0019	0.0028	0.0004	22	0.097	0.0777	0.0775	22	0.2224	0.1463	0.1861	22	0.0162	0.0141	0.015	22	0.098	0.0904	0.082
<i>All GDP</i>	22	1.3262	0.6358	1.1902	22	0.4973	0.0554	0.4839	22	0.7479	0.1963	0.7716	22	1.6119	0.4218	1.7152	22	1.1766	0.3251	1.1449	22	1.6258	0.8251	1.3273
<i>FDI GDP</i>	22	0.2599	0.1428	0.2767	22	0.0466	0.0155	0.0512	22	0.237	0.1055	0.262	22	0.6286	0.2609	0.7136	22	0.2699	0.0694	0.2621	22	0.1632	0.0627	0.1517
<i>Financial GDP</i>	22	0.9722	0.4935	0.8108	22	0.3955	0.0612	0.3808	22	0.4338	0.0901	0.4285	22	0.8076	0.1993	0.8514	22	0.7191	0.2822	0.6668	22	1.4092	0.8008	1.1033
<i>Asset Growth</i>	1879	0.0085	0.3028	0.0333	80	0.3352	0.7621	0.1875	4122	-0.1729	1.2505	0.0948	2095	0.0812	0.2841	0.0819	818	0.0943	0.247	0.067	6609	0.1126	0.3439	0.0927
<i>Sales Growth</i>	1400	0.0428	0.5194	0.0831	58	0.2836	0.4651	0.1747	3209	0.108	0.5114	0.1162	1656	0.0756	0.5742	0.107	640	0.1134	0.456	0.1037	3883	0.08	0.4141	0.0846
<i>Market Cap Growth</i>	926	0.0331	0.6181	0	55	0.6447	0.6712	0.4428	516	0.0547	1.7533	-0.0669	1535	0.0912	0.7021	0.071	528	0.1648	0.6474	0.0812	4570	-0.0417	0.7781	-0.0486
<i>Capital Financing</i>	1879	-0.0096	0.2316	0	80	0.0167	0.0604	0.0031	4108	-0.6469	15.531	0.0007	2091	0.0783	3.1468	0.0002	530	0.0014	0.0699	0.0005	6602	0.0009	0.0602	0.0006
<i>Herfindahl Index</i>	1530	0.5228	0.2947	0.5	79	0.7722	0.3426	1	3558	0.5479	0.3963	0.5	1790	0.6687	0.377	1	767	0.6402	0.405	0.9922	4241	0.5121	0.3702	0.5
<i>Gross Profit Margin</i>	1775	0.2699	0.2959	0.2671	79	0.2792	0.1434	0.26	3795	0.2495	1.5973	0.2686	1909	0.2378	0.618	0.2634	799	0.2413	0.525	0.232	6115	0.2224	0.2949	0.2244
<i>Log Wage</i>	216	3.4797	0.783	3.7506	42	1.0107	1.2485	1.0942	901	-3.2952	2.3942	-3.1732	126	2.1681	2.1196	2.7354	155	-0.9397	2.5679	-0.0145	2377	3.5058	0.8773	3.6061

FIC	IDN			IND			ISR			JAM			JOR			KEN								
Variable	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median
<i>KAOPEN</i>	22	0.7855	0.163	0.6949	22	0.1629	0	0.1629	22	0.6357	0.3448	0.7559	22	0.7543	0.2765	0.8475	22	0.7319	0.3547	0.9695	22	0.5202	0.2949	0.6949
<i>Equity GDP</i>	22	0.0656	0.0549	0.0457	22	0.0826	0.0819	0.0391	22	0.2506	0.1591	0.2396	22	0.0105	0.0169	0	22	0.1447	0.1736	0.1232	22	0.0113	0.0104	0.0082
<i>All GDP</i>	22	1.026	0.3783	0.8888	22	0.5102	0.1635	0.4342	22	1.5813	0.4955	1.5714	22	1.5546	0.3306	1.538	22	2.8329	0.4248	2.6531	22	0.8465	0.1321	0.8387
<i>FDI GDP</i>	22	0.1463	0.0828	0.1185	22	0.0724	0.0598	0.0546	22	0.2861	0.2013	0.2328	22	0.5378	0.2062	0.4757	22	0.481	0.3624	0.3828	22	0.1184	0.0197	0.1203
<i>Financial GDP</i>	22	0.7606	0.3221	0.7137	22	0.3289	0.0567	0.3129	22	1.1123	0.2558	1.1099	22	0.8913	0.1914	0.9063	22	2.0022	0.4574	2.1076	22	0.6532	0.1546	0.6743
<i>Asset Growth</i>	8869	0.0998	0.4378	0.0767	13390	-0.0637	1.0688	0.1261	4402	0.0829	0.5985	0.0558	80	-0.0154	0.2918	0.0466	681	0.0514	0.3329	0.0169	198	0.1047	0.205	0.1034
<i>Sales Growth</i>	4894	0.0947	0.5685	0.1049	11245	0.1622	0.5516	0.1475	2088	0.1072	0.4934	0.1037	61	-0.0065	0.2442	0.0212	540	0.0641	0.8033	0.068	132	0.0873	0.224	0.0919
<i>Market Cap Growth</i>	4492	0.0567	0.8065	0.0338	11823	0.1297	0.9178	0.2028	3283	0.0468	0.7662	0.0672	0	.	.	.	499	-0.0505	0.5109	-0.0505	164	0.0825	0.4712	0.0542
<i>Capital Financing</i>	8838	-0.0029	0.3249	0.0003	13381	-0.1398	111.9814	0.0514	4351	-0.4906	26.8544	0.0002	79	-0.0179	0.078	0	680	-0.0047	0.1206	0.0002	198	0.0006	0.1018	0.0009
<i>Herfindahl Index</i>	5295	0.373	0.302	0.3517	13123	0.2608	0.3537	0.0678	2568	0.5495	0.4022	0.5	79	0.8734	0.2979	1	671	0.6751	0.3869	1	161	0.8075	0.3096	1
<i>Gross Profit Margin</i>	8796	0.1929	0.9228	0.2062	8214	-0.2318	12.9482	0.02	4074	0.2352	1.3628	0.3166	71	0.3257	0.1972	0.2676	631	-0.0006	5.0786	0.1837	180	0.3713	0.2319	0.3473
<i>Log Wage</i>	6877	1.4796	1.224	1.3923	5175	1.9572	0.9327	1.915	1181	3.2855	1.1988	3.4504	5	3.685	0.1218	3.6891	283	1.1695	1.5029	1.6084	46	2.6437	1.148	2.976

FIC	KOR			LKA			MAR			MEX			MYS			NGA								
Variable	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median
<i>KAOPEN</i>	22	0.3921	0.1287	0.4091	22	0.4675	0.1377	0.4488	22	0.1965	0.0865	0.1629	22	0.6262	0.1349	0.6949	22	0.5496	0.2397	0.4396	22	0.1951	0.1465	0.3051
<i>Equity GDP</i>	22	0.1615	0.1385	0.1424	22	0.009	0.008	0.01	22	0.0256	0.0168	0.0257	22	0.1054	0.0431	0.0984	22	0.2322	0.0988	0.2468	22	0.0271	0.0386	0
<i>All GDP</i>	22	0.8679	0.4018	0.9003	22	0.8957	0.1082	0.8943	22	1.1328	0.0922	1.1201	22	0.7983	0.1693	0.7783	22	1.809	0.3486	1.8029	22	1.573	0.6461	1.4668
<i>FDI GDP</i>	22	0.13	0.0861	0.1431	22	0.1252	0.0343	0.1268	22	0.2767	0.1608	0.2408	22	0.236	0.1109	0.2223	22	0.5383	0.1486	0.5603	22	0.4968	0.1887	0.4538
<i>Financial GDP</i>	22	0.5703	0.2315	0.5347	22	0.6621	0.127	0.6593	22	0.665	0.2122	0.6328	22	0.4929	0.0885	0.476	22	0.9021	0.1402	0.8894	22	0.9064	0.523	0.8151
<i>Asset Growth</i>	15759	0.0987	0.3803	0.0954	988	0.128	0.3241	0.0759	363	0.1234	0.2312	0.0909	5661	0.0714	0.2286	0.0666	11924	0.0741	0.3781	0.0632	280	0.1532	0.5195	0.1267
<i>Sales Growth</i>	13608	0.1001	0.4773	0.0996	812	0.1212	0.5267	0.0989	306	0.117	0.317	0.1234	3432	0.079	0.29	0.1053	8982	0.0688	0.4982	0.0877	211	0.1551	0.304	0.1193
<i>Market Cap Growth</i>	13605	0.0908	0.7823	0.1087	932	0.2303	0.6519	0.1394	300	0.0937	0.3992	0.0957	2182	0.048	0.8651	0.0445	10192	-0.0066	0.6495	0.0211	37	0.3093	0.5417	0.3199
<i>Capital Financing</i>	15740	-0.0114	1.2059	0.0004	988	-0.0146	0.7078	0.003	363	0.0021	0.0266	0.0005	5656	-0.1553	11.7319	0	11909	-0.0145	1.844	0.0004	276	-0.0771	1.3794	0.0011
<i>Herfindahl Index</i>	15370	0.2933	0.3594	0.0991	984	0.5762	0.4299	0.6798	348	0.7098	0.3385	0.9281	3659	0.3066	0.2748	0.25	9721	0.3828	0.3827	0.2149	269	0.7063	0.3777	1
<i>Gross Profit Margin</i>	15216	0.1765	0.2594	0.1543	942	0.2689	0.4214	0.2288	351	0.1845	0.2641	0.1565	5563	0.3097	0.1468	0.3016	11660	0.0827	4.4462	0.18	271	0.2725	0.3354	0.2839
<i>Log Wage</i>	3988	3.0996	0.9811	3.0738	263	1.0622	1.1271	0.8735	57	2.6108	0.7918	2.7436	210	-0.613	2.453	-0.7784	4793	2.0015	0.7827	2.0197	105	2.8336	0.9216	3.1036

FIC	PAK			PHL			PRT			THA			TUR			VEN			ZWE									
Variable	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median	N	Average	Stdev	Median
<i>KAOPEN</i>	22	0.1555	0.0347	0.1629	22	0.408	0.1293	0.4488	22	0.8917	0.2072	1	22	0.3643	0.0972	0.4091	22	0.282	0.1342	0.1629	22	0.409	0.323	0.407	22	0.1112	0.1249	0.1629
<i>Equity GDP</i>	22	0.0206	0.0119	0.0187	22	0.0809	0.0403	0.0743	22	0.2336	0.1686	0.2064	22	0.1419	0.0594	0.1426	22	0.0385	0.0295	0.0335	22	0.0301	0.0147	0.0285	22	0.0223	0.0272	0.0179
<i>All GDP</i>	22	0.5998	0.0726	0.6105	22	1.0968	0.167	1.0764	22	2.8405	1.4665	2.9461	22	1.296	0.3005	1.349	22	0.715	0.2237	0.7733	22	1.3089	0.2734	1.253	22	1.1925	0.4484	1.1267
<i>FDI GDP</i>	22	0.0861	0.0445	0.0782	22	0.1422	0.0422	0.1645	22	0.4449	0.2359	0.4623	22	0.2946	0.1507	0.3174	22	0.1168	0.0819	0.096	22	0.2785	0.1489	0.2878	22	0.1902	0.1034	0.2134
<i>Financial GDP</i>	22	0.4623	0.0541	0.4657	22	0.809	0.137	0.8095	22	2.3092	1.3029	2.4058	22	0.7124	0.1509	0.7047	22	0.5178	0.1285	0.5482	22	0.9034	0.2416	0.8828	22	0.9746	0.3613	0.8801
<i>Asset Growth</i>	2119	0.0575	0.328	0.037	2631	0.0662	0.4653	0.0325	2258	0.0934	0.2526	0.0747	11625	0.0831	0.3024	0.0874	517	0.0576	0.3581	0.0521	357	0.0355	0.2981	0.0472	96	-0.8916	2.787	0.2309
<i>Sales Growth</i>	1841	0.0558	0.3868	0.0632	1792	0.0215	0.6997	0.0531	1071	0.085	0.4695	0.0776	8215	0.078	0.4113	0.092	202	0.0711	0.7345	0.0579	289	0.048	0.517	0.0345	0	.	.	.
<i>Market Cap Growth</i>	1320	0.0032	0.6042	0.0022	1828	0.029	0.8044	0.0122	1245	0.033	0.4957	0.0454	8686	0.0328	0.6921	0.0326	162	0.0569	0.944	-0.0373	272	-0.1264	0.7502	-0.0856	24	-0.1184	0.5076	-0.026
<i>Capital Financing</i>	2118	-0.0058	0.1443	0.0003	2619	-0.1685	3.2199	0.0001	2258	-0.0021	0.0633	0.0001	11616	-0.0072	0.7665	0.0005	517	0.0008	0.0137	0.0001	357	0	0.013	0	96	-3.1714	16.4467	0.0005
<i>Herfindahl Index</i>	2065	0.4455	0.4032	0.2835	2145	0.4261	0.3858	0.3333	1145	0.634	0.3594	0.5684	8947	0.3318	0.2578	0.3223	240	0.65	0.3396	0.5199	311	0.6752	0.301	0.5	54	0.963	0.1906	1
<i>Gross Profit Margin</i>	1973	0.1421	0.3601	0.1484	2318	-1.4877	16.7814	0.2039	2145	0.0425	0.3567	0.0535	11570	0.2003	0.7018	0.1972	517	0.2821	0.1448	0.279	324	0.2757	0.161	0.26	90	0.1581	0.1944	0.1402
<i>Log Wage</i>	627	1.5904	1.2054	1.6139	1471	1.7311	1.3192	1.8203	1854	3.3131	0.6453	3.2647	5159	1.0437	2.0207	1.6581	6	3.1062	0.1756	3.0183	16	4.1968	0.7123	4.2798	0	.	.	.

**Panel B. Mean values of control variables**

Average	ARG	BGD	BRA	CHL	EGY	GRC	IDN	IND	ISR	JAM	JOR	KEN	KOR	LKA	MAR	MEX	MYS	NGA	PAK	PHL	PRT	THA	TUR	VEN	ZWE
<i>Leverage</i>	1.161	0.990	4.132	0.953	0.592	0.758	0.404	1.020	0.870	0.086	1.032	0.005	0.785	1.072	0.307	0.262	0.939	24.516	162.249	2.276	1.127	2.889	0.566	0.488	0.425
<i>Operating income</i>	0.326	0.642	-7.868	64.022	0.471	0.152	0.178	42.929	-2.450	0.116	-1.230	0.169	22.752	0.409	0.216	0.159	-0.735	12.112	0.134	-7.417	0.862	0.133	0.525	0.150	2.335
<i>Market-to-book</i>	207.875	2.810	114.390	2.045	2.374	2.653	8.188	2.133	2.226	.	1.467	2.116	1.395	0.967	2.251	1.510	1.440	2.411	1.996	1.958	1.361	2.883	94.983	0.477	0.218
<i>Intangible asset</i>	0.140	0.007	0.180	0.480	0.033	0.065	0.014	722.405	0.329	0.083	0.071	0.075	8.746	0.082	0.083	0.049	0.139	3.045	0.720	1.029	0.454	0.345	0.055	0.053	0.014
<i>Lag asset</i>	4.942	7.548	5.147	6.264	5.479	3.877	4.916	2.385	5.291	7.232	2.137	7.552	2.251	6.233	6.444	6.763	4.930	4.011	3.479	6.541	4.761	7.089	4.253	4.101	1.062
<i>Lag sales</i>	5.225	7.629	5.305	3.206	5.656	3.772	4.099	3.035	5.310	7.778	2.272	8.062	2.709	6.865	6.687	6.177	4.973	5.743	5.026	6.147	4.662	7.582	4.490	4.284	1.239
<i>Lag market cap</i>	4.815	8.433	4.527	10.515	6.330	4.007	3.974	7.255	4.819	.	2.911	7.832	10.922	6.561	7.011	5.119	5.031	9.166	7.398	6.461	4.468	7.124	4.315	3.408	2.792
<i>Openness to trade</i>	0.272	0.459	0.230	0.657	0.591	0.552	0.584	0.420	0.757	0.959	1.337	0.655	0.761	0.653	0.736	0.496	1.907	0.590	0.338	0.894	0.647	1.219	0.471	0.506	0.744
<i>Annual per capita GDP</i>	0.063	0.044	0.057	0.072	0.053	0.083	0.047	0.049	0.092	0.060	0.063	0.047	0.087	0.051	0.072	0.065	0.071	0.043	0.042	0.054	0.083	0.068	0.057	0.052	0.055
<i>Human capital</i>	0.843	0.478	.	0.872	0.787	0.964	0.619	0.576	1.030	0.940	0.922	0.541	0.974	0.957	0.539	0.702	0.655	0.360	0.305	0.793	0.978	0.659	0.808	0.697	0.431
<i>Private credit</i>	0.138	0.422	0.418	0.620	0.442	0.633	0.302	0.418	0.865	0.260	0.824	0.288	1.143	0.294	0.558	0.178	1.148	0.228	0.250	0.334	1.107	1.084	0.244	0.135	0.222

**Table 3. The firm size based asymmetric impact of capital market liberalization on firm growth**

This table presents the estimation results from firm and year fixed effects regression models of the impact of liberalization. We first consider liberalization variable and accounting control variables and the country-specific control variables to look at how a country's degree of openness impact on the growth. And then the interaction terms of liberalization x size are added to examine whether the effect of financial liberalization on growth depends on firm size. Standard errors are corrected for firm-level clustering. In Panel A, Chinn-Ito index (*KAOPEN*) is an index measuring a country's financial openness. In Panel B, *Equity GDP* is computed by the sum of portfolio equity assets and portfolio equity liabilities divided by gdp. In Panel C, *All GDP* is calculated by the sum of total assets and total liabilities divided by gdp. In Panel D, *FDI GDP* is calculated by the sum of FDI assets and FDI liabilities divided by gdp. In Panel E, similarly, *Financial GDP* is computed by the sum of portfolio equity assets, portfolio equity liabilities, debt assets, debt liabilities, financial derivatives assets and financial derivatives liabilities divided by gdp. The interaction terms between financial openness measures and firm size measures are calculated by *Financial openness* × *lag asset* (*lag sales*, *lag market cap*). *Lag asset*, *Lag sales*, and *Lag market cap* are lagged values of log (total asset), log (total sales) and log (total market capitalization), respectively. Standard errors, which are corrected for firm level clustering, are displayed in parentheses. For brevity, the coefficient estimates on year and firm fixed effects are not reported. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels using two-tailed tests.

Panel A. Chinn-Ito index (KAOPEN) as a measure of financial openness

VARIABLES	Chinn-Ito index (KAOPEN)											
	Asset growth			Sales growth			Market cap growth			Capital financing		
<i>KAOPEN</i>	0.106*** (6.673)	0.163*** (9.186)	-0.368*** (-6.316)	0.0344** (2.273)	0.0397** (2.175)	-0.00410 (-0.0751)	0.0598** (2.397)	0.00682 (0.226)	-0.403*** (-6.571)	-0.0130 (-1.118)	-0.150*** (-11.07)	-0.663*** (-12.25)
<i>KAOPEN</i> ×lag asset			<b>0.105*** (9.189)</b>									<b>0.101*** (10.08)</b>
<i>KAOPEN</i> ×lag sales						<b>0.00963 (0.925)</b>						
<i>KAOPEN</i> ×lag Market cap									<b>0.0960*** (7.616)</b>			
<i>Leverage</i>	-0.000281 (-0.351)	0.000207 (0.264)	-0.000659 (-0.820)	0.00148*** (4.009)	0.00181*** (4.754)	0.00187*** (4.792)	0.00162*** (2.860)	0.00226*** (3.948)	0.00284*** (4.852)	-0.0180*** (-10.81)	-0.0193*** (-10.63)	-0.0201*** (-10.76)
<i>Operating income</i>	0.0675*** (7.326)	0.0538*** (5.423)	0.0500*** (5.019)	0.275*** (21.58)	0.298*** (20.33)	0.298*** (20.33)	0.288*** (19.32)	0.312*** (19.39)	0.313*** (19.43)	-0.000764 (-0.0525)	-0.00843 (-0.468)	-0.0121 (-0.673)
<i>Market-to-book</i>	-0.0001 (-0.0720)	-0.00143 (-1.044)	-0.00128 (-0.931)	0.00234** (2.148)	0.00214* (1.792)	0.00217* (1.811)	-0.0183*** (-9.225)	-0.0178*** (-8.784)	-0.0176*** (-8.669)	0.00709*** (3.521)	0.00608*** (2.937)	0.00624*** (3.015)
<i>Intangible asset</i>	0.000292 (1.624)	0.000345* (1.901)	0.000345* (1.749)	-0.000474*** (-3.801)	-0.000569*** (-3.196)	-0.000566*** (-3.217)	-0.000528*** (-2.786)	-0.000443** (-2.158)	-0.000421** (-1.963)	-0.00419*** (-7.853)	-0.00416*** (-7.821)	-0.00416*** (-7.667)
<i>Openness to trade</i>		0.00248 (0.114)	0.0151 (0.705)		0.0426** (2.062)	0.0443** (2.149)		-0.0198 (-0.537)	-0.0121 (-0.335)		0.126*** (9.417)	0.139*** (10.31)
<i>Annual per capita GDP</i>		0.180 (0.605)	0.136 (0.454)		1.834*** (5.447)	1.829*** (5.434)		7.998*** (15.94)	7.544*** (15.02)		3.834*** (15.41)	3.791*** (15.35)
<i>Human capital</i>		-0.813*** (-12.53)	-0.856*** (-13.40)		-0.324*** (-6.187)	-0.321*** (-6.156)		-0.856*** (-8.423)	-0.789*** (-7.930)		-0.590*** (-10.71)	-0.632*** (-11.51)
<i>Private credit</i>		-0.195*** (-11.57)	-0.231*** (-13.54)		-0.124*** (-8.353)	-0.126*** (-8.475)		-0.0884*** (-2.949)	-0.0892*** (-3.023)		-0.0127 (-1.303)	-0.0475*** (-5.055)
<i>Lag asset</i>	-0.229*** (-38.40)	-0.247*** (-36.95)	-0.285*** (-33.27)							-0.0986*** (-13.75)	-0.116*** (-12.75)	-0.151*** (-12.72)
<i>Lag sales</i>				-0.233*** (-33.35)	-0.232*** (-31.62)	-0.236*** (-27.40)						
<i>Lag market cap</i>							-0.364*** (-57.35)	-0.370*** (-57.51)	-0.414*** (-45.57)			
Observations	53,553	45,396	45,396	53,430	45,296	45,296	51,813	45,262	45,262	53,478	45,329	45,329
$\overline{Adj} R^2$	0.194	0.211	0.214	0.230	0.246	0.246	0.495	0.534	0.535	0.050	0.061	0.062
Number of firms	7,454	7,141	7,141	7,446	7,131	7,131	7,265	7,109	7,109	7,450	7,131	7,131
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel B. *Equity GDP* as a measure of financial openness

VARIABLES	Equity GDP											
	Asset growth			Sales growth			Market cap growth			Capital financing		
<i>Equity GDP</i>	0.188*** (4.699)	0.350*** (8.305)	-0.363*** (-3.771)	0.0784** (2.005)	0.143*** (3.144)	0.256*** (2.620)	1.023*** (15.68)	0.857*** (11.16)	0.803*** (6.678)	-0.104* (-1.853)	-0.246*** (-3.085)	-1.812*** (-7.568)
<b><i>Equity GDP</i>×lag asset</b>			<b>0.148*** (7.990)</b>									<b>0.324*** (7.773)</b>
<b><i>Equity GDP</i>×lag asset</b>						<b>-0.0242 (-1.420)</b>						
<b><i>Equity GDP</i>×lag asset</b>									<b>0.0127 (0.582)</b>			
<i>Leverage</i>	-0.000356 (-0.445)	0.000216 (0.275)	0.000367 (0.466)	0.00145*** (3.919)	0.00174*** (4.565)	0.00171*** (4.481)	0.00135** (2.390)	0.00194*** (3.405)	0.00196*** (3.446)	-0.0180*** (-10.80)	-0.0193*** (-10.65)	-0.0190*** (-10.48)
<i>Operating income</i>	0.0658*** (7.145)	0.0520*** (5.220)	0.0511*** (5.116)	0.274*** (21.58)	0.297*** (20.30)	0.298*** (20.30)	0.283*** (19.09)	0.307*** (19.18)	0.307*** (19.18)	-0.000192 (-0.0132)	-0.00718 (-0.399)	-0.00915 (-0.510)
<i>Market-to-book</i>	-0.000123 (-0.0968)	-0.00159 (-1.160)	-0.00154 (-1.122)	0.00231** (2.120)	0.00205* (1.715)	0.00208* (1.739)	-0.0189*** (-9.485)	-0.0183*** (-9.001)	-0.0183*** (-8.988)	0.00716*** (3.554)	0.00620*** (2.987)	0.00630*** (3.017)
<i>Intangible asset</i>	0.000301* (1.651)	0.000355* (1.909)	0.000381** (2.031)	-0.000471*** (-3.832)	-0.000569*** (-3.234)	-0.000576*** (-3.265)	-0.000519*** (-2.585)	-0.000444** (-2.075)	-0.000441** (-2.063)	-0.00419*** (-7.899)	-0.00417*** (-7.950)	-0.00411*** (-7.902)
<i>Openness to trade</i>		0.0281 (1.334)	0.00761 (0.361)		0.0479** (2.394)	0.0510** (2.507)		-0.0281 (-0.801)	-0.0297 (-0.843)		0.102*** (7.961)	0.0574*** (4.368)
<i>Annual per capita GDP</i>		-0.120 (-0.404)	-0.0828 (-0.278)		1.714*** (5.056)	1.721*** (5.071)		7.279*** (14.35)	7.263*** (14.26)		4.046*** (15.49)	4.130*** (15.61)
<i>Human capital</i>		-0.795*** (-11.68)	-0.721*** (-10.65)		-0.305*** (-5.794)	-0.322*** (-5.960)		-0.620*** (-6.448)	-0.615*** (-6.388)		-0.584*** (-11.05)	-0.422*** (-8.082)
<i>Private credit</i>		-0.182*** (-11.28)	-0.194*** (-11.91)		-0.125*** (-8.495)	-0.123*** (-8.434)		-0.149*** (-4.911)	-0.149*** (-4.912)		-0.0298*** (-2.662)	-0.0568*** (-4.801)
<i>Lag asset</i>	-0.229*** (-38.63)	-0.244*** (-36.36)	-0.274*** (-34.35)							-0.0987*** (-13.75)	-0.118*** (-12.99)	-0.182*** (-13.68)
<i>Lag sales</i>				-0.233*** (-33.37)	-0.231*** (-31.54)	-0.226*** (-26.70)						
<i>Lag market cap</i>							-0.366*** (-58.50)	-0.370*** (-57.82)	-0.372*** (-47.90)			
Observations	53,553	45,396	45,396	53,430	45,296	45,296	51,813	45,262	45,262	53,478	45,329	45,329
<i>Adj R</i> <sup>2</sup>	0.193	0.211	0.213	0.230	0.246	0.246	0.499	0.536	0.536	0.050	0.061	0.065
Number of firms	7,454	7,141	7,141	7,446	7,131	7,131	7,265	7,109	7,109	7,450	7,131	7,131
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel C. *All GDP* as a measure of financial openness

VARIABLES	<i>All GDP</i>											
	<i>Asset growth</i>			<i>Sales growth</i>			<i>Market cap growth</i>			<i>Capital financing</i>		
<i>All GDP</i>	-0.0398*** (-3.973)	0.0635*** (4.735)	-0.214*** (-7.644)	-0.0856*** (-10.39)	-0.0577*** (-5.571)	-0.0615*** (-2.601)	-0.108*** (-7.029)	-0.0950*** (-5.161)	-0.205*** (-7.312)	0.0424*** (5.954)	0.0705*** (7.623)	-0.341*** (-9.088)
<i>All GDP</i> × <i>lag asset</i>			<b>0.0532*** (10.94)</b>									<b>0.0789*** (9.972)</b>
<i>All GDP</i> × <i>lag asset</i>						<b>0.000784 (0.184)</b>						
<i>All GDP</i> × <i>lag asset</i>									<b>0.0268*** (5.065)</b>			
<i>Leverage</i>	-0.000270 (-0.338)	0.000278 (0.354)	-0.000577 (-0.723)	0.00129*** (3.511)	0.00163*** (4.288)	0.00164*** (4.238)	0.00136** (2.391)	0.00200*** (3.487)	0.00232*** (4.013)	-0.0181*** (-10.82)	-0.0193*** (-10.65)	-0.0206*** (-10.97)
<i>Operating income</i>	0.0653*** (7.103)	0.0557*** (5.593)	0.0500*** (5.038)	0.273*** (21.43)	0.296*** (20.24)	0.296*** (20.20)	0.284*** (19.13)	0.310*** (19.30)	0.309*** (19.23)	0.000748 (0.0511)	-0.00678 (-0.375)	-0.0153 (-0.843)
<i>Market-to-book</i>	-0.000002 (-0.00146)	-0.00125 (-0.911)	-0.00132 (-0.951)	0.00222** (2.053)	0.00195 (1.640)	0.00195 (1.638)	-0.0188*** (-9.520)	-0.0181*** (-8.942)	-0.0178*** (-8.816)	0.00712*** (3.542)	0.00624*** (3.011)	0.00613*** (2.953)
<i>Intangible asset</i>	0.000296 (1.638)	0.000357* (1.952)	0.000366* (1.884)	-0.000489*** (-3.715)	-0.000577*** (-3.147)	-0.000576*** (-3.147)	-0.000540*** (-2.857)	-0.000456** (-2.256)	-0.000437** (-2.129)	-0.00419*** (-7.835)	-0.00416*** (-7.838)	-0.00415*** (-7.776)
<i>Openness to trade</i>		0.0368* (1.755)	0.0376* (1.822)		0.0433** (2.127)	0.0434** (2.138)		-0.0285 (-0.786)	-0.0306 (-0.853)		0.106*** (8.734)	0.107*** (8.100)
<i>Annual per capita GDP</i>		0.267 (0.908)	0.197 (0.671)		1.768*** (5.302)	1.767*** (5.290)		7.882*** (15.70)	7.752*** (15.42)		3.927*** (15.56)	3.825*** (15.12)
<i>Human capital</i>		-0.922*** (-14.13)	-0.896*** (-13.94)		-0.325*** (-6.211)	-0.324*** (-6.017)		-0.827*** (-8.289)	-0.774*** (-7.803)		-0.543*** (-10.76)	-0.504*** (-9.742)
<i>Private credit</i>		-0.206*** (-11.55)	-0.224*** (-12.67)		-0.0693*** (-4.272)	-0.0693*** (-4.289)		-0.0118 (-0.388)	-0.00955 (-0.317)		-0.103*** (-7.513)	-0.130*** (-9.195)
<i>Lag asset</i>	-0.227*** (-38.14)	-0.248*** (-36.71)	-0.308*** (-31.60)							-0.101*** (-13.92)	-0.120*** (-13.19)	-0.209*** (-13.85)
<i>Lag sales</i>				-0.231*** (-33.23)	-0.231*** (-31.62)	-0.232*** (-23.63)						
<i>Lag market cap</i>							-0.361*** (-56.62)	-0.370*** (-57.67)	-0.405*** (-40.91)			
Observations	53,553	45,396	45,396	53,430	45,296	45,296	51,813	45,262	45,262	53,478	45,329	45,329
<i>Adj R</i> <sup>2</sup>	0.193	0.211	0.215	0.233	0.247	0.247	0.496	0.535	0.536	0.051	0.061	0.065
Number of firms	7,454	7,141	7,141	7,446	7,131	7,131	7,265	7,109	7,109	7,450	7,131	7,131
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel D. *FDI GDP* as a measure of financial openness

VARIABLES	<i>FDI GDP</i>											
	<i>Asset growth</i>			<i>Sales growth</i>			<i>Market cap growth</i>			<i>Capital financing</i>		
<i>FDI GDP</i>	-0.0451 (-1.158)	0.248*** (5.736)	0.0899** (1.972)	-0.312*** (-9.217)	-0.207*** (-5.336)	-0.242*** (-5.917)	-0.0403 (-0.713)	0.108* (1.691)	-0.0357 (-0.533)	0.0112 (0.327)	0.209*** (5.900)	-1.106*** (-11.85)
<b><i>FDI GDP</i>×<i>lag asset</i></b>			<b>0.0961*** (9.664)</b>									<b>0.250*** (12.78)</b>
<b><i>FDI GDP</i>×<i>lag asset</i></b>						<b>0.0246*** (2.872)</b>						
<b><i>FDI GDP</i>×<i>lag asset</i></b>									<b>0.119*** (8.193)</b>			
<i>Leverage</i>	-0.000329 (-0.412)	0.000322 (0.410)	0.000318 (0.405)	0.00132*** (3.567)	0.00168*** (4.415)	0.00164*** (4.320)	0.00159*** (2.797)	0.00232*** (4.053)	0.00220*** (3.838)	-0.0180*** (-10.80)	-0.0193*** (-10.64)	-0.0203*** (-10.90)
<i>Operating income</i>	0.0666*** (7.246)	0.0545*** (5.477)	0.0509*** (5.107)	0.274*** (21.56)	0.298*** (20.32)	0.296*** (20.23)	0.287*** (19.28)	0.312*** (19.41)	0.309*** (19.26)	-0.000648 (-0.0444)	-0.00825 (-0.457)	-0.0149 (-0.829)
<i>Market-to-book</i>	4.86e-05 (0.0384)	-0.00141 (-1.027)	-0.00162 (-1.177)	0.00238** (2.188)	0.00212* (1.777)	0.00202* (1.689)	-0.0184*** (-9.256)	-0.0178*** (-8.782)	-0.0178*** (-8.781)	0.00707*** (3.514)	0.00607*** (2.927)	0.00534** (2.571)
<i>Intangible asset</i>	0.000298* (1.648)	0.000355* (1.955)	0.000373** (1.988)	-0.000479*** (-3.751)	-0.000573*** (-3.174)	-0.000567*** (-3.170)	-0.000527*** (-2.775)	-0.000441** (-2.149)	-0.000418** (-1.983)	-0.00419*** (-7.862)	-0.00417*** (-7.878)	-0.00414*** (-7.641)
<i>Openness to trade</i>		0.0360* (1.716)	0.0154 (0.733)		0.0450** (2.213)	0.0399* (1.948)		-0.0163 (-0.456)	-0.0399 (-1.116)		0.104*** (8.426)	0.0892*** (7.012)
<i>Annual per capita GDP</i>		0.0801 (0.266)	-0.231 (-0.769)		1.926*** (5.731)	1.836*** (5.417)		7.954*** (15.83)	7.440*** (14.59)		3.746*** (15.15)	3.693*** (14.92)
<i>Human capital</i>		-0.897*** (-13.74)	-0.715*** (-10.61)		-0.346*** (-6.642)	-0.297*** (-5.423)		-0.860*** (-8.658)	-0.670*** (-6.853)		-0.515*** (-10.45)	-0.411*** (-8.637)
<i>Private credit</i>		-0.162*** (-9.665)	-0.200*** (-12.22)		-0.110*** (-7.291)	-0.119*** (-8.112)		-0.0895*** (-2.994)	-0.122*** (-4.110)		-0.0524*** (-5.061)	-0.0472*** (-4.329)
<i>Lag asset</i>	-0.229*** (-38.63)	-0.247*** (-36.77)	-0.263*** (-37.78)							-0.0986*** (-13.75)	-0.118*** (-13.05)	-0.181*** (-15.02)
<i>Lag sales</i>				-0.233*** (-33.43)	-0.231*** (-31.59)	-0.236*** (-31.09)						
<i>Lag market cap</i>							-0.363*** (-57.24)	-0.369*** (-57.38)	-0.393*** (-57.44)			
Observations	53,553	45,396	45,396	53,430	45,296	45,296	51,813	45,262	45,262	53,478	45,329	45,329
$\overline{Adj} R^2$	0.193	0.211	0.213	0.232	0.247	0.247	0.495	0.534	0.535	0.050	0.061	0.064
Number of firms	7,454	7,141	7,141	7,446	7,131	7,131	7,265	7,109	7,109	7,450	7,131	7,131
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel E. *Financial GDP* as a measure of financial openness

VARIABLES	Financial GDP											
	Asset growth			Sales growth			Market cap growth			Capital financing		
<i>Financial GDP</i>	-0.0280** (-2.550)	0.101*** (6.579)	0.0712*** (4.404)	-0.0712*** (-7.787)	-0.0375*** (-3.153)	-0.0426*** (-3.399)	-0.127*** (-7.317)	-0.143*** (-6.523)	-0.186*** (-8.452)	0.0333*** (5.744)	0.0457*** (5.982)	-0.422*** (-9.120)
<b><i>Financial GDP</i>×lag asset</b>			<b>0.0886*** (8.935)</b>									<b>0.0877*** (9.119)</b>
<b><i>Financial GDP</i>×lag asset</b>						<b>0.0175** (2.018)</b>						
<b><i>Financial GDP</i>×lag asset</b>									<b>0.152*** (10.46)</b>			
<i>Leverage</i>	-0.000264 (-0.329)	0.000219 (0.279)	0.000261 (0.333)	0.00135*** (3.656)	0.00171*** (4.498)	0.00169*** (4.435)	0.00136** (2.397)	0.00196*** (3.420)	0.00181*** (3.164)	-0.0181*** (-10.82)	-0.0193*** (-10.67)	-0.0203*** (-10.94)
<i>Operating income</i>	0.0656*** (7.124)	0.0571*** (5.724)	0.0531*** (5.316)	0.273*** (21.41)	0.297*** (20.25)	0.296*** (20.14)	0.283*** (19.06)	0.308*** (19.24)	0.303*** (19.02)	0.000634 (0.0434)	-0.00728 (-0.403)	-0.0143 (-0.788)
<i>Market-to-book</i>	2.39e-05 (0.0189)	-0.00120 (-0.875)	-0.00145 (-1.058)	0.00227** (2.092)	0.00204* (1.703)	0.00195 (1.629)	-0.0189*** (-9.566)	-0.0182*** (-8.998)	-0.0183*** (-9.055)	0.00710*** (3.530)	0.00616*** (2.972)	0.00630*** (3.039)
<i>Intangible asset</i>	0.000299* (1.652)	0.000352* (1.939)	0.000371** (1.981)	-0.000483*** (-3.753)	-0.000572*** (-3.174)	-0.000568*** (-3.172)	-0.000536*** (-2.808)	-0.000453** (-2.222)	-0.000424** (-2.014)	-0.00419*** (-7.864)	-0.00417*** (-7.881)	-0.00415*** (-7.734)
<i>Openness to trade</i>		0.0472** (2.255)	0.0263 (1.263)		0.0428** (2.116)	0.0388* (1.901)		-0.0440 (-1.217)	-0.0779** (-2.156)		0.107*** (8.728)	0.114*** (8.721)
<i>Annual per capita GDP</i>		0.291 (0.988)	-0.0879 (-0.298)		1.802*** (5.375)	1.722*** (5.072)		7.864*** (15.68)	7.089*** (13.85)		3.882*** (15.44)	3.704*** (14.71)
<i>Human capital</i>		-0.945*** (-14.44)	-0.764*** (-11.11)		-0.329*** (-6.329)	-0.292*** (-5.233)		-0.800*** (-8.039)	-0.539*** (-5.370)		-0.537*** (-10.66)	-0.565*** (-10.93)
<i>Private credit</i>		-0.239*** (-12.53)	-0.253*** (-13.86)		-0.0836*** (-4.983)	-0.0868*** (-5.265)		0.0313 (1.030)	0.0205 (0.688)		-0.0850*** (-6.510)	-0.108*** (-8.065)
<i>Lag asset</i>	-0.227*** (-38.11)	-0.250*** (-36.84)	-0.265*** (-38.12)							-0.100*** (-13.83)	-0.119*** (-13.05)	-0.176*** (-13.68)
<i>Lag sales</i>				-0.231*** (-33.11)	-0.231*** (-31.58)	-0.235*** (-30.88)						
<i>Lag market cap</i>							-0.360*** (-56.41)	-0.370*** (-57.57)	-0.400*** (-58.01)			
Observations	53,553	45,396	45,396	53,430	45,296	45,296	51,813	45,262	45,262	53,478	45,329	45,329
$\overline{Adj} R^2$	0.193	0.211	0.213	0.232	0.246	0.246	0.497	0.535	0.537	0.050	0.061	0.064
Number of firms	7,454	7,141	7,141	7,446	7,131	7,131	7,265	7,109	7,109	7,450	7,131	7,131
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

**Table 4. The asymmetric impact of capital market liberalization on firm growth based on cross listing dummy**

This table presents the results from panel regressions of the impact of liberalization on growth. We use four different measures of financial openness: *KAOPEN*, *Equity GDP*, *All GDP*, *Financial GDP*, *FDI GDP*. Chinn-Ito index (*KAOPEN*) is an index measuring a country's degree of capital account openness. *Equity GDP* is computed by the sum of portfolio equity assets and portfolio equity liabilities divided by GDP. *All GDP* is calculated by the sum of total assets and total liabilities divided by gdp. *FDI GDP* is calculated by the sum of FDI assets and FDI liabilities divided by GDP. Similarly, *Financial GDP* is computed by the sum of portfolio equity assets, portfolio equity liabilities, debt assets, debt liabilities, financial derivatives and financial derivatives divided by GDP. *Dummy (cross-listing)* variable equals one if firm is cross-listed and zero otherwise. The interaction terms of *Lib openness measure*×*cross-listing* are added to investigate whether cross-listing firms bring about asymmetric growth after financial liberalization. The control variables, *Leverage*, *Operating income*, *Market-to-book*, *Intangible asset*, are computed as  $Leverage_t = \text{total debt}_{t-1} / \text{total asset}_{t-1}$ ,  $Operating\ income_t = EBIT_{t-1} / \text{total sales}_{t-1}$ ,  $Market - to - book_t = market\ cap_t / \text{book value of equity}_t$ ,  $Intangible\ asset = \text{intangible asset}_{t-1} / \text{total asset}_{t-1}$ . The other control variables, *Lag asset*, is used to capture size effect. *Lag asset* is lagged term of log (total asset). Country-specific control variables are *Openness to trade*, *Annual per capita GDP*, *Human capital*, *Private credit*. *Openness to trade* is the annual ratio of export and imports to real GDP and *Annual per capita GDP* is computed by log (real GDP/population). *Human capital* is annual ratio of secondary school enrollment to total enrollment and *Private credit* is annual ratio of private credit to GDP. Robust standard errors are displayed in parentheses. For brevity, the coefficient estimates on year fixed effects are not reported. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels using two-tailed tests.

VARIABLES	<i>KAOPEN</i>		<i>Equity GDP</i>		<i>All GDP</i>		<i>Financial GDP</i>		<i>FDI GDP</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>	<i>Log(Asset growth)</i>
<i>Lib openness measure</i>	0.129*** (13.71)	0.0271*** (2.960)	0.338*** (19.11)	-0.0365 (-1.387)	0.0289*** (7.898)	-0.0216*** (-5.444)	0.0283*** (5.937)	-0.0162*** (-3.226)	0.0412*** (4.731)	-0.0411*** (-3.851)
<b><i>Lib openness measure</i>×<i>cross-listing</i></b>	<b>0.0325*** (8.173)</b>	<b>0.0412*** (9.631)</b>	<b>-0.222*** (-7.093)</b>	<b>-0.421*** (-11.52)</b>	<b>0.0618*** (9.105)</b>	<b>0.0547*** (7.469)</b>	<b>0.0523*** (6.885)</b>	<b>0.0601*** (7.120)</b>	<b>0.343*** (13.37)</b>	<b>0.224*** (8.438)</b>
<i>Dummy (cross-listing)</i>	-0.0110** (-2.313)	0.00109 (0.220)	0.0334*** (5.084)	0.0776*** (10.83)	-0.0959*** (-7.900)	-0.0688*** (-5.348)	-0.0558*** (-6.165)	-0.0440*** (-4.563)	-0.118*** (-10.48)	-0.0660*** (-5.718)
<i>Leverage</i>	0.00132*** (8.832)	0.00261*** (13.99)	0.000723*** (5.069)	0.00277*** (14.99)	0.00104*** (6.906)	0.00234*** (13.06)	0.000747*** (5.090)	0.00240*** (13.36)	0.000968*** (6.436)	0.00238*** (13.40)
<i>Operating income</i>	0.0848*** (12.65)	0.104*** (13.69)	0.0831*** (12.35)	0.102*** (13.43)	0.0825*** (12.28)	0.102*** (13.42)	0.0804*** (11.97)	0.102*** (13.41)	0.0799*** (11.86)	0.103*** (13.45)
<i>Market-to-book</i>	0.000181 (0.209)	0.00151* (1.673)	0.000732 (0.841)	0.00194** (2.146)	0.000889 (1.024)	0.00184** (2.029)	0.000554 (0.636)	0.00172* (1.899)	0.00126 (1.447)	0.00188** (2.081)
<i>Intangible asset</i>	0.00462*** (3.309)	0.00591*** (3.634)	0.00335** (2.427)	0.00510*** (3.178)	0.00501*** (3.542)	0.00487*** (3.026)	0.00391*** (2.802)	0.00478*** (2.977)	0.00433*** (3.092)	0.00495*** (3.080)
<i>Openness to trade</i>		0.108*** (16.64)		0.120*** (17.18)		0.116*** (17.44)		0.114*** (17.04)		0.105*** (15.20)
<i>Annual per capita GDP</i>		1.575*** (6.738)		2.565*** (10.40)		2.085*** (8.978)		2.043*** (8.782)		2.014*** (8.675)
<i>Human capital</i>		0.262*** (13.06)		0.308*** (14.39)		0.290*** (13.90)		0.290*** (13.97)		0.278*** (13.38)
<i>Private credit</i>		-0.0737*** (-11.19)		-0.0885*** (-12.37)		-0.0922*** (-13.32)		-0.0926*** (-13.25)		-0.0906*** (-13.22)
<i>Lag asset</i>	-0.0179*** (-15.13)	-0.0223*** (-16.00)	-0.0167*** (-14.35)	-0.0223*** (-15.97)	-0.0167*** (-14.15)	-0.0221*** (-15.87)	-0.0160*** (-13.68)	-0.0221*** (-15.86)	-0.0159*** (-13.67)	-0.0222*** (-15.79)
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard error	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	53,553	45,396	53,553	45,396	53,553	45,396	53,553	45,396	53,553	45,396
$\bar{Adj} R^2$	0.090	0.112	0.084	0.110	0.086	0.109	0.083	0.109	0.087	0.109

**Table 5. The asymmetric impact of capital market liberalization on firm growth based on export intensiveness**

This table presents the results from panel regressions of the asymmetric impact of liberalization on growth based on export intensiveness. We use four different measures of financial openness: *KAOPEN*, *Equity GDP*, *All GDP*, *Financial GDP*, *FDI GDP*. Chinn-Ito index (*KAOPEN*) is an index measuring a country's degree of capital account openness. *Equity GDP* is computed by the sum of portfolio equity assets and portfolio equity liabilities divided by GDP. *All GDP* is calculated by the sum of total assets and total liabilities divided by gdp. *FDI GDP* is calculated by the sum of FDI assets and FDI liabilities divided by GDP. Similarly, *Financial GDP* is computed by the sum of portfolio equity assets, portfolio equity liabilities, debt assets, debt liabilities, financial derivatives and financial derivatives divided by GDP. Log (export) is computed as  $\log(\text{export}) = \log(\text{export})$ . The interaction terms of *Lib openness measure*  $\times \log(\text{export})$  are added to examine whether firms with greater exports bring about the asymmetric growth after financial liberalization. The control variables, *Leverage*, *Operating income*, *Market-to-book*, *Intangible asset*, are computed as  $\text{Leverage}_t = \text{total debt}_{t-1} / \text{total asset}_{t-1}$ ,  $\text{Operating income}_t = \text{EBIT}_{t-1} / \text{total sales}_{t-1}$ ,  $\text{Market-to-book}_t = \text{market cap}_t / \text{book value of equity}_t$ ,  $\text{Intangible asset} = \text{intangible asset}_{t-1} / \text{total asset}_{t-1}$ . The other control variables, *Lag asset*, is used to capture size effect. *Lag asset* is lagged term of log (total asset). Country-specific control variables are *Openness to trade*, *Annual per capita GDP*, *Human capital* and *Private credit*. *Openness to trade* is the annual ratio of export and imports to real GDP and *Annual per capita GDP* is computed by log (real GDP/population). *Human capital* is annual ratio of secondary school enrollment to total enrollment and *Private credit* is annual ratio of private credit to GDP. Robust standard errors are displayed in parentheses. For brevity, the coefficient estimates on year fixed effects are not reported. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels using two-tailed tests.

VARIABLES	<i>KAOPEN</i>		<i>Equity GDP</i>		<i>All GDP</i>		<i>Financial GDP</i>		<i>FDI GDP</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Lib openness measure</i>	0.210** (2.127)	-0.0722 (-0.722)	-1.757*** (-6.535)	-3.403*** (-9.900)	-0.132*** (-2.600)	-0.529*** (-8.208)	-0.145** (-2.008)	-0.581*** (-6.849)	0.214 (1.259)	-0.406* (-1.670)
<i>Lib openness measure</i> $\times$ $\log(\text{export})$	<b>0.00243</b> <b>(1.073)</b>	<b>0.00581**</b> <b>(2.495)</b>	<b>0.144***</b> <b>(5.721)</b>	<b>0.211***</b> <b>(7.343)</b>	<b>0.0213***</b> <b>(4.187)</b>	<b>0.0405***</b> <b>(6.835)</b>	<b>0.0231***</b> <b>(3.243)</b>	<b>0.0476***</b> <b>(5.876)</b>	<b>0.0198</b> <b>(1.173)</b>	<b>0.0726***</b> <b>(3.856)</b>
Log (export)	0.0178*** (6.340)	0.0209*** (7.046)	0.00180 (0.583)	-0.00649* (-1.809)	-0.000279 (-0.0639)	-0.0129*** (-2.622)	0.00553 (1.394)	-0.00379 (-0.883)	0.0131*** (3.806)	0.00726* (1.887)
<i>Leverage</i>	0.000128 (0.529)	0.000961*** (3.793)	-0.000594** (-2.410)	0.00130*** (4.921)	-0.000306 (-1.222)	0.000490* (1.948)	-0.000566** (-2.286)	0.000537** (2.136)	0.000208 (0.802)	0.000924*** (3.562)
<i>Operating income</i>	0.0954*** (3.820)	0.154*** (5.801)	0.0644** (2.522)	0.165*** (6.195)	0.0768*** (2.956)	0.144*** (5.416)	0.0746*** (2.877)	0.146*** (5.500)	0.0813*** (3.114)	0.146*** (5.513)
<i>Market-to-book</i>	0.00374** (2.009)	0.00539*** (2.692)	0.00208 (1.109)	0.00546*** (2.726)	0.00315* (1.670)	0.00516*** (2.596)	0.00284 (1.505)	0.00525*** (2.636)	0.00407** (2.149)	0.00496** (2.474)
<i>Intangible asset</i>	0.00125 (0.376)	0.000387 (0.141)	0.00105 (0.308)	0.00254 (0.880)	0.00142 (0.413)	-0.000709 (-0.260)	0.000693 (0.202)	-0.000669 (-0.245)	0.00198 (0.588)	0.000743 (0.270)
<i>Openness to trade</i>		0.301*** (8.594)		0.351*** (10.32)		0.467*** (10.52)		0.400*** (10.44)		0.263*** (5.348)
<i>Annual per capita GDP</i>		-5.199*** (-4.236)		-5.256*** (-4.347)		-7.253*** (-5.526)		-7.511*** (-5.536)		-7.462*** (-5.518)
<i>Human capital</i>		0.393*** (5.265)		0.509*** (6.802)		0.567*** (7.004)		0.576*** (6.849)		0.572*** (6.576)
<i>Private credit</i>		-0.123*** (-3.030)		-0.0340 (-0.812)		-0.134*** (-3.230)		-0.150*** (-3.625)		-0.154*** (-3.793)
<i>Lag asset</i>	-0.0380*** (-10.31)	-0.0407*** (-9.995)	-0.0348*** (-9.672)	-0.0448*** (-10.62)	-0.0347*** (-9.698)	-0.0404*** (-10.06)	-0.0341*** (-9.530)	-0.0405*** (-9.975)	-0.0359*** (-9.863)	-0.0395*** (-9.761)
Year fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard error	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,717	7,971	8,717	7,971	8,717	7,971	8,717	7,971	8,717	7,971
Adj R <sup>2</sup>	0.326	0.374	0.317	0.381	0.317	0.376	0.315	0.374	0.320	0.372

**Table 6. The firm size based asymmetric impact of capital market liberalization on market concentration**

This table presents the results of regression models that test the size based asymmetric impact of liberalization on market concentration. We use four different measures of financial openness: *KAOPEN*, *Equity GDP*, *All GDP*, *Financial GDP*, *FDI GDP*. Chinn-Ito index (*KAOPEN*) is an index measuring a country's degree of capital account openness. *Equity GDP* is computed by the sum of portfolio equity assets and portfolio equity liabilities divided by GDP. *All GDP* is calculated by the sum of total assets and total liabilities divided by gdp. *FDI GDP* is calculated by the sum of FDI assets and FDI liabilities divided by GDP. Similarly, *Financial GDP* is computed by the sum of portfolio equity assets, portfolio equity liabilities, debt assets, debt liabilities, financial derivatives and financial derivatives divided by GDP. The interaction terms between financial openness measures and firm size measures are calculated by *Financial openness*×*lag asset* (*lag sales*, *lag market cap*). This interaction terms are added to examine how the asymmetric growth in firm-size after financial liberalization effect on market concentration. *Lag asset*, *Lag sales*, *Lag market cap*, are lagged values of log (total asset), log (total sales) and log (total market capitalization), respectively. Standard errors clustered by firm are displayed in parentheses. For brevity, the coefficient estimates on year and firm fixed effects are not reported. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels using two-tailed tests. Panel A reports the regression results using Herfindahl index (Market share) as dependent variable. In Panel B, gross profit margin is used as dependent variable.

Panel A. Herfindahl index

VARIABLES	Herfindahl index														
	<i>KAOPEN</i>		<i>Equity GDP</i>		<i>All GDP</i>		<i>FDI GDP</i>		<i>Financial GDP</i>						
<i>Lib openness measure</i>	-0.0587**	-0.0580**	-0.00294	-0.158***	-0.127**	-0.167***	-0.0480***	-0.0202	-0.00692	-0.153***	-0.0505	-0.0211	-0.0371**	-0.0112	0.00774
	(-2.047)	(-2.078)	(-0.152)	(-3.895)	(-2.483)	(-4.081)	(-3.414)	(-1.142)	(-0.551)	(-3.136)	(-0.970)	(-0.558)	(-2.106)	(-0.504)	(0.492)
<i>Lib openness measure</i> × <i>lag(Asset)</i>	<b>0.0162***</b>			<b>0.0390***</b>			<b>0.0139***</b>			<b>0.0442***</b>			<b>0.0128***</b>		
	(3.129)			(5.019)			(6.178)			(5.528)			(4.674)		
<i>Lib openness measure</i> × <i>lag(Sales)</i>		<b>0.0196***</b>			<b>0.0311***</b>			<b>0.0114***</b>			<b>0.0320***</b>			<b>0.0110***</b>	
		(3.632)			(3.127)			(3.901)			(3.636)			(2.999)	
<i>Lib openness measure</i> × <i>lag(Market cap)</i>			<b>0.00841**</b>			<b>0.0399***</b>			<b>0.0108***</b>			<b>0.0305***</b>			<b>0.00926***</b>
			(2.139)			(4.909)			(5.133)			(5.024)			(3.437)
<i>Leverage</i>	0.000283	-0.00190***	-0.00185***	0.000462*	-0.00200***	-0.00186***	0.000207	-0.00180***	-0.00168***	0.000270	-0.00188***	-0.00176***	0.000267	-0.00185***	-0.00174***
	(1.033)	(-8.004)	(-7.741)	(1.732)	(-8.393)	(-7.819)	(0.761)	(-7.614)	(-7.115)	(1.000)	(-7.966)	(-7.442)	(0.987)	(-7.800)	(-7.328)
<i>Operating income</i>	-0.000238	0.00633*	0.00124	-2.19e-05	0.00594*	0.00123	-0.000423	0.00636*	0.00176	-0.000616	0.00614*	0.00117	0.000340	0.00689**	0.00221
	(-0.0718)	(1.840)	(0.366)	(-0.00655)	(1.732)	(0.360)	(-0.129)	(1.898)	(0.530)	(-0.186)	(1.794)	(0.349)	(0.104)	(2.078)	(0.667)
<i>Market-to-book</i>	0.000558	-0.000130	-0.00140***	0.000535	-0.000223	-0.00134***	0.000582	-9.55e-05	-0.00124***	0.000412	-0.000238	-0.00133***	0.000623	-5.12e-05	-0.00128***
	(1.408)	(-0.334)	(-3.314)	(1.360)	(-0.572)	(-3.204)	(1.480)	(-0.245)	(-2.974)	(1.054)	(-0.615)	(-3.180)	(1.568)	(-0.130)	(-3.055)
<i>Intangible asset</i>	0.00002	-0.000101	-0.0001	0.00002	-0.000103	-0.0001	0.00002	-0.0001	-0.00005	0.00002	-0.0001	-0.0001	0.00002	-0.0001	-0.0001
	(0.330)	(-0.955)	(-0.804)	(0.441)	(-0.901)	(-0.665)	(0.419)	(-0.877)	(-0.694)	(0.447)	(-0.927)	(-0.778)	(0.388)	(-0.912)	(-0.729)
<i>Openness to trade</i>	-0.0580***	-0.0668***	-0.0855***	-0.0614***	-0.0691***	-0.0855***	-0.0534***	-0.0601***	-0.0775***	-0.0568***	-0.0642***	-0.0802***	-0.0497***	-0.0557***	-0.0723***
	(-4.783)	(-5.434)	(-6.848)	(-5.352)	(-5.958)	(-7.195)	(-4.808)	(-5.368)	(-6.803)	(-5.022)	(-5.604)	(-6.854)	(-4.548)	(-5.049)	(-6.463)
<i>Annual per capita GDP</i>	0.195	0.301**	0.309**	0.186	0.285**	0.302**	0.217	0.333**	0.345**	0.159	0.266*	0.284**	0.210	0.326**	0.350**
	(1.429)	(2.203)	(2.256)	(1.370)	(2.101)	(2.205)	(1.592)	(2.439)	(2.521)	(1.161)	(1.938)	(2.054)	(1.528)	(2.370)	(2.540)
<i>Human capital</i>	0.244***	0.167***	0.197***	0.267***	0.173***	0.191***	0.235***	0.157***	0.182***	0.257***	0.167***	0.187***	0.219***	0.137***	0.166***
	(7.899)	(5.421)	(6.166)	(8.570)	(5.511)	(6.027)	(7.905)	(5.204)	(5.999)	(8.404)	(5.505)	(6.097)	(7.521)	(4.635)	(5.520)
<i>Private credit</i>	-0.0175*	-0.0259**	-0.0166	-0.0119	-0.0166	-0.00908	-0.0305***	-0.0417***	-0.0373***	-0.00733	-0.0134	-0.00869	-0.0351***	-0.0494***	-0.0467***
	(-1.665)	(-2.428)	(-1.543)	(-1.172)	(-1.599)	(-0.860)	(-2.890)	(-3.908)	(-3.419)	(-0.713)	(-1.288)	(-0.813)	(-3.165)	(-4.415)	(-4.077)
<i>Lag asset</i>	0.0297***			0.0281***			0.0190***			0.0241***			0.0260***		
	(9.417)			(9.681)			(5.429)			(7.706)			(8.518)		
<i>Lag sales</i>		0.0248***			0.0274***			0.0178***			0.0232***			0.0244***	
		(6.196)			(7.540)			(3.650)			(5.792)			(5.983)	
<i>Lag market cap</i>			0.00693***			0.00297			-0.00286			0.00171			0.00390
			(2.622)			(1.281)			(-0.912)			(0.671)			(1.466)
Observations	45,215	45,211	45,170	45,215	45,211	45,170	45,211	45,170	45,211	45,215	45,211	45,170	45,215	45,211	45,170
<i>Adj R<sup>2</sup></i>	0.137	0.129	0.111	0.139	0.128	0.112	0.143	0.134	0.118	0.141	0.131	0.115	0.141	0.133	0.116
Number of firms	7,112	7,112	7,093	7,112	7,112	7,093	7,112	7,112	7,093	7,112	7,112	7,093	7,112	7,112	7,093
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel B. Gross profit margin

VARIABLES	Gross profit margin														
	KAOPEN			Equity GDP			All GDP			FDI GDP			Financial GDP		
<i>Lib openness measure</i>	0.00707 (0.297)	-0.127*** (-5.326)	-0.0971*** (-6.114)	0.0185 (0.503)	0.0487 (1.074)	0.0780** (2.182)	0.0283** (2.485)	-0.00151 (-0.112)	0.00832 (0.901)	0.0730* (1.833)	0.0465 (1.106)	0.0741** (2.448)	0.0242 (1.607)	-0.0282 (-1.644)	-0.0135 (-1.205)
<i>Lib openness measure</i> ×lag(Asset)	<b>-0.00858**</b> (-2.070)			<b>0.000252</b> (0.0426)			<b>-0.00225</b> (-1.255)			<b>-0.00384</b> (-0.593)			<b>-0.00258</b> (-1.079)		
<i>Lib openness measure</i> ×lag(Sales)		<b>0.0204***</b> (4.531)			<b>-0.00836</b> (-1.020)			<b>0.00423*</b> (1.894)			<b>0.00274</b> (0.364)			<b>0.00853***</b> (2.987)	
<i>Lib openness measure</i> ×lag(Market cap)			<b>0.0147***</b> (4.677)			<b>-0.0148**</b> (-2.371)			<b>0.00263*</b> (1.700)			<b>-0.00344</b> (-0.673)			<b>0.00654***</b> (3.325)
<i>Leverage</i>	-0.00105*** (-4.704)	-0.00164*** (-8.575)	-0.00174*** (-9.043)	-0.00115*** (-5.134)	-0.00178*** (-9.340)	-0.00187*** (-9.735)	-0.00110*** (-4.967)	-0.00166*** (-8.627)	-0.00175*** (-9.099)	-0.00111*** (-5.017)	-0.00172*** (-8.947)	-0.00183*** (-9.495)	-0.00112*** (-5.012)	-0.00166*** (-8.750)	-0.00175*** (-9.100)
<i>Operating income</i>	0.0562*** (11.22)	0.0555*** (11.05)	0.0566*** (11.23)	0.0557*** (11.13)	0.0556*** (11.01)	0.0564*** (11.16)	0.0565*** (11.28)	0.0557*** (11.05)	0.0569*** (11.26)	0.0560*** (11.20)	0.0556*** (11.02)	0.0566*** (11.21)	0.0564*** (11.24)	0.0553*** (11.00)	0.0567*** (11.22)
<i>Market-to-book</i>	-0.000907 (-1.475)	-0.000989 (-1.612)	-0.00117* (-1.748)	-0.000923 (-1.498)	-0.00103* (-1.676)	-0.00123* (-1.835)	-0.000870 (-1.407)	-0.00100 (-1.617)	-0.00113* (-1.676)	-0.000902 (-1.462)	-0.00104* (-1.697)	-0.00120* (-1.792)	-0.000900 (-1.455)	-0.00101 (-1.630)	-0.00114* (-1.689)
<i>Intangible asset</i>	-0.000655* (-1.799)	-0.000638 (-1.640)	-0.000919** (-2.255)	-0.000691* (-1.866)	-0.000784* (-1.942)	-0.000910** (-2.207)	-0.000643* (-1.759)	-0.000684* (-1.738)	-0.000895** (-2.178)	-0.000683* (-1.865)	-0.000760* (-1.899)	-0.000908** (-2.197)	-0.000674* (-1.836)	-0.000692* (-1.766)	-0.000923** (-2.255)
<i>Openness to trade</i>	0.00283 (0.296)	0.000518 (0.0538)	-5.46e-05 (-0.00573)	-0.00295 (-0.316)	-0.00784 (-0.831)	-0.00569 (-0.616)	-0.00167 (-0.178)	-0.00685 (-0.728)	-0.00589 (-0.633)	-0.00148 (-0.158)	-0.00774 (-0.820)	-0.00596 (-0.638)	-0.00146 (-0.157)	-0.00535 (-0.573)	-0.00487 (-0.526)
<i>Annual per capita GDP</i>	-0.518*** (-4.192)	-0.471*** (-3.823)	-0.550*** (-4.475)	-0.537*** (-4.346)	-0.478*** (-3.876)	-0.482*** (-3.915)	-0.490*** (-3.958)	-0.447*** (-3.621)	-0.466*** (-3.788)	-0.542*** (-4.381)	-0.498*** (-4.046)	-0.510*** (-4.144)	-0.500*** (-4.021)	-0.470*** (-3.785)	-0.496*** (-4.008)
<i>Human capital</i>	-0.118*** (-4.806)	-0.127*** (-5.112)	-0.128*** (-5.231)	-0.0964*** (-3.786)	-0.113*** (-4.135)	-0.117*** (-4.607)	-0.110*** (-4.679)	-0.109*** (-4.440)	-0.118*** (-5.004)	-0.104*** (-4.370)	-0.108*** (-4.315)	-0.117*** (-4.935)	-0.106*** (-4.516)	-0.111*** (-4.620)	-0.115*** (-4.891)
<i>Private credit</i>	-0.0309*** (-4.057)	-0.0362*** (-4.651)	-0.0337*** (-4.509)	-0.0440*** (-5.884)	-0.0375*** (-4.970)	-0.0421*** (-5.604)	-0.0543*** (-6.795)	-0.0533*** (-6.701)	-0.0561*** (-7.075)	-0.0437*** (-5.741)	-0.0388*** (-4.999)	-0.0428*** (-5.609)	-0.0501*** (-6.101)	-0.0506*** (-6.199)	-0.0526*** (-6.475)
<i>Lag asset</i>	0.0140*** (5.959)			0.0103*** (4.395)			0.0123*** (4.425)			0.0111*** (4.448)			0.0117*** (4.643)		
<i>Lag sales</i>		-0.0190*** (-5.495)			-0.00758** (-2.140)			-0.0157*** (-3.644)			-0.0104*** (-2.664)			-0.0169*** (-4.612)	
<i>Lag market cap</i>			-0.00596*** (-2.823)			0.00401** (2.041)			-0.00252 (-1.021)			0.00210 (1.005)			-0.00429** (-2.004)
Observations	40,741	40,737	40,695	40,741	40,737	40,695	40,741	40,737	40,695	40,741	40,737	40,695	40,741	40,737	40,695
Adj R <sup>2</sup>	0.044	0.044	0.042	0.042	0.042	0.040	0.043	0.043	0.041	0.043	0.042	0.041	0.043	0.043	0.041
Number of firms	6,621	6,619	6,601	6,621	6,619	6,601	6,621	6,619	6,601	6,621	6,619	6,601	6,621	6,619	6,601
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

**Table 7. The firm size based asymmetric impact of capital market liberalization on income inequality**

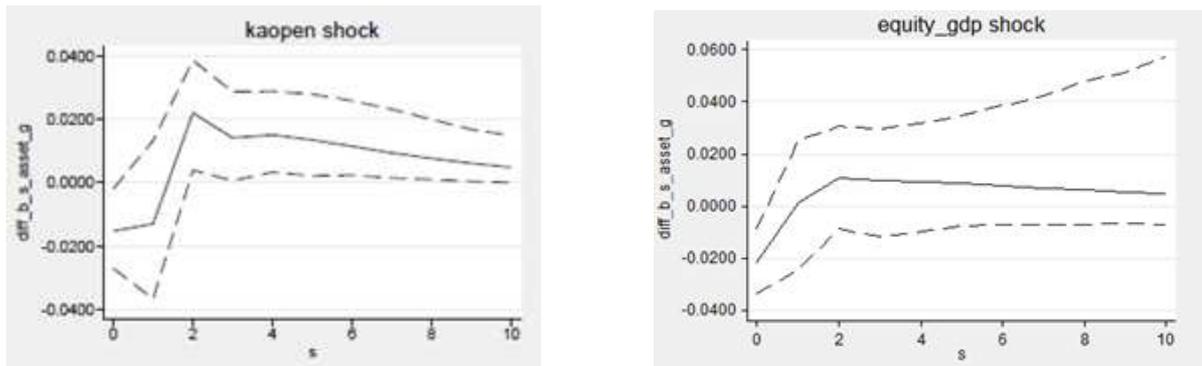
This table presents the estimation results from regression models that test the firm size based asymmetric effect of capital market liberalization on income inequality. We use four different measures of financial openness: *KAOPEN*, *Equity GDP*, *All GDP*, *Financial GDP*, *FDI GDP*. Chinn-Ito index (*KAOPEN*) is an index measuring a country's degree of capital account openness. *Equity GDP* is computed by the sum of portfolio equity assets and portfolio equity liabilities divided by GDP. *All GDP* is calculated by the sum of total assets and total liabilities divided by gdp. *FDI GDP* is calculated by the sum of FDI assets and FDI liabilities divided by GDP. Similarly, *Financial GDP* is computed by the sum of portfolio equity assets, portfolio equity liabilities, debt assets, debt liabilities, financial derivatives and financial derivatives divided by GDP. The interaction terms between financial openness measures and firm size measures are calculated by *Financial openness*×*lag asset* (*lag sales*, *lag market cap*). This interaction terms are added to examine how the asymmetric growth in firm-size after financial liberalization affects income inequality. *Lag asset*, *Lag sales*, *Lag market cap*, are lagged values of log (total asset), log (total sales) and log (total market capitalization), respectively. *Log wage* is calculated by the log of salaries and benefits expenses divided by the number of employees. Standard errors are displayed in parentheses. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels using two-tailed tests.

VARIABLES	<i>KAOPEN</i>		<i>Equity GDP</i>		<i>All GDP</i>		<i>FDI GDP</i>		<i>FDI GDP</i>	
	(1) <i>Log wage</i>	(2) <i>Log wage</i>	(3) <i>Log wage</i>	(9) <i>Log wage</i>	(9) <i>Log wage</i>	(6) <i>Log wage</i>	(7) <i>Log wage</i>	(8) <i>Log wage</i>	(9) <i>Log wage</i>	(10) <i>Log wage</i>
<i>Lib openness measure</i>	-1.150*** (-19.55)	-0.987*** (-11.16)	1.348*** (8.488)	1.349*** (6.630)	-0.161*** (-5.981)	-0.0901*** (-2.595)	-0.169*** (-6.370)	-0.0822** (-2.353)	-0.823*** (-5.947)	-0.618*** (-3.533)
<i>Lib openness measure</i> × <i>lag asset</i>	0.117*** (10.75)	0.0996*** (6.222)	0.0901*** (3.200)	0.0738* (1.855)	0.0358*** (9.453)	0.0233*** (4.216)	0.0333*** (8.683)	0.0187*** (3.228)	0.191*** (9.565)	0.126*** (4.604)
<i>Leverage</i>		-0.00137* (-1.833)		0.000798 (1.170)		0.00160** (2.247)		0.00194*** (2.719)		0.00153** (2.197)
<i>Operating income</i>		0.0143 (0.525)		0.0224 (0.828)		0.0304 (1.120)		0.0336 (1.241)		0.0295 (1.088)
<i>Market-to-book</i>		0.0366*** (13.29)		0.0359*** (13.01)		0.0375*** (13.46)		0.0376*** (13.48)		0.0375*** (13.45)
<i>Intangible asset</i>		0.116*** (20.04)		0.121*** (20.77)		0.123*** (21.17)		0.123*** (21.28)		0.123*** (21.14)
<i>Openness to trade</i>	-0.485*** (-26.91)	-0.521*** (-25.69)	-0.505*** (-29.85)	-0.540*** (-27.31)	-0.473*** (-24.52)	-0.533*** (-25.04)	-0.489*** (-26.23)	-0.532*** (-26.04)	-0.493*** (-21.14)	-0.519*** (-18.29)
<i>Annual per capita GDP</i>	12.23*** (10.04)	16.89*** (10.58)	12.22*** (10.09)	16.01*** (10.08)	13.49*** (11.05)	16.41*** (10.14)	13.17*** (10.75)	16.36*** (10.12)	12.86*** (10.58)	16.29*** (10.05)
<i>Human capital</i>	2.848*** (26.54)	2.210*** (16.87)	1.898*** (19.44)	1.394*** (11.68)	2.174*** (21.51)	1.643*** (13.60)	2.196*** (21.73)	1.666*** (13.63)	2.222*** (22.13)	1.694*** (14.08)
<i>Private credit</i>	0.313*** (8.106)	0.341*** (6.965)	0.194*** (4.901)	0.226*** (4.528)	0.350*** (8.819)	0.432*** (9.097)	0.383*** (9.634)	0.442*** (9.295)	0.377*** (9.852)	0.444*** (9.368)
<i>Lag asset</i>	-0.0104* (-1.702)	0.0139* (1.686)	0.0125* (1.715)	0.0387*** (4.083)	-0.0308*** (-4.847)	0.0153* (1.793)	-0.0102* (-1.926)	0.0311*** (4.329)	-0.0373*** (-5.724)	0.0103 (1.210)
Robust standard error	YES									
Observations	30,604	17,294	30,604	17,294	30,604	17,294	30,604	17,294	30,604	17,294
<i>Adj R</i> <sup>2</sup>	0.260	0.293	0.261	0.296	0.252	0.286	0.251	0.286	0.253	0.287

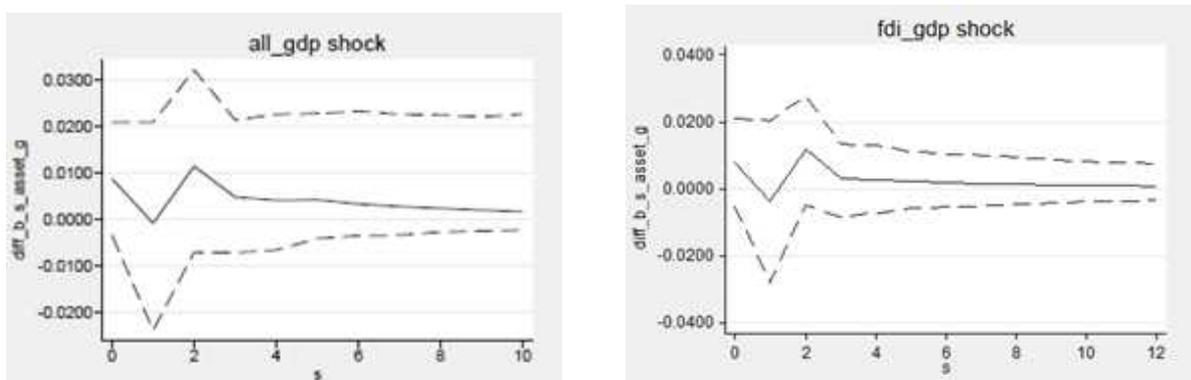
### Figure 1. Impulse responses

Figure 1 presents the impulse response functions of the ratio between the growth of the big firm portfolio and the growth of the small firm portfolio to a shock to openness. We use five different openness measures: *KAOPEN*, *Equity GDP*, *All GDP*, *Financial GDP*, *FDI GDP*. The graphs present the response of the growth ratio to one standard deviation shock in openness measure in a panel VAR model. The time scale on the horizontal axis is years. For each impulse response function, 95% confidence intervals are computed using 500 Monte-Carlo simulations.

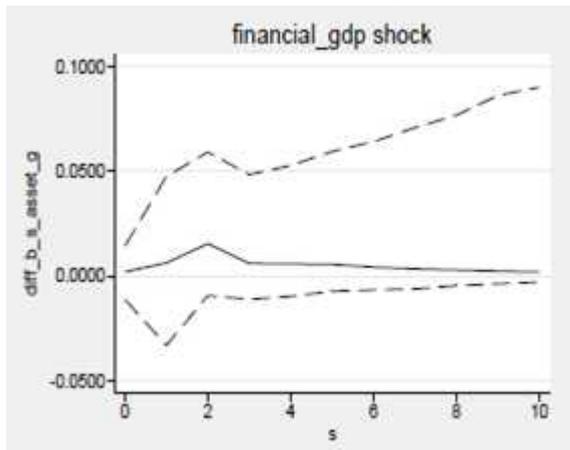
Panel A. Chinn-Ito index and equity\_gdp



Panel B. All\_gdp and FDI\_gdp



Panel C. Financial\_gdp



## Appendix A. Variable definitions and data sources

Below is a detailed description of the construction of all the variables used in the tables.

Category	Variables	Definition	Data Source
Openness Measures	<i>KAOPEN</i>	The Chinn-Ito index ( <i>KAOPEN</i> ) is an index measuring a country's degree of capital openness. The index was initially introduced in Chinn and Ito (Journal of Development Economics, 2006). <i>KAOPEN</i> is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).	<a href="http://web.pdx.edu/~ito/Chinn-Ito_website.htm">http://web.pdx.edu/~ito/Chinn-Ito_website.htm</a>
	<i>Equity GDP</i>	<i>Equity GDP</i> is computed by the sum of portfolio equity assets and portfolio equity liabilities divided by GDP.	<a href="http://www.philiplane.org/EWN.html">http://www.philiplane.org/EWN.html</a>
	<i>All GDP</i>	<i>All GDP</i> is calculated by the sum of total assets and total liabilities divided by GDP	<a href="http://www.philiplane.org/EWN.html">http://www.philiplane.org/EWN.html</a>
	<i>FDI GDP</i>	<i>FDI GDP</i> is calculated by the sum of FDI assets and FDI liabilities divided by GDP.	<a href="http://www.philiplane.org/EWN.html">http://www.philiplane.org/EWN.html</a>
	<i>Financial GDP</i>	<i>Financial GDP</i> is computed by the sum of portfolio equity assets, portfolio equity liabilities, debt assets, debt liabilities, financial derivatives and financial derivatives divided by GDP.	<a href="http://www.philiplane.org/EWN.html">http://www.philiplane.org/EWN.html</a>
Firm Growth Measures	<i>Asset growth</i>	<i>Asset growth</i> is computed by $\log(\text{Asset}_t / \text{Asset}_{t-1})$ .	Datastream /World Scope
	<i>Sales growth</i>	<i>Sales growth</i> is computed by $\log(\text{Sales}_t / \text{Sales}_{t-1})$ .	Datastream /World Scope
	<i>Market cap growth</i>	<i>Market cap growth</i> is computed by $\log(\text{Market Cap}_t / \text{Market Cap}_{t-1})$ .	Datastream /World Scope
	<i>Capital financing</i>	<i>Capital financing</i> is calculated by the sum of equity financing and debt financing divided by total asset, where equity financing is $\log(\text{total equity}_t / \text{total equity}_{t-1})$ and debt financing is $\log(\text{total debt}_t / \text{total debt}_{t-1})$ .	Datastream /World Scope
Market Concentration Measures	<i>Herfindahl Index</i>	Herfindahl Index is calculated by the sum of squared of market share based on sales for each firm relative to the total industry sales within the same industry based on the Fama-French's 12 industries.	Datastream /World Scope
	<i>Gross profit margin</i>	<i>Gross profit margin</i> is computed by Gross profit/Sales.	Datastream /World Scope
Wage Measure	<i>Log wage</i>	<i>Log wage</i> is calculated by the log of salaries and benefits expenses divided by the number of employees.	Datastream /World Scope
Firm-level accounting variables	<i>Leverage</i>	<i>Leverage</i> is calculated by the total debt divided by total asset.	Datastream /World Scope
	<i>Operating income</i>	<i>Operating income</i> is calculated by the EBIT divided by total sales.	Datastream /World Scope
	<i>Market-to-book</i>	<i>Market-to-book</i> is computed by the market cap divided by book value of equity.	Datastream /World Scope
	<i>Intangible asset</i>	<i>Intangible asset</i> is computed by intangible asset divided by total asset.	Datastream /World Scope
Country specific variables	<i>Openness to trade</i>	<i>Openness to trade</i> is the annual ratio of export and imports to real GDP.	World Development Indicators
	<i>Annual per capita GDP</i>	<i>Annual per capita GDP</i> is computed by $\log(\text{real GDP}/\text{population})$ .	World Development Indicators
	<i>Human capital</i>	<i>Human capital</i> is annual ratio of secondary school enrollment to total enrollment.	World Development Indicators
	<i>Private credit</i>	<i>Private credit</i> is annual ratio of private credit to GDP.	World Development Indicators