Financial Globalization and the Growth-Stability Trade-Off

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Abstract

Both developed and developing countries have become more integrated with the international financial markets in the past 50 years. Empirical studies that focus on conditional mean yield to largely mixed evidence for the effects of financial globalization on growth, to the contrary of the major benefits theoretical models predict. I apply a quantile regression approach to characterize the potentially nonlinear link between financial openness and growth. I find that financial openness is associated with a moderately higher conditional median as well as lower 5th and 25th conditional percentiles of GDP growth, implying that financial globalization brings about a "growth-stability" trade-off by promoting economic growth at the cost of a higher probability of a crisis.

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Financial markets that were once confined by country borders have been gradually opened for cross-border capital flows. The liberalization of trade in financial assets is often called "financial globalization." Theoretical models propose several channels through which openness to international financial flows can increase economic growth including global risk-sharing, efficient flow of capital to productive projects, and indirect benefits such as financial deepening and technological spillovers. However, there is little robust empirical evidence of a positive link between financial openness and economic growth.

Most of the existing empirical studies focus on how financial openness affects the conditional mean of GDP growth and other macroeconomic indicators; some further study the second moment (volatility). The actual association between financial openness and the macroeconomy, however, is potentially highly nonlinear and asymmetric. When the financial sector of an economy is more integrated with the international financial markets, it may be able to reap the benefits of financial globalization under normal circumstances and be more vulnerable to adverse global shocks and financial crisis contagion at the same time. Consistent with this notion, the vulnerability to sudden stops of international capital flows and market herding behaviors is widely viewed as an important contributing factor to the economic crises in Latin America in the 1980s and Mexico and Asian countries in the 1990s. Consistent with the

In this paper, I apply the quantile regression approach to study the potentially nonlinear link between financial openness and growth. I find that financial openness is associated with a moderately higher conditional median as well as lower 5th and 25th conditional percentiles of GDP growth, implying that financial globalization brings about a "growth-stability" trade-off by promoting economic growth at the cost of a higher probability of a crisis.

1 Extent of Financial Globalization

In this section, I briefly review the evolution of financial globalization. There has been a dramatic reduction in barriers to trade financial assets across national borders globally since the 1970s. Many researchers have proposed different measures to quantify this process. Broadly speaking, there are two types of measures used in the empirical literature. The *de jure* openness measures reflect the absence of legal, regulatory, or institutional restrictions on cross-border capital flows. The Annual Reports on Exchange Arrangements and Exchange Restrictions (AREAER) published by the International Monetary Fund (IMF) provide a detailed summary of regulatory controls over current or capital account transactions, the existence of multiple exchange rates, and the requirement of surrending export proceeds for a large number of countries. Researchers have codified the detailed information contained in the AREAER to numerical indices. These codifications differ in some countries and some years, due to differences in their methodologies, but are highly correlated overall. The *de facto* measures, on the other hand, describe the actual extent of cross-border capital flows and can be based on either asset prices or quantities. The price-based measures rely on the law of one price and assess the extent to which the interest rate parity is satisfied. The quantity-based measures capture the existence, direction, and magnitude of capital moving across borders. Cross-border capital flows can take the form of investment of foreign securities, foreign direct investments, issuance of debt or equity securities in the international capital markets, and so on. Over time, these various capital flows into foreign assets and liabilities for national economies.

I use both *de jure* and *de facto* measures to assess the extent of international financial integration for the 42 countries in my study. For the *de jure* measure, I use the Chinn and Ito (2006) index of capital account openness. This index is a continuous variable corresponding to the first principal component of various restrictions covered by AREAER estimated from the full sample.[1] I use the normalized index whose value is between 0 and 1. For comparison

[1]The 1970–2017 dataset is available at `http://web.pdx.edu/~ito/Chinn-Ito_website.htm`.

purposes, I also include the overall capital control restrictions index by Fernandez, Klein, Rebucci, Schindler, and Uribe (2016) (FKRSU). Fernandez et al. (2016) derive disaggregated scores for existence of control measures on inflows and outflows separately for 10 different categories of assets from AREAER; the overall restrictions index is the average of all sub-component scores. [2] For the *de facto* measure, I calculate the ratio of the sum of aggregate foreign assets and liabilities to GDP from the extended External Wealth of Nations data set (Lane and Milesi-Ferretti, 2018).

Figure 1 compares the evolution of the *de jure* measures, averaged across all countries in each group, to the *de facto* openness measured as the sum of foreign assets and liabilities scaled by GDP. From 0.45 in 1979, the average *de jure* Chinn-Ito openness increases consistently to exceed 0.9 by the mid-1990s and then stays relatively stable with a very mild reveral at the end of the sample period. The FKRSU restrictions index, an alternative characterization of the degree of *de jure* openness, reveals that developed economies on average have tighter capital controls in 2017 than in 1995. The average Foreign-Exposure-to-GDP increases substantially from 64% in 1970 to 673% in 2007. The increasing trend seems to be mildly disrupted by the global financial crisis with two notable reversals in 2008 and 2011.

For the 21 emerging market economies (Panel b), the average *de jure* openness has not changed much. The Chinn-Ito openness index starts at 0.28 in 1970 and ends at 0.47 in 2017. According to the FKRSU restrictions index, the average capital account restrictiveness is not lower in 2017 than in 1995. On the contrary, from 1970 to 2007, the average Foreign-Exposure-to-GDP ratop more than triples from 45% to 137%. There are two reversals in the integration process during this period – a noticeable reversal in late 1980s corresponding to the debt crises in Latin America and a milder reversal in the late 1990s and early 2000s corresponding to the Asian financial crisis. Emerging market economies also experience disruptions to their financial integration during the global financial crisis, though this time the crisis starts in the developed world. Their average Foreign-Exposure-to-GDP ratio drops

[2]The data set (June 13, 2019 update) is available at Martin Uribe's website at `http://www.columbia.edu/~mu2166/fkrsu/`.

by 24 percentage points in 2008, followed by a bounce-back in 2009.

This figure highlights the differences in information content that the two types of openness measures provide. The *de jure* measure reflects the timing and nature of capital account liberalization policies. The regulatory change of capital controls does not perfectly correspond to capture a national economy's actual level of integration into global financial markets, which is reflected in the *de facto* measure. National economies that implement similar capital controls can differ in how they enforce these control measures, an important determinant of the actual integration that is often not well captured in the *de jure* indexes. In addition, the availability and profitability of investment opportunities as well as the institutional quality affects how capitals move across borders given capital controls. As a result, we do observe that some countries with open capital accounts record few capital inflows or outflows. At certain times, particularly during currency crises, even countries with extensive capital controls can experience massive outflows of private capital. For a more comprehensive overview of these different measures of financial openness and their relative advantages and disadvantages, please see Kose, Prasad, Rogoff, and Wei (2009).

In the analysis presented here, I focus primarily on the *de facto* measure as I am interested in the effects of an outcome-based measure of financial integration.

2 How Does Financial Globalization Affect Growth?

Early studies by and large postulate that financial globalization has beneficial effects on economic growth. They propose several channels: First, allowing foreign investors to enter domestic markets expands the availability of capital and lower the cost. Compared with capital-abundant countries, capital-scarce countries exhibit higher returns to capital and would attract capital inflows when they allow foreign investments. Developing countries are expected to benefit from such an increase in funding opportunities.

Second, granting domestic investors access to the international financial markets expands

the set of financial instruments and can help them achieve better risk diversification.

Third, financial globalization can play a role in the development of well-functioning financial markets, a process known as "financial deepening". By promoting reforms to financial regulatory and institutional infrastructure, financial globalization can reduce information asymmetry, improve the availability and quality of financial services, and improve the efficiency of the financial sector. In turn, a deeper and better-functioning financial sector can boost economic growth through its role in mobilizing savings, enhancing allocation of scarce resources, and improving risk sharing. This can be viewed as an indirect effect of international financial integration.

Lastly, the indirect benefits that financial globalization can generate go beyond financial deepening and can include technological spillovers and improvements in economic decision-making, among others.

A large body of empirical studies has emerged to test these predictions. While some researchers find a positive impact of financial globalization on growth (for instance, Bekaert, Harvey, and Lundblad (2003)), many find the beneficial effects to be negligible or nonexistent in the data. In a study on the effects of financial globalization on developing countries, Prasad, Rogoff, Wei, and Kose (2003) conclude that there is no empirical proof for the benefits of financial globalization on growth and point out that some countries experience higher consumption volatility. Other studies have find that financial globalization increases financial crisis risks, as reviewed by, for instance, Schmukler (2004).

The mixed empirical findings have spurred discussions and analyses on why the predicted benefits may not materialize and how international financial integration works in practice. For example, Rodrik and Subramanian (2009) challenge the notion that developing countries are savings-constrained and therefore would benefit from access to foreign funding. They argue that developing countries are instead constrained of investment opportunities. Under this premise, they argue that openness to foreign capital leads to unfavorable appreciation of the real exchange real and erosion of profitable investment opportunities, therefore hurting

economic growth. Stulz (2005) deviates from the traditional set-up in which the only friction is the existence of explicit barriers to trading in financial assets across countries and emphasizes role of the "twin agency problem" between the sovereign states, corporate insiders, and the outside investors as a limiting factor for countries to benefit from financial globalization.

Most of the existing empirical studies use linear least squares models and therefore focus on how financial openness affects the conditional mean of output growth and other macroeconomic indicators. The actual association between financial openness and the macroeconomy, however, is potentially highly nonlinear and asymmetric. For instance, the vulnerability to sudden stops of international capital flows and market herding behaviors is widely viewed as an important contributing factor to the economic crises in Latin America in the 1980s and Mexico and Asian countries in the 1990s. More recently, the 2007-2009 global financial crisis reveals that relaxed financial conditions can lead to a crisis and therefore highlights the need to capture nonlinearity in an empirical model that studies financial openness and growth.

It is also plausible theoretically to conjecture that integration with international financial markets affects different parts of the growth distribution differentially. For instance, cross-border contagion spillovers, one channel through which financial globalization can lead to elevated risks, operates primarily during crises–left-tail events in the distribution of output growth.

To examine this potentially asymmetric and nonlinear association, I use a quantile regression approach. By doing so, I offer an empirical characterization of the trade-off between economic growth and stability in terms of the dispersion of the growth distribution.

3 The Quantile Regression Approach

Let y_{t+h} denote the annualized average growth rate of real per capital GDP between t and $t+h$. x_t is a k-dimensional vector of conditioning variables, including a constant term. A quantile regression of y_{t+h} on x_t estimates the τ^{th} quantile of y_{t+h} as a linear function of

x_t by choosing a regression slope β_τ that minimizes the quantile weighted absolute value of errors:

$$\beta_{\tau,h} = \underset{\beta \in \mathbb{R}^k}{\arg\min} \sum_{t=1}^{T-h} \left(\tau \cdot \mathbb{I}_{y_{t+h} \geq x_t\beta} |y_{t+h} - x_t\beta| + (1-\tau) \cdot \mathbb{I}_{y_{t+h} < x_t\beta} |y_{t+h} - x_t\beta| \right) \tag{1}$$

The predicted value from this regression, $\hat{Q}_{y_{t+h}|x_t} = x_t\hat{\beta}_{\tau,h}$, is a consistent estimator of the τ^{th} quantile of y_{t+h} conditional on x_t (Koenker and Bassett, 1978). By estimating a set of quantile-specific slopes $\beta_{\tau,h}$'s, I can evaluate the impact of financial openness on economic growth's central tendency and tail behaviors separately. Adrian, Boyarchenko, Giannone, and Domenico (2019); Adrian, Grinberg, Liang, and Malik (2018) apply a similar quantile regression approach to study the relationship between financial conditions and output growth. It is worth noting here that this approach intends to capture the forecasting effects of financial openness on the distribution of output growth, not causal effects.

I study the impact of financial openness on the distribution of economic growth using an annual panel data set that covers both developed economies and emerging market economies. The output measure is the growth of the log of real per capital GDP, calculated from the Penn World Tables Version 9.1 data. I focus on the impact of *de facto* financial openness. Specifically, I use the sum of foreign assets and liabilities as the *Exposure* measure and consider up to five lags of the changes in the log of *Exposure*.

The final sample covers annual data range from 1970 to 2015 for 42 countries, including 21 developed economies and 21 emerging market economies. The 21 developed economies are Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Denmark (DNK), Finland (FIN), France (FRA), Germany (DEU), Greece (GRC), Ireland (IRL), Italy (ITA), Japan (JPN), the Netherlands (NLD), New Zealand (NZL), Norway (NOR), Portugal (PRT), Spain (ESP), Sweden (SWE), Switzerland (CHE), the United Kingdom (GBR), and the United States of America (USA). The 21 emerging market economies are Argentina (ARG), Brazil (BRA), Chile (CHL), China (CHN), Colombia(COL), Egypt (EGY), India (IND), Indonesia (IDN), Israel (ISR), Jordan (JOR), South Korea (KOR), Malaysia (MYS), Mexico (MEX),

Morocco (MAR), Pakistan (PAK), Peru (PER), Philippines (PHL), South Africa (ZAF), Thailand (THA), Turkey (TUR), and Venezuela (VEN).

4 The Growth-Stability Trade-Off

Table 1 presents the coefficient estimates and robust (Huber-White) standard errors from the OLS model as well as quantile regressions at different quantiles. Owing to the substantial differences in the extent of financial globalization (Figure 1) and in the development stage between developed economies and emerging market economies, I separately estimate the empirical models for the two groups of countries. Results for developed economies and emerging market economies are reported in Panel (a) and (b) respectively.

As the normal behavior of economic growth may differ across countries, one would like to estimate the effect of financial openness on economic growth based only on the within-country variation through the inclusion of country fixed effects. Prasad et al (2003) argue that the effects of financial globalization on growth depend on specific country characteristics. Including the country fixed effects ensures that the relevant initial conditions, to the extent that they are time-invariant, do not contaminate my estimates.

Column (1) reports the results from the OLS model with fixed effects. In untabulated result, I also further add time fixed effects in addition to country fixed effects in the OLS model. It turns out that these time fixed effects are highly statistically significant for both developed economies and developing economies. This implies that there is a common global time component driving output growth. Despite the significance of time effects, I study models without time effects for two reasons. First, from an out-of-sample forecasting point of view, including the time effects is not very practical since time effects cannot be known *ex ante*. Second, when the panel structure has a small and fixed cross-sectional dimension N and a large and infinity-approximating time-series dimension T as is the case in my cross-country setting, it is feasible to include quantile-specific country fixed effects (Galvao

and Montes-Rojas, 2015). In this setting, the incidental parameters problem afflicts the time-series dimension and makes the inclusion of time fixed effects infeasible.[3]

In the OLS model in Column (1), the sum of the lag coefficients is about 0.01 for developed economies and 0.05 for emerging market economies and statistically insiginificant in both cases, consistent with earlier work that finds the growth effect of financial globalization is negligible or nonexistent. This masks the differential impacts of financial integration on different parts of the growth distribution, as shown by the estimates from quantile regressions at different quantiles in Columns (2) to (6). In these models, I allow for quantile-specific country fixed effects by adding including country indicators in the regressions.

The 0.5 quantile coefficients—for the conditional median—are close to the OLS coefficients in terms of quantitative and statistical significance for both samples of countries. If the conditional distribution of log growth of real GDP per capita is symmetric, so that the conditional median equals to the conditional mean, one should expect these two coefficients to be the same. Furthermore, one should expect expect to see constant coefficients across quantiles if the effect of financial integration on output growth amounts to a location shift, that is, as higher levels of financial integration raise average output growth, other parts of the growth distribution move in tandem. The conditional-on-financial-integration dispersion of output growth does not change.

Contrast to a simple location shift, quantile regression estimates differ markedly across quantiles. For developed economies, average annual growth of foreign exposure in this sample has a standard deviation of 11.8%, so a one-standard-deviation increase in foreign exposure decreases the lower 5^{th} percentile of output growth by 1.505% and the lower decile by 0.008% while increases the median by 0.410%, the upper decile by 0.276%, and the upper 5^{th} percentile by 0.662%. For emerging market economies, we see a stronger pattern of widened

[3]The literature on panel quantile regressions has focused mostly on the typical microeconometric problem where the cross-sectional dimension N far exceeds the time-series dimension T (Koenker, 2004). Several approaches have been proposed to make the inclusion of individual fixed effects feasible in such a setting, such as restricting fixed effects to be invariant across different quantiles (Canay, 2011) or using a conditional location-scale model (Machado and Santos Silva, 2019).

dispersion associated with foreign financial exposure. Average annual growth of foreign exposure in the sample of emerging market economies has a standard deviation of 10.5%, so a one-standard-deviation increase in foreign exposure decreases the lower 5^{th} percentile of output growth by 1.618% and the lower decile by 0.11% while increases the median by 0.104%, the upper decile by 1.258%, and the upper 5^{th} percentile by 1.722%. This finding implies that financial globalization brings about a "growth-stability" trade-off by promoting economic growth at the cost of a higher probability of a crisis.

Next, I present a series of robustness checks on alternative measures, additional control variables, and calculation of standard errors.

Table 2 replaces the logarithm of *Exposure* with the ratio of Exposure to GDP.

To guard against omitted variable bias, in Table 3 I include 5 lags of real GDP growth as additional control variables to the baseline specification.

In Table 1 I have reported standard errors that are robust to heteroscedasticity. Furthermore, innovations to the output growth can be autocorrelated for some countries. In other words, in the country-year panel setting, it is reasonable to assume that errors can be correlated within countries over time. To assess the validity of inference, I report standard errors based on two alternative approaches: The first approach is a bootstrap resampling procedure (Table 4); the second approach is the Parente and Santos Silva (2015) clustered standard errors for quantile regressions (Table 5). Both approaches are more conservative than the Huber-White sandwich approach and indeed lead to slightly larger values for standard errors. Reassuringly, the significance of the coefficient estimates remains largely unchanged.

5 Conclusion

In the past 50 years, there has been a substantial reduction in barriers to capital mobility across national borders in both developed and developing economies. This process of financial globalization can bring major economic gains by providing additional funding, enhancing risk

diversification, and facilitating financial deepening. It can also lead to higher macroeconomic instability and vulnerability to crises. In a nutshell, the effects of financial globalization on growth can be viewed as a "growth-stability trade-off".

In this paper, I provide an empirical characterization of this "growth-stability trade-off" by allowing the degree of national financial openness to affect the distribution of output growth flexibly in a quantile regression framework. I find that financial openness is associated with a moderately higher conditional median as well as lower 5th and 25th conditional percentiles of GDP growth, implying that financial globalization promotes growth at the cost of a higher probability of a crisis.

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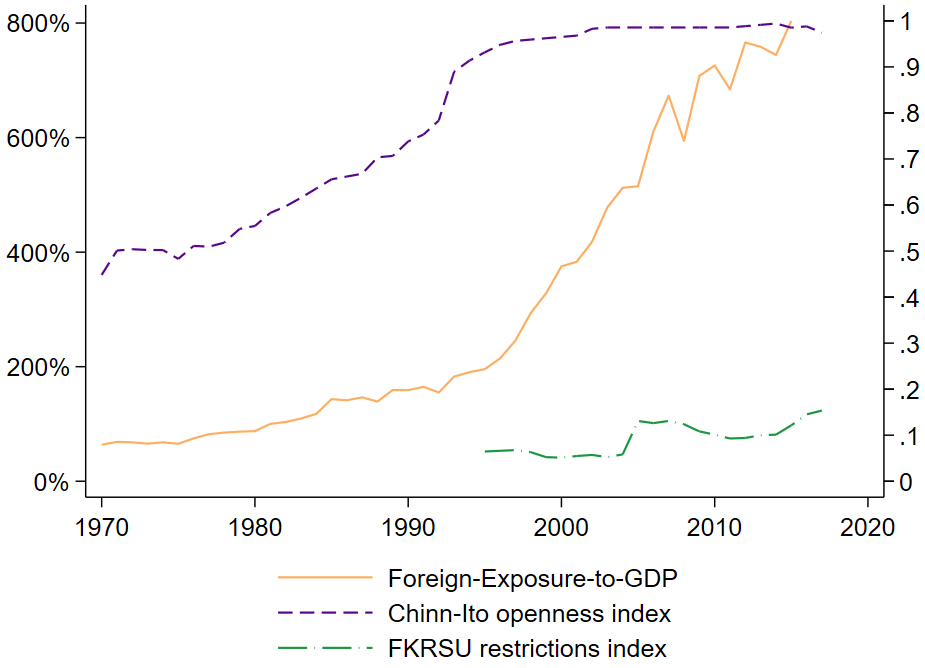
Figure 1: **Evolution of financial globalization**

This figure shows unweighted cross-country averages, within each group, of three measures of financial globalization from 1970 to 2017. The normalized Chinn and Ito (2006) openness index is a *de jure* measure of financial openness that takes a continuous value between 0 and 1 with a higher value corresponding to a higher degree of openness. The Fernandez et al. (2016) (FKRSU) restrictions index also measures the *de jure* financial openness which takes a value between 0 and 1 with a higher value corresponding to a higher degree of capital account restrictiveness and therefore a lower degree of openness. The *de facto* measure is based on the ratio of gross stocks of foreign assets and liabilities to GDP (in percent) based on the extended External Wealth of Nations data set (Lane and Milesi-Ferretti, 2018).

(a) Developed economies



(b) Emerging market economies

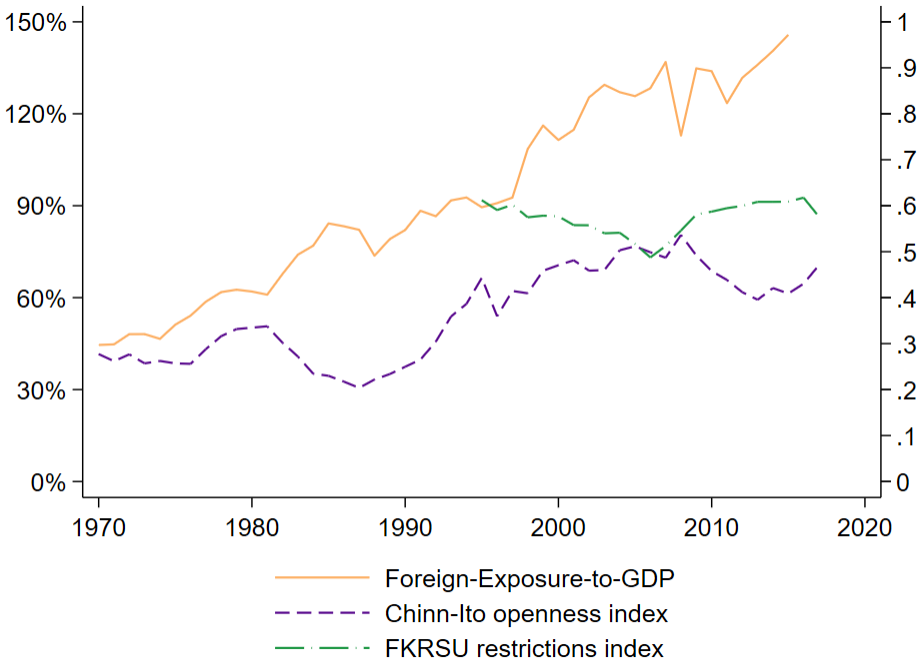


Table 1: Comparison of OLS and quantile regression models

Note: The sample covers 1970 to 2015 for 42 countries, including 21 developed economies and 21 emerging market economies. *Exposure* is the sum of aggregate foreign assets and liabilities from the extended External Wealth of Nations data set (Lane and Milesi-Ferretti, 2018). Fixed effects are denoted at the bottom. The t-statistics are reported in backets below coefficient estimates. I use ***, ** and * to denote significance at 1%, 5% and 10% level (two-sided), respectively.

(a) Developed economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ Log (Exposure)	0.075***	0.074***	0.085***	0.068***	0.043***	0.051***
	[7.18]	[7.18]	[11.7]	[7.49]	[4.49]	[3.78]
L2.Δ Log (Exposure)	-0.014	-0.061***	-0.018**	-0.0015	-0.0046	-0.019*
	[-1.37]	[-5.08]	[-2.04]	[-0.17]	[-0.46]	[-1.82]
L3.Δ Log (Exposure)	-0.0089	-0.038**	-0.031***	-0.0100	0.0093	0.035***
	[-0.84]	[-2.56]	[-4.03]	[-1.12]	[0.93]	[4.00]
L4.Δ Log (Exposure)	0.0023	-0.034***	-0.0011	0.0047	0.017*	0.022**
	[0.23]	[-3.47]	[-0.15]	[0.51]	[1.69]	[2.51]
L5.Δ Log (Exposure)	-0.045***	-0.068***	-0.036***	-0.027***	-0.042***	-0.033***
	[-4.32]	[-8.16]	[-6.13]	[-2.73]	[-4.29]	[-4.12]
Country fixed effects	✓	✓	✓	✓	✓	✓
Observations	859	859	859	859	859	859
R^2	0.127	0.187	0.086	0.062	0.080	0.172
Sum of lag coefficients	0.0101	-0.1275	-0.0007	0.0347	0.0234	0.0561
p-value	0.5924	0.0000	0.9499	0.0314	0.1642	0.0003

(b) Emerging market economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ Log (Exposure)	0.14***	0.13***	0.11***	0.11***	0.13***	0.090***
	[6.46]	[6.92]	[7.80]	[7.01]	[9.49]	[4.28]
L2.Δ Log (Exposure)	-0.0053	-0.0056	-0.024	-0.0098	0.0098	0.016
	[-0.26]	[-0.23]	[-1.44]	[-0.61]	[0.61]	[0.83]
L3.Δ Log (Exposure)	0.0044	-0.088***	-0.025	-0.0082	0.035**	0.059***
	[0.23]	[-4.22]	[-1.60]	[-0.54]	[2.55]	[3.58]
L4.Δ Log (Exposure)	-0.028	-0.027	-0.020	-0.036***	-0.0021	0.014
	[-1.56]	[-1.05]	[-1.42]	[-2.61]	[-0.15]	[0.71]
L5.Δ Log (Exposure)	-0.059***	-0.16***	-0.052***	-0.046***	-0.056***	-0.015
	[-3.74]	[-8.77]	[-3.37]	[-2.99]	[-3.94]	[-0.44]
Country fixed effects	✓	✓	✓	✓	✓	✓
Observations	849	849	849	849	849	849
R^2	0.123	0.155	0.101	0.092	0.117	0.211
Sum of lag coefficients	0.0469	-0.1541	-0.0105	0.0099	0.1198	0.1640
p-value	0.1086	0.0000	0.5957	0.7312	0.0000	0.0000

Table 2: Alternative measure of financial integration

Note: The sample covers 1970 to 2015 for 42 countries, including 21 developed economies and 21 emerging market economies. *Exposure* is the sum of aggregate foreign assets and liabilities from the extended External Wealth of Nations data set (Lane and Milesi-Ferretti, 2018). Fixed effects are denoted at the bottom. The t-statistics are reported in backets below coefficient estimates. I use ***, ** and * to denote significance at 1%, 5% and 10% level (two-sided), respectively.

(a) Developed economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ (Exposure/GDP)	0.012**	0.0079**	0.013***	0.0099***	0.0062**	0.015*
	[2.55]	[1.96]	[3.88]	[2.64]	[2.19]	[1.82]
L2.Δ (Exposure/GDP)	-0.0045	-0.019***	-0.0046*	-0.0031	-0.0025	-0.0049
	[-1.41]	[-3.76]	[-1.89]	[-1.11]	[-0.82]	[-0.98]
L3.Δ (Exposure/GDP)	-0.0023	-0.021***	-0.0094***	-0.0056*	-0.0033	0.0020
	[-0.60]	[-6.67]	[-4.66]	[-1.86]	[-1.02]	[0.38]
L4.Δ (Exposure/GDP)	-0.011**	-0.010*	-0.0087***	-0.0094***	-0.0032	-0.0077
	[-2.18]	[-1.70]	[-3.37]	[-3.12]	[-0.76]	[-1.35]
L5.Δ (Exposure/GDP)	0.0019	0.015**	0.0012	0.0027	-0.00055	-0.0016
	[0.58]	[2.29]	[0.56]	[0.91]	[-0.15]	[-0.32]
Country fixed effects	✓	✓	✓	✓	✓	✓
Observations	859	859	859	859	859	859
R^2	0.083	0.122	0.044	0.037	0.050	0.164
Sum of lag coefficients	-0.0030	-0.0271	-0.0090	-0.0055	-0.0033	0.0023
p-value	0.6430	0.0001	0.0494	0.3438	0.6332	0.8418

(b) Emerging market economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ (Exposure/GDP)	-0.0079	-0.032	0.017	-0.012	-0.00010	0.0049
	[-0.42]	[-0.67]	[1.52]	[-1.00]	[-0.0079]	[0.65]
L2.Δ (Exposure/GDP)	-0.021	-0.032	-0.022*	-0.0058	-0.0076	-0.026***
	[-1.08]	[-1.36]	[-1.69]	[-0.45]	[-0.62]	[-2.75]
L3.Δ (Exposure/GDP)	0.0076	0.010	-0.00078	0.0046	-0.0037	0.0095
	[0.56]	[0.68]	[-0.059]	[0.40]	[-0.35]	[0.70]
L4.Δ (Exposure/GDP)	0.017	0.0044	0.0050	0.0052	0.020	0.012
	[1.38]	[0.18]	[0.34]	[0.43]	[1.50]	[1.24]
L5.Δ (Exposure/GDP)	0.0068	0.0054	-0.019	0.0078	0.0071	-0.023**
	[0.50]	[0.16]	[-1.49]	[0.62]	[0.68]	[-2.02]
Country fixed effects	✓	✓	✓	✓	✓	✓
Observations	849	849	849	849	849	849
R^2	0.069	0.125	0.074	0.061	0.076	0.173
Sum of lag coefficients	0.0021	-0.0438	-0.0201	0.0003	0.0153	-0.0217
p-value	0.9577	0.4379	0.5081	0.9926	0.6395	0.5647

Table 3: Robustness check: Additional control variables

Note: The sample covers 1970 to 2015 for 42 countries, including 21 developed economies and 21 emerging market economies. *Exposure* is the sum of aggregate foreign assets and liabilities from the extended External Wealth of Nations data set (Lane and Milesi-Ferretti, 2018). Fixed effects are denoted at the bottom. The t-statistics are reported in backets below coefficient estimates. I use ***, ** and * to denote significance at 1%, 5% and 10% level (two-sided), respectively.

(a) Developed economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ Log (Exposure)	0.056***	0.088***	0.065***	0.038***	0.040***	0.015
	[6.01]	[7.59]	[7.53]	[4.82]	[4.92]	[1.51]
L2.Δ Log (Exposure)	-0.030***	-0.069***	-0.045***	-0.0085	-0.031***	-0.0095
	[-2.93]	[-5.37]	[-4.61]	[-1.03]	[-4.94]	[-1.10]
L3.Δ Log (Exposure)	0.0036	-0.015	-0.015	-0.0027	0.016**	0.015
	[0.38]	[-1.09]	[-1.52]	[-0.37]	[2.46]	[1.26]
L4.Δ Log (Exposure)	0.011	-0.030*	0.0089	0.018**	0.024***	0.019
	[1.14]	[-1.70]	[0.89]	[2.31]	[3.04]	[1.63]
L5.Δ Log (Exposure)	-0.037***	-0.052***	-0.034***	-0.021***	-0.035***	-0.014
	[-3.76]	[-3.25]	[-3.74]	[-3.02]	[-4.36]	[-1.32]
Country fixed effects	✓	✓	✓	✓	✓	✓
Include GDP	✓	✓	✓	✓	✓	✓
Observations	859	859	859	859	859	859
R^2	0.236	0.248	0.154	0.133	0.141	0.218
Sum of lag coefficients	0.0035	-0.0777	-0.0194	0.0233	0.0149	0.0251
p-value	0.8519	0.0276	0.2698	0.0834	0.3040	0.1972

(b) Emerging market economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ Log (Exposure)	0.10***	0.11***	0.086***	0.059***	0.081***	0.062**
	[5.30]	[4.14]	[9.26]	[3.92]	[5.73]	[2.43]
L2.Δ Log (Exposure)	-0.038**	-0.014	-0.052***	-0.024	-0.015	-0.021
	[-2.02]	[-0.41]	[-3.88]	[-1.56]	[-0.90]	[-1.20]
L3.Δ Log (Exposure)	0.0091	-0.099***	-0.0025	0.0094	0.047***	0.015
	[0.52]	[-3.59]	[-0.23]	[0.74]	[3.09]	[0.94]
L4.Δ Log (Exposure)	-0.021	-0.0093	-0.011	-0.029**	0.0069	0.000034
	[-1.23]	[-0.37]	[-0.90]	[-2.49]	[0.47]	[0.0019]
L5.Δ Log (Exposure)	-0.041**	-0.077***	-0.063***	-0.029**	-0.029**	-0.059***
	[-2.43]	[-4.32]	[-4.37]	[-1.97]	[-2.33]	[-3.02]
Country fixed effects	✓	✓	✓	✓	✓	✓
Include GDP	✓	✓	✓	✓	✓	✓
Observations	849	849	849	849	849	849
R^2	0.221	0.217	0.168	0.156	0.179	0.273
Sum of lag coefficients	0.0109	-0.0849	-0.0423	-0.0142	0.0916	-0.0027
p-value	0.7081	0.1591	0.0808	0.5701	0.0007	0.9291

Table 4: Robustness check: Use bootstrapped standard errors

Note: This table presents robustness tests of the main specification in Table 1 by using bootstrapped standard errors. The sample covers 1970 to 2015 for 42 countries, including 21 developed economies and 21 emerging market economies. *Exposure* is the sum of aggregate foreign assets and liabilities from the extended External Wealth of Nations data set (Lane and Milesi-Ferretti, 2018). Fixed effects are denoted at the bottom. The t-statistics are reported in backets below coefficient estimates. I use ***, ** and * to denote significance at 1%, 5% and 10% level (two-sided), respectively.

(a) Developed economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ Log (Exposure)	0.075***	0.074***	0.085***	0.068***	0.043***	0.051***
	[7.18]	[3.27]	[5.56]	[5.38]	[3.93]	[2.99]
L2.Δ Log (Exposure)	-0.014	-0.061***	-0.018	-0.0015	-0.0046	-0.019
	[-1.37]	[-2.87]	[-1.23]	[-0.11]	[-0.40]	[-0.99]
L3.Δ Log (Exposure)	-0.0089	-0.038*	-0.031**	-0.0100	0.0093	0.035**
	[-0.84]	[-1.71]	[-2.18]	[-0.81]	[0.74]	[2.44]
L4.Δ Log (Exposure)	0.0023	-0.034	-0.0011	0.0047	0.017	0.022
	[0.23]	[-1.42]	[-0.072]	[0.36]	[1.57]	[1.49]
L5.Δ Log (Exposure)	-0.045***	-0.068***	-0.036**	-0.027*	-0.042***	-0.033**
	[-4.32]	[-3.12]	[-2.49]	[-1.73]	[-3.18]	[-2.37]
Country fixed effects	✓	✓	✓	✓	✓	✓
Observations	859	859	859	859	859	859
R^2	0.127	0.187	0.086	0.062	0.080	0.172
Sum of lag coefficients	0.0101	-0.1275	-0.0007	0.0347	0.0234	0.0561
p-value	0.5924	0.0017	0.9776	0.1245	0.2636	0.0963

(b) Emerging market economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ Log (Exposure)	0.14***	0.13***	0.11***	0.11***	0.13***	0.090***
	[6.46]	[3.16]	[4.16]	[5.17]	[5.72]	[2.95]
L2.Δ Log (Exposure)	-0.0053	-0.0056	-0.024	-0.0098	0.0098	0.016
	[-0.26]	[-0.11]	[-0.97]	[-0.42]	[0.45]	[0.61]
L3.Δ Log (Exposure)	0.0044	-0.088*	-0.025	-0.0082	0.035	0.059***
	[0.23]	[-1.75]	[-1.11]	[-0.38]	[1.41]	[2.68]
L4.Δ Log (Exposure)	-0.028	-0.027	-0.020	-0.036*	-0.0021	0.014
	[-1.56]	[-0.65]	[-0.83]	[-1.81]	[-0.12]	[0.55]
L5.Δ Log (Exposure)	-0.059***	-0.16***	-0.052***	-0.046**	-0.056***	-0.015
	[-3.74]	[-3.70]	[-2.73]	[-2.27]	[-2.95]	[-0.47]
Country fixed effects	✓	✓	✓	✓	✓	✓
Observations	849	849	849	849	849	849
R^2	0.123	0.155	0.101	0.092	0.117	0.211
Sum of lag coefficients	0.0469	-0.1541	-0.0105	0.0099	0.1198	0.1640
p-value	0.1086	0.0265	0.7487	0.7883	0.0024	0.0033

Table 5: Robustness check: Use clustered standard errors

Note: This table presents robustness tests of the main specification in Table 1 by using clustered standard errors. For quantile regressions, I use the Parente and Santos Silva (2015) approach for clustering. The sample covers 1970 to 2015 for 42 countries, including 21 developed economies and 21 emerging market economies. *Exposure* is the sum of aggregate foreign assets and liabilities from the extended External Wealth of Nations data set (Lane and Milesi-Ferretti, 2018). Fixed effects are denoted at the bottom. The t-statistics are reported in backets below coefficient estimates. I use ***, ** and * to denote significance at 1%, 5% and 10% level (two-sided), respectively.

(a) Developed economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ Log (Exposure)	0.075***	0.074***	0.085***	0.068***	0.043***	0.051**
	[6.55]	[4.09]	[5.83]	[5.15]	[4.52]	[2.57]
L2.Δ Log (Exposure)	-0.014	-0.061***	-0.018	-0.0015	-0.0046	-0.019
	[-1.56]	[-3.19]	[-1.63]	[-0.13]	[-0.43]	[-0.96]
L3.Δ Log (Exposure)	-0.0089	-0.038**	-0.031***	-0.0100	0.0093	0.035***
	[-1.25]	[-2.52]	[-3.15]	[-0.88]	[1.04]	[3.67]
L4.Δ Log (Exposure)	0.0023	-0.034*	-0.0011	0.0047	0.017**	0.022*
	[0.32]	[-1.88]	[-0.11]	[0.49]	[2.14]	[1.94]
L5.Δ Log (Exposure)	-0.045***	-0.068***	-0.036***	-0.027*	-0.042***	-0.033***
	[-4.41]	[-3.14]	[-3.41]	[-1.92]	[-3.47]	[-3.60]
Country fixed effects	✓	✓	✓	✓	✓	✓
Observations	859	859	859	859	859	859
R^2	0.127	0.187	0.086	0.062	0.080	0.172
Sum of lag coefficients	0.0101	-0.1275	-0.0007	0.0347	0.0234	0.0561
p-value	0.6541	0.0003	0.9800	0.2057	0.3758	0.1137

(b) Emerging market economies

	Outcome variable: Δ log real GDP per capita					
	OLS	Quantile Regression Estimates				
	OLS	0.05	0.25	0.5	0.75	0.95
L1.Δ Log (Exposure)	0.14***	0.13***	0.11***	0.11***	0.13***	0.090***
	[4.93]	[3.23]	[3.68]	[4.58]	[4.52]	[6.14]
L2.Δ Log (Exposure)	-0.0053	-0.0056	-0.024	-0.0098	0.0098	0.016
	[-0.26]	[-0.11]	[-0.94]	[-0.59]	[0.45]	[0.95]
L3.Δ Log (Exposure)	0.0044	-0.088**	-0.025	-0.0082	0.035*	0.059***
	[0.37]	[-2.45]	[-1.28]	[-0.50]	[1.80]	[3.64]
L4.Δ Log (Exposure)	-0.028*	-0.027	-0.020	-0.036**	-0.0021	0.014
	[-1.90]	[-0.76]	[-0.95]	[-2.35]	[-0.18]	[0.82]
L5.Δ Log (Exposure)	-0.059***	-0.16***	-0.052***	-0.046***	-0.056***	-0.015
	[-3.53]	[-5.73]	[-3.31]	[-2.73]	[-2.68]	[-0.75]
Country fixed effects	✓	✓	✓	✓	✓	✓
Observations	849	849	849	849	849	849
R^2	0.123	0.155	0.101	0.092	0.117	0.211
Sum of lag coefficients	0.0469	-0.1541	-0.0105	0.0099	0.1198	0.1640
p-value	0.2535	0.0365	0.7136	0.7822	0.0197	0.0015