Financial Integration and Fiscal Policy[א]

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Abstract

The aim of this paper is to assess the impact of financial integration on fiscal policy. Using an unbalanced panel of 31 OECD countries from 1970 to 2009, the paper shows that financial integration has significant disciplinary effects by reducing fiscal deficits (mostly government spending) and (discretionary) spending volatility. In addition, we find that financial integration affects the composition of government debt and enhances risk-sharing by increasing the share of foreign debt to the total. The results are robust to both *de jure* and *de facto* measures of financial integration and to different estimation strategies (LSDV, 2SLS and 3SLS).

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1. Introduction

The occurrence of a financial crisis usually re-opens the discussion about the costs and benefits associated with financial integration. Indeed an oft-cited claim is that financial integration is itself responsible for the occurrence and the spreading of financial crises. Although there is weak empirical evidence in favor of this claim[1], in the aftermath of financial crises the advantages of financial integration seem to be in the common perception somehow annihilated by the costs associated with the crises.

From a theoretical point of view, financial integration can be beneficial for several reasons: i) financial integration, by giving access to world capital markets, contributes to international risk-sharing and domestic consumption smoothing (Kose et al. 2007); ii) it positively affects domestic investment and increases economic growth (Borensztein et al., 1998; Kose et al., 2010; Osada and Saito, 2010); iii) financial integration may also enhance the efficiency of the banking system and incentive the development of domestic financial markets (Chinn and Ito, 2005); iv) it may improve the quality of macroeconomic policies and enhance fiscal discipline (Fischer ,1998; Obstfeld, 1998 and 2009; Agénor, 2003).

Financial integration can improve the management of fiscal policy through few channels. First, given the fact that investment decisions are highly affected by the quality of macroeconomic policies, free capital movements may reward good policies and penalize bad ones and thus force national authorities to adopt a greater fiscal discipline. In addition, a greater financial integration can also be interpreted as a signal that country's authorities wish to introduce and follow sound policies (Bartolini and Drazen, 1997). Second, international risk-sharing by decreasing consumption and growth volatility also lowers government spending volatility which may in turn enhance fiscal positions and foster growth[2] (Fátas and Mihov, 2003). Third, spillover effects occurring in a more financially integrated economy can also attenuate the burden carried by a country's fiscal stimulus in the face of a common shock across countries and policy synchronization (Garret and Mitchell, 2001).[3]

In practice, however, the impact of financial integration on fiscal policy is less obvious. Indeed, the disciplinary effect strongly depends on how credit risk premia change in relation to countries' fiscal positions[4] and whether financial integration engages a country in international

[1] Glick et al. (2006) find that capital account openness reduces the probability of financial crises. Edwards (2005) finds no evidence of a relationship between financial openness and the incidence of external crises. Bonfiglioli and Mendicino (2004) find that the adverse effects of banking crises are weaker for countries with open capital accounts.

[2] Fiscal policy itself might be a source of business-cycle fluctuations and exacerbate macroeconomic volatility. Fatás and Mihov (2003) show that the volatility of output caused by discretionary changes in fiscal policy lowers economic growth by more than 0.8 percentage points for every percentage point increase in volatility.

[3] The traditional Keynesian theory stipulates that a domestic fiscal stimulus is usually "exported" to partner economies. Accordingly, in the case of a common shock across countries, synchronized policy actions can be then mutually beneficial (Garret and Mitchell, 2001).

[4] In fact, market discipline is far to be perfect. Credit risk premium can change without relation to countries' fundamentals (contagion, appetite for risk). Moreover, until recently, markets seemed to be more *indulgent* for

risk-sharing and consumption smoothing.[5] Finally, the disciplinary effect of financial integration relies upon national authorities' preferences and characteristics. For example, in countries with a lower quality of national institutions an easier access to external funding can, at least in the short-term, lower the incentive to pursue costly fiscal consolidations.

Financial integration can also affect the composition of the government budget balance and debt. A more competitive international environment can increase pressures on government finances, raising the needs for social protection and investment in infrastructure. At the same time, as a response to financial integration governments can modify their revenue structure[6] toward higher expenditure taxes (Hines and Summers, 2009). Finally, financial integration can affect the composition of public debt by increasing the share of foreign debt (Lane and Shambaugh, 2010).

The empirical literature on the impact of financial integration on fiscal policy is inconclusive. To the best of our knowledge only two studies analyze the (direct) disciplinary effect of financial integration on fiscal policy and also get opposite results[7]. Kim (2003) finds that capital account liberalization has disciplinary effects on fiscal policy and contributes to reduce fiscal deficits. In contrast, Tytell and Wei (2004) find no evidence of the positive influence of financial integration on public finance. Both studies use a similar panel of data and apply IV methodology, but they differ for the measure of financial openness used in the analysis (*de facto* vs. *de jure*). [8]

The objective of this research is to shed more light on the impact of financial integration on fiscal policy. In particular, our contribution to the empirical literature is fourfold. First, we investigate the disciplinary impact of financial integration on the government budget balance and its components. Second, we examine how this impact has changed over time. Third, we evaluate the disciplinary effect that financial integration exercises through reducing (total and

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developed countries, and credit risk premia have effectively reacted only to important fiscal deterioration (Bayoumi et al., 1995; Hauner et al., 2007).

[5]Kose et al. (2007) find a positive effect of financial integration on risk-sharing in the recent period only for developed countries. In emerging economies, financial integration is usually associated with important cross-border capital movements, such as bank loans, that limit the effectiveness of risk-sharing mechanisms.

[6] Devereux et al. (2002) find that financial integration lowers direct corporate taxation. Hines and Summers (2009) suggest that the greater the openness of the economy, the more it will rely on expenditure taxes. Furceri and Karras (2010) find that a higher level of financial openness is associated with higher expenditure taxes and lower income taxes.

[7] Few studies have indirectly assessed the disciplinary effect of financial integration. For instance, Manganelli and Wolswijk (2009) argue in favor of the disciplinary role of financial integration analyzing the influence of the rating on the euro zone bonds spreads (market discipline).

[8] These studies use data for 54 (Kim, 2003) and 62 (Tytell and Wei, 2004) countries including 20 industrial economies over the period of 1950-1994 and 1975-1999, respectively. Tytell and Wei (2004) use a *de facto* measure of financial integration and apply a transition matrix technique to determine whether financial integration induces substantial qualitative changes to macroeconomic policies. Kim (2003) uses a *de jure* measure of capital account openness.

discretionary[9]) spending volatility. Fourth, we investigate the effect of financial integration on the composition of public debt (domestic vs. foreign debt).

For robustness purposes, we evaluate the effect of financial integration using both *de facto* and *de jure* measures of financial integration. Finally, we also control for reverse causality and endogeneity using different estimation techniques (2SLS and 3SLS).

Our results provide strong empirical evidence that financial integration has a significant disciplinary effect on fiscal policy by reducing the budget deficit (mostly by decreasing government spending, in particular wage consumption and public investment, and to a lesser extent by increasing indirect taxes) and by lowering total and discretionary spending volatility (over and above the effect of the increase in risk-sharing and lower growth volatility). The disciplinary effect has increased over time, becoming statistically significant only in the last two decades. Financial integration also affects the composition of public debt and enhances risk-sharing by increasing the share of foreign debt to total public debt. Overall, the results remain robust to both *de jure* and *de facto* measures.

The rest of the paper is structured as follows. Section 2 describes definitions and sources of the main variables used in the empirical analysis and show the evolution of financial integration in the OECD countries over time. Section 3 presents the results. Section 4 summarizes the main results and concludes.

2. Data

This section describes definitions and sources of the main variables used in the empirical analysis, and it provides descriptive statistics of the fiscal variables and the measures of financial integration analyzed.

Our sample consists of annual observations for 31 OECD countries over the period 1970-2009. The reason to restrict the analysis to OECD countries is due to data availability for some of the variables (such as the disaggregated items of government spending and revenue) over a sufficient long time-span, and it has also the intent to reduce measurement errors associated with the measures of financial integration and with some fiscal variables (such as foreign debt and the components of the budget balance).

[9] Discretionary spending is defined as the component of government spending that does not react to the state of the economy and it is implemented for reasons other than current macroeconomic conditions.

2.1 Financial Integration

We consider two types of measures of financial integration: *de facto* and *de jure*. While *de facto* measures reflect the actual exposure of a country to international financial markets, *de jure* measures reflect the policy restrictions that affect the actual openness of a country to the markets. Therefore, although *de jure* measures could be considered superior for tracking changes in restrictions, *de facto* measures are preferable to capture the effectiveness of enforcement of capital controls, which can change over time even if the legal restrictions themselves remain unchanged.

The *de facto* measures of financial integration that we use in the empirical section draw upon the work of Lane and Milesi-Ferretti (2007).[10] The authors propose two measures of financial integration. The first (volume-based) measure (*FI1*) is the share of the total stocks of external asset and liabilities to *GDP*:

$$FI1_{it} = \frac{(FA_{it} + FL_{it})}{GDP_{it}} \tag{1}$$

where *FA* e *FL* refer to the stock of foreign assets and liabilities, respectively. The second (equity-based) measure (*FI2*) is the share of the sum of the total stocks of portfolio assets and liabilities and the stocks of direct investment assets and liabilities to *GDP*:

$$FI2_{it} = \frac{(PEQA_{it} + PEQL_{it} + FDIA_{it} + FDIL_{it})}{GDP_{it}} \tag{2}$$

where *PEQA (L)* and *FDIA (L)* are the stocks of portfolio equity and FDI assets (liabilities).

The reason for distinguishing two types of measures of financial integration is their potential different impact on fiscal positions. For instance, from a theoretical point of view is reasonable to expect that an increase in external portfolio and foreign direct investment positions can enhance more the effectiveness of international risk-sharing and induce a greater growth and consumption smoothing than an increase in external debt positions.

Figure 1 plots the evolution of the *GDP*-weighted average of these two measures over the period 1970-2004. It shows that financial integration has steadily increased over time with an acceleration around mid-90s. In particular, the first (second) measure of financial integration has

[10] The authors have constructed an extensive dataset of stocks of gross liabilities and assets for 145 countries covering the period 1970–2004. The database is an extension of the *External Wealth of Nations* database (Lane and Milesi-Ferretti, 2001) with a revised methodology and utilizing a larger set of sources. See Lane and Milesi-Ferretti (2007) for more details.

increased by about 270 (105) percentage points of *GDP* over the overall period, with 2/3 of the increase occurred only over the last decade.

The measure of *de jure* financial integration we consider is the one proposed by Chinn and Ito (2006, 2008). The authors, building on previous works of Quinn (1997, 2003), develop an index of financial openness based on principal components extracted from disaggregated capital account restriction measures reported in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER).[11] A higher value of the index means a higher level of capital account openness. Figure 2 plots the *GDP*-weighted average of the index over time and shows, as for the *de facto* measures, that capital account openness has steadily increased. As shown in Table 2, the *de facto* and the *de jure* measures of financial integration are positively and statistically significantly correlated.

2.2 Fiscal Variables

The fiscal variables considered in the analysis are: i) the government budget balance (as percentage of *GDP*) and its components; ii) government (discretionary) spending volatility; iii) foreign debt as share of domestic debt (total debt).

Table 2 reports descriptive statistics of these variables and of the measure of financial integration described in the previous section. With the exception of data for foreign debt (foreign owned debt issued in foreign countries and under the jurisdiction of a foreign court) which are taken from Panizza (2008), all the other fiscal data have been retrieved from the OECD Economic Outlook 88 Database.

2.3 Control Variables

Three types of control variables have been used in the analysis, where their choice has been dictated by previous findings in the literature:

- Macroeconomic variables: a) *GDP* per worker; b) inflation; c) short-term interest rate; d) output volatility; e) population and f) trade openness.
- Political variables: a) parties' concentration; b) legislative elections dummies; c) dummy for parliamentary system; d) political stability.
- Financial variables: a) stock market capitalization over *GDP*, b) bank deposits over *GDP*.

[11] Other studies in the literature that measure capital account openness rely on the summary information provided in the AREAER. See, for example, Quinn (1997, 2003), Mody and Murshid (2005) and Edwards (2005).

The source of macroeconomic variables is the OECD Economic Outlook 88 Database. Financial variables are obtained from Beck et al. (2010). Data for political variables are taken from the Database of Political Institutions (2010).

3. Empirical methodology and results

3.1 Budget balance

We investigate the disciplinary effect of financial integration on the budget balance by estimating the following equation:

$$\overline{BB}_{i,[t,t+4]} = \alpha_i + \beta FI_{it} + \gamma' \boldsymbol{X}_{it} + \varepsilon_{i,t} \quad (3)$$

where $\overline{BB}_{i,[t,t+4]}$ denotes the 5-years average of the government budget balance between time *t* and *t+4* , FI stands for the *de facto* (*de jure*) measure of financial integration and $\boldsymbol{X}$ is a set of budget balance determinants such as: a) output growth and debt-to-*GDP* (baseline); b) *GDP* per worker; c) population; d) inflation; e) short-term interest rate; f) openness; g) parties' concentrations; h) legislative elections dummies; i) parliamentary system; l) political stability). Country-fixed effects (α_i) are included to control for country-specific patterns of the budget balance. To iron out cyclical fluctuations equation (3) is estimated over 5-years non-overlapping periods: 1970-1974, 1975-1980, 1985-1989, 1990-1994, 19951-1999, 2000-2004, 2005-2009.[12] Reverse causality is addressed using in the regression only the initial values of financial integration and the control variables.

The results using the first measure of financial integration reported in Table 3 suggest that an increase in financial integration has a positive and significant effect on the budget balance. In particular, we find that a point increase in financial integration (equivalent to 100 percentage points of *GDP*) improves the budget balance by about 0.5-0.75 percentage point. This implies that the large increase in financial integration over the last decade (180 percentage points of *GDP*) may have pushed countries to improve their budget balance by 0.9-1.4 percentage points.

The results are robust across different specifications. In Table 4 we report the results obtained using also the other two measures of financial integration described in the previous section. The impact of financial integration measured using portfolio and direct investment is in general twice the effect based on total external assets and liabilities. The effect of capital openness is statistically significant and it implies that a reduction of one point in capital restrictions increases the budget balance by 0.9-1.3 percentage points.

[12] For the last period [2005, 2009] we considered the level of *de facto* financial integration in 2004 as initial level. The results are qualitatively unchanged when the last period is omitted from the analysis.

Among the control variables, we found a strong cyclical influence of *GDP* growth (about 0.4 percentage point). Parties' concentration is found to be negatively correlated with the budget balance. An increase in interest rates, capturing an increase in the cost of public financing, decreases the budget balance about 0.2-0.3 percentage point. The other control variables were found to be not statistically significant.

As an alternative specification we re-estimate equation (3) using the 5-years average of financial integration between time *t* and *t+4* (instead of the initial level at time *t*). In this case, reverse causality from the 5-years budget balance to the 5-years average of financial integration may be an issue. To control for this, although the Hausman tests *reject* the hypothesis of endogeneity for all the measures of financial integration, we re-estimate our baseline equation using Instrumental Variables. In particular, following Lane and Milesi-Ferretti (2008), we *instrument* the 5-years average of financial integration using the initial level of capital account openness, stock market capitalization to *GDP* (bank deposits to *GDP* for capital account openness), *GDP* per worker, and country size (population). The Kleibergen and Paap (2006) test together with the *F*-test of the first stage regression and the Hansen *J*-statistics validate the hypothesis of strong exogeneity of the instruments (Table 5). The results reported in the table corroborate the positive and statistically significant impact of financial integration on the budget balance. In particular, we find that while a point increase in the *de facto* measures (100 percentage points of *GDP*) increases the budget balance by about 1.3-3 percentage points, a point increase in capital account openness increases the budget balance by about 2 percentage points. The significant impact of financial integration on the government budget balance is also confirmed when 3SLS are applied (Table 6).

Successively, we test whether the effect of financial integration on the government budget balance has changed over time. For this purpose we re-estimate equation (3) over five non-overlapping 20-years windows: 1970-1989, 1975-1994, 1980-1999, 1985-2004, and 1990-2009.[13] The estimates of the coefficients related to financial integration reported in Table 7 suggest that the effect of financial integration on the budget balance has increased over time, becoming statistically significant only in the last two decades.

3.2 Components

In this section we test the impact of financial integration on the components of the budget balance by re-estimating equation (3) for each component of government spending (government consumption, transfers to households, and government investment) and revenue (direct and indirect revenue). The results presented in Table 8 show that the disciplinary effect on the budget balance is mostly driven by government spending. In fact, while the coefficient associated with

[13] For the last windows we considered the level of *de facto* financial integration in 2004 as initial level in the regression for the period [2005, 2009].

total spending is always negative and highly statistically significant, the estimated coefficient associated with total revenue is found to be statistically insignificant. Among the different categories of government expenditure, we find that the variables being negatively affected by financial integration are government investment and the wage share of government consumption. In contrast, the impact on the non-wage share of government consumption is positive and statistically significant, leading to a null effect for total government consumption. Financial integration seems to have no significant impact on transfers to households.

Among the components of government revenue, we find only weak evidence of a positive effect of financial integration on indirect total revenue. This is consistent with Hines and Summers (2009) which suggest that the greater the openness of the economy, the more it will tend to rely on expenditure taxes.

For robustness purposes, we re-estimated for each component of the budget balance the impact of financial integration using the 5-years average over the period [*t*, *t+4*] and IV techniques. The results reported in the Appendix (Table A1) are qualitatively unchanged and confirm that while financial integrations reduces government spending, it has no effect on total revenue.

3.3 Spending volatility

In order to assess the disciplinary impact of financial integration on spending volatility we construct two measures of government spending volatility: total spending volatility and discretionary spending volatility. The first measure consists of the standard deviation of the growth rate of government spending. This measure captures both the volatility of spending due to discretionary changes in fiscal policy but also the volatility associated with automatic stabilizers. To net out this second effect, we construct a measure of discretionary spending volatility which does not respond to the cycle (Fátas and Mihov, 2003). [14] In particular, we measure discretionary spending volatility by the standard deviation of the residuals $(\widehat{\varepsilon_{i,t}})$ of the following equation:

$$\Delta G_{i,t} = \alpha_i + \gamma_i \Delta G_{i,t-1} + \beta_i \Delta Y_{i,t} + \varepsilon_{i,t} \qquad (4)$$

where $\Delta G_{i,t}$ is the growth rate of public spending, $\Delta Y_{i,t}$ is *GDP* growth and α_i are country fixed effects. The equation is estimated by IV using two lags of *GDP* growth as instruments.

[14] For other works using a similar approach see, for example, Fátas and Mihov (2006), Afonso et al. (2010), Debrun and Kapoor (2010).

Successively, we estimate spending volatility against financial integration and a set of controls:

$$\overline{SG}_{i,[t,t+4]} = \alpha_i + \beta FI_{it} + \boldsymbol{\gamma' X_{it}} + \varepsilon_{i,t} \quad (5)$$

where $\overline{SG}_{i,[t,t+4]}$ refers to the 5-years average of total (discretionary[15]) spending volatility between time *t* and *t+4*. The set of controls ***X*** includes: a) Output volatility; b) government size (measured by the share of total government spending over *GDP*); and c) legislative elections dummies. Countries with higher output volatility tend to have higher government spending volatility due to automatic stabilizers and to a more frequent and discretionary use of fiscal policy to smooth economic fluctuations. It is important to remark that in order to assess the *disciplinary* impact of financial integration on spending volatility is necessary to control for output volatility. Indeed, financial integration can reduce government spending volatility via disciplinary effects, but also by lowering output volatility.

The results presented in Table 9 show that an increase in financial integration lowers total (discretionary) spending volatility even controlling for output volatility. This implies that for a given level of output volatility financial integration induces a more stable government spending. The results hold for both the *de jure* and *de facto* measures of financial integration. We also find that a higher spending volatility is generally associated with higher output volatility and with a lower government size, while legislative elections dummies do not have a significant impact.[16]

3.4 Foreign Debt

We investigate the impact of financial integration on the share of foreign public debt by estimating the following equation:

$$\overline{FD}_{i,[t,t+4]} = \alpha_i + \beta FI_{it} + \boldsymbol{\gamma' X_{it}} + \varepsilon_{i,t} \quad (6)$$

where $\overline{FD}_{i,[t,t+4]}$ is the 5-years average of the ratio of foreign debt to domestic debt (total debt) and ***X*** is a set of controls including: a) the ratio of total debt to *GDP;* b) *GDP* per worker; c) output volatility; and d) inflation. We control for *GDP* per worker since richer countries may benefit from a lower risk-perception from international investors; nominal volatility (inflation) is expected to reduce the willingness of foreign investors to hold bonds; and we control for output

[15] In the case of discretionary spending, our dependent variable is based on estimates. This leads to an increase in the standard deviation of the second-stage estimates, which lowers the *t* –statistic, meaning that any correction to the presence of this un-measurable error term will increase the significance of our estimates.

[16] We checked for reverse causality between spending volatility and financial integration, and the Hausman endogeneity tests rejected thy hypothesis of endogeneity for all measures of financial integration. In addition, we re-estimated equation (5) using 2SLS and the results, available from the authors upon request, are extremely robust.

volatility since the importance of international risk-sharing may be greater the more volatile is the domestic economy (Lane and Shambaug, 2010).

The results reported in Table 10 suggest that financial integration increases the share of foreign debt. The results hold both for the ratio of foreign debt to domestic debt and for the ratio of foreign debt to total debt. This implies that for a given level of total debt as percentage of *GDP* (used as control), countries with higher financial integration will tend to change the composition of public debt toward higher foreign debt. In particular, a point increase in the level of financial integration increases foreign debt as share of domestic debt (total debt) by 6-8 (1-3) percentage points.

The controls variables are all statistically significant across the different specifications and are in line with previous findings in the literature (Lane and Shambaug, 2010). In particular, we find that a higher initial level of *GDP* per capita (inflation), initial debt-to-GDP and growth volatility increases (reduces) the share of foreign debt.[17]

4. Conclusions

An oft-cited claim is that financial integration is itself responsible for the occurrence and the spreading of financial crises. Although there is weak empirical evidence in favor of this claim, in the aftermath of financial crises the advantages of financial integration seem to be in the common perception somehow annihilated by the costs associated with the crises. In addition, a common view in the literature is that although the advantage of financial integration can be shared in principle by any country, the advantages are much more compelling for countries with better institutions and good macroeconomic policies.

Assessing the benefits of financial integration is clearly a matter of remarkable policy relevance in the current situation, where several emerging markets are taking steps to restrict their capital account in response to the surge in capital inflows from advanced economies.

The results of our paper provide strong empirical evidence that financial integration can serve as a tool to enhance the quality of macroeconomic policies, and thereby indirectly enhance growth. More precisely, for a panel of 31 OECD countries over the period of 1970-2009, we find that an increase in financial integration comparable to the one observed over the last decade may increase the government budget balance about 0.9-1.4 percentage points. This improvement in fiscal positions is mainly due to a decrease in government wages and public investment, and to a lesser extent to an increase in indirect taxes. In addition, financial integration may also

[17] We checked for reverse causality between the share of foreign debt and financial integration, and the Hausman tests rejected the hypothesis of endogeneity. In addition, we re-estimated equation (6) using 2SLS and the results, available from the authors upon request, are qualitatively unchanged.

contribute to reduce government spending volatility, and thus enhance growth through this channel. Finally, the paper presents also evidence that financial integration improves fiscal policy management and enhances risk-sharing by increasing the share of debt held by foreign residents.

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Table 1.Descriptive statistics

		Average	SD	Min	Max
Financial integration	FI1	2.54	12.97	0.19	206.43
	FI2	1.02	7.55	0.00	123.05
	FI3	1.01	1.48	-1.81	2.54
Budget balance	Budget balance (% of GDP)	-2.03	4.32	-21.65	19.06
	Revenue (% of GDP)	39.31	9.62	16.84	61.94
	Spending (% of GDP)	39.20	10.34	12.65	64.21
Foreign debt	Foreign debt (% of GDP)	15.37	12.31	0	67.41
	Foreign debt (% of total debt)	28.95	17.12	0	77.41
Spending volatility	Total spending volatility	2.31	1.52	0.01	10.22
	Discretionary spending volatility	2.02	1.17	0.17	8.18

Note: FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

Table 2. Correlation between measures of financial integration

	FI1	**FI2**	**FI3**
FI1	1		
FI2	0.95	1	
FI3	0.40	0.44	1

Note: FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

Table 3. The effect of financial integration on budget balance (LSDV)

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
$FI1_t$	0.521 (2.12)**	0.639 (2.15)**	0.741 (2.32)**	0.737 (2.32)**	0.754 (2.19)**	0.753 (2.19)**	0.651 (2.07)**	0.656 (2.01)**
Growth $_t$	0.444 (3.65)***	0.113 (0.41)	0.326 (1.41)	0.323 (1.41)	0.586 (2.67)***	0.586 (2.65)***	0.511 (3.90)***	0.416 (3.08)***
Debt-to-GDP $_t$	-0.015 (-1.06)	0.010 (0.39)	-0.005 (-0.29)	-0.005 (-0.26)	0.021 (0.81)	0.021 (0.82)	-0.005 (-0.27)	-0.001 (-0.09)
GDP per capita $_t$ (log)	-	-	-	-	-	-	-1.224 (-0.41)	-0.430 (-0.10)
Population $_t$ (log)	-	-	-	-	-	-	-3.712 (-0.53)	1.168 (0.17)
Inflation $_t$	-	-	-	-	-	-	-	-0.040 (-1.29)
Interest rate $_t$	-	-	-	-	-	-	-	-0.269 (-3.08)***
Openness $_t$ (log)	-	-	-	-	-	-	-	-0.119 (-0.03)
Parties concentration $_t$	-	-10.823 (-1.83)*	-	-	-	-	-	-
Legislative Elections $_t$	-	-	0.090 (0.14)	-	-	-0.020 (-0.03)	-	-
System $_t$	-	-	-	0.600 (0.91)	-	1.065 (1.45)		-
Stabs $_t$	-	-	-	-	-0.142 (-0.12)	-0.151 (-0.12)	-	-
N	124	64	101	101	90	90	118	109
R^2	0.70	0.71	0.70	0.70	0.75	0.75	0.69	0.75

Note: t-statistics in parenthesis based on robust standard errors. ***,**,* denote significance at 1%, 5%, and 10%, respectively. Country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*.

Table 4. The effect of financial integration on budget balance, *de facto* and *de jure* (LDSV)

	FI 1 *de facto*			**FI 2** *de facto*			**FI 3** *de jure*		
FI_t	0.521 (2.12)**	0.639 (2.15)**	0.656 (2.01)**	1.160 (2.57)**	1.317 (2.45)**	1.117 (1.78)*	0.813 (2.33)**	1.289 (2.64)***	0.888 (2.43)**
Growth $_t$	0.444 (3.65)***	0.113 (0.41)	0.416 (3.08)***	0.430 (3.67)**	0.117 (0.46)	0.428 (3.16)***	0.415 (3.70)***	0.182 (0.72)	0.452 (3.35)***
Debt-to-GDP $_t$	-0.015 (-1.06)	0.010 (0.39)	-0.001 (-0.09)	-0.013 (-0.95)	0.015 (0.57)	0.002 (0.12)	-0.010 (-0.89)	0.004 (0.16)	-0.012 (-0.88)
Parties concentration $_t$	-	-10.823 (-1.83)*	-	-	-9.898 (-1.72)*	-	-	-15.428 (-2.44)**	-
GDP per capita $_t$ (log)	-	-	-0.430 (-0.10)	-	-	0.105 (0.02)	-	-	2.329 (0.57)
Population $_t$ (log)	-	-	1.168 (0.17)	-	-	-1.189 (-0.17)	-	-	8.427 (1.32)
Inflation $_t$	-	-	-0.040 (-1.29)	-	-	-0.031 (-0.96)	-	-	-0.078 (-2.38)**
Interest rate $_t$	-	-	-0.269 (-3.08)***	-	-	-0.243 (-2.75)***	-	-	-0.281 (-3.67)***
Openness $_t$ (log)	-	-	-0.119 (-0.03)	-	-	-0.365 (-0.10)	-	-	0.773 (0.27)
N	124	64	109	124	64	109	145	70	127
R^2	0.70	0.71	0.75	0.71	0.70	0.74	0.67	0.71	0.72

Note: t-statistics in parenthesis based on robust standard errors. ***,**,* denote significance at 1%, 5%, and 10%, respectively. Country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

Table 5. The effect of financial integration on budget balance (IV)

	FI 1 *de facto*	**FI 2** *de facto*	**FI 3** *de jure*
2st stage regression : budget balance as dependent variable			
$FI1_{t, t+4}$	1.338 (3.55)***	2.971 (3.60)***	2.095 (2.38)**
$Growth_{t}$	0.845 (3.90)***	0.740 (3.06)***	1.044 (4.26)***
$Debt\text{-}to\text{-}GDP_{t}$	-0.003 (-0.12)	-0.008 (-0.34)	-0.028 (-1.14)
KP under-identification test, p-value	0.005	0.001	0.033
Hansen test, p-value	0.22	0.22	0.19
N	58	58	57
Centered-R^2	0.61	0.61	0.50
1st stage regression : Financial Integration as dependent variable			
F-test (p-value)	43.91 (0.00)	25.25 (0.00)	11.10 (0.00)

Note: t-statistics in parenthesis based on robust standard errors. ***,**,* denote significance at 1%, 5%, and 10%, respectively. Country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

Table 6. The effect of financial integration on budget balance (3SLS)

	FI 1 *de facto*	**FI 2** *de facto*	**FI 3** *de jure*
regression : Budget Balance as dependent variable			
$FI1_{t,t+4}$	1.337 (4.90)***	2.943 (4.63)***	2.11 (3.92)***
Growth $_t$	0.846 (5.03)***	0.754 (4.13)***	0.980 (5.51)***
Debt-to-GDP $_t$	-0.003 (-0.18)	-0.005 (-0.31)	-0.023 (-1.68)*
N	62	58	62
R^2	0.84	0.84	0.79
regression : Financial Integration as dependent variable			
Initial capital openness $_t$	0.134 (1.00)	0.051 (0.78)	0.560 (8.52)***
Stock market capitalization $_t$	0.670 (2.99)***	0.319 (2.98)***	-0.198 (-2.46)***
GDP per worker $_t$ (log)	6.340 (5.17)***	2.127 (3.58)***	2.089 (4.29)***
Population $_t$ (log)	0.441 (0.11)	1.587 (0.79)	-4.052 (-2.45)**
Budget balance $_{t, t+4}$	-0.048 (-0.67)	0.010 (0.29)	0.051 (1.53)
N	62	62	0.62
R^2	0.97	0.95	0.93

Note: t-statistics in parenthesis based on robust standard errors. ***,**,* denote significance at 1%, 5%, and 10%, respectively. Country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

Table 7. The effect of financial integration over time

	FI 1 *de facto*	**FI 2** *de facto*	**FI 3** *de jure*
T=1970-1989	-0.164	3.831	0.027
T=1975-1994	-0.489	-4.837	0.128
T=1980-1999	0.319	0.022	0.195
T=1985-2004	0.630**	1.133**	1.060*
T=1990-2009	0.768**	1.412***	1.637***

***,**,* denote significance at 1%, 5%, and 10%. Control variables and country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

Table 8. The effect of financial integration on budget balance (LSDV)

	FI 1 *de facto*	**FI 2** *de facto*	**FI 3** *de jure*
Spending			
Total spending	-0.919 (-3.16)***	-2.079 (-4.66)***	-0.742 (-1.87)*
Government consumption-total	-0.032 (-0.42)	-0.042 (-0.32)	0.125 (1.13)
Government consumption wage	-0.370 (-3.94)***	-0.619 (-3.82)***	-0.078 (-0.92)
Government consumption non-wage	0.321 (2.78)***	0.500 (2.44)**	0.231 (2.19)**
Transfers to households	0.049 (0.23)	-0.195 (-0.57)	0.184 (0.74)
Capital formation	-0.443 (-3.68)***	-0.600 (-3.30)***	-0.374 (-3.12)***
Revenue			
Total	0.098 (0.44)	0.263 (0.67)	0.603 (1.96)*
Direct taxes	0.060 (0.40)	0.216 (0.81)	0.525 (2.73)***
Indirect taxes	0.161 (1.93)*	0.341 (2.12)**	0.227 (1.64)*

Note: t-statistics in parenthesis based on robust standard errors. ***,**,* denote significance at 1%, 5%, and 10%, respectively. Country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

Table 9. The effect of financial integration on spending volatility, *de facto* and *de jure* (LSDV)

	FI 1 *de facto*		**FI 2** *de facto*		**FI 3** *de jure*	
	Total spending volatility	Discretionary spending volatility	Total spending volatility	Discretionary spending volatility	Total spending volatility	Discretionary spending volatility
FI_t	-0.251 (-3.66)***	-0.254 (-3.28)***	-0.497 (-3.68)***	-0.594 (-3.59)***	-0.333 (-2.43)**	-0.261 (-2.10)**
Output volatility $_t$	0.318 (2.00)***	0.156 (1.34)	0.313 (1.97)***	0.313 (1.97)***	0.143 (1.45)	0.197 (1.80)*
Government size $_t$	-0.044 (-1.68)*	-0.042 (-1.60)	-0.047 (-1.64)*	-0.053 (-1.92)*	-0.023 (-0.10)	0.018 (0.66)
Legislative Elections $_t$	-0.064 (-0.28)	-0.018 (-0.11)	-0.095 (-0.40)	-0.046 (-0.25)	-0.064 (-0.28)	0.172 (0.99)
N	132	79	129	79	150	98
R^2	0.49	0.79	0.47	0.80	0.45	0.53

Note: t-statistics in parenthesis based on robust standard errors. ***,**,* denote significance at 1%, 5%, and 10%, respectively. Country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

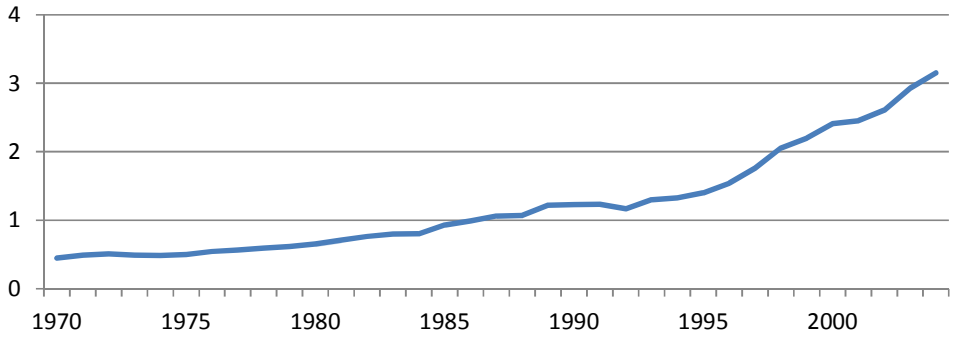
Table 10. The effect of financial integration on foreign debt (LSDV)

	FI 1 *de facto*		**FI 2** *de facto*		**FI 3** *de jure*	
	Foreign debt/ Domestic debt	Foreign debt/ Total debt	Foreign debt/ Domestic debt	Foreign debt/ Total debt	Foreign debt/ Domestic debt	Foreign debt/ Total debt
FI_t	6.389 (4.21)***	1.640 (4.17)***	11.096 (3.48)***	3.033 (3.66)***	8.415 (4.34)***	2.168 (3.74)***
(Total) Debt/ GDP $_t$	0.249 (2.19)**	0.105 (2.45)**	0.249 (2.08)**	0.104 (2.39)**	0.077 (0.59)	0.064 (1.41)
Growth Volatility $_t$	4.312 (4.06)***	1.806 (4.40)***	4.664 (4.29)***	1.899 (4.60)***	4.312 (4.06)***	1.921 (4.16)***
GDP per worker (log) $_t$	109.529 (2.92)***	14.508 (2.16)**	97.304 (5.23)***	15.940 (2.40)**	138.774 (6.56)***	27.165 (2.16)**
Inflation $_t$	-1.351 (-7.37)***	-0.214 (-3.77)***	-1.399 (-7.61)***	-0.224 (-3.97)***	-1.713 (-9.07)***	-0.303 (-5.28)***
N	237	237	237	237	231	231
R^2	0.91	0.91	0.90	0.91	0.90	0.90

Note: t-statistics in parenthesis based on robust standard errors. ***,**,* denote significance at 1%, 5%, and 10%, respectively. Country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.

Figure 1. *De facto* financial integration overtime (GDP-US$ weighted average)

A. Share of the total stock of external assets and liabilities to GDP



B. Share of the total stock of portfolio and foreign direct investment assets and liabilities to GDP

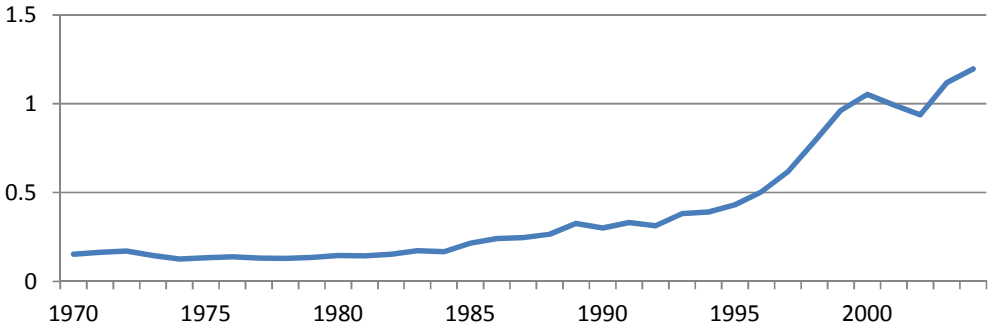
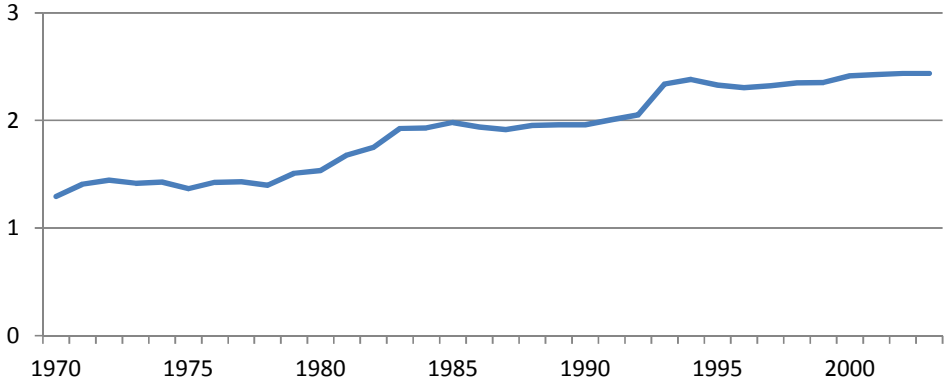


Figure 2. *De Jure* financial integration overtime (GDP-US$ weighted average)

Capital account openness



Appendix

Table A1. The effect of financial integration on budget balance (IV)

	FI 1 *de facto*	**FI 2** *de facto*	**FI 3** *de jure*
Spending			
Total spending	-1.905 (-5.42)***	-4.287 (-6.15)***	-2.252 (-3.09)***
Government consumption-total	0.113 (0.77)	0.210 (0.62)	0.075 (0.28)
Government consumption-wage	-0.295 (-2.78)***	-0.732 (-3.15)***	0.0.49 (0.20)
Government consumption non- wage	0.409 (4.94)***	0.941 (4.51)***	0.026 (0.15)
Transfers to households	-0.519 (-2.65)***	-1.222 (-2.83)***	-0.580 (-2.25)**
Capital formation	-0.326 (-3.42)***	-0.730 (-3.19)***	-0.272 (-1.88)*
Revenue			
Total	-0.037 (-0.13)	-0.214 (-0.29)	0.687 (0.19)
Direct taxes	0.047 (0.19)	-0.036 (-0.06)	0.973 (2.03)**
Indirect taxes	0.294 (2.19)**	0.639 (1.86)*	0.340 (1.04)

Note: t-statistics in parenthesis based on robust standard errors. ***,**,* denote significance at 1%, 5%, and 10%, respectively. Country dummies included but not reported. FI1= the share of the total stock of external assets and liabilities to *GDP*; FI2= the share of the sum of the total stock of portfolio assets and liabilities and the stock of direct investment assets and liabilities to *GDP*; FI3= capital account openness.