Public debt and financial development ☆

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Abstract

We examine the role of public debt in financial development. The literature has highlighted its supportive role through providing collateral and benchmark. We contrast this "safe asset" view to a "lazy banks" view: developing banking sectors that lend mainly to the public sector may develop more slowly, because it could make banks profitable but inefficient. Results from country-level and bank-level regressions are more supportive of the "lazy banks" view, but the "safe asset" view seems to play a role at moderate levels of public debt held by banks. There is also evidence of a harmful interaction between public debt and financial repression.
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1. Introduction

A large literature has examined the institutional determinants of financial development (e.g., Claessens and Laeven, 2003; Detragiache et al., 2005) and the relationship between financial development and economic growth (e.g., Christopoulos and Tsionas, 2004; King and Levine, 1993; Levine, 1997; Rajan and Zingales, 1998). However, less work has been done on the macroeconomic determinants of financial development: what has been shown is that financial development is undermined by inflation (Boyd et al., 2001) and that financial openness can support financial development if the appropriate institutional requirements are in place (Chinn and Ito, 2006).[1]

This paper examines the effects of public debt on financial development, an aspect that, while frequently discussed in policy circles, has received scant attention in the academic literature. Most often, the role of public debt in financial development has

been thought of in terms of a positive role it can play in developing financial sectors by providing a relatively safe asset; we will call this the "safe asset" view. In contrast, and as the main contribution of this paper to the literature, we propose what we will call a "lazy banks" view: developing banking sectors holding large public debt may progress more slowly, because banks that mainly lend to the public sector could become too complacent to have the drive to develop the banking market under the difficult conditions in developing countries. Note that "lazy" does not imply a value judgment here, as it reflects rational behavior on the part of the banks. While often quoted in policy circles, this view has been absent from the academic literature.[2] Note that there could also be room for non-linearities and interactions: public debt may be helpful for financial development up to a threshold, beyond which it may become harmful. Moreover, whether public debt exerts a

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[1] The literature has also dealt with indirect effects of fiscal policy on financial development: financial repression and inflation, two main foes of financial development, have been shown to be rooted in fiscal problems (Bencivenga and Smith, 1992; Roubini and Sala-i-Martin, 1992; Catão and Terrones, 2005).

[2] See, for example, the Economist's (9/11/04) article "Adieu, paresse?—'Lazy' banking turns out to be riskier than it looks" on the Indian banking sector that illustrates a classic example of the "lazy banks" view. Farrell et al. (2006) is another example. Fry (1995) mentions only in passing "the easy path of lending to finance large government deficits." Manove et al. (2001) use the term "lazy banks," but in a different context. Some stylized facts have been established by Hauner (2008), but without a theoretical framework on the effects of public debt on financial development, and using different samples and regression specifications and techniques than here.

negative effect on financial development may depend on whether the financial system is liberalized or remains repressed.

The consequences of large public sector borrowing from the domestic banking sector are also a timely policy issue, given the ongoing debate on optimal debt structures (e.g., Borensztein et al., 2004; Eichengreen and Hausmann, 2005; Reinhart et al., 2003). Many developing country governments have reduced their external indebtedness over recent years and increasingly rely on domestic financing. While this reduces macroeconomic risks, the rapid rise in the share of domestic credit absorbed by the public sector in many developing countries raises questions about the consequences for the development of the financial sector.

We examine the validity of the two contrasting views of the role of public debt in financial development based on bank-level and country-level data for 73 middle-income countries.[3] As most of the related literature, we focus on the banking sector: banks account for the overwhelming part of financial assets in developing countries, and for most of these countries, data on the non-bank financial sector is insufficient for an intertemporal analysis. Our independent variable of interest is public debt held by the domestic commercial banking sector, which we will refer to as "public sector credit." Our main dependent variables are indicators of financial development, which we define as the degree to which the banking sector performs its functions that contribute to economic growth: the theoretical literature identifies mobilization of savings; efficient allocation of resources; transfer of risk; and facilitation of trade. We measure this degree by three commonly used indicators, in each case relative to GDP: liquid liabilities of the banking sector; total bank credit; and bank credit to the private sector. The third indicator is the most important one, as it has been shown to bear the closest relationship to economic growth (Levine et al., 2000).

Our results are overall more favorable to the "lazy banks" view. Greater public debt holding by domestic banks raises their profitability but reduces their efficiency and diminishes financial deepening over time. However, there is evidence of non-linearity as we find some support for the "safe asset" view for limited shares of public sector credit, where financial development seems to be supported by public debt. Moreover, there is—albeit ambiguous—evidence that public debt holding by banks only has a negative effect when it interacts with financial repression.

In the remainder of the paper, Section 2 examines how important public sector credit is in middle-income countries. Section 3 discusses the two opposing views of its potential effects on financial development, and Sections 4 and 5 examine the validity of these views in bank-level and country-level regressions, respectively. Section 6 concludes.

2. How important is public sector credit?

It is not straightforward what indicator of public sector financing is most appropriate for measuring its potential impact on financial development. In fact, most previous studies of the determinants of financial development did not include a measure of public sector financing, and those that did found insignificant results (e.g., Boyd et al., 2001). However, the variables used bear only a distant relationship to the public sector's borrowing from the domestic commercial banking sector: some studies used the overall deficit of the public sector that also includes central bank financing, domestic non-bank financing, and external financing; others used government expenditures whose relationship to domestic bank financing is, in addition to the aforementioned items, further obscured by government revenues and grants. Indeed, the one study we are aware of that finds a significant effect of a fiscal variable on financial development (Detragiache et al., 2005) uses interest expenditure, which can be regarded as approximately proportional to public debt. Moreover, most studies have used central government figures, although there are often large fiscal activities outside the central government, particularly by local governments and public sector enterprises.

Here, we use two indicators that jointly closely capture the importance of banks' holdings of debt of the entire public sector, namely the share of credit to the general government[4] (PUBLIC) and to non-financial public enterprises (NFPE) in the total credit extended by the commercial banking system. We refer to these variables jointly as public sector credit and compile them from the IMF International Financial Statistics. As for all the variables used in this paper, definitions, sources, and descriptive statistics are summarized in the Appendix. We introduce the other variables as they come up in the analysis.

A first look at the data indicates that the public sector absorbs a substantial and rising share of credit in many developing countries. The country list in Table 1 shows that its share amounts to more than 20% of total bank credit in more than half of our 73 countries, and more than 50% in 13 of them. Moreover, a marked decline in external indebtedness has been accompanied by a rapidly rising share of public sector credit (Fig. 1). While it remains much smaller than external debt, it has been trending upwards since the beginning of the 1990s. However, combined with crises-induced shrinkages of some banking sectors, this has contributed to a dramatic rise in the average ratio of public sector credit to total credit since the mid-1990s, from 18% to more than 27%. There appears to be a broad trend to replace external with domestic borrowing: of the countries that reduced their external debt ratio from 1990 to 2003, about four-fifths increased their ratio of public sector credit to GDP; while this could also be due to financial deepening, about two-thirds of the countries also increased their ratio of public sector credit to total bank credit.

What are the typical characteristics of countries with high public sector credit? Simple correlations and univariate regressions[5] suggest that it is unrelated to income levels, but is significantly negatively related to growth. Countries with higher public sector credit also tend to have higher external

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[3] Middle-income is defined broadly and includes several countries usually included in the low-income category. However, we do not include the poorest countries, because banking is at a very nascent stage in many of them.

[4] General government usually includes all levels of government and extrabudgetary funds, but not central banks.

[5] Not shown here to save space; available from author on request.

Table 1
Public sector credit in middle-income countries

Country	Banking sector credit to the public sector, 2001–03 average in percent of		Country	Banking sector credit to the public sector, 2001–03 average in percent of	
	Total bank credit	GDP		Total bank credit	GDP
Albania	80.2	29.0	Latvia	18.7	6.2
Algeria	75.5	30.9	Lebanon	50.9	90.3
Angola	15.3	0.9	Libya	55.4	22.1
Argentina	57.1	22.3	Lithuania	30.3	6.3
Armenia	20.6	1.8	Macedonia	15.7	3.4
Azerbaijan	32.5	2.7	Malaysia	6.4	9.4
Bahrain	18.1	13.0	Mauritius	23.7	19.0
Belarus	47.5	8.6	Mexico	54.3	20.5
Bolivia	7.6	4.2	Morocco	25.8	19.0
Bosnia-H.	0.5	0.2	Namibia	9.5	5.1
Botswana	7.1	1.3	Nicaragua	16.6	4.5
Brazil	51.1	38.1	Oman	12.9	5.7
Bulgaria	21.7	5.6	Pakistan	33.4	13.7
Chile	1.5	1.1	Panama	2.3	2.1
China	8.4	12.4	Paraguay	7.1	1.6
Colombia	32.0	11.4	Peru	13.4	3.5
Costa Rica	16.1	5.7	Philippines	32.8	18.5
Croatia	23.2	14.7	Poland	26.2	10.1
Czech R.	34.2	17.3	Qatar	55.6	34.4
Dominican R.	9.9	4.4	Romania	32.2	4.0
Ecuador	9.9	2.6	Russia	28.5	7.3
Egypt	33.7	31.4	Saudi Arabia	26.4	20.2
El Salvador	7.8	3.4	Slovakia	47.8	34.2
E. Guinea	5.7	0.2	Slovenia	22.3	11.3
Estonia	7.1	2.2	South Africa	4.4	6.2
Georgia	10.1	0.9	Sri Lanka	22.7	8.5
Ghana	54.3	14.1	Syria	58.4	12.6
Guatemala	12.8	2.9	Thailand	8.4	9.3
Honduras	4.4	1.9	Trinidad & Tobago	20.0	10.4
Hungary	24.0	11.8	Tunisia	7.1	5.2
India	39.6	21.1	Turkey	64.7	39.5
Indonesia	53.3	22.0	Ukraine	13.0	2.7
Iran	3.6	1.3	U. Arab Emirates	9.7	5.8
Jamaica	63.3	24.8	Uruguay	16.0	10.5
Jordan	16.5	14.4	Venezuela	27.8	3.9
Kazakhstan	14.2	3.1	Vietnam	7.5	3.7
Kuwait	33.4	36.8	Mean	25.5	12.3

See Table A1 for variable definitions. The 73 countries are those meeting three criteria: (1) defined as developing economies in the IMF World Economic Outlook April 2005 and ranked among the top 100 of these economies at end-2004 both by (2) GNI per person and (3) GDP, both evaluated at purchasing power parities.

debt, although the relationship is not statistically significant. Two indicators of the government's access to external sources of capital—the sovereign risk premium and the share of externally held domestic-currency debt—are also not significant. There is also no relationship with the fiscal deficit, perhaps because domestic bank credit is only one way to finance it. However, countries with higher public sector credit tend to have more government intervention in the economy, more trade restrictions, a larger public sector, and more government ownership in the banking sector. Banking sectors which lend mainly to the government tend to be less free to conduct business, face more problems in assessing credit quality and in recovering loans, but tend to be more stable and benefit from deposit insurance for a longer period. Public sector credit is generally not related to regions or legal origin. However, surprisingly, it is relatively low in many Latin American countries, probably related to the prevalence of external financing in the region. In sum, public sector credit is prevalent in middle-income countries irrespective of income level, but is typically higher in slower-growing countries with more interventionist policies and a difficult business environment for banks which tends to increase risk involved in lending to the private sector.

3. Two views of the role of public debt in financial development

Most often, the role of public debt in financial development has been associated with what we will call the "safe asset" view. It emphasizes the positive role public debt can play in developing financial sectors by providing a relatively safe asset. This asset can help overcome the institutional imperfections that often preclude the use of real estate or movable property as collateral (De Soto, 2000). The availability of liquid collateral is also a key requirement for the development of derivative markets and payment and settlement systems.
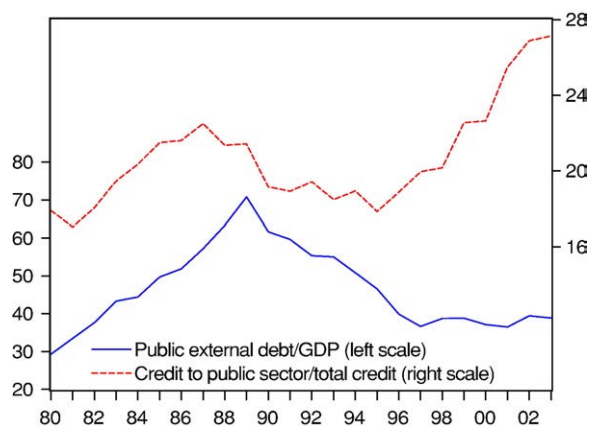
Fig. 1. Public sector credit and public external debt. Average of the 45 of the countries listed in Table 1 for which sufficiently long series are available. Left scale shows public external debt in % of GDP. See Table A1 for variable definitions.

Moreover, government bonds facilitate the pricing of corporate bonds and equities by providing a benchmark yield curve (Reinhart and Sack, 2000; World Bank and IMF, 2001). On the balance sheet of financial institutions, they provide a form of collateral for the depositors that increases their willingness to have their funds intermediated in a generally risky environment (Kumhof and Tanner, 2005). Thus, the "safe asset" view holds, without the availability of public debt, fewer savings would be utilized, and borrowers would face higher borrowing costs and shorter maturities.

As an alternative, we propose a "lazy banks" view of the impact of public debt on financial development. The channels through which large public sector borrowing from the banking system could negatively affect financial development are structural characteristics of the banks. Specifically, banks that are overly reliant on public debt could be more profitable, but less efficient, through channels discussed later. This could then slow financial deepening. Reliable profits from public sector lending are likely to reduce banks' incentives to actively develop the banking market in the often adverse banking environment in developing countries. This can diminish financial deepening that is strongly affected, for instance, by the number of bank branches (Demetriades and Luintel, 1996). Low bank efficiency, in turn, increases the deadweight loss created by financial intermediation, which is also detrimental to financial development (Fry, 1995). This "lazy banks" view is most closely related to La Porta et al. (2002), who find that more prevalent government ownership of banks tends to be associated with less efficient and less developed banking sectors. Note that the "safe asset" and "lazy banks" views do not need to be mutually exclusive: the effects of public debt on financial development may well be non-linear, with positive effects holding up to a certain threshold of the share of credit allocated to public debt, and negative effects above it.

Why would developing country banks that lend mainly to the public sector be more profitable? Consider that the return on a bank loan is determined by the lending rate, the refinancing rate, administrative costs, taxes, the expected loss, and the cost of

capital (determined by the risk of unexpected loss). Private sector lending tends to carry a disadvantage in all these components: Its refinancing rate will be higher if private sector loans are more risky and depositors require a risk premium from banks with a riskier loan portfolio; its administrative costs are likely to be higher due to economies of scale that benefit large public sector loans; taxes are often lower on interest on government debt; and the expected loss and the cost of capital of private sector lending will most often be higher for private sector loans (unless the government is in extremely dire financial condition). To make lending to the private and to the public sectors equally profitable, banks will require a substantial interest rate premium from private borrowers in most cases.

Whether banks will be able to obtain this premium is likely to depend on the degree of financial liberalization or repression. In a perfectly liberalized banking system, this should be the case, and risk-adjusted expected returns should be the same for lending to the public and private sectors. In fact, if private sector lending is on average riskier, conventional profitability that is not adjusted for risk (e.g., as measured by the return on assets) should actually be higher for private sector credit. Banks would thus be expected to hold public debt only to the extent that it is useful for their operations, for example in the money market, or because of a desire to hold some low-risk assets for liquidity purposes. This would be perfectly in line with the "safe asset" view. Overall, however, profit-maximizing banks that are able to manage risk should favor lending to the private sector over holding public debt.

Under financial repression, however, public debt may in fact be more profitable than private sector lending.[6] In particular, credit rate ceilings may prevent banks from charging the premium that would make private sector lending equally profitably on a risk-adjusted basis. Moreover, this distortion often tends to interact with others: one is that private borrowers in financially repressed economies are often very risky, and banks do not want to lend to borrowers willing to pay interest rates above a certain level due to adverse selection (Stiglitz and Weiss, 1985); another is collusion among banks that leads to excessive risk-adjusted returns in the public debt market that drive the interest rate above the return on most private sector projects. At the limit, these distortions result in a segmented credit market where banks first lend as much as possible to the public sector and only the rest to the private sector. This case, in which banks prefer public debt because it is more profitable than private sector credit, is consistent with the "lazy banks" view.

However, banks could also be forced directly (as opposed to indirectly through credit rate ceilings) to lend to the government and public enterprises. In this case, the banks would not hold public debt because they are "rationally lazy," but because they are coerced into it. However, the negative consequences for financial development would be expected to be the same: banks again have no incentive to develop deposit and private credit

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[6] See Courakis (1984) for a demonstration of the effects of financial repression on banks' portfolio choice.

markets. Indeed, directed credit has been shown to reduce deposit growth (Demetriades and Luintel, 1997).

Relatively high profitability could also be one way how large lending to the public sector may reduce bank efficiency, here given by the administrative cost of "producing" the bank's assets.[7] While incompatible with a strict notion of profit maximization, the pressure to control costs can be expected to be loosened under conditions of relatively high and secure profits. This effect could ultimately more than make up for any efficiency gain from the relatively large scale of lending contracts with the government. Moreover, governments that are heavily reliant on banking sector financing are likely to be reluctant to relinquish control over state-owned banks that have been shown to be less efficient than private banks (La Porta et al., 2002). Finally, banks that mainly lend to the government are likely to have only a muted interest in competition: the fact that they all have the same large customer, whose demand also tends to be relatively interest rate inelastic, can be expected to exert a powerful incentive for collusion in government bond auctions.[8] As with profitability, these negative effects on bank efficiency would not be expected to hold in fully liberalized banking systems.

This discussion can be distilled into a set of hypotheses for the empirical analysis. In the bank-level regressions, the "lazy banks" view would be consistent with a positive effect of public sector credit on bank profitability and a negative effect on bank efficiency in repressed banking systems. In contrast, in highly liberalized banking systems we would expect no effects. In the country-level regressions, the "lazy banks" view would be consistent with a negative effect of public sector credit on financial deepening, while the "safe asset" view would imply a positive effect. Both in the bank-level and country-level regressions, we expect that the evidence in favor of the "safe asset" view prevails below a certain threshold and the evidence in favor of the "lazy banks" view above this threshold.

4. Bank-level analysis

As a first step in the examination of the relative merits of the "safe asset" and "lazy banks" views, this section examines the empirical impact of the share of bank assets invested in public debt on the profitability and efficiency of individual banks in developing countries.

4.1. Estimation approach

The impact of the share of government credit in total bank credit on profitability and efficiency is examined by including the share of public sector credit (PUBLIC)[9] in standard models of profitability, as measured by a bank's return on assets

(PROFIT), and (productive) efficiency, as measured by its cost–income ratio (EFFICIENCY). Specifically, two equations are estimated, where i stands for an individual bank:

$$\text{PROFIT}_{it} = \alpha + \beta_1 \text{PUBLIC}_{it} + \beta_2 \text{MARGIN}_{it} + \beta_3 \text{CAPITAL}_{it} + \\ + \beta_4 \text{LIQUIDITY}_{it} + \beta_5 \text{OBS}_{it} + \beta_6 \text{SIZE}_{it} + \varepsilon_{it},$$
(1)

and

$$\text{EFFICIENCY}_{it} = \alpha + \beta_1 \text{PUBLIC}_{it} + \beta_2 \text{MARGIN}_{it} + \beta_3 \text{CAPITAL}_{it} + \\ + \beta_4 \text{LIQUIDITY}_{it} + \beta_5 \text{OBS}_{it} + \beta_6 \text{SIZE}_{it} + \varepsilon_{it}.$$
(2)

A number of control variables that have been found to be related to bank profitability and efficiency in the literature[10] are included: (i) the net interest MARGIN, a proxy for the degree of competition a bank is facing, where higher margins imply lower competition; (ii) CAPITAL, for a bank's capitalization, because banks with a higher capital/assets ratio would need to earn a higher return on assets (our profitability measure) and need to be more efficient to reach a given required return on capital; (iii) LIQUIDITY, for a bank's liquidity, because more liquid assets would be expected to earn a lower return, but require less in inputs than loans (they are typically marketable securities) and thus have a lower cost–income ratio; (iv) OBS, for the importance of the bank's off-balance-sheet activities, which usually generate additional profits outside the on-balance sheet lending, but tend to imply higher administrative costs and thus a higher cost–income ratio; and (v) SIZE, for the bank's size (measured by total assets) because profitability could vary by bank size (e.g., many large banks are owned by the usually less profit-maximizing government), and because efficiency could be increasing with bank size if there are economies of scale. We would also like to control for type of ownership because state-owned banks may lend more to the public sector and foreign owned banks may be more efficient and profitable.[11] However, this data is not available in coded form in Bankscope and would be exceedingly difficult to compile.

4.2. Results

We estimate the model for about 11,000 bank-year observations over 1994–03. In addition to the controls discussed above, all regressions include country-year fixed effects. Table 2 shows the regressions which explain about 40% of the variation in PROFIT and about 60% of the variation in EFFICIENCY. All controls are highly significant.

The regressions suggest that banks that are mainly invested in public debt tend to be more profitable but less efficient than others if the share of public debt exceeds a certain threshold or

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[7] See Sealey and Lindley (1977) for a classic treatment of efficiency concepts in financial services.
[8] See, e.g., Fry (1995) for a discussion of bank cartels that fix interest rates.
[9] While we would like to include lending to public enterprises as well, no data is available on the bank level.

[10] See, for example, Goddard et al. (2004) and Demirgüç-Kunt et al. (2004).
[11] See Weill (2003), Bonin et al. (2005), and Moreno and Villar (2005).

Table 2
Bank regressions

	PROFIT				EFFICIENCY			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
PUBLIC	0.03***	0.02**			−0.05***	−0.02**		
	(0.01)	(0.01)			(0.01)	(0.01)		
PUBLIC>10			0.02**				−0.02**	
			(0.01)				(0.01)	
PUBLIC<10			0.04				−0.02	
			(0.03)				(0.03)	
PUBLIC*HIGHFREE				0.01				−0.01
				(0.01)				(0.01)
PUBLIC*LOWFREE				0.02**				−0.03**
				(0.01)				(0.01)
MARGIN		0.21***	0.21***	0.21***		0.28***	0.28***	0.29***
		(0.04)	(0.04)	(0.04)		(0.05)	(0.05)	(0.05)
CAPITAL		0.05***	0.05***	0.05***		−0.03**	−0.03**	−0.03**
		(0.01)	(0.01)	(0.01)		(0.01)	(0.01)	(0.01)
LIQUIDITY		0.01**	0.01**	0.01**		−0.03***	−0.03***	−0.03***
		(0.01)	(0.01)	(0.01)		(0.01)	(0.01)	(0.01)
OBS		0.31***	0.31***	0.31***		0.61***	0.61***	0.61***
		(0.07)	(0.07)	(0.07)		(0.07)	(0.07)	(0.07)
SIZE		0.03***	0.03***	0.03***		−0.04***	−0.04***	−0.04***
		(0.01)	(0.01)	(0.01)		(0.01)	(0.01)	(0.01)
R^2	0.20	0.40	0.40	0.40	0.32	0.61	0.61	0.61
n	11,179	10,921	10,921	10,921	11,049	10,911	10,911	10,911

OLS regressions with country-year fixed effects. The dependent variables are PROFIT and EFFICIENCY, respectively. White heteroskedasticity-consistent standard errors in paretheses. ***/**/* indicates significance at 1/5/10% level.

the banking sector is repressed. In the baseline regressions with and without controls, the coefficient on PUBLIC is positive for PROFIT and negative for EFFICIENCY and significant at the 1% level in both cases. However, the regressions with thresholds and the interaction with high and low banking sector freedom show that these findings hold only beyond a threshold of 10%—which we chose because it is close to the sample mean of 9.3%—, or if the banking sector is relatively repressed.[12] The coefficients imply that a one percentage point increase in PUBLIC increases PROFIT and reduces EFFICIENCY by 0.2 percentage points, respectively. Although not large, these effects make a notable difference when comparing banks with substantially different levels of public debt holdings: an increase in PUBLIC from the first to the third quartile (by 17 percentage points) implies an increase in PROFIT by about 0.3 percentage points and a decline in EFFICIENCY by about 0.4 percentage points.

In sum, the findings of the bank-level regressions lend support to the "lazy banks" view. As long as public sector credit remains below the threshold, or if the banking sector is relatively liberalized, there are no significant effects. However, if the threshold is exceeded, or if the banking sector is relatively repressed, then public sector credit increases the profitability and reduces the efficiency of banks. According to the "lazy banks" view, these findings suggest negative consequences for

financial development when public sector credit is large and the banking sector is repressed. The next section examines whether such negative effects materialize, or public sector credit could still be helpful for financial development.

5. Country-level analysis

To explore the empirical association between the share of public sector credit and financial development, we estimate cross-country regressions of financial deepening.

5.1. Estimation approach

Our dependent variables are three common measures of financial depth (see, e.g., Levine, 1997): LIQUID is the ratio of liquid liabilities of the banking system to GDP, measuring the overall size of the financial intermediary sector; BANK is the ratio of total bank credit to GDP; and PRIVATE is the ratio of bank credit to the private sector to GDP. PRIVATE is most crucial here, as it tends to exert the strongest impact on growth (Levine et al., 2000). Our main independent variable is PUBLIC, the share of public sector credit in the total credit extended by the commercial banking system. All observations are annual.

We use both a 1960–2004 panel, with five-year non-overlapping windows to smooth short-term variation, and a cross-section of the 1980–2004 change in the level of financial development. While the panel has more observations and is better at exploiting the time-series dimension of the data and at controlling for possible endogeneity and omitted variable bias,

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[12] We interact with a dummy that equals one when PUBLIC is above/below the threshold. HIGHFREE equals one for values of banking sector freedom (see Table A1) greater than −3. LOWFREE equals 1−HIGHFREE.
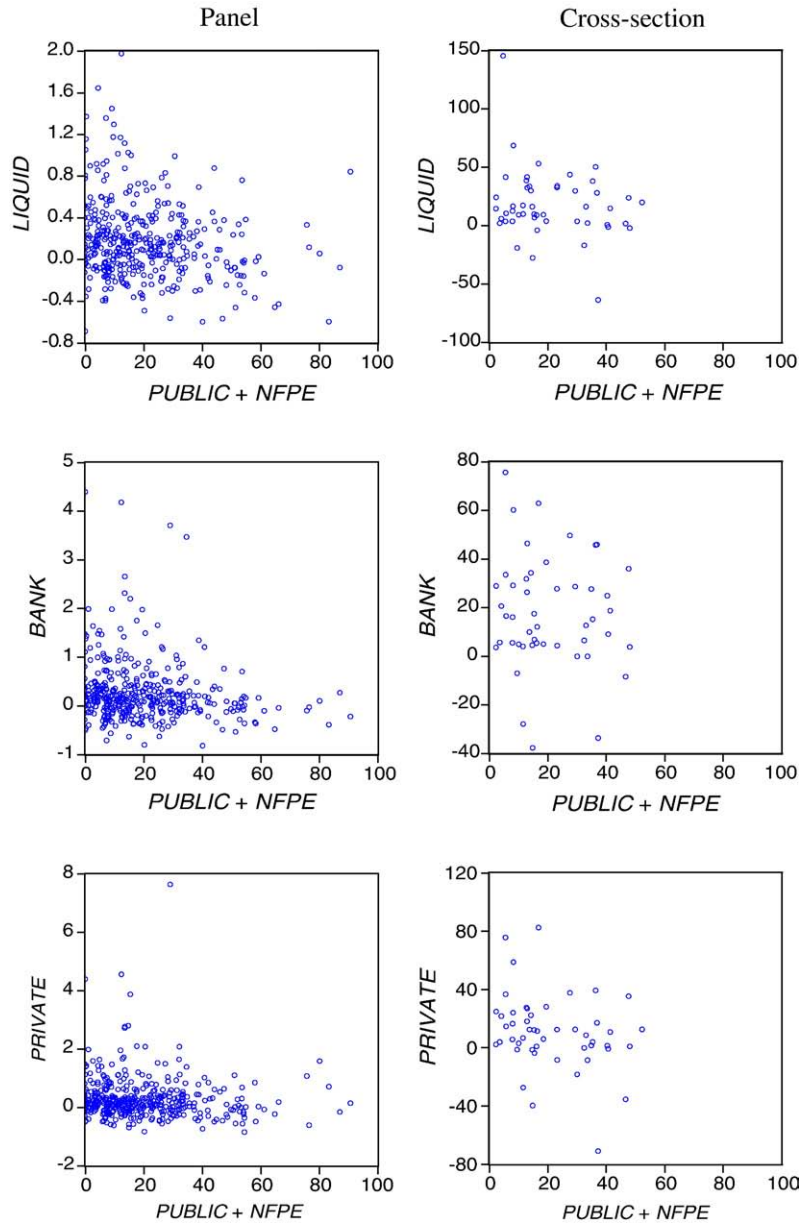
Fig. 2. Public sector credit and financial deepening. For the panel, PUBLIC is the average level, and LIQUID, BANK, and PRIVATE are the average growth rates during non-overlapping five-year periods from 1960 to 2004. For the cross-section, PUBLIC is the average level from 1980 to 2004, and LIQUID, BANK, and PRIVATE are the changes in the level between the 1980–82 average and the 2002–04 average. See Table A1 for variable definitions and Table 1 for countries included.

the cross-section is better at focusing on the long-run relationship between the variables and excludes any noise that potentially remains despite the use of five-year panel windows. While we view the two approaches as complementary, we prefer the panel because of its advantages just mentioned.

First, we estimate a fixed effects panel specification (similar to Chinn and Ito, 2006):

$$\frac{\mathrm{FD}_t^j}{\mathrm{FD}_{t-5}^j} - 1 = \alpha^j + \beta_1 \frac{1}{5} \sum_{s=t-4}^{t} \mathrm{PUBLIC}_s^j + \beta_2 \mathrm{FD}_{t-5}^j + \beta_3 \mathrm{INCOME}_{t-5}^j$$

$$+ \beta_4 \mathrm{INFLATION}_{t-5}^j + \sum_{k=5}^{K} \beta_k X_k^j + \varepsilon_t^j \qquad (3)$$

where j stands for a country; FD is a measure of financial development, alternatively given by LIQUID, BANK, and PRIVATE; PUBLIC is given by its 5-year average; INCOME is log per capita income at PPP; INFLATION is the CPI growth rate, and X is a set of institutional controls. We choose these controls because there is a long literature (e.g., Boyd et al., 2001; Claessens and Laeven, 2003) showing that income, inflation, and some institutional factors are the most important determinants of financial development. The institutional variables are time-invariant due to data constraints, but we do not regard this as a major problem, first because these characteristics tend to change very slowly, and, second, because they only serve as control variables here, while our main interest is

Table 3
Country panel regressions with macro controls

	LIQUID			BANK			PRIVATE		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Constant	0.73**	0.55*	0.71**	−0.27	−0.66	−0.14	−0.16	0.09	0.11
	(0.30)	(0.32)	(0.30)	(0.45)	(0.51)	(0.45)	(0.43)	(0.52)	(0.44)
PUBLIC	−0.01			−0.01***			−0.02***		
	(0.00)			(0.00)			(0.00)		
NFPE	−0.01*			−0.01**			−0.02***		
	(0.01)			(0.01)			(0.00)		
PUBLIC>10		−0.01**			−0.02**			−0.03**	
		(0.00)			(0.01)			(0.01)	
PUBLIC<10		−0.01***			−0.01***			−0.02***	
		(0.00)			(0.00)			(0.01)	
PUBLIC*HIGHFREE			−0.01***			−0.02***			−0.03***
			(0.00)			(0.00)			(0.01)
PUBLIC*LOWFREE			−0.01***			−0.01***			−0.02***
			(0.00)			(0.00)			(0.00)
FD_{int}	1.5e−3	1.5e−3	2.0e−3	−0.02***	−0.02***	−0.02***	−0.02***	−0.02***	−0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
INCOME	−0.05	−0.03	−0.06	0.18***	0.21***	0.16**	0.19***	0.13*	0.14**
	(0.04)	(0.04)	(0.04)	(0.07)	(0.07)	(0.07)	(0.06)	(0.07)	(0.06)
INFLATION	−1.1e−4***	−8.1e−5***	−1.0e−4***	−8.9e−6	−1.0e−5	−1.8e−5**	6.4e−5	1.9e−4	5.6e−5
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
R^2	0.29	0.26	0.26	0.34	0.36	0.33	0.31	0.32	0.29
n	237	229	239	359	260	261	362	262	264

OLS fixed effects panel regressions for nine non-overlapping five-year periods. The dependent variables are the five-year growth rate of LIQUID, BANK, and PRIVATE, respectively. White heteroskedasticity and serial correlation consistent standard errors in parentheses. ***/**/* indicates significance at 1/5/10% level.

elsewhere. Unit root tests (not shown to save space) strongly reject non-stationarity for all variables.

Second, we estimate a cross-section specification for the 73 countries, specified as:

$$FD_t^j - FD_0^j = \alpha + \beta_1 \frac{1}{T}\sum_{s=0}^{T} PUBLIC_s^j + \beta_2 FD_0^j + \beta_3 INCOME_0^j$$
$$+ \beta_4 \frac{1}{T}\sum_{s=0}^{T} INFLATION_s^j + \sum_{k=5}^{K} \beta_5 X_k^j + \varepsilon^j. \quad (4)$$

Due to missing observations in the earlier periods, we limit the cross-section to 1980–2004. The left-hand variable is the change in the level of the financial development variables during this period, or more precisely the difference between the 1980–83 and the 2002–04 averages to mitigate short-term fluctuations. PUBLIC is again the average during the entire period, similar to the treatment of inflation in Boyd et al. (2001), because high government borrowing from banks, as inflation, is likely to negatively affect financial deepening only gradually. We again include the initial level of income and long-term average of inflation.[13]

The two specifications avoid two endogeneity issues that would arise from estimating the equations in levels. One issue is that a negative relationship between public sector credit and financial development could be seen as evidence of the "lazy banks" view, but may as well be due to the lack of viable lending opportunities in poorly developed financial systems. The other issue is that, for a given fixed level of available bank

credit, an increase in PUBLIC will automatically reduce PRIVATE. We take four steps to address these concerns: we specify the FD variables as the average annual growth rates in the respective level during non-overlapping five-year windows; we include the initial level of the FD variable; we use initial income and inflation; and we include control variables that might jointly determine PUBLIC and the FD variables. To be sure, we run Hausman augmented regression tests that suggest that this approach successfully mitigates endogeneity, as will be discussed below.

Fig. 2 plots PUBLIC against the FD variables. The left column shows the scales used in the panel, the right column the scales used in the cross-section. Eyeballing the charts suggests in many of them a negative relationship between PUBLIC and the FD variables, which would tend to lend support to the "lazy banks" view.

5.2. Results

Table 3 reports the results for the panel including the macro controls for each of the three FD variables, and Table 4 adds the institutional controls.[14] The macro controls mostly have the expected sign, although they are not always significant: most notable, INFLATION tends to be highly significantly negative for LIQUID (see Boyd et al., 2001). The institutional controls stand for the degree of government intervention in the economy; the degree of ease of banking; and the geographic region and legal origin of countries. Among them, MARGIN is particularly robustly significant and always positive. This is an interesting

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[13] From an endogeneity perspective, we would prefer to again use initial inflation, but the period is too long.

[14] The results Table 4 do not include fixed effects, as they cannot be combined with time-invariant variables.

Table 4
Country panel regressions with macro and institutional controls

	LIQUID				BANK				PRIVATE			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
PUBLIC	−0.01**	−0.01			−0.01***	−0.01***			−0.01***	−0.02***		
	(0.00)	(0.01)			(0.00)	(0.00)			(0.00)	(0.01)		
NFPE	2.8e−3	(0.04)			−6.9e−4	(0.00)			−0.01	0.00		
	(0.01)	(0.03)			(0.00)	(0.00)			(0.01)	(0.01)		
PUBLIC>10			−0.01***				−0.01***				−0.01***	
			(0.00)				(0.00)				(0.00)	
PUBLIC<10			0.03***				−0.04***				−0.04***	
			(0.01)				(0.01)				(0.01)	
PUBLIC*HIGHFREE				−0.01***				−0.01*				−0.01
				(0.00)				(0.00)				(0.00)
PUBLIC*LOWFREE				0.01***				−0.01***				−0.02***
				(0.00)				(0.00)				(0.00)
FD_{int}	1.5e−3	3.8E−04	8.8e−4	8.1e−4	−0.01***	−0.01**	−0.01***	−5.7e−3***	−0.01***	−0.01***	−0.01***	−9.0e−3***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
INCOME	2.7e−3	−0.02	−0.16**	−0.15*	0.04	0.22***	0.09	0.13	0.05	0.39***	0.19	0.25**
	(0.03)	(0.12)	(0.07)	(0.08)	(0.03)	(0.08)	(0.10)	(0.10)	(0.05)	(0.11)	(0.12)	(0.12)
INFLATION	−1.6e−3***	−4.8e−3*	−2.9e−3**	−2.7e−3**	1.2e−5	2.1e−6	−7.3e−6	2.1e−6	2.9e−5	3.2e−6	3.9e−06	1.0e−5
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Overall government intervention	0.04	−0.12	0.09*	0.01*	0.05	0.07	0.03	0.05	0.06	0.08	0.05	0.07
	(0.07)	(0.29)	(0.05)	(0.05)	(0.04)	(0.07)	(0.05)	(0.05)	(0.06)	(0.07)	(0.05)	(0.05)
Trade restrictions	0.04	0.07	1.9e−3	4.2e−4	0.06**	−0.07	−0.02	−1.9e−2	0.06*	−0.09	−0.02	−2.2e−2
	(0.03)	(0.19)	(0.06)	(0.06)	(0.03)	(0.05)	(0.04)	(0.04)	(0.03)	(0.06)	(0.05)	(0.05)
Share of public sector in output			−1.13**	−1.26			−0.03	−0.05			0.25	0.39
			(0.49)	(0.47)			(0.39)	(0.44)			(0.51)	(0.52)
Government ownership in banks	0.10	1.49	0.06	0.13	3.9e−3	−0.05	−0.23***	−0.06	0.13	−0.27	−0.42***	−0.28**
	(0.12)	(0.89)	(0.10)	(0.09)	(0.16)	(0.14)	(0.08)	(0.08)	(0.35)	(0.17)	(0.12)	(0.12)
Banking sector freedom	−0.01	−1.20	0.08	0.09	0.01	−0.01	−0.04	0.00	0.02	0.06	0.01	0.04
	(0.05)	(0.94)	(0.09)	(0.09)	(0.06)	(0.10)	(0.07)	(0.07)	(0.10)	(0.10)	(0.06)	(0.06)
Cost of enforcement	8.2e−4	−1.2e−2	1.9e−3	2.2e−3	−2.6e−3**	−2.2e−3	−4.8e−3***	−4.6e−3***	−2.7e−3	−4.2e−3*	−5.6e−3***	−6.0e−3***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Credit information	−0.03	0.15	−0.01	−0.02	0.10**	−0.05	0.06	0.04	0.12*	−0.12*	0.02	0.00
	(0.03)	(0.28)	(0.07)	(0.07)	(0.04)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Deposit insurance	−4.2e−3	2.0e−2	−3.9e−3	−4.3e−3	−7.5e−4	−6.0e−3*	−4.1e−3	−3.9e−3	−3.7e−3	−0.01**	−0.01**	−7.5e−3**
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Banking crises	0.02	0.06	0.03**	0.04***	0.01	0.03**	−3.4e−3	0.00	0.02	0.01	−0.01*	−0.01
	(0.01)	(0.05)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Interest rate margin	1.7e−3***	−3.2e−4	6.4e−3	6.5e−3	−3.1e−5	1.3e−3***	1.6e−3***	1.4e−3***	2.1e−4***	1.7e−3***	1.8e−3***	1.7e−3***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Asia	0.13	−2.49	−0.26	−0.25	0.03	−0.12	0.07	0.14	−0.11	0.25*	0.25**	0.39***
	(0.11)	(1.66)	(0.17)	(0.17)	(0.10)	(0.13)	(0.09)	(0.11)	(0.12)	(0.15)	(0.13)	(0.13)
Latin America & Caribbean	0.23*	−1.40	−0.21	−0.20	−0.51***	−0.34	−0.47**	−0.42**	−0.79***	−0.14	−0.48***	−0.36*
	(0.12)	(1.01)	(0.19)	(0.19)	(0.19)	(0.26)	(0.19)	(0.21)	(0.29)	(0.25)	(0.18)	(0.19)
English legal origin	−0.20	−1.52	1.64***	1.53***	−0.32*	−0.66	−0.15	−0.60	−0.15	−1.39**	−0.51	−1.12
	(0.20)	(1.88)	(0.35)	(0.40)	(0.16)	(0.56)	(0.66)	(0.69)	(0.29)	(0.65)	(0.77)	(0.75)
French legal origin	−0.19	−1.48	1.69***	1.58***	−0.17	−0.77	0.06	−0.39	−0.03	−1.53**	−0.28	−0.91
	(0.22)	(1.72)	(0.42)	(0.46)	(0.17)	(0.54)	(0.66)	(0.70)	(0.31)	(0.67)	(0.78)	(0.75)
AR(1)	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No
R^2	0.26	0.66	0.40	0.38	0.14	0.31	0.20	0.17	0.15	0.37	0.22	0.24
n	104	32	66	66	138	68	96	96	139	68	96	96

OLS panel regressions for nine non-overlapping five-year periods. The dependent variables are the five-year growth rate of LIQUID, BANK, and PRIVATE. White heteroskedasticity and serial correlation consistent standard errors in parentheses. ***/**/* indicates significance at 1/5/10% level.

Table 5
Country cross-section regressions with macro controls

	LIQUID			BANK			PRIVATE		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Constant	124.36**	116.62**	113.77*	12.75	5.69	7.50	27.89	15.23	23.20
	(60.11)	(56.65)	(63.06)	(29.61)	(30.83)	(27.40)	(27.89)	(15.23)	(23.20)
PUBLIC	−0.04			−0.11			−0.57**		
	(0.29)			(0.31)			(0.30)		
NFPE	−0.68			−0.30			−0.68		
	(0.47)			(0.56)			(0.70)		
PUBLIC>10		−0.03			−0.01			−0.39	
		(0.36)			(0.34)			(0.29)	
PUBLIC<10		0.57			0.92			1.58	
		(2.07)			(1.89)			(1.80)	
PUBLIC*HIGHFREE			−0.35			−0.52			−1.02**
			(0.49)			(0.45)			(0.51)
PUBLIC*LOWFREE			0.22			0.01			−0.53**
			(0.32)			(0.30)			(0.25)
FD$_{int}$	−0.34**	−0.33**	−0.28**	−0.09	−0.11	−0.04	−0.36	−0.37	−0.26
	(0.14)	(0.13)	(0.14)	(0.25)	(0.25)	(0.21)	(0.30)	(0.30)	(0.28)
INCOME	−25.96	−24.73	−24.34	3.68	−0.11	4.57	2.01	3.36	2.41
	(16.34)	(16.26)	(17.28)	(8.64)	(8.82)	(8.09)	(7.44)	(7.50)	(7.03)
INFLATION	−0.02**	−0.02***	−0.02***	−0.03**	−0.03***	−0.03***	−0.03**	−0.03***	−0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
R^2	0.25	0.23	0.25	0.10	0.10	0.13	0.20	0.21	0.21
N	48	48	48	47	47	47	48	48	48

OLS regressions for the country cross-section. The dependent variables are the percentage point change of LIQUID, BANK, and PRIVATE from their 1980–82 average level to their 2002–04 average level. White heteroskedasticity-consistent standard errors in parentheses. ***/**/* indicates significance at 1/5/10%.

finding in itself because it supports McKinnon's (1973) reasoning that a positive interest rate margin, which makes financial intermediation profitable, is a necessary condition for financial deepening.

The results provide strong evidence of a negative impact of public sector credit on financial deepening. Its coefficient is negative in all 21 regressions in Tables 3 and 4, and it is significant at the 5% level in 20 of them. These results are driven by credit to government (PUBLIC) and are independent of the role of public enterprises. Credit to non-financial public enterprises (NFPE) is highly significant without the institutional controls, but becomes insignificant when they are included.[15] Moreover, PUBLIC remains highly significant if the share of the public sector in output and in bank ownership are controlled for.

The panel regressions do not provide evidence of threshold effects or of an interaction with financial repression. Allowing for separate coefficients on PUBLIC for values above and below a certain threshold, and high and low banking sector freedom,[16] respectively, still always yields highly statistically significant and negative coefficients. We report the results for a threshold of 10% for consistency with the bank regressions in the previous section, however, using thresholds in the range of 5–20% (the latter is the mean) yields qualitatively similar results. Wald tests also indicate that the two coefficients for low and high values of PUBLIC and financial repression are not significantly different.

The panel results are overall robust to a number of checks. (i) We have argued that particularly the specifications shown in Table 4 should successfully mitigate endogeneity. Indeed, Hausman tests do not reject the null hypothesis that PUBLIC is exogenous to all three FD variables at the 10% level. (ii) In addition to using standard errors that correct for serial correlation, we also check whether serial correlation could affect the results by including an AR(1) term, which successfully mitigates any first order serial correlation according to the LM test. The results for BANK and PRIVATE remain robust, but the effect of PUBLIC on LIQUID becomes insignificant; however, this may be explained simply by the fact that gaps in the data leave us with only 32 observations in this case. (iii) Although not shown in the tables, excluding outliers and adding period fixed effects or cross-section random effects leaves the effects of PUBLIC virtually unchanged for all three FD variables.

Table 5 reports the results for the cross-section including the macro controls for each of the three FD variables. The institutional controls can only be added individually due to lack of degrees of freedom and are not reported here to save space. The results largely confirm the findings of the panel regressions for PRIVATE, for which the coefficient on PUBLIC is negative and significant at the 5% level in 15 of the 18 regressions. The exceptions occur when PUBLIC is combined with the interest rate margin or the share of the public sector in output or in bank ownership; however, we know from the panel regressions that the effect of PUBLIC remains robust when the full set of controls is used. As in the panel with institutional controls, the negative effect of public sector credit comes from PUBLIC, while NFPE is insignificant. The effect is also robust to several checks: removing outliers leaves it unaffected, and the Hausman test does not reject the null that PUBLIC is exogenous.

[15] This is the case even though we exclude the share of the public sector in output in these regressions to avoid biasing the coefficient on NFPE towards zero.
[16] We interact with a dummy that equals one when PUBLIC is above/below the threshold. HIGHFREE equals one for values of banking sector freedom (see Table A1) greater than −3. LOWFREE equals 1−HIGHFREE.

As in the panel regressions, the degree of financial repression does not seem to make a difference for the effect of PUBLIC on financial development. In contrast to these robust findings for PRIVATE, in the cross-section regressions for LIQUID and BANK the coefficient on PUBLIC is not highly significant, although it is negative in most regressions.

In contrast to the panel regressions, the cross-section provides some evidence of non-linearity and in favor of the "safe asset" view. On the face of it, the coefficients for both high and low values of PUBLIC, including in the regression for PRIVATE, are statistically insignificant when non-linearity is allowed for. However, for all three FD variables, the coefficient is negative for high values and positive for low values of PUBLIC, and Wald tests suggest that the coefficients are highly significantly different. This evidence suggests that the "safe asset" view holds for PUBLIC up to a threshold, but the "lazy banks" view beyond that.

In sum, the country regressions lend considerable support to the "lazy banks" view. All linear panel and cross-section regressions find a negative effect of PUBLIC on all three indicators of financial deepening. This effect is highly statistically significant for PRIVATE in both panel and cross-section, as well as for LIQUID and BANK in the panel, although not for LIQUID and BANK in the cross-section. However, we have more faith in the panel regressions as they control at once for a much larger number of factors—whose importance is underscored by the large difference in explanatory power relative to the cross-section. Moreover, when in doubt we regard the results for PRIVATE as decisive, as it is the aspect of financial development indicator that has the strongest effect on economic growth (Levine et al., 2000). In contrast to the bank regressions, the country regressions do not suggest that the interaction between PUBLIC and the degree of financial repression plays a considerable role.

However, the results overall suggest scope for the "safe asset" view at low values of PUBLIC, for which the coefficients in the cross-section become positive and are statistically significantly different from those for high values of PUBLIC. It must be cautioned, however, that these positive coefficients are not statistically significant, while the corresponding ones in the panel are negative and highly significant.

Comparing the results for the different measures of financial development suggests another dichotomy in the effects of public sector lending. Remember that the discussed overall negative effect is more robust for PRIVATE than for LIQUID and BANK. In fact, it is plausible that public debt exerts some positive effects on LIQUID and BANK along the lines implied by the "safe asset" view. This could partially offset the negative effect suggested by the "lazy banks" view. In contrast, no such effect would be expected for PRIVATE where the crowding out by PUBLIC dominates the positive effect on the deposit base, measured by LIQUID, and the supply for loanable funds including for public debt, measured by BANK.

How important is the impact of public sector credit on financial deepening economically? According to the baseline specifications, an increase in PUBLIC by 1 standard deviation reduces the five-year average growth rate of each of the three financial development indicators by about 10–15 percentage points according to the panel regressions, and the twenty-year change in the level of PRIVATE by about 13 percentage points according to the cross-section regressions (LIQUID and BANK are not significant in the cross-section). In both cases, the predicted loss in the 1980–2004 financial deepening is about 15 percentage points for a country that had an average level of development in 1980. The fact that the predicted effects are extremely similar for the panel and the cross-section provides further reassurance regarding the robustness of our estimates.

6. Concluding remarks

This paper examined a neglected angle of financial development: the role of public debt. Its main contribution is the proposition of a "lazy banks" view that emphasizes the potentially negative implications of public sector credit in repressed banking systems, contrasting with the more traditional "safe asset" view that underlines the positive contribution of public debt to financial development. The results from bank-level and country-level regressions are overall more favorable to the "lazy banks" view. Greater public debt holding by domestic banks raises their profitability but reduces their efficiency if public debt exceeds a certain threshold or if it interacts with financial repression. Moreover, it diminishes financial deepening over time. However, we do find some support for the "safe asset" view for limited shares of public sector credit.

The findings also have important policy implications, as they highlight additional costs of large fiscal deficits in developing countries, working through the impact of public sector borrowing from the banking sector on financial development. The literature points to a number of effects: first, there is the impact of financial depth, and particularly credit to the private sector (for which we have found the strongest results), on economic growth; second, lack of private sector credit tends to disadvantage small firms and worsen income distribution (Nugent and Nabli, 1992); third, underdeveloped financial sectors can force financial openness upon an economy, raising the susceptibility to capital account crises (Aizenman and Noy, 2003); and, fourth, poor financial development tends to amplify financial crowding out (Caballero and Krishnamurthy, 2004).

These effects need to be taken into account more in determining the costs and benefits of running public sector deficits and of the domestic versus external financing of these deficits. Moreover, the findings of this paper suggest that where banks are heavily invested in public debt, financial liberalization and measures to spur competition become all the more important to avoid negative implications for progress in financial development over time.

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Appendix A

Variables in country regressions

Variable and description	Source	Mean, SD
LIQUID: bank liquid liabilities in percent of GDP	IFS line 55l or lines 34+35 in percent of WEO line NGDP:	
	P: 5-year growth rate in decimals	0.2, 0.4
	S: Change from 1980–82 average to 2002–04 average	17.0, 28.8
BANK: Total banking credit in percent of GDP	IFS lines 22+42 in percent of WEO line NGDP:	
	P: 5-year growth rate in decimals	0.2, 0.6
	S: Change from 1980–82 average to 2002–04 average	17.0, 22.8
PRIVATE: bank credit to private sector in percent of GDP	IFS lines 22d+42d in percent of WEO line NGDP:	
	P: 5-year growth rate in decimals	0.3, 0.8
	S: Change from 1980–82 average to 2002–04 average	10.0, 25.6
PUBLIC: share of bank credit to public sector in total	IFS lines 22a−b+42a−b in percent of IFS lines 22+42:	
	P: 5-year mean	16.6, 14.8
	S: 1980–2004 mean	17.9, 13.8
NFPE: share of bank credit to non-financial public enterprises in total	IFS lines 22c+42c in percent of IFS lines 22+42:	
	P: 5-year mean	3.5, 9.8
	S: 1980–2004 mean	5.2, 10.3
INCOME: log of per capita income in US-dollars at PPP	WEO line PPPPC:	
	P: level at beginning of 5-year period	3.5, 0.4
	S: level in 1980	3.5, 0.3
INFLATION: average consumer price inflation rate in percent	WEO line PCPI:	
	P: level at beginning of 5-year period	80.0, 647.6
	S: 1980–2004 mean	111.5, 226.2
Overall government intervention	Index from 1 to 5, where higher values imply more intervention, 2003 (Heritage Foundation, 2005)	3.0, 0.9
Trade restrictions	Index from 1 to 5, where higher values imply more restrictions, 2003 (Heritage Foundation, 2005)	3.5, 1.1
Share of public sector in output	Value-added of state-owned enterprises in percent of GDP, average of 1978–1991 (World Bank, 1995)	1.1, 3.8
Government ownership in banks	Share of assets of top 10 banks owned by government, 1995 (La Porta et al., 2002)	0.5, 0.3
Banking sector freedom	Index from −5 to −1, higher values imply less freedom, 2003 (Heritage Foundation, 2005)	−2.9, −1.0
Cost of enforcement	Cost of enforcing a contract in percent of debt, 2005 (World Bank, 2005)	24.3, 19.1
Credit information	Index from 0 to 6, higher values imply better information, 2005 (World Bank, 2005)	2.9, 2.0
Deposit insurance	Number of years of existence of deposit insurance (Demirgüç-Kunt and Sobaci, 2001)	6.8, 10.8
Banking crises	Number of years from 1970 to 2002 when banking sector was in systemic crisis, with small or borderline crises counted as half a year (Caprio and Klingebiel, 2003)	5.1, 4.2
Interest rate margin	5-year average of lending minus deposit rates (IFS lines 60p, 60 l)	48.6, 476.3
English/French legal origin	Dummy for respective legal origin (La Porta et al., 2002)	…

P: panel, S: cross-section, IFS: IMF International Financial Statistics, WEO: IMF World Economic Outlook.

Variables in bank regressions

Variable	Description and source	Mean, SD
PROFIT	Return on average assets in percent	1.0, 8.3
EFFICIENCY	Non-interest expense in percent of average assets, multiplied by (−1)	−7.1, 11.3
PUBLIC	Sum of loans to municipalities and government, government securities, and treasury bills in percent of total assets	14.1, 14.4
MARGIN	Net interest margin (interest income minus interest expense in percent of interest-bearing assets)	6.4, 18.8
CAPITAL	Equity in percent of total assets	16.3, 30.2
LIQUIDITY	Liquid assets in percent of total assets	34.3, 22.3
OBS	Other operating income in percent of total assets	3.2, 10.8
SIZE	Total assets in billions of US-dollars	3.7e+6, 2.3e+7

The source of all variables is Bankscope.

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