WPS4250

Economic Information and Finance:

More information means more credit, fewer bad loans and less corruption.

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Abstract

This paper builds on recent work that shows how financial sector outcomes are affected by the provision of information by financial and other entities. In particular, it shows that an indicator of economic transparency is positively related to higher levels of private credit and a lower share of non-performing loans even after accounting for factors commonly believed to influence financial sector development in cross-country empirical estimation. Timely access to economic data allows investors to make better decisions on investments and to better monitor banks' financial health. Greater economic transparency raises accountability and lowers corruption in bank lending.

Introduction

The type and abundance of information in economic markets affects economic outcomes. Ackerlof's seminal (1970) article on the market for lemons, Spence's (1976) work on the impact of signaling in labor markets, Rothschild and Stiglitz's (1976) work on insurance markets and Stiglitz's (1974) paper on sharecropping present just some of the varied informational problems arising in market economies and some of the mechanisms which markets have evolved to either reduce information asymmetries or to reduce risks associated with operating under less than perfect information. Less than perfect information allows some agents to obtain benefits at the expense of others or may make all agents worse off if it leads to inefficient outcomes. This paper examines whether better information on overall economic conditions supports financial development.

Because of the public good nature of information, non-rivalrous consumption and non-excludability, there is a presumption that information will be "underproduced" in competitive market economies. There are also externalities associated with the acquisition of information since it is not easy (or is sometimes not possible) to appropriate the returns to collecting information. The impact of asymmetries in information among different agents in financial markets has been thoroughly covered in a number of studies. As Stiglitz (1993) notes, the allocation of capital and monitoring its use are essentially information problems. Banks need information about potential lenders. Banks that have superior information on borrowers may not be willing to share it with others. Or banks may be unwilling to invest in obtaining information that they cannot "keep" from others if they cannot earn a return sufficient to justify the costs of obtaining

information. Within the financial system itself, information about the solvency of financial institutions and the management of these institutions is of great value to investors/depositors. But one person's knowledge about the impending insolvency of a financial institution (or poor bank management) does not subtract from another's knowledge. The public good characteristics of this information mean that there will be an undersupply of monitoring. Externalities related to lending (once one bank lends to a borrower, everyone else knows he is creditworthy) or to the perceptions regarding the financial health of banks (once one bank fails investors may conclude that other banks are in bad financial condition) also abound.

There are several papers that expound on the consequences of information asymmetries in financial markets. Ackerlof (1970) uses the example of credit markets in developing countries where local lenders (who have better, though still imperfect information) charge seemingly exhorbitant interest rates. New lenders (outsiders) wishing to compete with these lenders generally end up making losses when they enter the market because they have less information on borrowers than local lenders who know their town and clients. Information asymmetries in this case mean that financial institutions tend towards oligopolistic behavior since they will tend to deal with clients they know; potential entrants are kept out because of informational barriers. Stiglitz and Weiss (1981) showed how information imperfections can lead to rationing behavior in credit markets. In their model, since lenders cannot distinguish between borrowers with different risk profiles and because borrowers facing higher risk will also tend to borrow at higher interest rates, there will be credit rationing in markets. Lenders' expected profits will not be a monotonically increasing function of the interest rate charged. In

Townsend's model (1979), banks compile information and economize on verifying borrower conditions, and they also economize on monitoring costs (see also Diamond, 1984) which would be much higher if individual lenders had to evaluate potential borrowers. Diamond and Dybvig, 1983, conclude that there would be no bank runs in an economy with perfect information on banks since fully informed depositors would expect higher interest rates from risky banks and thus curtail risky behavior by banks. In their paper, only "shocks" would lead to bank runs.

Petersen and Rajan (1994) show that in a world of multiple lenders, each bank may be discouraged from monitoring the borrower closely to avoid free-riding by other lenders. But the costs of multiple lending relationships escalate if each lender or potential lender does not have information on the borrower's debt status, since the default risk is a function of the overall indebtedness of a borrower, not just his borrowing from one lender. Each lender is also threatened by possible future debt commitments the borrower may take on (Bizer and De Marzo, 1992). Thus, Ongena and Smith, 1998, show that the number of bank relationships has a negative impact on the availability of credit. This suggests that if lenders pool their information, the total amount of credit extended might increase (see also Bennardo and Pagano, 2001).

A number of papers discuss how wider information sharing among firms may affect the financial system. Jappelli and Pagano (1993) discuss how the reduction of adverse selection problems through information sharing would tend to reduce defaults, though the effect on overall lending is ambiguous since lending to good borrowers may increase but may not be sufficient to offset the decline in lending to bad borrowers. In another model, Padilla and Pagano (1997) show that greater exchange of information about borrower

types means banks restrain their ability to obtain future informational rents and in their

model, interest rates are lower and lending is higher than in the case with lower

information. This is because information sharing means lower market power. Lower

market power translates into an expectation of lower interest rates and raises the incentive

to perform on the part of borrowers. Thus defaults are lowered and lending rises.

Several papers discuss how markets have responded to information failures by

developing institutions to deal with them. Good examples of institutional innovations that

have evolved in response to informational asymmetries are credit registries and credit

bureaus which facilitate information sharing among lenders (see Jappelli and Pagano,

2000 for a survey). Credit bureaus operate on principles of reciprocity and are typically

voluntary mechanisms. Public credit registries are databases created by public authorities

and managed by central banks. These registries generally record bank loans and lines of

credit. In some countries, there are specialized registers for certain classes of debt (e.g.

those that record the real collateral assisting housing mortgage loans). Data are obtained

by lenders who are required to report and who in turn obtain a return flow of data to use

in their lending decisions.

Since lenders are required to participate in public credit registries, their coverage

of bank loans tends to be universal, though they may fail to include data provided by

credit card companies and other financial companies and they may not record loans

below a certain size. A credit bureau's information is limited to members. They tend to

provide reliable data -timeliness and honesty is forced by threatening expulsion from the

group in case of non-compliance. They also provide information on consumer loans and

small-business loans. Credit bureaus allow better pricing and targeting of loans, level the

informational playing field (and so raise competition and reduce moral hazard, that is they reduce the incentives to default).

Jappelli and Pagano (2000) find that public credit registers are more likely to arise where private arrangements are weak and that information sharing arrangements are more likely to arise where creditor rights are poorly protected (to compensate for poor protection ex-post).[2] But private arrangements may also serve as entry barriers –Jappelli and Pagano assert that in Mexico the banks have a vertically integrated arrangement with a monopolistic credit bureau system that prevent new banks (having an informational disadvantage) from entering. In an empirical study covering several countries Jappelli and Pagano (2002) find that information sharing leads to an increase in lending. This relationship holds even after accounting for country size and growth rate, and variables capturing respect for property rights and respect for the law. Galindo and Miller, 2001, find that improved assessment of credit risk as enabled by more information sharing translates into higher lending. Pinheiro and Cabral (2001) report that the postdated check market operates without collateral, without personal guarantees, and without legal sanctions of any type. It is based on an information sharing mechanism (a black list of people who write checks without funds to back them). Trivelli, Alvarado and Galarza (2001) find that the development of a public rating register in Peru has encouraged lenders to shift away from exclusive reliance on collateral towards information based lending.

The design of institutions such as credit registries discussed above affects the type of monitoring that takes place in countries since they affect the amount of information

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[2] The use of collateral can be justified as a response to information asymmetries, as can various types of contingent contracts.

produced and disseminated. Governments design and implement regulations that provide access to information by concerned agents and in some cases may be the sole repository of such information. Barth, Caprio and Levine (2006) focus on a different type of information problem in the financial sector and the regulations that might ameliorate information asymmetries. A healthy financial sector requires healthy financial intermediaries. Banks that are not properly monitored/ supervised may make poor lending decisions that cause bank failures. Bank failures are harmful for depositors as well as governments (and sometimes the whole economy). The less information there is on how lending and borrowing decisions are made and the health of the intermediaries in the financial system, the greater the risk of not being able to monitor banks properly, the greater the risk of bank crises and the lower will be financial development since agents will have less trust in banks and deposits will be low.[3]

A number of measures have been developed to assess the strength of supervisory and regulatory measures in the financial sector. Some of these measures aim to strengthen private monitoring of banks. For example, supervisory agencies may require banks to obtain and publish certified audits, or to produce comprehensive information on a bank's full range of activities and risk management systems. When banks are required to disclose information on their financial health or management systems, bank managers will have incentives to ensure that the bank is healthy and well managed in order to prevent bank runs. In other words disclosing information on a bank's health affects the bank's lending decisions, and the conditions of the portfolio.

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[3] For references on the incentives of banks to make lending decisions that endanger banking health (see Barth, Caprio and Levine, 2006).

Information disclosure allows private sector monitoring of banks and is an important complement to other supervisory/regulatory activities. Moreover, transparency in banks provides checks and balances to both bank managers *and* their public sector regulators. When the condition of a bank's portfolio is publicly disclosed, supervisors have a lower ability and incentive to collude with bankers. Private agents are also more able to monitor banking health. Barth, Caprio and Levine (2006) develop indicators to assess how much information disclosure is supported by a country's regulatory and supervisory system and relate these and other indicators to financial development. In a related paper, doing cross country analysis, La Porta et al (2005) find that securities market regulations that induce information disclosure promote stock market development while securities regulations that rely on official oversight of markets only boost equity market capitalization in countries with efficient government bureaucracies.

Finally, this paper is related to a recent paper by Beck, Demirguc-Kunt and Levine (BDL, 2005) who, using firm level data, investigate the relationship between supervisory and regulatory policies and bank corruption as an obstacle to raising external financing for firms. One of the regulatory tools on which they focus is mandating information disclosure by banks. Specifically, they analyze the impact of information disclosure on corruption in bank lending. This paper contends that economic transparency, by facilitating evaluation and monitoring of lending decisions (in terms of whether loans are made to projects based on expectations of profitability or some other criteria) should also reduce corruption in bank lending. [4]

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[4] For example, economic information that shows that a particular industry is facing losses would make a corrupt official more wary of lending to friends in that sector.

This paper adds to the literature on information asymmetries and finance by focusing on the impact of better information about overall macroeconomic conditions on financial development. Better information on the economy helps borrowers and lenders make better decisions and so may be expected to raise lending. Better information allows agents to allocate resources more efficiently within the financial system, it may also raise investment by lowering risk or by enabling better risk management. Conversely, when there is little up to date knowledge of economic conditions, banks may be more reluctant to lend and investors to invest. This would reduce the supply of and demand for credit.

Better knowledge of economic variables may also help lenders distinguish between different types of projects/borrowers- for example some borrowers may be more affected by exchange rate changes than others. Some may be more affected by the government's fiscal decisions than others. Knowing how different macroeconomic variables are evolving in a timely manner assists lenders in differentiating between borrowers; they will lend more to those who are expected to do better given the information received on macroeconomic outcomes. They will accordingly lend less to others and the overall effect may be higher or lower lending. Similarly on the demand side, borrowers who see better outcomes for their projects will enter the market where others will leave. The net result on private credit through this channel is ambiguous though the portfolio should improve (non-performing loans fall).

Knowledge of economic conditions would help in managing lending portfolios and thereby potentially improve the performance of the portfolio (and reduce non-performing loans). Knowledge of economic conditions affecting banking profitability would help investors and regulators in banks to differentiate between banks that are unhealthy due to

internal mismanagement and those whose condition is related to economic outcomes. Thus up-to-date information on economic conditions could have a positive effect on financial sector development. This paper contends that better information on economic variables lowers risk and helps lenders and borrowers make better judgements about borrowing and lending decisions. Overall credit may rise or fall, but bank portfolios should improve.

This paper uses an indicator that reflects the timeliness of economic data reported by governments- called the transparency indicator (Islam, 2006) as an indicator of knowledge available to the general public on key economic variables. It links the timeliness of data as measured by this indicator to financial sector development. In the following section, the paper lays out in more detail why information on economic outcomes may lead to overall financial sector development, though it does not go so far as to build a theoretical model showing these links. This is followed by a description of the data and empirical strategy. The next section describes the results.

So far the impact of transparency on private credit and non-performing loans has been analyzed without reference to an additional potential source of improved performance. I have assumed that lenders only seek to improve the performance of their portfolios. But in the real world, lending decisions are not always based on a desire to enhance efficiency and profits of the bank. Bank officials or supervisors may be corrupt and may hinder an efficient or competitive allocation of credit. The impact of transparency on the behavior of the portfolio may come about because of institutional factors or improved governance: that is it may reduce corruption. When information is available that allows better monitoring and evaluation of the decisions that supervisors

and lenders make, their behavior can be expected to change. One way to see whether governance improves with greater transparency is to look at how transparency affects access by firms to finance through its impact on corruption. BDL (2005) conduct an empirical investigation into the impact of supervision and private monitoring on corruption in lending. They use the index of supervisory practice and an index of private monitoring used in this paper. In this paper, I extend their analysis and ask whether economic transparency affects corruption in bank lending after having accounted for supervisory and regulatory practices in the financial sector. Though it is not possible to simultaneously investigate all the channels through which economic transparency may affect financial sector outcomes, I investigate whether reducing corruption in bank lending may be one of the ways in which bank portfolios may improve.

Theoretical Justification

In most of the finance literature, information asymmetries are of two types: (a) lack of information on borrower type and limited ability to monitor borrower actions lead to adverse selection and moral hazard; and (b) insufficient checks and balances (incentives and penalties) on bank owners/directors and supervisors, and the presence of moral hazard, lead to poor bank portfolios and bank failures. Usually, the literature has focused on how improving information asymmetries between (a) regulators and depositors on the one hand and bank management /owners on the other, or (b) lenders and borrowers can improve bank portfolios. The primary information asymmetry that this paper focuses on is that between the state and private agents. But this information asymmetry has consequences for how lenders and borrowers behave. The government knows the economic situation but either for political reasons (for example, the desire to hide bad

outcomes) or simply because producing and disseminating information has costs greater than expected (or internalized) benefits, they do not widely disseminate economic information in a timely manner. The information published by government may not reflect the current situation. [5] Yet the profitability of investment (and therefore the probability of default on bank lending) depends on key macro-economic variables such as the exchange rate, wage rates, interest rates, inflation, the fiscal deficit (or expenditures and taxes) and GDP growth. None of these outcomes are known with certainty and both borrowers and lenders face greater risk in their activities when they have poorer knowledge of economic variables.

Suppose the expected financial return to the borrower (and therefore the lender), ER, depends on a risk factor r, which depends on overall economic conditions and other conditions particular to the project in question, p: ER=ER(r,p). If we suppose that r is affected differently for different projects (for example, exchange rate depreciation would not affect both exporters and non-exporters equally), then we would have a distribution of ERs which depend on the realization of several macro variables. If borrowers and lenders know how r changes with economic variables, then knowing about economic outcomes will help both lenders and borrowers better assess the return on their projects. In particular, if the distribution of r changes with new knowledge then lenders will make better portfolio choices since they will estimate different expected returns for each project. Overall lending may rise or fall depending on the realizations of economic outcomes and how these outcomes affect the distribution of projects and bank profits.

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[5] In such a situation it is still possible to imagine that some private agents (e.g. those connected closely with government agents) have preferential access to information.

Suppose there are two projects with the same expected return but different risk features: B and D, B having higher risk at the current knowledge of economic outcomes. Suppose new knowledge reveals that the risk of an exchange rate depreciation has increased and suppose that D's return depends on exchange rate changes (depreciation reduces earnings) while B's does not. With this new knowledge, the relative expected return on D will fall and lenders will choose to finance more of type B than D, ceteris paribus[6]. The expected return on B will rise and profits of the bank will rise (they will have fewer defaults) since they will have made better choices than if they had assumed an unchanged situation between D and B. If higher profits affect the supply of lending – then we can assume that greater economic transparency will increase the amount of credit available in the economy at each interest rate, ceteris paribus. It should also reduce the ratio of non-performing loans.

Suppose borrowers have a better knowledge of economic outcomes; they too can reassess the type of project in which they will invest. Ceteris paribus, borrowers facing reduced expected earnings will not apply for the loan (demand will fall) while those with higher expected earnings (D) will demand more loans. Again overall demand may rise or fall. That is, at any given interest rate charged the demand curve may shift inwards or outwards. If borrowers and lenders had already purchased contingent contracts to hedge exchange rate risk, better knowledge of exchange rates may have less of an effect than in the case where contingent contracts are not available.

What role does corruption play? Suppose with corruption in bank lending and given the overall level of credit extended in the economy, the portfolio can be divided

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[6] Assuming that there are more of this type of borrower.

into those loans in which corruption plays a part LC, and those in which there is no corruption, L1.

Suppose officials accept bribes for a certain fraction of loans made. Then the return to the officials (as distinct from the bank owners) would be bribes and to the bank, the expected returns from LC loans, ELC. If it is assumed that bribes are made because the loan would yield lower expected returns to the bank than other investments, then the overall returns to the bank from its portfolio of investments would be lower; the return to the now corrupt lending officials would be higher where ELC+bribes would have to be the minimum overall return to the borrower. The share of non-performing loans may be higher in this scenario. But greater transparency means that it will be easier to detect and predict the actual performance of loans. This would also help monitor cases where loans are not made on the basis of expected returns but bribes: ability to monitor (and penalize corrupt officials), should reduce the incidence of bribes and of LC.[7] In other words, firms in general would see corruption as less of a constraint on access to finance when bank officials' decisions can be evaluated better and officials can be held accountable. However, this conclusion only holds if there are penalties (reputational or otherwise) associated with greater corruption that is revealed by better monitoring.

Empirical Estimation and Data Used

The empirical estimation conducted in the first part of this paper can be represented by the following equation:

$PC = \alpha + \beta T + \delta X$

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[7] Note that aspects of the private monitoring index developed by BCL can be expected to give information on similar aspects of the portfolio and on banking officials' behaviour. Thus information provided by T would complement that provided by the BCL indicators.

PC is the measure of financial development, or private credit over GDP. I also use

the share of non-performing loans in lending values as another measure of financial

sector development. T is the transparency indicator of interest, and X represents other

variables affecting financial development. In determining both the choice of the financial

development indicator and the variables to be put in X, I follow Barth, Caprio and Levine

(BCL, 2004, 2006). The transparency indicator is taken from Islam (2006), and represents

the availability of timely economic information in countries.[8] Legal origin has been

shown to be an important factor determining financial development (see Beck, Demirguc-

Kunt and Levine, 2003) and is therefore used as an explanatory variable. Legal origin is

divided into the following categories following La Porta et al (1999) - French, English,

Scandinavian, Socialist and German.

I also include an index constructed by BCL (pmindex and pmindex pc) which

reflects the amount of information available on banks in order to facilitate private

monitoring (see Appendix 2). For example, if international audits are required then banks

need to supply information to auditors. In addition, I have constructed a slightly adjusted

private monitoring index (apmindex) in order to focus solely on the availability of

information rather than the incentive to monitor. I have done this so that the private

monitoring index is more closely analogous to the economic transparency index, T.[9] I

have adjusted the index slightly by taking out the question on deposit insurance but

leaving all the other subindices that refer to actual disclosure of information.[10]

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[8] This index measures how timely or up-to-date is the economic information published by government on 11 economic variables: inflation, unemployment, output, exchange rates, exports, imports, foreign direct investment, government revenue, government expenditure, money supply and the 6 month deposit interest rate.

[9] The conclusions regarding T do not change depending whether pmindex or apmindex is used.

[10] BCL give an higher rating to countries with no deposit insurance. They contend that deposit insurance reduces the incentives for private monitoring. My goal is to assess the impact of having information

In the robustness checks, I also include a measure of the supervisory and regulatory strength in the country as a control variable. In order to check whether the coefficient on T is picking up the value of information over and above that directly related to information sharing among financial intermediaries, I include in the robustness check another variable called creditreg. This index is from Jentsch 2003 and measures a number of things: (a) existence credit related information (e.g. bankruptcy data bases), (b) access to information mandated by laws or regulation, (c) centralization of information for ease of access, (d) content of databases, (e) property rights to information. I use a composite of these indices (the summation over the individual values). The main purpose of this indicator is to assess both the availability of information considered critical for lenders plus the legal and regulatory framework governing information production and access.

Part 1. Private Credit, Non Performing Loans and Transparency

Descriptive Statistics and Empirical Estimation

Table A2 in the annex it shows the correlation among the variables used in the first part of the paper. A list of variables is shown in Annex 2. As might be expected, T is positively related to the measure of private credit (privo) and negatively related to the ratio of non-performing loans (npl0204). T is also positively and significantly associated with apmindex- the adjusted private monitoring index from BCL(2006).[11] T is positively correlated with the credit registry variable (creditregindex). It is also positively correlated with private credit and negatively so with the non-performing loans variable.

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available rather than to assess the joint effect of disclosure and related incentives for monitoring. By adjusting the BCL index, I am constructing an index that is closer to the economic transparency indicator that is the main focus of the paper.

[11] The adjusted index deals only with access to information while the unadjusted index (pmindex), which also includes a measure of the incentive to monitor, has a lower correlation with T.

Table 1 below shows the descriptive statistics for the variables used in the empirical estimations.

Table 1. Summary Statistics for the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
privo	173	45.47	42.13	1.33	232.33
npl0204	94	9.35	7.58	0.00	30.67
sdprivo	168	4.51	7.06	0.00	45.92
sdnpl0204	94	2.37	2.65	0.00	15.04
T_245	178	4.67	1.14	1.12	6.00
legor_uk	203	0.33	0.47	0.00	1.00
legor_fr	203	0.43	0.50	0.00	1.00
legor_ge	203	0.03	0.18	0.00	1.00
legor_so	203	0.17	0.38	0.00	1.00
pmindex	102	7.69	1.36	5.00	11.00
apmindex	144	7.35	2.24	1.00	12.00
creditregindex	89	31.03	10.92	10.00	59.00
ospower	143	10.55	2.96	4.00	14.00
supower_pc	82	-0.03	0.99	-3.05	1.14
pmindex_pc	82	0.07	0.95	-2.95	1.46
gdppn02	163	8.50	1.16	6.31	10.98
corup0204	140	2.49	1.13	0.00	6.00
law0204	140	3.71	1.40	0.78	6.00

Source: see Appendix 2 for variable coding and source

The first set of regressions using OLS are shown in their simplest form in Table 2 below using the main variables of interest, private credit and non-performing loans. Greater economic transparency is associated with either a larger or better performing (as implied by the non-performing loan ratio) financial sector.

Table 2. OLS regression results with Transparency index as explanatory variable.

Dependent variable	Coefficient of T	constant	R-squared	Number of observations
npl0204	-3.42*** (-4.53)	27.39*** (6.8)	0.14	93
Privo	19.44 ** (6.84)	-47.3 (-3.91)	0.23	170

(1): numbers in parentheses are t statistics.
*(2): Coefficients with * indicates significance at the .10 level, ** at the .05 level and *** for the .01 level. It is the same for the other regression tables.*

Table 3 shows a fuller specification where legal origins are included as explanatory variables as are other indices reflecting greater transparency in the financial sector, namely, the adjusted private monitoring index (apmindex) and the credit registry index (creditregind). In all cases, economic transparency is strongly correlated with better financial performance, though interestingly, neither apmindex nor creditregind are.[12] Calculations (based on the regressions in the first columns)[13] indicate that a one standard deviation increase in T raises the private credit to GDP variable by .47 standard deviations and reduces the share of non-performing loans by .32 standard deviations.

Table 3. OLS Regression

Dependent Var	Private Credit			NPL/total loan		
	Version 1	Version 2	Version 3	Version 1	Version 2	Version 3
T_245	19.2***	18.4***	30.2***	-3.02***	-3.01***	-4.04**
	(6.59)	(4.85)	(5.2)	(-3.62)	(-2.67)	(-2.43)
legor_uk	-22.70	-12.8	-6.5	4.62	4.89	4.40
	(-1.16)	(-.61)	(-.28)	(3.4)	(3.24)	(2.15)
legor_fr	-43.0	-40.9	-32.5	7.68	7.74	8.07
	(-2.29)	(-2.03)	(-1.5)	(4.91)	(4.74)	(4.29)
legor_ge	9.68	7.84	18.8	2.28	2.3	3.16
	(.48)	(.36)	(.76)	(3.35)	(3.11)	(3.56)
legor_so	-65.78	-68.	-66.0	7.26	6.7	8.35
	(-3.56)	(-3.53)	(-3.1)	(4.2)	(3.55)	(3.96)
apmindex		2.35			-.04	.31
		(1.47)			(-.08)	(.47)
creditregindex			-.38			-.01
			(-.80)			(-.09)
Constant	-8.85	-24.8	-62.8*	19.17***	19.5***	22.44**
	(--.36)	(-.89)	(-1.79)	(3.87)	(3.49)	(3.25)
# obs	169	133	83	93	82	65
R^2	.41	.49	.46	.21	.21	.21

Note: *1) Legor_uk are those countries with English legal system origin, legor_fr – French legal system origin; legor_ge – German legal system origin; legor_so – socialist legal system origin. (see the appendix 2 for source and variable description)*
(2): numbers in parentheses are t statistics.
(3): Coefficients with * denote significance at the .10 level, ** at the .05 level and *** for the .01 level.

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[12] The private monitoring index is significant when T is excluded from the regressions.

[13] As a check, the calculations were redone in regressions including the private monitoring index but there was no substantial difference.

Using Instrumental Variables

While the OLS regressions above indicate a strong empirical relationship between transparency and financial sector variables, they do not indicate anything about the direction of effect. The correlations may come about because of omitted variable bias or endogeneity. To control for potential simultaneity bias, I use IV to identify the exogenous component of transparency. In order to choose an appropriate instrument for transparency, I consider the literature on institutions. Beck et al (2003) and Easterly and Levine (2003) argue that countries in tropical climates have tended to produce exploitative political regimes that protect a small elite. Such regimes would favor a whole array of policies and institutions that limit competition and give advantages to a few. These are institutions that have been shown to be less favorable to measures of development. One of the key ways in which competition may be limited is to design policies and institutions that limit information exchanges. Since informational advantages create the potential for rent (or non-pecuniary benefits), we would expect less transparency in exploitative regimes and poor institutional environments. Endowments affect what types of regimes are established. Following the arguments developed by these authors, I use latitude as an instrument for transparency. Latitude is negatively correlated with transparency.

Two other possible instruments for transparency are ethnic diversity and religious composition. The same authors and Barth et al. (2006) have also used these indicators to explain financial sector supervision and regulation, including the presence of disclosure regulations (or transparency) in the financial sector. These authors have argued that countries in which the share of the Muslim and Catholic populations are high tend to be

more centralized and hierarchical. Extending this argument, more centralized

institutional/state structures would require and favor a less open information

environment. In centralized decisionmaking, fewer players need information. Similarly,

in more hierarchical decisionmaking fewer players need information (and there is little

opportunity for the majority to benefit from this information). Such structures would

probably be associated with less transparency. The Catholic and Muslim shares of the

population are negatively correlated with transparency.

Several papers have discussed the impact of ethnic diversity on institutional

development, growth, social conflict and so on (see Easterly 2001, Alesina and Ferrara,

2005). Lack of trust between different ethnic groups makes it difficult to develop

networks which require the sharing of information among other things. Countries with

high ethnic diversity tend to have poorer institutions and therefore might be expected to

have low transparency – or less sharing of information. Estimations indicate that ethnic

diversity and transparency are (significantly) negatively correlated.

Ethnic diversity, latitude, the share of the population that is catholic or muslim all

turn out to be good instruments. Using ethnic diversity and latitude as instruments below,

I find that greater transparency means better financial development. In fact, a one

standard deviation increase in T is associated with a .57 standard deviation increase in the

private sector to GDP ratio and a .41 decline in the non-performing loan ratio. Note that

the adjusted BCL index (apmindex) is not significant.

Table 4. IV Regression (instruments for T: Ethnic Diversity and Latitude)

Dependent Var	Private Credit		NPL/total loan	
	Without apmindex	With apmindex	Without apmindex	With apmindex
T_245	41.5***	52.4***	-6.2***	-13.7*
	(6.25)	(3.74)	(-2.75)	(-1.98)
legor_uk	6.48	13.7	2.02	-.47
	(.31)	(.67)	(.98)	(-.13)
legor_fr	-12.2	-14.7	5.1	2.28
	(-.59)	(-.76)	(2.44)	(.59)
legor_ge	8.46	13.5	2.51	1.81
	(.42)	(.75)	(3.69)	(.74)
legor_so	-43.6	-79.5	8.01	10.6
	(-1.87)	(-4.52)	(3.66)	(3.63)
apmindex		-7.03		2.67
		(-1.59)		(1.56)
Constant	-141.3***	-143.8***	38.41***	57.7**
	(-3.26)	(-2.75)	(2.85)	(2.19)
# obs	146	114	80	69
R^2	.64	.70	.67	.46

Note: *1) Legor_uk are those countries with English legal system origin, legor_fr – French legal system origin; legor_ge – German legal system origin; legor_so – socialist legal system origin. (see the appendix 2 for source and variable description)*
(2): numbers in parentheses are t statistics.
(3): Coefficients with * denote significance at the .10 level, ** at the .05 level and *** for the .01 level.
(4): The instruments passed the over-identification test, with Hansen J statistic quite small (p-value for the χ^2 larger than .95). We also looked at the first step regression in the 2SLS, to make sure the instruments are correlated with the endogenous explanatory variable with the p-value for the F-test smaller than .05).

Table 5. IV Regression (Instruments for T: Catholic, Muslim Share in Population and Latitude)

Dependent Var	Private Credit		NPL/total loan	
	With pmindex	With apmindex	With pmindex	With apmindex
T_245	28.6***	31.8***	-7.8***	-11.6***
	(3.82)	(3.2)	(-3.0)	(-2.99)
legor_uk	-23.3	-7.27	2.24	.37
	(-1.03)	(-.35)	(.97)	(.14)
legor_fr	-41.5	-31.7	5.07	2.93
	(-1.93)	(-1.57)	(1.98)	(1.19)
legor_ge	-16.2	9.5	2.47	1.99
	(-.86)	(.48)	(2.64)	1.15()
legor_so	-76.9	-68.3	5.02	8.65***
	(-4.06)	(-3.7)	(.02)	(3.17)
pmindex	1.95		.35	
	(.74)		(.43)	
apmindex		-.66		1.96
		(-.23)		(2.08)
Constant	-69.4	-77.8	44.5	52.3
	(-1.52)	(-1.8)	(2.87)	(3.23)
# obs	87	113	61	77
R^2	.77	.76	.56	.47

Note: *1) Legor_uk are those countries with English legal system origin, legor_fr – French legal system origin; legor_ge – German legal system origin; legor_so – socialist legal system origin. (see the appendix 2 for source and variable description)*
(2): numbers in parentheses are t statistics.
*(3): Coefficients with * denote significance at the .10 level, ** at the .05 level and *** for the .01 level.*
(4): The instruments passed the over-identification test, with Hansen J statistic quite small (p-value for the χ^2 larger than .95). I also looked at the first step regression in the 2SLS, to make sure the instruments are correlated with the endogenous explanatory variable with the p-value for the F-test smaller than .05.

It is possible that in a country with overall better governance, economic transparency would not have an additional impact on financial development. I run the base regressions again controlling for measures of governance such as law and order and corruption. When supervisory indices and measures of governance are used as controls in the OLS specifications the coefficient on transparency remains strongly significant. Table 6 shows different IV specifications that include measures of governance. In all the specifications for the npl variable, T continues to be significant, indicating that better

economic information helps sort good and poor projects. As controls, I also use the principal components of the supervisory and regulatory indices (as in BCL) – simple indices which sum over the different components were also tried and gave similar results. However, in these specifications, the coefficient on T loses significance when pmindex pc, the complete BCL monitoring index, is included and instead the BCL index is significant. Interestingly, when apmindex is used instead, it is not significant. In addition, overall corruption in the economy is not significant. When law and order is used as the governance measure as a control, it is significant, but has the wrong sign for the npl variable and but now pmindex pc is no longer significant. T continues to be significant in most specifications. Table 7 shows the IV specification using law and order – transparency raises private credit and lowers non-performing loans. Note that corruption overall has no impact on either dependent variable while law and order is usually significant for higher levels of private credit. These results suggest that economic transparency is quite robustly related to better financial sector performance. The results in the various specifications also suggest that greater economic transparency may be a substitute for greater transparency within the financial system in the sense that both types of transparency allow market participants to judge the performance of banking portfolios and of banks.

Table 6. IV Regressions with Corruption

Dependent Var	Private Credit				NPL/total loan			
	IV1	IV1	IV2	IV2	IV1	IV1	IV2	IV2
T_245	29.2**	9.6	32.2***	17.2	-13.8**	-10.2**	-11.0**	-7.5*
	(2.4)	(.56)	(2.61)	(.98)	(-2.06)	(-2.03)	(-2.2)	(-1.64)
legor_uk	6.6	6.6	5.88	1.59	3.7	2.95	2.7	1.72
	(.27)	(.20)	(.24)	(.05)	(1.17)	(.91)	(1.0)	(.56)
legor_fr	-15.6	-10.04	-16.4	-18.4	7.01	7.42*	5.6	5.04
	(-.69)	(-.3)	(-.7)	(-.57)	(1.44)	(1.7)	(1.3)	(1.19)
legor_ge	17.2	27.7	15.3	19.4	5.76	5.6	4.7	2.7
	(.77)	(.87)	(.71)	(.62)	(1.2)	(1.19)	(1.23)	(.62)
legor_so	-59.6**	-9.9	-60.2**	-29	15.04*	10.1	11.5	3.42
	(-2.2)	(-.25)	(-2.38)	(-.82)	(1.7)	(1.49)	(1.63)	(.61)
apmindex	-.44		-1.13		2.43*		1.63*	
	(-.14)		(-.35)		(1.8)		(1.73)	
ospower	.24		.53		-.47		-.55	
	(.16)		(.36)		(-.91)		(-1.33)	
pmindex_pc		17.5***		15.7**		-1.24		-.61
		(2.77)		(2.4)		(-.70)		(-.41)
Supoer_pc		-2.38		-.84		-1.19		-.47
		(-.39)		(-.16)		(-1.25)		(-.55)
Corup0204	6.4	7.6	5.6	4.83	1.1	.36	-.09	-.50
	(1.17)	(.91)	(1.18)	(.59)	(.49)	(.21)	(-.05)	(--.30)
Constant	-99.9**	-11.5	-109**	-36.6	58.6***	59.2***	55.8***	48.7**
	(-1.9)	(-.14)	(-2.0)	(-.43)	(2.74)	(2.75)	(3.28)	(2.5)
# obs	83	61	93	68	64	54	74	61
R^2	.80	.79	.79	.79	.45	.60	.54	.64

Note: *1) Legor_uk are those countries with English legal system origin, legor_fr – French legal system origin; legor_ge – German legal system origin; legor_so – socialist legal system origin. Latitude is the absolute average latitude of the country ("lat_abg"), ethnic diversity is the "avelf" index. Ospower is the official supervisory power index, apmindex is the adjusted private monitoring index, pmindex_pc is the principal component for the private monitoring index, supower_pc is the principal component of the supervisory power index. Corup0204 is the ICRG corruption index, average over 2002~04 (see Aappendix 2 for the source and variable description) (see the appendix 2 for source and variable description)*
(2): numbers in parentheses are t statistics.
*(3): Coefficients with * denote significance at the .10 level, ** at the .05 level and *** for the .01 level.*
(4): For IV1, the instruments for T are avelf, lat_avg, cathshare, and muslshare. For IV2, the instruments are lat_avg, indep, cathshar, and muslshare (see Appendix2 for variable descriptions and sources).
(5): The instruments (except the one used in the last column for IV2) passed the over-identification test, with Hansen J statistic quite small (p-value for the χ^2 larger than .10). We also looked at the first step regression in the 2SLS, to make sure the instruments are correlated with the endogenous explanatory variable (with the p-value for the F-test smaller than .05).

Table 7. IV Regressions with Law and Order

Dependent Var	Private Credit				NPL/total loan			
	IV1	IV1	IV2	IV2	IV1	IV1	IV2	IV2
T_245	26.5***	15.8	29.9***	-9.6***	-11.8***	19.2	-11.2***	-8.1**
	(2.6)	(1.188)	(2.8)	(-2.83)	(-2.8)	(1.4)	(-2.9)	(-2.59)
legor_uk	12.2	7.63	12.7	1.18	1.17	6.5	1.6	1.02
	(.56)	(.28)	(.58)	(.61)	(.51)	(.24)	(.77)	(.54)
legor_fr	-7.4	-8.63	-6.6	4.5*	3.6	-11.1	4.09	3.79
	(-.36)	(-.33)	(-.33)	(1.9)	(.94)	(-.43)	(1.10)	(1.6)
legor_ge	20.7	22.9	19.3	4.3*	3.6	18.6	4.17	3.02
	(1.0)	(.82)	(.95)	(1.69)	(1.0)	(.68)	(1.35)	(1.28)
legor_so	-57.2***	-24.1	-59***	8.2**	10.3***	-36.2	10.8***	4.29
	(-2.9)	(-.8)	(-3.13)	(2.3)	(2.6)	(-1.35)	(2.71)	(1.46)
apmindex	-1.5		-2.15		2.22***		1.76**	
	(-.52)		(-.76)		(2.6)		(2.29)	
ospower	-.16		.14		-.43		-.54	
	(-.11)		(.10)		(-.91)		(-1.29)	
pmindex_pc		9.96		-.13		9.5		.33
		(1.26)		(-.07)		(1.3)		(.23)
Supoer_pc		-2.1		-1.15		-.26		-.64
		(-.33)		(-1.2)		(-.05)		(-.8)
Law0204	10.6***	10.3**	10.2***	-1.03	-.55	10.03**	-.66	-1.39
	(3.9)	(2.55)	(3.7)	(-.9)	(-.42)	(2.57)	(-.55)	(-1.38)
Constant	-101**	-60.7	-116**	62.6***	-.55	-75.8	58.8***	56.2***
	(-2.1)	(-.76)	(-2.23)	(4.08)	(-.42)	(-.93)	(4.05)	(3.89)
# obs	83	61	93	54	64	68	74	61
R^2	.82	.80	.82	.62	.53	.80	.54	.64

Note: *1) Legor_uk is those with English legal system origin, legor_fr – French legal system origin; legor_ge – German legal system origin; legor_so – socialist legal system origin. Latitude is the Absolute average latitude of country, ethnic diversity is the avelf index. Ospower is official supervisory power (summation of the 14 dummries), apmindex is adjusted private monitoring index, pmindex_pc is the principal component for the private monitoring index, supower_pc is the principal component of the supervisory power index. Law0204 is the ICRG index on law and order, average over 2002~04 (see the appendix table for source and variable description)*
(2): numbers in parentheses are t statistic.
*(3): Coefficients with * means it is significant at .10 level, ** at .05 level and *** for.01 level. It is the same for the other regression tables.*
(4):For IV1, the instruments for T are avelf, lat_avg, cathshare, and muslshare. For IV2, the instruments are lat_avg, indep, cathshar, and muslshare (see Appendix 2 for variable description and source).
(5):The instruments passed the over-identification test, with the Hansen J statistic quite small (p-value for the χ^2 larger than .10). We also looked at the first step regression in the 2SLS, to make sure the instruments are correlated with the endogenous explanatory variable, with the p-value for the F-test smaller than .05.

Part 2. Corruption in Bank Lending and Transparency

Descriptive Statistics and Estimation

In this section of the paper, I use and extend the estimation procedure in BDL (2005) to investigate whether economic transparency reduces corruption in bank lending. BDL use both firm specific and country specific data to assess how corruption may hinder access to finance. Much of the firm specific data, including the data on corruption in bank lending comes from a WBES firm level survey that covers 81 countries.

The dependent variable, corruption in bank lending, comes from a questionnaire which attempts to identify if corruption is an obstacle to firms' access to finance. Bank corruption, is the response to the question: "How problematic is corruption of bank officials for the operation and growth of your business?" Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle). 12% in the sample report 4, 12 % report 3, 19% report 2 and 57% report 1. The dependent variable for the next three IV probit models is a binary response model based on Bank Corruption – with 1(no obstacle) recoded as 0, and all the other values recoded as 1 (obstacle to various degrees). This grouping puts 57% in the first category and 43% in the second. WBES data are useful in that they provide direct information on obstacles to financing, broad country and firm level coverage, and allow one to correct for both firm specific and country specific factors.[14]

The WBES survey includes data on firm type. The variable **government** takes on the value 1 if the government owns any percentage of the firm. **Foreign** takes on the value 1 if foreign entities take on any fraction of the firm. The sample includes 12%

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[14] BDL (2005) point out that several papers have shown that these subjective indicators are correlated with objective measures of performance.

government owned firms and 19% foreign owned firms. The regressions include dummies for whether the firm is an **exporter**, whether it produces **manufactured** goods, or is a **service** sector firm. The regressions also include the log of the number of **competitors** that each firm faces and the log of **sales** in USD as an indicator of size.

The regressions control for the strength of supervision and regulation and also include the private monitoring variable constructed by BCL and used by both BCL and BDL. The country level controls used are, as in BDL, growth of GDP (since firms in faster growing economies may face fewer obstacles), the inflation rate to proxy for market stability (firms in more stable markets face fewer obstacles, Boyd et al 2001), overall credit (overall financial development eases credit constraints). Overall corruption is a control as well.

The regression estimated is:

$$BC = \alpha + \beta_1 G + \beta_2 F + \beta_3 X + \beta_4 M + \beta_5 Serv + \beta_6 Sales + \beta_7 Comp + \beta_8 Growth + \beta_9 Inf + \beta_{10} PC + \beta_{11} \sup erpc + \beta_{12} PMpc + \beta_{13} T.$$

Even after the inclusion of all these variables, I expect to find that greater transparency reduces corruption in lending because more information enables both supervisors and private agents to monitor behavior of bank officials and portfolios. Better monitoring enhances accountability of officials since there is a greater chance that corruption or other wrongdoing would be exposed and punished by clients or others. Table A1b in the appendix shows the correlation among the main variables and Table 8 shows the summary statistics for the variables. Table 9 shows the ordered probit and binary IV probit regressions. Controls for supervisory power, and private monitoring are included.

Table 8. Summary Statistics for the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
bank_corup	8075	1.77	1.05	1	4
t_245_new	9932	5.26	0.88	1.67	6
avelf	7968	0.35	0.29	0	0.89
lat	9059	27.88	17.70	0.23	59.28
gvt_yn	9645	0.12	0.33	0	1
frk_yn	9673	0.19	0.39	0	1
exp_yn	9463	0.36	0.48	0	1
manuf	5463	0.24	0.43	0	1
service	5463	0.35	0.48	0	1
lsale	9034	9.87	8.00	-2.12	25.33
lncomp	9538	0.83	0.34	0	2.20
inflat_9599	9607	27.27	43.60	0.76	252.66
growth_9599	10032	3.56	4.04	-5.46	33.26
lpriv9599	9807	3.06	1.61	-7.74	5.31
suppower_pc	6658	-0.01	0.96	-3.05	1.14
pmindex_pc	6658	-0.10	0.87	-1.83	1.46
gdppn9599	9932	8.41	0.93	6.21	10.37
apmindex	8825	7.85	2.10	1	12

Source: see appendix.

The results in Table 9 below indicate that greater economic transparency reduces corruption in bank lending and should increase access to bank finance. These results are robust to the inclusion of several firm and country specific variables, though surprisingly, the coefficients on the supervisory indicators are not significant. In every specification, more transparency clearly reduces bank corruption- the results are robust across specifications. IV specification strengthens the results. Interestingly, exporting firms' access to credit is not hindered by bank corruption (they presumably have more potential sources of credit-such as trading partners). Restrictive supervisory practices are associated with *more* corruption in all specifications and the monitoring index, pmindex pc, with less. The private monitoring index is not significant in the IV specifications.

Table 9.[15] Regressions for Bank Corruption (with T instrumented by latitude and ethnic diversity)

	Ordered Probit	Ordered Probit	Ordered Probit	Ordered Probit	IV Provit	IV Probit	IV Provit	IV Provit
T_245	-.17***	-.07*	-.09**	-.11***	-1.11***	-1.14***	-1.09***	-1.57***
	(-4.62)	(-1.92)	(-2.43)	(-2.95)	(10.82)	(-5.6)	(-5.78)	(-13.5)
Gvt_yn	-.11	-.02	-.03	-.17	-.26**	--.27**	-.26**	-.10
	(-.97)	(-.26)	(-.3)	(-1.57)	(-2.22)	(-2.14)	(-2.07)	(-.97)
Frk_yn	-.13**	-.12**	-.114*	-.18***	-.09	-.10*	-.09	-.09*
	(-2.43)	(-2.14)	(-2.0)	(-3.6)	(-1.62)	(-1.82)	(-1.64)	(-1.87)
Exp_yn	-.11**	-.18***	-.114***	-.18***	-.18***	-.23***	-.18***	-.25***
	(-2.3)	(-3.73)	(-2.82)	(-3.98)	(-3.53)	(-4.5)	(-3.48)	(-5.89)
manuf	.09	.04	.05	.03	.11*	.10*	.11*	.12**
	(1.55)	(.81)	(.99)	(.58)	(1.88)	(1.74)	(1.85)	(2.58)
service	.03	-.04	-.02	-.02	-.01	-.03	-.01	.04
	(.62)	(-.90)	(-.47)	(-.57)	(1.47)	(-.62)	(-.18)	(.86)
lsale	-.005	-.006	-.003	-.004	.01	.008	.01	.03***
	(-.72)	(-.82)	(-.49)	(-.61)	(1.47)	(1.08)	(1.33)	(4.3)
lncomp	.14*	.15*	.14*	.03	-.0005	-.01	.005	-.10
	(1.82)	(1.91)	(1.77)	(.47)	(-.01)	(-.12)	(.06)	(-1.49)
Inflat_9599	.0002	.004*	-.0003	.007***	-.07***	-.0003	-.004	.01***
	(.09)	(1.77)	(-.11)	(2.8)	(-3.55)	(-.13)	(-1.63)	(3.86)
Growth_9599	.04***	.03*	.025	.05**	.33***	-.07***	-.07***	-.01
	(2.93)	(2.00)	(1.61)	(2.5)	(6.56)	(-2.72)	(-2.91)	(-.86)
Lpriv9599	-.05	.04	.079**	-.25***	.34***	.29***	.32***	.16***
	(-1.61)	(1.16)	(2.01)	(-7.33)	(6.56)	(5.7)	(6.3)	(3.1)
Suppower_pc	.20***		.201		.19***		.19***	
	(8.01)		(.02)		(8.37)		(7.79)	
Pmindex_pc		-.29***	-.29***			.04	.02	
		(-6.83)	(-6.77)			(.46)	(.24)	
apmindex				.04***				.34***
				(2.67)				(13.04)
Constant					4.63***	4.97***	4.61***	4.19***
					(8.92)	(4.57)	(4.56)	(12.4)
# obs	2850	2850	2850	3380	2850	2850	2850	3380
Pseudo R^2	.04	.04	.05	.04				

Note: *1) The first four ordered probit models are run with standard MLE with heteorskedasticity-robust standard errors. The dependent variable for ordered probit is Bank corruption, which is the response to the question "How problematic is corruption of bank officials for the operation and growth of your business?". Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle).The dependent variable for the next four IV probit models is binary response based on Bank Corruption – with 1(no obstacle) recoded as 0, and all the other values recoded as 1(obstacle to various degree). See Appendix 2 for variable description and sources.*
(2): Numbers in parentheses are t statistics.
(3): Coefficients with * denote significance at .10 level, ** at .05 level and *** for.01 level.
(4): The Wald endogeniety tests for IV probit models all show that the IV regression is valid (in the sense that it is significantly different from the non-IV models).

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[15] Using muslim and catholic share of the population and other combinations gives similar results.

Conclusion

      This paper has estimated the impact of greater economic transparency on the financial sector, specifically on the availability of credit, the share of non-performing loans in the portfolio, and on corruption in bank lending. The results indicate that even after accounting for the usual measures of financial disclosure and information flow used in the literature, economic transparency has a significant positive and robust impact on private credit, and a negative and statistically significant impact on non-performing loans and corruption in bank lending. These results inform policy and validate the importance of resolving information asymmetries for financial sector development.

Table 1a. Correlation of variables in the finance regressions

	privo	npl0204	T_245	lat_avg	avelf	cathsh~e	muslsh~e	legor_uk	legor_fr	legor_ge	legor_so	pmindex	apmindex	credit~x	ospower	supowe~c	pminde~c	cor~0204	law0204
privo	1																		
npl0204	-0.41	1																	
T_245	0.48	-0.37	1																
lat_avg	0.36	-0.33	0.50	1															
avelf	-0.34	0.29	-0.37	-0.39	1														
cathshare	0.07	-0.15	0.32	-0.03	-0.26	1													
muslshare	-0.22	0.43	-0.48	-0.13	0.18	-0.51	1												
legor_uk	0.18	-0.09	-0.11	-0.31	0.12	-0.21	-0.02	1											
legor_fr	-0.20	0.22	-0.17	-0.22	-0.07	0.35	0.19	-0.62	1										
legor_ge	0.29	-0.19	0.20	0.19	-0.16	0.03	-0.14	-0.13	-0.17	1									
legor_so	-0.20	0.05	0.19	0.45	-0.12	-0.15	-0.09	-0.32	-0.40	-0.09	1								
pmindex	0.35	-0.13	0.31	0.19	-0.10	-0.06	0.04	0.24	-0.13	0.12	-0.17	1							
apmindex	0.46	-0.25	0.65	0.30	-0.25	0.21	-0.17	-0.09	0.03	0.24	-0.14	0.67	1						
creditregi~x	0.28	-0.31	0.56	0.11	-0.22	0.38	-0.39	0.15	0.05	0.01	-0.20	0.24	0.55	1					
ospower	-0.09	-0.04	0.00	-0.08	0.15	0.03	-0.14	-0.06	0.11	0.12	-0.04	-0.07	0.15	-0.02	1				
supower_pc	-0.16	0.16	-0.21	-0.28	0.05	0.18	0.11	0.00	0.07	0.09	0.01	-0.12	-0.07	0.20	0.38	1			
pmindex_pc	0.44	-0.18	0.45	0.34	-0.20	0.03	0.04	-0.08	0.13	0.19	-0.26	0.57	0.67	0.51	-0.03	-0.09	1		
corup0204	0.59	-0.50	0.48	0.43	-0.39	0.09	-0.29	0.03	-0.15	0.24	-0.20	0.26	0.37	0.34	0.20	-0.24	0.43	1	
law0204	0.56	-0.43	0.44	0.60	-0.28	-0.11	-0.07	0.00	-0.29	0.19	0.12	0.35	0.34	0.20	-0.09	-0.19	0.39	0.61	1

Table 1b. Correlation of variables in the bank corruption regressions

	bank_c~p	b_cor~01	t_245	avelf	lat	gvt_yn	frk_yn	exp_yn	manuf	service	lsale	lncomp	inf~9599	gro~9599	lpr9599	suppowc	pmindex	apmi~x	gdp9599
bank_corup	1																		
b_corup01	0.86	1																	
t_245	-0.1	-0.1	1																
avelf	0.07	0.08	-0.3	1															
lat	-0.1	-0.1	0.39	-0.3	1														
gvt_yn	-0.1	-0.1	-0.02*	0.01	0.16	1													
frk_yn	-0.1	-0.1	0.1	0.03	-0.2	-0.1	1												
exp_yn	-0.1	-0.1	-0	0.07	0.1	0.05	0.24	1											
manuf	0.01	-0	0.08	0.2	0.04	-0	-0	0.14	1										
service	0	0	-0	0	0	0.1	-0	-0.1	0.4	1									
lsale	-0.1	-0.1	-0	-0.1	-0.7	-0.2	0.25	0.14	0.1	-0	1								
lncomp	0.08	0.08	-0	0.23	0.11	0.1	0.1	-0	0.1	0	-0.3	1							
inflat9599	0.06	0.03	0.15	0.01	0.37	0.13	-0.1	-0.1	0.1	0.02	-0.5	0.15	1						
growth9599	-0	-0	-0.3	0.1	-0.4	0.02	0.06	0.11	0.05	-0.1	0.05	-0	-0.5	1					
lpriv9599	-0.2	-0.2	0.31	0.2	-0.1	0.1	0.09	0.15	0.02	-0	0.45	-0.1	-0.3	0.09	1				
suppowerpc	0.13	0.14	-0.1	0.2	-0.3	-0	0	-0	-0	-0	0.03	0.03	-0.3	0.08	-0.1	1			
pmindex_pc	-0.2	-0.2	0.37	0.4	0.18	-0	0.09	0.1	0.1	-0.1	0.37	-0.2	-0.4	0.18	0.6	-0.1	1		
apmindex	-0.1	-0.1	0.53	0.3	0.01	-0	0.06	0.06	0.08	-0.1	0.44	-0.2	-0.3	-0	0.39	-0.02*	0.69	1	
gdpp9599	-0.2	-0.2	0.67	0.4	-0.4	-0	0	0.06	0.1	0	0.15	-0.2	-0.1	-0.1	0.48	-0.3	0.61	0.55	1

*Note: Those highlighted correlations are those not significant at the 0.1 level (p-value bigger than .1). Those with * are with significance at 0.1 level. Those without * and not highlighted are significant at the 0.05 or 0.01 level. For variable description and source, see appendix 2.*

Appendix 2

Source Table:

Variable name	Description	Source
npl0204	Non performing loans as share of total loans, average values over 2002-2004	Same as above
privo	Domestic credit to the private sector as percent of GDP, average values over 2002-2004	Same as above
T_245	Average of Transparency Index for 2002, 2004, and 2005	Author's calculation
pmindex	Private Monitoring Index based on 2003 Banking Regulation Survey	Barth, James R., Gerard Caprio, Jr. and Ross Levine. (2003)
apmindex	Adjusted Private Monitoring Index, based on the 2003 Banking Regulation Survey (BCL 2006). This variable differs from pmindex in that it is	Same as above, with author's adjustment

	composed as a sum of the following components of the survey, with a **Yes** answer taking value of 1, 0 otherwise: does accrued, though unpaid, interest/principal enter the income statement while the loan is still performing; or non-performing; are financial institutions required to produce consolidated accounts covering all bank and any non-bank financial subsidiaries; are off-balance sheet items disclosed to supervisors, or to the public; are bank directors legally liable if information disclosed is erroneous or misleading; what are the penalties, if applicable (none==0, fine==.5, jail ==1); have they been enforced; do regulations require credit ratings for commercial banks; how many of the top ten banks are rated by international credit rating agencies; or by domestic credit rating agencies; which bank activities are rated: bonds issuance; commercial paper issuance.	
Legor_uk	English legal origin	La Porta et la, (1999)
Legor_fr	French legal origin	La Porta et la, (1999)
Legor_ge	German legal origin	La Porta et la, (1999)
Legor_sc	Scandinavian legal origin	La Porta et la, (1999)
Legor_so	Socialist legal origin	La Porta et la, (1999)
pressfreedomindex	Press freedom index 2005	Freedom House http://www.freedomhouse.org/
creditregindex	Credit Information Regulation Index. This is the Sum index of regulation of business reported in Jentzsch (2006)	Jentzsch (2006) (see Table 3 in Appendix)
statownpress	State share of press ownership, based on ownership structure of country's five largest newspapers by circulation	Djankov et al. (2003)
corrupticrg	Control of corruption measure	ICRG Country Risk Guide 2006, Table 3b.
lat_avg	Absolute average latitude of country	CIA World Factbook 2005
avelf	ethno-linguistic fractionalization. It is the average of five different indices compiled by Easterly and Levine. It is the probability of two random people in a country not speaking a same language	William Easterly and Ross Levine, "Africa's Growth Tragedy: Policies and Ethnic Divisions", November 1997, Quarterly Journal of Economics. CXII (4), 1203-1250.
Indep	years since independence. If the value is 297 or higher, it will be fixed at the cap value of 297. After that, take natural log of the years since independence	CIA World Factbook, 1997. http://www.cia.gov/cia/publications/factbook/
cathshare	Share of Catholic population	Department of State Religious Freedom Report 2005
muslshare	Share of Muslim population	Same as above
Loggdppc80	Natural log of the gdp per catipa in 1980	WDI and author's calculation
overfcr	Overall Financial Conglomerates Restrictiveness 2003	Barth, James R., Gerard Caprio, Jr. and Ross Levine. (2006)
entrybr	Entry into Banking Requirements Restrictiveness 2003	Same as above
ocstring	Overall Capital Stringency Restrictiveness 2003	Same as above
crindex	Capital Requirements Index Restrictiveness 2003	Same as above
pcpower	Prompt Corrective Power Restrictiveness 2003	Same as above
rpower	Restructuring Power Restrictiveness 2003	Same as above
dipower	Declaring Insolvency Power Restrictiveness 2003	Same as above
divindex	Diversification Index Restrictiveness	Same as above

	2003	
indsa	Independence of Supervisory Authority Index Restrictiveness 2003	Same as above
mulsup	Multiple Supervisors Restrictiveness 2003	Same as above
caudit	Certified Audit Required Restrictiveness 2003	Same as above
bacct	Bank Accounting Restrictiveness 2003	Same as above
govbank	Government-Owned Banks Restrictiveness 2003	Same as above
seaudit	Strength of External Audit Restrictiveness 2003	Same as above
acctpra	Accounting Practices Restrictiveness 2003	Same as above
fstrans	Financial Statement Transparency Restrictiveness 2003	Same as above
Gvt_yn	Dummy variables that take the value 1 if the firm has government ownership and zero if not.	WBES survey, 2000, available at http://www.ifc.org/ifcext/economics.nsf/Content/ic-wbes
Frk_yn	Dummy variables that take the value 1 if the firm has foreign ownership and zero if not.	Same as above
Exp_yn	dummy variable that indicates if the firm is an exporting firm.	Same as above
manuf	Dummy for manufacturing industry	Same as above
service	Dummy for service industry	Same as above
lsale	Log of sales in US $	Same as above
lncomp	Log of number of competitors	Same as above
Inflat_9599	Inflation rate, average over 1995~1999	GDP & WDI database, Sep 2006
Gdppn02	GDP per capita in 2002	GDP & WDI database, Sep 2006
Growth_9599	GDP growth rate, average over 1995~1999	Same as above
Lpriv9599	claims on the private sector by deposit money banks as share of GDP, average over 1995~1999	Same as above
Suppower_pc	principal components indicator of the power of supervisory agency to discipline and monitor banks	Barth, James R., Gerard Caprio, Jr. and Ross Levine. (2001)
Pmindex_pc	principal components indicator of the degree to which regulations force banks to disclose accurate, transparent information to the public and whether regulations facilitate and encourage private sector monitoring of banks.	Barth, James R., Gerard Caprio, Jr. and Ross Levine. (2001)
ospower	Official supervisory power index based on 2003 Banking Regulation Survey. The value is the summary of the "1" (yes) or "0" (no) answers to 16 survey questions related with bank supervision, such as "Can supervisors meet with any external auditors to discuss their reports without bank approval?" etc., A higher value indicating more supervisory power.	Barth, James R., Gerard Caprio, Jr. and Ross Levine. (2003)
Corup0204	Corruption index averaged over 2002~04	ICRG, available at http://www.countrydata.com/
Law0204	Law and order index average over 2002~04	ICRG, available at http://www.countrydata.com/
bank_corup	Bank Corruption index which is the response to the question "How problematic is corruption of bank officials for the operation and growth of your business?". Answers vary between 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), and 4 (major obstacle).	WBES survey, 2000, available at http://www.ifc.org/ifcext/economics.nsf/Content/ic-wbes
b_corup01	binary response based on Bank	Same as above

	Corruption index– with 1(no obstacle) recoded as 0, and all the other values recoded as 1(obstacle to various degree)	

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