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Corruption, Composition of Capital Flows, and Currency Crises

Corruption affects the composition of capital inflows in a way that may raise the likelihood of a currency crisis.

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Summary findings

Crony capitalism and international creditors' self-fulfilling expectations are often suggested as rival explanations for currency crises. A possible link between the two has not been explored.

Wei shows one channel through which crony capitalism can increase the chance of a currency/financial crisis by altering the composition of capital inflows.

Using data on bilateral foreign direct investment and bilateral bank loans, Wei finds clear evidence that in corrupt countries the composition of capital inflows is relatively light in foreign direct investment.

Earlier studies indicated that a country with a capital inflow structure is more likely to run into a currency crisis down the road (partly through international creditors' self-fulfilling expectations).

Therefore, crony capitalism, through its effect on the composition of a country's capital inflows, makes the country more vulnerable to currency crises brought about by self-fulfilling expectations. Corruption may also weaken domestic financial supervision, with a subsequent deterioration in the quality in banks' and firms' balance sheets.

This paper — a product of Public Economics, Development Research Group — is part of a larger effort in the group to understand the connection between corruption and international capital flows. This study was supported in part by a grant from the OECD Development Center. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at swei@worldbank.org. August 2000. (26 pages)

Corruption, Composition of Capital Flows, and Currency Crises

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1. Motivation

The recent currency crises in East Asia, Russia, and Latin America have stimulated the research on the causes of currency crises. On the one hand, it is increasingly common to hear assertions that the so-called crony capitalism may be partly responsible for the onset and/or the depth of the crises. [There is virtually no systematic evidence on this so far, one way or the other.[1]] On the other hand, many researchers argue that the (fragile) self-fulfilling expectations by international creditors are the real reason for the currency crisis. Crony capitalism and self-fulfilling expectations are typically presented as rival explanations.

There may be a linkage between the two explanations. This paper investigates a particular channel through which crony capitalism increases the chance of a future currency crisis driven by self-fulfilling expectations. Specifically, the extent of corruption in a country may affect that country's composition of capital inflows in a way that makes it more vulnerable to international creditors' shifts in their self-fulfilling expectations. Corruption here refers to the extent to which firms (or private citizens) need to pay bribes to government officials in their interactions (for permits, licenses, loans, and so forth).[2]

Several studies (starting with Frankel and Rose 1996, followed by Radlet and Sachs 1998, and Rodrik and Velasco 1999) have shown that the composition of international capital inflows is correlated with incidence of currency crises. In particular, the lower the share of foreign direct investment in total capital inflow, or the higher the short-term debt to reserve ratio, the more likely a country may run into a currency crisis. One possible reason for this is that bank lending or other portfolio investment may be more sentiment-driven than direct investment. Hence, a small (unfavorable) change in

[1] For recent surveys of the literature on corruption and economic development, see Bardhan (1997), Kaufmann (1997), and Wei (1999). None of the survey covers any empirical study that links crony capitalism with currency crisis.

[2] We use the term "crony capitalism" interchangeably with "corruption." Strictly speaking, "crony capitalism" refers to an economic environment in which relatives and friends of government officials are placed in positions of power and government decisions on allocation of resources are distorted to favor friends and relatives. In reality, "crony capitalism" almost always implies a widespread corruption as private firms and citizens in such an environment find it necessary to pay bribes to government officials in order to get anything done.

the recipient countries' fundamentals may cause a large swing in the portfolio capitals (e.g., from massive inflows to massive outflows). This can strain the recipient country's currency or financial system sufficiently to cause or exacerbate its collapse (Radelet and Sachs 1998, Rodrik and Velasco 1999, and Reisen 1999).

To see the differences in the volatility of various types of capital flows, we compute the standard deviations of three ratios (portfolio capital inflow/GDP, borrowing-from-banks/GDP, and inward FDI/GDP) during 1980–96 for every member country of the IMF for which data on all three variables are available. Table 1 presents a summary of the results. We see that for the subset of OECD countries (with membership up to 1980), the volatility of FDI/GDP ratio is substantially smaller than the other two ratios. For non-OECD countries as a group, the FDI/GDP ratio is also much less volatile than the loan/GDP ratio, although it is higher than the portfolio flow/GDP ratio. The lower part of the same table presents the volatility of the three ratios for a number of individual countries that featured prominently in the recent currency crises. Each country shows a loan/GDP ratio that is at least twice and as much as fifteen times as volatile as the FDI/GDP ratio. For each of these countries, the portfolio capital/GDP ratio is also more volatile than the FDI/GDP ratio. If we extend the sample period to include the last two years, the differences in volatility would be even more pronounced (not reported). Therefore, the data is consistent with the hypothesis that FDI is less sentiment-driven and hence more stable as a source of foreign capital.

This paper studies the connection between the degree of corruption in capital-receiving countries and the composition of capital flows into these countries. In particular, we focus on the size of bilateral direct investment versus that of bilateral bank lending from 13 developed countries to 30 developing and transition economies. [As we are not able to obtain data on non-bank portfolio investment on a bilateral basis, we leave them out of this examination.]

Corruption is bad for both international direct investors and creditors. Corrupt borrowing countries are more likely to default on bank loans, or to nationalize (or otherwise diminish the value of) the assets of foreign direct investors. When this happens, there is a limit on how much international arbitration or court proceedings can

help to recover the assets, as there is a limit on how much collateral the foreign creditors or direct investors can seize as compensation.[3]

One may argue that domestic investors have an informational advantage over international investors. Among international investors, international direct investors may have an informational advantage over international portfolio investors (and presumably banks). International direct investors could obtain more information about the local market by having managers from the headquarters stationing in the country that they invest in. As a consequence, the existence of cross-border informational asymmetry may lead to a bias in favor of international direct investment. This is the logic underlying Razin, Sadka and Yuen's theory of (1998) of "pecking order of international capital flows." However, the existence of corruption could temper with this effect. The need for international investors to pay bribery and deal with extortion by corrupt bureaucrats tends to increase with the frequency and the extent of their interactions with local bureaucrats. Given that international direct investors are more likely to have repeated interactions with local officials (for permits, taxes, health inspections, and so forth) than international banks or portfolio investors, local corruption would be more detrimental to FDI than other forms of capital flows. Along the same line, direct investment involves greater sunk cost than bank loans or portfolio investment. Once an investment is made, when corrupt local officials start to demand bribery (in exchange for not setting up obstacles), direct investors would be in a weaker bargaining position than international banks or portfolio investors. This *ex post* disadvantage of FDI would make international direct investors more cautious *ex ante* in a corrupt host country than international portfolio investors.[4]

There is a second reason for why international direct investment is deterred more by local corruption than international bank credit or portfolio investment. The current international financial architecture is such that international creditors are more likely to be bailed out than international direct investors. For example, during the Mexican (and subsequent Tequila) crisis and the more recent Asian currency crisis, the IMF, the World

[3] In the old days, major international creditors and direct investors might rely on their navies to invade a defauting countries to seize more collateral. Such is no longer a (ready) option today.

[4] Tornell (1990) presented a model in which a combination of sunk cost in real investment and uncertainty leads to under-investment in real projects even when the inflow of financial capital is abundant.

Bank, and the G7 countries mobilized a large amount of funds for these countries to prevent or minimize the potentially massive defaults on bank loans. So an international bailout of the bank loans in an event of a massive crisis has by now been firmly in market expectations. [In addition, many developing country governments implicitly or explicitly guarantee the loans borrowed by the private sector in the country.[5]] In comparison, there have are no comparable examples of international assistance packages for the recovery of nationalized or extorted assets of foreign direct investors except for an insignificant amount of insurance that is often expensive to acquire. This difference further tilts the composition of capital flows and makes banks more willing than direct investors to do business with corrupt countries.

Both reasons suggest the possibility that corruption may affect the composition of capital inflows in such a way that the country is more likely to experience a currency crisis. Of course, the composition of capital flows impacts economic development in ways that go beyond its effect on the propensity for a currency crisis. Indeed, many would argue that attracting FDI as opposed to international bank loans or portfolio investment is a more useful way to transfer technology and managerial know-how.

As some concrete examples, table 2 shows the total amount of inward foreign direct investment, foreign bank loans, portfolio capital inflows, and their ratios for New Zealand, Singapore, Uruguay and Thailand. On the one hand, New Zealand and Singapore (are perceived to) have relatively low corruption (the exact source is explained in the next section) and relatively low loan/FDI and portfolio investment/FDI ratios. On the other hand, Uruguay and Thailand (are perceived to) have relatively high corruption and relatively high loan/FDI and portfolio investment/FDI ratios. So these examples are consistent with the notion that local corruption is correlated with patterns of capital inflows. Of course, these four countries are just examples. As such, there are two questions that need to be addressed more formally. First, does the association between corruption and composition of capital flows generalize beyond these four countries? Second, once we control for a number of other characteristics that affect the composition

[5] McKinnon and Pill (1996 and 1999) argue that the government guarantee generates "moral hazard" which in turn leads the developing countries to "overborrow" from the international credit market.

of capital inflows, would we still find the positive association between corruption and the loan/FDI ratio?

We organize the rest of the paper in the following way. Section 2 presents a simple model that shows how corruption may affect the composition of capital flows. Section 3 describes the data. Section 4 presents the methodology and the statistical results of the analyses. And Section 5 concludes.

2. A Minimalist Model

In this section, a simple two-period model is used to demonstrate how corruption in a country may affect the composition of its capital flows. For simplicity, let us consider that there are two types of international capital flows: direct investment and bank credit.

Let us suppose that the government in the capital-importing country, k, maximizes the following two-period objective function:

$$U[G(k, 1)] + \delta U[G(k, 2)]$$

where G(k, 1) and G(k, 2) are expenditures by the government in country k in Period 1 and Period 2, respectively, and δ is the subjective discount factor. For simplicity, we assume that the tax revenues in the two periods, T(k, 1) and T(k, 2), are exogenously given. Let B(k) and D(k) are first-period borrowing by country k from international banks and first-period direct investment in country k, respectively. To abstract from unnecessary complications, we assume that bank credit and FDI are merely two forms of additional funding sources. No production is explicitly modeled. In this case, the gap between the first-period expenditure and tax revenue has to be met by the inflow of international capital:

$$G(k, 1) = T(k, 1) + B(k) + D(k)$$

In the second period, the international credit has to be repaid. Moreover, international direct investors are assumed to recoup both the investment and the gross profit.

$$G(k, 2) = T(k, 2) - R[B(k)]\, B(k) - R[D(k)]\, D(k)$$

where R[B(k)] and R[D(k)] are the gross returns that international creditors and international director investors would demand from country k. Suppose R* is the gross return on the risk free bond (say, the U.S. government bond as an approximation), then, we assume that

$$R[B(k)] = R^* + \theta\, B(k)$$

and

$$R[D(k)] = R^* + \theta\, D(k) + \rho(k)\, D(k)$$

Both θ and $\rho(k)$ are positive. $\rho(k)$ should be thought of proportional to country k's perceived level of corruption. The positive θ reflects the assumption that the warranted returns on either bank credit or direct investment increases with the size of the capital inflow. $\rho(k)$ appears in the return on the direct investment but not in that on bank credit because corruption represents a greater risk to direct investment than to bank loans (for the two reasons described in the previous section).

A few points are worth noting here. First, we assume that the bank credit is obtained and later paid back by the government. Borrowing from international credit market in reality can be done by either private or public sector. Many researchers have observed that the distinction between private and public borrowing is very thin since private borrowing from the international credit market often carries implicit and sometimes explicit guarantee from the government of the borrowing country. Second, while direct investment is supposed to be for the "long term," investors eventually would want to recoup both the initial investment and the cumulative profits along the way.

The government's maximization problem yields the following two first-order conditions:

$$U'[G(k, 1)] - \delta U'[G(k, 2)] [R^* + 2 \theta B(k)] = 0$$

and

$$U'[G(k, 1)] - \delta U'[G(k, 2)] [R^* + 2 \theta B(k) + 2 \rho(k) D(k)] = 0$$

This implies a particular relationship between the composition of capital inflow for country k and its corruption level:

$$B(k) / D(k) = [\theta + \rho(k)] / \theta$$

Hence, the higher is the corruption level in country k, the less FDI it would receive relative to its bank borrowing. While this model is very simple and perhaps overly simplistic, it does capture the basic message relatively well.

3. Data

The key components of international capital flows in the empirical investigation are bilateral direct investment and bilateral bank loans. As far as we know, other forms of capital flows are not available on a bilateral basis for a broad set of capital-exporting countries examined in this paper.

The **bilateral foreign direct investment (FDI)** data is an average over three years (1994-96) of the stock of foreign direct investment from 13 source countries to 30 host countries. Table 3 presents a list of all source and host countries in our sample. The data come from the OECD's International Direct Investment 1998. [The original data also have the source countries themselves as the hosts of FDI. But these country pairs do not have comparable bilateral lending data. To keep comparability, we restrict our analysis to those country pairs that are common to both data sets. To reduce year-to-year fluctuation in the data due to measurement error, we use the simple average over 1994-96 (year-end stocks).

The **bilateral bank lending** data is an average over three years of the outstanding loans from 13 lending countries to 83 borrowing countries. After excluding missing observations, there are altogether 793 country pairs. The data come from the Bank for

International Settlement's Consolidated International Claims of BIS Reporting Banks on Individual countries, and are given in millions of dollars. To reduce measurement errors in a given year, we use the simple average over three years (1994-96, year-end outstanding amounts).

For relative extent of **corruption** across countries, we employ three different measures. The first, which we label as the TI Index, is published by Transparency International, a Germany-based international non-governmental organization devoted to fight corruption worldwide. The TI index itself is a weighted average of twelve separate sources ranging from 1996-98.[6] The TI index ranks the extent of corruption on a zero-to-ten scale.

As a survey of surveys, the TI corruption index has its advantages and disadvantages. If the measurement errors in each of its component surveys are independent and identically distributed (iid), the averaging process used to produce the TI index reduces the measurement error. On the other hand, the iid assumption may not hold. Moreover, since each component of the TI index could have different country coverage and employ different definitions of corruption, the averaging process could introduce new measurement errors when cross-country ratings are produced.

The second corruption measure, the GCR Index, is derived from the Global Competitiveness Report 1997 produced jointly by the Geneva-based World Economic Forum and Harvard Institute for International Development. The survey for the report was conducted in late 1996 on 2827 firms in 58 countries. The GCR Survey asked respondents (in Question 8.02) to rate the level of corruption in their country on a one-to-seven scale, based on the extent of "irregular, additional payments connected with imports and exports permits, business licenses, exchange controls, tax assessments, police protection or loan applications." The GCR Corruption Index is based on the country average of the individual ratings.

[6] They are World Competitiveness Yearbooks 1996, 1997, and 1998, Political Economic Risk Consultancy's Asian Intelligence Issues, 1997 and 1998, Gallup International 50th Anniversary Survey 1997, Political Risk Services' ICRG rating 1998, Global Competitiveness Reports 1996, 1997 and 1998, World Bank's World Development Report Survey 1997, and Economist Intelligence Unit rating 1998. For details, see http://www.gwdg.de/~uwvw/CPI1998.htm.

The third corruption measure, labeled as the WDR Index, is derived from a World Bank survey in 1996 of 3866 firms in 73 countries in preparation for its World Development Report 1997. Question 14 of that survey asks: "Is it common for firms in my line of business to have to pay some irregular, "additional" payments to get things done?" The respondents were asked to rate the level of corruption on a one-to-six scale. The WDR corruption index is based on the country average of the individual answers.

For the three corruption indexes, the original sources are such that a higher number implies lower corruption. To avoid awkwardness in interpretation, they are re-scaled in this paper so that a high number now implies high corruption.

Table 4 presents pair-wise correlation coefficients for the three corruption measures (as well their correlations with per capita GDP). In spite of the different sources and methodologies, the three corruption measures are fairly highly correlated with each other, suggesting sufficient consistency in the perception of relative corruption levels across countries.

We have employed other variables in the statistical analyses. For details of the data construction and their sources, please see Appendix A.

4. Statistical Analyses

4.1 Bilateral Foreign Direct Investment

We start with an analysis of the relationship between corruption and foreign direct investment. Let FDI_{jk} denote bilateral foreign direct investment from source country j to host country k. We adopt a generalized gravity specification:

$$\text{Log}(FDI_{jk}) = \underset{\text{source country}}{\text{fixed effects}} + \beta\, \text{corruption}_k + X_{jk}\Gamma + e_{jk}$$

Where β and Γ are scalar and vector parameters, respectively, and X_{jk} is a vector of determinants of bilateral FDI other than host country corruption. Specifically,

$$X_{jk} = [\log(GDP_k), \log(GDP_k / \text{Population}_k), \log(\text{Distance}_{jk}), \text{Linguistic-Tie}_{jk}]$$

Finally, e_{jk} is assumed to be an iid normally distributed variate with a zero mean.

The regression result is presented as column 1 in table 5a. We observe that the coefficients on the control variables are of sensible signs. Larger host economies tend to receive more FDI. Host countries that are closer to source countries either in physical proximity or in linguistic/historical connection also receive more FDI. Most importantly for our question, countries that are more corrupt tend to receive less foreign direct investment. This FDI-depressing effect of corruption is significant not only statistically (at the 5 percent level) but also economically. A one-step increase in the TI corruption rating is associated with a 20 percent reduction in inward FDI. An increase in local corruption from the Singapore level (TI-index value of 0.9) to the level of Mexico (TI-index value of 6.7) is associated with a reduction in inward FDI by 68 percent.[7]

So far, we have assumed that the error term in the regression is independently distributed across observations. If there are other host country characteristics that are important for FDI but omitted from the current specification, it could induce correlation in the error terms (over observations for a common host country). To investigate the effect of this type of omitted variables, we also implement a type of random effects specification which differs from the previous fixed-effects regression by allowing a host-country specific component in the error term. That is,

$$\text{Log}(\text{FDI}_{jk}) = \underset{\text{source country}}{\text{fixed effects}} + \beta\,\text{corruption}_k + X_{jk}\Gamma + u_k + e_{jk}$$

where u_k is host-specific normal variate with zero mean, e_{jk} is the same as before (iid across all observations), and u_k and e_{jk} are uncorrelated from each other.

The result of this random-effects regression is reported as column 2 in table 5a. The qualitative results of all coefficients remain the same as before. The effect of corruption on FDI remains negative and statistically significant. If anything, the point estimate of the effect has become even larger.

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[7] $\exp\{-0.199 \times (6.7-0.9)\} - 1 = -0.68$.

Since the corruption rating that we have used is based on subjective survey responses, it is useful to check for robustness of our finding by using alternative corruption ratings. Specifically, we replicate our key regressions by replacing the TI corruption rating with the ratings from the Global Competitiveness Report (GCR) and World Development Report (WDR), respectively. Unlike a typical component of the TI rating, which is based on a survey of (a single) expert, both GCR and WDR ratings are derived by averaging over individual responses in large firm-level surveys.

The regression results are reported as columns 3-6 in table 5a. The most important observation to make is that corruption depresses FDI no matter which measure of corruption is used. In three out of four regressions, the coefficient on corruption is negative and statistically significant. The remaining insignificant coefficient still has a negative sign and an economically big coefficient.

When we use log(FDI) as the dependent variable, those bilateral FDI observations that are zero are dropped from the regressions. To see if our result is qualitatively affected by including zero-FDI observations, we also use log(FDI+0.1) as the dependent variable and replicate all the previous regressions. The results are reported as table 5b. Overall, the results in this new specification (with slightly more observations) are very similar to before.

4.2 Bilateral Bank Loans

We now proceed to examine the connection between corruption level in a developing country and its borrowing from the industrial countries. For easy comparison with the results on FDI, we start with a generalized gravity specification with source country fixed effects like before:

$$\text{Log}(\text{Loan}_{jk}) = \underset{\text{fixed effects}}{\text{source country}} + \beta\, \text{corruption}_k + X_{jk}\Gamma + e_{jk}$$

where Loan_{jk} is the bilateral loan from lending country j to borrowing country k. β and Γ are scalar and vector parameters, respectively. And X_{jk} is a vector of determinants of

bilateral loans other than host country corruption. The regression result is reported as column 1 in table 6a. In contrast to the earlier result on FDI (which is discouraged by host country corruption), the coefficient on corruption in this regression is not statistically different from zero. Thus, a corrupt country experiences no apparent disadvantage in terms of securing bank loans from developed countries.

Similar to our discussion on FDI, we proceed to run an alternative (random-effects) specification that allows part of the error term to be host-country specific:

$$\text{Log}(\text{Loan}_{jk}) = \underbrace{\text{source country fixed effects}}_{} + \beta\,\text{corruption}_k + X_{jk}\Gamma + u_k + e_{jk}$$

where u_k is host-specific normal variate with zero mean, e_{jk} is the same as before (iid across all observations), and u_k and e_{jk} are uncorrelated to each other. The result is reported as column 2 in table 6a. The coefficient estimates are qualitatively similar to those from the fixed-effects regression. In particular, the coefficient on corruption remains indifferent from zero even at the 15 percent level.

As a robustness check, we replicate the above fixed-effects and random-effects regressions using the two alternative measures of corruption, namely, the GCR and WDR indexes. The regression results are reported in the last four columns of table 6a. As it turns out, the sign of the coefficient on corruption is sensitive to the choice of corruption measure. When the GCR index is employed, more corrupt countries on average attract more bank loans from developed countries than otherwise identical borrowing countries. This is true for both fixed- and random-effects specifications. When the WDR index is employed, the effect of corruption on loans is either zero (in the case of a fixed-effects regression) or negative (in the case of a random-effects regression). The pair-wise correlation coefficients among the three measures of corruption are high (see table 4). Scatter plots of one corruption measure against another do not reveal any obvious outliers either. So we do not have an intuitive explanation for why the three different corruption measures produce different results. Table 6b reports some Tobit regressions, which turn out to have qualitatively very similar results as the corresponding fixed-effects regressions.

To summarize, in contrast to the earlier results on FDI, most regressions (five out of six in table 6a) suggest that corrupt countries are not disadvantaged in obtaining bank loans from developed countries. Some regressions even suggest the opposite. Finally, it is useful to note that in the only case (last regression) where the corruption coefficient is negative, the absolute value of the point estimate (-0.34) is smaller than the corresponding estimate for the effect of corruption on FDI (-0.97, in the last regression of table 5a). This suggests that corruption in developing countries discourages FDI more than bank loans. We formally test this hypothesis in the next subsection.

4.3 Ratio of bank loans to FDI

The central question of the paper is whether corruption affects the composition of capital inflows. So we now examine whether the ratio of bank loans to FDI is affected by local corruption.

We proceed as before starting with a fixed-effects regression using the TI-index as the measure of corruption:

$$\text{Log}(\text{Loan}_{jk} / \text{FDI}_{jk}) = \underset{\text{fixed effects}}{\text{source country}} + \beta\, \text{corruption}_k + X_{jk}\Gamma + e_{jk}$$

The regression result is reported in column 1 in table 7a. As expected, the coefficient on corruption is positive and statistically significant at the 5 percent level. Hence, a corrupt country tends to have a composition of capital inflows that is relatively light in FDI and relatively heavy in bank loans.

Also note that because FDI is more relationship-intensive (as proxied by physical and linguistic distances) than bank loans, the coefficients on geographic distance and the linguistic tie dummy are positive and negative, respectively, in this regression which examines the determinants of the loan-to-FDI ratio.

We proceed with a slew of robustness checks employing alternative measures of corruption (GCR and WDR) and alternative specification (i.e., random-effects). The results are reported in the last five columns of tables 7a and 7b. The qualitative results are similar. In particular, the coefficient estimate on the corruption variable in each of the six regressions is positive and statistically significant. Hence, the evidence is

overwhelming and robust that corrupt countries tend to have a particular structure of capital inflows characterized by a relatively light foreign direct investment.

4.4 Instrumental Variable Regressions

One might be concerned with endogeneity of the corruption measure. For example, if survey respondents may perceive a country to be corrupt in part because they observe very little FDI going there. In this case, the negative association between the FDI-to-loan ratio and corruption is due to the reverse causality. This is of a particular concern here since our reliable measures of corruption were derived in 1996 or later, whereas the most recent FDI and loan data (on a bilateral basis) are from 1996 or earlier.

In this subsection, we perform instrumental variable (IV) regressions on our key regressions. Mauro (1995) argued that ethnolinguistic fragmentation is a good IV for corruption. His ethnolinguistic indicator measures the probability that two persons from a country are from two distinct ethnic groups. The greater the indicator, the more fragmented the country. Table 8a reports the regressions of our corruption measures on a constant (not reported) and the same measure of ethnolinguistic fragmentation as Mauro. The slope coefficient is positive and statistically significant: the greater the heterogeneity in the population, the greater the corruption on average.

In table 8b, we add one more regressor, namely, the extent of democracy. This variable is also statistically significant. More democracy means less corruption. The reason seems intuitive. More democracy means more accountability (either through check-and-balances across different branches of government, or through greater responsiveness of the government to people, or both). And more accountability implies less corruption. It is interesting to observe that once one controls for democracy, the ethnolinguistic fragmentation variable is no longer statistically significant.

In table 9, we re-do some of the key regressions in tables 5-7 using the fitted value of regression (1) in table 8b as the instrumented value of corruption.[8] Now there is some weak evidence that corrupt countries may also receive less bank loans (columns 1 and 2). They still receive significantly less FDI (columns 3-4). Most importantly,

because corruption deters FDI more than bank loans, countries that are more corrupt tend to have a capital inflow structure that relies relatively more on bank borrowing and less on FDI.

4.5 Portfolio and Direct Investments from the United States

While bilateral data on portfolio investment other than bank credits are not available for the whole set of capital-exporting countries examined in the previous sub-sections, we can obtain data on portfolio investment from the United States (to a set of developing countries). In this subsection, we use the data on United States outward capital flows to examine whether the portfolio-to-direct investment ratio in a capital-receiving country is affected by its corruption level.

We again perform fixed-effects and random-effects regressions pruning the relationship between portfolio-investment-to FDI ratio. The results are reported in table 10. We see again that, at least for this sub-sample, the portfolio-investment-to-FDI ratio is also positively related to the capital-importing country's corruption level. The corrupt a country is, the less FDI it tends to receive relative to portfolio capital.

5. Conclusions

Corrupt countries receive less foreign direct investment. On the other hand, corrupt countries may not be disadvantaged in obtaining bank loans (or at least not by as much). As a result, corruption in a capital-importing country tends to tilt the composition of its capital inflows away from foreign direct investment and towards foreign bank loans. The data supports this hypothesis. Furthermore, the effect of corruption on the ratio of borrowing from foreign banks to inward FDI is robust across different measures of corruption and different econometric specifications.

There are two possible reasons for this effect. First, foreign direct investments are more likely to be exploited by local corrupt officials *ex post* than foreign loans. As a

[8] The same IV regressions with alternative measures of corruption (GCR, WDR, and BI) will produce similar results for the second stage regression, since they are all linear combination of the same

result, fewer FDI would go to a corrupt countries *ex ante*. Second, the current international financial architecture is such that there is more insurance/protection from the IMF and the G7 governments for bank lenders from developed countries than for direct investors.

Previous research (starting with Frankel and Rose 1996) has shown that a capital inflow structure that is relatively low in FDI is associated with a greater propensity for future currency crisis. It may be that international bank loans (or other portfolio flows) swing more than direct investment in the event of a bad news (real, or self-generated by the international investors) about economic or policy fundamentals. If so, this paper has provided evidence for one possible channel through which corruption in a developing country may increase its chances of running into a future crisis.

In the literature on the causes of currency crises, crony capitalism and self-fulfilling expectations by international creditors are often proposed as two rival hypotheses. Indeed, authors that subscribe to one view often do not accept the other. The evidence in this paper suggests a natural linkage between the two. Crony capitalism, through its effect on the composition of a country's capital inflows, make it more vulnerable to self-fulfilling expectations type of currency crisis.

Corruption could also lead to a financial crisis by weakening domestic financial supervision and producing a deteriorated quality of banks' and firms' balance sheets. This possibility itself can be a topic for a useful research project.

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instruments.

References

Bardhan, Pranab, 1997, "Corruption and Development: A Review of Issues," *Journal of Economic Literature*, Vol. XXXV (September): 1320-1346.

Frankel and Rose, 1996, "Currency Crashes in Emerging Markets: An Empirical Treatment," *Journal of International Economics*, v41 n3-4 (November): 351-66.

Hines, James, 1995, "Forbidden Payment: Foreign Bribery and American Business After 1977," NBER Working Paper 5266, September.

Kaufmann, Daniel, 1997, "Corruption: some Myths and Facts," *Foreign Policy*, Summer: 114-131.

Kaufmann, Daniel and Shang-Jin Wei, 1999, "Does 'Grease Payment' Speed Up the Wheels of Commerce?" National Bureau of Economic Research Working Paper 7093.

Mauro, Paolo, 1995, "Corruption and Growth, "*Quarterly Journal of Economics*, 110: 681-712.

McKinnon, Ronald, and Huw Pill, 1996, "Credible Liberalization and International Capital Flows: The Overborrowing Syndrome," in Takatoshi Ito and Anne O. Krueger eds., *Financial Deregulation and Integration in East Asia*, Chicago: University of Chicago Press, pp 7-45.

McKinnon, Ronald, and Huw Pill, 1999, "Exchange Rate Regimes for Emerging Markets: Moral Hazard and International Overborrowing," Stanford University and Harvard University. Forthcoming, Oxford Review of Economic Policy.

OECD, 1998, *International Direct Investment Statistics Yearbook*, Paris: OECD Publication. [There is an associated data diskette.]

Radelet, Steven, and Jeffrey Sachs, 1998, "The East Asian Financial Crisis: Diagnosis, Remedies, and Prospects, " *Brookings Papers on Economic Activities*.

Razin, Assaf, Efraim Sadka, and Chi-Wa Yuen, 1998, "A Pecking Order of Capital Inflows and International Tax Principles," *Journal of International Economics*, 44.

Reisen, Helmut, 1999, "The Great Asian Slump," OECD Development Center.

Rodrik, Dani, and Andres Velasco, 1999, "Short-Term Capital Flows," Paper prepared for the 1999 World Bank Annual Bank Conference on Development Economics. Harvard University and New York University.

Tornell, Aaron, 1990, "Real vs. Financial Investment: Can Tobin Taxes Eliminate the Irreversibility Distortion?" *Journal of Development Economics* 32: 419-444.

Wei, Shang-Jin, 1997, "How Taxing is Corruption on International Investors?" NBER Working Paper 6030. Forthcoming, *Review of Economics and Statistics*, November, 1999.

Wei, Shang-Jin, 1999, "Corruption in Economic Development: Beneficial Grease, Minor Annoyance, or Major Obstacle?" Policy Research Working Paper 2048, Development Research Group, World Bank Policy, Washington, D.C. February.

Appendix: Source and Construction of the Variables

Bilateral Bank Loans
Source: Bank for International Settlements
CONSOLIDATED INTERNATIONAL CLAIMS OF BIS REPORTING BANKS ON INDIVIDUAL COUNTRIES;(in millions of U.S. dollars); Semi-annual International Banking Statistics;International claims by nationality of reporting banks on countries outside the reporting area;(in millions of U.S. dollars);End-December. Data loans to offshore banking centers are dropped.

Bilateral Foreign Direct Investment
Source: OECD, International Direct Investment Statistics Yearbook 1998, Diskettes. In millions of US$ (converted into $ using the yearly average exchange rates from the book: Annex III).

Distance
Greater Circle Distance between economic centers in a pair of countries based on the latitute and longitude data.
Source for latitude and longitude: Rudloff/Pearce, Watlas, Gale
The distance (in kilometers) between the capital cities.
The primary source is Rudloff, updated from Pearce, Watlas

Argentina: used the average of Buenos Aires, Cordoba, and Rosario
Australia: used the average of Canberra, Sydney, and Melbourne
Bahrain: used the data from the city of Muharraq
Bermuda: used the data from Kindley Air Force Base
Bhutan: the figure is from http://www.kingdomofbhutan.com/kingdom.html
Canada: used the average of Toronto, Vancouver, and Montreal
Equatorial Guinea: used the data from the city of Santa Isabel
Greenland: used the data from the city of Peary Land
India: used the average of New Delhi, Bombay, and Calcutta
Israel: used the data from Lod Airport (near Java and Tel Aviv)
Mauritius: used the data from the city of Diego Gracia
Netherlands: used the data from the city of De Bilt
Slovak: used the data from the city of Poprad
Sudan: used the average of Atbara Khartoum and El Fasher
Switzerland: used the data from the city of Zurich
Belize: the data are from Belmopan (capital)
Brazil: used the average of Brasilia, Rio de Janeiro, and Sao Paulo. The data for Brasilia is from Watlas
Panama: used the data from Panama city
Russia: used the average of Moscow, St. Petersburg and Nizhni Novogorodo.
The data for Nzhni Novogorodo is from http://www.unn.runnet.ru/nn/whereis.htm
Kazakhstan: used the average of Almaty, Chimkent, and Karaganda. The data for chimkent are from Watlas
Tajikistan: the data are from Watlas
United States: used the data from Kansas City, Missouri.
Distance between Taiwan and the lending countries are from Shang-jin Wei's web site: www.nber.org/~wei

Linguistic Tie
Source on major languages: Shang-Jin Wei's website (see above) and CIA world facts book
Dummy = 1 if the two countries share a common language or have a former colonial relation.
Used the data from Shang-jin Wei's web site wherever data available except:
Kuwait (English): follow CIA where English is listed as widely spoken.
Libya (add Italian): In addition to English, Italian is listed in CIA.
Others: from CIA world fact book.

For African countries, used the official languages except Namibia (German), Mauritania (French), Mauritius(English, French, English is the official language).

Others included although not main language: Costa Rica (English, main language is Spanish), Dominica (French), Trinidad/Tobago (French, Spanish), Oman (English), Qatar (English), Brunei (English), Papua New Guinea (English), Jordan (English), Israel (English), Sri Lanka (English),

Corruption -- TI Index
Source: Transparency International (http://www.gwdg.de/~uwvw/icr.htm), the 1998 index.
Transformation: Value in this paper = 10 minus the original values. Thus, a smaller number means less corrupt government.

Corruption – GCR Index
Original source: Global Competitiveness Report 1997
Transformation: value in this paper = 8 – original values.

Corruption – WDR Index
Original source: survey for the 1997 World Development Report
Transformation: value in this paper = 8 – original values.
See: Kaufmann and Wei (1999), "Does 'Grease Payment' Speed Up the Wheels of Commerce?" NBER Working Paper 7093.

Gross Domestic Product (GDP) and GDP Per Capita
Source: World Bank Sima/WDI99 Database
GDP at market prices (constant 1995 US$).
Log(GDP) calculated as Ln(GDP94 + GDP95 + GDP96)/3. Log(per capita GDP) calculated as Ln [(gdp94/pop94+gdp95/pop95+gdp06/pop96)/3]. Exceptions: two year average if the value for the third year is missing.

Table 1: Standard Deviations of FDI/GDP, Bank Loans/GDP, and Portfolio Flow/GDP (1980-96)

	FDI/GDP	*Loans/GDP*	*Ptf/GDP*
OECD countries			
Mean	0.0073	0.0208	0.0199
Median	0.0062	0.0174	0.0192
Emerging markets: 73 countries			
Mean	0.0218	0.0437	0.0109
Median	0.0102	0.0346	0.0037
Whole sample: 93 countries			
Mean	0.019	0.039	0.013
Median	0.009	0.033	0.009
Selected countries			
Indonesia	0.007	0.017	0.009
Korea	0.002	0.037	0.014
Malaysia	0.023	0.034	0.023
Mexico	0.007	0.033	0.026
Philippines	0.009	0.026	0.017
Thailand	0.007	0.028	0.012

Note: Samples include only countries that have at least eight non-missing observations during 1980-1996 for all three variables.

Source: Total inward FDI flows, total bank loans, and total inward portfolio investments: IMF Balance of Payment Statistics; GDP: World Bank's GDF & WDI central Databases.

Table 2: Quality of Public Governance and the Composition of Capital Inflows

	New Zealand	*Singapore*	*Uruguay*	*Thailand*
Corruption	0.6	0.9	5.7	7.0
(Ti Index)	(less corrupt)			(more corrupt)
Loan / FDI	0.11	0.44	1.77	5.77
Portfolio / FDI	0.07	0.09	1.40	1.76
Loan	9.20E+08	1.05E+10	7.94E+08	2.50E+09
Portfolio	6.10E+08	2.20E+09	6.27E+08	7.61E+08
FDI	8.40E+09	2.36E+10	4.48E+08	4.32E+08

Note: The lower half of the table reports the absolute amount of the three inflows in U.S. dollars.

Source: total inward loans, portfolio investment, and FDI are from the IMF's Balance of Payment Statistics. The reported numbers are averages over three years (1994-96).

Table 3: List of Countries in the Sample

Source countries of FDI and lending countries of loan:		
Austria,	Germany,	Spain,
Belgium,	Italy,	United Kingdom,
Canada,	Japan,	United States
Finland,	Luxembourg,	
France,	the Netherlands,	

Host countries of loan and FDI (FDI data only available for *countries):		
Albania, Argentina*,	Bissau, Honduras, Hungary*,	Pakistan, Paraguay, Peru,
Armenia, Australia*,	Iceland*, India*, Indonesia*,	Philippines*, Poland,
Azerbaijan, Belarus, Benin,	Islamic Rep., Israel*,	Portugal, Romania*, Russian
Bolivia, Brazil*, Bulgaria*, ,	Jamaica, Jordan, Kazakhstan,	Federation*, Senegal, Slovak
Cameroon, Chad, Chile*,	Kenya, Korea, Rep.*, Kyrgyz	Republic*, South Africa*,
China*, Colombia*, Congo,	Republic, Latvia, Lithuania,	Taiwan*, Tanzania,
Rep., Costa Rica*, Cote d'	Madagascar, Malawi,	Thailand*, Tonga, Tunisia,
Ivoire, Czech Republic*,	Malaysia*, Mali, Mauritius,	Turkey*, Uganda, Ukraine*,
Ecuador, Egypt, Arab Rep.*,	Mexico*, Moldova,	Uruguay, Uzbekistan,
El Salvador, Estonia, Fiji,	Morocco*, Mozambique,	Venezuela*, Vietnam,
Georgia, Ghana, Greece*,	Namibia, New Zealand*,	Zambia, Zimbabwe
Guatemala, Guinea, Guinea-	Nicaragua, Niger, Nigeria,	

Table 4: Correlation Matrix

	GDP96	*ti*	*gcr97*	*wdr97*
GDP96	1			
ti	-0.2147	1		
gcr97	-0.2680	0.8689	1	
wdr97	-0.2465	0.8636	0.8305	1

Table 5a: Corruption and Bilateral Foreign Direct Investment

Dependent variable:	*ti*		*gcr97*		*wdr97*	
Log(average FDI)	Fixed[1] Effects OLS	Random[2] Effects	Fixed Effects OLS	Random Effects	Fixed Effects OLS	Random Effects
Corruption	-0.199**	-0.257**	-0.214**	-0.214	-0.967**	-0.967**
	(0.081)	(0.122)	(0.107)	(0.158)	(0.245)	(0.245)
Log average gdp of 94-96	1.312**	1.521**	1.044**	1.243**	0.988**	0.988**
	(0.107)	(0.15)	(0.111)	(0.154)	(0.142)	(0.142)
Log average gdp per capita of 94-96	0.113	0.044	0.144	0.17	0.232	0.232
	(0.142)	(0.221)	(0.111)	(0.166)	(0.208)	(0.208)
Log distance between the two countries	-0.615**	-1.065**	-0.535**	-0.972**	-0.912**	-0.912**
	(0.118)	(0.128)	(0.115)	(0.128)	(0.149)	(0.149)
Linguistic tie	1.042**	1.054**	0.793**	0.906**	1.157**	1.157**
	(0.374)	(0.328)	(0.376)	(0.338)	(0.526)	(0.526)
Adjusted R^2 / Overall R^2	0.59	0.59	0.58	0.58	0.58	0.62
No. of obs.	262	262	242	242	147	147
Breusch and Pagan test Prob>chi2[5]		0.00		0.00		0.00
Hausman test Prob>chi2[6]		0.00		0.00		0.00

**Significant at 5%, *significant at 10%, #significant at 15%. Standard errors in parentheses.
Adjusted R^2 for OLS and Overall R^2 for Random effect respectively.
Breusch and Pagan lagrangian multiplier test for random effects. Ho: Var(u) = 0.
Hausman specification test. Ho: E[e(ij)|X(ij)] = 0.
The estimated Var(u) = 0. The Breusch and Pagan test does not perform well under such circumstance.
Note: 1. Fixed effect OLS: Y(ij) = dummy(i) + bX(ij) + e(ij); i: source country index, j: host country index. All regression have a country dummy for all source countries except United States. Not reported to save space.
2. Random effect: Y(ij) = dummy(i) + bX(ij) + u(j) + e(ij).

Table 5b: Corruption and Bilateral Foreign Direct Investment
(With Tobit Regressions)

Dependent variable:	ti			Gcr97			wdr97		
Log average FDI + 0.1	Fixed Effects OLS	Fixed[1] Effects Tobit	Random Effects	Fixed Effects OLS	Fixed Effects Tobit	Random Effects	Fixed Effects OLS	Fixed Effects Tobit	Random Effects
Corruption	-0.17*	-0.164*	-0.268#	-0.211*	-0.216*	-0.208	-0.858**	-0.856**	-1.035**
	(0.09)	(0.090)	(0.167)	(0.121)	(0.120)	(0.227)	(0.283)	(0.274)	(0.469)
Log average	1.375**	1.390**	1.645**	1.14**	1.160**	1.395**	0.992**	0.997**	1.162**
GDP of 94-96	(0.118)	(0.118)	(0.2)	(0.124)	(0.123)	(0.214)	(0.164)	(0.158)	(0.253)
Log average gdp	0.104	0.103	0.02	0.12	0.107	0.185	0.423*	0.434*	0.373
Per capita of 94-96	(0.159)	(0.158)	(0.307)	(0.125)	(0.124)	(0.24)	(0.24)	(0.232)	(0.411)
Log distance	-0.621**	-0.628**	-1.255**	-0.535**	-0.544**	-1.188**	-0.823**	-0.822**	-1.339**
between the two countries	(0.131)	(0.131)	(0.142)	(0.13)	(0.129)	(0.146)	(0.172)	(0.166)	(0.183)
Linguistic tie	1.194**	1.209**	1.131**	0.949**	0.955**	1.002**	1.404**	1.416**	1.168**
	(0.419)	(0.417)	(0.346)	(0.432)	(0.428)	(0.359)	(0.609)	(0.588)	(0.524)
R^2	0.56	0.18	0.55	0.54	0.17	0.53	0.51	0.17	0.53
No. of obs.	269	269	269	248	248	248	150	150	150
Breusch and Pagan test Prob>chi2[5]			0.00			0.00			0.00
Hausman test Prob>chi2			0.00			0.00			0.00

1. Fixed effect tobit: Y(ij) = dummy(i) + bX(ij) + e(ij); i: source country index, j: host country index.
2. Adjusted R^2 for OLS, Pseudo R^2 for tobit, and Overall R^2 for Random effect respectively.

Table 6a: Corruption and Bilateral Bank Loans

Dependent variable:	*ti*		*gcr97*		*wdr97*	
Log(average loan)	Fixed Effects OLS	Random Effects	Fixed Effects OLS	Random Effects	Fixed Effects OLS	Random Effects
Corruption	0.03	-0.012	0.216**	0.226**	-0.159	-0.34*
	-0.045	-0.079	-0.063	-0.091	-0.113	-0.178
Log average GDP of	1.004**	1.055**	0.946**	0.958**	1.069**	1.112**
94-96	-0.04	-0.069	-0.044	-0.061	-0.053	-0.086
Log average GDP per	0.271**	0.165	0.358**	0.343**	0.17*	-0.035
capita of 94-96	-0.074	-0.128	-0.062	-0.089	-0.091	(0.146)
Log distance between	-0.322**	-0.738**	-0.234**	-0.458**	-0.365**	-0.771**
the two countries	-0.065	-0.08	-0.07	-0.082	-0.089	(0.105)
Linguistic tie	0.759**	0.887**	0.673**	0.896**	1.08**	1.107**
	(0.163)	(0.148)	(0.197)	(0.185)	(0.205)	(0.185)
Adjusted R^2 / Overall R^2	0.69	0.67	0.72	0.72	0.66	0.65
No. of obs.	669	669	450	450	483	483
Breusch and Pagan test Prob>chi2[5]		0.00		0.00		0.00
Hausman test Prob>chi2		0.00		0.00		0.00

Table 6b: Corruption and Bilateral Bank Loans

Dependent variable:	*ti*			*gcr97*			*wdr97*		
Log(loan + 0.1)	Fixed Effects OLS	Fixed Effects Tobit	Random Effects	Fixed Effects OLS	Fixed Effects Tobit	Random Effects	Fixed Effects OLS	Fixed Effects Tobit	Random Effects
Corruption	-0.061	-0.070	-0.1	0.228**	0.222**	0.203	-0.619**	-0.685**	-0.791**
	(0.059)	(0.068)	(0.111)	(0.086)	(0.090)	(0.182)	(0.13)	(0.185)	(0.249)
Log average GDP of 94-96	1.363**	1.497**	1.41**	1.154**	1.211**	1.204**	1.477**	1.880**	1.514**
	(0.051)	(0.059)	(0.097)	(0.056)	(0.059)	(0.117)	(0.06)	(0.087)	(0.12)
Log average GDP per capita of 94-96	0.168*	0.195*	0.05	0.478**	0.505**	0.398**	0.046	0.175 .	-0.158
	(0.096)	(0.111)	(0.179)	(0.084)	(0.088)	(0.177)	(0.107)	(0.152)	(0.205)
Log distance between the two countries	-0.37**	-0.456**	-0.976**	-0.341**	-0.378**	-0.962**	-0.378**	-0.505**	-0.986**
	(0.087)	(0.100)	(0.108)	(0.095)	(0.099)	(0.118)	(0.112)	(0.154)	(0.137)
Linguistic tie	1.327**	1.505**	1.304**	1.277**	1.384**	1.284**	1.884**	2.730**	1.656**
	(0.213)	(0.246)	(0.191)	(0.264)	(0.277)	(0.234)	(0.243)	(0.346)	(0.223)
R^2	0.68	0.21	0.67	0.67	0.22	0.65	0.68	0.22	0.67
No. of obs.	793	793	793	483	483	483	742	742	742
Breusch and Pagan test Prob>chi2[5]		0.00		0.00		0.00			0.00
Hausman test Prob>chi2		0.00		0.00		0.00			0.01

Table 7: Corruption and Composition of Capital Inflows

Dependent variable:	*ti*		*gcr97*		*wdr97*	
Log (Loan/FDI)	Fixed Effects OLS	Random Effects	Fixed Effects OLS	Random Effects	Fixed Effects OLS	Random Effects
Corruption	0.282**	0.288**	0.401**	0.387**	1.181**	1.214**
	(0.072)	(0.121)	(0.091)	(0.154)	(0.207)	(0.304)
Log average GDP of 94-96	-0.388**	-0.45**	-0.11	-0.174	-0.009	0.005
	(0.095)	(0.148)	(0.095)	(0.148)	(0.12)	(O.167)
Log average GDP per capita Of 94-96	0.15	0.201	0.092	0.108	0.193	0.199
	(0.126)	(0.221)	(0.095)	(0.162)	(0.176)	(0.266)
Log distance between the two countries	0.388**	0.558**	0.331**	0.53**	0.682**	0.731**
	(0.105)	(0.119)	(0.098)	(0.116)	(0.126)	(0.139)
Linguistic tie	-0.828**	-0.72**	-0.69**	-0.676**	-0.669#	-0.544
Adjusted R^2 / Overall R^2	0.34	0.36	0.36	0.39	0.45	0.51
No. of obs.	261	261	241	241	146	146
Breusch and Pagan test Prob>chi2[5]		0.00		0.00		0.00
Hausman test Prob>chi2		0.84		0.92		0.00[1]

Table 8a: First Stage of the IV Regressions

	ti	*gcr97*	*wdr97*	*bi*
Ethnolinguistic	0.035**	0.013*	0.013*	0.029**
Fractionalization	-0.009	-0.008	-0.008	-0.01
Adjusted R2	0.16	0.04	0.15	0.1
No. of Obs.	70	50	50	66

Note: A constant is inclued in the regression. Not reported to save space.

Table 8b: First Stage of the IV Regressions

	ti	*gcr97*	*wdr97*	*bi*
Ethnolinguistic	0.035**	0.013*	0.013*	0.029**
Fractionalization	(0.009)	(0.008)	(0.008)	(0.01)
Adjusted R^2	0.16	0.04	0.15	0.10
No. of Obs.	70	50	50	66
Ethnolinguistic	0.0005	-0.002	0.004	0.014
Fractionalization	(0.009)	(0.007)	(0.005)	(0.01)
Democracy index 1993	0.53**	0.275**	0.114**	
	(0.079)	(0.062)	(0.043)	
Democracy index 1983				0.31**
Adjusted R^2	0.49	0.31	0.22	0.28
No. of Obs.	68	48	49	63

Table 9: IV Regressions on Composition of Capital Inflows

Dependent variables:	*log FDI*		*log Loan*		*Log(FDI/Loan)*	
	Fixed Effects OLS	Random Effects	Fixed Effects OLS	Random Effects	Fixed Effects OLS	Random Effects
Intrumented wdr97[2]	-0.605*	-1.012*	-0.168	-0.208	0.793**	1.228**
	(0.341)	(0.531)	(0.152)	(0.223)	(0.328)	(0.615)
Log average gdp of 94-96	1.276**	1.524**	1.059**	1.084**	-0.333**	-0.476**
	(0.119)	(0.183)	(0.040)	(0.058)	(0.114)	(0.212)
Log average gdp per	0.083	-0.007	0.184**	0.169*	0.074	0.189
capita of 94-96	(0.145)	(0.234)	(0.062)	(0.091)	(0.139)	(0.273)
Log distance between	-0.158	-0.783**	-0.541**	-0.851**	-0.126	0.241
The two countries	(0.159)	(0.172)	(0.087)	(0.102)	(0.153)	(0.170)
Linguistic tie	0.604*	0.706**	0.680**	0.837**	-0.705**	-0.504*
	(0.349)	(0.303)	(0.141)	(0.134)	(0.335)	(0.291)
Adjusted r^2 / overall r^2	0.65	0.65	0.70	0.71	0.37	0.39
No. Of obs.	197	197	708	708	197	197
Breusch and Pagan test Prob>chi2[5]		0.00		0.00		0.00
Hausman test Prob>chi2		0.00		0.00		0.95

1. The results are similar if use (Loan+0.1) and (FDI+0.1).
2. From table 6b, the correlation between wdr97 and instrumented wdr is 0.51

Table 10: Portfolio versus Direct Investment from the United States

Dependent variable	*Ti*	*GCR97*	*WDR97*	*GCR97iv*[2]
Log (Portfolio/FDI flow)				
Corruption	0.118	0.225*	-0.268	0.152
	(0.103)	(0.121)	(0.183)	(0.146)
Log GDP	0.290**	0.305**	0.296**	0.317**
	(0.124)	(0.138)	(0.121)	(0.112)
Log GDP per capita	0.514**	0.508**	0.079	0.331**
	(0.164)	(0.100)	(0.155)	(0.071)
Log distance	-0.197**	-0.200*	-0.162*	-0.236**
	(0.085)	(0.101)	(0.082)	(0.091)
Linguistic tie	0.855**	0.872**	0.687**	0.510**
	(0.269)	(0.238)	(0.296)	(0.207)
Constant	-9.322**	-9.857**	-4.685	-7.911**
	(4.443)	(4.425)	(3.308)	(3.420)
No. Of Obs.	39	39	21	37
R^2	0.52	0.67	0.66	0.69

1. Average of FDI flow of 94-96

2. Instrument of WDR97 constructed by EFL and Demorcracy93.

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