

# Do Corrupt Countries Receive Less Foreign Capital After All?

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Abstract:

*Investigating the relationship between foreign capital and corruption in developing countries over the period 1984 to 2001, this paper adopts a new methodology that aggregates both private and public external capital flows. We find that a structural break occurred in 1995. Before 1995 foreign aggregate capital flows avoided corrupt countries. Thereafter they ceased to do this in spite of anti-corruption campaigns. These results partly explain the persistence of corruption and highlight the difficulty for international financial institutions to deal with this issue. They also show that, to be effective, the fight against corruption must consider public and private flows simultaneously. (JEL F30, F21, O19)*

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This paper contributes to the literature about corruption and international capital flows in two respects. First, we adopt a unique methodology that aggregates both private and public external capital flow data. We argue that whatever their source, foreign public and foreign private flows can generate corruption amongst officials in the recipient countries. Corrupt bureaucracies do not necessarily care about the origin of funds, provided they can pursue their rent-seeking activities. Even though private and public flows do not share the same motivations, from the recipient countries' point of view, they can both be used to finance balance of payment constraints, and they can both be embezzled to finance corruption. Therefore, we contend it is important to study the relationship between corruption and these two types of capital. To our knowledge, this research is the first to include international private and public capital flows concomitantly<sup>1</sup>. It complements Wei (2000, 2001) and Wei and Wu (2002) that focus on private flows, and Alesina and Weder (2002) that address the issue from the public flows stance.

The second contribution of this paper is to investigate the impact of the dramatic changes that occurred in the mid 90s on the relationship between foreign capital and corruption. During this period, FDI to developing countries roughly doubled as a percentage of GDP. In the meantime, the World Bank followed by other IFIs placed the anti-corruption policy at the forefront of their agenda. We study the stability of the relationship between corruption and international capital flows over this changing period. To do this and contrary to most existing research, we cover the second half of the 90s and include data up to 2001.

Since the beginning of the 90s, the detrimental impact of corruption on growth and investment in developing countries has been widely documented. Many studies have shown that the poor quality of the institutions in a country –including corruption– is likely to deter private investment. Following these findings, international financial institutions (IFIs) and G7 countries have expressed their willingness to tackle the issue, amongst other things by allocating foreign aid to the less corrupt economies.

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<sup>1</sup>Focusing on aid, Alesina and Dollar (2000) also address very briefly the issue of FDI.

However, as noted for instance by Mauro (2004), corruption in developing countries has been remarkably persistent since 1984. Why is corruption resistant to pressure from international donors and investors? Do these parties really take corruption into account in their allocation process? The aim of this paper is to investigate these questions. Now that the international community has recognized corruption as harmful to growth and development, we want to check if developing countries were sent a clear signal from capital exporters regarding corruption.

Our results establish a clear structural break in the relationship between foreign capital flows and corruption in developing countries. Whereas total external financing -including private and public flows- was negatively associated with corruption until the mid 90s, this link has since disappeared. After 1995, we evidence an absence of relationship between corruption and foreign capital. Furthermore, we show that private capital flows are responsible for this change. We speculate that this is because of a change in the nature of foreign direct investment, which increasingly shared the characteristics of portfolio flows. After all, external financial pressure vis-à-vis corrupt countries has decreased in spite of the anti-corruption economic policy advocated by the IFIs. This outcome is bad news for developing economies. It shows that corrupt countries have not been sent a clear signal from capital exporters over the past decade. It questions the effectiveness of the IFIs' anti-corruption policies and it underscores the changing nature of private capital flows.

The remainder of this paper is organized as follows. In the first section we examine the relationship between corruption and international capital flows as presented in the literature. The second section presents the methodology and the data. In the third section we discuss the econometric results and the fourth section concludes.

## **I. How Do International Capital Flows Interrelate With Corruption?**

The World Bank has a short and straightforward definition of corruption: it is the abuse of public office for private gain (World Bank, 1997). This definition is widely used by scholars in

the academic community (Bardhan, 1997; Tanzi, 1998), and will be retained in the course of this paper. As noted by Tanzi (1998), since the beginning of the 90s, corruption has emerged as a key issue in development economics. The detrimental effects of corruption on growth are now well documented. Murphy et al. (1991, 1993), Shleifer and Vishny (1993), Mauro (1995), Ades and Di Tella (1997), Tanzi and Davoodi (1997) or Gupta et al. (2001) have all shown that corruption leads to a sub-optimal allocation of resources, deters investment, decreases productivity and consequently reduces growth. It increases uncertainties and can be considered as a tax that reduces incentives to invest.

Until the beginning of the 90s, governance was not at the centre stage of the IFIs' policy discussion agenda. However, following World Bank President James D. Wolfensohn's speech about "the cancer of corruption" in October 1996 (Wolfensohn, 1996), corruption has now emerged as a key issue for foreign donors. The International Monetary Fund (IMF) followed by bilateral donors has also endorsed this stance (IMF, 2000). A way of encouraging developing countries to tackle the problem of corruption is by linking foreign capital flows with the implementation of anti-corruption policy. The recently launched new American aid program called Millennium Challenge Account explicitly pursues this objective.

Based on the above considerations, we should expect that both private and public capital exporters to avoid corrupt countries. Other things being equal, high total foreign capital flows should be associated with low corruption. An important cohort of papers has started to investigate this issue. A first stream deals with the linkage between private capital flows and corruption. A second stream focuses on foreign public financing and corruption. In the first category, most researches study Foreign Direct Investment (FDI). Wei (2000) uses the 1993 bilateral stocks of FDI between twelve source countries and forty-five host countries, and shows that corruption in host countries significantly affects their ability to attract FDI. These results are confirmed by Wei (2001) for the three-year 1994-1996 average stocks of FDI between thirteen source countries and thirty host countries. Taking annual bilateral flows of FDI for the years 1996 to 1998 between seven source countries and eighty-nine host countries,

Habib and Zurawicki (2002) also find a negative association between FDI and corruption. Foreign direct investors tend to avoid corrupt countries. Conversely, international private banks tend to invest more in the most corrupt countries (Wei, 2001). In the latter paper, a positive association between the loan-to-FDI ratio and corruption is evidenced. A possible explanation could be that FDI are more sensitive and careful about corruption than are private loans. Therefore, the most corrupt countries could find it more difficult to attract the former and would be obliged to rely more heavily on the latter. Apart from FDI and loans, a third private source of foreign capital comes from international bond issues. Studying this type of financing, Ciocchini et al. (2003) shows that international bond investors require a higher risk premium in order to invest in more corrupt countries. Finally, focusing on opacity instead of corruption and looking at equity portfolio between 1996 and 2000, Gelos and Wei (2005) establish that international funds prefer more transparent countries.

The second stream of research concentrates on official capital flows and asks: “Do corrupt governments receive less foreign aid?”, that is precisely Alesina and Weder (2002)’s title. Svensson (2000) works out a model showing how aid may have an adverse impact on developing economies by increasing rent-seeking activities. He tests this model for sixty-six countries from 1980 to 1994 and finds that under certain circumstances foreign aid may be associated with increased corruption. Furthermore, donors do not discriminate against corrupt countries. These results are corroborated by Alesina and Weder (2002) over the period 1975-1995. They also evidence different behaviors among donors, Scandinavian and Australian donors being careful to allocate funds to less corrupt economies, while the vast majority of donors pay no attention to this criterion. In the same vein, using panel data for fifty-six countries from 1970 to 1993, Burnside and Dollar (2000) finds that total and bilateral aids do not favor good policy, contrary to multilateral aid. In addition, they substantiate a strong correlation between bilateral aid and government consumption. Similarly, Knack (2001) evidences a link between higher level of aid and lower quality of governance. Alesina and Dollar (2000) regress bilateral aid and FDI on a set of economic and political variables

over the period 1970-1994. They show that bilateral donors help developing countries not according to the recipient countries' needs but according to their own strategic interests. In particular, the variable rule of law is not significant for bilateral aid but influences FDI significantly. It is worth noting that most of the literature dealing with corruption and foreign capital flows does not cover the second half of the 90s<sup>2</sup> after a consensus about the detrimental effect of corruption began to emerge in the international community, and after international capital flows experienced dramatic changes in their composition (see table 1).

[Table 1 about here.]

Based on the various research mentioned above, it seems that international capital flows to developing countries behave differently vis-à-vis corruption depending on their origin. On one hand bilateral aid and private loans do not appear to discriminate against corruption. On the other, FDI and multilateral aid seem to favor less corrupt countries. Mauro (2004) stresses the necessity of strong outside intervention in order to help countries to break out of the vicious circle of corruption. However, if this stance is not shared by everyone, such policy might have no impact on corrupt countries. Corrupt bureaucracies might even be tempted to replace some virtuous types of foreign flows with less cautious sources of funds. As Wei (2001) noticed regarding the Foreign Corrupt Practices Act of 1977: "the United States law has not been very effective in reducing corruption in foreign countries, mainly because companies from other countries are too eager to pick up the business". In the absence of international consensus, anticorruption policy can hardly deliver results. Therefore, it appears necessary to investigate if foreign capital taken as a whole discriminates against corruption. What is the nature of the signal, if any, sent by capital exporters to developing countries? Do they discriminate against corrupt bureaucracies? Do the less corrupt countries attract more easily external capital flows?

In addition, in order to check the validity of the opposite and separate findings found in the existing literature, it is important to use the same extended database, including the

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<sup>2</sup>Only Globerman and Shapiro (2002) and Habib and Zurawicki (2002) study the period post-1995.

post-1995 period after corruption emerged as a key issue and after important structural changes took place in the composition of international capital flows. Foreign investors and donors may differ in their appreciation of the situation. Some types of international capital flows may respond very negatively to a given level of corruption, while other types react less radically. Alternatively, even though every kind of flows had the same attitude vis-à-vis corruption, some might unwittingly impact the level of corruption indirectly, for instance by favoring government expenditure and rent-seeking activities as modeled in Alesina and Angeletos (2005) and evidenced in Tanzi and Davoodi (1997).

The next sections empirically investigate these issues using the Global Development Finance database over the period 1984-2001. After having presented the methodology and data, we analyze the overall signal sent to developing countries by capital exporters: we study the relationship between corruption and aggregate foreign private and public resources. Then, we examine the stability of this relationship over various sub-periods. We check for the possible consequences of the structural changes that occurred in the 90s. Finally, we analyze separately private and public capital flows to determine their respective behavior vis-à-vis corruption.

## II. Methodology and data

Corruption is naturally difficult to assess. Due to its secrecy and illegal character, it is almost impossible to measure objectively. The level of corruption needs to be estimated by relying on expert opinions or by conducting polls of citizens and businessmen involved in the country surveyed. Providers of such indicators have flourished since the mid-90s. This paper uses the ICRG corruption index provided by the PRS group and based on the judgment of specialists. This index aims at evaluating the degree of corruption within the political system. Countries are rated on a 0-6 scale, the lower the scores the higher the level of corruption. To facilitate the interpretation of coefficients, we invert the scale by taking 6 minus the original index, so that a higher number corresponds to more corruption. We

chose the ICRG index because it has been consistently available since 1984, which allows cross-country and time comparisons. Starting with Knack and Keefer (1995), it has been widely used in the academic literature. Other indices such as the corruption perception index of Transparency International exist. They are highly correlated<sup>3</sup> strengthening confidence in their reliability.

In order to test if other things being equal, high total foreign capital flows are associated with low corruption, we build the specifications of the equation 1 drawing on the literature on determinants of international capital flows.

$$(1) \quad \log(ANR_{it}) = \beta_0 + corruption_{it}\beta_1 + z'_{it}\beta_z + u_{it}$$

where  $i$  indexes countries,  $t$  indexes time,  $ANR_{it}$  represents the long-term aggregate net resources flows to recipient country  $i$  at time  $t$ ,  $corruption_{it}$  is the ICRG corruption index mentioned above, and  $z_{it}$  a vector of controlling variables likely to influence foreign capital flows. ANR comprises the bulk of external finance to developing countries. It is the sum of net resource flows on long-term debt (excluding IMF) plus net foreign direct investment, portfolio equity flows and official grants. It does not include short-term debt flows. A quick glance at the data on external capital flows to developing countries shows that although it exhibits a strong increase in constant terms, it has fluctuated between 2 and 6 percent of GDP since 1984. An important feature of the past decade is the growing importance of FDI, mainly at the expense of official funding. Among the latter, bilateral loans even present a total net outflow since the mid 90s.

ANR as well as some right-hand-side variables are log-transformed. In some papers, the dependant variable is expressed as a percentage of gross domestic product (Burnside and Dollar, 2000), and most often taken in logarithm (Alesina and Dollar, 2000). Alesina and Weder (2002) focus on aid variable and work on a per capita basis in logarithm. We also

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<sup>3</sup>See for instance Herzfeld and Weiss (2003).



test equation 1 with these alternative specifications. Most papers use flows as opposed to stocks of capital. However, dealing with FDI and bank loans, Wei (2001) pleads in favor of stocks, arguing that economic agents optimize their stock of capital in a given country and not the flows of a given year. Conversely, we can think of stocks as a by-product of the past, whereas net flows better measure the foreign capital exporters' anticipation. Constrained by data availability, this paper adopts only the flow specification.

The choice of the control variables<sup>4</sup> is derived from the existing theoretical and empirical literature on the determinants of external finance. Dealing with both public and private flows, we control for variables that appear either in the aid (Alesina and Weder, 2002) or in the FDI (Wei, 2001) literature. Usually represented by its gross domestic product (GDP) or by its population, the size of the recipient country is likely to influence the amount of these flows. The bigger the economy, the more foreign private investment it is likely to receive. And the higher the population, the more funds it is likely to obtain.

Identified either by the Sachs and Warner (1995) index or by the ratio imports plus exports to GDP, a measure of openness is also regularly found in the literature. It expresses the recipient country's willingness to follow sound economic policy. We can expect donors and private investors to favor such policy. The Sachs and Warner index has been updated by Wacziarg and Welch (2003) to include the 1990-99 period. However, it does not fit perfectly with our sample and we prefer to retain the Trade to GDP ratio so as not to exclude too many countries from the sample.

The log(GDP per capita) variable appears both in papers on aid and in research on private flows. In the former, GDP per capita is expected to be negatively associated with aid, since the richer the country the less aid it needs. In the latter, the sign of GDP per capita is more ambiguous. It reflects the potential demand in the host country and proxies for the level of infrastructure development, all of which encourage foreign private investment. But conversely, it is also likely to be associated with higher wage rates that may deter FDI.

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<sup>4</sup>As evidenced by Knack and Azfar (2003), some of these variables may be affected by sample selection bias due to the way corruption indices are built. We try to circumvent such bias by choosing ad hoc samples.

We take the logarithm of the initial GDP per capita at the beginning of a period.

Controlling for the local economic environment, we include the annual GDP growth rate, the inflation rate, the export growth rate, the foreign exchange volatility in the list of explanatory variables. Furthermore, aid and private flows could possibly be influenced by the political situation in the recipient country, especially before the fall of the Berlin Wall. In the same vein as Alesina and Dollar (2000) or Alesina and Weder (2002), we introduce the Freedom House index (FREE) by taking the average of the political rights and civil liberties indices<sup>5</sup>. Drawn on the aid literature, we also control for the colonial history of the recipient country with a dummy variable that takes the value of one if the country was ever colonized. Data definitions and sources are listed in appendix A.

As noted by Mauro (1995), the corruption variable could be endogenous. For instance, experts' assessment may be influenced by the economic performance of a surveyed country. It is also possible that foreign capital flows influence the institutional environment of the recipient countries. In both cases, the estimated level of corruption could be partly determined by these flows, which would result in inconsistent estimators of the OLS regressions. In order to deal with this potential problem, we need to find suitable instrumental variables, so as to implement two-stage least-squares regressions. Starting with Mauro (1995), the literature has emphasized ethno-linguistic fractionalization (ELF) as a good instrument for corruption. This index measures the probability that two randomly selected persons from a given country do not belong to the same ethno-linguistic group. Following La Porta et al. (1998, 1999), the origin of a country's legal system<sup>6</sup> being likely to influence government efficiency, it is also a good candidate as instrument variable. Acemoglu et al. (2001) adopt a different stance and estimate that the underlying cause for institution efficiency pertains more to the climatic environment of the country and its consequences on European settler

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<sup>5</sup>Freedom House indices were originally measured on a one-to-seven scale, one denoting the highest and seven the lowest degree of freedom. As for the ICRG corruption index, we have inverted the original grades by taking seven minus the freedom index, so as to interpret the results more readily: the higher the score the higher the level of freedom.

<sup>6</sup>Common law, French civil law, German civil law, Scandinavian law or socialist law.

mortality during the time of colonization. We also considered this latter variable in our set of potential instruments. Finally, relying on the aid literature (Burnside and Dollar, 2000; Svensson, 2000; Guillaumont and Chauvet, 2001; Knack, 2001), we included the squared log of population size, infant mortality rate and a sub-Saharan Africa dummy variable.

Most variables dealing with the quality of institutions including corruption exhibits very little variation over time and much of the interesting variation is across countries. This rules out the possibility to work in first-difference, since it would eliminate most of the information about the corruption variable. This suggests working mainly with cross-section data. However, it is possible to study temporal comparison provided it is based on long term spans. Therefore allowing for this small time variation and the inertia that characterize corruption, we use long term six-year averages. This removes a good deal of autocorrelation. Furthermore, this specification helps to eliminate short term business cycle variations. Since our interest lies in the persistence of corruption, we have studied the longest possible period for which data are available. The initial data set is a pooled cross section of one hundred and forty four developing countries, and three six-year periods from 1984 to 2001. Each observation refers to a country's performance averaged over a six-year period (1984-1989, 1990-1995, 1996-2001). In order to be included in our samples, a country must have observations for any single year and for all the variables in the period under consideration. We choose this restrictive selection process so as to get consistent data when taking the average. Appendix B gives the list of countries included in the various samples.

We retained these three time periods first because of the recent emergence of corruption in the international arena in the mid 90s, and second because of the radical political and economic changes that took place around these cut-off dates. 1984-1989 corresponds to the debt crisis period and to the Soviet Union area that was marked by East-West competition vis-à-vis the third world countries. 1990-1995 is characterized by the collapse of communism, the end of the debt crisis, and the reopening of international capital markets to developing and former communist countries. Following Mexico in 1995, 1996-2001 is the era of emerging

market crises (Asia 1997, Russia 1998, Argentina 2001), combined with the awareness of the negative consequences of corruption on development.

Taking the logs of net financial flows excludes observations with a zero or negative value and may lead to sample selection bias<sup>7</sup>. As a robustness check for this possible bias, we also run the Heckman selection model. Results are in accordance with the standard OLS model<sup>8</sup>.

Data sources are from Global Development Finance (World Bank) for ANR and World Development Indicators (World Bank) for the other economic variables as well as for the population. The ICRG corruption index is taken from the PRS Group database. The Freedom House index is provided by the non governmental organization Freedom House. All currency variables are expressed in constant year 2000 U.S. dollars. While Levine and Renelt (1991) advocates the use of purchasing power parity (PPP) conversion rate, we prefer to convert data at foreign exchange rate, sharing Roodman (2004)’s view that the opportunity cost for the recipient country of not receiving this external finance is better approximated using the exchange rate, and would be underestimated if converted at PPP rate. Summary statistics and the correlation matrices for the explanatory variables are given in tables 2 and 3.

[Table 2 about here.]

[Table 3 about here.]

### III. Econometric Results

#### A. *Aggregate net resources (ANR): period 1984-2001*

We perform several regressions investigating the relationship between total foreign capital flows to developing countries and their level of corruption. In our “base” specification, the

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<sup>7</sup>In our case, using average flows over six-year periods substantially reduces the number of non-positive observations and therefore minimizes the problem. Appendix B indicates the countries presenting outflows in the different periods.

<sup>8</sup>These results are available from the authors upon request.

dependent variable is the log of aggregate net resource flows. Results for the OLS pooled cross section regression<sup>9</sup> are reported in table 4. Regarding the 2SLS regression, the Durbin-Hausman-Wu (DWH) test rejects the hypothesis of endogeneity for the ICRG corruption variable<sup>10</sup>.

[Table 4 about here.]

This model has a high explanatory power. The size of the country, estimated by its GDP, is able to explain a fair amount of the external capital flows. Bigger economies receive more. When we control for the GDP variable, the GDP per capita coefficient is significantly negative, meaning that more populated countries receive more<sup>11</sup>. The degree of openness as measured by the TRADE variable is significantly associated with more inflows, as suggested in the literature. More open countries receive more capital. The degree of democracy as approximated by the FREE variable has a positive expected sign although not significant. This outcome conforms to Alesina and Dollar (2000) findings over the period 1980-1995. Former colonies tend to receive less funds which can be explained by the composition of the non-former colony sample including some of the biggest foreign capital importers: China, Russia, Thailand and Turkey.

Turning to the ICRG corruption variable, we find a significant negative coefficient. In the long run, controlling for size, level of economic development, economic and political environments, it appears that more corrupt countries tend to receive fewer external resources. This finding is consistent with most papers about FDI, but it is at odds with research on foreign aid. The latter shows at best an absence of link between corruption and aid, especially for the bilateral aid. FDI being by far the main component of ANR over the period 1984-2001, reaching almost 50 percent, explains the above result. When considering the total external resources devoted to developing countries, including FDI, aid and other

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<sup>9</sup>We pool the three sub-period means: 1984-1989, 1990-1995 and 1996-2001.

<sup>10</sup>Results for the 2SLS regression are available from the authors upon request.

<sup>11</sup>In alternative specifications, when the size of a country is estimated by its population, the sign of the GDPCAP variable is significantly positive, indicating that bigger economies receive more.

types of foreign capital, we cannot argue that the most corrupt countries were favored. Over that period, external financing seem to have exerted a pressure on these countries by discriminating against corruption. This result also holds across the various specifications used in the above mentioned literature when the dependent variable is taken as ANR/GDP,  $\log(\text{ANR}/\text{GDP})^{12}$  or  $\log(\text{ANR}/\text{POP})$ .

*B. Aggregate net resources (ANR): sub-periods 1984-89, 1990-95 and 1996-2001*

Going further, we now investigate the validity of this result in the different sub-periods and test equation 1 over the years 1984-1989, 1990-1995 and 1996-2001. We present results for the OLS regressions of the  $\log(\text{ANR})$  specification in table 5. Regarding the 2SLS regressions, the DWH test again rejects the hypothesis of endogeneity for the ICRG corruption variable in the three sub-periods<sup>13</sup>.

[Table 5 about here.]

At first glance, coefficients seem to vary widely according to the different sub-periods. This is confirmed even when the sample is restricted to the common set of observations for the three periods<sup>14</sup>. In order to check the stability of coefficients, we perform a standard analysis of covariance on panel data. We first tested and rejected the hypothesis of equality of variance<sup>15</sup>. However, even though variances are not equal, Schmidt and Sickles (1977) showed that the Chow test is still reasonably accurate, provided the sample sizes are equal. Consequently, we run this test on the common set of observations. We also perform a pairwise Wald test of coefficient restriction. Both tests strongly reject the hypothesis of

<sup>12</sup>The specification ANR/GDP does not pass the Breusch-Pagan test for heteroskedasticity or the Ramsey reset test, and the specification  $\log(\text{ANR}/\text{GDP})$  fails the latter.

<sup>13</sup>Results for the 2SLS regressions are available from the authors upon request.

<sup>14</sup>This common set is made of the initial 53 observations found in the 1984-1989 period minus Tunisia (not available in 1990-1995), Congo Dem. Rep and Papua New Guinea (not available in 1996-2001), and minus three countries that present negative flows in 1996-2001 (Algeria, Gabon, Indonesia). These results are available from the authors upon request.

<sup>15</sup>Using Levene and Brown-Forsythe procedures, we reject the null hypothesis of equality of variance at the 1 percent level.

temporal stability of the relationship between foreign capital and corruption, and suggest that structural changes occurred over the past decades. In the case of the Wald test, it is interesting to note that we cannot reject the hypothesis of stability between the periods 1984-1989 and 1990-1995. Therefore, it seems that the date of these structural changes is to be found in the second half of the 90s.

In the three sub-periods, coefficients for  $\log(\text{GDP})$  are of the same magnitude as those found over the period 1984-2001.  $\log(\text{GDPCAP})$  produces roughly the same effects in 1984-1989 and 1990-1995 as in the whole period but loses significance in 1996-2001. The  $\text{TRADE}$  variable is positive but not significantly. Concerning the democratic environment, the coefficient of the  $\text{FREE}$  variable after being negative in 1984-1989, turns out to be positive in 1990-1995 and significantly positive in 1996-2001. The collapse of communism and the end of Soviet Union area may explain this evolution. During the cold war, official donors partly used aid allocation as a political tool to preserve their strategic alliances around the world. They did not pay much attention to the democratic environment in the recipient country. Presumably, this way of using aid allocation has been less frequent since the fall of the Berlin Wall. These outcomes are consistent with Alesina and Weder (2002) findings for the periods 1980-1990 and 1990-1995, as well as with Alesina and Dollar (2000) results in 1980-1995. Contrary to the Cold War era, it seems that in recent years, democracy has started to be significantly associated with increased foreign capital flows.

Regarding the ICRG corruption coefficient, while it remains in line with our previous long term results for the periods 1984-1989 and 1990-1995 with significant negative figures, it loses any significance over the most recent 1996-2001 phase. This outcome holds across the various alternative specifications found in the literature. So as to check if these results are driven by the inclusion of new countries in 1990-1995 and 1996-2001, we run this regression on the common initial set of forty-seven observations. Results are in accordance with those found in the table 5 and show an absence of significance for the corruption variable in the last period, contrary to 1984-89 and 1990-95 that are respectively significant at the 11 percent

and 5 percent level. We also check their robustness with another corruption variable, the Corruption Perception Index provided by Transparency International (TI-CPI). This index has only been available since 1995. The TI-CPI regression is consistent with the 1996-2001 ICRG results, exhibiting a non significant coefficient for the corruption variable<sup>16</sup>.

Contrary to the pre-1996 periods, since the mid 90s high total foreign capital flows do not seem to have been particularly associated with low corruption. Over this period, developing countries had no specific incentives to tackle the problem of corruption in terms of external finance. Foreign capital seems to have paid less attention to corruption in the recipient countries over the most recent period. This result deserves attention, since it corresponds to the period when corruption began to be addressed as a central issue in the international arena. Empirical data are at variance with political speeches. In order to analyze this outcome and find the cause of this evolution, we run further investigation on the particular sources of financing. The next section studies separately private and public flows.

### *C. Foreign private and public capital flows*

We split ANR, the total long term foreign capital flows, into their private (PRI) and public (PUB) components. Private capital flows are made of net commercial bank loans, net other private creditor debts, net portfolio flows, and net FDI flows. Public flows are the sum of net multilateral official flows, net bilateral official flows and grants. The source for these dependent variables is the Global Development Finance (World Bank) database. We follow exactly the same procedure as for ANR, and run the same regressions on the dependent variables PRI and PUB for the three sub-periods. Tables 6 and 7 present results of the OLS regressions for respectively  $\log(\text{PRI})$  and  $\log(\text{PUB})$ <sup>17</sup>. The Durbin-Hausman-Wu (DWH) test rejects the hypothesis of endogeneity for the ICRG corruption variable for all 2SLS regressions except in 1984-1989 for the public flows. Results for the latter are presented

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<sup>16</sup>These results are available from the authors upon request.

<sup>17</sup>Alternative specifications give similar outcomes and are available upon request.



in table 8<sup>18</sup>.

[Table 6 about here.]

[Table 7 about here.]

[Table 8 about here.]

We perform a standard F-test of parameter stability for the OLS public flow regressions<sup>19</sup>. We reject the null hypothesis of parameter stability for public flows across the three sub-periods at the 1 percent level. However, when applying a pairwise Wald test, we cannot reject the hypothesis of stability between two periods.

Regarding private flows, the test of equality of variance is rejected<sup>20</sup>. Consequently, we restrict the sample to the thirty-six observations common to the three sub-periods. The standard F-test of parameter stability rejects the hypothesis of stability for private flows across the three sub-periods at the 1 percent confidence level. The pairwise Wald test of coefficient restriction cannot reject the hypothesis of stability between 1984-1989 and 1990-1995 and rejects this assumption at usual confidence levels when comparing 1996-2001 with 1984-1989 and 1990-1995.

In summary, the instability that was found above for the aggregate net resources over the period 1996-2001 is confirmed. It is originated more specifically in the private flows, whereas public flow coefficient regressions exhibit a lower variability. In addition, we find that these structural changes among international capital flows took place after 1995.

Looking more specifically at the corruption coefficient, table 6 evidences variations in the relationship between corruption and private flows depending on the periods. After being significantly negative in 1984-1989, it loses significance in 1990-1995<sup>21</sup> and 1996-2001 and turns

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<sup>18</sup>Results for the other 2SLS regressions are available from the authors upon request.

<sup>19</sup>With p-values for Brown-Forsythe tests of respectively 25.9 and 25.8 percent, we don't reject the hypothesis of equality of variances for public flows.

<sup>20</sup>Levene and Brown-Forsythe tests reject the hypothesis of equality of variance for private flows at the 1 percent level.

<sup>21</sup>At 10.3 percent in 1990-1995, the p-value is only slightly above the 10 percent threshold.

positive in the latest period. On the contrary, table 7 shows that the nature of relationship between public flows and corruption appears roughly constant since 1984, with non significant negative coefficients in all OLS regressions<sup>22</sup>. Whereas private financing were negatively affected by corruption until the mid-1990s, they became indifferent to this issue thereafter, like public flows. After all, both private and public flows were indifferent to corruption after 1995.

These results are robust to alternative specifications and are confirmed when we limit the sample size to the common set of thirty-six countries. We could suspect that outcomes for private flows are driven by the end of communism and the liberalization of the Chinese economy that dramatically modified the FDI flows over the past two decades. While these countries attracted massive foreign capital during the 90s, they also experienced increasing corruption. In order to isolate these effects, we introduce two dummy variables, “China” and “communist country”. The latter is based on authors’ calculations and includes all countries which adopted a Marxist economy at any time between 1984 and 2001. The above results are unaffected after controlling for these particular situations. The signs and significance are the same as in table 6<sup>23</sup>.

So as to check this assumption of instability in the corruption coefficient, we perform a series of Wald test for the equality of two regression coefficients, for respectively private and public flows. The corruption coefficient in the public flows regression appears fairly stable for any pairwise periods. When dealing with private flows, we also cannot reject the hypothesis of equality between 1984-1989 and 1990-1995. Conversely, this hypothesis is rejected for private flows when comparing the 1996-2001 model with the 1984-1989 or the 1990-1995 models. Contrary to external public financing, private sources have changed attitude towards corruption. They seem to have been less sensitive to corruption from the

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<sup>22</sup>The DWH test suggests that the 2SLS method is more appropriate for public capital in 1984-1989. In that case, the corruption coefficient is significantly positive (see table 8): public flows were allocated to the most corrupt countries in 1984-1989 but the situation slightly improved since they were not favored anylonger in the following periods.

<sup>23</sup>These results are available from the authors upon request.

second half of the 90s.

Consequently, the shift in the attitude of private flows, plus a growing share of foreign private flows in external financing, account for the absence of negative association between total foreign capital flows and corruption in 1996-2001. What can explain such a shift since 1995? First, we can hypothesize that foreign private capital and particularly FDI have changed in essence during the past decade. The era of globalization, liberalization of developing economies, and their comeback on the international finance stage have potentially changed the deal. This view is supported by Mody and Murshid (2005) who document a diminution of the impact of FDI on domestic investment, and show that FDI increasingly share the characteristics of portfolio flows, being motivated by the search for diversification. Second, we must remember that 1984-1989 was a period characterized by defaults, debt repudiations and foreign exchange controls in many developing countries. At that time, foreign private investors faced the risk of being trapped for many years into hyperinflationary and low-growth economies. Most of them chose to avoid such countries. By contrast, today, even though emerging market crises are frequent and extremely violent, developing countries helped by some more or less implicit IFI bailouts, have kept their economies open and experienced impressive and rapid recovery in the aftermath of these collapses. Therefore, foreign private capital is more likely to invest in those countries than in the previous decade.

#### **IV. Conclusion**

By investigating the nature of the signal sent by capital exporters to developing countries regarding corruption, we have analyzed the link between corruption and total external resources –both private and public. In view of the important changes that occurred in the composition of foreign capital and considering the anti-corruption campaign launched by the IFIs after 1995, we have studied the stability of this linkage from 1984 to 2001. We evidenced a structural change after 1995. Whereas total foreign capital flows tended to avoid the more corrupt countries before 1996, they were indifferent to this issue thereafter. From that date,

developing countries had no more incentive to fight corruption in terms of external financing.

In order to understand this shift, we have conducted a parallel study of the private and public components of external resources. Regarding foreign public flows, our findings are in line with the literature. We confirmed at best the absence of relationship between corruption and such flows, including the most recent period. Concerning foreign private flows, our results differ from preceding research notably Wei (2000, 2001) for the FDI flows. Contrary to previous outcomes and using more recent data, we show that foreign private capital does not heed the issue of corruption over the period 1996-2001. Consequently, the absence of relationship between total external resources and corruption after 1995 can be attributed to a change in attitude toward corruption from private flows after that date. It can also be attributed to the increasing share of private flows in external resources.

These results partly explain the persistence of corruption. Public flows have remained unaffected by the criterion of corruption even after the anti-corruption economic policy was implemented by the IFIs. Worse still, private flows have paid less attention to this question since the mid 90s. No external financing constraint concerning corruption has been exerted on developing countries over the most recent period. In spite of IFIs and governments' willingness, this shows how difficult it can be to eradicate the problem.

As a matter of economic policy, these results highlight the importance of considering both public and private flows. In the fight against corruption, international financial institutions should take into consideration not only foreign public resources but also resources from private capital.

## V. Appendices

### A Data Descriptions and Sources

*ANR*, *aggregate net resource flows* (constant 2000 U.S. dollar): sum of net resource flows on long-term debt (excluding IMF) plus net direct foreign investment, portfolio equity flows and official grants (excluding technical cooperation). World Bank, Global Development Finance.

*FREE*, *average of the political rights and civil liberties* Freedom House indices.

*GDP*, *gross domestic product* (constant year 2000 U.S. dollars). World Bank, World Development Indicators.

*GDPCAP*, *gross domestic product per capita* (in constant year 2000 U.S. dollars). World Bank, World Development Indicators.

*ICRG corruption*, a measure of corruption within the political system that is a threat to foreign investment by distorting the economic and financial environment, reducing the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability, and introducing inherent instability into the political process. PRS Group.

*POP*, *population*. World Bank, World Development Indicators.

*PRI*, *private net resource flows* (constant 2000 U.S. dollar): sum of net flows on debt to private creditors plus net direct foreign investment and portfolio equity flows. World Bank, Global Development Finance.

*PUB*, *public net resource flows* (constant 2000 U.S. dollar): sum of net multilateral flows, net bilateral flows and grants. World Bank, Global Development Finance.

*TRADE*, *trade as percentage of GDP*: sum of exports and imports of good and services measured as a share of gross domestic product. World Bank, Global Development Finance.

*DUMSAH*, *sub-Saharan country dummy variable*: 1 if sub-Saharan country, 0 otherwise.

*ELF*, *ethno-linguistic fractionalization*. The ethnolinguistic fractionalization index mea-

sures the probability that two randomly selected persons from a given country will not belong to the same ethnolinguistic group. Mauro (1995) and Wei (2001) for China.

*INF, infant mortality rate* (per1,000 live births). World Bank, World Development Indicators.

*MOR, European settler mortality*: European settler mortality rate during the time of colonization. Acemoglu et al. (2001).

*DEFL, inflation rate*: GDP deflator (annual percentage). World Bank, World Development Indicators.

*GDPGR, GDP growth rate* (annual percentage). World Bank, World Development Indicators.

*FXVOL, foreign exchange rate volatility*: standard deviation of the change in monthly log nominal exchange rate with respect to U.S. dollar. The nominal exchange rate is the monthly end-of-period exchange rate from the IMF's International Financial Statistics (AE.ZF).

*EXP, exports of goods and services* (annual percentage growth). World Bank, World Development Indicators.

*LGCOLONY, colonized country dummy variable*: 1 if the country was ever colonized for a relatively long period of time, 0 otherwise. CEPIL.

## B Samples

*“1984-1989” sample (56 countries)*

Argentina, Bangladesh, Bolivia, Brazil, Botswana, Chile, China, Cote d'Ivoire, Cameroon, Colombia, Costa Rica, Dominican Republic, Algeria, Ecuador, Egypt, Ethiopia, Gabon, Ghana, Guatemala, Guyana, Honduras, Haiti, Hungary, Indonesia, India, Iran: net outflow in 1984-1989, Jordan, Kenya, Morocco, Madagascar, Mexico, Mali, Mozambique, Malawi, Malaysia, Nigeria, Nicaragua, Pakistan, Panama: net outflow in 1984-1989, Peru, Philippines, Papua New Guinea, Paraguay, Senegal, El Salvador, Syrian Arab Republic, Togo, Thailand, Trinidad and Tobago, Tunisia, Uganda, Uruguay, Venezuela: net outflow in

1984-1989, Congo, Dem. Rep., Zambia, Zimbabwe.

*“1990-1995” sample (66 countries)*

Same countries as in the “1984-1989” sample plus Burkina Faso, Congo, Rep., Guinea, Gambia, Guinea-Bissau, Lebanon, Sri Lanka, Niger, Sierra Leone, Turkey, Vietnam, less Tunisia.

Iran presents a net outflow for the period 1990-1995.

*“1996-2001” sample (76 countries)*

Same countries as in the “1990-1995” sample plus Albania, Bulgaria, Czech Republic, Jamaica, Poland, Romania, Russian Federation, Sudan, Slovak Republic, Tunisia, Tanzania, Yemen, South Africa less Niger, Papua New Guinea and Congo, Dem. Rep..

Algeria, Gabon, Indonesia, Iran present a net outflow for the period 1996-2001.

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Table 1: International capital flows as a percentage of total aggregate net resources

|                         | 1984   | 1985   | 1986   | 1987   | 1988   |
|-------------------------|--------|--------|--------|--------|--------|
| Bilateral loans         | 18.00% | 16.10% | 15.70% | 16.10% | 10.30% |
| Grants                  | 16.50% | 19.30% | 20.60% | 21.10% | 19.50% |
| Multilateral loans      | 20.40% | 20.80% | 23.60% | 22.10% | 18.80% |
| Other private creditors | 8.60%  | 9.00%  | 8.90%  | 5.40%  | 8.90%  |
| Portfolio               | -1.00% | 6.90%  | 1.90%  | -0.10% | 5.40%  |
| Commercial loans        | 21.30% | 6.20%  | 11.40% | 16.90% | 9.70%  |
| FDI                     | 16.20% | 21.80% | 17.80% | 18.50% | 27.40% |
|                         | 1989   | 1990   | 1991   | 1992   | 1993   |
| Bilateral loans         | 14.30% | 10.20% | 10.20% | 7.60%  | 4.30%  |
| Grants                  | 20.00% | 27.80% | 27.10% | 17.40% | 10.80% |
| Multilateral loans      | 18.20% | 18.40% | 13.80% | 8.60%  | 7.40%  |
| Other private creditors | 6.70%  | 4.30%  | 0.50%  | 9.00%  | 4.90%  |
| Portfolio               | 7.90%  | 4.90%  | 12.60% | 15.00% | 37.40% |
| Commercial loans        | -0.20% | 7.90%  | 4.20%  | 10.70% | 2.40%  |
| FDI                     | 33.00% | 26.50% | 31.60% | 31.70% | 32.80% |
|                         | 1994   | 1995   | 1996   | 1997   | 1998   |
| Bilateral loans         | 1.90%  | 4.80%  | -3.90% | -2.30% | -1.00% |
| Grants                  | 12.20% | 10.80% | 7.40%  | 5.80%  | 6.20%  |
| Multilateral loans      | 5.20%  | 5.10%  | 4.90%  | 5.40%  | 7.60%  |
| Other private creditors | 2.30%  | 0.80%  | 0.90%  | 0.90%  | -1.70% |
| Portfolio               | 31.20% | 18.10% | 30.90% | 20.10% | 15.40% |
| Commercial loans        | 3.90%  | 12.70% | 11.50% | 14.50% | 16.70% |
| FDI                     | 43.30% | 47.60% | 48.30% | 55.60% | 56.90% |
|                         | 1999   | 2000   | 2001   |        |        |
| Bilateral loans         | -0.90% | -3.30% | -3.80% |        |        |
| Grants                  | 7.90%  | 9.20%  | 9.90%  |        |        |
| Multilateral loans      | 7.20%  | 5.60%  | 7.60%  |        |        |
| Other private creditors | -0.60% | -1.90% | -3.10% |        |        |
| Portfolio               | 16.80% | 14.20% | 8.40%  |        |        |
| Commercial loans        | -2.70% | -2.70% | -5.40% |        |        |
| FDI                     | 72.20% | 79.00% | 86.40% |        |        |

Source: Global Development Finance (World Bank)

Table 2: Descriptive statistics

| Variable                                  | Mean     | Std. Dev. | Min       | Max      |
|---|----------|-----------|-----------|----------|
| 1984-1989 average: sample of 56 countries |          |           |           |          |
| ANR                                       | 1.27E+09 | 1.86E+09  | -9.68E+08 | 9.88E+09 |
| PRI                                       | 6.14E+08 | 1.34E+09  | -1.02E+09 | 7.95E+09 |
| PUB                                       | 6.57E+08 | 7.31E+08  | -1.16E+08 | 3.50E+09 |
| ICRG                                      | 3.39     | 1.15      | 1.00      | 6.00     |
| GDP                                       | 4.50E+10 | 9.18E+10  | 4.85E+08  | 4.45E+11 |
| GDP per capita                            | 1,526.27 | 1,597.01  | 101.13    | 6,760.88 |
| Trade openness                            | 54.33    | 28.14     | 13.68     | 133.86   |
| Freedom House index                       | 2.61     | 1.61      | 0.17      | 6.00     |
| GDP growth rate                           | 2.89     | 2.88      | -3.74     | 11.37    |
| Inflation rate                            | 150.95   | 537.76    | -5.19     | 3,221.93 |
| Export growth rate                        | 5.68     | 4.97      | -5.66     | 23.41    |
| FX volatility                             | 0.05     | 0.07      | 0.00      | 0.39     |
| 1990-1995 average: sample of 66 countries |          |           |           |          |
| ANR                                       | 2.33E+09 | 5.14E+09  | -1.13E+08 | 3.38E+10 |
| PRI                                       | 1.75E+09 | 4.61E+09  | -1.48E+08 | 2.94E+10 |
| PUB                                       | 5.87E+08 | 8.90E+08  | -1.39E+09 | 4.42E+09 |
| ICRG                                      | 3.09     | 0.90      | 1.00      | 6.00     |
| GDP                                       | 5.19E+10 | 1.12E+11  | 2.01E+08  | 5.58E+11 |
| GDP per capita                            | 1,394.46 | 1,448.80  | 94.67     | 5,642.89 |
| Trade openness                            | 64.02    | 37.47     | 16.26     | 228.86   |
| Freedom House index                       | 2.81     | 1.46      | 0.00      | 5.92     |
| GDP growth rate                           | 3.51     | 3.50      | -7.03     | 15.12    |
| Inflation rate                            | 177.97   | 771.16    | 2.30      | 5,880.09 |
| Export growth rate                        | 7.15     | 6.42      | -9.31     | 25.65    |
| FX volatility                             | 0.04     | 0.04      | 0.00      | 0.27     |
| 1996-2001 average: sample of 76 countries |          |           |           |          |
| ANR                                       | 3.18E+09 | 7.53E+09  | -1.85E+09 | 4.91E+10 |
| PRI                                       | 2.88E+09 | 7.33E+09  | -2.49E+09 | 4.57E+10 |
| PUB                                       | 3.02E+08 | 7.02E+08  | -2.73E+09 | 3.42E+09 |
| ICRG                                      | 3.28     | 0.81      | 1.33      | 5.00     |
| GDP                                       | 6.89E+10 | 1.52E+11  | 2.20E+08  | 9.73E+11 |
| GDP per capita                            | 1,723.10 | 1,683.90  | 97.10     | 7,656.53 |
| Trade openness                            | 70.98    | 36.28     | 20.65     | 206.30   |
| Freedom House index                       | 3.10     | 1.56      | 0.00      | 5.50     |
| GDP growth rate                           | 3.50     | 1.97      | -0.64     | 8.82     |
| Inflation rate                            | 13.84    | 23.63     | -0.69     | 185.05   |
| Export growth rate                        | 7.09     | 7.29      | -13.95    | 36.28    |
| FX volatility                             | 0.02     | 0.02      | 0.00      | 0.10     |

Table 3: Correlation matrices for each sub-period

|                     | ICRG             | GDP   | GDP per capita | Trade openness | Freedom House index | GDP growth rate | Inflation rate | Export growth rate |
|---------------------|------------------|-------|----------------|----------------|---------------------|-----------------|----------------|--------------------|
|                     | period 1984-1989 |       |                |                |                     |                 |                |                    |
| ICRG                | 1.00             |       |                |                |                     |                 |                |                    |
| GDP                 | -0.24            | 1.00  |                |                |                     |                 |                |                    |
| GDP per capita      | -0.28            | 0.31  | 1.00           |                |                     |                 |                |                    |
| Trade openness      | -0.01            | -0.39 | 0.12           | 1.00           |                     |                 |                |                    |
| Freedom House index | -0.26            | 0.22  | 0.48           | 0.02           | 1.00                |                 |                |                    |
| GDP growth rate     | -0.12            | 0.22  | -0.31          | -0.06          | 0.01                | 1.00            |                |                    |
| Inflation rate      | -0.17            | 0.03  | 0.05           | -0.11          | 0.13                | -0.34           | 1.00           |                    |
| Export growth rate  | -0.02            | 0.08  | -0.02          | 0.02           | 0.12                | 0.52            | -0.25          | 1.00               |
| FX volatility       | -0.13            | -0.07 | 0.00           | -0.09          | 0.07                | -0.36           | 0.82           | -0.30              |
|                     | period 1990-1995 |       |                |                |                     |                 |                |                    |
| ICRG                | 1.00             |       |                |                |                     |                 |                |                    |
| GDP                 | -0.19            | 1.00  |                |                |                     |                 |                |                    |
| GDP per capita      | -0.20            | 0.30  | 1.00           |                |                     |                 |                |                    |
| Trade openness      | -0.00            | -0.29 | 0.05           | 1.00           |                     |                 |                |                    |
| Freedom House index | -0.14            | 0.02  | 0.58           | 0.12           | 1.00                |                 |                |                    |
| GDP growth rate     | -0.25            | 0.21  | 0.11           | 0.24           | -0.01               | 1.00            |                |                    |
| Inflation rate      | 0.28             | 0.05  | -0.05          | -0.14          | 0.01                | -0.38           | 1.00           |                    |
| Export growth rate  | -0.14            | 0.17  | 0.06           | 0.20           | 0.06                | 0.70            | -0.31          | 1.00               |
| FX volatility       | 0.24             | 0.00  | -0.10          | -0.17          | -0.16               | -0.46           | 0.74           | -0.46              |
|                     | period 1996-2001 |       |                |                |                     |                 |                |                    |
| ICRG                | 1.00             |       |                |                |                     |                 |                |                    |
| GDP                 | 0.12             | 1.00  |                |                |                     |                 |                |                    |
| GDP per capita      | -0.24            | 0.22  | 1.00           |                |                     |                 |                |                    |
| Trade openness      | -0.26            | -0.24 | 0.15           | 1.00           |                     |                 |                |                    |
| Freedom House index | -0.46            | -0.06 | 0.50           | 0.20           | 1.00                |                 |                |                    |
| GDP growth rate     | -0.06            | 0.14  | -0.28          | -0.04          | -0.19               | 1.00            |                |                    |
| Inflation rate      | 0.01             | -0.03 | -0.03          | 0.02           | 0.07                | -0.33           | 1.00           |                    |
| Export growth rate  | 0.06             | 0.11  | -0.13          | -0.16          | -0.10               | 0.46            | 0.07           | 1.00               |
| FX volatility       | 0.12             | -0.04 | -0.22          | 0.03           | -0.06               | -0.36           | 0.56           | -0.07              |

Table 4: OLS pooled cross-section regressions of aggregate net resources (ANR) over the period 1984-2001

| Dependent variable is log(ANR)   |                      |
|----------------------------------|----------------------|
| ICRG corruption index            | -0.170***<br>(0.055) |
| log(GDP)                         | 0.796***<br>(0.045)  |
| log(GDP per capita)              | -0.342***<br>(0.073) |
| Trade openness                   | 0.004**<br>(0.002)   |
| Freedom House index              | 0.035<br>(0.045)     |
| GDP growth rate                  | -0.017<br>(0.023)    |
| Inflation rate                   | -0.000<br>(0.000)    |
| Export growth rate               | 0.009<br>(0.009)     |
| Foreign exchange rate volatility | 1.594<br>(1.562)     |
| Colony dummy                     | -0.244*<br>(0.131)   |
| 1984-89 period dummy             | -0.036<br>(0.139)    |
| 1990-95 period dummy             | -0.086<br>(0.125)    |
| Constant                         | 4.776***<br>(0.929)  |
| Adj. $R^2$                       | 0.76                 |
| Observations                     | 190                  |

Robust standard errors in parentheses

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$



Table 5: OLS cross-section regressions of aggregate net resources (ANR) for each sub-period

| Dependent variable is log(ANR)   |           |           |           |
|----------------------------------|-----------|-----------|-----------|
|                                  | 1984-89   | 1990-95   | 1996-2001 |
| ICRG corruption index            | -0.131*   | -0.324*** | 0.036     |
|                                  | (0.068)   | (0.080)   | (0.145)   |
| log(GDP)                         | 0.719***  | 0.831***  | 0.809***  |
|                                  | (0.087)   | (0.077)   | (0.099)   |
| log(initial GDP per capita)      | -0.434*** | -0.556*** | -0.170    |
|                                  | (0.138)   | (0.101)   | (0.182)   |
| Trade openness                   | 0.007     | 0.004     | 0.002     |
|                                  | (0.006)   | (0.003)   | (0.002)   |
| Freedom House index              | -0.075    | 0.045     | 0.214**   |
|                                  | (0.068)   | (0.063)   | (0.082)   |
| GDP growth rate                  | -0.013    | -0.006    | -0.024    |
|                                  | (0.037)   | (0.039)   | (0.088)   |
| Inflation rate                   | 0.000     | -0.000**  | 0.000     |
|                                  | (0.000)   | (0.000)   | (0.003)   |
| Export growth rate               | -0.002    | 0.018     | 0.020     |
|                                  | (0.017)   | (0.019)   | (0.012)   |
| Foreign exchange rate volatility | -0.855    | 8.284***  | -6.842    |
|                                  | (1.850)   | (2.789)   | (8.169)   |
| Colony dummy                     | 0.075     | -0.485**  | -0.069    |
|                                  | (0.247)   | (0.203)   | (0.226)   |
| Constant                         | 6.974***  | 5.571***  | 2.091     |
|                                  | (1.775)   | (1.665)   | (1.562)   |
| Adj. $R^2$                       | 0.73      | 0.83      | 0.82      |
| Observations                     | 53        | 65        | 72        |

Robust standard errors in parentheses, \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

Table 6: OLS cross-section regressions of foreign private capital flows (PRI) for each sub-period

| Dependent variable is log(PRI)   |                      |                       |                      |
|----------------------------------|----------------------|-----------------------|----------------------|
|                                  | 1984-89              | 1990-95               | 1996-2001            |
| ICRG corruption index            | -0.490**<br>(0.182)  | -0.379<br>(0.309)     | 0.187<br>(0.138)     |
| log(GDP)                         | 1.189***<br>(0.169)  | 1.371***<br>(0.164)   | 1.040***<br>(0.101)  |
| log(initial GDP per capita)      | -0.100<br>(0.248)    | -0.420<br>(0.325)     | 0.225<br>(0.178)     |
| Trade openness                   | 0.020**<br>(0.010)   | 0.019***<br>(0.005)   | 0.009***<br>(0.003)  |
| Freedom House index              | -0.012<br>(0.132)    | 0.308*<br>(0.179)     | 0.168*<br>(0.089)    |
| GDP growth rate                  | 0.002<br>(0.063)     | 0.097<br>(0.089)      | 0.024<br>(0.076)     |
| Inflation rate                   | -0.002***<br>(0.000) | 0.000<br>(0.001)      | 0.003<br>(0.003)     |
| Export growth rate               | -0.009<br>(0.031)    | 0.013<br>(0.043)      | 0.019<br>(0.011)     |
| Foreign exchange rate volatility | 7.254*<br>(3.932)    | 3.546<br>(4.691)      | -6.465<br>(7.242)    |
| Colony dummy                     | 0.028<br>(0.472)     | 0.341<br>(0.884)      | 0.543<br>(0.345)     |
| Constant                         | -7.596*<br>(4.027)   | -12.047***<br>(3.017) | -8.333***<br>(1.866) |
| Observations                     | 45                   | 58                    | 70                   |
| Adj. $R^2$                       | 0.71                 | 0.76                  | 0.87                 |

Robust standard errors in parentheses, \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

Table 7: OLS cross-section regressions of foreign public capital flows (PUB) for each sub-period

|                                  | Dependent variable is log(PUB) |                      |                      |
|----------------------------------|--------------------------------|----------------------|----------------------|
|                                  | 1984-89                        | 1990-95              | 1996-2001            |
| ICRG corruption index            | -0.040<br>(0.089)              | -0.160<br>(0.118)    | -0.034<br>(0.158)    |
| log(GDP)                         | 0.441***<br>(0.121)            | 0.531***<br>(0.095)  | 0.506***<br>(0.109)  |
| log(initial GDP per capita)      | -0.558***<br>(0.151)           | -0.550***<br>(0.128) | -0.700***<br>(0.223) |
| Trade openness                   | -0.003<br>(0.007)              | -0.002<br>(0.004)    | 0.001<br>(0.003)     |
| Freedom House index              | -0.165<br>(0.110)              | -0.047<br>(0.070)    | 0.062<br>(0.085)     |
| GDP growth rate                  | 0.042<br>(0.062)               | -0.016<br>(0.042)    | -0.078<br>(0.120)    |
| Inflation rate                   | 0.001**<br>(0.000)             | -0.000<br>(0.000)    | -0.007<br>(0.007)    |
| Export growth rate               | -0.006<br>(0.023)              | -0.013<br>(0.024)    | 0.011<br>(0.019)     |
| Foreign exchange rate volatility | -3.923<br>(2.891)              | 5.024<br>(3.471)     | -0.183<br>(7.865)    |
| Colony dummy                     | 0.672**<br>(0.291)             | 0.381<br>(0.273)     | 0.131<br>(0.551)     |
| Constant                         | 13.526***<br>(2.557)           | 11.572***<br>(2.044) | 12.439***<br>(1.705) |
| Observations                     | 54                             | 60                   | 62                   |
| Adj. $R^2$                       | 0.52                           | 0.54                 | 0.35                 |

Robust standard errors in parentheses, \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

Table 8: 2SLS cross-section regressions of public capital flows (PUB) for each sub-period

|  | Dependent variable is log(PUB) |                      |                      |
|--|--------------------------------|----------------------|----------------------|
|  | 1984-89                        | 1990-95              | 1996-2001            |
| ICRG corruption index                              | 0.423*<br>(0.243)              | 0.015<br>(0.188)     | -0.113<br>(0.288)    |
| log(GDP)   | 0.410***<br>(0.117)            | 0.452***<br>(0.112)  | 0.562***<br>(0.125)  |
| log(initial GDP per capita)                        | -0.440**<br>(0.185)            | -0.445***<br>(0.130) | -0.880***<br>(0.255) |
| Trade openness                                     | -0.003<br>(0.006)              | -0.004<br>(0.004)    | 0.002<br>(0.002)     |
| Freedom House index                                | -0.094<br>(0.105)              | -0.137**<br>(0.057)  | 0.052<br>(0.062)     |
| GDP growth rate                                    | 0.106<br>(0.078)               | 0.048<br>(0.062)     | -0.255*<br>(0.143)   |
| Inflation rate                                     | 0.001**<br>(0.000)             | -0.000**<br>(0.000)  | -0.015<br>(0.010)    |
| Export growth rate                                 | -0.015<br>(0.025)              | 0.005<br>(0.031)     | 0.039*<br>(0.022)    |
| Foreign exchange rate volatility                   | -2.539<br>(3.157)              | 8.604***<br>(3.142)  | -5.754<br>(7.733)    |
| Colony dummy                                       | 0.339<br>(0.428)               | 0.576**<br>(0.277)   | 0.566**<br>(0.273)   |
| Constant   | 11.736***<br>(2.753)           | 11.929***<br>(2.105) | 12.755***<br>(1.759) |
| Observations                                       | 54                             | 55                   | 44                   |
| Overidentification test (p-value) <sup>a</sup>     | 0.51                           | 0.27                 | 0.17                 |
| Test of endogeneity of ICRG (p-value) <sup>b</sup> | 0.02                           | 0.52                 | 0.82                 |
| F-stat of the first-stage regression <sup>c</sup>  | 6.28                           | 6.47                 | 7.04                 |

Robust standard errors in parentheses, \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

The excluded instrumental variables are population, square of population, sub-Saharan country dummy, ethno-linguistic fractionalization, infant mortality rate, settler mortality rate, infant mortality times settler mortality rate and freedom house index times trade openness.

<sup>a</sup> Hansen J test. The joint null hypothesis is that the instruments are valid.

<sup>b</sup> Durbin-Wu-Hausman test. The null hypothesis is that ICRG is exogenous.

<sup>c</sup> F-test of the joint significance of the excluded instruments in the first-stage regression.