The curse of aid[1]

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Abstract: Foreign aid provides a windfall of resources to recipient countries and may result in the same rent seeking behavior as documented in the "curse of natural resources" literature. In this paper we discuss this effect and document its magnitude. Using data for 108 recipient countries in the period 1960 to 1999, we find that foreign aid has a negative impact on democracy. In particular, if the foreign aid over GDP that a country receives over a period of five years reaches the 75th percentile in the sample, then a 10-point index of democracy is reduced between 0.6 and one point, a large effect. For comparison, we also measure the effect of oil rents on political institutions. The fall in democracy if oil revenues reach the 75th percentile is smaller, (0.02). Aid is a bigger curse than oil.

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1. **Introduction**

Many studies have shown a negative correlation between economic growth and natural resources, a finding often dubbed "the curse of natural resources." However, oil and other minerals may not be the biggest curse in developing countries. In many of them, the amount of foreign aid is a far larger share of government revenues. In Burkina Faso, for example, aid accounted for two-thirds of the government budget and 8% of GDP over the period 1985-89. In Mauritania, it accounted for 60% and 22%, respectively, for the period 1980-84. In Rwanda, Vanuatu, Gambia, Niger, Tonga and Mali, foreign donors provided over a third of the government budget during some 5-year periods between 1960 and 1999. Some countries are chronically dependent on aid. Aid accounted for 40% of the government budget and 6.2% of GDP in Burkina Faso during 1960-1999. In Mauritania, for 37% and 12%, respectively.

A recent empirical literature has investigated the role of institutions on development. Mauro (1995, 1998), Knack and Keefer (1999), Hall and Jones (1999), Acemoglu et al. (2001, 2002), Easterly and Levine (2003), Dollar and Kraay (2003) and Rodrik (2004), among others, show a positive relationship between good institutions and development. The literature on political institutions and growth is less developed. Papaioannou and Siourounis (2004) find strong effects of democracy on growth. Persson (2004) shows that the form of democracy, rather than democracy versus non-democracy has important consequences for the adoption of structural policies that promote growth. Barro (1991) and Glaeser et al (forthcoming) find weaker effect of political institutions on growth.

In this paper we investigate the relationship between aid and political institutions.[2] One view of this relationship suggests that aid is needed to advance democratic institutions in developing countries. In the words of Boutros Boutros Ghali: 'We must help states to change certain mentalities and persuade them to embark on a process of structural reform. The United Nations must be able to provide them with technical assistance enabling them to adapt institutions as necessary, to educate their citizens, to train officials and to elaborate regulatory systems designed to uphold democracy and the respect for human rights." A second view holds that foreign aid could leads politicians in power to engage in rent-seeking activities in order to appropriate these resources and try to exclude

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[2] This paper is related to the recent work on aid and growth. See Easterly, Levine and Roodman (2003) for a summary of the previous literature.

other groups from the political process. By doing so political institutions are damaged because they became less democratic and less representative.

Our findings support the second view. Foreign aid damages the political institutions of the country by reducing democratic rules. The magnitudes are striking. If the average share of foreign aid over GDP in a country were 1.9% over the period 1960-1999, then the recipient country would have gone from the average level of democracy in recipient countries in the initial year to a total absence of democratic institutions. Since most foreign aid is not contingent on the democratic level of the recipient countries, there is no incentive for governments to keep a good level of checks and balances in place. The effect of oil in the long-run is less important: if the average amount of oil revenues over GDP is 12.2% over the period, then the recipient country will go from the average level of democracy in recipient countries in the initial year to a total absence of democracy.

This is not to say that promoting democracy should be the objective of foreign aid.[3] However, as argued in Collier and Dollar (2004), at a minimum donors and international agencies should abide by the Hippocratic oath: do no harm.

2. The curse of natural resources and the effect of foreign aid

The curse of natural resources has been documented in several studies. Sachs and Warner (2001) show that resource-rich countries grow slower than other countries and that this finding is robust to controlling for geography, resource abundance per capita and mineral versus agricultural resources. This corroborates previous studies, among them Sachs and Warner (1999) and Auty (1990). Some case studies also provide compelling explanation of the relationship between natural resources and civil wars (Ross 2003).

Natural resources and foreign aid share a common characteristic: they can be appropriated by corrupt politicians without having to resort to unpopular, and normally less profitable, measures like taxation. However, there is less agreement with respect to the economic impact of aid. The literature on the effect of aid on growth is mixed. Boone (1996) finds, using a sample of developing

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[3] Indeed, the constitution of the World Bank prohibits such targeting.

countries, that aid has no effect on investment or growth. Burnside and Dollar (2000) qualify this result by including the role of policies: aid has a positive effect on growth in developing countries with "good" policies while it has no effect when countries follow "poor" policies. This latter result has been challenged recently by Easterly, Levine and Roodman (2003), who find the result of Burnside and Dollar (2000) sensitive to sample size. Easterly (2003a) points out that the findings in Burnside and Dollar (2003) are also sensitive to the definition of foreign aid, policies and output per capita.[4] Easterly (2003b) makes a broader argument on why aid frequently fails.

One reason that can justify the small effect of foreign aid on growth is the generation of many rent-seeking activities. There is a large body of evidence on the rent-seeking activities generated by foreign aid. Reinikka and Svensson (2004) analyze using panel data from a unique survey of primary school in Uganda, the extent to which the foreign aid for education purposes actually reached the schools. They find that during the period 1991-1995 schools on average received only 13% of the grants received by the government. Moreover they show that other surveys in other African countries confirm that Uganda is not a special case. These results provide case studies evidence of the rent-seeking activities generated by the reception of foreign aid. In extreme cases the extent of the rent seeking activities could lead to a civil conflict. Maren (1997) provides evidence that Somalia's civil war was caused by the desire of different factions to control the large food aid that the country was receiving.

The economics literature has documented several mechanisms that can explain why sudden windfalls of resources in developing countries could lead to a decline in their growth rate. But, how about the effect of foreign aid on democracy in recipient countries? Brautigam and Knack (2004) have recently summarized some mechanisms that could explain a negative relationship between foreign aid and democracy. "High levels of aid can make it more difficult to solve the collective action problems that are inherent in reform efforts, create moral hazards for both recipients and donors, perpetuate both a "soft budget constraint" and a "tragedy of the commons" with regards to

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[4] There have also been some recent theoretical contributions. Tornell and Lane (1999) have demonstrated the so called "voracity effect": if some groups can extract transfers from the government and if there are not institutional barriers to discretionary redistribution then a sudden windfall of resources can reduce the growth rate of the economy. Svensson (2000) focuses on the deleterious effect of aid in economies with powerful social groups.

the future budget, and weaken the development of local pressures for accountability and reform". Our interest is in the last channel. A large amount of aid can reduce the incentives for democratic accountability. When revenues do not depend on the taxes raised from citizens and business, there is less incentive for accountability. At the same time corrupt government officials will try to perpetuate their rent seeking activities by reducing the likelihood of losing power.

3. Some Empirical Evidence

Traditionally the literature that analyzes the effect of foreign aid on development has used official development assistance (ODA) data. ODA measures aid flows that arrive to the recipient country in a given year, irrespective of what part, if any, has to be repaid. Data are in current US dollars.[5] Following Burnside and Dollar (2000) we use the IMF's Import Unit Value index to transform data in constant dollars and to purchasing power parity.[6] Table 1 shows the twenty most aid dependent countries in the world. The numbers indicate the average share of aid to GDP over the 1970 – 1999 period. Comoros received around 16%, Guinea-Bissau near 14%, and Mauritania more than 12%. None of these countries have oil resources.

The share of primary exports from oil over GDP is the variable most widely used as a proxy for natural resource dependence. But the data are missing in many developing countries, especially during years of civil conflict. An alternative measure of rents from oil is the barrel production per day and the price per barrel, available from British Petroleum. Prices are in current dollars and are converted into constant dollars using the IMF's Import Unit Value index, as in the case of aid. Table 1 shows the twenty most oil-revenue dependent countries in the world. Kuwait tops the list. During 1973-1999, the rents from oil in Kuwait represent 49% of GDP. Saudi Arabia (48%) and Gabon (44%) are close behind. Oil producers seldom receive aid. The exceptions are Papua New Guinea, Congo, Rep., Cameroon, Egypt, Angola and Gabon.

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[5] Whether aid should be adjusted for purchasing power parity depends on whether the funds are spent on tradable or non-tradable goods. In practice donor money is spent on both so there is equal justification for adjusting or not adjusting. We use PPP-adjusted aid but find that our results are robust to the use of non-adjusted aid.

[6] The Unit Value Import index (UVI) is the ratio between the Import Unit values and import prices. In order to have the aid data in constant dollars and in purchasing power parity we multiply by the Unit Value Import Index of 1985 for the world and then divide by the UVI index for the world of the current year. Finally, we divide the aid value by real GDP in constant 1985 prices using the Penn World Tables 5.6.

There are two sources of data on political institutions. One is the Polity IV project. Scales of democracy are created through the aggregation of authority characteristics, the procedure for recruitment of chief executives, and the centralization of government structure.[7] The variable democracy ranges from 0 to 10. For example in 1999, Sudan, China and Uganda were countries with 0 level of democracy, while Malaysia was coded with an intermediate level of 4. Uruguay and Mauritius are examples of full democracy, scoring at 10. Several examples help explain its construction. In Fiji, a 1987 military coup led by Stivenu Rabuka installed a government ruled by indigenous Melanesians. The democracy score dropped from 9 to 0. In Niger, a 1996 coup led by Colonel Mainassara ousted the elected government. The democracy score dropped from 8 to 0. In Thailand, student protests in 1992 forced the military to call depoliticize and call elections. Thailand's democracy score went from 1 to 8. In Indonesia, the authoritarian regime of General Suharto collapsed in 1998 and new elections were called the following year. Indonesia's democracy score jumped from 0 to 8.

The other source of information is the Database of Political Institutions (DPI) constructed by Keefer et al. (2001), which provides information after 1975. The variable Checks captures the number of decision makers whose agreement is necessary before policies can be changed.[8] It takes values from 1 to 9 in our sample, 1 being countries with the lowest number of key decision makers. For example in 1999 Liberia, Nigeria, Haiti and Honduras scored 1 or 2 of checks and balances. Madagascar, Kenya, Cameroon, Sierra Leone and Brazil had a score of 3, and Mexico, Ecuador, Nepal, Thailand 4 or 5. The construction of the variable is based on legislative and executive indices of electoral competitiveness and the number of the parties in the government coalition. Countries with multiple decision makers may offer greater protection of individuals and minorities from arbitrary government action. The lower the value of the variable, the higher the level of political exclusion. We alternatively use the measures of legislative and executive electoral competitiveness, also in DPI, and find that quantitatively similar results (not reported) are obtained when using these variables.

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[7] Freedom House also has a democracy variable. It is cruder, yet the correlation between the Polity and Freedom House variables during our sample period is 0.88.

[8] Another relevant set of variables on judicial checks and balances are developed in La Porta et al. (forthcoming). Unfortunately, their 71-country sample covers less than half of the countries here.

The two variables previously discussed are linked. Countries that become more democratic usually display an increase in checks and balances on the government. Among highly democratic countries, checks and balances' increases are not associated with changes in democracy.

We have a sample of 108 recipient countries. Among them 43 are sub-Saharan African countries, 29 from Latin America, and 13 from Asia. With these data in hand, we analyze what happens in the countries that receive the largest amount of aid. Table 2 ranks the 10 countries that receive the largest and least amount of aid conditional on having any institutional change during that 5-years period. On average, aid-dependent countries suffer a 2 points reduction in democracy. In contrast, the countries least dependent on aid suffer a 0.9 points reduction in democracy. These results suggest a positive correlation between aid and reduction in the democratic level of countries.

African countries are the largest recipients of foreign aid. In addition they are among the least democratic. Therefore it seems reasonable to look at the time series behavior of foreign aid and the level of democracy among these countries. Figure 1 shows a negative relationship between the annual average of aid over GDP and the level of democracy. This result is robust to calculating the average weighted by population (not shown). Figure 2 shows the partial correlation between aid and the change in democracy between 1960 and 1999 for the whole sample. The slope of this relationship is negative. Similar correlations are found when plotting the changes in checks and balances against aid flows.

In figure 3 and figure 4 we perform the same exercise but looking at oil instead of ODA. Figure 3 shows the negative relationship between the annual average of oil over GDP and the level of democracy. This result is also robust to calculating the average weighted by population (not shown). Figure 4 shows the partial correlation between oil and the change of democracy between 1960 and 1999 for the whole sample. The slope of this relationship is also negative.

4. Estimation

The descriptive statistics in the previous section indicate a negative correlation between changes in the stock of foreign aid and improvements in political institutions. Next, we investigate econometrically whether the changes in the stock of foreign aid and the rents from oil have an effect on the change of political institutions. The dependent variable we analyze is the change of institutions. In the empirical analysis we use a sample of recipient countries and data of two different periods: 1960 to 1999 when using the Polity IV database and 1977 to 1999 when using the DPI database.

We consider the several explanatory variables besides foreign aid and oil. Sudden changes in the terms of trade are shocks that can lead to social unrest and political instability. This effect is related to the reduced ability of corrupt governments to benefit from exports of natural resources. Negative shocks pressure governments to reduce democracy and checks and balances. On the other hand positive shocks imply an increase in the size of rents that can be appropriated. Finally, we control for the initial quality of political institutions. Table 3 describes the main variables used in the analysis.[9]

The literature on the determinants of democracy usually includes income as a determinant of democracy level. Our specification does not follow the literature since recent empirical work by Knack (2004) and Acemoglu, Johnson and Robinson (2005) shows that the association falls out once you control for factors that simultaneously affect income and democracy. We confirm this using our data. Another often-used control variable is primary school enrollment. Human capital is shown to be an important determinant of institutions that affect economic growth (Glaeser et al, forthcoming). In alternative specifications, we find that our results are robust to the inclusion of primary school enrollment. Finally, the legal origin of a country has been found to be an important determinant of institutional development. In particular, the legal origin of a country influences the ability of a political or economic system to change. Our results are robust to the inclusion of this variable (not reported).

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[9] Knack (2001) analyzes the effect of aid on the change on the ICRG index, but using a different specification.

As aid may flow to countries whose institutions are getting worse, we need an instrument for foreign aid. We follow Burnside and Dollar (2000) and Easterly et al. (2003) and use the logarithm of initial income, the logarithm of population and a group of variables that captures donors "strategic interests" – represented by dummy variables for sub-Saharan Africa, the Franc Zone, Egypt, and Central American countries [10]. Therefore our specification is the following:

$$\Delta INST_{it} = \boldsymbol{b}_0 + \boldsymbol{b}_1 aid_{it} + \boldsymbol{b}_2 OIL_{it} + \boldsymbol{b}_3 SHOCKS(-)_{it} + \boldsymbol{b}_4 SHOCKS(+)_{it} + \boldsymbol{b}_5 INST_{it-1} + \boldsymbol{e}_{it}$$

$$aid_{it} = \boldsymbol{g}_y y_{it-1} + \boldsymbol{f}_p p_{it-1} + z'_i \boldsymbol{g}_z + \boldsymbol{z}_{it}$$

where $\Delta INST_{it}$ is the change on institutions, aid is a measure of the change in the stock of aid received by a country measured as the net ODA (flow) over GDP, OIL is the size of rents of oil over GDP, SHOCKS(.) is the size of the absolute negative (positive) shock to the terms of trade and INST is the level of institutional development at the beginning of the period [11]. The excluded instruments are initial income in the previous period (y), the logarithm of population in the previous period (p) and the group of variables that capture donors "strategic interests" (z).

Knack (2004) and Bräutigam and Knack (2004) have also recently studied the determinants of changes in institutions and the quality of democracy. Our study is different in many respects. First, these studies consider a different sample period from ours. Knack (2004) considers a cross section of changes of the Freedom House index from 1975 to 2000. Bräutigam and Knack (2004) work with a cross section of African countries from 1982 to 1997. In addition our basic result is obtained from a panel of 5 years periods instead of a single cross-section. Second, we only include in the specification sources of a sudden windfall of resources (aid, oil and shocks to the terms of trade) that may generate an institutional change in order to increase the chances of the groups in power to control these resources. Knack (2004) includes aid together with income and other indicators of the level of development of a country (for instance illiteracy). These variables are included in levels

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[10] In their study of the effect of foreign aid on growth Burnside and Dollar (2000) also include as additional instruments the ratio of arms imports over imports and a policy index.

[11] The specification can be interpreted as regressing changes on changes. Aid is the net change in the stock of foreign aid over GDP; Oil is the annual rents from oil over GDP and the shocks are, by definition, changes in the levels.

and first differences but turn out to be not significantly different from 0.[12] Third, our source for the data on foreign aid is also different. We use ODA from the OECD and we transform it into constant dollars and PPP, following Burnside and Dollar, and we do the ratio over real GDP in constant 1985 prices using Penn World Tables. Knack (2004) uses aid over GDP from the World Development Indicators. Moreover, we compare the effect of ODA with the effect of rents from oil using the production and price information from British petroleum. Finally, the instruments are not the same as the ones used in Knack (2004).

We present the results using IV estimation. The F test for excluded instruments is large (F= 47.07) and above usual thresholds which implies that the instruments are not weak. The same conclusion can be drawn from the partial R^2 statistic [13] (0.41). The column 1 in table 4 presents the results of the IV estimation. Notice that it is quite likely that there is intra-group correlation. Under this circumstance IV estimators are still consistent but the usual standard deviation will not be consistent. For this reason in column 1 we present the z-statistics obtained using a cluster-robust standard deviation. The results show that foreign aid and rents of oil have a negative and statistically significant effect on the changes of the democratic stance of a country. The coefficient on the past level of democracy is negative and significantly different from 0. The Durbin test rejects the hypothesis that foreign aid is exogenous and, therefore, IV estimation is recommended. This result is different from the findings in Burnside and Dollar (2000) who find foreign aid to be exogenous in their set up[14]. Finally Sargan's test of over-identification shows that the chosen instruments are appropriate.

Column 1 in table 4 indicates that the more aid a country received the worse its political institutions get[15]. If the average amount of aid over GDP that a country receives over a period of five years reaches the 75th percentile then the index of democracy is reduced by more than half a point (0.60). By contrast, if aid over GDP reaches the 25th percentile then the reduction in the index of

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[12] We avoid using income as an explanatory variable because most of its content is not related with windfall of resources that could be easily expropriated. If we include income per capita as an additional regressor it is insignificantly different from 0 as in Knack (2004).

[13] Shea (1997).

[14] The found that foreign aid was endogenous only in the sample of lower-income countries.

[15] We performed the same analysis using the mean of aid flows of the previous five years. The results are robust when using this specification.

democracy is a modest 0.07 points. Countries in the 75th percentile are, for example, Bolivia, Chad, Senegal, Central African Republic and Haiti. Countries in the 25th percentile are, for example, Chile, Turkey, Ecuador and Malaysia. The effect of oil revenues is smaller. If the average oil revenues over GDP over a period of five years reaches the 75th percentile then the index of democracy is reduced by 0.02 points. If it reaches the 25th percentile then the reduction in democracy is zero.

However, IV estimators under heteroskedasticity may not be efficient. For this reason column 2 presents the results of the estimation using the generalized method of moments (GMM). The estimators are similar to the ones shown in column 1: foreign aid and rents of oil have a negative and significant coefficient while the shocks to the terms of trade have an insignificant effect. The J test of over-identification cannot reject the null hypothesis that the instruments satisfy the orthogonality conditions. We can also calculate a GMM estimator assuming the presence of arbitrary intra-cluster correlation (column 3). The results are also similar to the ones reported in column 1. In addition the J test confirms that the instruments pass the test of over-identification. There are two particular instruments (population and GDP per capita) that we should consider specially. For this reason the last rows of column 3 contains the test for the validity of these two instruments. In both cases the test of the difference of J shows that the orthogonality conditions generated by those instruments are valid.

Another issue that may be important is the inclusion in the regression of population and GDP per capita. The population of a country is a measure of the capacity of the government to tax. Mulligan and Shleifer (2003) show that the size of the population is an important determinant of whether and how many activities are regulated. This effect may have an influence on the quality of democratic institutions. We think that only resources that are easy to expropriate should be included in the regression. But income and population are bad proxies since tax revenue in developing countries is low. In addition the inclusion of the initial level of democracy seems to be enough to proxy the initial level of development.

Despite these arguments we analyze in table 5 the robustness of the previous results to considering these variables as instruments included in the main regression. Columns 1 and 2 of table 5 report

the results of the IV estimator with cluster robust standard deviations. In both cases the coefficients for foreign aid and rents of oil are negative and statistically significant while the included instrument (population and GDP per capita) turn out to be insignificant. The test rejects the exogeneity of foreign aid. In addition the tests of over-identification cannot reject the exogeneity of the excluded instruments. Columns 3 and 4 present the results of the GMM estimation. The parameter estimates are similar to the ones obtained using the IV estimator. The estimates in column 4 indicates that if the average amount of aid over GDP that a country receives over a period of five years reaches the 75th percentile then the index of democracy is reduced by almost one point (0.95). By contrast, if aid over GDP reaches the 25th percentile then the reduction in the index of democracy is only 0.11 points.

When population is included in the regression (columns 2 and 4 of table 5) the estimated coefficient on foreign aid is larger than the ones in table 4. The opposite happens when income per capita becomes an included exogenous variable in the regression. The estimates in table 3 are in between. The largest difference in the estimated parameters in columns 1 and 2 versus 3 and 4 is associated with the new instruments. However, the parameters of these regressors are statistically insignificant in all the estimations. The J test confirms the validity of the excluded instruments in columns 3 and 4 while the differences of J test point out to the exogeneity of population and GDP per capita. Therefore, population and GDP per capita have a role to play as excluded instruments but they do not seem to belong to the main regression.

To test the robustness of the findings with five-year periods, table 6 presents the results of different estimation procedures using a cross section of countries for the period 1960-99. We first used IV regression using as instruments the ones consider previously. The results show that foreign aid has a negative effect on democracy which is much stronger than the effect of the rents of oil. The specification test show that the F statistic for the excluded instruments is over the usual threshold (F=10). The over-identification test points out that the instruments are valid at the usual level of significance. However, the Durbin test indicates that we cannot reject the null hypothesis that foreign aid is exogenous. Therefore we present the estimation using OLS and ordered probit. As in previous tables, foreign aid, rents of oil and the initial level of democracy have a negative and

significant coefficient. Column 2 presents the estimation of an ordered probit specification. As in the OLS case foreign aid and the rents of oil have a negative and significant coefficient.

The effect of aid over GDP in the long run is large: if the average amount of aid over GDP is 1.9% over the period, then the recipient country will go from the average level of democracy in recipient countries in the initial year to a total absence of democracy. The effect of oil in the long-run is far smaller: if the average amount of oil revenue over GDP is 12.2% over the period, then the recipient country will go from the average level of democracy of the recipient countries in the initial year to a total absence of democracy.[16]

Our sample includes countries like Singapore, which started poor but grew rich by the end of the sample period. We test whether the results are robust if these countries are left out. We follow the standard World Bank definition for upper middle-income countries, i.e., countries with annual income per capita larger than $2,935 in 2001. All results are robust if we exclude these countries from the analysis. We also test whether our results are robust to the exclusion of a small number of influential observations. In particular, we re-run the regressions when deleting the top 1% and 5% of observations in terms of the main explanatory variable – foreign aid or oil revenues. The effect remains similar. For example, re-running equation 1 in Table 5 without the top 5% observations yields a coefficient of –0.22 and t-statistics of 3.38, as compared to –0.16 and 3.29, respectively.

We do the same analysis using checks and balances from DPI instead of democracy from Polity IV, for the 5-years period (table 7) and cross-section of countries (table 8). In the five-years period the F test for excluded instruments is large, (F(6,448)=47.07). Moreover, the Durbin test shown in table 7 rejects the hypothesis that foreign aid is exogenous, and therefore IV estimation is recommended, as when using democracy data. In column 1 of table 7 we present the results using IV estimation. As explained before it is likely that there is intra-group correlation, therefore we present the z-statistics obtained using cluster-robust standard deviation. The results show that foreign aid has a negative and statistically significant effect on the changes on checks and balances of a country.

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[16] However, the instrumental variables approach does not take into account the fact that the democracy indicator cannot take values smaller than 0. Yet some countries that had a low democracy score in the initial year had a high proportion of oil over GDP, as shown in Table 1.

However, the effect of rents of oil is not statistically significant. As before, initial level of institutional development, in this case of checks and balances, is negative and significantly different from zero. Finally Sargan's test of over-identification shows that the chosen instruments seem to be appropriate.

Given that IV results under heteroskedasticity will not be efficient, we present the results of the estimation using the generalized method of moments, column 2 of table 7. The results are similar: flows of aid have a negative and significant effect of the changes on checks and balances, and rents of oil are insignificant. The J test of over-identification cannot reject the null hypothesis that the instruments satisfy the orthogonality conditions. In column 3 we present the results of the GMM estimations assuming the presence of arbitrary intra-cluster correlation. The results again are similar, and the J test of over-identification confirms that the instruments are valid.

Table 8 presents the results using a cross-section of countries for the period 1977-99. Results of Durbin test for IV estimation in cross-section of countries indicates that we cannot reject the hypothesis that foreign aid is exogenous, and IV estimation is not recommended. Therefore we present the results using OLS and ordered probit specification. As before, flows of foreign aid have a negative and significant effect on the change on checks and balances, while rents of oil do not have any effect on the change of checks and balances.

5. Robustness

We do several robustness tests to ensure that the results discussed before are not altered by reasonable changes in specification or the use of other proxy for institutional development.

Since changes of institutions are regressed on lagged institutions, the previous estimation of the five year periods may be inconsistent because of the correlation between the individual specific effect and the lagged endogenous variable. In order to address this issue we use the Arellano Bond estimator. Table 9 present the results. In column 1 we use the change of democracy, and we include the usual excluded instruments for the estimation. The results show that flows of aid have a negative and significant effect on the change of democracy of a country, while rents of oil have no

statistically significant effect[17]. The Arellano and Bond method generates many valid instruments without the need to search for additional ones. Therefore in column 2 we present the results without our usual excluded instruments. Results as before indicate that flows of aid have a negative and statistically significant effect on the change of democracy. The effect of rents of oil is not statistically significant. In column 3 and 4, we do the same analysis but using the change on checks and balances. In column 3 we include our usual excluded instruments, and in column 4 we use the valid instrument generated by Arellano and Bond procedure. When using this instrument, the results indicate that aid has a statistically negative effect on the change in checks and balances.

Second, we test the sensitivity of the results to the chosen time period. The negative effect of aid on changes in democracy maintains if the sample starts alternatively in 1965, 1970, or 1975 (not shown). The size of the parameter is smaller than the one obtained for the whole sample but the statistical and economic significance are maintained. The coefficient on oil revenues is also statistically significant and negative as in previous tables. We also run the regressions by decade (four ten-years periods) and we cut the sample into two periods. Finally, we use only post-Cold War data (data in the last decade – 1989-1999). The results are robust to changing the period length.

Third, we use alternative data on institutions. Using the democracy index from Freedom House and the composite index from ICRG, as in Keefer and Knack (1999), we find near-identical results.

Fourth, we test for sensitivity of the results conditional on working with the sample of countries that have had a change in the level of democracy in the previous period for the 5 years data or in the cross-section. We perform the same analysis as before but considering only the countries, years and periods in which institutions changed. The results of the analysis are summarized in Table 10. The rows indicate the frequency of the data (5-year panels or cross-section). In the cross-section, we include different starting years, 1960, 1965, 1970, and 1975. We use IV and standard errors corrected by clusters when using the 5-years specification, and OLS when using cross-section of countries specification. The columns indicate which institutional variable is used as the dependent

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[17] The standard errors in table 9 have been calculated using the finite sample correction proposed by Windmeijer (2005).

variable. The numbers of the table are the coefficient of foreign aid and the t-statistic. The results indicate that democracy and checks and balances fall with increased aid flows.

Fifth, we check whether results come from countries scoring below the average on democracy at the beginning of the period. We run the regressions for countries scoring above the average on democracy, and we find qualitatively the same results. This indicates that countries with good democratic institutions are not immune to the "curse of aid".

Finally, we test whether aid has a positive effect on economic institutions. As many aid programs are explicitly targeted on such improvements, a positive result may provide some solace to donors. Using various indicators from Djankov et al (2002, 2003) and Djankov, McLiesh, and Shleifer (2005), we find that higher aid flows affect adversely economic institutions as well. In particular, countries that have received more aid during the sample period have more burdensome procedures for new business start-ups, less efficient courts, and fewer protections of creditors at the end of the sample period. These results echo the examples in Easterly (2003b) of how enormous demands on scarce administrative skills in poor countries often lead to little benefit.

6. Conclusions

Recently a United Nations proposal for a doubling in foreign aid in order to generate a "big push" in development has been put forward (UN, 2005). The results described in the previous literature suggest that more money will likely generate little growth. Instead, stronger incentives for rent seeking may reduce the quality of democratic institutions and the checks and balances in the governments of recipient countries.

Using data on over one hundred countries and for over forty years, this study quantifies the effects of aid on democracy. Being dependent on foreign aid seems to result in worsening democratic institutions. This effect is akin to the "curse of oil" effect established in previous work. We provide new evidence for the relative size of the curse of aid and the curse of oil on political institutions. The comparison is instructive as it highlights how little is known about the delivery of foreign aid, despite an estimated \$2.3 trillion spent on aid in the second half of the 20th century. The specific

mechanism why foreign aid has a negative effect on political institutions needs to be further investigated.

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Figure 1: Tracking Aid and Democracy in Africa
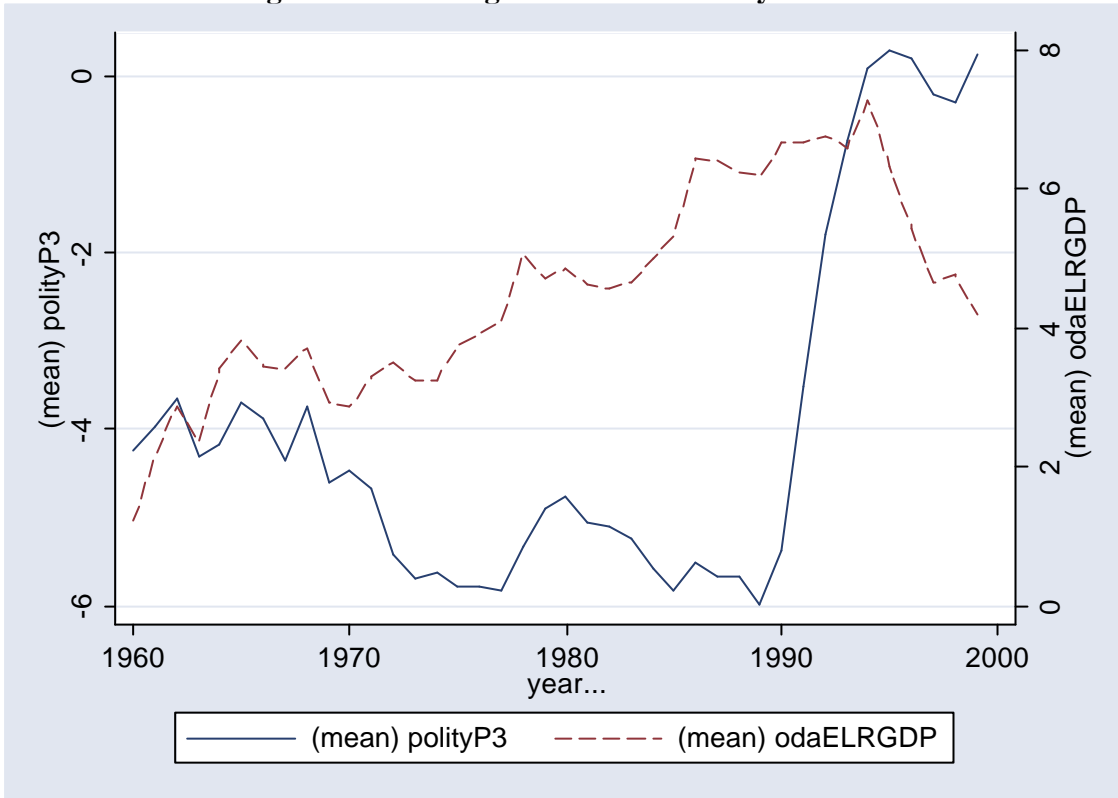
Figure 2: Partial Correlation of Aid and Democracy Change

coef = -.95957362, se = .20998279, t = -4.57
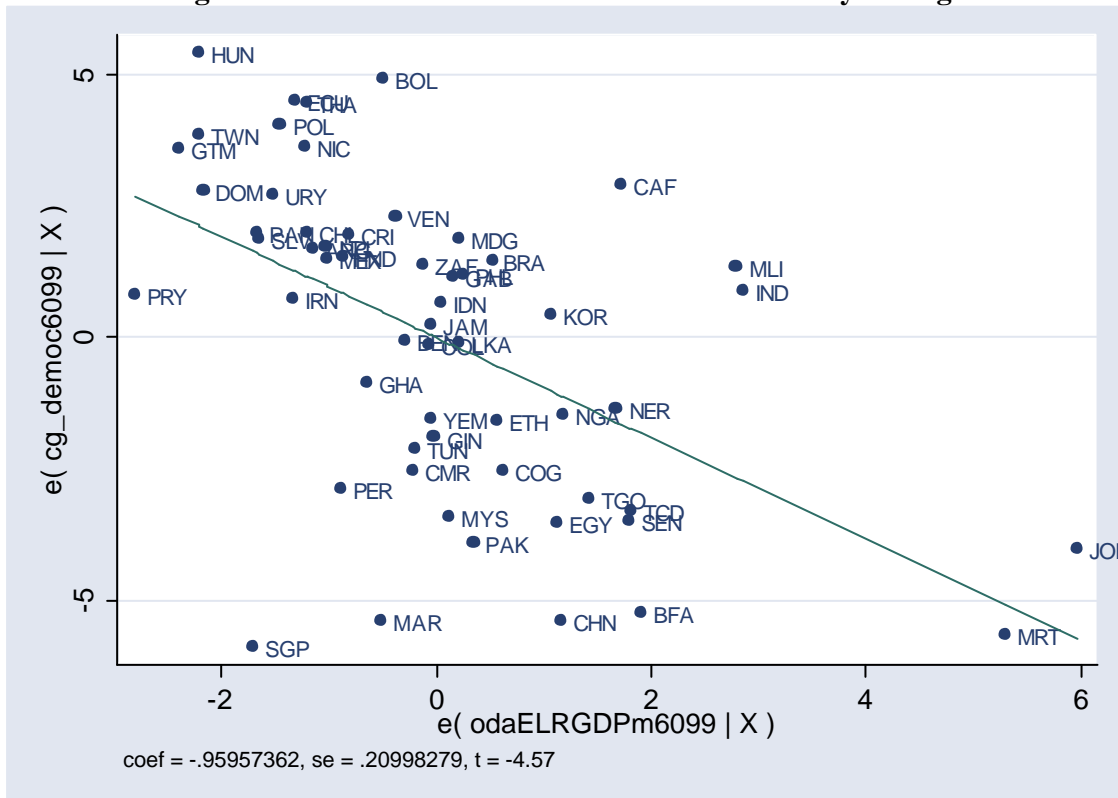
Figure 3: Tracking Oil and Democracy in Africa
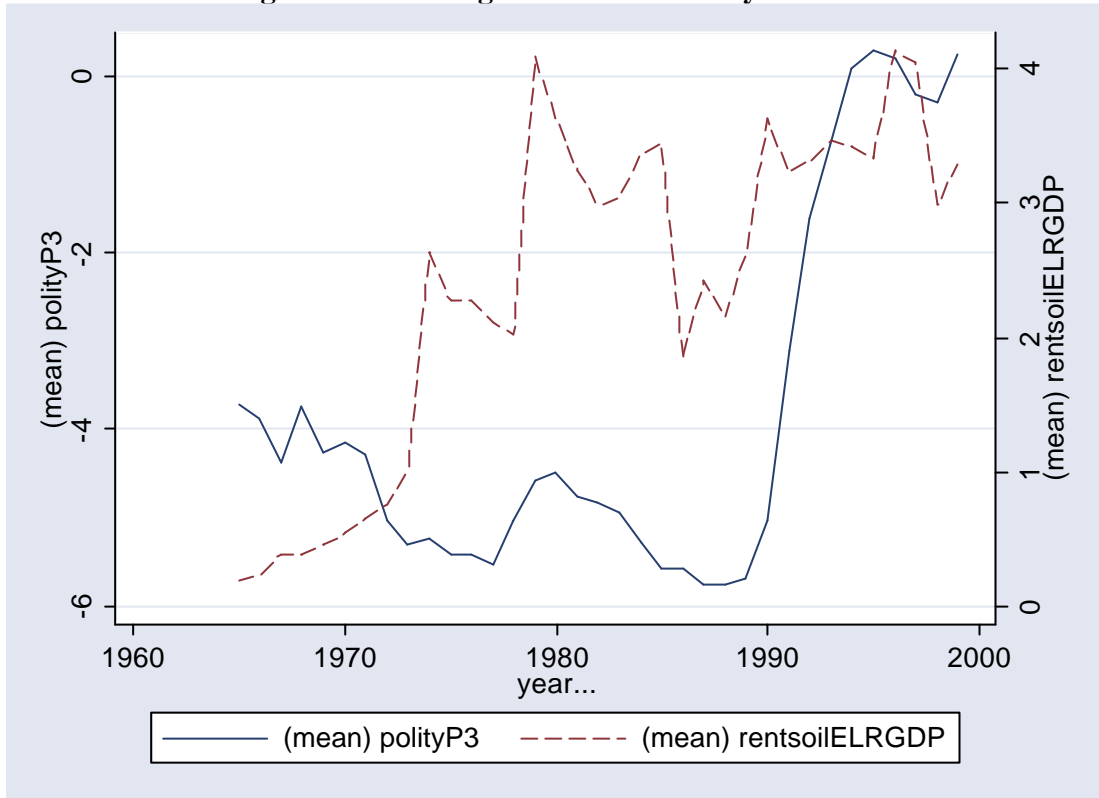
Figure 4: Partial Correlation of Oil and Democracy Change

coef = -.19697042, se = .06860294, t = -2.87

22
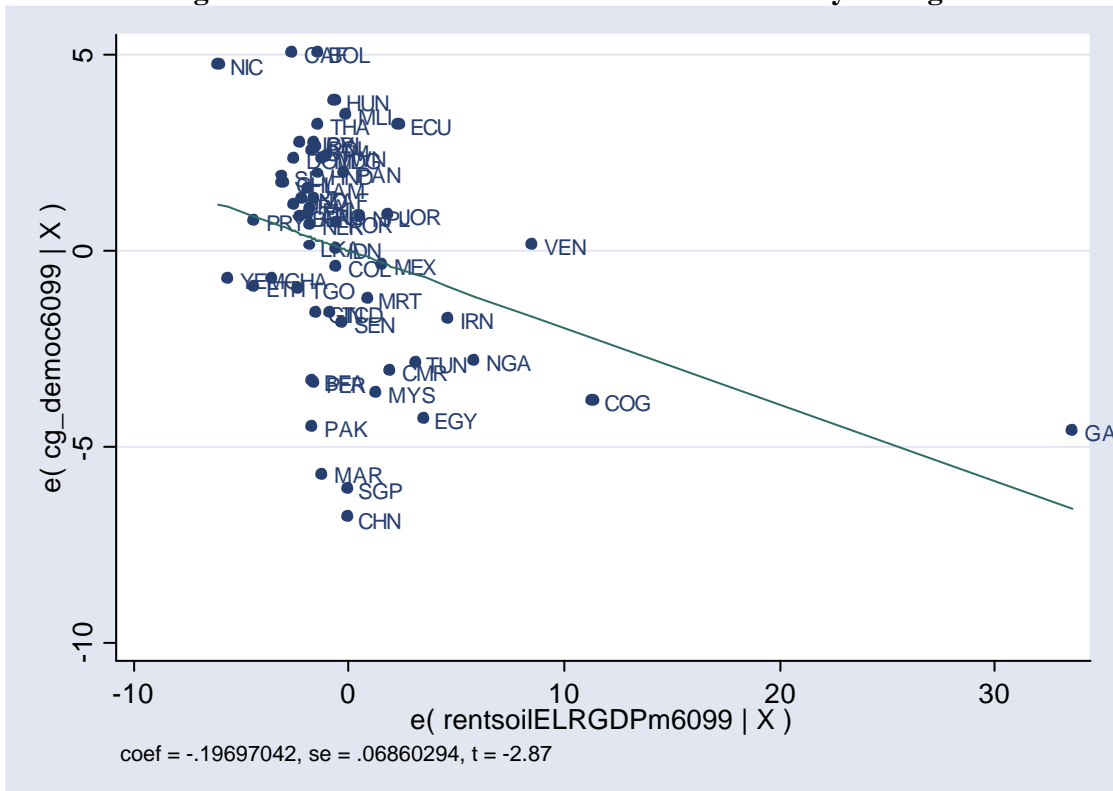
Table 1: The 20 most aid or oil-dependent countries

Country	Aid over GDP	Country	Oil revenue over GDP
Comoros	16.1	Kuwait	49.5
Guinea-Bissau	13.9	Saudi Arabia	48.2
Mauritania	12.3	Gabon	44.6
Chad	8.1	Angola	38.5
Gambia, The	8.1	Oman	35.6
Zambia	8.0	Iraq	22.6
Central Afr. Rep.	7.2	Congo, Rep.	19.5
Mali	7.1	Algeria	15.5
Somalia	7.0	Venezuela	14.4
Jordan	7.0	Nigeria	12.9
Niger	6.2	Iran, Islamic Rep.	12.2
Burkina Faso	6.2	Trinidad and Tobago	11.5
Malawi	6.1	Ecuador	7.1
Lesotho	6.1	Papua New Guinea	7.1
Tanzania	5.9	Egypt, Arab Rep.	6.2
Togo	5.9	Cameroon	6.1
Nicaragua	5.8	Mexico	4.4
Senegal	5.3	Syrian Arab Rep.	4.4
Burundi	5.2	Indonesia	4.4
Rwanda	5.1	Malaysia	4.2

Note: ODA over GDP is the average annual share of GDP during 1970-1999. Oil revenue over GDP is the average annual share of GDP during 1973-1999.

Table 2: Top and Bottom 10 Recipients of Aid and Changes in Institutions

Country	Oda	Democracy lag	?Democ
Zambia, 1996	29.52	6	-3
Comoros, 1999	14.30	5	-4
Gambia, The, 1990	11.99	7	1
Nicaragua, 1995	10.33	6	2
Gambia, The, 1994	9.34	8	-8
Lesotho, 1970	9.04	9	-9
Botswana, 1971	8.89	7	2
Madagascar, 1998	8.84	8	-1
Jordan, 1992	8.05	1	1
Mali, 1997	7.78	7	-1
Venezuela, 1992	0.017	9	-1
Venezuela, 1999	0.025	8	-1
Argentina, 1976	0.025	6	-6
Brazil, 1985	0.031	2	5
Argentina, 1999	0.032	7	1
Mexico, 1988	0.034	1	1
Mexico, 1997	0.041	4	2
Brazil, 1988	0.043	7	1
Trini. Tobago, 1984	0.044	8	1
Malaysia, 1995	0.044	5	-1

Table 3: Variables

Oda: Share of ODA over GDP. ODA comes from OECD database. ODA is converted to 1985 dollars with World Import Unit Value index from IMF 2002, series 75. GDP comes from PWT5.6. We update GDP using GDNGD.

Oil: Share of rents from oil over GDP. Rents from oil comes from British Petroleum database. We compute barrels per years and multiply by the barrel price. Rents of oil are concerted to 1985 dollars with World Import Unit Value index from IMF 2002, series75. GDP comes from PWT5.6. We update GDP using GDNGD.

Lpop: log of the population at the beginning of the period from the Penn World Tables 5.6. Updated with the data of the Global Development Network Growth Database.

Sh_tot_neg: mean absolute value of the negative growth rate of the terms of trade over a five-years period. Terms of trade shows the national accounts exports price index divided by the imports price index, with 1995 equal to 100. Data comes from GDF, The World Bank.

Sh_tot_pos : mean value of the positive growth rate of the terms of trade over a five-years period. Terms of trade shows the national accounts exports price index divided by the imports price index, with 1995 equal to 100. Data comes from GDF, The world Bank.

? Democ: Change in the degree of democracy between period t and t-1. Democracy variable comes from Polity IV database.

Democ (t-1): Degree of democraticy at the beginning of the period.

?Checks: Checks at period t minus checks at t-1. The variable checks and balances comes from Database of Political Institutions 2002.

Table 4: 2SLS (5-year periods)
Endogenous variable: ?Democ

	IV (cluster robust)	GMM	GMM (cluster robust)
	(1)	(2)	(3)
Oda t	-0.16	-0.14	-0.16
	(-3.29)	(-2.55)	(-3.40)
Oilrents t	-0.02	-0.01	-0.02
	(-2.24)	(-1.21)	(-2.31)
Sh_tot_neg t	-0.02	-0.02	-0.01
	(-0.88)	(-0.80)	(-0.68)
Sh_tot_pos t	0.002	0.002	0.0006
	(0.08)	(0.14)	(0.04)
Democ (t-1)	-0.22	-0.19	-0.20
	(-7.49)	(-6.33)	(-5.42)
Durbin test H0 : oda exogenous	$?^2(1)=14.12$ P=0.00		
Sargan test for overidentification	$?^2(5)=3.42$ P=0.63		
Hansen J test		$?^2(5)=8.12$ p=0.15	$?^2(5)=3.74$ p=0.58
dif J (Lpop)			$?^2(1)=0.27$ p=0.60
dif J (Lgdp)			$?^2(1)=0.41$ p=0.51
N	459	459	459

Note: The subindex t-1 refers to the previous five-years period.

Table 5: Robustness to the inclusion of excluded instruments
2SLS (5-year periods)
Endogenous variable: ?Democ

	IV (cluster robust)	IV (cluster robust)	GMM (cluster robust)	GMM (cluster robust)
	(1)	(2)	(3)	(4)
Oda t	-0.11	-0.24	-0.12	-0.26
	(-1.81)	(-2.84)	(-2.05)	(-3.18)
Oilrents t	-0.02	-0.03	-0.02	-0.03
	(-2.51)	(-2.60)	(-2.62)	(-2.94)
Sh_tot_neg t	-0.02	-0.02	-0.02	-0.02
	(-0.91)	(-0.83)	(-0.82)	(-0.76)
Sh_tot_pos t	0.004	0.007	0.003	0.006
	(0.29)	(0.42)	(0.22)	(0.36)
Democ (t-1)	-0.23	-0.24	-0.22	-0.24
	(-5.45)	(-5.15)	(-5.39)	(-5.35)
Lgdp (t-1)	0.17		0.13	
	(1.13)		(0.94)	
Lpop (t-1)		-0.14		-0.17
		(-1.48)		(-1.64)
Durbin test H0 : oda exogenous	$?^2(1)=6.92$ p=0.00	$?^2(1)=15.66$ p=0.00		
Sargan test for overidentification	$?^2(4)=1.98$ p=0.73	$?^2(4)=1.07$ p=0.89		
Hansen J test			$?^2(4)=3.19$ p=0.52	$?^2(4)=1.94$ p=0.74
dif J			$?^2(1)=0.88$ p=0.34	$?^2(1)=0.67$ p=0.41
N	459	459	459	459

Note: The subindex t-1 refers to the previous five-years period.

Table 6: Cross section (1960-99)
Endogenous variable: ?Democ

	OLS	Ord. Prob
	(1)	(3)
Oda t	-0.67	-0.26
	(-3.65)	(-3.68)
Oilrents t	-0.19	-0.07
	(-2.87)	(-2.72)
Sh_tot_neg t	-0.44	-0.13
	(-1.73)	(-1.46)
Sh_tot_pos t	0.43	0.12
	(1.54)	(1.19)
Initial Democ	-0.83	-0.32
	(-7.01)	(-5.96)
R^2	0.54	0.1493
N	57	57

Table 7: 2SLS (5-year periods)
Endogenous variable: ?checks

	IV (cluster robust)	GMM	GMM (cluster robust)
	(1)	(2)	(3)
Oda t	-0.09	-0.08	-0.08
	(-2.89)	(-3.31)	(-3.49)
Oilrents t	-0.007	-0.005	-0.006
	(-1.42)	(-0.71)	(-1.35)
Sh_tot_neg t	-1.72	-1.71	-1.60
	(-1.30)	(-1.45)	(-1.27)
Sh_tot_pos t	-0.32	-0.33	-0.64
	(-0.20)	(-0.22)	(-0.44)
Checks(t-1)	-0.35	-0.37	-0.37
	(-5.56)	(-6.56)	(-6.45)
Durbin test H0 : oda exogenous	$\chi^2(1)=14.22$ P=0.00		
Sargan test for overidentification	$\chi^2(5)=1.051$ P=0.95		
Hansen J test		$\chi^2(5)=1.23$ p=0.94	$\chi^2(5)=2.04$ p=0.84
dif J (Lpop)			$\chi^2(1)=0.78$ p=0.37
dif J (Lgdp)			$\chi^2(1)=0.33$ p=0.56
N	356	356	356

Note: The subindex t-1 refers to the previous five-years period.

Table 8: Cross section (1977-99)
Endogenous variable: ?Checks

	OLS	Ord. Prob
	(2)	(3)
Oda t	-0.11	-0.09
	(-2.01)	(-2.63)
Oilrents t	-0.022	-0.01
	(-0.82)	(-1.01)
Sh_tot_neg t	0.04	0.04
	(0.33)	(0.50)
Sh_tot_pos t	-0.14	-0.13
	(-1.07)	(-1.57)
Initial Checks	-0.65	-0.75
	(-3.76)	(-5.25)
R^2	0.1331	0.1391
N	73	73

Table 9: Arellano Bond (5-year periods)
Endogenous variable: ?Democ ?Checks

	GMM	GMM	GMM	GMM
	?Democ	?Democ	?Checks	?Checks
	(1)	(2)	(1)	(2)
Oda t	-0.14	-0.16	-0.10	-0.16
	(-4.79)	(-4.71)	(-1.65)	(-2.40)
Oilrents t	-0.00	-0.00	0.06	0.06
	(-0.47)	(-0.08)	(2.55)	(1.94)
Sh_tot_neg t	-1.05	-1.09	-3.15	-3.34
	(-1.03)	(-0.91)	(-2.82)	(-2.20)
Sh_tot_pos t	0.07	0.55	-1.43	-1.11
	(0.08)	(0.51)	(-0.96)	(-0.68)
Initial Democ	0.53	0.58		
	(17.11)	(15.21)		
Initial Checks			0.58	0.49
			(4.83)	(3.11)
constant	0.32	0.32	0.22	0.21
	(10.73)	(10.5)	(4.58)	(3.88)
Sargan test for	$\chi^2(46)=52$	$\chi^2(40)=48.45$	$\chi^2(46)=32.47$	$\chi^2(40)=23.31$
overidentification	P=0.25	p=0.16	P=0.14	p=0.2239
m_2	0.88	0.91	0.14	0.06
	P=0.37	p=0.36	P=0.89	p=0.9492
R^2				
N	365	372	215	219

Table 10: Robust analysis: 2sls estimation

	? Democ	? Checks
5years (IV cluster)	-0.28 (-1.85)	-0.212 (-3.00)
Cross6099 (OLS)	-0.79 (-4.60)	
Cross6599 (OLS)	-0.79 (-4.25)	
Cross7099 (OLS)	-0.72 (-4.07)	
Cross7599 (OLS)	-0.45 (-3.54)	
Cross7799 (OLS)		-0.14 (-1.49)