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**On the potential of foreign aid to protect democracy
against instability from trade**

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Abstract

In this paper, we examine the effects of a major source of instability, namely terms of trade instability on the quality of democracy, and we investigate whether foreign aid can dampen them. We take advantage of previous empirical findings explaining the role of aid in mitigating the adverse effects of external shocks, and argue that in the long term, aggregate aid flows can potentially dampen the effects of terms of trade instability on democracy. An empirical investigation with data from 71 developing countries over the period 1980-2003 provides supportive results. Moreover, the data suggest that terms of trade instability affects democracy through income instability.

Keywords: *democracy, foreign aid, terms of trade instability.*

JEL Classification numbers: *F35, F4, O11, O43*

1. Introduction

The positive role of institutions on development has been widely assessed and confirmed; institutions cause fundamentally economic growth and development (North, 1990, Hall and Jones, 1999, Acemoglu, Johnson and Robinson, 2001; Rodrik and al., 2004). The obvious next question for some scholars has naturally been to know how countries acquire good institutions. Rodrik (2000) has explained that countries face two strategies to optimise their institutions: copying well-functioning institutions from advanced countries (with a risk of failure, since the effectiveness of institutions is highly specific to local conditions), or taking advantage of local knowledge and engage in an experimentation process of institutional designs. But from another policy point of view, one can propose another formulation of strategies: still following Rodrik (2000), a first strategy could suggest that countries invest directly their resources in institutional improvement (through experimentation or copying from abroad) [which can be costly for their current economic performance], while a second strategy could suggest that instead of focusing directly on institutions, countries give preference to an indirect way of institutional building. They can do so by investing their resources on some determining factors of the emergence of good institutions, such as economic performance. As we will discuss in the next section, growth stability matters for institutional building and external assistance can be given a role, which is the purpose of this research. As a matter of fact, recent studies on aid effectiveness have highlighted macroeconomic instability as a factor of aid effectiveness. Guillaumont and Chauvet (2001), Chauvet and Guillaumont (2004, 2007), Collier and Dehn (2001) and Collier and Goderis (2007) have shown that aid, by protecting growth against the negative effects of shocks, is more effective in vulnerable countries. The core assumption of our paper is based on these findings and can be

formulated as follows: if one accepts that a stable growth is good for institutional building and that aid can make growth more stable by protecting it against shocks, one can therefore expect a positive effect of aid on institutions in countries exposed to these shocks. The question this research answers is important since reducing the adverse effects of macroeconomic instability has become a great challenge for developing countries. We focus in this research on democracy, as measured by synthetic indexes. As a matter of fact, democracy is considered as a meta institution which help to build better institutions, help societies to select good economic institutions from the available menu of them, and deliver higher-quality growth (more stable, better redistributed, more predictable) (Rodrik, 1997, 2000). Democracy has also gained importance with the worldwide diffusion of its ideology, which has induced a great deal of pressure for the underdeveloped world to adopt democratic forms of governments. We also focus in this research on terms of trade instability as a source of instability, since most of developing countries rely on the export sector of primary products and are dependent of world markets, making them particularly sensitive to terms of trade fluctuations. Moreover, the exogenous character of terms of trade fluctuations we can assume with the data we use¹ provides some technical benefits in the econometric estimations. We empirically test successfully that terms of trade instability is a source of income instability, which have negative effects on democracy, and that aid has a positive effect on the quality of democracy conditional on this instability. We explain that this is probably due to the ‘growth stabilising’ effect of aid shown in previous studies. We use panel data from 71 developing and emerging countries² over the period 1980-2003 (pooled in two twelve-years periods) and we find evidence that aid mitigates the adverse effects of term of trade

¹ We discuss this argument in section 5.3

instability on democracy. The effect of aid on institutions conditional on instability is assessed through an interactive variable equal to the product of aid and terms of trade instability. We also use instrumental variables to isolate the exogenous variation in aid flows. The rest of the paper proceeds as follows: section 2 discusses how terms of trade instability can lower democracy through income instability; section 3 briefly gives an overview of the debated institutional impacts of aid. Section 4 explains how aid may have a positive impact on democracy conditional on terms of trade instability. Section 5 provides the empirical evaluation, and section 6 concludes. The appendix contains further information on the construction of the democracy indexes we use and the other variables.

2. Why instability is detrimental for democracy? Some theoretical arguments

Relatively few academic works deal explicitly with issues about causal relationships between macroeconomic instability (or its determining factors) and the quality of institutions. One interest of this paper is to explain how macroeconomic instability (more precisely terms of trade instability) can affect the quality of democracy. However, the well-known papers in the literature about macroeconomic instability and institutions has been interested in the reverse causation, that is the institutional causes of instability. Rodrik (1999) has explained that countries with weak institutions of conflicts management and where it exists latent social conflicts are more likely to experience severe external shocks. The core idea of his argumentation is that shocks (more precisely negative terms of trade shocks), by reducing wealths to be redistributed, weaken growth stability because of redistribution conflicts when there are no rules to manage them. So,

² See the complete list in appendix 2

by concluding from this idea, good institutions of conflicts management (democratic institutions, rule of law, good social insurance system, and so forth.) can mitigate the impacts of shocks on growth. Acemoglu and al. (2003) have also explained that macroeconomic volatility is deeply determined by weak institutions rather than distortionary macroeconomic policies. Countries characterized by weak institutions are more likely to experience macroeconomic instability because of weak constraints on the executive (that favor bad resources redistribution and distortionary policies), lack of entrepreneur's confidence (which causes investment instability), and weak security of contracts. Democratic institutions have also proved to have direct effects on macroeconomic stability, making that countries leaded by democratic regimes experience greater macroeconomic stability than non-democratic countries (Weede, 1996; Rodrik, 1997; Quinn and Woolley, 2001; Almeida and Ferreira, 2002; Mobarak, 2005). Yang (2008) has also examined the causal relationship between democracy and growth volatility, and has shown that democratic institutions lower the volatility of real GDP per capita growth in ethnically divided countries.

However, the reverse idea that is institutions can be affected by instability is also very important for policy implications, and concerns this research. We are interested in this paper in knowing how can terms of trade instability affect the quality of democracy. Our main theoretical reasoning is that a term of trade instability affects negatively democracy by generating income instability (Easterly and Kraay, 2000) and in turn, by lowering growth (Mobarak, 2005), which has been proved to be unfavourable to democratic processes. Academic works interested in the economic determinants of democracy have highlighted the level of development as one of the main determinants (Lipset, 1959, Helliwell, 1994). Nonetheless, while most of them have established a positive effect of

the level of growth on democracy, very few of them have discussed the quality of growth, and more specifically its stability (although the both can be closely related). We support the view that terms of trade instability causes (ceteris paribus) growth instability, which in turn, weakens democracy. As a matter of fact, growth instability can have an effect on the quality of democracy through (income) growth volatility in various ways. The first argument is that macroeconomic volatility is costly for growth and development, which are important determinants of democracy. Indeed, development, which is favourable to the emergence of good political institutions, requires sustained increases in income. The influential work of Ramey and Ramey (1995)³ using a sample of 92 countries has shown that countries with higher volatility have lower growth rates. But more interestingly, Mendoza (1997) has shown that volatility associated with terms of trade fluctuations could lead to slower growth (depending on the degree of risk aversion). Since we know that democratic institutions are evolving slowly and that their establishment and their reinforcement require financial resources (resources for organising democratic elections, resources to give means to civil society to be effective, resources for the establishment of an efficient parliament or an independent judicial court, etc.) to be taken from growth, income volatility which lower growth appears as a penalising factor of democracy.

Instability from trade (proxied in this research by terms of trade instability) per se can also be harmful for democracy. High trade dependency (which increases countries' exposure to external shocks) has been found to be unfavourable for the installation and consolidation of democratic regimes. As a matter of fact, terms of trade instability which can be seen as one of the symptoms of economic dependence and weak diversification, is a source of high exposure to fluctuations in world markets and economic instability,

³ Followed by many other studies

which penalize the stabilisation and legitimation of regimes (Huber, Rueschemeyer and Stephens, 1993). About this point, Djankov and al. (2008) have explained that negative shocks bring pressure on governments to reduce democracy and checks and balances.

Income volatility (arising from terms of trade instability) can also have a negative effect on democratic institutions by generating uncertainty and risks on resources to be redistributed in an economy. On the one hand income instability can create some uncertainty in the politico-economic environment, which can in turn have a direct negative effect on the democratic process by changing the way of assuming power. On the other hand, this uncertainty can give some incitement to elites in power to exclude other competing political groups in order to maximise in the present, rent capture. So, elites can engage in rent-seeking activities in 'good times' (when income is high⁴) if their objective is to smooth their private consumption across time. As a consequence, this can result in a weak political competition and a therefore in a weak quality of democracy.

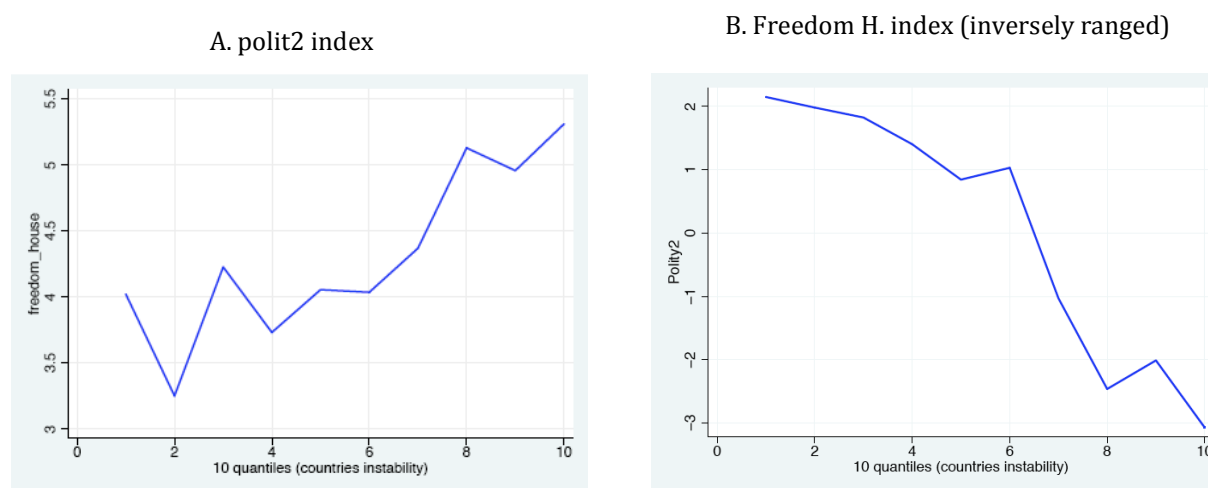
Some stylized facts

Our theoretical arguments predict a negative effect of instability on the quality of institutions (democracy). We have explained through literature how causalities between institutions and instability can run. We use in this section some statistical tools to assess the correlation between these two variables. Figure 1 confirms the expected negative correlation between terms of trade instability and the quality of democracy. As a matter of fact, after sorting countries by deciles regarding their indexes of terms of trade instability⁵, we show by using the institutional quality indexes of Freedom House and Polity IV that the most unstable countries are the ones which have the weakest

⁴ Since instability can be viewed as an alternation of positive and/or negative shocks

democratic institutions⁶. Table 2 also confirms this statistical evidence, by indicating a negative and significant correlation between terms of trade instability and the Freedom House democratic index. Though a correlation does not mean a causality, we predict a causal effect of instability on democracy, since in our opinion, one can assume an exogeneity of terms of trade instability. As a matter of fact, most of developing countries rely on their primary sectors exports and are price takers on the world markets. So, by using a variable of terms of trade instability, we exclude the assumption of the causal relationship from institutions to instability.

Figure 1: The quality of institutions by deciles of instability



3. The existing literature on the effects of aid on institutions and democracy

Disregarding any conditional effect of aid on the quality of institutions, several papers

⁵ See section 5.2 for the calculation method of instability and appendix B for the sample countries

have examined the potential direct impact of aid on institutional development and have found different results about the nature of this impact, making them very debated. Many of them have focused on legal institutions (rule of law, corruption, bureaucracy, contracts, property rights), others on economic and political institutions, and have found that aid can have negative as well as positive effects on these institutions (see Svensson, 2000; Goldsmith, 2001; Knack, 2001; Alesina and Weder, 2002; McNab and Everhart, 2002; Hoffman, 2003; Tavares, 2003; Brautigam and Knack, 2004; Knack and Rahaman, 2004; IMF's World Economic Outlook, 2005; Coviello and Islam, 2006). Regarding the specific effect of aid on democracy, the empirical findings in the literature seem to be less debated. The general view of the relationship between foreign aid and democracy is that one of aid's purposes is to promote democracy in the developing world. Excepted the work of Djankov and al. (2008) which finds that aid has a negative effect on democracy, most of empirical papers conclude either to positive effects or simply to no effects. Djankov and al (2008) explain their findings by the fact that foreign aid could lead politicians in power to engage in rent-seeking activities in order to appropriate aid resources and to exclude other groups from the political process. This damages political institutions because they become in this way less representative and less democratic. The democracy-building efforts of aid donors potentially contribute to improve democratisation by improving the learning of electoral processes (through technical assistance and conditionalities), and by improving human resources quality and income level (Knack 2004). This point is confirmed by Kalyvitis and Vlachaki (2005) who find strong evidence that political aid⁷ (electoral and technical assistance) directed to

⁶ The Freedom House index is negatively ranged from 1 to 7. So the higher the index is the weaker is the quality of democracy

⁷ The data they used is Government and Civil society Aid, provided by OECD

democratisation predict positively democratic transitions in recipient countries, when aggregate aid flows does not. While most of empirical studies on aid and democratisation have concluded to no effect of aid (Hoffman, 2003, Knack 2004, Kalyvitis and Vlachaki, 2005), some of them have found that aid could lead to better civil liberties, political competition and participation. Goldsmith (2001) supports this point by explaining that foreign aid, by improving health and literacy, make people more informed and aware of public politics, which improve the quality of democracy. Dunning (2004) demonstrates that foreign aid has a (small) positive effect on democracy in the post cold-War period. To sum up, the main empirical studies about the direct effect of aid on democratic institutions conclude that aid has no effect on them, or at most has a positive effect on democracy. But what effect of aid on institutions can be expected in some exogenous circumstances?

4. What effect of aid on democracy conditional on exogenous factors?

The aid effectiveness literature focusing on macroeconomic instability and economic vulnerability of recipient countries provide us with the general intuition of this research. Indeed if one accepts the point that aid has proved to be more effective in vulnerable countries by protecting growth against external shocks (by making it more stable), so aid could therefore have an indirect (positive) effect on institutions in these countries through this channel, since institutional development requires some stability in the economic environment. Guillaumont and Chauvet (2001), Chauvet and Guillaumont (2004, 2007) have shown that negative terms of trade shocks have adverse effects on growth and that aid is more effective in vulnerable countries by making growth more stable in the

medium term. Guillaumont and Chauvet (2007) have discussed the stabilising character of aid regarding exports and more interestingly for this research, regarding growth volatility. They have explained that more than aid cyclical (pro or counter), it's the relative trend level of aid and its relative volatility compared to the flow of the interest (exports, national revenues, etc.), that contribute to explain its dampening character. Pointing out aid volatility as a factor of income volatility, their findings have concluded that the level of aid tends to dampen it. Guillaumont and Chauvet (2001), Chauvet and Guillaumont (2004, 2007) have explained that in cases shocks occur, aid smoothes public expenditures and limit the risk of fiscal deficits. In recipient countries, national income and fiscal revenues are indeed more likely to be influenced by aid disbursements. The indicator of vulnerability they have used allow them to conclude that the level of aid is likely to cushion the negative effects of external shocks on economic growth⁸. Collier and Goderis (2007) have pursued this idea and have shown that the level of aid lower the negative effects of commodity export prices shocks on growth because aid finance precautionary expenditures, which reduce vulnerability to shocks. Elsewhere, Collier and Dehn (2001) have focused on export price shocks to explain aid effectiveness and have shown that while positive shocks have insignificant effects on the growth process, negative shocks reduce growth and the interaction between them and offsetting increases of aid is significantly positive, meaning that aid mitigates the negative effects of terms of trade deterioration on growth. Easterly and Kraay (2000) have shown for small states that because of their greater openness, terms of trade shocks volatility is a source of growth instability. We can generalize this point to under developed countries since their are also

⁸ In Guillaumont and Chauvet (2001), the indicator of vulnerability takes into account the size of population, the instability of exports agricultural production, while in Chauvet and Guillaumont (2004), it only takes into account exports instability and the negative trend of terms of trade. Since

highly dependent to trade and their exports are more specialised, making that when a trade shock occurs, their growth performances can be severely damaged. In previous sections, we have provided some arguments explaining that growth instability is not good for institutions partly because a stable growth allow quality institutions to emerge. We deduce from this point that all causes of stable growth are indirect causes of the emergence of good institutions. So, if aid reduces growth volatility, it can also protect institutions in situation of instability. To put things briefly, our main theoretical prediction is that aid, by mitigating the adverse effects of shocks on growth could have a positive conditional effect on democracy (*ceteris paribus*). The next sections provide an empirical evaluation of this prediction.

5. Specifications, causalities and results

5.1 The data

We use data from 71 developing countries over the period 1980-2003. Aid data are from the World Development Indicators and Global Development Finance cd-rom (2005) (originally taken from OECD/DAC). Data on exports and imports of goods and services, Gross Development Product (measured in constant dollars of 2000 and in purchasing power parity) and population, have been also gotten from the same source. The Global Development Network Growth Database collected by William Easterly provides us with data on legal origin, ethno-linguistic fractionalisation, geography and infant mortality. We focus in this paper on political institutions, and more precisely on democratic

(exogeneous) terms of trade instability is also a source of vulnerability (which causes a risk on growth), the growth-stabilisation effect of aid can also be valid for this type of instability.

institutions. So, we use two synthetic democratic indicators from the Polity IV project database and the Freedom House database (See appendix 1 for a complete description of these indicators). Data on terms of trade are from the United Nations Conference on Trade and Development (UNCTAD) statistics.

5.2 The measure of instability

Our terms of trade instability variable measures the gap between the terms of trade and an estimated trend of terms of trade. Instability is indeed always measured over a reference, which is often an estimated trend. This requires making some assumptions about the nature of this trend. As a matter of fact, estimations can give wrong results if a deterministic trend is estimated with a non-stationary variable. Because most of economic variables include a trend, which is not purely stochastic, we assume the trend in terms of trade to be mixed (both deterministic and stochastic). Then, we get the predicted value of terms of trade (\hat{X}) by running the following regression (equation 3) on 12-year periods⁹ (i refers to countries, t refers to years. X is the terms of trade variable and ε_{it} is the idiosyncratic error term):

$$X_{it} = \alpha + \beta X_{i(t-1)} + \gamma + \varepsilon_{it} \quad (1)$$

Afterwards, we compute for each period, an instability index by using the following formula (quadratic mean):

$$Instab_{it} = 100 \cdot \sqrt{\frac{1}{T} \sum_{i=t_1}^{t_2} \left(\frac{X_i - \hat{X}}{\hat{X}} \right)^2} \quad (2)$$

⁹ We also considerer 12-year trends

where $T = t_2 - t_1$ is the length of periods p .

5.3 The econometric model and the identification strategy

Our econometric model includes as main controls¹⁰, net aggregate Official Development Assistance, terms of trade instability, and an interaction term equal to the product of aid and terms of trade instability. This latter variable allows us to test the dampening effect of aid. We write the baseline model as follows:

$$Democ_{it} = \alpha_i + \beta I_{it} + \gamma A_{it} + \kappa A_{it} \times I_{it} + \omega X_{it} + v_{it} \quad (3)$$

where $Democ_{it}$ is an index of democracy, A_{it} is the aid variable, I_{it} is terms of trade instability and $A_{it} \times I_{it}$ is the interaction term between aid and terms of trade instability. α_i is country fixed effects which are included to capture time-invariant country characteristics. X_{it} is a vector of controls including geography, education, ethnolinguistic fractionalisation, initial conditions, estimated settler mortality rate, life expectancy, and an african dummy variable¹¹. i and t stand respectively for countries and time periods. Democracy in a country is indeed a function of many factors. Ethnic diversity (proxied by ethnolinguistic fractionalisation) is often assumed to have an effect on political freedom and political competition, since democracy is less likely to prevail in countries which are socially divided and which lack cultural and linguistic coherence (Lijphart, 1977, Horowitz, 1993). Socioeconomic development (that we proxied by the purchasing power parity estimate of income per capita, and education) has long been believed to be conducive to the emergence or survival of democracy. Democracy can also be explained

¹⁰ See appendix for a more detailed description and definition of the data

¹¹ Appendix give a precise description of all of these variables

by geographical characteristics which are a good control for climatic conditions and contagion effects, and which may predict political regime classification. Initial economic conditions (proxied by initial level of per capita income) also matter for democracy, since they are assumed to determine the initial quality of democracy (and therefore current, because of the persistence of institutions). So, we anticipate positive estimated coefficients of the interaction term, geography, education, and negative coefficients of instability, and fractionalisation. Since we focus on long-run effects of aid and instability, and because democratisation is a long-term process, we average our variables on twelve-year periods (1980-1991 and 1992-2003).

Potential endogeneity problems and treatment

It is often argued that aid and democracy are endogenously related, since countries which make progress in their democratisation process are able to attract more aid ('conditionality' argument), as some donors reward recipients with better democratic performances with more aid. The econometric estimation of such a model facing reverse causality between aid and institutions requires dealing rightly with endogeneity. As demonstrated by Wooldridge (2006) Ordinary Least Squares (OLS) estimation of such a model produce biased and inconsistent estimators. Although in principle, the endogeneity problem can be avoided by applying instrumental variable techniques, the fundamental problem is that there are no ideal instruments available. A good instrument in this case would be a variable, which is highly correlated with aid but not with the error term in the regression. Nevertheless, we have tried to control for the aid endogeneity problem by using as excluded instruments, the amount of official development assistance and grants of the five main donors (identified each year), weighted by the distance between the

donor and the recipient. So, following Brun, Chambas and Guerineau (2005), we create instrumental variables for aid *à la* Tavares (2003), which should be correlated with the level of foreign aid received by a country while being exogenous to the level of democracy in this country. For each recipient country and each year, the five main aid donors are identified (with dummies variables). The total amount of aid is then weighted by the geographical proximity (proxied by the inverse of bilateral distance) of the recipient country with Washington (for Canada and United States), Brussels (for European donor countries), Tokyo (for Japan) and Canberra (for Australia and New Zealand). As explained by Tavares (2003), the reasoning is that, when a donor country increases its total aid outflows, recipient countries that are closer to that donor experience an exogenous increase in aid inflows. The overidentification tests and statistics confirm the quality of these two variables as instruments for aid.

We assume terms of trade instability to be exogenous¹²; as a matter of fact, most of developing countries rely on their primary sectors exports and are price takers on the world markets. Moreover, the principal international markets for developing countries exports are the advanced industrial countries on which developing countries also rely regarding their imports. Thus, terms of trade shifts should be determined exogenously. Finally, we use the predicted value (exogenous component) of aid from the first-stage regression to compute the interactive variable between aid and terms of trade instability to get the real exogenous value of it. So, the econometric model we estimate can be written as follows:

$$Democ_{it} = \alpha_i + \beta I_{it} + \gamma \hat{A}_{it} + \kappa \hat{A}_{it} \times I_{it} + \omega X_{it} + \varepsilon_{it} \quad (4)$$

¹² Unfortunately, it remains difficult to test the exogeneity of this variable, because of the availability of good instrumental variables.

where \hat{A}_{it} is the predicted value of aid from the first-stage regression. $Democ_{it}$, I_{it} , X_{it} keep the same meaning as in equation (1). ε_{it} is the error term.

5.4 Findings

Table 3 presents the main results¹³. In columns (1), (2) and (3), the dependant variable is the quality of democracy, measured by the polity2 combined index of democracy and autocracy. All of our estimations include country fixed effects to take into account country-specific heterogeneity. The aid variable is aid per capita in the three specifications. Column (1) is the baseline specification and includes as controls, geography, education, ethnolinguistic fractionnalisation, and initial income. According to the findings of previous studies, the effect of aid on democracy is not significantly different from 0, even if the coefficient is negative. Unsurprisingly, an increase in terms of trade instability seems to be associated with a significant decline in democracy, which confirms our theoretical expectations. But since both the coefficients of terms of trade instability and the multiplicative variables are significant, the marginal effect of terms of trade instability on democracy must be interpreted with caution. As demonstrated by Wooldridge (2006), this marginal effect depends on aid values, and equals

$$\frac{\partial Democ}{\partial Instab} = \alpha + \beta Aid, \text{ where } \alpha \text{ is the estimated coefficient of terms of trade instability and}$$

β is the one of the interaction variable. From our main findings,

$$\frac{\partial Democ}{\partial Instab} = -0.51 + 0.005 Aid. \text{ This mean that at the sample mean value of aid (per capita),}$$

which is 54.82, the marginal effect of terms of trade instability on the quality of

democracy is always negative, and is about $-0.51 + 0.005(54.82) = -0.24$.

More interestingly, we find that aid dampens the effect of instability on democracy. This effect is showed by the positive and significant coefficient of the interactive variable, explaining that as instability increases, the effect of aid on the quality of democracy becomes positive. This coefficient is however small and about .005. Among the control variables, education is the most powerful predictor of democracy. As expected, its coefficient is positive and significant. Geography and initial income are not significant. Only ethnolinguistic fractionalisation has not the expected sign, and is significantly different from 0. In columns (2) and (3), we successively include in the regression for robustness, other possible determinants of democracy that are the estimated mortality of european settler, the initial income and a dummy variable for african countries. This african dummy controls for group specific effects; life expectancy allows a better control for socioeconomic development, and settler mortality control for historical conditions. As a matter of fact, Acemoglu, Johnson and Robinson (2001) have explained that the different environments (from the viewpoint of their hospitality) faced by european colonists, have fundamentally influenced the types of long-lasting institutions they created. We find that these specifications does not change the main findings, and that the coefficients of interest are stable. Aid remains not significantly related to democracy; increase in instability still leads to a decrease of democracy, and aid has still a dampening effect. In column (3), except settler mortality which has not the expected sign (but is however weakly significant), all others significant variables have the right sign: geography, education, and initial income predict positively democracy, while having a high fractionalisation index and being an african countries predict negatively democracy.

¹³ Regarding the number of countries we basically consider, the number of observations seems to be

The Hansen overidentification test confirms the quality of instrumental variables for aid, since all associated p-values are above 10%. Columns (1) and (2) of table 4 attempt to explain the dampening effect of aid according to our theoretical expectations, that is terms of trade instability is a source of income instability and aid dampens the negative effect of the primer because it makes growth more stable. In column (1), we test the direct effect of terms of trade instability on democracy, with the same set of control variables, and we confirm its negative effects. In column (2), we include in the regression, income instability¹⁴. As expected, while the effects of terms of trade instability remains negative and far from significance, the coefficient of income instability variable, which is about -2.95, is negative and significantly different from 0. And because we suspect income instability to be endogenous to democracy (since it may depend of many internal factors correlated with the quality of democracy), we instrument it. As a matter of fact, Rodrik (1997) has shown that democracies produce greater stability in economic performance. So, to deal with this potential endogeneity, we use as instrumental variable for income instability, foreign direct investments (henceforth FDI) instability. The amount of FDI is indeed a strong predictor of the level of development and income, and is not obviously related to democracy. The Hansen overidentification test confirms the quality of this instrumentation, since the associated p-value is about 0.19. Among the control variables, except life expectancy, all of them have the expected sign, even if only geography and settler mortality are significantly different from 0. This result shows that income instability is a valid transmission channel of the effect of terms of trade instability on democracy. To come back to our question of interest, if the negative effect of terms of trade instability on democracy is channeled through income

somewhat small; this is due to gaps in some important variables we control for in regressions.

instability, so, aid may have a dampening effect, since some authors have shown that it makes income growth more stable. Finally, we have tested the robustness of our main results regarding the use of another democracy index (the Freedom House index of democracy¹⁵), the use of another measure of aid intensity (net official development assistance over GDP), and the use of different temporal periods (8-years periods). Our main results, which are summarised in columns (1), (2) and (3) of table 3, stand. Except geography and settler mortality which have not the expected sign, terms of trade instability remains detrimental for the quality of democracy and aid remains stabilising, while having no direct effect on democracy.

Table 1: Main results (with aid per capita)

	Dependent variable: democracy (polity2)		
	(1)	(2)	(3)
Aid	-.07(-1.31)	-.0718(-1.31)	-.07(-1.32)
Terms of trade instab.	-.51***(-2.54)	-.512***(-2.54)	-.51**(-2.44)
Aid×instability	.005**(2.00)	.005**(2.00)	.005**(1.99)
Geography	-.02(-0.48)	.13(1.28)	.348***(-3.27)
Education	.25***(-3.23)	.25***(-3.23)	.25***(-3.13)
Eth. Fractionalisation	.12***(-6.16)	.08*(1.77)	-.07***(-2.46)
Initial income	1.10(0.30)	1.77(0.50)	2.49(0.68)
Settler mortality		.24(0.17)	4.03*(1.88)
Life expectancy			-.0002(-0.00)
Africa			-13.8***(-4.45)
Countries fixed effects	Yes	Yes	Yes
R ²	0.86	0.86	0.87
Obs	88	88	88
Overidentification test for aid instruments			
Hansen J stat.	2.34	0.36	1.82
p-value	0.12	0.54	0.17

Notes: significativity thresholds: (***:1%), (**:5%), (*:10%). Heteroskedasticity robust z-statistics in parentheses

¹⁴ computed with the same methodology used for the calculation of terms of trade instability

¹⁵ As illustrated by figure 2 in appendix, the polity2 and the Freedom House indexes are in close agreement over the period 1977-2003.

6. Concluding remarks

Aid does neither promote nor undermine democratic processes, but have a indirect positive effect on democracy in the long term by dampening the adverse effects of terms of trade instability. While the debate about how external assistance could improve political institutions is still ongoing, this study finds that aggregate aid flows mitigate instability from trade and protect democracy, and this is probably because aid makes growth more stable, as shown by some recent studies (Guillaumont and Chauvet, 2001, 2004, Chauvet and Guilaumont, 2007, Collier and Goderis, 2007). We have also shown that terms of trade instability is a source of income instability which have a negative effect on democracy. So, to come back to the development strategies we proposed in introduction, the message of this study is that foreign aid can be useful in promoting institutions through their determinants. However, in a context of a debate about how to significantly increase aid in developing countries to reach the Millennium Development Goals by 2015, the findings from this study must not be interpreted as a calling for a big push of aid. As a matter of fact, even if democracy is considered as a meta institution, others types of institutions (legal and economic institutions) also matter for growth and development, and numerous studies have shown that they can be severely damaged as a result of large amounts of aid.

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APPENDIX A: Description of democracy indicators from Freedom

House and Polity IV

A. The Freedom House democratic index

The Freedom House index focuses on two aspects of democracy, which are political rights and civil liberties. The methodology of assessing democracy consists in ranking each country regarding these two aspects, from 1 (worse democratic situation) to 7 (best democratic situation). Evaluations are made on the basis of the answers to a questionnaire submitted to actors from civil society, political world and the media, which are mostly non-governmental organizations or press. Next, the synthetic index is computed by averaging the index of political rights (proxied through the election mode of the chief of executive and the existence of an electoral framework) and the index of civil liberties (proxied through the freedom of opinion, the freedom of believes, the freedom of association, the legitimate state and human rights, the autonomy of people and the economic rights). The questionnaire is made of eight questions about political rights and fourteen questions about civil liberties; the scale of each question goes negatively from 1 to 4. Finally, depending of the total score, the two indexes are given a note between 1 and 7.

B. The Polity IV democratic index (*polity2*)

The Polity IV project from the University of Maryland provides a database about several indicators of democracy (executive constraints, political participation, openness in recruitment, etc.). The *polity2* index is computed by summing an index of democracy (*DEMOC*), which is positively scaled from 0 to 10, and an index of autocracy (*AUTOC*), which is positively scaled from -10 to 0. The (*DEMOC*) index of democracy assesses democracy on the basis of four

criteria: competition in political participation, competition and openness in the executive recruitment, and institutional constraints on the executive power. For instance, to assess openness in executive recruitment, assessors will ask whether all people can potentially access to the power if elections are free, or whether the power are hereditary. For instance, in order to assess executive constraints, assessors will be interested in the existence of a legislative power or a constitutional strength. These informations are used to give a ranking for each variable. So, political participation will be coded by 3 in cases of competitive situations, by 2 in cases of transitional situations, and by 1 in cases of factional situations. The total score of these different components of democracy will be the score for *DEMOC* variable. The *AUTO*C index of autocracy, which assesses political competition, and respect for political liberties is computed with the same methodology. Thus, situations of repressed competitiveness of participation will be coded by -2, and situations of suppressed competitiveness of participation will be coded by -1. The scale for the *DEMOC* variable goes positively from -10 to 0. In the end, the *polity2* synthetic variable is obtained by summing the two indexes and by normalizing situations that assessors have considered as impossible to assess like periods of political transitions.

APPENDIX B: data description

Aid per capita¹⁶ = Net aggregate official development assistance transfers (2004 \$US millions) per capita (Source: author's calculations from Development Assistance Committee (DAC) online database and World Development Indicators, 2005).

Aid%GDP¹ = Net aggregate official development assistance transfers (2004 \$US millions) as share of gross domestic product (Source: author's calculations from Development Assistance

¹⁶ Aid includes grants and concessionary loans with a grant element of more than 25%. Military assistance is excluded.

Committee (DAC) online database and World Development Indicators, 2005).

Polity2 index = Combined democracy and autocracy score, ranged from -10(full autocracy) to +10(full democracy). (Source: Polity IV project).

Freedom House index = Democracy index, ranged from 1(best democratic situation) to +7(worse situation). (Source: Freedom House).

Terms of trade instability = Net barter terms of trade instability (see section 5.2 for the calculation method). (Source: author's calculation).

Income instability = instability of GDP per capita (2000 US \$), computed with the calculation method described in section 5.2 (Source: author's calculation).

Geography = Distance from equator of capital city measured as $\text{abs}(\text{latitude})/90$. (Source: World Bank (2002)).

Education = Literacy rate, adult total (% of people 15+). (Source: World Development Indicators, 2005).

Ethnolinguistic fractionalisation= Probability that two persons randomly selected in the population don't belong to the same ethnic group. (Source: Atlas Narodov Mira).

Settler mortality = Natural logarithm of estimated european settlers' mortality rate. (Source: Acemoglu, Johnson, and Robinson (2001)).

Life expectancy = Life expectancy at birth, for total population (years). (Source: World Development Indicators, 2005).

Africa = Dummy variable taking value 1 if a country belongs to Africa, 0 otherwise. (Source: author).

Initial income = Natural logarithm of GDP per capita in 1980 (2000 US dollars and PPP). (Source: World Development Indicators, 2005).

Income growth = Natural logarithm of GDP per capita growth (2000 US dollars and PPP). (Source: World Development Indicators, 2005).

Base countries sample (71 countries -African countries in bold characters)

Algeria, Argentina, Bahrain, Bangladesh, **Benin**, Bolivia, **Botswana**, Brazil, **Burkina Faso**, **Burundi**, **Cameroon**, **Central African Rep.**, **Chad**, Colombia, **Congo (Rep.)**, Costa Rica, **Ivory Coast**, Cyprus, Dominican Rep., Ecuador, **Egypt**, El Salvador, Fiji, **Ghana**, Guatemala, Honduras, India, Indonesia, Iran, Islamic Rep., Israel, Jamaica, Jordan, **Kenya**, Kuwait, Lao PDR, **Lesotho**, **Liberia**, **Malawi**, Malaysia, **Mali**, **Mauritania**, Mexico, **Morocco**, **Mozambique**, Nepal, Nicaragua, **Niger**, **Nigeria**, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, **Rwanda**, Saudi Arabia, **Senegal**, Singapore, Sri Lanka, **Sudan**, Syrian Arab Republic, Thailand, **Togo**, Trinidad and Tobago, **Tunisia**, Turkey, United Arab Emirates, Uruguay, Venezuela, **Zimbabwe**.

Table 2: Descriptive statistics

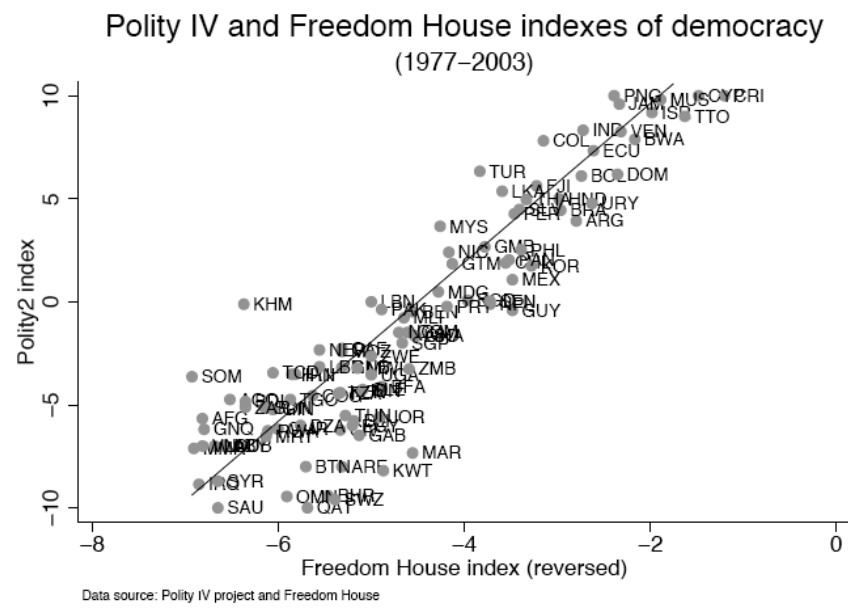
	Obs	Mean	Std. Dev.	Min.	Max.
A. Aid variables					
Net ODA per capita (US \$)	204	54.82	71.29	-2.40	485.52
Net ODA as percent. of GDP (%)	198	.106	.139	-.0002	.89
B. Institutional measures					
Polity2 index	203	-.86	6.41	-10	10
Freedom House index	204	4.61	1.59	7	1
C. Terms of trade					
Net barter terms of trade	150	113.37	42.39	26.25	397.54
Terms of trade instability (12-years trend)	150	9.53	9.33	7.63e-06	90.22
D. Countries characteristics					
Geography	204	16.84	10.92	0	39
Education	168	66.04	22.46	9.81	97.87
Eth. Fractionalisation	166	47.62	29.10	0	93
Settler mortality	138	4.90	1.06	2.43	7.98
Life expectancy	203	59.11	11.21	35.80	77.95
Africa	204	0.45	0.49	0	1
Initial income	174	2677.96	5898.56	126.35	46473.4
Income growth	193	0.88	0.65	-0.93	3.37

Table 3: Pairwise correlation matrix

	Aid per cap.	Aid %GDP	Polity2	Fr. House	tot ins.	Income ins.
Aid per cap.	1.00					
Aid %GDP	0.41*	1.00				
Polity2	-0.07	-0.22*	1.00			
Fr. House	0.02	-0.27*	0.88*	1.00		
tot ins.	-0.07	0.06	-0.13	-0.17*	1.00	
Income ins.	0.09	0.13	-0.18*	-0.19*	0.19*	1.00

Note:(*) 5 percent level significativity. Terms of trade instability and income instability are computed with 12-years trends.

Figure 2: Correlation between Freedom House and Polity IV democratic indexes



APPENDIX C: Findings

Table 4: Democracy, term of trade and income instability

	Dependent var.: democracy (polity2)	
	(1)	(2)
Income instab.	-	-2.95***(-2.61)
Terms of trade instab.	-0.18***(-2.59)	-0.03(-0.33)
Geography	-0.61(-0.13)	-0.36***(-5.08)
Eth. Fractionalisation	-1.05(-0.55)	-0.02(-0.50)
Log(trade)	1.35(1.02)	0.30(0.17)
Settler mortality	-69.41(-0.36)	-7.75***(-2.90)
Education	0.25***(5.96)	-0.04(-0.62)
Life expectancy	-0.03(-0.33)	-0.51***(-2.74)
Initial income	16.64***(3.91)	1.44(0.89)
Countries fixed effects	<i>Yes</i>	<i>Yes</i>
R ²	0.81	0.86
Obs	128	126
Overidentification test for aid instruments		
Hansen J stat.	-	1.74
p-value	-	0.19

Notes: significance thresholds: (***:1%), (**:5%), (*:10%). Heteroskedasticity robust z-statistics in parentheses

Table 5: Robustness checks

Dependent variable: democracy			
	Freedom House	aid %gdp	8-years periods
Aid	-0.027(-1.56)	-0.099(-1.50)	-0.061(-1.42)
Terms of trade instab.	-.18***(-2.97)	-.184***(-3.39)	-.054***(-2.74)
Aid×instability	.0016***(2.38)	.007***(2.90)	.003*(1.86)
Geography	.062*(1.86)	.028***(2.18)	.068***(2.34)
Education	.02(0.99)	.027(1.37)	.024(1.48)
Eth. Fractionalisation	.003(0.33)	-.013(-1.12)	.012(1.43)
Initial income	.84(0.94)	.94(1.02)	1.45**(2.09)
Settler mortality	.41(0.72)	.77***(2.43)	.74(2.04)
Life expectancy	-.05(-0.85)	-.09(-1.43)	-.01(-0.37)
Africa	-1.94**(-2.12)	-2.12***(-3.20)	-.63(-0.92)
Countries fixed effects	Yes	Yes	Yes
R ²	0.85	0.85	0.82
Obs	88	88	131
Overidentification test for aid instruments			
Hansen J stat.	0.397	0.57	0.56
p-value	0.52	0.44	0.45

Notes: significance thresholds: (***:1%), (**:5%), (*:10%). Heteroskedasticity robust z-statistics in parentheses