

# When Do Donors Trust Recipient Country Systems?

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## Abstract

The 2005 Paris Declaration on Aid Effectiveness sets targets for increased use by donors of recipient country systems for managing aid. The target is premised on a view that country systems are strengthened when donors trust recipients to manage aid funds, but undermined when donors manage aid through their own separate parallel systems. This study provides an analytical framework for understanding donors' decisions to trust or bypass country systems. Empirical tests are conducted using data from three OECD-DAC surveys designed to monitor progress toward Paris Declaration goals.

Tests show that a donor's use of the recipient country's systems is positively related to: (1) the donor's share of aid provided to the recipient (a proxy for the donor's reputational stake in the country's development); (2) perceptions of corruption in the recipient country (a proxy for the trustworthiness or quality of the country's systems); and (3) public support for aid in the donor country (a proxy for the donor's risk tolerance). Findings are robust to corrections for potential sample selection, omitted variables or endogeneity bias.

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# When Do Donors Trust Recipient Country Systems?

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## 1. Introduction

The literature on growth and development now recognizes a key role for the quality of public institutions. Yet, little is known about how to apply this insight constructively in the design of development assistance. “Good governance” in the form of capable and accountable state institutions emerged only over the course of centuries in the West, and it may be impossible for today’s developing countries to follow similar paths in a dramatically compressed time frame. Historically unprecedented progress on health outcomes and education enrollment may contribute to unrealistic expectations regarding donors’ role in accelerating institutional development in poor countries. Even in relatively technocratic areas (e.g. civil service and legal/judicial reform) of public sector governance, success rates for donor projects are low and the evidence base underpinning the design of interventions is thin or absent (IEG, 2008).

Moreover, there is growing recognition that international aid – and particular donor practices - can unintentionally weaken governance in recipient countries. Aid – like natural resource revenues - can encourage rent seeking and undermine government’s accountability to its own citizens, by reducing its dependence on domestic taxpayers for revenues (Moore, 1998; Collier, 2006; Knack, 2009). Donors can also undermine government capacity, when they fragment their aid among too many projects, sectors and countries, and insist on delivering aid using their own reporting, procurement and other procedures (Brautigam and Knack, 2004). As the World Bank’s *Assessing Aid* report acknowledges: “At times, donors have hindered the creation of effective public sectors because they saw end runs around local institutions as the easiest way to achieve project success” (World Bank, 1998: 84).

These arguments have attained the status of conventional wisdom within the international aid community. The importance of delivering aid in ways consistent with long-run institutional

strengthening is a major theme in the Paris Declaration agenda for reforming aid practices. The Paris Declaration (PD) created a set of numerical indicators on improved “alignment” of aid activities with country systems and inter-donor coordination, to be monitored through surveys of donors and recipient countries, with defined targets for the year 2010.

Although the PD principles and associated indicators reflect a broad consensus within the donor community (most notably in the OECD Development Assistance Committee), the empirical basis for this new aid effectiveness agenda is thin (Easterly, 2007). Advocacy for reform of donor practices is based on theory, intuition and scattered anecdotal evidence.<sup>1</sup> This paper does not attempt to add to the thin evidence base underpinning the Paris Declaration principles and indicators. Rather, it is premised on the fact that they have been endorsed by the DAC bilateral donors and multilateral agencies providing the bulk of ODA, and by most recipient countries. Donor behavior is assessed relative to donors’ own assertions about what constitutes more effective aid practices.<sup>2</sup>

Knack and Eubank (2009) provide a theoretical framework for understanding the incentive problems among donors that can produce suboptimal levels of harmonization and alignment in their aid activities. This framework and supporting empirical evidence are relevant so long as most of the donor community believes that use of country systems is currently below the optimal level. The caveat is that we cannot offer confident conclusions about which donors

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<sup>1</sup> See World Bank (2003: ch. 11) for representative anecdotes. Azam et al. (1999) construct a formal model with learning-by-doing externalities in tax administration, in which aid dependence with low institutional capacity can be an equilibrium outcome. What little systematic empirical evidence exists in support of the Paris Declaration agenda bears mostly on its harmonization provisions, not the alignment provisions that cover (inter alia) use of country systems. Anderson (2011), Djankov et al. (2009), Knack and Rahman, (2007) and Knack and Smets (2012) all provide empirical evidence on the adverse effects of fragmenting a country’s aid among a larger number of donors.

<sup>2</sup> Here we follow Easterly (2007) and Easterly and Pfitze (2008: 3-4): “The academic aid policy literature and the aid agencies themselves agree on many elements of ‘best practice’ . . . By taking this consensus as our standard, we are asking in effect if aid agencies operate the way they themselves say they should operate.”

are really providing “better” aid, in the absence of more evidence on how using country systems affects either the quality of systems or development outcomes.

The current study builds on the preliminary empirical tests reported in Knack and Eubank (2008), using a much-expanded dataset. Unlike the earlier study, it addresses potential sample selection and endogeneity problems in detail. There is a time dimension to the dataset used in this study, allowing us to rule out omitted variable or simultaneity bias in certain key results. While the earlier study corrected standard errors for clustering only by donors or by recipients, this update reports more conservative standard errors, corrected for two-way clustering for donors and recipients. In addressing endogeneity and other potential problems more thoroughly, we have chosen to report results only for one dependent variable: use of country public financial management (PFM) systems. Results in general hold for the additional dependent variables in Knack and Eubank (2008), namely use of direct budget support and use of program-based approaches (which include but are not limited to direct budget support). Finally, in the attempt to minimize sources of endogeneity and other bias, the current study measures quality of country systems using widely-known governance indicators that mostly reflect views of experts outside aid agencies; Knack and Eubank (2009) relied heavily on indicators reflecting the judgments of World Bank staff.

Before turning to the empirical analysis, the remainder of this section presents the theoretical arguments from Knack and Eubank (2009) in condensed form. To preview, a donor’s trust in a recipient’s aid management systems is determined in our framework by three broad considerations:

1. Confidence it will reap sufficient benefits from investing in recipient country systems;
2. Trustworthiness of those systems, as measured for example by corruption ratings;

### 3. Trust in aid's effectiveness in general, in donor countries.

The Paris Declaration calls for increased use of recipient country systems in managing aid, but it explicitly acknowledges that the quality of country systems is a key determinant of their use by donors. Recipients, with technical assistance from donors, are therefore urged to strengthen their public financial management (PFM) systems. In the meantime, using those systems, despite their flaws, is believed to strengthen them in the medium or long run: “Donors can help build capacity and trust by using country systems to the fullest extent possible, while accepting and managing the risks involved...” (OECD, 2009a: 27). On the other hand, bypassing country systems undermines them, by diffusing accountability and fragmenting policy and planning processes (OECD, 2009b; Mokoro Ltd. 2008a). Moreover, donors often staff their own parallel aid management systems by “poaching” the most talented government officials.

Donors' incentives to trust country systems (or alternatively to micro-manage aid using their own parallel systems) depend in part on their perceived trustworthiness. Where recipient aid management systems are stronger, corruption scandals tarnishing the donor agency's reputation are less likely to occur, and aid-funded programs are more likely to be selected and implemented more efficiently. The Paris Declaration recognizes that weaknesses in country systems sometimes justify donors' decisions to bypass them. The developmentally-optimal level of trust by donors in country systems varies positively with the quality of those systems. In certain cases, trust may even be inefficiently high (Jansen, 2009).

For a given level of trustworthiness of country systems, donors' trust in them can vary substantially because they have different mandates and face varying degrees of political pressure from their taxpayers and elected overseers. Multilateral donors can differ from bilateral donors, and some bilateral donors may be constrained more than others by limited support for foreign aid

on the part of politicians and the public. Pressures to demonstrate visible achievements (that can be attributed plausibly to a donor agency's own aid funds) to skeptical taxpayers or elected officials will increase further the tendency to free ride on other donors' contributions to strengthening country systems (Williamson and Agha, 2008: 34). When bilateral donors use aid to advance diplomatic or commercial objectives, incentives to rely on their own parallel systems for aid delivery will be further aggravated. For example, using their own procurement rules will likely advantage donor-country contractors.

If using country systems for managing aid does strengthen them, then donors' use of country systems (in the absence of coordinated action) is likely to be sub-optimal. The benefits of using country systems are mostly external (benefiting other donors) and realized only over the long term, while costs are short term and fully internalized by the donor. When donor agency *i* undertakes any action to strengthen recipient country systems, it is in effect providing a public good for other donors. Stronger aid management systems reduce reputational and fiduciary risks and increase the developmental impact of aid funds not only for donor *i*'s future aid, but also for other donors. Meanwhile, donor *i* incurs the full costs, in exposing its current aid funds to higher risks than if it bypassed recipient country systems. The benefits are not wholly external, however: when a donor has a larger share of the aid "market" in a country, it will internalize more of the benefits from any investments in strengthening country systems. Donor *i*'s use of country systems is then expected to be positively related to its share of total aid that is received by a given country, controlling for quality of recipient systems.

The next section describes how the model's concepts can be operationalized and its predictions tested using a panel dataset based on the Paris Declaration's three monitoring surveys, with donor-recipient pairs as the main unit of analysis. Empirical results reported in

section 3 are largely consistent with the predictions of the theoretical framework. A variety of robustness tests in this section address potential concerns regarding sample selection, omitted variables and endogeneity bias. The final section summarizes the findings and discusses their implications.

## 2. Data and Empirical Strategy

### *Measuring trust in country systems*

We operationalize  $\frac{R_i}{A_i}$ , the share of recipient-managed aid, using data from the OECD

DAC's Paris Declaration Monitoring Survey (PDMS). The PDMS was designed to assist in measuring progress toward the Paris Declaration's objectives between 2005 and 2010. Among the 12 PD indicators established with goals set for 2010, 9 of them are measured using data from the PDMS and 3 from other sources. Most of these indicators are beyond the scope of the present study. We measure trust in country systems with PD Indicator 5a: use of country public financial management (PFM) systems as a percentage of aid for the government sector.<sup>3</sup> This indicator is constructed as a simple average of three sub-indicators from the survey: use of national (i) budget execution procedures, (ii) financial reporting procedures, and (iii) auditing procedures, each as a percentage of aid for the government sector. Detailed criteria for these three dimensions of use-of-PFM-systems are provided in Appendix 1. Correlations among these sub-indicators average .73 (ranging from .54 to .77). Findings presented below change very little if any one of its three components is analyzed instead of Indicator 5a. Mean use of PFM systems

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<sup>3</sup> Aid for the government sector accounts for about 83% of total aid disbursements reported in the PDMS, and excludes aid disbursed to NGOs, parastatals or private companies unless it is provided "in the context of an agreement with officials authorized to act on behalf of central government" (OECD, 2008a). Empirical results reported below are unaffected if government sector aid is replaced with total aid in the denominator.

among the 2,213 observations appearing in one or more tests reported below is 33%. (Appendix Table A1 provides summary statistics for all variables in the analysis.)

The PDMS data constitute an unbalanced three-dimensional panel: surveys were conducted in 2006, 2008 and 2011, and designed to obtain information on aid flows for the previous calendar year (2005, 2007 and 2010 respectively) for each donor-recipient pair. Each successive survey round improved the quality and comprehensiveness of data. Guidance on definitions was strengthened and comparability of data reported by donors and by recipients was enhanced in later rounds (OECD, 2011; OECD 2008). The number of recipient countries choosing to participate in the survey increased from 34 in 2006, to 54 in 2008, and 78 in 2011. These 78 recipients account for about three-fourths of total aid worldwide (OECD, 2011).

Coverage of aid within these recipients is comprehensive over donors. Most of the “emerging” bilateral donors and a few of the smaller multilateral donors and vertical funds are dropped from the analysis, due to missing data on other donor variables from the DAC database or public opinion surveys. Dropped donors collectively account for a total of only 1.4% of aid reported in the survey.<sup>4</sup> The 34 donors remaining include the 22 traditional DAC donors, Korea (a new DAC member in 2011), Turkey, 7 multilateral organizations, and 3 vertical funds.<sup>5</sup>

The panel is unbalanced not only with respect to time, but also with respect to donor-recipient pairs: not all donors provide aid to all recipients in each survey year. These features of the data create potential selection problems, considered in more detail below.

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<sup>4</sup> Their share of all aid worldwide is undoubtedly greater, although much of what is popularly termed “aid” from China and some other new donors would not meet the DAC’s definition of official development assistance (ODA).

<sup>5</sup> Bilateral donors are listed in Appendix Table A2. Multilaterals in the sample include the African, Asian and Inter-American Development Banks, the World Bank, IMF, EU and UN. Vertical funds include the GAVI Alliance, IFAD, and the Global Fund to Fight AIDS, Tuberculosis, and Malaria. The sample includes all donors with sufficient data for listing in the appendix of the OECD (2011) survey report, and all donors covered by Birdsall and Kharas (2010) in their rankings of donor performance. (The OECD tables exclude Greece, while Birdsall and Kharas exclude Turkey, the IMF and the GAVI Alliance.)

### *Independent variables*

Donor's ability to benefit from investments in country systems ( $\bar{A}_i$  in the model) is proxied by donor aid share, defined as the percentage of total aid (inclusive of aid not to the government sector) to recipient  $j$  accounted for by donor  $i$ . Higher donor aid shares are predicted to increase use of country systems. The sample mean for donor aid share is 7%, with a minimum value of 0.0014%<sup>6</sup> (Switzerland in Egypt in 2010) and a maximum of 83.6% (World Bank in St. Vincent in 2010).<sup>7</sup>

Trustworthiness of recipient country systems ( $\gamma$  in the model) is measured primarily by the widely used Control of Corruption indicator, from the Worldwide Governance Indicators project.<sup>8</sup> Weaker country systems, as measured by lower scores on Control of Corruption reflect increased risks to donors of corruption-related scandals, diversion of funds to lower priority uses, or inability to account for how funds were spent. The Paris Declaration explicitly asserts that corruption "inhibits donors from relying on partner country systems." Use of country PFM systems is thus expected to be positively related to corruption scores.

The Freedom House civil liberties indicator is used as a supplementary indicator of trustworthiness of country systems. Civil liberties scores are higher in countries with a free and independent media, freedom of assembly, freedom for NGOs, and greater personal autonomy and individual freedoms.<sup>9</sup> The use of donor and other public funds is likely to be more

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<sup>6</sup> Values of 0 are not present in the sample because the dependent variables are all undefined for donor-recipient pairs with no aid transfers.

<sup>7</sup> Larger donors at the global level do not always have higher average aid shares at the recipient level, as some donors concentrate their aid in fewer countries. Portugal's average aid share (23.5%) exceeds that of the U.S. (12.4%), although the U.S. provided more than 100 times as much total aid to countries in the sample as Portugal.

<sup>8</sup> This indicator is a composite of numerous corruption-related indicators collected from various sources including surveys and risk assessment firms. It is similar in many respects to Transparency International's even more widely known Corruption Perceptions Index, but includes more data sources and covers more countries.

<sup>9</sup> An index scored from 1 to 7 is available going back to 1972, but we use a more finely-grained version scored from 0-100 that is available for 2003 onward. The political freedoms indicator produced by Freedom House includes

transparent in a more open society. Moreover, the principle of “country ownership” may have a stronger appeal to donors operating in countries with stronger mechanisms for public voice and government accountability to broader constituencies. In short, donors will tend to trust country systems more when aiding recipients that look more like most donor countries, i.e. those that are relatively open and democratic. Where there is reason to think local elites are not committed to development objectives and will divert aid to maintain their political and economic power (Bjornskov, 2010; Angeles and Neandis, 2009), donors are less likely to provide budget support and to trust country PFM and procurement systems. Civil Liberties – and to some degree Control of Corruption – can measure the potential for elite capture of aid flows.

Other recipient characteristics included as control variables are log of per capita income, recent growth in per capita income (average annual increase in the two preceding years), log of population, and log of per capita aid. These variables can capture the effects of real or perceived quality of country systems, separate from what is measured by Control of Corruption and Civil Liberties.<sup>10</sup> Donors may sometimes infer that wealthier or more rapidly growing countries have stronger capacity for managing aid, in the absence of more direct evidence. If there are economies of scale in aid management systems, their quality may tend to be higher in larger countries. For a given level of expected quality, uncertainty about quality is likely higher in smaller countries, where donors have obtained relevant information from fewer projects and have undertaken fewer diagnostic and other analytic studies. If donors tend to be risk averse, this higher uncertainty can reduce use of country systems.

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freedom from government corruption among its criteria. Political freedoms and civil liberties are correlated at .95, and we prefer the latter to the former to avoid conceptual overlap with Control of Corruption.

<sup>10</sup> Anecdotal evidence from country evaluations suggests that donors sometimes bypass country systems because they are “slower and more cumbersome” as well as vulnerable to corruption (Wood et al., 2011).

Use of country systems may be higher in more aid-dependent countries for two reasons. First, delivering higher volumes of aid may be accomplished in part by disbursing a greater percentage of it in the form of direct budget support, which by definition uses country PFM systems. Second, the impact of donor decisions to use (or bypass) country systems on strengthening (or undermining) government capacity and accountability is likely to be greater where aid volumes are higher. These potential impacts may also be greater in lower-income countries, perhaps explaining in part why governments of many middle-income countries receiving modest levels of aid show relatively little concern over donors' choices of aid management practices (Wood et al., 2011). The net effect of income on use of country systems is therefore ambiguous.

Donor characteristics comprise a third set of determinants of trust in country systems. A first-level distinction, between multilateral and bilateral (i.e. national) donors, reflects their differing mandates. Multilateral aid agencies were established in part to resolve collective action problems plaguing bilateral donors. They are better insulated from political pressures to demonstrate short-term visible results to elected officials and taxpayers (Wood et al., 2011). Multilaterals "are cases of joint delegation from multiple principals" that may "enable the agency to commit itself to procedures that would not be easy to implement for a bilateral donor, such as transparent and competitive procedures for tendering and procurement" (Martens et al., 2002: 21). They also have a comparative advantage in aid activities involving "spillover effects" which bilaterals "might have difficulty internalizing" (Martens et al., 2002: 65). Donor coordination is part of the mandate of some multilaterals. The World Bank and UN partner with the OECD-DAC in its harmonization agenda and in the Paris Declaration monitoring effort. Use

of country systems should therefore be greater in general for multilateral than for bilateral donors.

Among multilaterals, a further distinction can be made between the MDBs (multilateral development banks including the World Bank, IMF and regional development banks) and other multilateral donors including the UN system and European Commission (EC). The MDBs have a “country-led business model” that aims to align operations in support of recipient countries’ national development strategies (World Bank, 2011). The non-MDB multilaterals are a heterogeneous group, but for multiple reasons we expect their use of country systems to fall short of the MDBs’. In the EC, “responsibility rests in the hands of serving politicians from member states,” so its decisions are less apolitical than other multilateral agencies that “have genuinely delegated their management to an executive board” (Martens et al., 2002: 47). National representatives in EC foreign aid decision-making committees devote considerable effort to pursuing opportunities for their own nation’s aid contractors (Martens et al., 2002: 193). The various UN agencies are treated as a single donor in the PDMS, with their data collected and reported by the UNDP.<sup>11</sup> Some UN agencies specialize in humanitarian aid, which is not included in the PDMS. Other UN agencies provide mostly technical assistance, which rarely uses country PFM systems.

Among bilateral donors, the distinction between OECD-DAC donors and non-DAC donors may be important.<sup>12</sup> Use of country systems is expected to be higher for DAC donors, as the DAC is the leading advocate of Paris Declaration objectives including increased use of

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<sup>11</sup> Some bilaterals also have multiple aid agencies but the survey collects and reports data only at the national level, e.g. for the USA and not separately for USAID, the MCC, etc.

<sup>12</sup> Non-DAC bilaterals in the sample include only Turkey and Korea. The latter is now a DAC member, but it was not during the 2005-2010 period covered by the surveys.

country PFM systems. The DAC's peer reviews of its members' aid programs now include assessments of their consistency with Paris Declaration principles and objectives.

The DAC donors can be divided further, between the "Nordic Plus" group and others. Nordic Plus donors include Denmark, Finland, Norway, Sweden, Ireland, the Netherlands, and the United Kingdom. The group's purpose is to improve complementarities among its members, through division of labor based on comparative advantages (NORAD, 2006; de Renzio, 2005). By reducing the number of sectors and countries each donor operates in, transactions costs for recipients can be reduced, at the price of reduced visibility for the donors. Nordic Plus membership can thus be viewed as a proxy for low skepticism of aid's effectiveness among their domestic constituencies. Empirical support for this hypothesis may be interpreted as merely showing that donors committed to the harmonization elements of the PD agenda tend to be committed also to its "alignment" elements. At a minimum, however, the Nordic Plus dummy can usefully test for any significant variation among DAC bilaterals in use of country systems.

The vertical funds (sometimes called global funds) comprise a last set of donors. These donors have limited sector-specific mandates, such as the environment or specific diseases. In the PDMS, most aid from vertical funds is accounted for by the Global Fund to Fight AIDS, Tuberculosis and Malaria. It disbursed 2.2% of the aid represented in the survey - more than the Netherlands or Canada. Vertical funds, particularly in health, are often viewed as being motivated by concerns over global public goods, not integrated into national strategies, and reluctant to use country systems (Wood et al. 2011: 34-35; World Bank, 2006: 22). For these reasons vertical funds may be associated with lower use of country systems in general.

For the DAC bilateral donors, we can go beyond these donor group dummies and attempt to measure domestic constituents' trust in aid effectiveness in general using data from public

opinion surveys. We expect stronger public support for development aid to increase a bilateral donor agency's use of country systems. Where support for aid is relatively weak, aid agency officials will be under more pressure to show that the funds they are provided produce visible results directly attributable to its efforts, so will provide more aid in the form of projects using parallel systems and less in the form of budget support.

Data for testing this hypothesis are available from three different public opinion surveys: Gallup International's 2002 "Voice of the People" survey, the 1995-1998 round of World Values Surveys (WVS), and the 2004 Eurobarometer. These surveys each cover a somewhat different sample of donor countries, as shown in Appendix Table A2. All 24 bilateral donors are represented in one or more of the surveys, but only four (Finland, Germany, Spain and Sweden) are included in all three. The question inquiring about support for development aid is worded somewhat differently in each survey. The percentage of respondents indicating greater support for aid in the WVS is correlated at .85 with the corresponding percentage from Gallup International (GI), and at .49 with the percentage supporting aid in Eurobarometer. Support for aid in GI and Eurobarometer, however, are correlated at only .18. The two donors with the weakest support for foreign aid in both the WVS and GI are the U.S. and Japan (neither is included in Eurobarometer).

To maximize the information content from these three surveys and to preserve the sample size, we construct an index of public support for aid. Values from each survey are first standardized to have a mean of 0 and standard deviation of 1. Index scores, reported in Table 2, are then computed as the unweighted mean of the index components that are available for each country. The alpha coefficient of index reliability from this procedure is a very respectable .72,

with an average inter-item correlation of .46. Most of our tests employ this index, but we also show how results are affected by instead using each of the three surveys in isolation.

Year dummies are also included in the regressions where appropriate. The Paris Declaration along with its associated monitoring indicators and follow-up conferences is designed in part to create “peer pressure” among donor agencies toward meeting its numerical targets.<sup>13</sup> If pressure from peers, recipients, or civil society is increased as intended, coefficients for year dummies included in the analysis should exhibit a significant positive trend.

Donors choose whether or not to use country systems. Their choices, however, reflect some combination of donor and recipient country characteristics. We estimate regressions of the general form:

$$UCS_{ijt} = \beta Z_{ijt} + \delta X_{it} + \eta M_{jt-1} + Y_t + u_{ijt} \quad (6)$$

where  $UCS_{ijt}$  is the share of donor  $i$ 's aid to recipient  $j$  in year  $t$  that is recipient-managed,  $Z_{ijt}$  are regressors that vary by donor, recipient, and year;  $X_{it}$  are regressors that vary by donor and year but are recipient-invariant;  $M_{jt}$  are regressors that vary by recipient and year but are donor-invariant; and  $Y_t$  is a vector of year dummy variables. Recipient variables are lagged by one year. Donor variables are mostly time-invariant, including donor public opinion, which is constructed from surveys conducted between 1 and 15 years prior to the years for which the PDMS measures use of country PFM systems.

The dataset can be treated as an unbalanced panel, with anywhere between 1 and 80 observations per donor. We can exploit this structure of the data to conduct stronger tests by controlling for donor-year, recipient-year, or donor-recipient fixed effects. For example, in

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<sup>13</sup> International donor conferences on harmonization bring senior managers of aid agencies “in close contact with colleagues from other agencies, pushing them to align with recognized international best practice and not be seen as laggards” (de Renzio, 2005: 11).

testing the robustness of results for Control of Corruption and other recipient characteristics, with the inclusion of donor-year fixed effects estimates are informed only by cross-recipient variation in the data within each of the 102 (= 34 x 3) donor-year panels. These regressions take the form

$$UCS_{ijt} = \beta Z_{ijt} + \delta X_i Y_t + \eta M_{jt-1} + u_{ijt} \quad (7)$$

where  $X_i Y_t$  is a vector of donor-year fixed effects. The analysis similarly adopts a stringent and highly conservative approach to determining statistical significance of estimates. All tests, unless otherwise specified, correct standard errors for two-way clustering (Cameron, Gelbach and Miller, 2011), for non-independence of errors within clusters of observations pertaining to each donor and to each recipient.

### 3. Results

Equation 1.1 of Table 1 presents results from the baseline model, which includes observations from all 34 donors, by not including the public opinion variable that pertains only to bilaterals. Most coefficients have the hypothesized signs, and the majority of them are statistically significant at the .05 level. In countries where a donor has a larger share of the aid market, its aid is more likely to be managed via country PFM systems. The coefficient of .45 indicates that for each 10 percentage point increase in the donor's share of aid in a country, its use of country systems increases by 4.5 percentage points.

Control of Corruption and Civil Liberties also have positive and significant coefficients. Control of Corruption is measured in standard deviation units, so use of country systems is nearly 9 points higher, other things equal, in a recipient scoring 1 standard deviation higher than another recipient. Each 10-point increment in the civil liberties index (scaled from 0 to 100) is associated with an increase in use of country PFM systems by 5.5 percentage points.

Donors use country systems more in larger and more aid-dependent recipients. Neither per capita income nor the recent growth rate of income is significant.

The “donor type” dummies in general produce results consistent with expectations. Relative to the omitted category of other DAC bilaterals, use of country systems is about 17 percentage points higher on average for the “Nordic Plus” group, and 15 points higher for the MDBs. Use of country systems is 15 percentage points lower for the non-DAC bilaterals<sup>14</sup>, and (somewhat surprisingly) 9 points higher on average for vertical funds, than for the omitted category. However, the latter difference falls far short of statistical significance at conventional levels. “Other multilaterals” do not differ from the reference group.

Coefficients for the year dummies are negative, indicating that use of country systems is higher by 3 or 4 percentage points in 2010, other things equal. These dummies are not significant, however. These coefficients may underestimate the actual trend, as anecdotal evidence indicates that survey coordinators in later rounds of the survey were able to hold donors to account for more accurate reporting and stricter application of the indicator criteria (OECD, 2011; OECD, 2009a).

Equation 1.2 adds the public opinion index. This variable is undefined for the multilateral donors and vertical funds, so its inclusion reduces the sample size by about two-fifths. A 1-standard-deviation increase in support for aid is associated with a 6.6-point increase in use of country systems by bilateral donors on average, significant at the .01 level. This result is consistent with the prediction that stronger domestic support for overseas aid allows donors to be less risk averse and to place a relatively high weight on broader, longer-run development objectives as opposed to visible and short-term outputs.

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<sup>14</sup> The non-DAC bilateral category in our sample includes only Korea and Turkey, but the result appears to generalize more broadly. In 2010, 42.9% of all aid from DAC bilaterals used country PFM systems, compared to 6.6% from Korea and Turkey, and only 4.9% from the other non-DAC bilaterals excluded from the regressions.

Results for most other variables in equation 1.2 are very similar to those in equation 1.1. The most notable difference is that the coefficient for non-DAC bilaterals increases in magnitude from -15 to -23. Controlling for their very high levels of support for aid, Korea and Turkey stand out even more strongly as negative outliers on use of country systems. It is not clear how to interpret the public opinion results for these two countries, however. Korea and Turkey were historically aid recipients, and their aid outflows are still small. The public opinion index for them is measured using only the GI 2002 survey, in which 87% of respondents in each country thought that “the wealthier nations should give more financial help to the poorer nations.” Many respondents in both countries might not have considered their own country to be among the “wealthier nations,” and some (particularly in Turkey) may even have considered their own country to be among the “poorer nations” on the receiving end. In equation 1.3 we therefore drop the 52 observations in which Korea or Turkey are the donors. Results for the public opinion variable (and for the other regressors) are unaffected by this change in sample, however.

The remainder of this section addresses three potential problems with the basic results reported in equations 1.1-1.3. First, those estimates are potentially affected by sample selection bias. Second, there may be omitted variables correlated with use of country systems. Third, coefficients for some key regressors may incorporate endogeneity bias.

There are two sources of potential selection bias in the data. First, aid-recipient governments self-select into (or out of) the PDMS. Of the 151 eligible aid recipients on the official DAC list, only 80 participated in one or more rounds of the survey. Second, not all donors choose to provide aid to all recipients in all years (or, in some cases, recipients may choose not to accept aid). In fact, for the vast majority of all possible donor-recipient pairs, no aid flows are recorded, as shown in Appendix Table A3. For 2010, the year with the highest

participation by recipient countries, pairing each of the 34 donors in our sample with each of the 76 recipients would imply a total of 2584 potential aid relationships. This figure represents only 50.3% (row 7 of the table) of the 5134 total potential aid relationships implied by pairing each of the 34 donors with each of the 151 eligible DAC recipients. Of the 2584 potential pairings in the survey, a positive aid flow is recorded in only 998 cases, or 38.6% (row 8). These 998 active aid relationships account for only 19.4% (row 9) of the 5134 total pairings of the 34 donors with each of the 151 DAC recipients. For the earlier survey years of 2005 and 2007 these percentages were even lower. Pooling the three survey years (last column of Table A3), nearly 64% of potential observations are censored by recipient nonparticipation in the PDMS (although the majority of these would be censored anyway due to zero aid flows), and more than 60% of the remaining pairs are censored by donors' provision of zero aid.

There is some evidence suggesting that the censored observations may differ systematically from the uncensored observations, potentially creating a selection bias in our use of country systems tests. Use of country systems averages 38.3% for 2010 among all observations corresponding to the initial (2005) set of PDMS recipient participants. The average for 2010 is only 28.5% for recipients that joined the survey in 2007, and is only 26.5% for recipients that did not participate until 2010. Very few recipients dropped out, but many were added over the three rounds, and use of country systems is markedly higher in the earlier volunteers. Uncensored observations differ significantly from censored observations on all of the recipient-level regressors in the analysis: they are larger, poorer, more aid-dependent, grow more slowly, and score less well on Control of Corruption and Civil Liberties.

Correcting for potential selection bias using the Heckman approach requires identifying exogenous variables that affect selection by recipients into the PDMS, and by donors and

recipients into active aid relationships. Selection regressions are reported in Appendix Table A4. The sample in Equation A4.1 is the full set of 15,402 pairings of the 34 donors and 151 eligible DAC recipients for each of the three survey years.

Selection variables include HIPC status, colonial tie, and distance from the donor capital or headquarters city (in log of kilometers). Countries already intensively engaged with donors to qualify for debt relief may have a greater interest in results, as well as lower participation costs, so we expect a dummy for countries reaching the HIPC completion point to be positively related to survey participation.

Colonial ties are shown to influence aid allocations by donors across recipients in Alesina and Dollar (2000), among other studies. We create a colonial tie dummy variable equal to 1 for all donor-recipient pairs (such as UK-Ghana) where the recipient was once part of the donor's colonial empire.<sup>15</sup> A colonial tie is present in 4.9% of the PDMS observations but in only 1.9% of the censored cases. Physical distance has also been shown to influence donor's aid decisions (e.g. Frot and Perrotta, 2011). Distance is less meaningful and its effect may be weaker for multilaterals, however, as some of them have global mandates (UN, World Bank) or interests (EC). We therefore create two separate distance variables, one for bilaterals (with multilaterals coded 0) and another for multilaterals (with bilateral coded 0).

Appendix Table A4 reports probit regression results for the selection variable, coded 1 for uncensored and 0 for censored observations. The coefficient estimates presented in the table represent marginal effects, evaluated at the means of all of the other regressors. Equation A4.1 includes data from all three survey years. The selection variables are all highly significant. The probability of a donor-recipient pair being uncensored increases by 20 percentage points if they

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<sup>15</sup> Colonies are assigned only to their last colonial master; e.g. Rwanda and Burundi are assigned only to Belgium, which occupied those parts of German East Africa in 1916.

have a colonial tie, by 26 points if the recipient had reached the HIPC completion point (for full irrevocable debt cancellation), and by 11 points if it had reached the HIPC decision point (for interim debt relief). Greater geographic distance separating the donor from the recipient significantly increases the probability of censoring, as expected. The selection tests also include all of the regressors from equation 1.1 that do not reduce the sample size in A4.1, i.e. those that are available for all 15,402 data points. Pairs in which the donor is a non-DAC bilateral are significantly more likely to be censored, and larger recipients are less likely to be censored. Year dummies confirm that censoring has diminished with each subsequent round of the PDMS.

The three remaining equations in Table A4 report results for 2005, 2007 and 2010 respectively. Country size, colonial ties and distance matter more in the later years, while HIPC status matters more in the earlier years. The pseudo- $R^2$  for this selection model drops from .26 in 2005 to .23 in 2007 and .16 in 2010, suggesting that the sample becomes more representative as additional recipient countries join later rounds of the survey.

To test and correct for potential sample selection bias in our use of country systems regressions, we compute inverse Mills' ratios from equations A4.2-A4.4, allowing the impact of selection variables to vary by survey year (Wooldridge, 2002). Equation 1.4 of Table 1 adds the inverse Mills' ratio (IMR) to the base specification of equation 1.1. The IMR is inversely related to the predicted probability of selection, so its negative coefficient estimate in equation 1.4 implies that use of country systems is positively related to the selection probability. It is not significant at conventional levels, however, so there is only weak evidence of selection bias. Moreover, the addition of the IMR to the model has little effect on results for key variables such as the donor's share of aid. For simplicity, therefore, we do not correct for potential selection bias in reporting additional robustness tests in Tables 2 through 6. Note that these tests all

include donor-year, recipient-year, or donor-recipient fixed effects, and the potential for selection bias is reduced (although not eliminated) in the presence of fixed effects (Wooldridge, 2002).

Table 2 tests the robustness of results for Control of Corruption and other recipient characteristics. The possibility of omitted variable bias is addressed in two ways. First, each regression includes donor-year fixed effects, so estimates are informed only by cross-recipient variation in the data within each donor-year panel of observations. This method effectively controls for any omitted donor characteristics, even if they vary by survey year. Second, these tests control for additional regressors that vary by recipient or by recipient-donor pairs.

Equation 2.1 differs from equation 1.1 only by replacing donor type variables (and year dummies) with donor-year fixed effects. This change increases the coefficient on donor aid share from .45 to .71, and the t-statistic increases from 2 to 3.5. Results for other variables, including Control of Corruption and Civil Liberties, change very little.

Equation 2.2 adds a dummy variable for “fragile states” (listed in OECD, 2011: 104). This dummy is significant at the .05 level, and use of country systems is 11 percentage points lower on average in these countries. Controlling for the fragile states dummy, coefficients for Control of Corruption and Civil Liberties diminish slightly, but remain significant.

Equation 2.3 controls for HIPC status and colonial ties. In using them as selection variables in Table A4, we assumed they had no direct effect on use of country systems. However, donors might perceive a larger reputational stake in the development of their former colonies, and internalize more of the benefits of investments in strengthening their PFM systems. The more intensive engagement of with donors, including relatively high levels of budget support, could imply increased use of country systems in HIPC countries, other things equal. Neither the HIPC variables nor colonial ties are significant in equation 2.3, however, supporting

their validity as selection variables in Table A4. Moreover, their inclusion in equation 2.3 has little effect on results for donor aid share and most of the recipient-level variables. The coefficient for aid dependence declines somewhat when HIPC indicators are included, as the HIPC countries tend to receive more aid than most others.

Equation 2.4 adds the percentage of aid for each donor-recipient pair that is in the form of direct budget support (DBS), as reported in the PDMS. Budget support by definition uses country PFM systems. When this variable is included, the regression in effect is testing for relationships between the regressors and use of PFM systems for project aid and other non-DBS aid. Coefficients that were significant in equation 1.1 remain significant (although only at the .10 level for Control of Corruption) in equation 1.4, but are reduced in magnitude.

If using country systems strengthens them while bypassing them weakens them (OECD, 2011; 2008a), then quality of country systems is endogenous. We address this potential problem in several ways. First, any beneficial effects on quality from using PFM systems will be on the PFM systems themselves: budget execution, financial reporting, and auditing procedures. Our system quality indicators - Control of Corruption, supplemented by Civil Liberties – are defined far more broadly, and are likely affected only with a lag. Second, we lag the system quality indicators by a year in our tests. Third, we test for the presence of heterogeneous effects among donors that should be present – or absent - if coefficients on Control of Corruption are biased upward to a significant degree by reverse causation.

Our basic identification strategy is premised on differences among donors. First, we distinguish donors by size. The impact of a percentage point increase in a donor's use of country systems should vary with a donor's aid share. Each \$1 increase should have the same impact, so 1 percentage point will imply a larger impact for larger donors. A sufficiently small donor could

safely take system quality as given in its decisions. In contrast, there is no particular reason to expect the causal impact of quality of country systems on use of country systems to vary by donor size. Therefore, if coefficients on control of corruption in Tables 1 and 2 mostly reflect endogeneity bias, the strength of association should vary positively with donor size. We add the appropriate interaction term in equation 2.5 to test this hypothesis.<sup>16</sup> Results are highly inconsistent with the argument for reverse causation: the coefficient on the interaction term is negative (and significant at the .10 level for a two-tailed test), not positive.

In our second variant of this identification strategy, we distinguish donors by selectivity in aid allocations. Specifically, we posit that donors that are more sensitive to quality of country policies and systems when allocating aid will also be more sensitive to the quality of systems when deciding whether to rely on them for managing their aid. In contrast, there is no particular reason to expect the strength of any reverse causation from use of country systems to vary with donors' sensitivity to policy in allocating aid. An empirical finding of heterogeneous impacts in this instance can be explained better by the causal argument than by reverse causality (from use of systems to system quality). Equation 3.1 includes an interaction term, to test the hypothesis that Control of Corruption will affect use of country systems more for donors that are more policy selective in allocating aid among recipients.<sup>17</sup> For this purpose, we use the donor policy selectivity scores from Knack, Rogers and Eubank (2011), based on aid disbursements in 2007. The interaction coefficient is positively signed, as hypothesized, and significant at the .05 level.

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<sup>16</sup> The interaction term is equal to the product of the deviations of Control of Corruption and donor aid share from their respective means. The coefficient on Control of Corruption thus indicates its marginal effect conditional on the mean value of donor aid share.

<sup>17</sup> The interaction term is equal to the product of the deviations of Control of Corruption and policy selectivity from their respective means. The coefficient on Control of Corruption thus indicates its marginal effect conditional on the mean value of policy selectivity. The coefficient on policy selectivity is subsumed by the donor-year fixed effects, because it is donor-invariant.

Taken together, our measurement and identification strategies for estimating the impact of the quality of country systems do not entirely rule out endogeneity bias from our estimates. However, these strategies coupled with empirical results from equations 2.5 and 3.1 suggest that the direction of causality is predominantly from quality to use of country systems.

Next, we address the possibility of omitted variable or endogeneity bias in the coefficient for donor aid share. Two potential objections are easily answered. First, the donor aid share coefficient is not merely showing that larger donors use country systems more. Tests in Tables 2 and 3 include donor-year fixed effects, so results imply that a given donor makes more use of country systems in those recipients where its share of aid is larger, as predicted. Second, higher quality country systems might induce donors both to increase their aid and to manage a larger share of it through country systems. If quality of systems is imperfectly measured by Control of Corruption and Civil Liberties, the donor aid share coefficient might appear to be affected by simultaneity bias. Donor aid *shares* will be unchanged, however, if all donors increase their aid proportionately, so this argument for bias is largely unfounded.

The simultaneity critique does apply if we allow donors' perceptions of corruption (or other aspects of the quality of country systems) to vary for a given recipient. Donors with relatively high risk perceptions may respond by reducing use of country systems and reducing aid – which will now reduce the aid share, because not all donors are reducing their aid. In equation 3.2 we control for risk perceptions that vary across donor-recipient pairs, by introducing donor-recipient fixed effects. Not incidentally, these pair dummies also control for effects of any historical, commercial or other ties that might increase a donor's interest or reputational stake in a recipient's long-run development. In this specification estimates are informed only by variation over time within each donor-recipient pair. This test is particularly stringent, as some

regressors may exhibit little variation over the three periods, covering only a 5-year time span. Nevertheless, most variables significant in previous tests remain significant in equation 3.2. The exception is Control of Corruption, which varies little over time for most recipients. The coefficient for donor aid share is somewhat lower in equation 3.2 than in tests using donor-year fixed effects, but it remains positive and significant at the .01 level.

We are not aware of any plausible argument regarding reverse causation from use of country systems to donor aid share. Nevertheless, the remainder of Table 3 addresses this possibility, again by exploiting differences among donors as an identification strategy. The theoretical argument concerning the impact of donor aid share on use of country systems applies more strongly to bilateral donors in general than to multilaterals. Multilaterals' decisions are less sensitive to political pressures and arguably to their ability to claim credit for results. Their allocations (and hence aid shares in a country) are determined partly by their mandates, including funding formulas established by their membership. For these reasons, a donor's aid share should be a better proxy for its reputational stake in a country's development for bilaterals.

These arguments are supported in Table 3. Equations 3.3 and 3.4 run the specification of equation 2.1 separately for bilateral and multilaterals, respectively. While donor aid share coefficients are positive and significant in both cases, the magnitude is three times as large for the bilaterals. Equation 3.5 retains the combined sample but introduces an interaction term, equal to the product of donor aid share and a multilateral dummy. The coefficient on this interaction is significant at the .05 level.

Table 4 addresses omitted variable bias in results for donor type variables that may be present in Table 1. Most notably, these tests control for recipient-year fixed effects, so rule out

bias from missing recipient characteristics. Results on donor type variables and donor aid share in equation 4.1 are surprisingly similar to those in equation 1.1, which included no fixed effects.

Equation 4.2 tests robustness of donor type results to controlling for differences in donors' priorities or mandates, as proxied by the sectoral composition of their aid. These variables, constructed from the DAC's Creditor Reporting System, vary by donor and year, but not over recipients. They potentially matter in either of two ways. First, sectoral priorities may be correlated with other aid delivery preferences. Second, aid in sectors such as infrastructure is mostly delivered in the form of projects, so less likely to use country systems than (for example) education aid, which often takes the form of sectoral budget support to help fund teacher salaries.<sup>18</sup> The five sectoral variables in equation 4.2 are all significant, relative to the base category of all other sectors (including multisectoral aid). Infrastructure, health and governance aid have negative signs. Donors providing larger shares of their aid for governance reform may be the ones that perceive greater governance-related risks, accounting for the negative relationship with use of country systems. Of the donor type variables, non-DAC bilaterals are no longer significantly different when the sector shares are added, but this is due in part to missing sectoral data for Turkey: the non-DAC bilateral dummy is in effect a Korea dummy in equation 4.2. The coefficient on vertical funds increases in magnitude and significance, controlling for the fact they mostly provide health aid, which is associated with lower use of country systems.

Equation 4.3 adds three more proxies for donor preferences, but at the expense of dropping the multilaterals due to missing data. Technical assistance as a share of aid is not significant. Contributions to multilateral donors as a share of total aid predicts reliance on country systems: donor countries that are reluctant to delegate to multilaterals tend to be the

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<sup>18</sup> The PDMS does not collect information on sector, so we cannot directly compare use of country systems across sectoral categories.

same ones that are reluctant to delegate the management of aid funds to country PFM systems. Donors that tie more of their aid to purchases from home-country suppliers are significantly less likely to use country systems. Inclusion of these variables does not materially affect results on donor aid share, or on the Nordic Plus dummy.

Equation 4.4 adds a USA dummy. Corruption concerns are voiced often in U.S. debates on foreign aid, in Congress and in the media, and Congressional earmarks and reporting requirements severely restrict the use of budget support or reliance on recipients' procurement and other PFM systems in managing project aid (OECD, 2006). Equation 4.4 confirms that U.S. aid use country systems at a far lower rate than other DAC bilaterals, even when controlling for donor preferences via sectoral composition, tying, etc.

Equation 4.5 replicates equation 4.1, but replaces the "other multilateral" dummy with separate dummies for the two donors belonging to this residual category of multilaterals that are neither MDBs nor vertical funds. The UN and EC differ in important respects as noted in section 3. Coefficients for the UN and EC show that use of country systems is lower in the former and higher in the latter, relative to the omitted group of DAC bilateral. The negative UN effect (but not the positive EC effect) disappears when sector shares are added to the model (results not shown in table).

Table 5 addresses the donor public opinion measures in more detail. As in equation 1.4, Korea and Turkey are dropped, but Table 5 regressions (as in Table 4) control for recipient-year fixed effects. In equation 5.1, public support for aid is significantly and positively associated with use of country systems, with a coefficient very similar to those in equations 1.1 and 1.2. A one standard deviation increase in support is associated with an increase of about 7 percentage points in use of country PFM systems. Equations 5.2-5.4 respectively substitute for the index its

three separate component measures, from surveys covering different sets of donor countries and using somewhat different question wording. Coefficients are positive and significant using GI (equation 5.2) and WVS (equation 5.3), but not for Eurobarometer (equation 5.4). Each 10-point increase in the percentage of GI respondents (or 5-point increase for WVS respondents) is associated with an increase in use of country PFM systems of more than 4 percentage points.

Equation 6.1 shows that results for the index of public support are robust to the inclusion of sector shares and other donor-level control variables from Table 4. Public support is weakest for the USA, providing a possible explanation for its extremely low usage of country systems as shown in equation 4.4. The USA dummy coefficient remains strongly significant, however, when it is tested together with public support for aid in equation 6.2. The coefficient magnitude of -34 is not so different from the -37 in equation 4.4, so the outlier status of the USA is largely unexplained by the substantive variables in the analysis.<sup>19</sup> The USA is an influential observation however in testing the link between public support for aid and use of country systems. The public support index is significant only at the .06 level in equation 6.2, with a coefficient only half as large as in equation 6.1.

Public support for aid is potentially endogenous to its effectiveness, which may in turn be influenced by donor's use of country systems. The opinion surveys were all conducted between 1995 and 2004, prior to the 2005-2010 period for which the PDMS measures use of country systems. This timing sequence reduces but does not eliminate the potential for reverse causation. We therefore instrument for public opinion in equation 6.3, with first-stage results shown in

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<sup>19</sup> The large negative USA coefficient reflects its relatively tepid support for some of the PD principles. Due to U.S. opposition the PD omitted targets for budget support, and weakened targets for use of country procurement systems (Mokoro Ltd., 2008b: 23). In contrast, the U.S. led the effort to include a provision on "managing for results" in the PD because "reporting on results is critical to demonstrating aid effectiveness and to sustaining public and Congressional support for U.S. assistance" (USAID, 2006). However, USAID's own reporting system "focuses mainly on physical deliverables" such as number of schools or clinics, instead of outcomes (OECD, 2006).

equation 6.4. The exclusion restriction assumes donor country size and number of former colonies predict support for aid but do not independently affect use of country PFM systems. Citizens of smaller countries, or of countries with a more active history of colonization, may in general be better informed about poverty outside their own borders and feel a greater obligation to alleviate it (Paxton and Knack, 2011). Total number of former colonies may be correlated with a dummy for whether each donor-recipient pair represents a former colonial relationship. We thus control for a colonial tie dummy in the 2SLS test.

As shown in the first-stage diagnostics in equation 6.4, the exogenous instruments have strong predictive power for public opinion. Donor country population has the expected negative sign, and number of former colonies has the expected positive sign. The applicable test of over-identification does not reject the assumption of instrument validity ( $p$  value = .30). The coefficient on public opinion in the second stage regression (equation 6.3) is positive and significant. The coefficient size is very similar to those in OLS tests in equations 1.4 and 5.1. While there may be alternative possible interpretations of this relationship, results are consistent with our argument that stronger domestic support for aid allows donors more freedom to pursue medium- or long-run development objectives less constrained by the need to demonstrate visible outputs and avoid any risks.

#### **4. Conclusions**

This paper identifies and tests three broad explanations for donor agencies' inability or unwillingness to rely more on country systems. First, and most fundamentally, country systems are often not very trustworthy so their use implies significant reputational and fiduciary risks to donors. We provide empirical evidence supporting the proposition that use of country systems is

strongly linked to their quality, as proxied by indicators of corruption perceptions and civil liberties. Knack and Eubank (2009) obtained a similar result using an indicator of PFM quality that is produced by World Bank staff.

Second, donors' trust in country systems is influenced by their mandates and by their constituents' faith in the development effectiveness of aid. Multilateral donors (particularly the development banks) use country systems more than bilaterals. There is substantial diversity within each category, however, and in bilaterals popular support for aid is associated with greater use of country systems. Where voters are more skeptical of aid, donors tend to micro-manage aid to produce tangible, visible outputs that can be plausibly attributed to its own activities.

Third, we find that a donor's use of country systems is greater when it has a more "encompassing interest" in a recipient's development. When a donor's share of all aid provided to the recipient is higher, it internalizes more of the benefits of its use of country systems. These three key findings are robust to a variety of corrections for possible sample selection, omitted variables and endogeneity bias. Results for donor aid share (and Civil Liberties) are even robust to the inclusion of fixed effects for donor-recipient pairs, where estimates are informed only by variation in the data over the three survey years within each unique pair.

In contrast, pressure from other donors, recipients or civil society groups created by the Paris Declaration campaign appears to be relatively unimportant in explaining use of country systems. Coefficients from year dummies fail to show a significant positive trend over the 2005-2010 period, controlling for quality of country systems and other variables.

If donors' risk tolerance is mostly unaffected by the Paris Declaration campaign, broad-based and sizeable increases in the use of country systems may depend largely on improving their quality. However, successful reform of PFM systems tends to occur only over long time

periods, and involves political as well as technical challenges, with resistance from certain public officials who benefit from maintaining less-transparent systems and procedures (OECD, 2009b; Allen, 2009; IEG, 2008).

Concentrating a typical donor's aid in fewer countries and sectors would reduce the enormous transactions costs imposed on recipient governments. It would also tend to increase donors' use of country systems, as the leading donors in a recipient would internalize a greater share of the benefits. Even if donors' aid shares were all unchanged in a country, but divisions of labor by sector were sharpened, donors would have less incentive to micro-manage aid. The lead donor for education, for example, would have a strengthened reputational stake in education outcomes, and similarly for the lead donor in health. Incentives for them would shift away from delivering donor-managed, successful-looking projects, and toward working with governments to deliver improved sector-wide development outcomes. Concentrating aid in fewer countries or sectors, however, potentially reduces a donor agency's visibility, with possibly adverse consequences for its budget (see Andersen, 2000: 193).

Of course, the urgency of pursuing such measures for the purposes of increasing use of country systems depends on learning more about the latter's effects on development outcomes. When donors choose to rely on country systems or bypass them, how important are the associated "learning-by-doing" externalities? While the Paris Declaration's premise that the quality of aid matters as much as its quantity is surely correct, research on the implications of donor's aid management practices for aid quality is still in its infancy. Further research using the PDMS data can test for the effects of different categories of aid – based on whether it is delivered in ways consistent with PD principles - on governance and other outcomes.

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Table 1

Equation	1.1	1.2	1.3	1.4
Variation	Baseline	Public support for aid added	Korea, Turkey dropped	Heckman
D share of aid in R (%)	0.453** (2.02)	0.713** (2.09)	0.712** (2.05)	0.448** (2.07)
Log of R per capita income	-1.860 (-0.99)	-2.739 (-1.14)	-2.829 (-1.14)	-0.565 (-0.30)
Income growth rate in R	0.459 (1.05)	0.134 (0.29)	0.011 (0.03)	0.721* (1.72)
Log of R population	9.105*** (5.16)	10.820*** (3.99)	11.484*** (4.05)	7.412*** (4.05)
Log of aid per capita in R	8.516*** (3.02)	11.066*** (2.67)	11.813*** (2.75)	6.953*** (2.75)
Civil liberties in R	0.554*** (3.60)	0.631*** (3.33)	0.617*** (3.04)	0.517*** (3.43)
Control of corruption in R	8.754** (2.49)	8.195** (1.98)	8.892** (2.10)	7.944** (2.38)
Multilateral devp. bank	15.292*** (2.78)			15.277*** (2.81)
Vertical fund	9.044 (0.91)			7.724 (0.78)
Other multilateral (UN, EC)	-1.568 (-0.19)			-5.188 (-0.63)
Non-DAC bilateral	-14.922*** (-3.85)	-22.920*** (-4.65)		-12.139*** (-2.55)
Nordic Plus	16.647*** (3.33)	14.582*** (3.17)	14.476*** (3.17)	17.078*** (3.45)
Public support for aid in D		6.569*** (2.59)	6.562*** (2.61)	
Year=2007	-3.782 (-1.46)	-1.541 (-0.57)	-1.826 (-0.65)	-3.794 (-1.52)
Year=2005	-3.531 (-1.00)	-1.120 (-0.29)	-1.544 (-0.38)	-2.506 (-0.68)
Inverse Mills ratio				-6.710 (-1.59)
Constant	-158.33 (-3.96)	-193.52 (-3.21)	-205.36 (-3.26)	-124.47 (-3.08)
No. of observations	2110	1274	1222	2110
No. of Donors, Recipients	34, 77	24, 75	22, 75	34, 77
R <sup>2</sup>	0.16	0.20	0.19	.16

Dependent variable is percentage of donor aid to government managed by recipient government's public financial management systems. T-statistics, reported in parentheses below point estimates, are based on standard errors adjusted for non-independence of errors within both donor and recipient clusters of observations, with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 2

Equation	2.1	2.2	2.3	2.4	2.5
Fixed effects	D-Y pairs	D-Y pairs	D-Y pairs	D-Y pairs	D-Y pairs
D share of aid in R (%)	0.712*** (3.52)	0.737*** (3.67)	0.703*** (3.50)	0.493** (2.50)	0.740*** (3.71)
Log of R per capita Income	-1.895 (-0.98)	-3.021 (-1.48)	-0.003 (-0.01)	-0.812 (-0.48)	-1.835 (-0.95)
Income growth rate in R	0.543 (1.30)	0.335 (0.77)	0.723* (1.65)	0.361 (1.01)	0.547 (1.31)
Log of R population	9.451*** (5.40)	8.939*** (5.18)	8.391*** (5.01)	7.997*** (5.40)	9.418*** (5.39)
Log of aid per capita in R	9.192*** (3.30)	9.097*** (3.31)	7.274*** (2.99)	7.041*** (3.28)	9.232*** (3.32)
Civil liberties in R	0.574*** (3.67)	0.497*** (3.65)	0.510*** (3.46)	0.411*** (2.88)	0.570*** (2.72)
Control of corruption in R	8.672** (2.40)	6.947** (2.05)	7.455** (2.20)	5.899* (1.78)	8.910** (2.50)
Fragile state		-11.217** (-2.30)			
HIPC completion			6.456 (1.41)		
HIPC decision			1.807 (0.28)		
Colonial tie			2.627 (0.85)		
Direct budget support (share of aid)				0.554*** (11.55)	
Control of corruption x Donor aid share					-0.248* (1.72)
No. of observations	2110	2110	2110	2079	2110
No. of Donors, Recipients	34, 77	34, 77	34, 77	34, 77	34, 77
R <sup>2</sup>	0.31	0.31	0.31	0.40	0.31

Dependent variable is percentage of donor aid to government managed by recipient government's public financial management systems. T-statistics, reported in parentheses below point estimates, are based on standard errors adjusted for non-independence of errors within both donor and recipient clusters of observations, with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 3

Equation	3.1	3.2	3.3	3.4	3.5
Fixed effects	D-Y pairs	D-R pairs	D-Y pairs	D-Y pairs	D-Y pairs
Donor sample	All	All	bilaterals	multilaterals	All
D share of aid in R (%)	0.705*** (3.45)	0.455*** (4.32)	1.119*** (3.28)	0.344** (2.52)	1.102*** (3.39)
D share x multilateral					-0.737** (-2.14)
Log of R per capita Income	-1.899 (-0.96)	27.336* (1.85)	-2.704 (-1.10)	-1.691 (-1.05)	-2.279 (-1.20)
Income growth rate in R	0.577 (1.35)	16.942 (0.41)	33.144 (0.73)	78.766* (1.90)	51.958 (1.23)
Log of R population	9.731*** (5.38)	75.629* (1.73)	10.970*** (4.16)	7.584*** (4.86)	9.365*** (5.21)
Log of aid per capita in R	9.485*** (3.33)	9.582** (2.34)	11.430*** (2.83)	5.504** (2.51)	8.838*** (3.14)
Civil liberties in R	0.592*** (3.70)	0.756* (1.73)	0.629*** (3.20)	0.476*** (3.21)	0.561*** (3.57)
Control of corruption in R	8.955** (2.40)	-0.005 (-0.85)	8.202*** (1.87)	10.020*** (2.57)	8.926** (2.44)
Control of corruption x governance selectivity	1.062** (2.22)				
Year=2007		-1.258 (-1.37)			
Year=2005		-0.261 (-0.15)			
No. of observations	2049	2110	1274	836	2110
No. of Donors, Recipients	33, 77	34, 77	24, 75	10, 77	34, 77
R <sup>2</sup>	0.30	0.78	0.31	0.31	0.31

Dependent variable is percentage of donor aid to government managed by recipient government's public financial management systems. T-statistics, reported in parentheses below point estimates, are based on standard errors adjusted for non-independence of errors within both donor and recipient clusters of observations, with \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 4

Equation	4.1	4.2	4.3	4.4	4.5
Method	R-Y pairs	R-Y pairs	R-Y pairs	R-Y pairs	R-Y pairs
D share of aid in R (%)	0.423** (2.03)	0.479** (2.55)	0.770*** (2.77)	1.059*** (4.07)	0.381* (1.89)
Multilateral devp. bank	15.866*** (2.88)	26.607*** (5.50)			16.108*** (2.96)
Vertical fund	8.373 (0.89)	40.131*** (10.16)			8.162 (0.87)
Other multilateral (UN, EC)	-1.883 (-0.24)	6.353 (1.10)			
Non-DAC bilateral	-15.132*** (-3.75)	-4.556 (-1.18)	17.911 (1.26)	-5.329 (-0.45)	-0.127*** (-4.06)
Nordic Plus	15.135*** (3.24)	18.422*** (3.73)	15.209*** (2.70)	15.241*** (3.52)	0.131*** (2.97)
Infrastructure share		-0.271*** (-2.61)	-0.331* (-2.12)	-0.228 (-1.13)	
Health share		-0.708*** (-11.12)	-0.263 (-0.41)	-0.172 (-0.29)	
Education share		0.730** (2.38)	0.371 (1.44)	0.236 (0.78)	
Humanitarian share		0.740* (1.83)	0.683 (1.24)	1.142*** (3.31)	
Governance share		-0.600*** (-3.20)	-0.242 (-0.95)	-0.447* (-1.77)	
Tech. assistance share			0.176 (1.44)	0.232* (1.81)	
Multilateral contribution share of aid by bilateral			0.432** (2.29)	0.082 (0.056)	
Tied aid			-0.289* (-1.86)	0.013 (0.12)	
USA				-37.230*** (-6.21)	
UN					-11.520*** (-3.37)
EC					8.463** (2.16)
No. of observations	2213	2132	1307	1307	2213
No. of Donors, Recipients	34, 80	33, 80	23, 78	23, 78	34, 80
R <sup>2</sup>	0.30	0.36	0.39	0.41	0.31

Dependent variable is percentage of donor aid to government managed by recipient government's public financial management systems. T-statistics, reported in parentheses below point estimates, are based on standard errors adjusted for non-independence of errors within both donor and recipient clusters of observations, with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 5

Equation	5.1	5.2	5.3	5.4
Fixed effects	R-Y pairs	R-Y pairs	R-Y pairs	R-Y pairs
Survey	Index of all 3	Gallup 2002	World Values 1995-98	Eurobarometer 2004
D share of aid in R (%)	0.619** (2.07)	0.604** (2.02)	0.529 (1.34)	1.422*** (3.42)
Nordic Plus	13.103*** (3.01)	16.573*** (3.45)	8.138 (1.31)	11.106*** (2.91)
Public support for aid in D	6.897*** (2.70)	0.442** (2.05)	0.835*** (3.05)	0.091 (0.53)
No. of observations	1289	1089	639	795
No. of Donors, Recipients	22,78	17, 77	9, 77	15, 71
R <sup>2</sup>	0.38	0.39	0.39	0.48

Dependent variable is percentage of donor aid to government managed by recipient government's public financial management systems. T-statistics, reported in parentheses below point estimates, are based on standard errors adjusted for non-independence of errors within both donor and recipient clusters of observations, with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 6

Equation	6.1	6.2	6.3	6.4
Method	OLS	OLS	2SLS	first stage
Fixed effects	R-Y pairs	R-Y pairs	R-Y pairs	R-Y pairs
D share of aid in R (%)	0.797*** (2.82)	1.046*** (3.84)	0.660*** (4.01)	-.016*** (-5.26)
Nordic Plus	15.780*** (2.69)	15.392*** (3.29)	13.287*** (5.87)	-0.303*** (-5.76)
Public support for aid in D	5.270*** (3.31)	2.768* (1.94)	6.738*** (3.13)	
Infrastructure share	-0.068 (-0.39)	-0.098 (-0.45)		
Health share	-0.186 (-0.30)	-0.170 (-0.28)		
Education share	0.419** (1.58)	0.288 (0.97)		
Humanitarian share	0.772 (1.53)	1.146*** (3.49)		
Governance share	-0.348 (-1.33)	-0.469* (-1.91)		
Tech. assistance share	0.219* (1.94)	0.234** (2.00)		
Multilateral contribution Share USA	0.268 (1.56)	0.024 (0.15)		
		-33.906*** (-4.96)		
Colonial tie			-5.765 (-1.48)	0.449*** (4.62)
Log of D population 1995				-0.299*** (-12.45)
No. of former colonies				0.025*** (18.63)
No. of observations	1268	1268	1289	1289
No. of Donors, Recipients	22, 78	22, 78	22, 78	22, 78
R <sup>2</sup>	0.40	0.42	0.09	0.41
Overid test p value			.30	
Angrist-Pischke weak-ID p value				< .0001
F test of excluded instruments				176.8
F test p value				< .0001

Dependent variable in columns 1-3 is percentage of donor aid to government managed by recipient government's public financial management systems. Dependent variable in column 4 is index of public support for aid in donor country. T-statistics, reported in parentheses below point estimates, are based on standard errors adjusted for non-independence of errors within both donor and recipient clusters of observations in equations 1 and 2, and within donor-recipient pair clusters in equations 3 and 4, with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## Appendix

### Paris Declaration Monitoring Survey Indicator Definitions

**Use of country PFM systems (PD indicator 5a):** Simple average of following three sub-indicators, as a percentage of all aid for the public sector.

#### **Use of national budget execution procedures**

Three of these four criteria must be met to qualify:

- 1) Funds are included in the annual budget approved by the legislature;
- 2) Funds are subject to established country procedures for authorization, approval and payment of funds;
- 3) Funds are deposited and disbursed through the established treasury system;
- 4) Opening of separate bank accounts for donor funds is not required

#### **Use of national financial reporting procedures**

Both criteria must be met to qualify:

- 1) No separate accounting system is required to satisfy donor's reporting needs;
- 2) No separate chart of accounts is required to record the use of donor funds

#### **Use of national auditing procedures**

To qualify, funds are subject to audits by the country's Supreme Audit Institution using its auditing cycle and standards, and additional auditing arrangements are not requested in normal circumstances.

#### **Direct budget support**

To qualify, funds must be transferred to the national treasury and be managed using national budgetary procedures, and not earmarked for specific uses. They may be nominally earmarked for a broadly-defined sector such as education (sector budget support).

Table A1  
Summary statistics

	mean	Std. dev.	Min.	Max.	N
Use of PFM systems (%)	33.3	35.0	0	100	2213
D share of aid in R (%)	6.99	9.13	0.00001	83.6	2213
Log of R per capita income	6.31	0.90	4.48	8.37	2110
Income growth rate in R	2.95	2.70	-7.43	9.88	2110
Log of R population	16.55	1.37	11.55	19.30	2110
Log of aid per capita in R	3.82	0.86	1.46	6.08	2110
Civil liberties in R	32.0	10.4	6	53	2110
Control of corruption in R	-0.63	0.43	-1.43	1.05	2110
Multilateral development bank	0.14	0.35	0	1	2213
Vertical (global) fund	0.11	0.31	0	1	2213
Other multilaterals	0.14	0.35	0	1	2213
Non-DAC bilateral donors	0.03	0.16	0	1	2213
“Nordic plus” donors	0.18	0.39	0	1	2213
Public support for aid (index)	-0.15	0.85	-1.49	2.00	1289
Public support for aid (Gallup)	62.7	13.6	45	91	1089
Public support for aid (World Values)	17.4	9.7	6.7	35.5	639
Public support for aid (Eurobarometer)	33.1	8.5	19	58	795
Direct budget support	12.4	22.8	0	100	2079
Infrastructure (% of D aid)	13.7	13.4	0	63.1	2132
Education (% of D aid)	8.2	6.1	0	34.7	2132
Health (% of D aid)	9.6	15.6	0	89.3	2132
Humanitarian (% of D aid)	5.7	5.2	0	28.9	2132
Government/civil society (% of D aid)	10.4	7.3	0	38.8	2132
Technical cooperation (% of D aid)	17.1	11.9	1.4	47.4	1307
Multilateral contributions (% of D aid)	32.4	11.5	10.1	73.5	1307
Tied aid (% of D aid)	12.8	16.9	0	98.1	1307

Table A2  
Public Support for Foreign Aid in Donor Countries

survey	WVS 1995-8	Gallup International 2002	Eurobarometer 2004	Index
donor	"very much for" aid	should "give more aid"	aid share of budget "too small"	
Australia	17.7%	63%	.	-0.28
Austria	.	.	21%	-1.17
Belgium	.	.	36%	0.51
Canada	.	64%	.	-0.36
Switzerland	.	71%	.	0.12
Germany	18.2%	68%	25%	-0.29
Denmark	.	53%	35%	-0.29
Spain	33.1%	91%	58%	2.00
Finland	15.2%	61%	31%	-0.34
France	.	.	35%	0.39
UK	.	69%	38%	0.36
Greece	.	.	30%	-0.16
Ireland	.	87%	30%	0.53
Italy	.	83%	30%	0.39
Japan	9.8%	45%	.	-1.32
Korea	.	87%	.	1.22
Luxembourg	.	71%	19%	-0.64
Netherlands	.	50%	33%	-0.58
Norway	21.9%	63%	.	-0.05
New Zealand	11.9%	.	.	-0.75
Portugal	.	89%	22%	0.15
Sweden	35.5%	69%	29%	0.50
Turkey	.	87%	.	1.22
USA	6.7%	45%	.	-1.49

**Gallup:** Do you think that the wealthier nations *should give more* financial help to the poorer nations or are they *giving enough now?* (Should give more/are giving enough now)

**WVS:** Some people favor, and others are against, having this country provide economic aid to poorer countries. Are you personally: very much for/for to some extent/somewhat against/very much against

**Eurobarometer:** Do you think that the share of its budget that the [respondent's country] Government dedicates to development aid is: too big/too small/about right

Table A3  
Sources of Censoring

Row #	Year	2005	2007	2010	Total
1	Donors	34	34	34	
2	Recipients	34	55	76	
3	DAC recipients	151	151	151	
4	D-R pairs in survey	1156	1870	2584	5610
5	D-DAC recipient pairs	5134	5134	5134	15402
6	D-R active pairs in survey	473	730	998	2201
7	(4) as % of (5)	22.5	36.4	50.3	36.4
9	(6) as % of (4)	40.9	39.0	38.6	39.2
10	(6) as % of (5)	9.2	14.2	19.4	14.3

Table A4  
selection regressions (probit)

Equation	5.1	5.2	5.3	5.4
Years	All	2005	2007	2010
Multilateral devp. bank	0.004 (0.04)	0.007 (0.07)	0.002 (0.02)	0.028 (0.14)
Vertical fund	0.056 (0.44)	0.016 (0.14)	0.033 (0.25)	0.158 (0.69)
Other multilateral (UN, EC)	0.233 (1.36)	0.135 (0.78)	0.228 (1.18)	0.362 (1.39)
Non-DAC bilateral	-0.065*** (-5.48)	-0.048*** (-4.43)	-0.067*** (-4.36)	-0.066*** (-3.66)
Nordic Plus	-0.015 (-1.44)	0.009 (1.35)	-0.014 (-1.25)	-0.050 (-3.08)
Log of R population	0.034*** (5.19)	0.021 (3.71)	0.039*** (4.75)	0.041*** (4.84)
Colonial tie	0.203*** (8.89)	0.107*** (5.77)	0.206*** (7.73)	0.285*** (8.32)
Distance from capital city (bilateral)	-0.031* (-1.91)	-0.013 (-0.88)	-0.039** (-2.34)	-0.045** (-1.97)
Distance from donor HQ city (multilateral)	-0.031*** (-2.70)	-0.013* (-1.76)	-0.039*** (-2.92)	-0.046** (-2.27)
HIPC completion	0.264*** (8.61)	0.309*** (7.95)	0.276*** (8.12)	0.227*** (5.96)
HIPC decision point	0.114** (2.48)	0.083* (1.93)	0.214*** (3.70)	-0.002 (-0.03)
Year=2007	-0.039*** (-3.63)			
Year=2005	-0.085*** (-6.22)			
No. of observations	15402	5134	5134	5134
No. of Donors, Recipients	34, 151	34, 151	34, 151	34, 151
Pseudo R <sup>2</sup>	0.21	0.26	0.23	0.16

Dependent variable is selection, coded 1 for donor-recipient pairs if positive aid flows are recorded in the PDMS and 0 otherwise. Coefficients are marginal effects, evaluated at the means of all other independent variables. T-statistics, reported in parentheses below point estimates, are based on standard errors adjusted for non-independence of errors within recipient clusters of observations, with \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.