

Addison, Tony; McGillivray, Mark; Odedokun, Matthew

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## Donor funding of multilateral aid agencies: Determining factors and revealed burden sharing

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Discussion Paper No. 2003/17

## **Donor Funding of Multilateral Aid Agencies**

Determining Factors and Revealed Burden  
Sharing

Tony Addison, Mark McGillivray  
and Matthew Odedokun \*

February 2003

### **Abstract**

The paper reports an empirical study of the factors affecting burden sharing among OECD's 22 DAC members in 'bankrolling' the multilateral aid agencies. These are the UN agencies, World Bank's IDA and non-IDA programmes, regional development banks, European Community, and other multilateral agencies that include the Global Environmental Facility and the Montreal Protocol on environment. Annual data over 1970-2000, pooled across the donor countries, form the basis for the empirical estimation of each donor's share in the ODA aid receipts for each multilateral agency. Our findings suggest the existence of reverse exploitation, i.e., the financial burden of the agencies is disproportionately carried by the smaller donors. The study also finds that

.../.

Keywords: burden sharing, ability to pay, exploitation hypothesis, UN agencies, IDA, non-IDA, regional development banks, European Community, Global Environmental Facility, Montreal Protocol

JEL classification: F02, F35, H40, H87, O19

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\* UNU/WIDER, Helsinki; emails: [addison@wider.unu.edu](mailto:addison@wider.unu.edu); [mark@wider.unu.edu](mailto:mark@wider.unu.edu); [odedokun@wider.unu.edu](mailto:odedokun@wider.unu.edu)

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factors such as inherent donor generosity, donor concern for domestic egalitarianism, and the extent to which donors are pro-poor in their bilateral aid policies have an impact on their readiness to support multilateral agencies financially. Size of the donor government and its budgetary balance positively influence burden sharing of contributions to other multilateral agencies. But neither the phase of economic cycle nor the rate of economic growth affects the burden-sharing responsibility of donors. It was also observed that contributions by EU members to the EC do not appear to crowd-out their contributions to other multilateral aid agencies and that right-wing donor governments are generally more parsimonious with regard to financial assistance to multilateral aid agencies. The preferred alternative, particularly among EU member countries, appears to be the EC.

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UNU World Institute for Development Economics Research (UNU/WIDER)  
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## 1 Introduction

Multilateral aid agencies need adequate funding to meet the ever-demanding requirements for accomplishing their objectives. This is particularly true in the current era of increasing globalization and recognition of the need to centralize the delivery of global public goods. Looking at the UN agencies, for example, the refugee issues of the UNHCR are not abating; neither are the demands for WHO's epidemic relief (including HIV/AIDS) or WFP's disaster relief. Multilateral aid agencies outside the UN system are also involved. The number of countries eligible (on the basis of per capita income) for World Bank's IDA has been increasing because the poorest developing countries have not been able to improve their relative position. Neither has the scale of the World Bank's non-IDA operations decreased, nor the range of operations of the regional development banks. To top it all, new, possibly competing outlets for multilateral contributions—such as funding multilateral global public goods, i.e., Global Environmental Facility (GEF) and Montreal Protocol—have emerged. Policy analysts have even recommended establishing a 'common pool' (Kanbur and Sander 1999 and Zedillo 2000) for donor government contributions which would then be allocated to potential recipient (developing country) governments.

Relevant policies require an understanding of the various factors that motivate donors to continue funding existing multilateral agencies. Donors will also need to contribute generously to new agencies now and in the future. This, in turn, pre-supposes an understanding of the factors that have in the past influenced donor support to existing multilateral aid agencies.

Following the seminal paper by Olson and Zeckhauser (1966), studies have focussed on the economic theory of collective action and alliances. But most of the extensions have been in the realm of burden sharing NATO's defence budget (e.g., see Sandler 1993, Siqueira and Sandler 2001, Oneal 1990, Sandler and Hartley 2001). Similarly and understandably, most empirical tests of these burden-sharing theories have been limited to NATO (Hartley and Sandler 1999 and Khana and Sandler 1997). At the same time, parallel but more recent literature on burden-sharing propositions and empirical studies (particularly, post-Kyoto Agreement) have been characterized by environmental issues such as financing the abatement of climatic changes, CO<sub>2</sub> emissions, etc. (e.g., Cardenas *et al.* 2002 and Kohn 2001). But the financing of aid agencies has scarcely been accorded the same attention. While Olson-Zeckhauser's theoretical framework has been extended to international organizations generally and empirically tested by Kwon (1998) (using the extended framework), this is an exception. On the other hand, Officer's (1994) study of UN membership assessment is prescriptive in nature, merely suggesting that UN expenses could be 'better' shared by making poor member countries pay more!

The present study focuses on the funding of multilateral aid agencies. The approach is essentially empirical. The findings from existing theoretical and applied studies on collective action and alliances with respect to NATO and environmental issues will have a bearing on the present tests. Specifically, the study aims to undertake the following:

- i) Presentation and discussion of stylized facts on historical donor funding of multilateral aid agencies;

- ii) Econometric tests of the relevance of the traditional ability-to-pay criteria, particularly, relative size (or GDP) in determining relative historical donor contributions to agencies, in order to shed light on the ‘exploitation’ hypothesis;
- iii) Econometric tests to determine whether donor-specific factors (e.g., size of government, the country’s overall generosity ratio, and ideological orientation of the government in power) have affected donor’s relative contributions in the past; and
- iv) Policy recommendations based on the findings.

The rest of the paper is organized into 4 sections. In section 2, we present the stylized facts. The statistical framework is described in section 3, while section 4 presents the empirical results. The summary and conclusion are in section 5.

## **2 Some stylized facts**

### **2.1 Trend and structure of multilateral ODA**

The ODA multilateral contributions by donor countries to various aid agencies and programmes during 1970-2000 are shown in Chart 1. It can be seen that while some agencies—World Bank IDA programmes and UN aid agencies—exhibit positive trends, at least in nominal terms, contribution volumes are characterized with ‘cyclical’ swings. IDA, for example, shows a downward movement since its all-time peak in the early 1990s. Furthermore, there is no discernible pattern in the trend of contributions to the Bank’s non-IDA programmes. The regional development banks drastically pummelled from the all-time peak attained around 1998 (coinciding with the Southeast Asian crisis) to below the 1994 pinnacle (coinciding this time with the Mexican episode). Contributions to other or ‘residual’ agencies or programmes rose to a peak around 1978 but fell steadily until around 1994 when they started to rise again to surpass the 1978 figure. This is being attributed to the start of contributions in 1994 to GEF and the Montreal Protocol multilateral environmental programmes. The EC development programme, another component of ODA multilateral (not shown), has been increasing, mainly due to EC’s ever-expanding membership.

Total multilateral ODA contributions, including grants and loans, are shown in Chart 2, together with total bilateral grants.<sup>1</sup> As shown in Chart 1, multilateral ODA has always been less than bilateral ODA (at least, since 1970) and the gap has been increasing over time. The chart also shows that both have been decreasing since the mid-1990s from the all-time peaks attained earlier in the decade.

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<sup>1</sup> The combined bilateral ODA (grants and loans) is not shown in order to facilitate comparison with multilateral ODA, which included in grants. Some ODA multilateral loans do exist (mostly from Japan), but they are not analysed according to aid agencies and programmes and consistent statistics became available only from the mid-1990s. Furthermore, net resource transfers to multilateral recipients of ODA loans over the years are no doubt due to re-flows being generated to donor countries. Thus ODA multilateral loans are excluded in Charts 1 and 2 and bilateral loans excluded in Chart 2.

## 2.2 Historical pattern of ‘burden’ sharing in the finance of multilateral aid agencies and programmes

Table 1 gives the statistics on the historical burden-sharing contributions of OECD’s 22 DAC members versus total contributions, as well as for each multilateral aid agency and programme. We also give each country’s relative share of the DAC members’ combined GDP as an indication of the ability to contribute or ‘pay’. As explained later, the so-called ‘exploitation’ hypothesis is supported if the relative share of the financial burden for these agencies increases faster than the ability to contribute or pay, so that larger members are faced with a disproportionate share. The hypothesis is contradicted if burden sharing is proportionate to relative ability-to-pay. However, if burden sharing increases slower than the ability-to-pay, this could be called ‘reverse exploitation’, a term not in the lexicon of existing theoretical works on the subject, as a similar situation has not been contemplated.

A cursory look at the table does not indicate clearly whether exploitation or reverse exploitation exists. The balance of evidence, however, supports the existence of reverse exploitation, especially with regard to total multilateral ODA. If GDP is considered an indicator of the size and ability of members to pay, the above-average members<sup>2</sup> would be Italy, UK, France, Germany, Japan, and USA, in ascending order. Only in the case of UK (the second smallest) does the relative share of multilateral ODA clearly exceed its share of the combined GDP. The individual share of multilateral ODA for Italy, France, Germany and Japan falls only slight short of each country’s share of combined GDP. On the part of the USA, the dominant and largest single member, the share of its GDP is almost twice its share of official aid. On the other hand, certain small countries—notably Denmark, Netherlands, Norway and Sweden<sup>3</sup>—display relative shares of multilateral ODA that are several multiples of their relative shares of the combined GDP of DAC. But this is not to overlook some mixed aspects of the evidence. For instance, shares of small countries like Australia, Ireland and Switzerland in the combined ‘group’ GDP are no smaller than their respective shares in total multilateral ODA contributions.

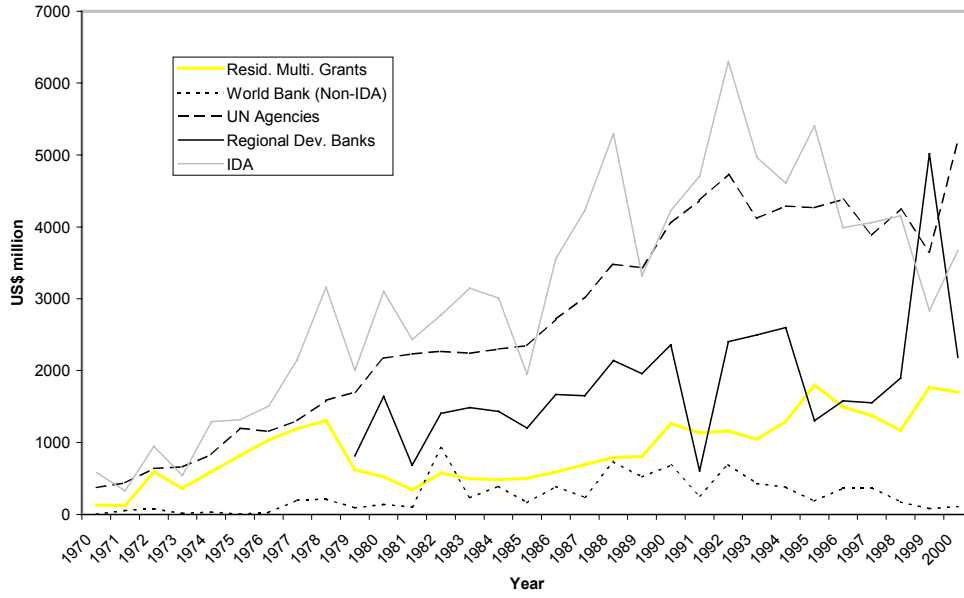
The fact that some countries carry less than their expected GDP-based share while others assume a greater proportion is, without a doubt, a reflection of domestically-related economic and political circumstances or factors. While many of these factors can be hypothesized, their proper identification is an empirical issue—and the main objective of the present study. The methodology and econometric framework of this study are described below.

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<sup>2</sup> Those with about 5 per cent or above as their relative share of group GDP total, since there are 22 members, giving an average of just above 4.5 per cent or 100/5.

<sup>3</sup> The so-called ‘G4’ countries that have earned reputation for reaching and even surpassing the UN aid target of 0.7 per cent of GDP.

**Chart 1: Donors' Grants and Loans to Multilateral Aid Agencies, 1970-2000 (US\$ million)**



**Chart 2: Bilateral and Multilateral Grants, 1970-2000 (US\$ million)**

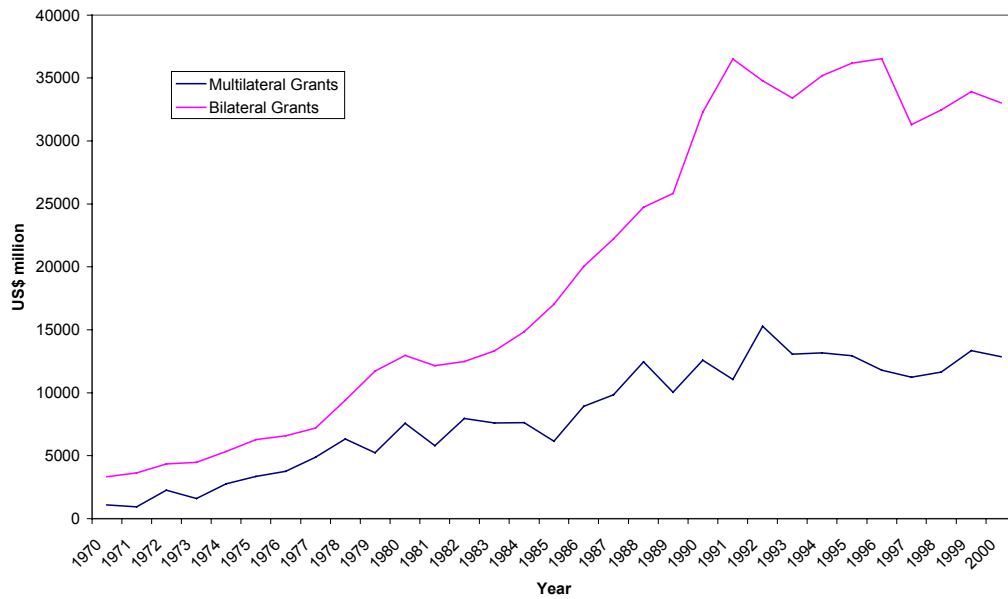


Table 1: Relative Shares of Donor Countries in Different Multilateral ODA and GDP (percent), 1970-99.

	<u>Aust- ralia</u>	<u>Aust- ria</u>	<u>Bel- gium</u>	<u>Canada</u>	<u>Den- mark</u>	<u>Fin- land</u>	<u>France</u>	<u>Ger- many</u>	<u>Greece</u>	<u>Ire- land</u>	<u>Italy</u>	<u>Japan</u>	<u>Luxe- mbourg</u>	<u>Nether- lands</u>	<u>N. Zea- land</u>	<u>Norway</u>	<u>Port- ugal</u>	<u>Spain</u>	<u>Sweden</u>	<u>Switz- erland</u>	<u>UK</u>	<u>U.S.</u>	<u>Total (in %)</u>
<b>1. United Nations Agencies</b>																							
1970-79	1.44	0.67	1.72	9.08	6.08	0.98	1.93	7.11	n.a.	0.20	1.26	4.38	n.a.	7.74	0.37	4.94	n.a.	n.a.	10.64	2.13	7.18	32.23	100
1980-89	2.92	0.65	1.04	8.13	5.25	2.11	3.15	6.40	n.a.	0.18	4.25	11.78	0.01	6.30	0.16	6.41	0.01	0.64	7.52	2.21	4.57	26.63	100
1990-99	1.88	0.71	1.03	5.08	6.89	2.43	3.37	7.57	0.29	0.27	5.02	15.37	0.12	6.55	0.20	5.83	0.12	0.99	6.82	2.65	5.31	21.67	100
1970-99	2.08	0.68	1.26	7.43	6.07	1.84	2.82	7.03	0.29	0.22	3.51	10.51	0.10	6.86	0.24	5.73	0.10	0.87	8.33	2.33	5.69	26.85	100
<b>2. The World Bank IDA Programme</b>																							
1970-79	2.36	0.69	1.85	7.38	1.18	0.43	6.46	13.42	n.a.	0.17	2.44	9.92	n.a.	2.65	0.10	1.31	n.a.	n.a.	5.10	n.a.	15.93	28.68	100
1980-89	2.26	0.84	1.61	5.53	1.24	0.71	7.02	11.50	n.a.	0.12	5.54	22.35	0.07	3.85	0.09	1.59	n.a.	0.65	2.78	n.a.	7.49	25.21	100
1990-99	1.92	0.85	1.79	4.28	1.66	0.65	8.22	13.66	0.07	0.15	5.40	21.59	0.09	4.74	0.15	1.65	0.09	0.92	2.85	2.18	6.55	21.03	100
1970-99	2.18	0.79	1.75	5.73	1.36	0.60	7.23	12.86	0.07	0.14	4.46	17.95	0.09	3.75	0.11	1.51	0.09	0.84	3.58	2.18	9.99	24.97	100
<b>3. The World Bank Other (i.e., non-IDA) Programmes</b>																							
1970-79	-0.87	2.18	3.22	3.56	4.18	1.73	7.90	8.79	n.a.	n.a.	7.36	7.05	n.a.	1.65	0.05	4.83	n.a.	n.a.	1.29	n.a.	33.87	13.27	100
1980-89	2.20	0.29	3.49	5.35	2.92	1.87	9.43	7.43	n.a.	0.52	4.84	17.12	n.a.	5.33	0.76	1.62	0.72	6.08	0.40	n.a.	6.67	26.50	100
1990-99	2.38	1.57	1.55	3.57	8.31	0.40	2.51	1.31	1.74	0.16	4.87	37.63	0.44	4.30	0.29	2.70	0.41	3.05	1.03	5.55	3.50	14.93	100
1970-99	1.24	1.34	2.75	4.16	5.14	1.30	6.62	5.85	1.74	0.44	5.69	20.60	0.44	3.76	0.37	3.05	0.48	4.06	0.91	5.55	14.68	18.23	100
<b>4. Regional Development Programmes</b>																							
1970-79	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1980-89	3.42	0.89	1.11	9.39	0.45	0.99	5.73	6.15	n.a.	n.a.	5.67	29.53	n.a.	2.04	0.21	1.75	0.27	1.30	2.34	2.32	4.44	22.85	100
1990-99	2.85	0.81	0.80	6.72	1.65	1.14	7.97	7.51	0.16	n.a.	4.35	36.26	n.a.	3.07	0.12	2.41	0.25	1.73	2.68	1.95	3.21	14.48	100
1970-99	3.14	0.85	0.96	8.05	1.05	1.06	6.85	6.83	0.16	n.a.	5.01	32.89	n.a.	2.55	0.16	2.08	0.25	1.59	2.51	2.13	3.83	18.66	100
<b>5. Global Environmental Facilities, Montreal Protocol and Other Multilateral Institutions</b>																							
1970-79	3.30	0.41	0.66	9.98	0.98	0.91	2.37	6.97	n.a.	0.02	2.53	17.28	n.a.	2.20	0.63	1.72	n.a.	n.a.	2.07	1.50	1.43	45.38	100
1980-89	3.43	0.74	1.73	7.23	7.19	1.87	5.24	4.45	n.a.	0.13	4.57	6.61	0.78	2.00	0.55	5.16	0.96	4.15	3.65	1.06	5.26	33.60	100
1990-99	2.12	1.21	1.87	11.18	10.05	1.33	8.57	6.18	0.33	0.14	5.93	13.72	0.05	3.54	0.59	1.35	0.17	0.98	2.53	1.48	5.88	21.01	100
1970-99	2.94	0.79	1.42	9.44	6.07	1.37	5.39	5.87	0.33	0.00	4.34	12.37	0.41	2.58	0.59	2.78	0.54	2.56	2.75	1.34	4.19	32.92	100
<b>Combined Multilateral ODA (Grants), i.e. 1 through 5</b>																							
1970-79	1.82	0.55	2.54	7.07	2.44	0.59	7.48	12.89	n.a.	0.20	4.05	8.34	n.a.	4.82	0.25	2.13	n.a.	n.a.	5.12	0.87	9.48	29.44	100
1980-89	2.25	0.64	2.06	5.79	2.69	1.07	8.55	11.71	n.a.	0.26	6.38	15.70	0.06	4.72	0.15	2.77	0.11	0.76	3.40	0.97	8.17	21.79	100
1990-99	1.49	0.88	2.07	4.05	3.68	1.19	9.66	14.02	0.78	0.34	7.13	16.74	0.13	4.98	0.15	2.26	0.40	2.63	3.22	1.54	8.29	14.85	100
1970-99	1.85	0.69	2.23	5.64	2.94	0.95	8.56	12.88	0.78	0.27	5.85	13.59	0.10	4.84	0.18	2.39	0.26	1.69	3.91	1.12	8.65	22.03	100
<b>Nominal Gross Domestic Products, GDP (US dollars)</b>																							
1970-79	2.21	0.89	1.42	3.93	0.88	0.60	7.74	12.32	n.a.	0.22	4.96	12.31	n.a.	2.08	0.32	0.70	n.a.	n.a.	1.66	1.28	5.48	41.11	100
1980-89	2.03	0.86	1.09	3.59	0.73	0.65	6.78	10.09	n.a.	0.24	5.28	16.02	0.05	1.72	0.28	0.71	0.32	2.29	1.30	1.22	5.60	39.18	100
1990-99	1.74	0.97	1.15	2.88	0.77	0.59	6.73	9.98	0.54	0.31	5.58	19.97	0.08	1.75	0.25	0.66	0.47	2.74	1.16	1.26	5.61	35.16	100
1970-99	1.99	0.91	1.22	3.46	0.80	0.61	7.08	10.80	0.54	0.26	5.27	16.10	0.06	1.85	0.28	0.69	0.40	2.52	1.37	1.25	5.56	38.48	100



### 3 Model framework and statistical methodology

#### 3.1 A review of existing theoretical framework and testing methodologies

As mentioned earlier, the economics of collective action can be traced to Olson and Zeckhauser (1966). Although they focused on alliances (military or defence equivalent of collective action), they demonstrate that their theory and empirical test have equal applicability to other forms of collective action, including the financing of UN and OECD's contributions to ODA.

The theory of collective action simply refers to an adaptation of the public goods theory to a setting of organizational cooperation (Kwon 1998). In its pure form, a public good has two distinguishing characteristics: non-rivalrous (in the sense that its consumption by an individual does not diminish the amount available to others) and non-excludable (in the sense that those providing the good cannot exclude others from its benefits, giving rise to the free-rider problem). Therefore, unless organizational arrangements exist for the provision of a public good, it tends to be under-provided. In the international setting, such public goods are referred to as global public goods or regional public goods, depending on the geographical scope of likely beneficiaries. International organizational arrangements have been established to cater for the provision of cross-border public goods, such as military alliances among groups of countries, one of which is NATO.

In Olson and Zeckhauser's (1966) application to military alliances, they utilize a pure public good model, with defence being 'characterized as deterrence or inhibiting an enemy's attack on any ally through the threat of an annihilating retaliation' (Sandler and Hartley 2001: 871). Within such a model, they recognize only disproportionate burden sharing, whereby bigger alliance members bankroll an unequal share. It was on the basis of this that they coined the term 'exploitation' and propounded their famous 'exploitation hypothesis', whereby smaller members are generally assumed to exploit bigger ones in financing alliances or collective action.

However, as reviewed by Sandler and Hartley (2001), recent theoretical studies have shown that the exploitation hypothesis is not applicable within a joint-product model of alliance (i.e., a product encompassing the characteristics of a pure public good and private, excludable good). According to Sandler and Hartley (2001: 878),

The collective action implications of the joint product model may be drastically different than those of the purely public deterrence model of alliances. ... As the ratio (of excludable or private benefits to total benefits) nears one, the exploitation hypothesis is anticipated to lose its relevancy.

At the empirical level, Olson and Zeckhauser's test of their exploitation hypothesis consists of two stages. First, the defence burden of each alliance member is defined and measured as the ratio of defence spending to GDP, giving what is referred to in the literature as *within-ally* measure of burden (Sandler and Hartley 2001: 883). Second, a simple non-parametric Spearman or rank correlation test between the size of the economy (i.e., GDP) and defence burden is carried out. A positive and statistically significant rank correlation, as reported by Olson and Zeckhauser, is interpreted to support the exploitation hypothesis. Several subsequent studies based on this test framework have supported the theory, except the recent analyses which have been based

on data for the 1980s and thereafter (see Sandler and Hartley 2001 for a comprehensive survey).

While Olson and Zeckhauser's empirical tests were also applied to non-military forms of collective action, subsequent studies have been confined to alliances only, particularly NATO. Probably the first to deviate from this tradition was Boyer (1989), who extended the test to OECD's ODA programme. In order to test his hypothesis that members become specialized in financing collective action according to their respective comparative advantage, i.e., militarily strong members are more inclined to share an alliance burden, Boyer compared the burden sharing (defence/GDP ratio) of NATO members to their ODA contributions (in relation to their GDP). Since then, the only other study to have been extended beyond a military alliances is the one by Kwon (1998). Kwon hypothesized that the two factors broadly influencing UN expense burden sharing by OECD members include domestic politico-economic conditions and international incentives. Thus, apart from performing the traditional Spearman's rank correlation tests to make an inference on the exploitation hypothesis, Kwon estimated panel regression equations for OECD member countries' burden sharing of the UN finances. Regressors include lagged value of the dependent variable, GNP, and some variables representing domestic politico-economic conditions (specifically, per capita income, imports-to-trade ratio, and party ideology). The international incentive factors include cold war intensity, third world influence and time-cum-trend variables. But, invariably, only some of these were observed to exert statistical significance. Nevertheless, the application to a non-defence form of collective action is noteworthy as there appears to be a vacuum in existing empirical literature on collective action. As rightly observed by Sandler and Hartley (2001: 870):

Insights garnered from the study of alliances can be applied to a broad set of collectives concerned with curbing environmental degradation, controlling terrorism, promoting world health, eliminating trade barriers, furthering scientific research, and assisting foreign development. This essay on alliances has much to offer for understanding a wide range of international organisations such as arms-control regimes, the EU, the United Nations (UN), WTO, and pollution pacts.

The above mentioned empirical studies examine the *within-ally* burden sharing (measured as the contribution share to collective action in relation to contributor's GDP). But there is a more direct and easily interpreted alternative measure of burden sharing, the *among-ally* indicator. This is defined in literature as each contributor's share of the total contribution by all members. According to Sandler and Hartley 2001: 883-4, 'Another burden-sharing measure, devised by Sandler and Forbes (1980), denotes *among-ally* burdens by relating an ally's share of NATO's total spending ... to its derived benefits from being defended'. Sandler and Forbes proxied the benefits derived from defence spending by what was being protected by NATO activities. This was taken to be a simple average of three factors, namely, each ally's industrial base (approximated by the ally's share of the combined GDP of NATO members), its population (in relation to total population of all NATO members), and its exposed borders (in relation to exposed borders of all NATO members).<sup>4</sup> Within this framework,

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<sup>4</sup> The result has a semblance to the statistics given in Table 1 if NATO is substituted for each multilateral agency there and the average of the three benefit factors (including GDP) also substitutes for GDP in the same table.

Wilcoxon tests were employed to formally determine whether the distribution of defence burdens is the same as the distribution of average benefit shares. This approach of *among-ally* burden-sharing analysis has also been adopted by Khana and Sandler (1996) and Sandler and Murdoch (2000), among others. But the simplistic Wilcoxon test has weaknesses. For instance, in the event of a mismatch between relative burden sharing and benefit derived, it is not possible to determine which member countries—the bigger or the smaller—are the exploiters. Nor would it shed light on the factors explaining the observed exploitation. While the econometric approach devised and used in the present study is based on the *among-ally* framework, it manages to overcome these defects. Specifically, our approach indicates whether in the event of exploitation, smaller members are exploiting the bigger ones (as initially assumed by Olsen and Zeckhauser [1966] and in the studies thereafter) or whether it is reverse exploitation, with bigger members exploiting the smaller ones. It also explains the reasons for whatever form of exploitation is observed in terms of other economic and political factors, along the lines of Kwon’s (1998) study that was, however, based on a *within-ally* framework.

### 3.3 Econometric approach adopted in the study

#### 3.3.1 The postulated determinants of burden sharing tested for

Our interest is in finding out the extent to which the ability-to-pay explains the contributions to multilateral aid agencies by DAC members, and in identifying other specific domestic factors (beyond the relative ability-to-pay) that have hindered or enhanced their cross-member contributions.<sup>5</sup>

As in virtually all previous multilateral burden studies, a DAC member’s relative ability-to-pay  $x_i$  is proxied by its relative share of the group GDP (such that  $\sum_{i=1}^n x_i = 1$ ,  $i = 1, \dots, n$ , where  $n$  is the number of DAC members). Ideally, i.e. if exploitation or reverse exploitation hypothesis is not supported, the share  $y_i$  of each member  $i$  in the funding of a particular multilateral aid agency should also be equal to  $x_i$ , i.e.,  $y_i = x_i$ . Otherwise, if  $y_i > x_i$ , there is said to be exploitation of the bigger members by the smaller ones while reverse exploitation exists if  $y_i < x_i$ . But, as pointed out earlier, available evidence suggests that the equality does not seem to hold, although the direction of inequality might not necessarily be the same for all multilateral aid agencies. Hence, there is need to explain relative burden sharing in terms of other (particularly, domestic) factors, i.e., after controlling for the effect of ability-to-pay.

One such factor is the per capita income level. One would expect this to provide more impetus to the ability-to-pay beyond that induced by the size of the overall GDP. More affluent but small-sized members may be able to bear a disproportionate share of the

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<sup>5</sup> There is some confusion in the literature as to whether the scale factor, such as the relative size of GDP, is an ability-to-pay or benefit derived variable. At times, both are implied simultaneously. For example, Kwon (1998: 39), in explaining the concept of exploitation, makes references to both benefits and resources (i.e., ability) thus: ‘Those who would benefit most from a collective good and have the greatest resources to provide it will bear a disproportionate share of the costs, while ‘smaller’ members of the group will bear a burden that is less than their share of the benefits and resources, behaving as free (or cheap) riders’. Here, we refer to it simply as ‘ability-to-pay’, without necessarily implying that it could also not be referred to as ‘benefit received’ indicator.

financial burden, and thus we posit a positive effect of this on the *ex post* burden share. But the level of per capita income can also affect each donor's desire and, hence, demand for the services of that particular multilateral agency. This latter effect can possibly also work in an opposite direction to the ability-to-pay effect or high per capita income level (even outweighing it). This suggests that the overall result of the effect of the per capita income level is an empirical issue only, rather than what can be definitely determined *a priori*.

Some member countries, for various reasons, are more generous 'givers' than others, even after controlling for the ideological orientation of the respective government in power. To capture this possibility, we test for the effect of the members' overall aid-giving generosity. This is measured as the share of each country's total multilateral and bilateral ODA versus GDP. The higher this combined generosity ratio, the higher the relative share in each multilateral aid agency's finance is expected to be.

Similarly, some members invariably have more concern for the poor nations. The activities of multilateral aid agencies are more focused towards the poorer developing countries, thus providing an effective channel for pro-poor donors. Thus after controlling or allowing for their ability-to-pay and other factors, these donors would be more willing than other countries to finance the multilateral aid agencies. To test this hypothesis, we include, as our proxy for pro-poor concern in external assistance, each donor's share of bilateral aid allocation to the poorest developing countries (those with a per capita income of less than US\$760 in 1998) versus total bilateral aid. We posit a high share of bilateral aid to imply also a higher share for the multilateral aid agencies.

A complementary way of testing the same is to see whether there is a correlation between domestic altruism and concern for the poor (as proxied by the prevailing income distribution pattern of the donor) and extending this altruism to poor countries through multilateral aid agencies. In this context, we posit a positive association between the donor's high egalitarian income distribution pattern and the relative share of the burden of multilateral aid agencies. Two alternative patterns are tested for: the Gini coefficient (an inequality indicator) and the share of income accruing to the poorest 20 per cent of the population (an egalitarian or equality indicator). We expect the former to be negatively related to the donor's relative burden sharing and the latter to be positively related to it.

Also, the ease with which a member is able to bear financial responsibility for the agencies should depend on the size of the public sector in that country. With a very lean public sector, the capacity to fund multilateral aid agencies would be reduced, since the country's resources are sufficient to meet only the barest responsibilities of the government, both domestically and abroad. The reverse should be the case if the public sector is large. In this instance, the size of the public sector is proxied by the share of government spending in GDP and we expect it to be positively related to relative donor burden sharing.

The fiscal position of the government is associated with the above. A government with a chronic and unsustainable deficit would be constrained to assume financial responsibility for the multilateral aid agencies. Testing for this factor, we use the share of fiscal surplus in the total budget (i.e., total expenditure) as a proxy, and posit positive effects.

The overall domestic economic climate in each donor country is another possible factor that could influence the ability to carry financial responsibility for the multilateral agencies. When the economy is buoyant and businesses booming, the government has more freedom to focus on international aid issues. We test for the relevance of this factor by including economic (real GDP) growth and an indicator of the phase of economic cycle in the alternative equations. A positive effect of each on relative burden sharing is expected.

EU members have their own separate collective or multilateral aid programme, and contributions are made in the same manner as to other multilateral aid agencies. Thus, it is not unlikely that contributions to EU's own programme would crowd-out assistance to other agencies, as would be the case if each EU member country has a more or less fixed multilateral aid budget. To test if this true, we include a dummy variable for EU membership (taking a value of 1 if the donor is an EU member and zero otherwise). We expect its coefficient to be negative in the equations for partial or full crowding-out proposition to be supported.

Contributions to multilateral aid agencies cannot be divorced from domestic polity in donor countries. Particularly, ideological orientation of the government in power should be a factor. Generally, it appears that a right-wing nationalistic government is not sympathetic to pro-poor issues in a multilateral context which yields no direct or tangible *quid pro quo* for the country. Thus, we single out this political factor by including as an explanatory variable the extent to which the government is right-wing oriented. We expect its coefficients to be negatively signed. Kwon (1998) reported empirical evidence in support of this with regard to the funding of the UN.

### *3.3.2 The dependent variables and multilateral aid agencies considered*

The aid agencies are classified into six categories. One is the International Development Association (IDA), which is the soft loan window of the World Bank. The second represents the totality of other World Bank windows: the International Bank for Reconstruction and Development (IBRD) and International Finance Corporation (IFC), the private sector financing window. Contributions to the World Bank's Multilateral Investment Guarantee Agency (MIGA) are also included in this. Next are the regional development banks, which are not, however, decomposed into soft, standard or private sector financing windows in the data source. The fourth is the European Community (EC) aid programme, to which only EU members contribute. The eligible EC contributions are EC Development Budget, European Commission Humanitarian Office, European Development Fund, and European Investment Bank (interest subsidies only). The fifth are the UN agencies (more than 40 in number) and include Economic Commissions for Africa, Latin America, Western Asia, and Economic and Social Commission for Asia and Pacific. Also included are International Atomic Energy Agency, International Fund for Agricultural Development, United Nations Development Programme, United Nations Environmental Programme, World Food Programme, UNHCR, UNIDO, and last but not least, United Nations University. For some of the agencies, only a part of contributions are included, for example, FAO (52.8 per cent), UNESCO (25 per cent), WHO (75.4 per cent), ILO (15.4 per cent), and even United Nations organization itself (11.5 per cent). Last are the other multilateral institutions, the list of which is rather long. Effective from around 1994, contributions to the GEF and Montreal Protocol on environmental matters are also included in this category.

For each of the six categories, an equation of the share of each donor in the cross-donor total is specified so that there are six equations altogether. In addition, for a complete picture, we specify a corresponding equation for the share of each donor in the overall ODA in all six categories, which provides the universe of multilateral ODA recipients. This is the seventh equation specified.<sup>6</sup>

### 3.3.3 Model specification

We specify for estimation a regression equation of the form:

$$y_{it} = x_{it}\beta + u_{it} \quad (i = 1, 2, \dots, 22; t = 1, 2 \dots T) \quad (1)$$

where:

- $y$  = the dependent variable, which is the donor's share of the burden of the multilateral aid agency, defined as each donor's contribution as a fraction total contributions by all the DAC donors;
- $x$  = the vector of the explanatory variables discussed above;
- $\beta$  = the vector of the explanatory variables' parameters, the estimates of which are to be derived;
- $u$  = the vector of stochastic term that is assumed to satisfy most of the usual conditions; and
- $i, t$  subscripts = indicators of country and time subscripts (respectively) in the panel data.

The above specification implies that the time-series data are pooled across the countries to form a panel dataset used to estimate the equations. Specifically, annual data over the 1970-2000 period are pooled across the 22 donor countries. But the resulting panel data are unbalanced, as values are missing in a random manner with respect to both countries and variables. Also, because of this unbalanced nature of the data, we include only a fixed set of explanatory variables (relative share of the country in the group GDP, per capita income, income distribution, etc.) available for all countries for almost all the years in all the equations estimated. Other explanatory variables (specifically, economic growth, indicator of the phase of economic cycle, ideological orientation of the government in power, size of government and fiscal balance) are divided into two alternative groups. The two groups are not represented simultaneously (only one group at a time). With this procedure, the incidence of multicollinearity is minimized, and the available number of data points maximized, as the inclusion of all or most explanatory variables in a particular equation would drastically reduce the usable data points.

We employ the random-effect method to derive the panel data estimates.<sup>7</sup> Evidence on the existence (or lack) of stability of the parameter estimates becomes indirectly

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<sup>6</sup> Since collective agreement is often reached on a 3-year basis among the contributors, we tried a 3-year average of the variables for some, such as the IDA, but the results were not substantially altered. Hence, we do not report these results here.

<sup>7</sup> This method decomposes the  $u_{it}$  in the above equation thus:  $u_{it} = \varepsilon_i + \lambda_t + \eta_{it}$  (where  $\varepsilon$  is the individual effect,  $\lambda$  the time effect, and  $\eta$  the purely random effect) and incorporates this assumption into GLS technique used in estimating the  $\beta$ . The fixed-effect alternative too gives practically the same results

available in the sense that the two alternative equation estimates cover different periods, as dictated by data availability, with only some regressors (such as ability-to-pay and per capita income) featuring in all equations. Thus, the temporal stability of parameter estimates of these common regressors can be inferred, while for most others this is not crucial in view of the fact that their estimates do not cover long periods. Given the nature of the explanatory variables, we have little or no reason to anticipate their endogeneity. Thus, we employ OLS technique to the data.

### 3.4 Data sources and technique of variable measurements

Subject to limited data availability on the part of some variables, the study uses annual data for the 1970-99 period and covers the 22 members of OECD's Development Assistance Committee (DAC), the list of which is provided in Table 1.

Data on income distribution (quintile income shares) are from the World Bank's *World Development Report* (various issues). The Gini coefficient was computed in the usual manner from the quintile shares. As income distribution statistics are not available for every year, we employed those available (often at intervals of between 5 to 10 years) to other years. This is justified by the fact that income distribution pattern is not volatile; it does not change often or rapidly.

The statistics on all other economic variables are from OECD's *International Development Statistics* (IDS) online, with the exception of GDP, per capita income, size of government, and fiscal balance, which are from the World Bank's *Development Indicators* (online). Beck *et al.* (online) is the source for the political variable, the government's ideological orientation.

Size of the government is measured as the ratio of government spending to GDP; fiscal surplus is expressed as the ratio to total government spending; per capita income is in 1995 real US-dollar value; overall generosity ratio is the share of total ODA (bilateral and multilateral, loans and grants) in GDP, and the extent of being pro-poor in bilateral aid policy is the share of ODA to the poorest countries (with less than US\$760 per capita income in 1998) in total bilateral development aid. The indicator of the relevant phase of economic cycle for each donor country for each year is computed as the residuals obtained from regressing the logarithm of index of real GDP (1970 = 0) for each country on the time trend, so that positive values correspond to a rising economic phase and negative values to a receding phase. Concerning the political or ideological orientation factor, a right-winged executive arm of government (whose value ranges between 1 and -1) takes an indicator value of 1 if classified in the data source as right-wing; zero if classified as ideologically centre; and -1 if classified as left-wing. A similar calibration is conducted for the legislative arm (depending on which ideology has the majority) and then added to that of the executive arm to arrive at the index of both branches of government being right-wing, whose values therefore range between 2 and -2.

The relative ability-to-pay is each country's yearly share in the combined GDP for the 22 DAC members. Since their relative contributions should total 1, this, in estimating

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but the presence of EU membership dummy variable makes it inapplicable and, hence, we opt for the random-effect alternative instead

the burden-sharing equation for EC, means that the computation has to be amended almost yearly, since membership has been increasing and does not cover all the 22 DAC members. This was done. The relative burden sharing for each multilateral agency and for the combined multilateral agencies (i.e., the dependent variables) is calculated in the same way. The decade average values of each of these (burden-sharing) dependent variables and the relative ability-to-pay are presented in Table 1.

The logarithm values of each of the variables (with the exception of the indicator of the phase of economic cycle, real GDP growth, and fiscal surplus-GDP ratio) are employed. Since each of these (except per capita GDP) is a pure fraction, what is actually employed is computed as  $\log(1+z)$ , where  $z$  is the variable in pure fraction form. Thus, the parameter values are elasticities, except for the coefficients of these three variables, and those of the EU dummy variable and the indicator of the government's political ideology (no need to express either of these in logarithm).

The fact that the parameter estimates are elasticities, facilitates the interpretation and evaluation of our results, particularly with reference to the coefficients of the ability-to-pay regressor. If its coefficient were greater than 1, then the exploitation hypothesis is supported while reverse exploitations proposition holds if it is less than 1. Being equal to 1 suggests an absence of exploitation or reverse exploitation.

#### **4 Empirical results**

The empirical results from estimating Equation (1) are as presented in Table 2, which gives the evaluation of the estimates. Table 2 shows that, judging from the high adjusted  $R^2$  values, the equations generally have a very good fit. The fit is particularly high in the burden-sharing equations for the UN agencies, IDA, other multilaterals, and combined multilaterals.

Coefficients of the ability-to-pay variable are positive and statistically significant in all cases, implying that the ability-to-pay is a factor in making contributions to the agencies. They slightly exceed unity in the two alternative equations for the World Bank IDA and other (miscellaneous) multilaterals, suggesting a mild existence of exploitation of bigger DAC members by smaller. More appropriately, they can also imply a lack of exploitation (because the coefficients are approximately equal to unity in a statistical sense) in funding the IDA programme and other (miscellaneous) multilateral agencies. In some other cases, namely the World Bank's non-IDA programmes and regional development banks, the coefficient is approximately equal to (or, more precisely, only slightly greater than) unity in one alternative specification, but substantially less than unity in the second alternative. Thus the overall picture is one of reverse exploitation and bigger DAC members are 'cheap' riders exploiting the smaller members. In all other cases (namely, equations for EC, UN agencies, and all the multilateral aid agencies combined), the coefficients of the two alternative specifications are sufficiently below unity, so that an unambiguous reverse exploitation (of smaller by bigger DAC members) is inferred. The totality of evidence, therefore, is that reverse exploitation exists and smaller-sized countries assume more than a proportionate burden of these multilateral aid agencies. An exception is the funding of the World Bank's IDA programme and miscellaneous multilateral agencies.



Table 2  
The empirical results

	Total multilateral		IDA		World Bank, non-IDA		Regional development banks		UN agencies		European Community		Other multilaterals	
Relative (GDP ) size	0.767 (11.1)	0.682 (12.7)	1.128 (10.2)	1.086 (11.6)	0.598 (6.7)	1.090 (5.2)	0.521 (1.9)	1.039 (5.1)	0.983 (16.4)	0.800 (16.3)	0.986 (17.7)	0.933 (18.7)	1.089 (9.6)	1.075 (9.3)
Per capita income level	-0.001 (-0.1)	0.008 (0.9)	-0.020 (-1.6)	-0.002 (-0.2)	-0.025 (-1.3)	-0.009 (-0.3)	-0.214 (-5.2)	-0.125 (-3.5)	-0.003 (-0.5)	0.008 (1.7)	-0.004 (-0.5)	-0.004 (-0.6)	-0.024 (-1.7)	0.0001 (0.01)
Overall generosity ratio	-2.171 (-1.4)	1.256 (0.8)	4.503 (2.5)	3.559 (1.7)	4.097 (1.3)	8.920 (1.8)	33.231 (4.4)	19.789 (3.2)	3.919 (4.7)	5.537 (6.2)	0.681 (0.5)	0.434 (0.3)	4.872 (2.2)	5.713 (2.5)
Extent of being pro-poor in bilateral aid programme	0.075 (4.5)	0.064 (3.6)	0.037 (1.9)	0.051 (2.2)	0.016 (0.4)	0.004 (0.1)	0.080 (1.2)	0.123 (1.9)	0.050 (5.6)	0.038 (3.8)	-0.016 (-1.0)	-0.005 (-0.3)	0.032 (1.4)	-0.011 (-0.4)
Gini coefficient, extent of income inequality	-0.210 (-3.0)	–	-0.260 (-3.2)	–	-0.429 (-2.6)	–	-1.430 (-5.4)	–	-0.185 (-5.1)	–	0.170 (2.8)	–	0.037 (0.7)	–
Income egalitarian extent, share of the 20% poorest population	–	0.251 (1.9)	–	0.338 (2.0)	–	0.474 (1.1)	–	1.146 (2.6)	–	0.094 (1.3)	–	-0.111 (-0.9)	–	0.013 (0.1)
Size of government (government expenditure-to-GDP ratio)	0.135 (2.6)	–	-0.060 (-0.9)	–	-0.112 (-1.1)	–	-0.998 (-4.0)	–	0.008 (0.2)	–	-0.017 (-0.3)	–	0.209 (2.7)	–
Fiscal position—surplus-to-total expenditure ratio	-0.000 (-0.4)	–	0.000 (0.1)	–	-0.000 (-0.3)	–	-0.001 (-0.8)	–	0.000 (0.1)	–	0.0003 (1.8)	–	0.000 (2.7)	–
Being EU member	-0.003 (-0.4)	0.008 (1.2)	-0.010 (-1.1)	0.006 (0.7)	0.016 (1.1)	0.011 (0.5)	-0.018 (-0.7)	0.012 (0.5)	-0.010 (-2.2)	-0.002 (-0.6)	NA	NA	0.004 (0.3)	-0.004 (-0.4)
Rising phase of economic cycle	0.055 (1.2)	–	-0.026 (-0.5)	–	0.102 (0.8)	–	-0.010 (-0.1)	–	0.049 (2.2)	–	-0.098 (-2.4)	–	-0.018 (-0.3)	–
Economic (real GDP) growth	–	-0.001 (-1.1)	–	-0.0004 (-0.6)	–	0.0002 (0.1)	–	-0.0004 (-0.2)	–	-0.0005 (-1.6)	–	0.0006 (1.2)	–	0.0006 (0.7)
Extent of government being right-wing oriented in ideology	–	-0.001 (-0.7)	–	0.0001 (0.1)	–	-0.007 (-2.7)	–	-0.011 (-3.9)	–	-0.0013 (-3.2)	–	0.0024 (3.8)	–	0.0006 (0.5)
Total no. of obs	460	392	411	366	457	389	332	313	460	392	212	200	449	387
Adjusted R <sup>2</sup>	0.770	0.816	0.842	0.858	0.252	0.413	0.538	0.521	0.941	0.951	0.953	0.975	0.770	0.790

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- Notes: (i) The dependent variable for each multilateral aid agency indicated on top of the table is each donor's burden sharing in respect of that agency (i.e., fraction of the agency's ODA receipt provided by that donor).
- (ii) The dependent variables and the regressors (except the last 5) are in logarithms so that the parameter estimates of regressors in logarithms are elasticities.
- (iii) The numbers in parentheses below the parameter estimates are the t-values. A parameter estimate is statistically significant at 1%; 5%; and 10% levels if its t-value is, in absolute sense, up to 2.6; 2.0; and 1.6 respectively.

But against expectations, coefficients of the per capita income are not positive nor statistically significant in the pair of burden-sharing equations for any of the agencies. Instead, they are negative and statistically significant in the equation pair for regional development banks. This suggests that a country's greater affluence versus other members, does not improve burden sharing for these agencies beyond the effect of affluence, as already implied by that particular donor's relative share in the overall GDP of the group. The evidence further suggests that burden sharing in funding the regional development banks is even regressive, with a higher affluence level reducing a donor's share.

Except in one of the equation pairs for the overall multilateral ODA burden sharing where the (statistically insignificant) coefficient of generosity ratio is negative, the coefficients of this factor are positive in all, and statistically significant in most cases. This suggests that the characteristic generosity of each donor is also reflected in the extent to which these 'bankroll' the multilateral aid agencies, implying that these aid agencies are seen as a channel for donor generosity. Another interesting feature is the high values of the elasticity of this actor.

High elasticity infers that a given proportionate change (be it an increase or a decrease) in the overall generosity ratio translates into multiple proportionate increase (or decrease) in the multilateral aid agencies' financial burden sharing. This, in turn, suggests that the financing of multilateral agencies is largely a residual item in the donor's overall aid budget, so that any change in total aid resources results in more than a proportionate modification in allocations to the multilaterals.

Our income inequality measure, the Gini coefficient, enters the two equation for EC burden sharing with the unexpected positive coefficient that is statistically significant and the equation for other (miscellaneous) multilateral burden sharing with an insignificant positive coefficient. In each of the other cases, the coefficient is negative, as expected, and also statistically significant. On the other hand, the coefficient of the egalitarian measure (i.e., share of income accruing to the poorest 20 per cent of the total population) is found, as expected, to have the opposite sign to that of the Gini coefficient, although statistical significance is lower in all cases. Therefore, the EU donor countries do not see EC as a vehicle for international altruism and re-distribution as such, nor do they generally see the miscellaneous multilateral programmes (including the GEF, Montreal Protocols) as a channel for their re-distribution concerns. On the other hand, donors view other aid agencies (the World Bank IDA and non-IDA programmes, regional development banks, and UN aid agencies) as a channel for distributing to developing countries a portion of the amounts allocated domestically for pro-poor and pro-egalitarianism measures.

Coefficients of the factor quantifying the extent to which a donor is pro-poor in bilateral aid programmes are negative and statistically insignificant for EC, while they are mixed (positive in one and negative in the other) in the equations for the other (miscellaneous) multilaterals. In all other equations, the coefficients are positive, as expected, and statistically significant in all except for the World Bank's non-IDA programme. Thus, there is evidence that the pro-poor disposition of a donor with regard to bilateral aid policies influences the extent to which it is willing to share in financing the multilateral aid agencies. This does not hold for the EC and the miscellaneous multilateral agencies, on the part of which there is no evidence to suggest these are considered the multilateral

avenue for assisting poor countries worldwide. This is in line with the evidence based on income distribution pattern, as discussed in the previous paragraph.

The coefficient of the size of government is positive and statistically significant, as expected, only in the equation for other multilateral agencies and for the combined multilateral ODA. But it is significant and negative for the regional development banks, while, in other equations, it is at times positive or negative but without ever being statistically significant in any. Thus, the size of government enhances a donor's financial burden sharing of other multilateral aid agencies, and to some extent the generality of aid agencies. Regional development banks are a notable exception: donors with a high government size shy away from supporting these.

The coefficient of the size of government fiscal position (surplus) is positive and statistically significant, as expected, in only the burden-sharing equation for other multilateral agencies, and to only a marginally significant extent, also for the European Community (EC). In other equations, it is at times positive or negative but without ever being statistically significant in any. Thus, the existence, as well as the extent of a budgetary surplus in the government finances, enhances a donor's financial burden sharing of other multilateral aid agencies and to a less certain extent the EC, while it appears neutral in other cases.

The coefficient of the EU member dummy variable is at times positive and at times negative, but not statistically significant in any equation, except in the pair for UN agencies, where the negative coefficient is significant. Thus, with the probable exception of funding the UN agencies, the evidence emerging does not suggest that EU members consider their contributions to EC aid programmes an alternative outlet for their fixed multilateral ODA budgets, i.e., members' contributions to EC do not affect their burden-sharing responsibility (or crowd-out their contributions) to other multilateral aid agencies.

The coefficient of the phase of economic cycle has the expected positive and is statistically significant coefficient for the UN agencies. However, it has the unexpected negative and statistically significant coefficient in the burden-sharing equation for the EC, suggesting that a donor's economic recession enhances its burden-sharing efforts in financing EC. This result is not plausible and could have arisen from a specification problem, particularly when considered within the context of the coefficient of this same factor that is not statistically significant in any other equation apart from those two. Overall, the impression seems to be that a donor's current phase of the economic cycle has little or no bearing on its burden-sharing responsibility of the multilateral aid agencies. The same applies to economic growth: its coefficient is not statistically significant in any equation, except for the UN agencies where its negative coefficient is only marginally significant. To sum up, it appears that neither the phase of economic cycle nor rate of economic growth affects donor's burden-sharing responsibility.

The coefficient of the extent of donor government being politically right-wing in ideology is, as expected, negative and very statistically significant in the burden-sharing equations for the World Bank's non-IDA programmes, regional development banks, and the UN agencies. But the exact opposite is observed for the EC equations, where the coefficient is positive and significant. The coefficient is not significant for IDA and other multilateral agencies, nor for combined multilateral ODA, although it has the expected negative sign here. The conclusion seems to be that right-wing donor

governments are generally more parsimonious and less disposed to providing financial assistance to worldwide multilateral aid agencies, particularly, the World Bank's non-IDA programmes, regional development banks, and UN agencies. Furthermore, donors in the EU see EC as being closer to home and prefer to focus their limited multilateral generosity here.

## **5 Summary and conclusion**

Multilateral aid agencies need adequate funding to operate effectively and core funding comes from the rich countries, particularly OECD's DAC members that presently constitute 22 nations. The study endeavours to provide an understanding of the multilateral aid agencies' main sources of funding, by highlighting the particular factors that have shaped in the past DAC members' relative share in the finances of these agencies. This is a topic that has hardly been addressed in the existing empirical literature.

Our empirical analysis is based on annual data over 1970-2000, pooled across the 22 donor countries. We devise and specify a burden-sharing equation for each donor's share in the total ODA receipts of each agency as well as in all the multilateral aid agencies combined. And in order to test for the validity of the so-called exploitation hypothesis as well as for a number of other domestic economic and political factors specific to each donor, we explain the cross-donor country and temporal variations in terms of the donors' ability-to-pay. The model was estimated and the highlights of our findings include the following:

- i) The totality of evidence with respect to the effect of the ability-to-pay factor is that reverse exploitation predominates, i.e., smaller-sized countries bear more than a proportionate burden of these multilateral aid agencies,.
- ii) This suggests that contribution burden-sharing of the agencies is not enhanced by a donor country's greater affluent position beyond the effect of affluence already implied by its overall economic size. It is further suggested that burden sharing in funding the regional development banks is even regressive; a higher level of affluence reduces donor burden sharing.
- iii) The inherent generosity of each donor is also reflected in the extent to which such a donor 'bankrolls' the finances of multilateral aid agencies and that the donors see these aid agencies as an avenue for channelling their generosity abroad. Also, the financing of multilateral agencies is a largely residual item in the donor's overall aid budget so that any percentage change to this budget would result in a disproportionate change in the allocation to multilaterals.
- iv) Donors view aid agencies—the World Bank IDA and non-IDA programmes, regional development banks and UN aid agencies included—as a channel for extending to developing countries a portion of the amounts allocated domestically to pro-poor and pro-egalitarianism measures. But this is not the case with EC miscellaneous multilateral programmes; these are not regarded as a channel for pro-poor concerns.

- v) There is evidence that the pro-poor disposition of a donor in its bilateral aid policies influences the extent to which it is willing to share in the financial burden of the multilateral aid agencies. These are perceived as an avenue for assisting poor countries worldwide, but again, with the exception of the EC and miscellaneous multilateral programmes.
- vi) The size of government enhances a donor's financial burden sharing of other multilateral aid agencies and, to some extent, the generality of aid agencies. The notable exception are regional development banks: donors with high government size shy away from supporting these agencies.
- vii) The existence and extent of budgetary surplus in government finances enhance the donor government's burden-sharing efforts of other multilateral aid agencies and to a less certain extent the EC, but in other cases it appears neutral.
- viii) EU members do not appear to have treated their contributions to EC aid programmes as an alternative outlet for a fixed multilateral ODA budget, i.e., contributions to EC do not crowd-out their contributions to other multilateral aid agencies.
- ix) Neither the phase of economic cycle nor rate of economic growth affects the burden-sharing responsibility of donors.
- x) Right-wing oriented donor governments are generally more stingy and less disposed to providing financial assistance to worldwide multilateral aid agencies, particularly, the World Bank's non-IDA programmes, regional development banks and UN agencies, whereas EU members view the EC as being closer to home and prefer to focus their limited multilateral generosity here.

In conclusion, the study has shed some light on a number of factors that are likely to affect relative burden sharing and donor support for the budget and operations of the multilateral development agencies. Given the current trends in factors like donor country per capita income levels, fiscal situation, ideological leaning of the political party in power, and so on, what these portend for future financial support and burden sharing among the donors can be inferred. However, given the rather pioneering and exploratory nature of the present study, a more detailed and disaggregated analysis of some of these agencies (e.g., UN agencies) was not undertaken. Neither was a very elaborate model specific to each type of multilateral agency built, as we chose instead to simply adapt the existing generalized public goods model framework. While the analysis undertaken was adequate for achieving the objectives of the study, we hope and recommend that future studies take up additional exploration of some of these issues.

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