THE NEED FOR GOVERNANCE REFORMS IN HIGHLY INDEBTED, LOW-INCOME COUNTRIES TO MAKE DEVELOPMENT AID EFFECTIVE*

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ABSTRACT

Empirical studies do not agree on the conditions that are necessary to assure that ODA[1] be effective in recipient countries.

This paper finds that average Official Development Aid per capita does significantly contribute to higher levels of per capita income only when: i) ODA is not fungible; ii) domestic savings are depressed by high debt service and low levels of per capita income, and iii) foreign savings inflow is prevented by poor governance or lack of guarantees on foreign capital reimbursement.

It is advanced that ODA does not affect levels of per capita income, investment and growth except for a restricted subgroup of countries with high level of foreign debt, low income, and poor protection of international investment.

These results are an indirect support to World Bank debt relief policies that stress conditionality governance reforms in highly-indebted, poor countries (HIPC), since these policies may allow HIPC countries to leave the group for which ODA is absolutely necessary and effectively impacts investment only when aid is not fungible. The scheme proposed in the final section may be made even more appealing to private banks by financing debt relief partially through reduced or foregone ODA transfers.

Key words: ODA, growth, foreign debt, domestic & foreign savings, investment, governance, debt relief.

RESUMEN

No existe consenso en los estudios empíricos sobre las condiciones necesarias para que la ayuda oficial para el desarrollo[2] (ODA, por sus iniciales en inglés) sea efectiva en los países receptores. El estudio plantea que la ODA contribuye a elevar los niveles de ingreso per capita solamente si: i)la ODA es no fungible; ii) el nivel de ahorro interno está restringido por un alto servicio de la deuda externa y bajos niveles de ingreso per capita, y iii) flujos de entrada de ahorro extranjero bajos o inexistentes debido a políticas inadecuadas o falta de garantías para el reembolso del capital.

El artículo concluye que la ayuda oficial para el desarrollo no afecta significativamente los niveles de ingreso, inversión y crecimiento per capita, excepto en un pequeño grupo de países que presentan un alto nivel de endeudamiento externo, un bajo nivel de ingreso y una limitada protección de la inversión internacional.

Los resultados sustentan indirectamente las políticas de reducción de la deuda del Banco Mundial, con la condición de que los países pobres y con alto nivel de endeudamiento internacional realicen reformas que permitan, en el mediano y largo plazo, eliminar la necesidad de la ODA no fungible y que, mientras sea necesaria, ésta incida efectivamente sobre la inversión. Se sugiere, finalmente, un mecanismo atractivo para los prestamistas privados en el que una parte del esquema de reducción de la deuda se financia con los excedentes no utilizados de los recursos destinados a la ODA.

Palabras claves: ODA, crecimiento, deuda externa, ahorro interno y extranjero, inversión, política, alivio de la deuda.

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[1] Official Development Assistance (ODA) consists of net disbursements of loans and grants made on concessional terms by official agencies of the members of DAC and certain Arab countries to promote economic development and welfare in recipient economies listed as developing by DAC.

Loans with a grant component greater than 25 percent are included in ODA, as are technical cooperation and assistance. ODA is said to be fungible when spent in consumption.

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Introduction

The relationship between Official Development Aid[1] (ODA) and growth in developing countries has long been debated in the theoretical and empirical literature during the last decade.

In theoretical literature, ODA is considered from two different perspectives. First, it is considered an additional productive factor in the aggregate production function, apart from private capital and labour (such as, an additional source of non-private investment in infrastructure). Second, it is considered a supplementary source for financing investment in physical and human capital when domestic or foreign savings are scarce due to high debt service, low levels of per capita income, and insufficient guarantees for foreign investment.

This dual perspective on the potential role of ODA emerges when dealing with the link between aid and growth. Boone (1996) maintains that growth is positively influenced only when ODA contributes to physical capital investment. Burnside and Dollar (2000), instead, state that aid is more effective if it boosts income and, consequently, generates an increase in the savings rate.[2]

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[2] ODA is seen as an income transfer that can be spent either in consumption or in investment. Easterly (1999) considers aid permanent income given its persistence in time. Such a view would justify spending aid in consumption rather than in investment. This may be the origin of a moral hazard problem since recipients will have an incentive to maintain or even decrease savings as long as they receive aid calculated as the equivalent of the saving-investment gap. On the other hand, Gunning (2001) and Soludo (2001) also controvert on the use of aid as a substitute for taxa-

A factual support for the second view is found in the two-gap model, a particular version of the Harrod-Domar growth model that has been extensively used to estimate the amount of foreign aid required by developing countries to temporarily fill the gap between investment needs and effective savings (Easterly, 1999). Accordingly, the mechanism should be effective provided that two short-run conditions are met: i) aid goes into investment in a one to one ratio; ii) there is a fixed linear relationship between growth and investment in the short run.

Unfortunately, empirical support for both hypotheses is scarce as most empirical works on ODA conclude that its impact on growth is very low if not inexistent (Boone, 1996; Easterly, 1999; Burnside and Dollar, 2000; Lensink and Morrissey, 2000). In particular, Dawson and Tiffin (1999) find robust evidence that ODA and GDP do not hold any long-run relationship in the case of India, and Boone (1996) finds that aid positively affects total consumption only when government consumption is added to private consumption.

According to Lensink and Morrissey (2000), potential reasons for ODA's lack of effect on growth are: i) the diversion of aid funds from investment; ii) aid granting for poverty-relief or social sectors, or iii) low productivity of investment when ODA funds are not diverted.

Yet, not all results suggest that ODA is completely useless and ineffective.

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tion. Finally, ODA might have an additional role concerning debt service that should not be overlooked, as emphasized by Soludo (2001).

Burnside and Dollar (2000) agree on the reduced impact of ODA on growth, but they assert "aid has a positive impact on growth in developing countries when good fiscal, monetary and trade policies are present but has little effect in the presence of poor policies".

Lensink and Morrissey (2000) find strong evidence that uncertainty, measured as the instability of aid receipts, is related significantly and negatively to growth via the "investment channel". According to them, uncertainty arises from both donor-recipient relations[3] and shocks to the economy.

Boone (1996) concludes that aid is effective only when it is non-fungible (this is the case, according to the author, when the aid to GDP ratio is higher than 15 percent) and it has a weak but significant influence on the reduction of infant mortality.[4]

It is interesting to note that Boone's (1996) findings are not entirely consistent with those from Burnside and Dollar (2000) since, in the first case, it is the impossibility of diverting aid resources from investment, not

good governance or good macroeconomic policies, that makes ODA effective.

This paper starts from the apparent contrast between Boone (1996) and Burnside and Dollar (2000) results and tries to interpret them from a different perspective by providing additional evidence.

In the second section, a simple framework is outlined for evaluating the effect of ODA from two alternative assumptions in which this variable (ODA) is considered either an additional productive factor or a form of complementary savings. In the third section, these two hypotheses are tested and we find that the second one is supported for a subgroup of low income, high debt service countries which also happen to have significantly poorer legal guarantees for foreign investment with respect to other ODA recipients. These countries also have an ODA to GDP ratio higher than 15 percent and, therefore, meet the "non fungibility condition" described by Boone (1996). Only in such a case, does ODA significantly affect physical capital investment and income per worker levels and growth.

In the concluding section, it is argued that the results obtained indirectly support the World Bank policy concerning HIPC countries, since debt relief measures conditional to governance reforms may drive these countries out from the group for which aid significantly supports levels of income per worker (and even its growth rate), thus reducing the need for and the effectiveness of foreign aid in the future. If these findings were correct, an additional implication would be that the current sacrifice of private lend-

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[3]   Burnside and Dollar (2000) distinguish between bilateral and multilateral ODA. Donors in the first category are strongly conditioned by their own strategic interests, while those in the second category allocate aid as a function of (low) income level, population (small countries get more), and policy.

[4]   Concerning the crucial subject of aid effectiveness, Gunning (2001) reviews and illustrates different views on aid use and the case for conditionality (in)effectiveness both, from theoretical and empirical standpoints. Furthermore, Gunning (2001), Ranis (2001), and Soludo (2001) discuss the controversial issue of ex-ante *vs* ex-post conditionality along with bundling.

ers in terms of foregone debt service might therefore, be compensated for by an amount equal to the expected future government savings on ODA transfers to former HIPC countries.

1. ODA and the Determinants of the Differences in Per Capita Growth Levels: Two Hypotheses

A simple hypothesis is formulated to convey the idea that ODA may be considered an additional productive factor in the aggregate production function:

Hyp 1: ODA is an additional productive factor in the aggregate production function of ODA recipients

The standard Mankiw-Romer-Weil (MRW) (1992) production function, accounting for human capital and including ODA as an additional production factor, then becomes:

$Y_t = F(K, H, AL, ODA) = K_t^\alpha H^\beta (A_t L_t)^{1-\alpha-\beta-\gamma}(ODA)^\gamma$ where $\alpha + \beta + \gamma < 1$

where K stands for private physical capital, H is the stock of human capital, A is a labour-augmenting factor, L is labour, and *ODA* is Official Development Aid.

Physical capital and human capital have the following standard laws of motion:

$$\dot{K} = s_k Y - \delta K$$
$$= s_k F(K, AL) - \delta K \qquad (1)$$

and:

$$\dot{H} = s_h Y - \delta H$$
$$= s_h F(K, AL) - \delta H \qquad (2)$$

where s_k and s_h are the fraction of income invested respectively in physical and human capital,

while the growth of the labour input is expressed as: $L_t = L_0 e^{nt}$.

Solving for the steady state values of physical and human capital one gets:

$$\frac{Y}{L} = Af(k*, h*, ODA) = Ak*^\alpha h*^\beta ODA^\gamma$$
$$= A_0 e^{gt} k*^\alpha h*^\beta oda^\gamma . \qquad (3)$$

where all lowercase variables are original inputs divided by workers per efficiency unit, and:

$$k* = \left(\frac{s_k^{1-\beta} \cdot s_h^\beta (oda)^\gamma}{n + g + \delta} \right)^{\frac{1}{1-\alpha-\beta}} \qquad (4)$$

and:

$$h* = \left(\frac{s_k^\alpha \cdot s_h^{1-\alpha} (oda)^\gamma}{n + g + \delta} \right)^{\frac{1}{1-\alpha-\beta}} \qquad (5)$$

with *oda=ODA/AL*.

By substituting in the production function and taking logs, one gets:

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$$\ln = \left(\frac{Y}{L}\right)* = \ln(A_0) + g - \frac{\alpha+\beta}{1-\alpha-\beta}\ln(g+n+\delta)$$
$$+ \frac{\alpha}{1-\alpha-\beta}\ln(s_k) + \frac{\beta}{1-\alpha-\beta}\ln(s_h)$$
$$+ \frac{\gamma}{1-\alpha-\beta}\ln oda \quad\quad (6)$$

or:

$$\ln(\frac{Y}{L})* = \ln(A_0\,') + g - \frac{\alpha+\beta}{1-\alpha-\beta}$$
$$\ln(g+n+\delta) + \frac{\alpha}{1-\alpha-\beta}\ln(s_k)$$
$$+ \frac{\beta}{1-\alpha-\beta}\ln(s_h) + \frac{\gamma}{1-\alpha-\beta}\ln da \quad\quad (6')$$

where

$$\ln(A_0\,') = \ln(A_0) - \frac{\gamma}{1-\alpha-\beta}\ln A$$

and $da = ODA/L$

According to this equation, if ODA is an additional productive factor, it should positively affect levels of income per worker and the numerator of its coefficient should be exactly its output elasticity.

Hyp 2: ODA compensates for the shortage of private and international investment financing in countries with poor governance.

Now, let us assume that ODA is not a productive factor and that each country has the traditional MRW (1992) aggregate production function:

$$Y_t = F(K, H, AL, ODA) = K_t^\alpha\,H^\beta?^\gamma(A_tL_t)^{1-\alpha-\beta}$$
where $\alpha+\beta < 1$.

Let us assume also that, for countries with low income, high debt service, and poor governance (from now on LIHDSPG countries), domestic and international savings are insufficient to finance physical capital growth and therefore, are supplemented by ODA.[5]

For these countries, physical capital and human capital have the following laws of motion:

$$\dot{K} = s_k Y - \delta K + ODA$$
$$= s_k F(K,AL) - \delta K + ODA$$

$$\dot{H} = s_h Y - \delta H$$
$$= s_h F(K,AL) - \delta H$$

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[5]   One may wonder why this does not occur for other ODA recipients also. An explanation may be the following. Consider that the exogenous driving force of the law of motion of physical capital is the amount of profitable ideas, which may be implemented domestically. With rational economic agents, domestic aggregate savings devoted to domestic investment should not be more than what is exactly needed to finance such profitable ideas in equilibrium. If domestic savings due to low income are insufficient, international savings should do the case. Only with high debt service and poor governance under the risk of repudiation and confiscation of private property, it may occur that the inflow of both domestic and foreign savings is insufficient to finance these profitable ideas. However, even in this case, poor governance may divert ODA from productive uses when aid is fungible. Therefore, only when ODA is not fungible (in addition to all previously mentioned conditions), it significantly contributes to investment and positively affects growth.

which allow to obtain the following laws of motion and steady state values of physical and human capital per efficiency unit (respectively denoted as k and h):

$$\dot{k}_t = s_k y_t + ODA/AL - (n + g + \delta)k$$
$$\dot{h}_t = s_h y_t - (n + g + \delta)h_t$$

$$k* = \left(\frac{\left(oda * s_k\right)^{1-\beta} \cdot s_h^{\beta}}{n + g + \delta}\right)^{\frac{1}{1-\alpha-\beta}} \qquad (7)$$

$$h* = \left(\frac{\left(oda * s_k\right)^{\alpha} \cdot s_h^{1-\alpha}}{n + g + \delta}\right)^{\frac{1}{1-\alpha-\beta}} \qquad (8)$$

By substituting them in the production function and taking logs, one obtains:

$$\frac{Y}{L} = Af(k*, h*) = AK*^{\alpha} h*^{\beta}$$
$$= A_0 e^{gt} k*^{\alpha} h*^{\beta} \qquad (9)$$

and:

$$\ln = \left(\frac{Y_t}{L_t}\right) = \ln(A_0) + gt - \frac{\alpha}{1-\alpha-\beta}$$
$$\ln(s_k) + \frac{\alpha}{1-\alpha-\beta}\ln(oda) + \frac{\beta}{1-\alpha-\beta}$$
$$\ln(s_h) - \frac{\alpha+\beta}{1-\alpha-\beta}\ln(n+g+\delta) \qquad (10)$$

or:

$$\ln(\frac{Y}{L})* = \ln(A_0{}') + g - \frac{\alpha+\beta}{1-\alpha-\beta}$$
$$\ln(g+n+\delta) + \frac{\alpha}{1-\alpha-\beta}\ln(s_k)$$
$$+ \frac{\beta}{1-\alpha-\beta}\ln(s_h) + \frac{\gamma}{1-\alpha-\beta}\ln da \qquad (10')$$

where, again,

$$\ln(A_0{}') = \ln(A_0) - \frac{\gamma}{1-\alpha-\beta}\ln A$$

and $da = ODA/L$.

One may alternatively assume that ODA complements insufficient savings for human capital accumulation. In that case, one would obtain:

$$\dot{H} = s_h Y - \delta H + DA$$
$$= s_h F(K, AL) - \delta H + DA \qquad (11)$$

and:

$$\ln\left(\frac{Y_t}{L_t}\right) = \ln(A_0{}') + gt + \frac{\alpha}{1-\alpha-\beta}$$
$$\ln(s_k) + \frac{\beta}{1-\alpha-\beta}\ln(da) + \frac{\beta}{1-\alpha-\beta}$$
$$\ln(s_h) - \frac{\alpha+\beta}{1-\alpha-\beta}\ln(n+g+\delta) \qquad (12)$$

Once again, the possibility for LIHDSPG countries to catch up depends not only on the levelling of their population growth rate and of their physical and human capital investment rates (and on country specific fun-

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damentals captured by the intercept), but also on ODA received. Thus, in these countries, the model introduces an additional factor of conditionality for convergence in levels.

A comparison of the two hypotheses shows that they are almost observationally equivalent when one focuses on levels of per capita income, but that they are not if one measures variables affecting private investment, which should be significantly related to ODA only in the second case.

1.1 *Determinants of the Difference in Convergence of Per Capita Growth: Three Hypotheses*

Under hypotheses 1 and 2, it is possible to show that, in the proximity of the balanced growth path, *y* converges to *y** respectively at the rate

(1 - α - β - γ) (n+g) ≡ and
λ *(1 - α - β) (n+g)*≡λ   (13)

 as:

Dln(y)/dt=-λ[ln(y)-ln(y*)]   (14)

For both hypotheses, this implies that:

ln(y_t)-ln(y*)=e^{-1^t}[ln(y_0)-ln(y*)]   (15)

If *ln(y*)- ln(y_0)* is added to both sides, one gets an equation for the rate of growth:

ln(y_t)- ln(y_0)=-(1-e^{-λ^t})[ln(y_0)-ln(y*)].

By replacing *ln(y*)* with the steady state solution, one gets under hypothesis 1:

$$
\ln((Y/L)(t) - \ln((Y/L)(0))
$$

$$
= gt + (1 - e^{-\lambda t})\frac{\alpha}{1 - \alpha - \beta}\ln(s_k)
$$

$$
+ (1 - e^{-\lambda t})\frac{\beta}{1 - \alpha - \beta}\ln(s_h) +
$$

$$
- (1 - e^{-\lambda t})\frac{\alpha + \beta}{1 - \alpha - \beta}\ln(n + g + \delta)
$$

$$
+ (1 - e^{-\lambda t})\frac{\gamma}{1 - \alpha - \beta}\ln(da) - (1 - e^{-\lambda t})
$$

$$
\ln((Y/L)(0)) + (1 - e^{-\lambda t})\ln(A_{(0)}')
$$

(16)

and under hypothesis 2 (when one assumes that ODA contributes to physical capital investment):

$$
\ln((Y/L)(t) - \ln((Y/L)(0)) = gt + (1 - e^{-\lambda t})
$$

$$
\frac{\alpha}{1 - \alpha - \beta}\ln(s_k) + (1 - e^{-\lambda t})\frac{\beta}{1 - \alpha - \beta}\ln(s_h) +
$$

$$
- (1 - e^{-\lambda t})\frac{\alpha + \beta}{1 - \alpha - \beta}\ln(n + g + \delta)
$$

$$
+ (1 - e^{-\lambda t})\frac{\alpha}{1 - \alpha - \beta}\ln(da)
$$

(17)

$$
- (1 - e^{-\lambda t})\ln((Y/L)(0)) + (1 - e^{-\lambda t})\ln(A_{(0)}')
$$

Therefore, under both hypotheses, an additional factor of conditionality for convergence is introduced and it is represented by the ODA inflow.

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2. Empirical Analysis

2.1 *Database Description and Descriptive Statistics*

Variables for the empirical analysis are taken from the World Bank database.[6] The dependent variable Y is the gross domestic product per capita converted to international dollars using purchasing power parity rates,[7] L is the number of people who could potentially be economically active (population aged between 15-64) or, alternatively, the ILO labour force.[8] The advantage of the second measure is that it accounts for potential heterogeneity in participation rates across countries, a factor left out when one proxies the domestic labour force with population in the 15-64 age cohort. As in Mankiw, Romer and Weil (1992), s_k is gross domestic investment over GDP, s_H is the (secondary education) gross enrolment ratio or the ratio of total enrolment regardless of age, to the population of the age group that officially corresponds to the level of education shown.

Descriptive statistics for subgroups of ODA recipients show that the LIHDSPG group has a relatively larger aid to GDP ratio (about 15 percent), a much lower school enrolment ratio, and an extremely larger aid to investment ratio. Population is relatively small, but not the smallest among selected subgroups (upper middle income recipients are slightly less populated on average) (Table 1).

The LIHDSPG group also has significant differences with the group of countries having ODA/GDP ratios higher than 15 percent, the threshold Boone (2000) considers necessary for aid to be non-fungible and to have effects on per capita income. More specifically, the secondary school enrolment ratio (15.42 percent against 53.24 percent) and gross domestic investment (16.98 percent against 21.88 percent) are dramatically lower. Government consumption to GDP is also smaller.

The important issue is the comparison between this subgroup and all others in terms of economic freedom (Table 2).[9] The comparison of the LIHDSPG group averages with those of other non-OECD countries shows large and significant differences in terms of economic freedom with both parametric and non-parametric tests. The largest differences with respect to

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[6]   We cannot use the Penn World Tables as the period of time in this analysis does not coincide with that of the Summers-Heston database.

[7]   An international dollar has the same purchasing power over GDP as the U.S. dollar in the United States.

[8]   The ILO labour force includes the armed forces, the unemployed, and first-time job seekers, but excludes homemakers and other unpaid caregivers and workers in the informal sector.

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[9]   The index of economic freedom published in the *Economic Freedom of the World: 2000 Annual Report* is a weighted average of the following seven composed indicators designed to identify the consistency of institutional arrangements and policies with economic freedom in seven major areas: *i) Size of Government; ii) Structure of the Economy and Use of Markets; iii) Monetary Policy and Price Stability; iv) Freedom to Use Alternative Currencies; v) Legal Structure and Property Rights; vi) International Exchange: Freedom to Trade with Foreigners; vii) Freedom of Exchange in Capital and Financial Markets.*

other non-OECD countries are in terms of *legal structure and property rights*[10] and *freedom of exchange in capital and financial markets*.[11] This difference supports the hypothesis that the LIHDSPG subgroup may have relevant difficulties in collecting foreign savings.

2.2 *Econometric Estimates*

As a first step in the econometric analysis, equation (6) is estimated for different subgroups of ODA recipients according to geography, levels of income per capita (high, upper-middle, lower-middle and low) and levels of debt service (high, medium, low). Finally, the group of ODA recipients with an average ODA to GDP ratio higher than 15 percent is considered, as well as the World Bank HIPC countries and the group of low income, high debt service, poor governance (LIHDSPG) countries.

The estimation period is 1975-1997 and the estimation approach is a simple cross-section in which regressors are calculated as estimation period averages and the dependent variable is measured in the final year of the estimation period.[12]

The empirical findings clearly show that ODA has affected levels of GDP per worker significantly and positively only in the Boone and in the LIHDSPG subgroup (Tables 3a-3d).[13] It is difficult to imagine that this relationship is affected by any kind of endogeneity for two reasons. First, high levels of income per worker should cause lower, not higher ODA. Second, regressors and the dependent variable are measured at different time intervals.

However, when trying to measure the impact of ODA on convergence, it is found that growth is conditional on ODA only in the group of countries in which ODA is higher than 15 percent of the GDP. The result is confirmed both in the cross-sectional (Tables 4a-4d) and in the panel (three-year averages) estimate of convergence (Tables 5a-5d).[14] Therefore, one may be led to con-

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[10] The *Legal Structure and Property Rights* index is a composed indicator measuring security of property rights and viability of contracts. It is a weighted average of the following items: i) Legal Security of Private Ownership Rights *(Risk of confiscation)*; ii) Viability of Contracts *(Risk of contract repudiation by the government)*; iii) Rule of Law: Legal Institutions Supportive of the Principles of Rule of Law and Access to a Non-discriminatory Judiciary.

[11] *The Freedom of Exchange in Capital and Financial Markets* composed indicator is a weighted average of the following items: i) Ownership of Banks: Percent of Deposits Held in Privately Owned Banks; ii) Extension of Credit: Percent of Credit Extended to Private Sector; iii) Interest Rate Controls and Regulations that Lead to Negative Interest Rates; iv) Restrictions on the Freedom of Citizens to Engage in Capital Transactions with Foreigners.

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[12] The trend income is used alternatively to observe income to avoid results to be influenced by cyclical effects on output (Temple, 1999). Estimates with the alternative proxies for the dependent variable do not differ substantially and are available from the authors upon request.

[13] Note that human and physical capitals, while significant in the overall sample, are often not significant in subgroup estimates. This is probably due to the limited number of observations in subgroup estimates, which reduces degrees of freedom, and goodness of fit.

[14] Subgroup estimates of convergence obviously measure factors affecting convergence in a re-

clude that in other HIPC countries ODA sustains levels of income per worker through government or private consumption and not through investment. To test this hypothesis, an extended version of the Feldstein-Horioka (1980) test is proposed by regressing investment to GDP ratios on savings to GDP ratios and ODA per capita. The model is estimated with panel fixed effects and the test confirms the hypothesis formulated by showing that ODA significantly affects investment and per capita income growth in the Boone subgroup, but that it does not in the larger HIPC subgroup (Tables 6a-6d).

Conclusions

ODA may have positive effects on income levels and growth per capita if it acts either as an additional productive factor (substituting, for instance, for public expenditure in infrastructure) or as a substitute for domestic and foreign savings in financing domestically profitable ideas when the latter two sources of financing are insufficient because of poor governance, low levels of income, and high debt service.

The relevance of these two theoretical hypotheses is tested on a panel of 112 ODA recipients observed during 23 years. To this end, a group of countries with low per capita income and high debt service is identified and this particular group is shown to have significantly poorer governance if compared to

stricted subset of countries. Therefore, it is reasonable to expect that regional convergence does not always follow the same laws for different groups.

other ODA recipients (LIHDSPG countries). Econometric estimates show that average aid per capita in the last two decades has had positive and significant effects on levels of income per worker only for this group.

Yet, when estimating the impact of ODA on growth, it is found that international aid has significant effects on this variable (and also on investment) only for the subgroup of LIHDSPG countries for which the aid to GDP ratio is higher than 15 percent.

Based on these findings, it is argued that in the case of this small group of countries ODA may compensate for the shortage of domestic and foreign capital. The accumulation of the former is prevented by poor income and high debt service, while the inflow of the latter is prevented by poor governance. On the other hand, ODA is effectively channelled towards investment and it significantly affects growth only when the size of aid is particularly high with respect to domestic GDP or when aid is non-fungible. This argument would justify the different results of ODA on growth for HIPC and Boone's countries.

The results of this paper indirectly support World Bank (1998) debt relief policies conditional to governance reforms in HIPC countries. In fact, these policies may allow HIPC countries to leave the group that needs ODA to support income levels, and for which ODA is effective on investment and growth when it is not fungible. Of course, aid used to whatsoever end should be supported by a detailed country analysis, since reforms, timing and order are fundamental for successfully sustained implementation

of policy choices that are compatible with macroeconomic variable conditions.

The findings presented here suggest the possibility of creating a mechanism for the implementation of self-financing debt relief schemes. If these plans are successful and the reduction of debt service is accompanied by an improvement of governance according to present estimates, the HIPC country will not need international aid anymore. In such a case, savings on ODA transfers could finance the losses of private lenders due to the foregone debt service.

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Table 1

Descriptive Statistics for Selected Subgroups of Countries (foreign debt classification)

	All Countries	Severely Indebted Countries	Moderately Indebted Countries	Less Indebted Countries	Boone Group (AID/GNP > 15%)
Variables	Mean	Mean	Mean	Mean	Mean
Total population	21.8	16.4	35.3	24.1	15.7
GDP (PPP) to total population	5076.19	1729.031	2747.594	3867.32	7787.32
GDP (PPP) to total labour force	11826.08	4323.7	7010.345	9614.715	17381.88
Gross domestic investment (% of GDP)	21.86	18.87	20.83	24.03	21.88
Secondary school enrolment, (% gross)	49.40	26.30	36.10	55.76	53.24
Aid per capita (current US$)	76.51	46.02	38.39	67.54	143.68
Aid to Population aged 15-64	127.65	94.28	67.95	105.40	261.37
Aid to Labour Force Total	102.12	106.28	73.98	109.72	145.27
Aid (% of GNP)	9.18	13.40	7.02	7.89	30.17
Aid (% of gross domestic investment)	53.76	97.90	37.13	29.54	174.01
Total debt service (% of GNP)	4.93	6.00	5.16	3.49	4.41
Total central government debt (% of GDP)	45.53	68.53	39.75	34.65	42.19
General government consumption (% of GDP)	15.40	13.88	13.75	17.77	15.36

<<	Low Income Countries	Lower Middle Income Countries	Upper Middle Income Countries	High Income Countries	Severely Indebted and Low Income Countries
Variables	Mean	Mean	Mean	Mean	Mean
Total population (millions of inhabitants)	22.7	30.9	12.1	16.8	12.4
GDP (PPP) to total population	1090.835	2890.757	5740.769	13042.8	977.2521
GDP (PPP) to Population aged 15-64	2277.85	5695.28	11132.02	23589.44	2061.13
GDP (PPP) to total labour force	2504.934	7483.02	14776.55	27673.16	2254.03
Gross domestic investment (% of GDP)	18.45	23.00	23.18	23.57	16.98
Secondary school enrolment, (% gross)	21.50	50.46	58.92	83.60	15.42
Aid per capita (current US$)	40.83	71.45	93.45	238.17	44.55
Aid to Population aged 15-64	86.17	130.61	59.69	445.28	95.75
Aid to Labour Force Total	83.59	129.22	81.24	137.35	86.45
Aid (% of GNP)	14.82	8.62	2.19	0.92	17.00
Aid (% of gross domestic investment)	106.80	28.13	7.52	2.10	130.52
Total debt service (% of GNP)	4.20	5.77	4.98	5.32	4.99
Total central government debt (% of GDP)	56.54	49.45	30.29	44.19	64.40
General government consumption (% of GDP)	14.35	15.75	16.08	15.93	13.97

The taxonomy adopted to define a country subgroup is taken from the World Bank. The list of countries belonging to each subgroup is provided in the data Appendix.

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Table 2

A Comparison between Low Income/Highly Indebted Countries and the Rest of the Sample in Terms of Economic Freedom

	Low income highly indebted	Boone Aid/GDP>15 %	Others, non OECD	Others	T-stat on the significance of the difference in mean (versus Boone groups)	T-stat on the significance of the difference in mean (versus Others non OECD)	T-stat on the significance of the difference in mean (versus Others)	Non-parametric test (versus Others non OECD) Z-stat	Non-parametric test (versus Others non OECD) Z-stat
ECFREE(I)	8.50	8.09	7.501	7.18	3.48	-4.810	-5.84	-4.299	3.531
ECFREE(II)	2.54	2.53	5.746	4.11	0.09	10.613	5.44	3.990	-3.347
ECFREE(III)	6.08	6.04	5.485	7.27	0.17	-1.801	3.63	3.451	-2.654
ECFREE(IV)	3.59	3.08	6.258	5.93	1.72	6.244	5.46	3.824	-3.078
ECFREE(V)	3.52	3.76	5.622	6.40	-0.99	8.049	9.17	5.653	-5.020
ECFREE(VI)	3.94	4.44	5.868	6.40	-1.64	6.388	8.07	5.054	-4.393
ECFREE(VII)	3.02	3.43	5.574	5.53	-1.92	7.486	7.13	4.998	-4.440
ECFREE (ALL)	4.24	4.34	5.430	6.07	-0.73	6.090	8.61	5.514	-4.930

The index of economic freedom published in the *Economic Freedom of the World: 2000 Annual Report* ECFREE(ALL) is a weighted average of the seven following composed indicators designed to identify the consistency of institutional arrangements and policies with economic freedom in seven major areas: ECFREE(I) Size of Government: Consumption, Transfers, and Subsidies [11.0%], i) General Government Consumption Expenditures as a Percent of Total Consumption (50%), ii) Transfers and Subsidies as a Percent of GDP (50%). ECFREE(II) Structure of the Economy and Use of Markets *(Production and allocation via governmental* [14.2%] *and political mandates rather than private enterprises and market*s) i) Government Enterprises and Investment as a Share of the Economy (32.7%); ii) Price Controls: Extent to which Businesses Are Free to Set Their Own Prices (33.5%); iii) Top Marginal Tax Rate *(and income threshold at which it applie*s) (25.0%); iv) The Use of Conscripts to Obtain Military Personnel (8.8%). ECFREE(III) Monetary Policy and Price Stability *(Protection of money as a store of value and medium of exchang*e)[9.2%], i) Average Annual Growth Rate of the Money Supply during the Last Five Years (34.9%) minus the Growth Rate of Real GDP during the Last Ten Years; ii) Standard Deviation of the Annual Inflation Rate during the Last Five Years (32.6%); iii) Annual Inflation Rate during the Most Recent Year (32.5%). ECFREE(IV) Freedom to Use Alternative Currencies *(Freedom of access to alternative currencie*s) [14.6%] i) Freedom of Citizens to Own Foreign Currency Bank Accounts Domestically and Abroad (50%); ii) Difference between the Official Exchange Rate and the Black Market Rate (50%). ECFREE(V): Legal Structure and

Property Rights *(Security of property rights and viability of contract*s) [16.6%] i) Legal Security of Private Ownership Rights *(Risk of confiscatio*n) (34.5%); ii) Viability of Contracts *(Risk of contract repudiation by the governmen*t) (33.9%); iii) Rule of Law: Legal Institutions Supportive of the Principles of Rule of Law (31.7%) and Access to a Non-discriminatory Judiciary; ECFREE(VI) International Exchange: Freedom to Trade with Foreigners [17.1%] i) Taxes on International Trade, ia Revenue from Taxes on International Trade as a Percent of Exports plus Imports (23.3%), ib Mean Tariff Rate (24.6%), ic Standard Deviation of Tariff Rates (23.6%), ii) Non-tariff Regulatory Trade Barriers, iib Percent of International Trade Covered by Non-tariff Trade Restraints (19.4%), iic Actual Size of Trade Sector Compared to the Expected Size (9.1%). ECFREE(VII) Freedom of Exchange in Capital and Financial Markets [17.2%], i) Ownership of Banks: Percent of Deposits Held in Privately Owned Banks (27.1%); ii) Extension of Credit: Percent of Credit Extended to Private Sector (21.2%); iii) Interest Rate Controls and Regulations that Lead to Negative Interest Rates (24.7%); iv) Restrictions on the Freedom of Citizens to Engage in Capital Transactions with Foreigners (27.1%).

Any of the considered freedom indicators has a 0-10 value range. A higher value means a higher level in the item considered by the indicator .

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Table 3a

The Impact of ODA on Income per Worker (Overall Sample and Debt Service Subgroups)

	Dependent variable: log GDP per labour unit 1997									
	Mankiw-Romer-Weil (1992) model		Entire sample		Debt service ratio					
					High		Moderate		Low	
	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION
$ln(S_k)$-$ln(n+g+d)$	0.357	0.528	0.399	0.600	0.746	0.770	0.244	0.459	-0.252	-0.012
	[1.520]	[2.430]	[1.740]	[2.940]	[2.640]	[2.850]	[0.540]	[1.110]	[-0.910]	[-0.040]
$ln(S_h)$-$ln(n+g+d)$	0.674	0.631	0.519	0.344	0.593	0.408	0.844	0.617	-0.101	-0.118
	[8.500]	[8.200]	[5.640]	[3.930]	[6.310]	[4.660]	[3.730]	[2.970]	[-0.640]	[-0.850]
$ln(ODApc)$			-0.149	-0.158	-0.049	-0.059	-0.151	-0.146	-0.154	-0.163
			[-2.130]	[-2.630]	[-0.470]	[-0.610]	[-1.150]	[-1.420]	[-1.830]	[-2.460]
CONSTANT	2.472	1.767	4.072	3.744	1.092	1.842	3.107	2.914	12.022	10.395
	[2.280]	[1.820]	[3.610]	[3.820]	[0.690]	[1.260]	[1.340]	[1.350]	[6.550]	[5.790]
R^2	0.4954	0.5279	0.4559	0.4764	0.673	0.6421	0.6086	0.6324	0.1267	0.1327
Obs.	132	135	109	112	38	39	28	29	38	39

T-stats in square brackets

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Table 3b
The Impact of ODA on Income per Worker (Income Subgroups)

	Dependent variable: log GDP per labour unit 1997					
	Income levels					
	Low		Lower-Middle		Upper-Middle	
	labour input: ILO labour force	labour input: Working age population	labour input: ILO labour force	labour input: Working age population	labour input: ILO labour force	labour input: Working age population
$ln(S_k)-ln(n+g+d)$	0.149	0.148	-0.320	-0.184	-0.353	-0.015
	[0.840]	[0.810]	[-1.750]	[-1.070]	[-1.690]	[-0.070]
$ln(S_h)-ln(n+g+d)$	0.313	0.215	-0.129	-0.145	-0.031	-0.086
	[5.260]	[3.740]	[-1.550]	[-1.880]	[-0.300]	[-1.030]
$ln(ODApc)$	0.063	0.087	-0.004	-0.045	-0.003	-0.021
	[1.700]	[2.780]	[-0.070]	[-1.050]	[-0.050]	[-0.490]
CONSTANT	5.025	5.307	11.837	10.975	12.115	10.206
	[5.560]	[5.900]	[11.430]	[11.570]	[9.140]	[8.000]
R^2	0.4566	0.3575	0.2057	0.1654	0.1237	0.067
Obs.	47	49	36	37	21	21

T-stats in square brackets

Table 3c

The Impact of ODA on Income per Worker (Geographical Areas)

	Dependent variable: log GDP per labour unit 1997									
	Geographical Areas									
	EAST ASIA AND PACIFIC		EUROPE AND CENTRAL ASIA		LATIN AMERICA & CARIBBEAN		MIDDLE EAST AND NORTH AFRICAN		SUB-SAHARAN AFRICA	
	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION
$ln(S_k)-ln(n+g+d)$	0.606	0.858	0.279	0.382	0.472	0.579	-0.540	0.626	0.285	0.534
	[1.000]	[1.560]	[0.600]	[0.860]	[0.960]	[1.410]	[-0.430]	[0.580]	[0.470]	[1.100]
$ln(S_h)-ln(n+g+d)$	0.362	0.210	0.879	0.671	0.546	0.364	0.678	0.270	0.485	0.289
	[1.910]	[1.340]	[3.310]	[2.560]	[2.070]	[1.390]	[1.530]	[0.600]	[2.470]	[1.720]
$ln(ODApc)$	-0.238	-0.233	-0.008	-0.042	-0.158	-0.164	-0.235	-0.097	-0.153	-0.211
	[-1.810]	[-2.340]	[-0.060]	[-0.340]	[-1.340]	[-1.420]	[-0.710]	[-0.440]	[-1.020]	[-1.650]
CONSTANT	4.433	3.564	1.975	2.508	3.707	3.893	8.816	3.855	4.798	4.597
	[1.270]	[1.200]	[0.820]	[1.190]	[1.130]	[1.270]	[1.780]	[1.060]	[1.800]	[2.240]
R^2	0.456	0.5036	0.48	0.4897	0.5936	0.6025	0.386	0.3228	0.4799	0.5369
Obs.	16	16	23	24	17	17	12	13	30	31

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Table 3d

The Impact of ODA on Income per Worker (HIPC and Other Subgroups)

	Dependent variable: log GDP per labour unit 1997							
	LOW INCOME AND SEVERELY INDEBTED COUNTRIES		WORLD BANK HIPC COUNTRIES		AID/GNP <15%		AID/GNP > 15% (BOONE)	
	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION
$ln(S_k)$-$ln(n+g+d)$	0.390	0.402	0.196	0.220	0.519	0.697	-0.116	-0.017
	[1.630]	[1.590]	[0.750]	[0.880]	[1.880]	[2.570]	[-0.280]	[-0.040]
$ln(S_h)$-$ln(n+g+d)$	0.481	0.378	0.485	0.372	0.418	0.274	0.229	0.208
	[5.100]	[4.340]	[6.970]	[5.630]	[3.370]	[2.260]	[1.940]	[2.240]
$ln(ODApc)$	0.140	0.155	0.280	0.260	-0.145	-0.149	0.788	0.690
	[2.750]	[3.450]	[2.540]	[2.940]	[-1.780]	[-2.080]	[4.420]	[4.730]
CONSTANT	2.449	2.757	2.738	3.214	4.051	3.633	2.520	2.636
	[1.620]	[1.830]	[2.300]	[2.670]	[3.050]	[2.930]	[1.550]	[1.920]
R^2	0.5839	0.507	0.666	0.5771	0.3743	0.4221	0.87	0.8373
Obs.	26	27	33	35	93	94	16	18

T-stats in square brackets

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Table 4a

The Impact of ODA on Growth

	MRW MODEL		ENTIRE SAMPLE		DEBT SERVICE RATIO					
Dependent variable: log difference GDP per labour unit (1975-1997)										
					HIGH		MODERATE		LOW	
	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION
$Ln(Y/L_{1975})$	-0.168	-0.187	-0.209	-0.250	-0.247	-0.295	-0.248	-0.310	-0.346	-0.382
	[-2.720]	[-2.880]	[-3.580]	[-3.830]	[-2.490]	[-2.800]	[-2.570]	[-3.080]	[-2.890]	[-2.870]
$ln(S_k)-ln(n+g+d)$	0.789	0.799	0.699	0.710	0.682	0.691	0.388	0.366	0.384	0.330
	[5.140]	[5.180]	[5.260]	[5.290]	[4.420]	[4.590]	[1.110]	[0.940]	[1.150]	[0.970]
$ln(S_h)-ln(n+g+d)$	0.097	0.103	0.101	0.092	0.051	0.031	0.216	0.219	-0.007	0.003
	[1.090]	[1.250]	[1.360]	[1.390]	[0.630]	[0.510]	[1.140]	[1.180]	[-0.040]	[0.020]
$ln(ODApc)$			-0.049	-0.056	-0.069	-0.070	-0.040	-0.053	-0.002	-0.011
			[-1.230]	[-1.360]	[-1.260]	[-1.220]	[-0.680]	[-0.980]	[-0.030]	[-0.130]
CONSTANT	-2.597	-2.593	-1.576	-1.324	-0.984	-0.643	-0.186	0.352	1.853	2.285
	[-3.840]	[-3.940]	[-1.970]	[-1.540]	[-1.290]	[-0.830]	[-0.130]	[0.210]	[0.660]	[0.790]
R^2	0.444	0.457	0.451	0.463	0.542	0.590	0.380	0.373	0.586	0.550
Obs.	96	97	76	77	28	29	24	24	20	20

T-stats in square brackets

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Table 4b
The Impact of ODA on Growth

Dependent variable: log difference GDP per labour unit (1975-1997)										
					DEBT SERVICE RATIO					
	MRW MODEL		ENTIRE SAMPLE		HIGH		MODERATE		LOW	
	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION	LABOUR INPUT: ILO LABOUR FORCE	LABOUR INPUT: WORKING AGE POPULATION
$Ln(Y/L_{1975})$	-0.168	-0.187	-0.209	-0.250	-0.247	-0.295	-0.248	-0.310	-0.346	-0.382
	[-2.720]	[-2.880]	[-3.580]	[-3.830]	[-2.490]	[-2.800]	[-2.570]	[-3.080]	[-2.890]	[-2.870]
$ln(S_k)-ln(n+g+d)$	0.789	0.799	0.699	0.710	0.682	0.691	0.388	0.366	0.384	0.330
	[5.140]	[5.180]	[5.260]	[5.290]	[4.420]	[4.590]	[1.110]	[0.940]	[1.150]	[0.970]
$ln(S_h)-ln(n+g+d)$	0.097	0.103	0.101	0.092	0.051	0.031	0.216	0.219	-0.007	0.003
	[1.090]	[1.250]	[1.360]	[1.390]	[0.630]	[0.510]	[1.140]	[1.180]	[-0.040]	[0.020]
$ln(ODApc)$			-0.049	-0.056	-0.069	-0.070	-0.040	-0.053	-0.002	-0.011
			[-1.230]	[-1.360]	[-1.260]	[-1.220]	[-0.680]	[-0.980]	[-0.030]	[-0.130]
CONSTANT	-2.597	-2.593	-1.576	-1.324	-0.984	-0.643	-0.186	0.352	1.853	2.285
	[-3.840]	[-3.940]	[-1.970]	[-1.540]	[-1.290]	[-0.830]	[-0.130]	[0.210]	[0.660]	[0.790]
R^2	0.444	0.457	0.451	0.463	0.542	0.590	0.380	0.373	0.586	0.550
Obs.	96	97	76	77	28	29	24	24	20	20

T-stats in square brackets

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Table 4c
The Impact of ODA on Growth

Dependent variable: log difference GDP per labour unit (1975-1997)									
GEOGRAPHICAL AREAS									
	EAST ASIA AND PACIFIC		EUROPE AND CENTRAL ASIA		LATIN AMERICA & CARIBBEAN		MIDDLE EAST AND NORTH AFRICAN		SUB-SAHARAN AFRICAN	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1975})<$	-0.249	-0.184	-0.297	-0.311	-0.410	-0.578	-0.116	-0.032	-0.138	-0.238
	[-1.330]	[-0.640]	[-7.140]	[-7.390]	[-1.450]	[-2.440]	[-0.570]	[-0.140]	[-0.940]	[-1.640]
$ln(S_k)-ln(n+g+d)$	0.774	0.729	0.423	0.424	1.337	1.328	0.754	0.775	0.859	0.885
	[2.710]	[2.190]	[4.610]	[5.560]	[1.450]	[2.030]	[0.680]	[0.650]	[2.460]	[2.420]
$ln(S_h)-ln(n+g+d)$	0.069	0.038	0.517	0.440	-0.037	0.013	-0.046	-0.096	0.017	0.007
	[0.440]	[0.240]	[3.690]	[3.320]	[-0.170]	[0.050]	[-0.120]	[-0.240]	[0.120]	[0.050]
$ln(ODApc)$	-0.054	-0.015	-0.019	-0.029	-0.037	-0.053	0.029	0.052	-0.117	-0.150
	[-0.270]	[-0.070]	[-0.550]	[-0.770]	[-0.270]	[-0.460]	[0.230]	[0.470]	[-1.180]	[-1.660]
CONSTANT	-1.465	-1.778	-1.911	-1.411	-2.587	-1.640	-2.182	-2.767	-2.187	-1.462
	[-0.630]	[-0.720]	[-1.810]	[-1.610]	[-0.670]	[-0.550]	[-0.420]	[-0.500]	[-0.990]	[-0.620]
R^2	0.444	0.361	0.803	0.830	0.445	0.596	0.289	0.219	0.549	0.601
Obs.	11	11	17	18	13	13	10	10	18	18

T-stats in square brackets

Table 4d
The Impact of ODA on Growth

Dependent variable: log difference GDP per labour unit (1975-1997)								
	LOW INCOME AND SEVERELY INDEBTED		HIPC		AID/GNP <15%		AID/GNP > 15% (BOONE)	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1985})$	-0.208	-0.279	-0.213	-0.282	-0.211	-0.252	-0.745	-0.898
	[-1.420]	[-1.710]	[-1.200]	[-1.420]	[-3.480]	[-3.750]	[-6.850]	[-6.260]
$ln(S_k)-ln(n+g+d)$	0.675	0.638	0.663	0.612	0.737	0.750	0.522	0.459
	[5.390]	[5.070]	[5.670]	[4.410]	[4.790]	[4.810]	[4.340]	[4.140]
$ln(S_h)-ln(n+g+d)$	0.014	0.023	-0.022	-0.023	0.078	0.079	0.192	0.184
	[0.150]	[0.270]	[-0.240]	[-0.250]	[0.840]	[0.940]	[2.850]	[3.430]
$ln(ODApc)$	0.018	0.037	-0.081	-0.036	-0.028	-0.037	0.314	0.414
	[0.490]	[0.970]	[-0.600]	[-0.300]	[-0.700]	[-0.860]	[5.140]	[5.970]
CONSTANT	-1.504	-0.999	-0.650	-0.182	-1.710	-1.518	0.311	1.119
	[-2.080]	[-1.120]	[-0.870]	[-0.180]	[-1.940]	[-1.630]	[0.550]	[2.350]
R^2	0.684	0.682	0.599	0.582	0.465	0.474	0.968	0.952
Obs.	19	20	24	25	68	69	16	16

T-stats in square brackets

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Table 5a
The Impact of ODA on Growth (Panel Convergence)

	MRW Model		Entire Sample		High		Moderate		Low	
Dependent variable: log difference GDP per labour unit (1975-1997)										
					DEBT SERVICE RATIO					
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1975})$	-0.015	-0.024	-0.033	-0.050	-0.072	-0.086	-0.058	-0.070	-0.056	-0.071
	[-1.500]	[-2.250]	[-3.240]	[-4.440]	[-3.340]	[-3.570]	[-3.780]	[-3.860]	[-3.030]	[-3.550]
$ln(S_k)-ln(n+g+d)$	0.118	0.120	0.119	0.125	0.153	0.151	0.111	0.095	0.072	0.058
	[6.310]	[6.310]	[6.190]	[6.470]	[5.170]	[5.500]	[2.960]	[2.600]	[1.610]	[1.360]
$ln(S_h)-ln(n+g+d)$	-0.021	-0.012	-0.028	-0.022	0.030	0.026	0.004	0.002	-0.126	-0.112
	[-1.370]	[-0.790]	[-1.760]	[-1.480]	[1.370]	[1.310]	[0.140]	[0.060]	[-3.680]	[-3.360]
$ln(ODApc)$			-0.021	-0.025	-0.007	-0.009	-0.019	-0.022	-0.028	-0.032
			[-3.160]	[-3.840]	[-0.920]	[-1.060]	[-2.170]	[-2.650]	[-2.110]	[-2.490]
CONSTANT	-0.254	-0.254	0.023	0.098	-0.273	-0.139	0.095	0.284	1.161	1.255
	[-2.690]	[-2.710]	[0.180]	[0.730]	[-1.490]	[-0.780]	[0.420]	[1.340]	[3.470]	[3.650]
R^2	0.069	0.074	0.120	0.148	0.227	0.244	0.166	0.172	0.222	0.231
Obs.	560	568	425	433	150	154	124	125	127	129

T-stats in square brackets

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THE NEED FOR GOVERNANCE REFORMS IN HIGHLY INDEBTED, LOW-INCOME COUNTRIES TO MAKE DEVELOPMENT AID EFFECTIVE

Table 5b
The Impact of ODA on Growth (Panel Convergence)

Dependent variable: log difference GDP per labour unit (1975-1997)					
INCOME LEVELS					
	LOW		LOWER-MIDDLE		UPPER-MIDDLE	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1975})$	-0.154	-0.165	-0.134	-0.161	-0.136	-0.163
	[-3.800]	[-3.820]	[-8.130]	[-8.060]	[-4.190]	[-4.690]
$ln(S_k)-ln(n+g+d)$	0.082	0.070	0.082	0.050	0.016	0.037
	[3.000]	[2.510]	[2.210]	[1.320]	[0.280]	[0.690]
$ln(S_h)-ln(n+g+d)$	0.000	-0.015	-0.130	-0.100	-0.064	-0.059
	[0.010]	[-0.630]	[-3.960]	[-3.170]	[-2.140]	[-2.130]
$ln(ODApc)$	-0.014	-0.009	0.003	-0.005	0.020	0.015
	[-1.070]	[-0.690]	[0.270]	[-0.610]	[1.950]	[1.660]
CONSTANT	0.907	1.082	1.686	1.877	1.701	1.765
	[2.640]	[2.910]	[4.890]	[5.530]	[4.060]	[4.140]
R^2	0.281	0.280	0.403	0.421	0.305	0.344
Obs.	181.000	186.000	138.000	140.000	82.000	82.000

T-stats in square brackets

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Table 5c

The Impact of ODA on Growth (Panel Convergence)

Dependent variable: log difference GDP per labour unit (1975-1997)									
GEOGRAPHICAL AREAS									
	EAST ASIA AND PACIFIC		EUROPE AND CENTRAL ASIA		LATIN AMERICA & CARIBBEAN		MIDDLE EAST AND NORTH AFRICAN		SUB-SAHARAN AFRICA	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1975})$	-0.006	-0.014	-0.193	-0.167	-0.047	-0.059	-0.054	-0.059	-0.060	-0.064
	[-0.190]	[-0.420]	[-1.900]	[-1.540]	[-1.660]	[-1.830]	[-2.110]	[-2.430]	[-2.280]	[-2.300]
$ln(S_k)-ln(n+g+d)$	0.001	-0.034	-0.133	-0.106	0.192	0.195	0.149	0.209	0.115	0.109
	[0.020]	[-0.490]	[-0.670]	[-0.490]	[3.530]	[3.700]	[2.280]	[3.620]	[4.370]	[4.280]
$ln(S_h)-ln(n+g+d)$	-0.135	-0.107	0.042	0.024	0.008	0.009	-0.019	-0.015	0.020	0.014
	[-1.720]	[-1.380]	[0.310]	[0.190]	[0.250]	[0.270]	[-0.390]	[-0.300]	[0.760]	[0.570]
$ln(ODApc)$	-0.054	-0.060	-0.147	-0.133	-0.011	-0.013	0.021	0.012	-0.002	-0.001
	[-3.220]	[-3.690]	[-3.550]	[-3.560]	[-1.150]	[-1.460]	[1.830]	[1.120]	[-0.210]	[-0.050]
CONSTANT	1.340	1.436	2.889	2.454	-0.500	-0.434	-0.174	-0.470	-0.129	-0.053
	[2.260]	[2.260]	[3.250]	[2.990]	[-1.500]	[-1.350]	[-0.440]	[-1.650]	[-0.820]	[-0.330]
R^2	0.366	0.404	0.433	0.417	0.166	0.184	0.302	0.385	0.165	0.161
Obs.	42.000	45.000	39.000	39.000	106.000	106.000	55.000	56.000	160.000	164.000

T-stats in square brackets

Table 5d
The Impact of ODA on Growth (Panel Convergence)

Dependent variable: log difference GDP per labour unit (1975-1997)								
	Low Income and Severely Indebted		HIPC		AID/GNP <15%		AID/GNP > 15% (Boone)	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y</L_{1985})$	-0.120	-0.126	-0.126	-0.132	-0.034	-0.048	-0.178	-0.229
	[-3.570]	[-3.470]	[-4.000]	[-3.870]	[-3.280]	[-4.100]	[-3.410]	[-4.410]
$ln(S_k)-ln(n+g+d)$	0.136	0.132	0.120	0.117	0.125	0.134	0.118	0.111
	[4.190]	[4.220]	[3.780]	[3.860]	[5.820]	[5.980]	[2.270]	[2.330]
$ln(S_h)-ln(n+g+d)$	0.048	0.036	0.044	0.029	-0.044	-0.039	0.021	0.030
	[1.700]	[1.370]	[1.910]	[1.410]	[-2.310]	[-2.090]	[0.510]	[0.980]
$ln(ODApc)$	0.006	0.008	0.000	0.001	-0.020	-0.024	0.083	0.086
	[0.610]	[0.840]	[0.000]	[0.040]	[-2.750]	[-3.200]	[2.320]	[2.510]
CONSTANT	0.006	0.112	0.200	0.321	0.103	0.127	0.204	0.547
	[0.030]	[0.460]	[0.890]	[1.390]	[0.720]	[0.850]	[0.640]	[1.900]
R^2	0.287	0.279	0.251	0.246	0.132	0.157	0.305	0.343
Obs.	109.000	113.000	137.000	142.000	367.000	372.000	58.000	61.000

T-stats in square brackets

Table 6a
The Impact of ODA on Investment

Dependent variable: log investment to gdp ratio

	All sample		Severely		Moderate		Less	
			DEBT SERVICE RATIO					
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
Ln(S/GDP)	0.229	0.230	0.234	0.238	0.181	0.195	0.172	0.101
	[5.830]	[5.560]	*[3.260]*	*[3.190]*	*[2.550]*	*[2.790]*	[2.000]	[1.090]
ln(ODApc)	0.032	0.035	0.040	0.021	0.045	0.064	0.065	0.062
	[1.440]	[1.650]	*[0.860]*	*[0.440]*	*[0.850]*	*[1.440]*	[2.150]	[1.990]
CONSTANT	2.228	2.225	2.076	2.154	2.302	2.217	2.292	2.547
	[13.050]	[12.960]	*[6.520]*	*[6.640]*	*[6.290]*	*[6.950]*	[6.990]	[7.350]
R^2 within	0.242	0.214	0.228	0.222	0.202	0.219	0.170	0.106
Obs.	1513	1536	578	593	448	451	410	415
Countries	112	118	39	40	29	31	35	38

T-stats in square brackets

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Table 6b
The Impact of ODA on Investment

Dependent variable: LOG INVESTMENT to gdp ratio								
INCOME LEVELS								
	LOW		LOWER-MIDDLE		UPPER-MIDDLE		High	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
Ln(S/GDP)	0.142	0.142	0.091	0.086	0.238	0.056	-0.055	-0.049
	[2.030]	[1.990]	[0.870]	[0.870]	[2.200]	[0.470]	[-0.270]	[-0.240]
ln(ODApc)	0.057	0.040	0.035	0.050	0.070	0.077	-0.060	-0.057
	[1.030]	[0.740]	[0.890]	[1.450]	[2.500]	[2.400]	[-0.850]	[-0.820]
CONSTANT	2.180	2.259	2.634	2.607	2.102	2.691	3.517	3.468
	[6.420]	[6.780]	[6.090]	[6.660]	[6.000]	[6.690]	[4.630]	[4.730]
R^2 within	0.103	0.091	0.028	0.054	0.386	0.210	0.115	0.108
Obs.	574	589	539	544	323	326	77	77
Countries	43	44	37	40	23	25	9	9

T-stats in square brackets

Table 6c
The Impact of ODA on Investment

	Dependent variable: LOG INVESTMENT to gdp ratio									
	GEOGRAPHICAL AREAS									
	EAST ASIA AND PACIFIC		EUROPE AND CENTRAL ASIA		LATIN AMERICA E CARIBBEAN		MIDDLE EAST AND NORTH AFRICAN		SUB-SAHARAN AFRICA	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
ln(S/GDP)	0.142	0.142	0.091	0.086	0.238	0.056	-0.055	-0.049	0.212	0.197
	[2.030]	[1.990]	[0.870]	[0.870]	[2.200]	[0.470]	[-0.270]	[-0.240]	[2.200]	[2.030]
ln(ODApc)	0.057	0.040	0.035	0.050	0.070	0.077	-0.060	-0.057	0.067	0.046
	[1.030]	[0.740]	[0.890]	[1.450]	[2.500]	[2.400]	[-0.850]	[-0.820]	[1.110]	[0.790]
CONSTANT	2.180	2.259	2.634	2.607	2.102	2.691	3.517	3.468	2.172	2.318
	[6.420]	[6.780]	[6.090]	[6.660]	[6.000]	[6.690]	[4.630]	[4.730]	[4.570]	[5.050]
R^2 within	0.103	0.091	0.028	0.054	0.386	0.210	0.115	0.108	0.163	0.138
Obs.	574	589	539	544	323	326	77	77	354	355
Countries	43	44	37	40	23	25	9	9	28	29

T-stats in square brackets

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Table 6d
The Impact of ODA on Investment

	Dependent variable: log investment to gdp ratio							
	LOW INCOME AND SEVERELY INDEBTED		HIPC		AID/GNP <15%		AID/GNP > 15% (BOONE)	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S/GDP)$	0.180	0.189	0.090	0.106	0.257	0.251	0.085	0.079
	[1.950]	[2.000]	[1.240]	[1.430]	[6.230]	[5.620]	[1.290]	[1.120]
$ln(ODApc)$	0.042	0.034	0.208	0.163	-0.001	0.004	0.341	0.325
	[0.640]	[0.520]	[1.980]	[1.510]	[-0.050]	[0.170]	[6.160]	[5.230]
CONSTANT	2.103	2.115	1.431	1.640	2.272	2.275	0.821	0.951
	[5.330]	[5.310]	[2.660]	[2.990]	[13.030]	[12.490]	[2.360]	[2.530]
R^2 within	0.146	0.141	0.190	0.146	0.318	0.268	0.773	0.692
Obs.	383	398	469	484	1337	1357	176	179
Countries	27	28	34	35	97	101	15	17

T-stats in square brackets

Data Appendix
Country Classification Adopted in the Definition of Sub-samples for Econometric Estimates

By region

East Asia & Pacific

American Samoa Australia Brunei Cambodia China Fiji French Polynesia Guam Hong Kong China Indonesia Japan Kiribati Korea Dem. Rep. Korea Rep. Lao PDR Macao Malaysia Marshall Islands Micronesia Fed. Sts. Mongolia Myanmar New Caledonia New Zealand Northern Mariana Islands Palau Papua New Guinea Philippines Samoa Singapore Solomon Islands Thailand Tonga Vanuatu Vietnam

Europe & Central Asia

Albania Andorra Armenia Austria Azerbaijan Belarus Belgium Bosnia and Herzegovina Bulgaria Channel Islands Croatia Cyprus Czech Republic Denmark Estonia Faeroe Islands Finland France Georgia Germany Greece Greenland Hungary Iceland Ireland Isle of Man Italy Kazakhstan Kyrgyz Republic Latvia Liechtenstein Lithuania Luxembourg Macedonia FYR Moldova Monaco Netherlands Norway Poland Portugal Romania Russian Federation Slovak Republic

Slovenia Spain Sweden Switzerland Tajikistan Turkey Turkmenistan Ukraine United Kingdom Uzbekistan Yugoslavia FR (Serbia/Montenegro)

Latin American & Caribbean

Antigua and Barbuda Argentina Aruba Bahamas Barbados Belize Bolivia Brazil Cayman Islands Chile Colombia Costa Rica Cuba Dominica Dominican Republic Ecuador El Salvador French Guiana Grenada Guadeloupe Guatemala Guyana Haiti Honduras Jamaica Martinique Mexico Netherlands Antilles Nicaragua Panama Paraguay Peru Puerto Rico St. Kitts and Nevis St. Lucia St. Vincent and the Grenadines Suriname Trinidad and Tobago Uruguay Venezuela Virgin Islands (U.S.)

Middle East & North Africa

Algeria Bahrain Egypt Arab Rep. Iran Islamic Rep. Iraq Israel Jordan Kuwait Lebanon Libya Malta Morocco Oman Qatar Saudi Arabia Syrian Arab Republic Tunisia United Arab Emirates West Bank and Gaza Yemen Rep.

North America

Bermuda Canada United States

South Asia

Afghanistan Bangladesh Bhutan India Maldives Nepal Pakistan Sri Lanka

Sub-saharan Africa

Angola Benin Botswana Burkina Faso Burundi Cameroon Cape Verde Central African Republic Chad Comoros Congo Dem. Rep. Congo Rep. Cote d'Ivoire Djibouti Equatorial Guinea Eritrea Ethiopia Gabon Gambia The Ghana Guinea Guinea-Bissau Kenya Lesotho Liberia Madagascar Malawi Mali

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Mauritania Mauritius Mayotte Mozambique Namibia Niger Nigeria Reunion Rwanda Sao Tome and Principe Senegal Seychelles Sierra Leone Somalia South Africa Sudan Swaziland Tanzania Togo Uganda Zambia Zimbabwe

By Income

Low Income

Afghanistan Albania Angola Armenia Azerbaijan Bangladesh Benin Bhutan Bosnia and Herzegovina Burkina Faso Burundi Cambodia Cameroon Central African Republic Chad Comoros Congo Dem. Rep. Congo Rep. Cote d'Ivoire Eritrea Ethiopia Gambia The Ghana Guinea Guinea-Bissau Haiti Honduras India Kenya Kyrgyz Republic Lao PDR Lesotho Liberia Madagascar Malawi Mali Mauritania Moldova Mongolia Mozambique Myanmar Nepal Nicaragua Niger Nigeria Pakistan Rwanda Sao Tome and Principe Senegal Sierra Leone Somalia Sudan Tajikistan Tanzania Togo

Turkmenistan Uganda Vietnam Yemen Rep. Zambia Zimbabwe

Lower Middle Income

Algeria Belarus Belize Bolivia Bulgaria Cape Verde China Colombia Costa Rica Cuba Djibouti Dominica Dominican Republic Ecuador Egypt Arab Rep. El Salvador Equatorial Guinea Fiji Georgia Guatemala Guyana Indonesia Iran Islamic Rep. Iraq Jamaica Jordan Kazakhstan Kiribati Korea Dem. Rep. Latvia Lithuania Macedonia FYR Maldives Marshall Islands Micronesia Fed. Sts. Morocco Namibia Panama Papua New Guinea Paraguay Peru Philippines Romania

Russian Federation Samoa Solomon Islands Sri Lanka St. Vincent and the Grenadines Suriname Swaziland Syrian Arab Republic Thailand Tonga Tunisia Ukraine Uzbekistan Vanuatu West Bank and Gaza Yugoslavia FR (Serbia/Montenegro)

Upper Middle Income

American Samoa Antigua and Barbuda Argentina Bahrain Barbados Botswana Brazil Chile Croatia Czech Republic Estonia Gabon Grenada Guadeloupe Hungary Isle of Man Lebanon Libya Malaysia Malta Mauritius Mayotte Mexico Oman Palau Poland Puerto Rico Saudi Arabia Seychelles Slovak Republic South Africa St. Kitts and Nevis St. Lucia Trinidad and Tobago Turkey Uruguay Venezuela

High Income OECD

Australia Austria Belgium Canada Denmark Finland France Germany Greece Iceland Ireland Italy Japan Korea Rep.

Luxembourg Netherlands New Zealand Norway Portugal Spain Sweden Switzerland United Kingdom United States

High Income Non-OECD

Andorra Aruba Bahamas The Bermuda Brunei Cayman Islands Channel Islands Cyprus Faeroe Islands French Guiana French Polynesia Greenland Guam Hong Kong China Israel Kuwait Liechtenstein Macao Martinique Monaco Netherlands Antilles New Caledonia Northern Mariana Islands Qatar Reunion Singapore Slovenia United Arab Emirates Virgin Islands (U.S.)

by FOREIGN DEBT

Severely Indebted

Afghanistan Angola Argentina Bolivia Bosnia and Herzegovina Brazil Bulgaria Burkina Faso Burundi Cameroon Central African Republic Congo Dem. Rep. Congo Rep. Cote d'Ivoire Cuba Ecuador Ethiopia Gabon Ghana Guinea

Guinea-Bissau Guyana Haiti Honduras Indonesia Iraq Jamaica Jordan Madagascar Malawi Mali Mauritania Mozambique Myanmar Nicaragua Niger Nigeria Peru Rwanda Sao Tome and Principe Sierra Leone Somalia Sudan Syrian Arab Republic Tanzania Uganda Vietnam Zambia

Moderately Indebted

Algeria Bangladesh Belize Benin Cambodia Chad Chile Colombia Comoros Dominica Equatorial Guinea Gambia The

Georgia Hungary India Kenya Lao PDR Macedonia FYR Malaysia Mauritius Morocco Pakistan Panama Philippines Senegal St. Vincent and the Grenadines Thailand Togo Tunisia Turkey Uruguay Venezuela Yemen Rep. Zimbabwe

Less Indebted

Albania Antigua and Barbuda Armenia Azerbaijan Bahrain Barbados Belarus Bhutan Botswana Cape Verde China

Costa Rica Croatia Czech Republic Djibouti Dominican Republic Egypt Arab Rep. El Salvador Eritrea Estonia Fiji Grenada Guatemala Iran Islamic Rep. Kazakhstan Kiribati Korea

Dem. Rep. Kyrgyz Republic Latvia Lebanon Lesotho Libya Lithuania Maldives Malta Mexico Moldova Mongolia Namibia Nepal Oman Papua New Guinea Paraguay Poland Romania Russian Federation Samoa Saudi Arabia Seychelles Slovak Republic Solomon Islands South Africa Sri Lanka St. Kitts and Nevis St. Lucia Suriname Swaziland Tajikistan Tonga Trinidad and Tobago Turkmenistan Ukraine Uzbekistan Vanuatu Yugoslavia FR (Serbia/Montenegro)

ODA/GDP A15 percent

Albania Bhutan Burundi Cape Verde Comoros Djibouti Dominica Equatorial Guinea Eritrea Gambia The

Guinea-Bissau Guyana Jordan Kiribati Lao PDR Malawi Maldives Mali Marshall Islands Mauritania Micronesia Fed. Sts. Mongolia Mozambique New Caledonia Nicaragua Rwanda Samoa Sao Tome and Principe Solomon Islands Somalia Tanzania Tonga Vanuatu Zambia

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Appendix

Table A1.a

The Impact of ODA on Income per Worker (Overall Sample and Debt Service Subgroups) Trend Income

Dependent variable: trend of log GDP per labour unit 1997								
			DEBT SERVICE RATIO					
	MRW MODEL		HIGH		MODERATE		LOW	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S_k)-ln(n+g+d)$	0.183	0.395	0.628	0.655	0.187	0.381	-0.311	-0.049
	[0.800]	[1.910]	[2.450]	[2.680]	[0.460]	[1.040]	[-0.960]	[-0.140]
$ln(S_h)-ln(n+g+d)$	0.786	0.654	0.605	0.421	0.891	0.672	-0.145	-0.126
	[9.960]	[8.660]	[6.900]	[5.080]	[4.340]	[3.500]	[-0.850]	[-0.840]
$ln(ODApc)$			-0.048	-0.059	-0.122	-0.121	-0.172	-0.169
			[-0.480]	[-0.630]	[-0.920]	[-1.140]	[-2.540]	[-2.930]
CONSTANT	3.050	2.390	1.660	2.400	2.972	2.881	12.780	10.712
	[2.870]	[2.570]	[1.180]	[1.830]	[1.370]	[1.460]	[6.800]	[5.900]
R^2	0.469	0.473	0.679	0.637	0.617	0.638	0.154	0.149
Obs.	145	148	39	40	29	30	44	45

T-stats in square brackets

Table A1.b

The Impact of ODA on Income per Worker (Income Subgroups)

Dependent variable: trend of log GDP per labour unit 1997							
INCOME LEVELS							
LOW		LOWER-MIDDLE		UPPER-MIDDLE		HIGH	
ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S_k)$-$ln(n+g+d)$							
0.103	0.113	-0.369	-0.221	-0.404	-0.160	0.526	0.466
[0.800]	[0.820]	[-1.840]	[-1.120]	[-1.280]	[-0.500]	[2.950]	[4.050]
$ln(S_h)$-$ln(n+g+d)$							
0.271	0.160	-0.075	-0.087	-0.136	-0.119	-0.575	-0.592
[4.290]	[2.530]	[-0.770]	[-0.970]	[-0.890]	[-1.020]	[-2.730]	[-2.900]
$ln(ODApc)$							
0.013	0.028	-0.022	-0.038	0.054	0.034	0.017	0.022
[0.270]	[0.540]	[-0.340]	[-0.830]	[0.950]	[0.660]	[0.340]	[0.590]
CONSTANT 5.749	6.078	11.857	10.773	12.865	11.055	11.326	11.433
[9.270]	[9.300]	[10.150]	[10.050]	[7.610]	[6.850]	[6.210]	[6.800]
R^2 0.359	0.212	0.137	0.101	0.176	0.101	0.675	0.714
Obs. 49	51	38	39	25	25	8	8

T-stats in square brackets

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Table A1.c

The Impact of ODA on Income per Worker (Geographical Areas)

	EAST ASIA AND PACIFIC		EUROPE AND CENTRAL ASIA		LATIN AMERICA E CARIBBEAN		MIDDLE EAST AND NORTH AFRICAN		SUB-SAHARAN AFRICA	
Dependent variable: trend of log GDP per labour unit 1997										
Geographical Areas										
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S_k)-ln(n+g+d)$	-0.355	0.884	0.560	0.790	-0.233	-0.440	-0.512	-0.588	0.493	0.462
	[-0.470]	[1.130]	[1.280]	[1.740]	[-0.630]	[-1.350]	[-0.610]	[-0.680]	[1.780]	[1.670]
$ln(S_h)-ln(n+g+d)$	1.024	-0.127	-0.273	-0.246	0.548	0.590	0.995	1.027	0.732	0.615
	[1.880]	[-0.250]	[-0.940]	[-0.810]	[3.880]	[4.760]	[1.730]	[1.990]	[6.630]	[5.820]
$ln(ODApc)$	-0.441	-0.287	-0.277	-0.256	-0.242	-0.238	-0.102	-0.104	0.148	0.147
	[-1.930]	[-1.450]	[-4.220]	[-4.730]	[-4.650]	[-5.490]	[-1.060]	[-0.970]	[2.130]	[2.070]
CONSTANT	6.328	5.625	8.968	6.926	8.275	8.666	6.791	6.459	0.682	1.378
	[1.630]	[1.040]	[5.330]	[3.720]	[3.470]	[4.290]	[1.290]	[1.370]	[0.470]	[0.970]
R^2	0.459	0.444	0.515	0.526	0.676	0.750	0.304	0.325	0.676	0.608
Obs.	11	13	23	23	25	25	16	16	39	40

T-stats in square brackets

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Table A1.d
The Impact of ODA on Income per Worker (HIPC and Other Subgroups)

	Dependent variable: trend of log GDP per labour unit 1997							
	LOW INCOME AND SEVERELY INDEBTED COUNTRIES		WORLD BANK HIPC COUNTRIES		AID/GNP <15%		AID/GNP > 15% (BOONE)	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S_k)-ln(n+g+d)$	0.258	0.276	0.111	0.130	0.294	0.451	-0.070	-0.027
	[1.390]	[1.440]	[0.560]	[0.650]	[1.120]	[1.790]	[-0.220]	[-0.090]
$ln(S_h)-ln(n+g+d)$	0.496	0.381	0.483	0.360	0.476	0.347	0.213	0.187
	[6.420]	[5.500]	[7.480]	[5.820]	[3.950]	[2.980]	[2.250]	[2.370]
$ln(ODApc)$	0.141	0.144	0.215	0.200	-0.185	-0.188	0.756	0.698
	[3.560]	[3.890]	[2.150]	[2.250]	[-2.800]	[-3.240]	[6.410]	[7.490]
CONSTANT	3.088	3.472	3.551	4.063	5.182	4.757	2.535	2.749
	[2.720]	[3.170]	[3.840]	[4.230]	[4.270]	[4.260]	[1.830]	[2.310]
R^2	0.610	0.517	0.660	0.549	0.345	0.387	0.884	0.853
Obs.	27	28	34	36	103	104	17	19

T-stats in square brackets

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Table A2.a
The Impact of ODA on Growth

Dependent variable: log DIFFERENCE OF TREND GDP per labour unit (1975-1997)									
				DEBT SERVICE RATIO					
	MRW MODEL		ENTIRE SAMPLE		HIGH		MODERATE		LOW	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1975})$	-0.788	-0.829	-0.853	-0.887	-0.742	-0.777	-0.820	-0.878	-0.962	-0.956
	[-9.630]	[-10.740]	[-10.420]	[-11.860]	[-3.960]	[-4.270]	[-5.440]	[-6.180]	[-7.810]	[-9.570]
$ln(S_k)-ln(n+g+d)$	0.105	0.280	0.100	0.279	0.533	0.576	-0.148	-0.089	-0.231	0.004
	[0.450]	[1.340]	[0.420]	[1.330]	[2.580]	[3.010]	[-0.270]	[-0.190]	[-0.700]	[0.010]
$ln(S_h)-ln(n+g+d)$	0.572	0.531	0.430	0.334	0.478	0.359	0.776	0.652	-0.110	-0.071
	[5.530]	[6.310]	[3.790]	[3.440]	[2.780]	[2.680]	[2.420]	[2.560]	[-0.610]	[-0.450]
$ln(ODApc)$			-0.172	-0.178	-0.020	-0.037	-0.100	-0.116	-0.235	-0.215
			[-2.770]	[-3.290]	[-0.240]	[-0.450]	[-0.740]	[-1.000]	[-4.330]	[-4.300]
CONSTANT	3.140	2.514	5.287	4.865	0.902	1.503	4.155	4.768	12.033	9.881
	[2.800]	[2.550]	[4.460]	[4.690]	[0.680]	[1.110]	[1.760]	[2.230]	[5.700]	[5.410]
R^2	0.531	0.593	0.669	0.742	0.717	0.758	0.745	0.821	0.803	0.831
Obs.	126	127	103	104	35	36	24	24	39	39

T-stats in square brackets

Table A2.b
The Impact of ODA on Growth

Dependent variable: log difference of trend GDP per labour unit (1975-1997)						
INCOME LEVELS						
	LOW		LOWER-MIDDLE		UPPER-MIDDLE	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1975})$	-0.994	-0.973	-0.947	-0.942	-0.974	-0.986
	[-12.520]	[-11.110]	[-16.610]	[-20.780]	[-9.410]	[-]11.200
$ln(S_k)-ln(n+g+d)$	0.087	0.140	-0.226	-0.240	-0.452	-0.177
	[0.500]	[0.740]	[-1.070]	[-1.150]	[-1.340]	[-0.490]
$ln(S_h)-ln(n+g+d)$	0.278	0.170	-0.215	-0.143	-0.107	-0.116
	[3.190]	[2.010]	[-1.960]	[-1.780]	[-0.650]	[-0.840]
$ln(ODApc)$	0.001	-0.014	-0.079	-0.061	0.065	0.050
	[0.020]	[-0.180]	[-1.240]	[-1.540]	[0.900]	[0.680]
CONSTANT	5.807	5.905	11.850	10.928	12.680	10.981
	[6.790]	[6.290]	[10.590]	[10.010]	[6.440]	[5.790]
R^2	0.911	0.917	0.942	0.955	0.895	0.922
Obs.	43	43	34	35	21	21

T-stats in square brackets

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Table A2.c
The Impact of ODA on Growth

Dependent variable: log difference of trend GDP per labour unit (1975-1997)								
GEOGRAPHICAL AREAS								
	EUROPE AND CENTRAL ASIA		LATIN AMERICA E CARIBBEAN		MIDDLE EAST AND NORTH AFRICAN		SUB-SAHARAN AFRICAN	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1975})$	-1.202	-1.226	-1.047	-1.041	-0.529	-0.487	-0.565	-0.589
	[-12.200]	[-10.810]	[-16.780]	[-22.360]	[-7.300]	[-6.530]	[-8.370]	[-8.160]
$ln(S_k)-ln(n+g+d)$	0.443	0.524	-0.181	-0.404	0.164	0.272	0.644	0.650
	[0.970]	[1.160]	[-0.460]	[-1.170]	[0.230]	[0.370]	[4.480]	[4.410]
$ln(S_h)-ln(n+g+d)$	0.045	0.234	0.551	0.592	0.794	0.802	0.455	0.404
	[0.140]	[0.700]	[3.720]	[4.470]	[2.920]	[3.090]	[3.920]	[3.760]
$ln(ODApc)$	-0.229	-0.208	-0.259	-0.251	0.041	0.058	0.146	0.129
	[-2.710]	[-3.060]	[-4.230]	[-5.140]	[0.590]	[0.770]	[2.970]	[3.470]
CONSTANT	8.899	6.787	8.426	8.821	-0.424	-1.735	-1.640	-1.211
	[5.230]	[3.590]	[3.520]	[4.380]	[-0.090]	[-0.420]	[-1.800]	[-1.320]
R^2	0.904	0.928	0.916	0.940	0.919	0.908	0.766	0.799
Obs.	22	21	25	25	13	13	35	36

T-stats in square brackets

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Table A2.d
The Impact of ODA on Growth-Trend

Dependent variable: log difference of trend GDP per labour unit (1975-1997)								
	LOW INCOME AND SEVERELY INDEBTED		HIPC		AID/GNP <15%		AID/GNP > 15% (BOONE)	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$Ln(Y/L_{1985})$	-0.568	-0.587	-0.921	-0.933	-0.847	-0.890	-0.919	-0.927
	[-7.560]	[-7.250]	[-7.810]	[-8.380]	[-10.140]	[-11.520]	[-5.320]	[-8.550]
$ln(S_k)-ln(n+g+d)$	0.497	0.480	0.121	0.154	0.186	0.297	-0.323	-0.281
	[3.610]	[3.300]	[0.520]	[0.680]	[0.760]	[1.250]	[-1.290]	[-1.070]
$ln(S_h)-ln(n+g+d)$	0.258	0.193	0.463	0.359	0.326	0.301	0.208	0.199
	[2.830]	[2.110]	[4.980]	[4.270]	[2.420]	[2.450]	[1.750]	[2.490]
$ln(ODApc)$	0.009	0.026	0.214	0.182	-0.180	-0.185	0.759	0.715
	[0.200]	[0.570]	[1.520]	[1.340]	[-2.610]	[-3.060]	[6.830]	[6.820]
CONSTANT	0.773	1.166	3.061	3.590	5.478	5.053	3.397	3.503
	[0.900]	[1.270]	[2.670]	[2.850]	[4.370]	[4.380]	[2.340]	[3.080]
R^2	0.794	0.790	0.870	0.879	0.690	0.758	0.920	0.929
Obs.	24	25	30	31	88	88	15	16

T-stats in square brackets

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Table 4a

The Impact of ODA on Income per Worker (Overall Sample and Debt Service Subgroups) Panel

	Dependent variable: log GDP per labour unit 1997							
			DEBT SERVICE RATIO					
	MRW MODEL		HIGH		MODERATE		LOW	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S_k)-ln(n+g+d)$	0.196	0.199	0.242	0.243	0.090	0.095	0.237	0.231
	[10.570]	[10.720]	[5.500]	[5.690]	[1.870]	[1.980]	[12.980]	[12.810]
$ln(S_h)-ln(n+g+d)$	0.019	0.034	0.277	0.277	0.019	0.003	0.024	0.041
	[0.630]	[1.150]	[4.710]	[4.780]	[0.290]	[0.040]	[0.890]	[1.580]
$ln(ODApc)$	0.263	0.246	0.491	0.494	1.066	1.064	0.261	0.243
	[5.710]	[5.420]	[7.220]	[7.350]	[12.340]	[12.350]	[7.540]	[7.250]
CONSTANT	5.928	5.754	4.433	4.182	3.685	3.389	5.432	5.364
	[31.270]	[30.550]	[15.030]	[14.490]	[10.000]	[9.090]	[40.410]	[41.120]
R^2	0.209	0.104	0.206	0.117	0.063	0.059	0.369	0.331
Obs.	443	456	395	396	305	307	526	540
Countries	36	37	28	29	29	30	43	45

T-stats in square brackets

Table 4b

The Impact of ODA on Income per Worker (Income Subgroups) Panel

	Dependent variable: log GDP per labour unit 1997							
	INCOME LEVELS							
	LOW		LOWER-MIDDLE		UPPER-MIDDLE		HIGH	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S_k)-ln(n+g+d)$	0.237	0.231	0.196	0.205	0.139	0.164	0.091	0.149
	[12.980]	[12.810]	[4.750]	[5.060]	[2.310]	[2.790]	[0.200]	[0.470]
$ln(S_h)-ln(n+g+d)$	0.024	0.041	0.133	0.137	0.411	0.428	-0.141	-0.343
	[0.890]	[1.580]	[2.380]	[2.440]	[4.060]	[4.070]	[-0.600]	[-1.220]
$ln(ODApc)$	0.261	0.243	0.955	0.969	1.011	1.057	-0.108	0.826
	[7.540]	[7.250]	[10.550]	[10.630]	[10.210]	[10.320]	[-0.350]	[1.770]
CONSTANT	5.432	5.364	3.127	2.674	2.850	2.126	11.021	6.490
	[40.410]	[41.120]	[8.180]	[6.840]	[4.640]	[3.310]	[8.280]	[2.210]
R^2	0.369	0.331	0.000	0.003	0.012	0.019	0.486	0.260
Obs.	526	540	416	418	201	201	33	33
Countries	43	45	31	32	19	19	6	6

T-stats in square brackets

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Table 4c
The Impact of ODA on Income per Worker (Geographical Areas) Panel

	Dependent variable: log GDP per labour unit 1997									
	Geographical Areas									
	EAST ASIA AND PACIFIC		EUROPE AND CENTRAL ASIA		LATIN AMERICA E CARIBBEAN		MIDDLE EAST AND NORTH AFRICAN		SUB-SAHARAN AFRICA	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S_k)-ln(n+g+d)$	0.679	0.635	-0.055	0.026	0.255	0.274	-0.187	-0.260	0.199	0.195
	[4.260]	[4.200]	[-0.480]	[0.350]	[6.190]	[6.450]	[-2.120]	[-2.520]	[10.030]	[9.800]
$ln(S_h)-ln(n+g+d)$	0.854	0.790	0.104	0.069	0.165	0.174	-0.475	-0.092	0.057	0.071
	[3.610]	[3.500]	[0.520]	[0.490]	[3.010]	[3.010]	[-5.730]	[-0.580]	[1.900]	[2.430]
$ln(ODApc)$	0.448	0.548	1.788	1.822	0.309	0.371	0.531	0.998	0.379	0.351
	[1.220]	[1.550]	[5.120]	[7.710]	[1.950]	[2.120]	[4.920]	[5.400]	[10.440]	[9.850]
CONSTANT	0.640	0.447	0.426	-0.241	5.992	5.299	9.630	5.699	5.224	5.182
	[0.620]	[0.450]	[0.280]	[-0.240]	[9.660]	[7.590]	[20.730]	[5.330]	[33.650]	[34.010]
R^2	0.142	0.110	0.106	0.072	0.214	0.248	0.182	0.224	0.648	0.579
Obs.	106	109	38	38	306	306	155	155	497	510
Countries	11	13	9	9	23	23	14	14	37	38

T-stats in square brackets

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Table 4d

The Impact of ODA on Income per Worker (HIPC and Other Subgroups) Panel

	DEPENDENT VARIABLE: LOG GDP PER LABOUR UNIT 1997							
	LOW INCOME AND SEVERELY INDEBTED COUNTRIES		WORLD BANK HIPC COUNTRIES		AID/GNP <15%		AID/GNP > 15% (BOONE)	
	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE	ILO LABOUR FORCE	WORKING AGE
$ln(S_k)-ln(n+g+d)$	0.213	0.211	0.263	0.267	0.239	0.200	0.283	0.287
	[12.760]	[12.550]	[13.840]	[13.970]	[10.410]	[9.450]	[6.620]	[6.840]
$ln(S_h)-ln(n+g+d)$	-0.007	0.010	-0.013	0.004	-0.007	0.118	-0.076	-0.063
	[-0.250]	[0.370]	[-0.500]	[0.170]	[-0.220]	[3.850]	[-1.520]	[-1.290]
$ln(ODApc)$	0.217	0.189	0.231	0.209	0.450	0.626	0.134	0.127
	[5.520]	[4.930]	[5.980]	[5.470]	[10.480]	[14.760]	[1.930]	[1.850]
CONSTANT	5.811	5.760	5.490	5.396	5.663	4.388	5.751	5.633
	[38.550]	[38.770]	[37.170]	[36.750]	[30.740]	[22.630]	[25.120]	[25.060]
R^2	0.354	0.260	0.476	0.325	0.116	0.244	0.897	0.884
Obs.	325	338	414	428	1005	1018	171	174
Countries	27	28	33	35	86	87	13	15

T-stats in square brackets