Does Aid Increase FDI?

Pablo Selaya and Eva Rytter Sunesen
Department of Economics, University of Copenhagen

6 June 2007

Abstract

By applying a simple open economy Solow model of foreign direct investment (FDI) this paper shows that the theoretical relationship between aid and FDI is indeterminate. On the one hand, aid may raise the marginal productivity of capital by financing complementary inputs, such as public infrastructure projects and human capital investment. On the other hand, aid may also have the adverse impact of crowding out productive private investments. The model thus highlights the need to distinguish between different types of aid investments. In the empirical part we therefore analyse the relationship between FDI and disaggregated aid flows. Our results strongly support the hypotheses that aid invested in complementary goods draws in foreign capital while aid invested in physical capital crowds out FDI. The latter effect is, however, less pronounced in countries with political stability, accountability and good institutions where aid resources are managed more effectively.

1 Introduction

A salient point of the UN (2002) Monterrey Report of the International Conference on Financing for Development is that official development assistance (ODA), trade and foreign direct investment (FDI) are three essential tools for development financing. In particular (p. 9):

> ODA plays an essential role as a complement to other sources of financing for development, especially in those countries with the least capacity to attract private direct investment. A central challenge, therefore, is to create the necessary domestic and international conditions to facilitate direct investment flows, conducive to achieving national development priorities, to developing countries, particularly Africa, least developed countries, small island developing States, and landlocked developing countries, and also to countries with economies in transition.

However, the presumption that ODA in this way has a "catalysing" effect on FDI, that aid and FDI are complements, is by no means evident. Recently, arguments have been put forth that aid and FDI are not complements (Kosack and Tobin, 2006) or, even, that aid and FDI are substitutes (Caselli and Feyrer, 2006). Kosack and Tobin (2006) argue that aid and FDI have no effect on each other chiefly because aid is government-centred and linked to human development, while FDI is a private sector decision and relatively more connected to physical capital. The finding of a near equalisation of marginal products of capital (MPK) across countries in Caselli and Feyrer (2006) implies that by lowering MPK in the recipient country, foreign aid will be fully offset by outflows of other types of capital investment. As a result, aid and FDI can be seen as perfect substitutes over a medium or long-run perspective.

This paper argues that both lines of reasoning are too simple to capture the relationship between aid and FDI. This paper contributes to the literature on aid and FDI by setting up an open economy Solow model that distinguishes between aid directed towards complementary factors of production and aid that goes into capital accumulation. This distinction is motivated by Caselli and Feyrer (2006) who explain the lower capital-labour ratios in poor countries by lower endowments of complementary factors and lower levels of overall efficiency in these countries. An important implication is that aid invested in complementary factors is likely to increase MPK in the recipient country in which case an increase in the capital stock is sustainable. For example, aid can ease important bottlenecks in poor countries by financing public infrastructure and human capital investments that would not have been undertaken by private actors due to the "common good" nature of public goods, and that budgetary constraints refrain the recipient government from undertaking. However, foreign aid directed towards other purposes directly compete with private capital and replace investments that private actors would have undertaken anyway. In this case, rate-of-return equalisation will give rise to capital flight leaving the capital stock unchanged.

The theoretical model holds a number of results. First, the effect of total aid on FDI is ambiguous and that we need to distinguish between different types of aid investments when evaluating the effect of aid on FDI. While aid invested in physical capital to crowd out foreign investments, aid invested in complementary factors of production has an ambiguous effect on FDI. The logic of the ambiguity is that while an increase in complementary factors increase MPK, the productivity increase also raise income and thus domestic savings. The resulting increase in domestically financed investments lowers MPK and thus crowds out foreign investments. Second, the relationship between complementary aid and FDI is unlikely to be linear and that we should take scale effects of this type of aid into account. And third, the model stresses the need to take all sources of capital investments into account, which means that it is essential to include domestic savings as an additional explanatory variable in the empirical regression analysis.

We then take the implications of our theoretical model to the data by utilising a panel of 84 countries over the period 1970-2000. We distinguish between aid invested in complementary factors (aid to social and economic infrastructure) and aid invested in physical capital (aid to production sectors) and allow for scale effects by including squared complementary aid in the empirical model. Also, we control for heterogeneity in the government's effectiveness in managing the aid flows by including interactions between aid and a broad selection of policy variables.

We find a large and positive effect of complementary aid, while aid to production sectors turns out to have a negative impact on FDI. This Implies that more aid should be directed towards complementary goods, since such investments allow the recipient country to attract more foreign capital. In countries with sound policies, on the other hand, our results show that the crowding out effect of aid invested in production sectors is less pronounced because aid in these countries is invested more effectively and might actually generate positive externalities.

The paper is structured as follows. Section 2 shortly reviews the scarce empirical literature on FDI and aid. Section 3 introduces the theoretical model of FDI and aid building on an open economy Solow model with part of aid entering the production function through investments in complementary goods while the other part goes into capital accumulation through investments in the production sector. Section 4 discusses some econometric issues behind our empirical analysis and presents the data, and Section 5 then goes on to present the results. Section 6 sums up and discusses some policy implications.

2 Literature Review

The relationship between aid and FDI has been analysed only recently and the empirical results remain highly inconclusive. To our knowledge, only four papers explicitly analyse the relationship between aid and FDI. Harms and Lutz (2006) and Karakaplan et al. (2005) analyse the question for a broad sample of developing countries. Karakaplan et al. (2005) find that aid has a negative direct effect on FDI but that both good governance and financial market development significantly improve the impact of aid on subsequent flows of FDI. Harms and Lutz (2006), on the other hand, find that once they control for the regulatory burden in the host country, aid works as a complement to FDI and, surprisingly, that the catalysing effects of foreign aid are stronger in countries that are characterised by an unfavourable institutional environment.

The two case studies based on bilateral FDI and aid flows in Kimura and Todo (2007) and Blaise (2005) also find incongruent results. While Blaise (2005) finds positive effects of aid to infrastructure projects on FDI, Kimura and Todo (2007) find no positive infrastructure effects, no negative rent-seeking effects but positive vanguard effects (arising

when foreign aid from a particular donor country promotes FDI from the same country but not from other countries) for the case of Japan.

This paper argues that the mixed results can be explained by the high level of aggregation of the aid variable. While Karakaplan et al. (2005) include only overall ODA, Harms and Lutz (2006) also distinguish between grants, technical cooperation grants, as well as bilateral and multilateral aid. However, it remains unclear why one would expect foreign investors to react differently to these types of aid. Kimura and Todo (2007) apply the idea of different types of aid, but construct their proxies relying only on data for aid commitments, and make an ad hoc selection of aid categories that blurs the interpretation of their results.

3 A Theoretical Model of FDI and Aid

A general shortcoming in the empirical literature is the lack of consensus on the specification of the FDI relation, and none of the existing empirical papers on aid and FDI are supported by a theoretical model. This paper closes this gap by proposing a Solow model for a small open economy as shorthand for modelling the main characteristics of the relationship between aid and FDI.

We assume a Cobb-Douglas production function according to which GDP per capita, y, is given by

$$y = Ak^{\alpha}, \tag{1}$$

where α is a constant, k is the capital stock per capita and A denotes total factor productivity.

We assume that the total flow of foreign aid, AID, can be split into aid invested in complementary inputs, AID_A, and aid invested in physical capital, AID_K, where $AID = AID_A + AID_K$. Complementary aid by nature raises the marginal productivity of all production factors. For example, infrastructure investments lead to the interconnection of markets, while investments in human capital improve technology adoption.[1] Aid invested in physical capital, on the other hand, enters the production function only indirectly through its effect on capital accumulation, and has no (augmenting) effect on total factor productivity.

To model this explicitly, we first assume that complementary aid has an augmenting effect on all production factors and we thus allow the flow of AID_A to increase the existing

[1] Reinikka and Svensson (2002), for example, offer empirical evidence on the importance of complementary public capital for foreign investors, and Dollar and Easterly (1999, p. 573) emphasise the potentially beneficial effects of aid in "helping ease infrastructure bottlenecks." The argument of the complementarity between public and private investment is generalised by Clarida (1993) and Chatterjee et al. (2003).

stock (A_0) of A in the economy:[2]

$$A = A_0 + AID_A. \tag{2}$$

Second, we assume an open economy with perfect capital mobility in line with Sørensen and Witta-Jacobsen (2006, Ch. 4). Accordingly, capital equipment can be financed by (i) domestic savings ($S = sy$, where s is the saving rate), (ii) foreign direct investments (fdi) and (iii) the inflow of aid invested in physical capital (aid_K). Then, capital accumulation in per capita terms is given by

$$\dot{k} = sy + fdi + aid_K - (n + \delta)k, \tag{3}$$

where δ is a fixed depreciation rate and n is the population growth rate.

Third, we assume free capital mobility so that the marginal productivity of capital (MPK) at any point in time is pinned down by the world real rate of return, r^w

$$r^w = A\alpha k^{\alpha-1}. \tag{4}$$

According to (4), the steady level of capital at any given point in time is given by:

$$k^* = \left[\frac{A\alpha}{r^w}\right]^{\frac{1}{1-\alpha}}. \tag{5}$$

Rewriting (3) taking (5) as given, the flow of FDI per capita is determined as the residual:

$$fdi = -aid_K - sy^* + (n + \delta)k^*. \tag{6}$$

At a first glance, (6) seems to support the Caselli and Feyrer (2006) result that aid and FDI are substitutes: for a given level of domestic savings, equalisation between MPK and r^w requires an increase in foreign aid to be accommodated by a proportional reduction in FDI:

$$\frac{\partial fdi}{\partial aid_K} = -1. \tag{7}$$

However, this finding only holds for aid invested in physical capital. The effect of complementary aid, on the other hand, is slightly more complicated:

$$\frac{\partial fdi}{\partial aid_A} = -s\frac{\partial y^*}{\partial aid_A} + (n + \delta)\frac{\partial k^*}{\partial aid_A}. \tag{8}$$

Since

[2]Since we have assumed Cobb-Douglass production, the assumption of AID_A working like Hicks neutral technological progress is equivalent to the assumption of it being only labour- or capital-augmenting.

$$s\frac{\partial y^*}{\partial aid_A} = s\frac{\partial \left(Ak^{*\alpha}\right)}{\partial aid_A} = s\left[Lk^{*\alpha} + A\alpha k^{*\alpha-1}\frac{\partial k^*}{\partial aid_A}\right] > 0,$$

we see that complementary aid has a positive effect on domestic savings and thus on domestically financed capital investments. This result comes from the fact that aid_A shifts the production function thereby raising the steady state levels of income and domestic savings. Given the assumption of MPK equalisation in (4), the corresponding increase in domestically financed investments causes a proportional reduction in the need for FDI of the size $-s\frac{\partial y^*}{\partial aid_A}$.

Also, since

$$\frac{\partial k^*}{\partial aid_A} = \frac{\partial}{\partial aid_A}\left(\left[\frac{A\alpha}{r^w}\right]^{\frac{1}{1-\alpha}}\right) = \frac{1}{1-\alpha}\left[\frac{A\alpha}{r^w}\right]^{\frac{\alpha}{1-\alpha}}\frac{L\alpha}{r^w} > 0,$$

we see that complementary aid has a positive effect on the steady state capital stock. This finding is based on the augmenting effect of aid_A, which raises MPK and thus allows the recipient country to increase its capital stock without experiencing a counterbalancing capital flight. That is, for a fixed s, aid-financed investments in complementary factors allow a sustainable increase in FDI equal to $(n+\delta)\frac{\partial k^*}{\partial aid_A}$.

This model holds several implications that should be taken into account when assessing the empirical relationship between aid and FDI. First, we find that the effect of total aid on FDI is ambiguous:

$$\frac{\partial fdi}{\partial aid} = \frac{\partial fdi}{\partial aid_K} + \frac{\partial fdi}{\partial aid_A} = -1 - s\frac{\partial y^*}{\partial aid_A} + (n+\delta)\frac{\partial k^*}{\partial aid_A} \lessgtr 0, \tag{9}$$

and that we need to distinguish between different types of aid when judging how aid impacts FDI. Rather, we would expect aid to production sectors to have a negative effect on FDI, while the effect of complementary aid is indeterminate. Second, since the marginal effect of complementary aid on FDI includes the level of aid itself the relationship between complementary aid and FDI is not linear. In particular, there is likely to be certain scale effects of complementary aid that should be taken into account. However, since $-s\frac{\partial y^*}{\partial aid_A}$ and $(n+\delta)\frac{\partial k^*}{\partial aid_A}$ work in opposite directions, the sign of the second order effects will also be indeterminate and will need to be assessed empirically. Third, the model stresses the need to take all sources of capital into account, and it is therefore essential to include domestic savings as an additional explanatory variable in the empirical FDI analysis. To our knowledge, this has never been done before.

In short, the model presented in this paper predicts the following relationship between FDI and aid:

$$fdi = f(\underset{+}{A_0}, \underset{+}{n}, \underset{-}{S}, \underset{-}{aid_K}, \underset{+/-}{aid_A}, \underset{+/-}{aid_A^2}), \tag{10}$$

where A_0 is the initial productivity level, n is the population growth rate, S is domestic savings per capita, aid_K is aid invested in physical capital and aid_A is aid invested in complementary inputs.

4 Econometric Issues

The econometric interpretation of (10) is

$$fdi_{it} = \alpha_{0i} + \alpha_t + \beta_0 + \beta_1 n_{it} + \beta_2 S_{it} + \beta_3 aidk_{it} + \beta_4 aida_{it} + \beta_5 aida_{it}^2 + u_{it}, \qquad (11)$$

where α_{0i} is a country-specific constant which captures the initial productivity level in country i and α_t is a time-specific constant which captures common productivity shocks at time t. We proxy α_{0i} with the lagged level of FDI, which captures slowly moving factors as well as agglomeration effects. This also reduces the need to control for other FDI determinants.

To estimate the above equation, however, we need to face the possible endogeneity of aid since the OLS estimator is consistent only if all explanatory variables are exogenous. Aid could be endogenous if donors systematically disburse more resources to those countries that are neglected by private foreign investors. We therefore estimate (11) by two-stage least square (2SLS) following the instrumentation strategy in Hansen and Tarp (2000, 2001), Dalgaard and Hansen (2001) and Dalgaard et al. (2004).

The first set of instruments for the aid variable includes (lagged) interactions between levels of aid, the Burnside and Dollar (2000) index for the quality of macro policy, the size of population and the initial level of GDP per capita in the recipient country. These factors account for the most important determinants of aid in the aid-allocation literature, namely the donors' overall preference for granting more aid to countries with better fiscal behaviour, smaller populations and lower levels of income per capita. Second, we include the lagged level of aid, to account for persistency in other determinants of aid. Finally, we include a dummy variable for African countries in the CFA franc zone to capture particular donors' strategic interests.

Tests confirmed the validity of our instruments, and the Durbin-Wu-Hausman test did not reject the null hypothesis that the aid variables could be treated as exogenous in the FDI relation. Since pooled OLS provides both consistent and efficient estimates in this case, we estimate (11) using standard errors adjusted for cluster-correlations, which allows not only for country-specific heteroscedasticity but also for intra-country correlation of residuals.

4.1 Data

The dependent variable, fdi_{it}, is net FDI inflows in constant US dollars from the UNCTAD Foreign Direct Investment database divided by the population to control for country size. The main explanatory variables are the population growth rate and savings per capita both from the WDI (2006).

The aid variables are based on total net flows of official aid disbursements reported in the OECD/DAC database. Since data on sectoral disbursements are available only after 1990, the measure of per capita aid flows to sector k, aid_{itk}, is constructed using sectoral commitments as a proxy for sectoral disbursements. In particular, we follow Clemens et al. (2004) and Thiele et al. (2006) and assume that the proportion of aid actually disbursed to sector k is equal to the proportion of aid committed to sector k and hence that

$$aid_{itk} \approx \frac{commit_{itk}}{\sum_k commit_{itk}} aid_{it}, \tag{12}$$

where $commit_{itk}$ is ODA commitments to sector k. Approximating sectoral disbursements with sectoral commitments may cause some concerns due to differences in definitions and statistical record (see Clemens et al., 2004, for more details). However, according to Odedokun (2003) and Clemens et al (2004) this problem is likely to be small since disbursements and commitments (both on the aggregate and sectoral levels) are highly correlated. Also, annual discrepancies are likely to be larger than averages and we thus average the data over five-year intervals.

Aid is decomposed into two broad categories:

- Aid invested in complementary inputs: aid oriented to social infrastructure (such as education, health, and water supply projects) and economic infrastructure (such as energy, transportation and communications projects).
- Aid invested in physical capital: contributions to directly productive sectors (such as agriculture, manufacturing, trade, banking and tourism projects).

Other sectoral aid categories (like multisector support, programme assistance, debt reorganisation, emergency assistance and unallocated types of aid) are excluded from the analysis since they are primarily oriented to provide fiscal budget support in the recipient country.

5 Results

Results from estimating (11) using pooled OLS for a sample of 84 countries using five-year intervals are reported in Table 1. For ease of comparison with existing studies, we also report the results from omitting the square term of complementary aid. Our

results strongly support the notion that complementary aid has a catalysing effect on FDI, which means that the replacement effect of increased domestically financed investments resulting from the increase in income is more than outweighed by the increase in the steady state level of capital due to the increase in MPK. For a given domestic savings rate, this means that one aid dollar invested in complementary factors draws in more than ninety cents of foreign capital in the short run and close to 1.8 dollars in the long run. The square of complementary aid is negative and significant suggesting that the rate at which aid replaces domestically financed investments is faster than the rate at which aid enhances MPK and thus increases the steady state level of capital. In other words, there is diminishing returns to investments in complementary goods.

The results also confirm the crowing out effect of aid invested in production sectors where one aid dollar invested in physical capital replaces FDI by 70 cents in the short run and not one-to-one as predicted by the theoretical model. This might be due to the irreversible nature of FDI and that fact that direct investments typically have a long-term investment horizon. In the long run, aid invested in the productive sectors more than replaces foreign investment suggesting that private investors avoid investing in countries that have a long history of donor interference in the private sector.

The prediction from the theoretical model that the growth rate of the population should have a positive effect on FDI does not find empirical support. One explanation might be that a fast growing population is an attractor of the efficiency-seeking investor but that the quality of the abundant labour in some countries might be too poor to attract foreign investors. In this case, a fast growing population might instead cause social tensions and excessive burdens on the public system, which will tend to scare away foreign investors rather than draw in more investments.[3] In Column 3 we therefore include the literacy rate from the World Development Indicators (2006) to take the quality of the labour force and the level of development into account. As we would expect, population growth becomes less significant althoughy it continues to enter negatively. Also, the adjustment for the level of development renders the savings rate insignificant, which suggests that part of the effect of domestic savings on FDI was due to the fact that poorly developed countries have lower savings and domestically financed investments for the same reasons that keep foreign investors from investing in the country.

Some recent findings on the link between FDI and democracy deserve closer attention. First, Persson and Tabellini (2006) find that democratic regimes enjoy higher efficiency and thus higher expected returns and investments. Second, Ferris et al. (1997), Kamaly (2002), Lemi and Asefa (2003) and Onyeiwu and Shrestha (2004) have included democracy as a proxy for risk and they all find that democracy is a strong determinant of FDI. This is

[3]This is in line with the Mankiw-Romer-Weil (1992) notation the an increased population growth rate implies lower per capita human capital levels and thus lower MPK levels. This will have a negative impact on FDI.

also in line with Tuman and Emmert (2004) who more explicitly analyse the importance of the political reigme on FDI. To ensure that our results are not driven by an omitted variable bias, we include the Vanhanen Democracy Index in Column 4.[4] As expected, democracy turns out to have a positive impact on FDI. However, this result might be due to the high and positive correlation between institutional quality and democracy. To test for this, we also include the share of a country's area that is in the tropics (*tropical*) from Gallup, Sachs and Mellinger (1999), which has been used by Dalgaard et al. (2004) as a proxy for deep structural determinants or institutions. Democracy remains significant and we thus conclude that foreign investors prefer to invest in democracies for other reasons than high institutional quality.

Initial regressions also included measures of market potential (GDP growth, GDP per capita, urban population and rural population), factor market characteristics (size of the labour force, average years of schooling), market access (openness, number of vehicles, transportation network density, telephone lines and rail lines) and macroeconomic stability (current account balance, inflation, exchange rate variability and debt) to account for the risk of investing abroad. None of them turned out significant or to have a qualitative impact on our results. These regression results are available upon request.

However, not all countries will be equally able to effectively manage the aid funds. Bauer (1991) and Economides et al. (2003), for example, argue that the possibility of extraction from foreign aid pushes self-interested individuals away from productive to rent-seeking competition. This means that the political and institutional environment of the recipient country has a direct influence on the ability of government officials in making judgements about the profitability of alternative investment projects. Also, these factors supposedly enhance the accountability of spending to the public which will influence the extent to which aid is actually invested in profitable projects rather than encouraging unproductive rent-seeking activities (see Robinson et al., 2002).

As a final test for robustness of our results, we wish to allow for heterogeneity in government effectiveness by including interactions between the aid variables and a range of policy indicators, $policy_{it}$. Since some of the policy indicators might also influence the investment climate directly, we also include $policy_{it}$ on its own and estimate:

$$\begin{aligned} fdi_{it} &= \alpha_{0i} + \alpha_t + \beta_0 + \beta_1 n_{it} + \beta_2 S_{it} + \beta_3 aidk_{it} + \beta_4 aida_{it} + \beta_5 aida_{it}^2 \\ &\quad + \beta_6 (aidk_{it} * policy_{it}) + \beta_7 (aida_{it} * policy_{it}) + \beta_8 policy + u_{it}, \end{aligned} \tag{13}$$

where we expect β_6 to be negative and β_7 to be positive since a better policy environment can effectively be interpreted the same way as an increased amount of sectoral aid. This means that the interactions should move in the same direction as the level of aid. We expect β_8 to be positive since countries with good policies are likely to be relatively more

[4] Results are unchanged if we instead included the Freedom House or the IDEA democracy indices.

attractive than other countries.

We include the political risk subcomponents from the International Country Risk Guide rating system, which reflect the degree of accountability, stability and institutional quality in the political process: government stability (gov stab), socioeconomic conditions (socio), investment profile (profile), internal conflicts (internal), external conflicts (external), political corruption (polcor), military in politics (military), religious tensions (religion), law and order (order), ethnic tensions (ethnic), democratic accountability (accountability)and bureaucratic quality (quality).[5] Results are reported in Table 2.

The interactions between complementary aid and the policy indicators are rarely significant suggesting that complementary aid works equally well in all policy environments. However, our results suggest that aid invested in production sectors in countries characterised by government stability, low levels of political corruption, no military interference in politics, protection of law and order, and a high degree of bureaucratic quality might actually generate positive externalities that will dampen the crowding out effect of this type of aid investments. It is important to notice, however, that this extension does not change our main conclusion, namely that aid invested in complementary inputs allows for a sustainable increase the the recipient country's capital stock while aid invested in production sectors crowds out foreign capital.

6 Conclusion

Due to its potential to transfer knowledge and technology, create jobs, boost overall productivity, and enhance competitiveness and entrepreneurship, attracting FDI to developing countries is essential to contribute to economic growth, development and poverty reduction. Given the emphasis on using ODA as a vehicle for creating a private sector enabling environment, the question of whether or not aid flows induce significantly more FDI inflows becomes an important and relevant question not only on its own right but also as an essential element in the aid effectiveness literature.

The results strongly support the hypotheses that aid invested in complementary goods draws in foreign capital, while aid invested in production sectors crowds out private foreign investments. However, the latter effect is less pronounced in good policy environments where the more effective management of aid resources seems to generate positive externalities that benefit foreign investors. The policy implication is that the composition of foreign aid matters and that more aid should be directed towards complementary goods, since such investments improve the absorption capacity of the recipient country

[5] Karakaplan et al. (2005) and Harms and Lutz (2006) use the six governance indicators from Kaufmann et al. (2005) avaulable in 1997 and 1998 to capture governemtn effectiveness. Their results are therefore based on the implicit assumption that the quality of governance does not change significantly during the 1990s and can thus be approximated by the 1997/98 value. One of the main advantages of our methodology is therefore the extended time dimension.

and increase MPK in the host country, which allows it to accumulate more foreign capital without experiencing a drop in domestic investments or a flight of foreign capital.

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Table 1: FDI and foreign aid

	(1)	(2)	(3)	(4)	(5)
aid_K	-0.67^{**}	-0.39^{***}	-0.67^{**}	-0.65^{**}	-0.65^{**}
	[0.3]	[0.09]	[0.3]	[0.3]	[0.3]
aid_A	0.89^{***}	0.10	0.87^{***}	0.85^{***}	0.85^{***}
	[0.3]	[0.1]	[0.3]	[0.3]	[0.3]
aid_A, squared	-0.0011^{***}		-0.0011^{***}	-0.0011^{***}	-0.0011^{***}
	[0.0002]		[0.0002]	[0.0002]	[0.0003]
Population growth, n	-4.61^{**}	-5.78^{*}	-3.35^{*}	-2.12	-1.83
	[2.2]	[2.9]	[2.0]	[1.8]	[1.9]
Savings per capita, sy	14.8^{*}	18.9	12.5	12.6	12.4
	[7.5]	[13]	[7.6]	[7.6]	[7.6]
fdi_{t-1}	0.54^{***}	0.60^{***}	0.53^{***}	0.53^{***}	0.53^{***}
	[0.2]	[0.2]	[0.2]	[0.2]	[0.2]
Literacy rate			0.17^{*}	0.089	0.084
			[0.09]	[0.10]	[0.09]
Democracy				0.69^{**}	0.70^{**}
				[0.3]	[0.3]
Tropical area					-2.36
					[5.1]
Observations	305	305	305	305	305
R^2	0.67	0.5	0.67	0.68	0.68
Countries	84	84	84	84	84
Marginal effects at the median					
aid_K	-0.67^{**}	-0.39^{***}	-0.67^{**}	-0.65^{**}	-0.65^{**}
	[0.29]	[0.09]	[0.29]	[0.29]	[0.29]
aid_A	0.84^{***}	0.10	0.82^{***}	0.80^{***}	0.80^{***}
	[0.26]	[0.14]	[0.26]	[0.25]	[0.26]

Notes. Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1
The dependent variable is fdi_t.
All regressions include a constant term and time-dummies.

Table 2: FDI and foreign aid: extended model

Policy:	Govt. stab. (1)	Socioecon. conditions (2)	Investment profile (3)	Internal conflict (4)	External conflict (5)	Corruption (6)	Military in politics (7)	Religion in politics (8)	Law and Order (9)	Ethnic tensions (10)	Democ. accountab. (11)	Bureaucr. quality (12)
aid_K	$-3.40^{\ddagger}$	-0.8	-3.51	-2.86	-2.27	$-2.81^{\ddagger}$	$-2.52^{\ddagger}$	1.18	$-2.92^{\ddagger}$	2.96^{*}	-1.42	$-1.66^{\ddagger}$
	[1.2]	[1.3]	[2.5]	[2.3]	[2.1]	[0.7]	[0.8]	[0.9]	[0.7]	[1.6]	[1.0]	[0.4]
aid_A	2.02^{*}	$1.11^{\dagger}$	1.41	1.52	0.65	$2.07^{\ddagger}$	$1.32^{\dagger}$	0.16	$1.47^{\dagger}$	-0.69	0.45	$1.48^{\ddagger}$
	[1.1]	[0.5]	[1.0]	[1.2]	[1.5]	[0.7]	[0.6]	[0.6]	[0.7]	[0.9]	[0.7]	[0.5]
aid_A, squared	$-0.0013^{\ddagger}$	$-0.0012^{\ddagger}$	$-0.0012^{\ddagger}$	$-0.0013^{\ddagger}$	$-0.0012^{\ddagger}$	$-0.0014^{\ddagger}$	$-0.0013^{\ddagger}$	$-0.0012^{\ddagger}$	$-0.0013^{\ddagger}$	$-0.0013^{\ddagger}$	$-0.0011^{\ddagger}$	$-0.0014^{\ddagger}$
	[0.0003]	[0.0003]	[0.0003]	[0.0003]	[0.0003]	[0.0003]	[0.0003]	[0.0002]	[0.0003]	[0.0002]	[0.0003]	[0.0003]
$aid_K \times$Policy	$0.42^{\dagger}$	0.013	0.41	0.26	0.18	$0.88^{\ddagger}$	$0.59^{\dagger}$	$-0.40^{\dagger}$	$0.80^{\ddagger}$	$-0.76^{\dagger}$	0.23	$0.79^{\ddagger}$
	[0.2]	[0.2]	[0.4]	[0.3]	[0.2]	[0.3]	[0.2]	[0.2]	[0.2]	[0.3]	[0.3]	[0.3]
$aid_A \times$Policy	-0.15	-0.025	-0.061	-0.061	0.034	-0.41^{*}	-0.1	0.16	-0.17	0.35^{*}	0.14	-0.32
	[0.1]	[0.09]	[0.1]	[0.1]	[0.2]	[0.2]	[0.1]	[0.1]	[0.2]	[0.2]	[0.2]	[0.2]
Policy	-1.31	1.75	-2.44	0.75	1.33	1.55	-3.48	1.36	-0.4	0.27	-5.46	3.46
	[2.9]	[3.4]	[3.3]	[2.0]	[2.9]	[4.0]	[2.4]	[2.3]	[4.0]	[3.2]	[4.0]	[3.9]
Pop. gr., n	-6.97^{*}	-3.54	-4.23	-4.18	-2.77	-4.28	$-7.41^{\dagger}$	-3.9	$-7.66^{\dagger}$	-3.25	-3.41	$-7.27^{\dagger}$
	[3.6]	[3.2]	[3.4]	[3.3]	[3.5]	[3.4]	[3.6]	[3.0]	[3.6]	[3.2]	[3.2]	[3.6]
Savings, sy	$16.1^{\dagger}$	12.8^{*}	$15.1^{\dagger}$	11.5	9.01	$16.0^{\dagger}$	$18.7^{\ddagger}$	$17.0^{\dagger}$	$12.9^{\dagger}$	$16.5^{\dagger}$	12.8	$13.9^{\dagger}$
	[6.6]	[7.6]	[7.3]	[7.3]	[8.2]	[6.1]	[6.8]	[7.9]	[5.8]	[7.6]	[8.1]	[6.2]
fdi_{t-1}	$0.51^{\ddagger}$	$0.52^{\ddagger}$	$0.52^{\ddagger}$	$0.52^{\ddagger}$	$0.49^{\ddagger}$	$0.52^{\ddagger}$	$0.49^{\ddagger}$	$0.50^{\ddagger}$	$0.48^{\ddagger}$	$0.51^{\ddagger}$	$0.50^{\ddagger}$	$0.51^{\ddagger}$
	[0.1]	[0.1]	[0.1]	[0.1]	[0.2]	[0.1]	[0.1]	[0.2]	[0.2]	[0.1]	[0.2]	[0.1]
Literacy rate	-0.0064	0.017	0.024	-0.028	0.023	-0.017	-0.054	0.016	-0.061	0.11	0.047	-0.041
	[0.1]	[0.10]	[0.1]	[0.1]	[0.1]	[0.09]	[0.1]	[0.1]	[0.1]	[0.1]	[0.1]	[0.1]
Democracy	$0.78^{\dagger}$	$0.85^{\ddagger}$	$0.89^{\ddagger}$	$0.81^{\ddagger}$	0.60^{*}	$0.73^{\dagger}$	$0.86^{\ddagger}$	$0.90^{\ddagger}$	$0.79^{\ddagger}$	$0.97^{\ddagger}$	0.76^{*}	$0.81^{\ddagger}$
	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]	[0.4]	[0.3]
Tropical area	3.94	2.15	2.65	4.06	1.55	4.87	7.1	1.49	9.46	2.24	2	8.17
	[6.2]	[5.7]	[6.4]	[6.5]	[7.6]	[5.5]	[6.5]	[6.0]	[6.2]	[5.5]	[5.9]	[5.7]
Observations	262	262	262	262	262	262	262	262	262	262	262	262
R^2	0.72	0.69	0.7	0.69	0.7	0.73	0.72	0.71	0.73	0.72	0.7	0.73
Countries	71	71	71	71	71	71	71	71	71	71	71	71

Notes. Standard errors in brackets. ‡ p<0.01, † p<0.05, * p<0.1
The dependent variable is fdi_t.
All regressions include a constant term and time-dummies.