

Aid Effectiveness in Africa Requires Good Policies - But What is Good?

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EXTENDED ABSTRACT

This paper makes two points, both supported by empirical analysis. Effective development aid requires ‘developmental state’ policies rather than the trade openness and restrictive fiscal and monetary policies which are still among the standard aid conditionalities. And constructive government involvement by ‘developmental states’ is especially crucial for agricultural development, which in turn is a *sine qua non* for broader economic growth. We review the literature on the effectiveness of aid, which appears inconclusive after the Burnside and Dollar (2000) result (aid effectiveness depends on trade openness and restrictive policies) was deconstructed by Easterly et al (2003). We propose another set of policies, inspired by ‘developmental state’ literature which points to the importance of strong and capable states, sector and credit policies, stable exchange rates and high savings rates, and educational investment. In an empirical test we find that an index reflecting these policies tends to improve aid effectiveness for growth in a sample of 112 developing countries, also when we control for a ‘South East Asia’ effect. But when we study regional effects, there is an ‘African Puzzle’: both developmental state policies and aid are growth effective, but they are not in combination. In exploring this puzzle, we discuss the role of developmental states especially for policies towards the agricultural sector and in support of broader growth and transformation. We suggest that aid conditionalities may have undermined this potential, with particularly pernicious results for underdeveloped Africa. We support this by econometric work where we find that public investments in agriculture in the contexts of developmental states are vital for growth prospects.

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1. Introduction

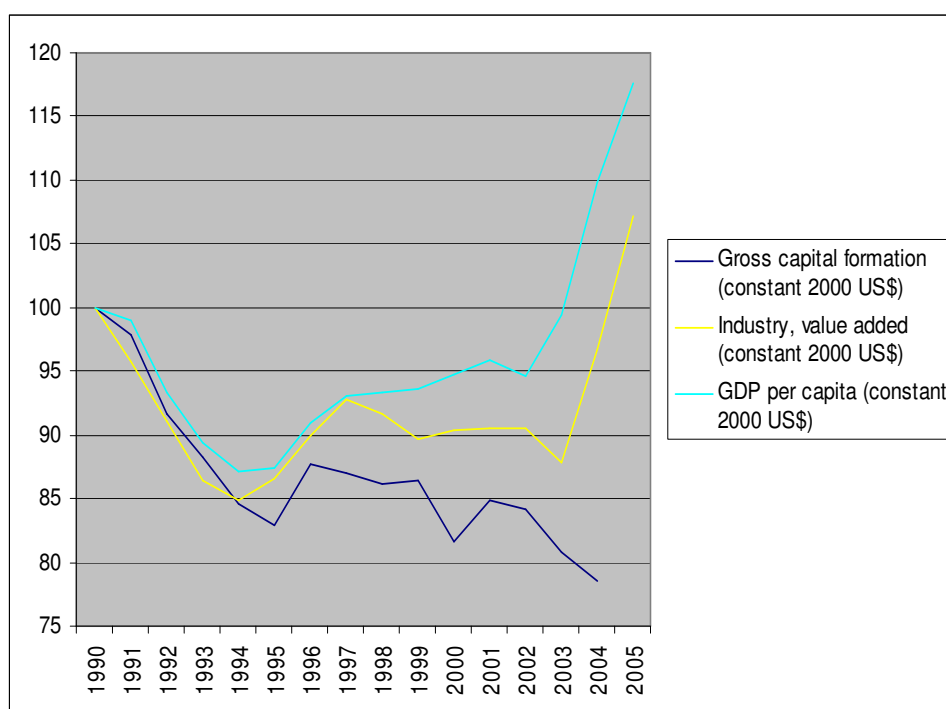
A large literature reviews the effectiveness of aid. White (1994) concludes that direct regressions between aid and economic growth do not yield meaningful results. Burnside & Dollar (1997), following the analysis of Boone (1994), found that during 1973-1993 aid had on average little impact on economic growth. Burnside & Dollar (2000) investigated whether the policy environment in aid-receiving countries increases the effect of aid on the annual per capita GDP growth rate and conclude that an environment of 'good policies' does. Dollar and Easterley (1999) had made the same argument for Africa in "The Search for the Key: Aid, Investment and Policies in Africa". In this context good policies are defined as 'good fiscal, monetary, and trade policies that are themselves important for growth' (Burnside & Dollar, 2000: 847). In their study, a policy index represents the presence of these policies in a country, and they find a positive relationship between this policy index and the effect of aid on economic growth. But Easterley et al (2003) in "New Data, New doubts: A Comment on Burnside and Dollar's "Aid, Policies, and Growth" found that the Burnside and Dollar (2000) results are not robust: when adding a few years of observations, the findings disappear.

Other papers confirm these doubts. Banerjee et al (2007), in an exemplary exercise of self-criticism by the World Bank, are unusually harsh particularly on the Burnside & Dollar (2000) paper which, they show, has serious methodological flaws but became extremely influential in justifying aid and its conditionalities. Przeworski & Vreeland (2000) find that the IMF program participation that accompanies aid giving reduces growth. Dreher (2005) concludes that if the ultimate goal of loans of the International Monetary Fund (IMF) is economic growth, the programs are a failure: the impact of aid-compliance with conditionality on economic growth is quantitatively small. Specifically, Doucouliagos and Paldam (2005 a,b) review the 'sad results' of research into aid effectiveness with respect to *accumulation*. This focus appears appropriate as Rodrik (1995) and other have suggested that a sharp increase in investment demand is at the heart

of growth spurts. This ties in with a long-standing emphasis by UN institutions on “Developing Productive Capacities”, as is the title the *Least Developed Countries Report* by UNCTAD in 2006.

In this respect, Sub-Saharan Africa is not doing well. Despite large private capital and FDI inflows and increases in recorded industrial value-added and in GDP per capita, Africa’s fixed-capital formation has been on a downward trend since the mid-1990s (Figure 1). This throws up the question of the sustainability of Africa’s current growth improvement based on capital inflows and sale of natural resources.

Figure 1: Africa’s Value Added, GDP and Capital formation, 1990-2005 (Source: World Development Indicators)



The present study revisits the question of what the ‘good policy’ is that may enhance the effectiveness of aid to support growth. We propose an alternative for the ‘good fiscal, monetary, and trade policies’ selected in Burnside and Dollar (2000), which are also part and parcel of conditionality programs. Give the ineffectiveness of such programs to foster growth (Dreher 2006), we construct a policy index similar in methodology to the Burnside and Dollar (2000) approach but radically different in content. We draw on the ‘developmental state’ literature, where productive investments and the formation of a fixed capital base are central.

2. Good Policies for Aid Effectiveness, Yes – But Which Policies?

In this section we define and review developmental state' policies and review country experiences with these policies from the history of OECD countries and from the three developing regions in the world – Asia (including the East Asian Newly Industrialising Countries in the 1960s and 1970s), Latin America, North Africa and the Middle East, and Sub-Saharan Africa. We note that communist countries applied similar policies, and were successful in realizing a transformation of their economies.

Two historical observations motivate our study of developmental state policies. The first is that such policies have always been applied in poor countries that were successful in initiating the first phase of development, which is a transformation from a agrarian to an industrializing or service-oriented economy. This includes both the presently developed countries in the OECD and the middle-income countries that started more recently on this development path (Chang, 2002; Adelman and Morris, 1984). The second observation is that most developing countries experienced negative average annual GNP per capita growth rates between 1965-1990, but those that experienced a moderate or a remarkable growth rates (of over four percent a year) share the presence of 'developmental state' policies, as noted by Leftwich (1995). Our argument, then, is both about (qualitative) structural change and (quantitative) growth rates. Historically, the two are intimately linked - part of the problem with policies that do not include substantial state involvement is precisely that they have a tendency to ignore the qualitative element of structural change, as we shall argue below.

The thrust of our work will be empirical, and for reasons of scope and space we can only briefly touch on the theoretical case for substantial state involvement in development. In standard neoclassical microeconomic theory, only externalities or public goods justify public 'interference' in the market (we will prefer to use the less pejorative, neutral term 'involvement'). Externalities arise if agent A's actions alter the incentives facing agent B, without this being taken into account by agent A. In consequence, outcomes will deviate from the market equilibrium, which may justify public involvement to correct this. Therefore if one can argue that externalities or public goods are central to the development process, this constitutes an argument for state involvement 'even' in a neoclassical world. There are, of course, other

justifications of state action that do not refer to the neoclassical microeconomic framework, but we will below couch the discussion in these terms as this is the frame of reference for most critics of developmental policies. We can identify four sorts of externalities, which partly overlap and are all central to the development process. They have to do with institutions, ‘fallacies of composition’, coordination problems, multipliers. For reasons of space and time, we briefly elaborate only on the last two.

1) *Coordination Problems*. Economic development involves increasing factor productivity through technical change and increasingly specialised production through exchange. The transactions in which this exchange occurs need to be *low cost* and, crucially, *coordinated* by either market or non-market mechanisms (Williamson, 1985, 1991; North, 1990; Jaffee and Morton, 1995; World Bank, 2000, 2002). Developmental problems, then, can be thought of as “massive coordination failures” (Kondonassis et al, 2000). Coordination failures exist if market agents would benefit from transacting with each other, but do not individually have the incentive to trade. Consider one example. Many smallholder farmers would invest in the resources to produce higher-quality output or larger volumes, if only they could obtain a bank loan. A bank manager would lend if (s)he was confident the farmers would sell the produce to a trader and so be able to repay the loan. And the trader would guarantee to buy, collect and transport the produce if (s)he knew there was sufficient volume and quality to cover the costs – which in turn depends on farmers’ access to finance. But because of high mutual uncertainty over quality, volumes and opportunism, the transactions may never happen. Obviously, such uncertainty is the rule rather than the exception in poor economies and there is indeed ample evidence of coordination problems like the above in developing countries (e.g. Ariadis and Drazen; and Poulton et al, 2003; Dorward et al, 2009 for Sub-Saharan Africa). Only if a third party steps in to coordinate the decisions of these three market parties will transactions - and thus markets - actually develop. And as only the state has an objective function broad enough to include the profit functions of all three parties (via tax collection and political economy considerations), public rather than private coordination is typically the typical solution. This is not to say that public involvement will necessarily be successful, but rather that there simply are no conceivable private solutions to these types of multi-market coordination problems in poor countries

2) *Institutional Vacuum*. A second argument arises from the fact that the existence and quality of institutions are crucial to successful development, and that many

institutions are public goods. Neither of these two propositions are seriously disputed in the development debate, yet most economists do not infer from this that therefore developmental state policies are required – even though all agree that the presence of public goods implies a positive role for the state. The reason is to do with the *sort of* institutions considered. We use the term ‘institutions’ here broadly to refer to the organizations and rules that form the human-made context shared by all agents in an economy. Few development economists disputes that states need to build and support institutions like a political governance system, a functioning monetary system, commercial codes and Chambers of Commerce, property rights legislation, law and order, transport and communications infrastructure, education, and so on. These are often collectively alluded to as the ‘enabling environment’ for markets to develop and flourish, and only extreme small-government proponents would question their necessity or the role of the state in maintaining them. But developmental-state policies go much further – and this is our reason to write *substantive* state involvement when referring to these kinds of policies. Developmental states in poor countries do not just create an enabling environment for the market; they initiate markets themselves, which did not exist before (as in the above coordination problem) and they actively meddle in existing market. Developmental-state policies include price controls, import barriers and export subsidies, state ownership in enterprises, credit controls and targeted credit allocation, exchange rate depreciation, and all sorts of (other) industrial policies that alter market incentives (the standard term is ‘distort’, again too pejorative to our taste). It is about ‘getting prices wrong’, as Amsden (1990) aptly writes. The reasoning is that since the market process will not alter incentives sufficiently to kick-start the development process, governments need to change those incentives via taxes, subsidies, quantitative regulation and price controls. *If* it is accepted that these sorts of policies are a *sine qua non* for a viable development process, then it follows that there need to be institutions to implement these policies, and only the state can, typically, create those institutions. Of course, this is a big ‘if’. But the argument is again that unless the state steps in to do these things, there is an ‘institutional vacuum’: no other parties have the incentives or capacity to do what developmental states can do: create, support and manage the appropriate institutions.

Vartianen (1999) summarises evidence for the success of strongly interventionist strategies for economic development. Using Taiwan, Korea, Finland and Australia as

examples she shows that the state played an active role in the transformation, in different historical periods, of each of these countries. Johnson (1995) named this form of state intervention - in which private ownership is united with state guidance - a 'developmental state' ; but the model already existed 'before anybody thought of naming it' (Bagchi, 2000: 398). Japan, Taiwan and South Korea are often cited in the causal argument from interventionism to rapid economic growth (Xia, 2000). 'In 1960 South Korea was poorer than many sub-Saharan African countries. Since then, the country has experienced average increases in per capita income of 6.8%, with the result that South Korea has left sub-Saharan African countries behind as well as others like Mexico and Argentina, which started at a richer point' (Rodrik, 1995: 55). This strand of development thinking advocates a strong state which can create and regulate economic and political relationships that support sustained industrialisation (Chang, 2002). Amsden (1989) and Wade (1990) argue that the governments in Taiwan and South Korea had a clear vision and did not hesitate to intervene to promote their industrial priorities with subsidies, trade restrictions, administrative guidance, and public enterprises or credit allocation.

Based on this literature, we identify the following elements of a 'Developmental State Index' that may enhance the growth effectiveness of aid and, indeed, growth itself:

- ⇒ *state strength and credibility* The function of the state is more than providing an 'enabling environment' for the private sector, as in mainstream thinking; it acts as transformer of the economy and society (Corporaso & Levine, 1992). In order for the state to be able to impose its own policies and commit to them, it must be strong, credible and in command a capable bureaucracy (Vartianen, 1999; Johnson, 1995). Grabowski (1994) was the first to model credibility as a fundamental aspect of the developmental state. A developmental state needs to attain a certain level of credibility in order to be able to be trusted by private investors, and make them follow its investment plans. However, '[p]olicy makers often have great difficulty in committing themselves credibly to an investment policy entirely geared towards attaining maximum economic growth' (Huff, Dewitt & Oughton (2001: 714). Commitment to a path of investment co-ordination is crucial; therefore there is key role for state reputation
- ⇒ *promotion of industrial activity* Wade (1990) concludes that the developmental state policy focuses on the terms of growth, productivity and competitiveness, rather than on welfare. The developmental state has the ability and flexibility to

promote targeted industries, systematically guiding the course of indigenous industrialisation (Cumings, 1987; Beeson 2001). The state selects particular industries as strategic sectors and encourages development, using a wide range of industrial policies. These include the use of state controls on tariffs, import-substitution and non-tariff barriers to protect own industries and improve the export status (Amsden, 1989; Bruton, 1998).

- ⇒ An important way of promoting particular industries is the significant role the state can play in the *allocation of credit*. Directed credit programs - loans on preferential terms and conditions to priority sectors - were a major tool of development policy for both developed and developing countries, mainly in the 1960s and 1970s. The main purpose of credit policy (also referred to as policy-based finance) is to overcome market imperfections through consultation and coordination between the government and the private sector. The effectiveness of credit policies is determined by whether an economy can provide the institutional environment and the mechanisms needed for close and effective consultation, coordination and monitoring (Vittas and Cho, 1999). All of the successfully developed or developing countries have used credit policies as part of their industrial policies (Farahbaksh and Sensenbrenner, 1996; Chang 2002).
- ⇒ Another key feature of the developmental state model is a system of *stable and depreciated exchange rates*. During their 'miraculous' growth phases, East Asian countries successfully pegged their currencies to the dollar. Gala (2005) compares the exchange rate regime in East Asia with Latin America. While Latin American countries went through volatile populist and then 'stabilisation' episodes, East and Southeast Asian countries focused on their export-led growth strategy with a permanent stimulus for the export sector, avoiding episodes of strong appreciation. Rodrik (1994) also recognises the importance of competitive exchange rates in the development of East Asian countries. In Korea and Taiwan the real exchange rate was stable over the whole period from 1956 until 1985; in China it has been since 1997. This was a great help to investors, who were competitive and did not need to hedge against exchange rate fluctuations (Wade, 1990).
- ⇒ Finally Abe (2006) emphasizes the 'rapid *educational advance* in East Asian developmental states, namely Japan, South Korea, Taiwan and Singapore' (Abe, 2006: 6). According to Morris (1996) the expansion of the national educational

systems was sequential, with first priority placed on primary education, later on secondary education, followed by tertiary education.

What can we expect from such policies? This question has been amply debated in the literature. Here we summarise our position, in two points. The first is that no country that is currently developed (or successfully developing) attained this position without significant developmental-state type policies (the exceptions would be some city states such as Hong Kong, and countries with point resources like oil, which could grow rich without structurally changing and industrialising). Evidence for this is presented, for instance, in Chang (2002). Hence, if we take the historical record seriously, long-term development *without* attention to these policy elements – as, for instance, a Washington Consensus based strategy such as Structural Adjustment Programs - is unrealistic. It can be tried, but if experience is anything to go by, it will fail. This is one way to understand the across-the-board failure of Structural Adjustment Programs to generate sustained growth.

Our second point is that developmental-state type policies, while apparently indispensable for long-term development, are also risky (see e.g. the summary by Bruton, 1998 for the case of import-substitution policies). Therefore, we observe failure more often than success. This is quite obvious and the evidence is abundant in the many ways in which developing-country governments have abused state intervention to hemorrhage agriculture by heavy implicit and explicit taxation; to indulge in unrealistic pet and prestige projects in industry; and to misappropriate public means for private gain. However: this cannot be an argument against trying! The alternative to harmful state involvement is helpful state involvement – it is not *no* state involvement, or simply less state involvement. This is not merely an ideological statement, but it is based on development experience. It bears repetition: development strategies that ignored substantive state involvement have always failed, and successful development strategies have always included substantive state involvement. The lesson from history is that development without developmental-state policies is simply not an option. This lesson is so controversial because of the many ways in which developmental-state policies can (and do) go wrong. But consider the following analogy. Most start-up firms fail to survive their first few years of existence. But no economist would use this as an argument against promoting the start-up of new firms. They are vital and risky policies in accelerating and sustaining economic growth. Similarly, developmental-state type policies are risky but

vital. We cannot do without, but need to think hard about their design. The question is not if, but how states should foster development in today's context. We take up this question specifically for Africa in the next section

3. Effective Developmental Policies: the Role of Agriculture

In this section we argue that effective developmental state policies especially in the poorest countries should be agriculturally focused. We emphasize that both the sectoral focus and the extensive state involvement implied are vital. We here review a truly substantial body of work from economic theory, economic history and contemporary empirical analysis which strongly supports these claims, drawing on Bezemer and Headey (2008).

3.1 Agriculture, Growth and Poverty reduction

Substantial government involvement in agriculture seems to be a necessary precursor to both agricultural development and overall economic progress. Therefore any policy which discriminates against LDC agriculture is likely to hinder economic growth and poverty reduction.

In terms of theory, Lewis (1954), Johnston and Mellor (1961) and the literature following these frameworks, argue that agriculture is a relatively labour intensive source of employment, thereby economizing on scarce capital and imports. It aids growth by providing cheap food, raw materials, labour, savings, and demand for non-agricultural goods.ⁱ More widely, agricultural growth is also a key determinant of food stability and nutrition, poverty reduction, and political stability.

In terms of economic history, in the 19th Century the strong agricultural performers among the now advanced, Western countries subsequently developed most rapidly (Adelman and Morris, 1988).ⁱⁱ Many authors also argue that a Green Revolution occurred before or contemporaneously to the Industrial Revolution in Europe, its offshoots, and Japan (Rostow, 1960; Ohkawa & Rosovsky, 1964; Bairoch, 1973; Lipton, 1977; Crafts, 1985; Allen, 1994; Overton, 1996). Also the more recent experiences of Taiwan and South Korea highlight the importance of pre-war agricultural growth to their post-war industrialization (Wade, 1990; Kang & Ramachandran, 1999). And evidence on a broader subset of LDCs suggests that

agricultural transformation was pivotally important at early stages of development, both in the manner predicted by Lewis (1954) and in terms of breaking down the social barriers to growth in traditional rural societies (Adelman and Morris, 1967).

In terms of contemporary empirical analysis, modern econometric and simulation techniques have been used to gauge the ‘multiplier’ effects of a sector’s growth rate on other sector’s growth rates, or each sector’s contribution to aggregate growth. These studies can be broadly divided into cross-country studies (which present either aggregate or continent-specific results), and country studies. In a very extensive literature review we found that *all* cross-country studies which attempt to gauge the sectoral sources of aggregate growth in LDCs find that agricultural gains have the strongest linkages of all sectors to growth in other sectors and to aggregate growth. Because of important externalities (discussed below), agriculture’s contribution to growth is significantly larger than its output share would suggest (Gollin, *et al.*, 2002; Timmer, 2002; Bravo-Ortega & Lederman, 2005; Tiffin & Irz, 2005; Diao, *et al.*, 2006).ⁱⁱⁱ Case studies demonstrate that the magnitude and the transmission channels of agriculture’s multiplier effects vary substantially, depending on the tradability of inputs and outputs, agricultural employment shares, consumption patterns, distributional impacts of income and assets, the abundance of underemployed resources, and, indirectly, a range of policy factors (Delgado, *et al.*, 1998; Dorosh & Haggblade, 2003).^{iv} Nevertheless, most case studies which perform analogous tests or simulations find that agriculture’s multiplier effects on the rural economy, or on the economy as a whole, are larger than those of any other sector (see reviews in Byerlee *et al.* (2005), Lanjouw and Lanjouw (2001) and Thirtle *et al.* (2003)).^v

In sum, there is overwhelming evidence from theory, history and contemporary analysis that agricultural growth is a precondition to broader growth. A further important point is that agricultural growth is quintessentially pro-poor growth. The reasons are now well known: agriculture is generally labor intensive and skill-extensive, so that agricultural growth creates additional employment with low entry barriers. Increased agricultural productivity also lowers food prices for both the rural and urban poor, who typically spend most of their household budgets on food. Especially productivity growth on small family farms is very pro-poor; Lipton (2005) argues this has been driving world wide poverty reduction from 1700 to the present day. And again, the empirical evidence in this context is impressive. Numerous cross-country and country-specific studies conclude that agricultural productivity is a major

source of poverty reduction, and almost certainly *the* major source at lower levels of development (Huppi & Ravallion, 1991; Datt & Ravallion, 1996; Gallup, *et al.*, 1997; Bourguignon & Morrison, 1998; Ravallion & Datt, 2002; Timmer, 2002; Warr, 2002a; Warr, 2002b; Thirtle, *et al.*, 2003; Ravallion & Chen, 2004; Bravo-Ortega & Lederman, 2005; Byerlee, *et al.*, 2005).

3.2 *The Role of Developmental States*

There is an additional ‘stylized fact’ which suggests that urban biased policies are especially harmful: public support programs are a *necessary* precondition for growth in agricultural productivity - not merely helpful, but essential. There are both theoretical and historical reasons supporting this contention.

Theoretically, the large multiplier effects of agriculture to broader growth and poverty reduction are externalities to the sector itself, a notion already implicit in the early work by Lewis (1954) and especially Johnston and Mellor (1967). Private investors will therefore under-invest relative to the social optimum, so government has an important role to play in coordinating their economy’s sectoral development. A second theoretical reason for state involvement in the agricultural transformation is that market failure is pervasive in underdeveloped agriculture. Binswanger and Deininger (1997), for example, provide numerous examples of market distortions due to information asymmetry (e.g. between smallholders and wholesalers), high transaction costs (e.g. in altering production modes), labor market distortions (e.g. efficiency wages, sharecropping), extreme volatility and covariance of incomes (e.g. missing agricultural insurance markets, distorted land markets), and the indivisibility of many rural investments (e.g. R&D, marketing, roads and irrigation). These distortions in just about every aspect of producing and selling agricultural outputs justify a judicious and quite extensive ‘industrial policy’ towards agriculture. Successful support programs have historically included pricing, taxation, and trade policies as well as direct and indirect support for agricultural research, extension, technological innovation, quality management, information provision, infrastructural investment, human capital development, and export potential. It is important to note that such policies clearly go beyond a Washington-Consensus role for the state restricted to infrastructure, law and order and human capital investments.

The historical record suggests that this kind of purposeful ‘industrial policy’ for the agricultural sector indeed is *sine qua non* for successful agriculture-led growth at early and intermediate development stages. All European economies and their offshoots as well as the successful industrializers of East Asia (including China) followed government-led agrarian transformations to invigorate growth and poverty reduction in both the farm and non-farm economies. Several of them (South Korea and Taiwan, especially) began their path to development with substantial land reform,^{vi} which arguably mitigated the most critical market failures.^{vii} They then proceeded to administer moderately low food prices to suppress real wages, which in turn facilitated industrial expansion. These food price distortions were essential but not excessive, did not last very long, and were counteracted by government policies which subsidized agricultural inputs, decreased risks associated with production and prices, and invested in new agricultural technologies (Wade, 1990). In contrast, less effective governments in other regions struggled with land reform and kept agricultural prices low without providing sufficient public expenditure, especially on R&D and extension activities (Krueger, *et al.*, 1991; Lipton, Michael & Ahmed, 1997; Kherallah, *et al.*, 2002; Fan & Rao, 2004). Indeed, the empirical evidence accumulated by a range of studies suggests that public investment in agriculture – especially in research and extension – yields particularly high returns and is critical for this sector’s growth, more so than is the case for expenditure on other productive sectors (Lipton, 1987; Fan & Pardey, 1998; Fan, *et al.*, 2000; Fan & Rao, 2004; Fan, *et al.*, 2005).

3.2. Policies Towards Agriculture: A Quarter Century of Neglect?

However, every relevant policy indicator we examined suggests increasingly urban biased policies and persistently large welfare differentials between urban and rural populations. For example, data collated by researchers at The World Bank (Crego, *et al.*, 1997) indicate that agricultural capital stocks declined from 1967 to 1992 in 13 of 33 developing countries for which data were available, while another 8 experienced growth of less than 1% per annum (Table 3). In contrast, only 3 reporting LDCs recorded declines in manufacturing capital. It also seems unlikely that agricultural investment since the early 1990s has made up for this shortfall. Data on public

expenditure on agriculture as a share of agricultural GDP from Fan and Rao (2004) suggest that 24 of the 47 reporting countries recorded declines in the 1990s. In sub-Saharan Africa, 11 of the 13 reporting countries recorded declines, mostly from levels that were already the lowest in the world. And The World Bank (2003) reports that rural areas continue to suffer from much less access to basic education, health, infrastructure and other key services than urban areas (see also Appendix Table A1).

There are, of course, a few exceptions to this generally grim picture. Ethiopia's Agricultural-Demand-Led-Industrialization (ADLI) strategy and Uganda's Plan to Modern Agriculture (PMA) are recent efforts to put agricultural development at the top of the development agenda in very poor countries. But the broader picture which our findings paint is that unless we measure urban bias exclusively in terms of price distortions, domestic policy discrimination against LDC agriculture has persisted. If public investment in agriculture is viewed as pivotal to agricultural growth and rural welfare, the data even suggest that domestic urban biases have worsened.^{viii}

In this section we review international trade and subsidy biases against LDC agriculture, before looking at trends in OECD aid to the agricultural sector and in resources allocated to research on agricultural issues by the international financial institutions and the international development profession.

A widely discussed international dimension of the urban bias against LDC agriculture – the international trade bias - is ironically the result of a bias in favour of agriculture in OECD countries. Agricultural sectors in most OECD countries receive high levels of protection, of up to six to ten thousand US dollars per agricultural worker per year. OECD subsidies to agriculture have actually doubled in real terms since the Uruguay round in the early 1990s, totalling about 270 billion US dollars in 2003, which is roughly five times global foreign aid flows for that year (OECD, 2006). In contrast, the typical African country spends less than ten dollars per worker per year on agriculture, to the general detriment of LDC agricultural exports.

The counterpart to these subsidies is persistently high tariffs on agricultural goods. While tariffs on industrial goods were brought down to just 4.7% on average already during the Tokyo round (1973-79), special concessions to developing countries continue to mostly exclude agricultural imports. An especially important problem for LDCs is that tariffs on processed agricultural goods are often higher than on commodities,^{ix} which perpetuates the lack of trade and production diversification in LDCs and erodes their incentives to develop technological infrastructure.

Estimates of the costs of these policies depend on who liberalizes trade (i.e. OECD countries or all countries), the size of the reductions in agriculture and the size of reduction in manufacturing and services tariffs. Anderson et al. (2006), for example, estimate the costs of OECD tariffs for LDCs at about 11 billion per year (in 1995 US dollars), or 0.4 percentage points of agricultural growth per year. ABARE (2001) estimates that a 50% reduction in agricultural tariffs would lead to a static US\$ 40 billion increase in LDC GDP in 2010, although the gains would accrue rather unevenly. Thus, conventional trade biases within OECD countries are still a formidable source of underdevelopment in LDC agriculture.^x

Another important aspect of the international economic system is the allocation of foreign aid. The real global volume of assistance to agriculture decreased by nearly two-thirds from 1980 (US\$6.2 billion) to 2002 (US\$2.3), while agriculture's share of total aid has fallen from a peak of 17.0% in 1982 to just 3.7% in 2002 (The World Bank, 2003; DFID, 2005c). In Sub-Saharan Africa, where it is needed most, agricultural aid more than halved in 1980-2002. Moreover, this fall is not related to declining agricultural populations: agricultural aid per agricultural inhabitant declined from a peak of around US \$20 per capita in the mid 1980s to just \$7 per capita in 2001.^{xi} These trends went hand in hand with strongly declined efforts in agricultural R&D, most seriously in Sub-Saharan Africa (Pardey et al, 2006; Beintema and Stads, 2006)

Figure 1 compares the development of different aid components. We find that the decline in agriculture's share of total aid was roughly similar to that of aid to other productive sectors (multisector and program assistance also declined marginally). In contrast, nearly all the components of social sector assistance registered a dramatic increase, with aid volumes towards governance, health, 'other social sectors' and the environment rising most steeply. To our surprise, aid to education rose only modestly.

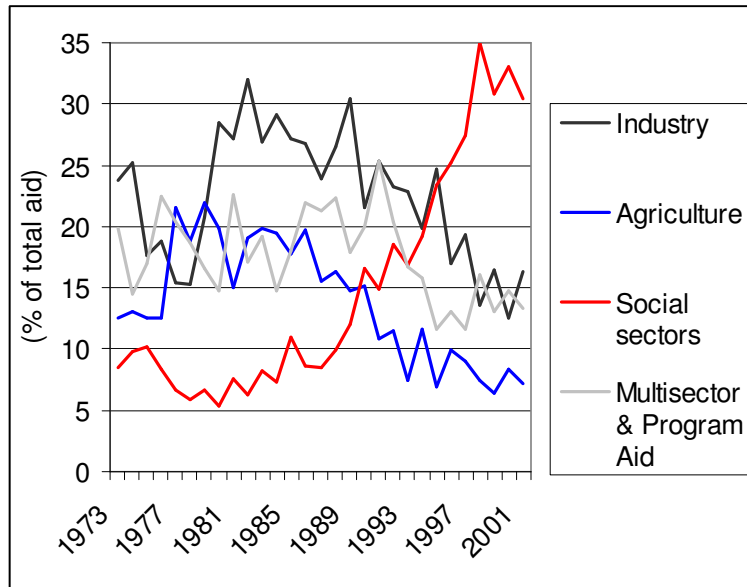


Figure 1. The changing composition of foreign aid: all countries, 1973-2001. Source: Aid data is from the OECD DAC data base. Industry refers to all nonagricultural sectors except transport and communications, since these could effectively be agricultural expenditures. Social sectors refers to expenditures on education, health, population, women, the environment, governance and NGOs.

This remarkable shift in aid allocation from production to social sectors is reflective of a significant 15-year shift in donor's development strategies, albeit one which has rarely been explicitly commented on. This is also reflected in the intellectual resources devoted to agriculture by leading policy makers, such as the World Bank.

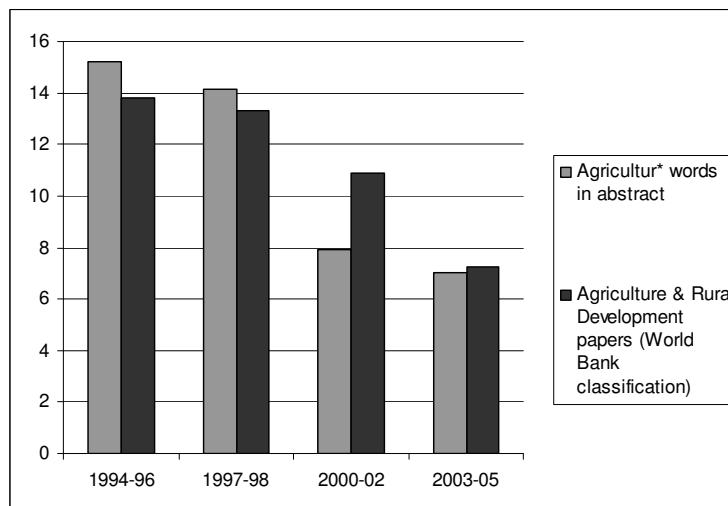
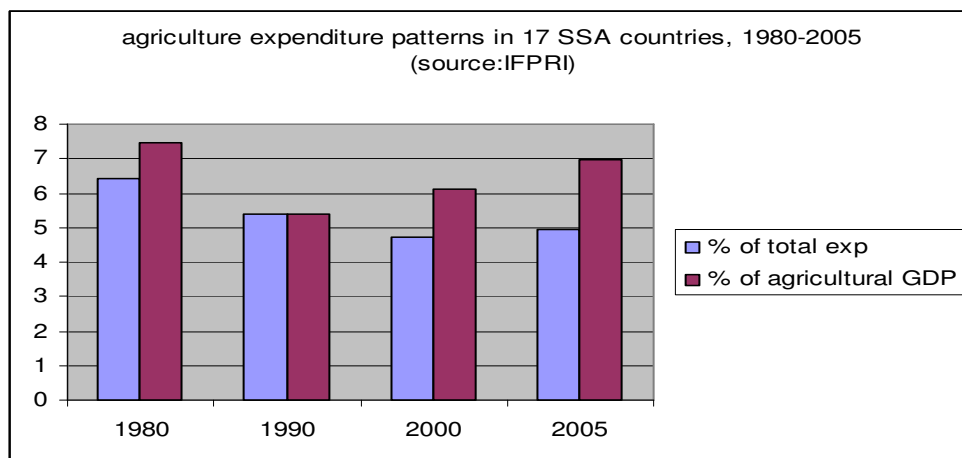
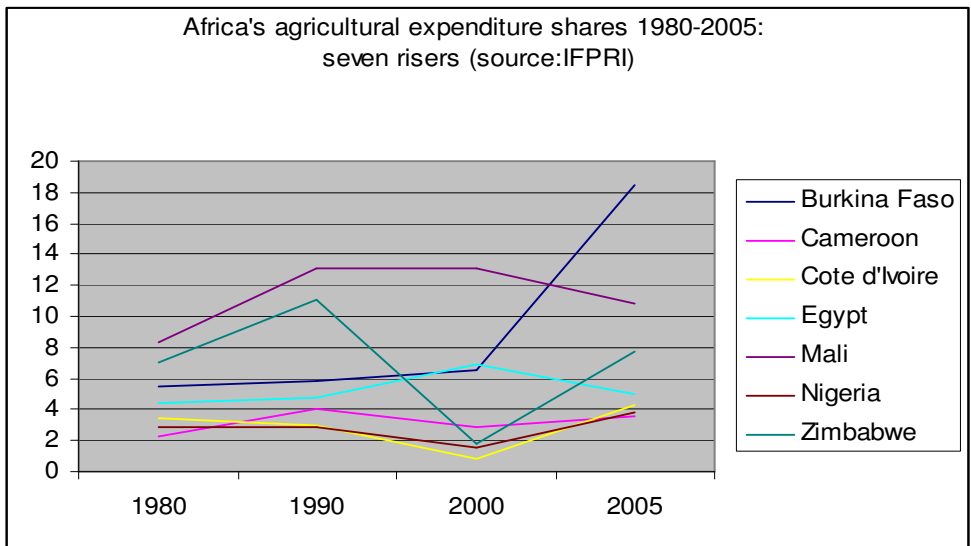
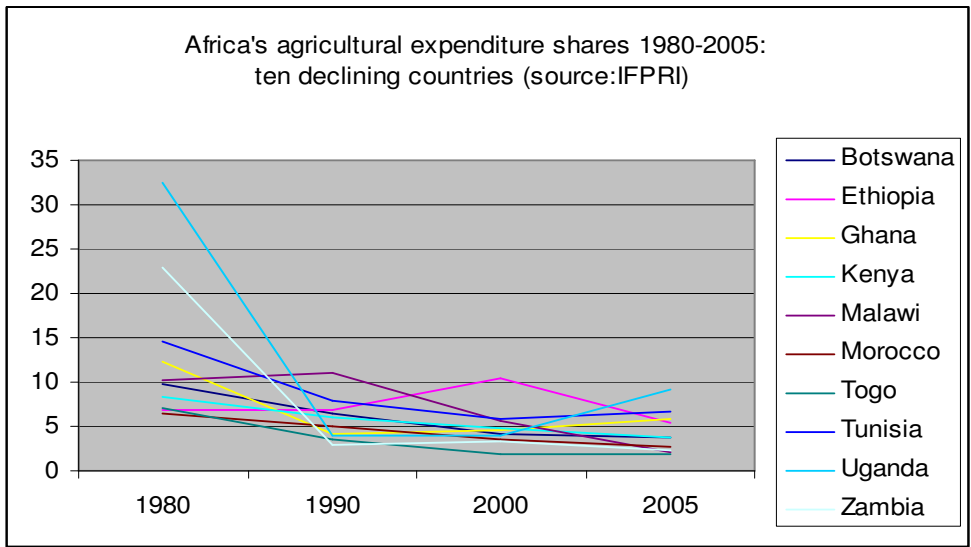


Figure 2. The Percentage of World Bank Working Papers Discussing Agriculture. Source: Bezemer and Headey (2008)

Specifically for Africa, we find that agriculture's share in total government expenditure has significantly declined during 1980-2000 from 6.4% to 4.7% on average for the 17 SSA countries that we have data on. After 2000, this trend was reversed, the share reaching 4.9% in 2005 (unweighed averages). The expenditure ratio to agricultural value-added has risen, but that is due more to stagnating output than rising expenditure levels. Some countries with very high spending in the 1980s (such as Uganda and Zambia with 33% and 23 %) have decreased this quite dramatically (to 9% and 2%, respectively) and some of its most populous economies have consistently low spending shares on agriculture (e.g. Kenya and Nigeria, both with 3.8 % in 2005). Significant increases over 1980-2005 were only seen in Cote d'Ivoire and Burkina Faso; most 'risers' have been registering fluctuating patterns or only marginal net increases.





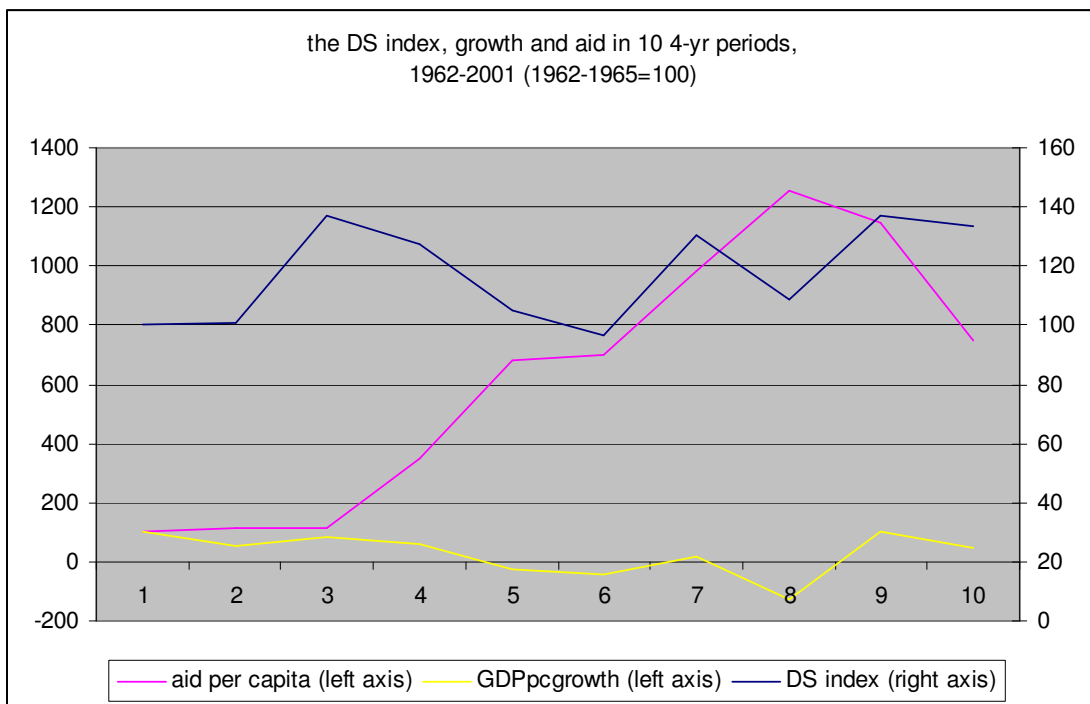
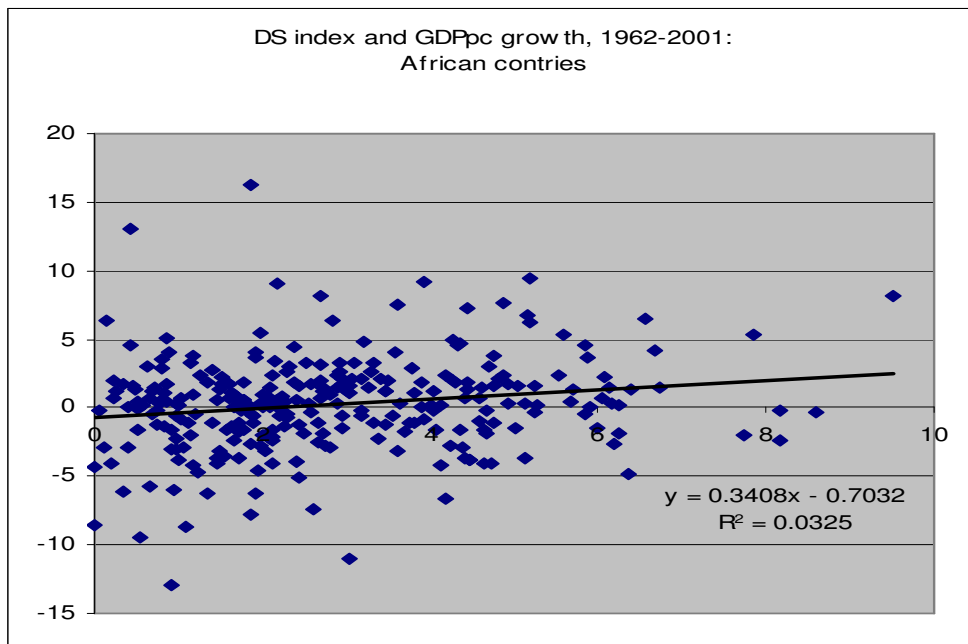
4. Exploration and Analysis

In order to empirically research the above suggestions on developmental state policies and the role of agriculture, to start with we collected data from various sources on variables that capture developmental state policies. Data, definitions and sources are provided in the Appendix. We combine these variables in a ‘Developmental State’ (DS) policy index similar to the Burnside and Dollar ‘good polices’ index:

$$DSindex_{it} = [\alpha_1 * \text{credibility}] + [\alpha_2 * \text{authority}] + [\alpha_3 * \text{subsidy}] + [\alpha_4 * \text{reserves ratio}] + [\alpha_5 * \text{savings rate}] + [\alpha_6 * \text{volatility of the exchange rate}] + [\alpha_7 * \text{Gini Coefficient}] + [\alpha_8 * \text{educational investment}]$$

With $\alpha_{0, 1, \dots, 8}$ = representing the weight of the variable. The scatter plot in Figure (2) – where we applied equal weightings to the DS index elements - shows the correlation of this index with GDP per capita growth over 1980-2005:

Figure2: Developmental State Polices Index and GDP per Capita Growth, 1980-2005



After screening for outliers and data consistency, we estimated the impact of this policy environment index on GDP per capita growth, controlling for a number of other growth determinants Z_{it} , which we based on the empirical growth literature:

$$Z_{it} = \gamma_1 \text{GDP}_{1960} + \gamma_2 \text{ETHNIC}_{it} + \gamma_3 \text{ASSASS}_{it} + \gamma_4 (\text{ETHNIC} * \text{ASSASS})_{it} + \gamma_5 \text{INST}_{it} + \gamma_6 (\text{M2/GDP})_{i(t-1)} + \gamma_7 \text{EDU}_{it} + \gamma_8 \text{INFRA}_{it} + \gamma_9 \text{EXPORTS}_{it} + \gamma_{10} \text{INVESTM}_{it} + \gamma_{11} \text{SSA}_i + \gamma_{12} \text{EASIA}_i + \gamma_{13} \text{LATINCA}_i$$

GDP_{1960} = The logarithm of initial (1960) real per capita GDP.

ETHNIC_{it} = Ethno linguistic fractionalisation representing societal conflict.

ASSASS_{it} = Number of assassinations and attempted assassinations representing civil unrest.

$(\text{ETHNIC} * \text{ASSASS})$ = Interaction term between ethnic fractionalisation and assassinations.

INST_{it} = Institutional quality will be controlled for using the ICRG from Knack and Keefer (1995).

$(\text{M2/GDP})_{i(t-1)}$ = Financial system proxied by the level of broad money. This variable is lagged by one time period due to the concern over the endogeneity problem.

EDU_{it} = Level of human capital proxied by the average primary and secondary school enrolment rate.

INFRA_{it} = Level of public infrastructure proxied by the number of main telephone lines in use per 100 inhabitants.

EXPORTS_{it} = Ratio of exports to GDP.

INVESTM_{it} = Investment is measured using the net investment share in GDP; net share of investment is measured in relation to total production.

SSA_i = Dummy variable for sub-Saharan Africa.

EASIA_i = Dummy variable for East Asia.

LATINCA_i = Dummy variable for Latin America and the Caribbean.

We estimate the model on the full set of developing countries in the 1980s and 1990s, using 4-year averages of our variables so as to improve data quality. We apply fixed-effect and Generalized Method of Moment equations so as to control for the endogeneity of growth and aid. In our estimations we also take account of heteroskedasticity, collinearity, and autocorrelation. As most countries that score high on our DS index are in South East Asia, we also control for regional effects. In our specification, we include control

variables, aid, the DS index, and an interaction term, which is our focus. The interaction term captures the potential for DS policies to enhance the effectiveness of aid. We obtain results for a variety of models in a series of robustness tests, where we vary the set of control variables and the weighing applied in the construction of the DS index. Please see the full paper for all econometric details.

Findings are robust over such model variations, and indicate that: (1) aid has no significant correlation with growth in developing countries; (2) the DS index has no significant correlation with growth in developing countries; and (3) the interaction term of aid with the DS index is consistently positive and significant. We present findings from a representative model in table 1 below.

Dependent Variable: GDPGROWTHPC_EXOUT
 Method: Panel Generalized Method of Moments
 Date: 08/24/08 Time: 11:39
 Sample (adjusted): 1986 1994
 Cross-sections included: 44
 Total panel (unbalanced) observations: 114
 White period instrument weighting matrix
 White period standard errors & covariance (d.f. corrected)
 Instrument list: C AIDPCD (-1) AIDPCD (-2) EW-DSINDEX
 D(INTERACTION) D(ASSASS) D(EDUCSTATS) ETHFRAC
 D(ETHFRACXASSASS) D(EXPORT) ICRG D(INITIALGDPPC)
 D(INVESTM) LATINCA SSA SEA D(M2_GDP_LAGGED) D(TEL)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.629087	1.112091	1.464887	0.1462
D(AIDPC)	-0.062432	0.041621	-1.500034	0.1369
EW-DSINDEX	0.204557	0.211653	0.966475	0.3362
D(INTERACTION)	0.008315	0.004357	1.908413	0.0593
D(ASSASS)	-1.674516	0.989826	-1.691728	0.0939
D(EDUCSTATS)	0.068815	0.239886	0.286867	0.7748
ETHFRAC	-1.483978	1.913023	-0.775724	0.4398
D(ETHFRACXASSASS)	2.717280	2.101570	1.292976	0.1991
D(EXPORT)	-2.06E-15	1.59E-15	-1.297859	0.1974
ICRG	-0.188420	0.200791	-0.938388	0.3504
D(INITIALGDPPC)	0.001271	0.000836	1.519723	0.1318
D(INVESTM)	-8.61E-17	1.82E-15	-0.047351	0.9623
LATINCA	0.317123	0.946663	0.334990	0.7384
SSA	-0.246032	1.208650	-0.203559	0.8391
SEA	3.509048	1.322633	2.653077	0.0093
D(M2_GDP_LAGGED)	-0.000155	0.001073	-0.144463	0.8854
D(TEL)	0.122237	0.285793	0.427712	0.6698
R-squared	0.432333	Mean dependent var		1.517544
Adjusted R-squared	0.338698	S.D. dependent var		3.418410
S.E. of regression	2.779868	Sum squared resid		749.5838
Durbin-Watson stat	1.934598	J-statistic		9.35E-26

We explore the variation in developmental state policies, their effects over time and over regions, and its relation to aid in a series of further regressions. We here apply panel data models with panel-specific autoregressive terms and heteroskedasticity corrections, but without correction for possible endogeneity. Thus we take account of error structures but explore correlations rather than causalities (which we address more carefully below).

Table 2 shows that the correlation of developmental state policies with higher growth is robust to adding control variables. Table 3 shows that developmental state policies have been correlated to growth in African and Asian developing countries, but not in Latin America. The success of developmental-state policies in Southeast Asia have not simply been replicated in a full sample of developing countries. This is in line with other evidence (e.g. Bruton, 1998) and unsurprising in view of the high-risk nature of developmental policies, even though they are necessary for accelerating growth. Table 4 implements the same analysis for data after 1980. In the global data set, the coefficient for developmental state policies is clearly lower for 1980-2001 than for the whole 1962-2001 period shown in table 2. The ‘Asian’ coefficient is about the same, but the correlation of developmental state policies in Africa is much stronger after 1980 – presumably because in those ‘lost decades’, African low growth and low developmental state policy scores due to SAPs and other liberalization policies went hand in hand. In all three model sets, the correlation of aid with growth is insignificant or negative. Finally Table 5 includes an interaction term of developmental state policies with aid, as in table 1. In Latin America, aid appears to enhance developmental state policies correlation to growth; in Asia this is insignificant, as aid presumably added little to the strong home grown growth effect of developmental state policies. In Africa, surprisingly, developmental state policies combined with aid correlate strongly negative to growth. This is strange as both effects in isolation are now positive: African growth seems to correlate to developmental state policies and aid, but no to their combination.

Table 2: Developmental State policies and growth, 1962-2001

	model1	model2	model3
	b/se	b/se	b/se
DS policy index	0.115*** (0.022)	0.091*** (0.023)	0.459*** (0.081)
Aid pc		-0.000 (0.001)	0.009** (0.004)
Pol. Comp.			-0.050 (0.045)
Initial GDPpc			-0.000 (0.000)
Ethnic fract.			-1.983*** (0.623)
ICRG inst. Index			0.021 (0.117)
Exports			0.000** (0.000)
Fixed capital form.			-0.000 (0.000)
_cons	0.873*** (0.048)	0.882*** (0.048)	0.772 (0.760)
N	808	770	315

Note: Dependent variable: Four-year averages of GDP per capita growth. Panel data models with panel-specific autoregressive terms and heteroskedasticity corrections. Standard errors are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Sources: see Appendix

Table 3: Developmental State policies: regional growth effects 1962-2001

	Asia	Africa	Latin America
DS index	2.296*** (0.717)	0.156* (0.085)	0.473 (0.382)
Aid pc	-0.164** (0.077)	-0.003 (0.007)	0.023* (0.012)
Pol.comp.	0.526** (0.255)	0.158** (0.070)	-0.243* (0.141)
Initial GDPpc	-0.002** (0.001)	-0.003*** (0.001)	-0.001** (0.001)
Ethnic. Fract.	0.020 (4.338)	-0.947 (1.341)	1.228 (3.001)
ICRG inst. index	0.037 (0.262)	-0.257 (0.200)	1.318*** (0.374)
Exports	0.000 (0.000)	0.000* (0.000)	-0.000 (0.000)
Fixed cap.form.	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
_cons	-10.375* (5.809)	3.755** (1.907)	-3.330 (2.491)
N	30	114	68

Note: Dependent variable: Four-year averages of GDP per capita growth. Panel data models with panel-specific autoregressive terms and heteroskedasticity corrections. Standard errors are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Sources: see Appendix

Table 4: Developmental State policies: Regional growth effects since 1980

	All LDCs	Asia	Africa	Latin America
DS index	0.285*** (0.082)	2.548*** (0.839)	0.401*** (0.075)	0.020 (0.327)
Aid pc	0.002 (0.004)	-0.152 (0.110)	0.011** (0.005)	0.050*** (0.008)
Pol. Comp.	0.155*** (0.049)	0.664** (0.307)	0.228*** (0.066)	-0.015 (0.101)
Initial GDPpc	-0.001*** (0.000)	-0.002** (0.001)	-0.003*** (0.001)	-0.000 (0.001)
Ethnic fract.	-4.007*** (0.667)	-0.293 (5.628)	-1.946** (0.957)	2.385 (2.350)
ICRG index	-0.073 (0.129)	0.075 (0.413)	-0.129 (0.148)	1.517*** (0.514)
Exports	0.000*** (0.000)	0.000 (0.000)	0.000*** (0.000)	-0.000* (0.000)
Fixed cap.form.	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
_cons	2.657** (1.049)	-12.652* (6.754)	0.740 (1.663)	-8.429*** (1.986)
N	189	24	90	45

Note: Dependent variable: Four-year averages of GDP per capita growth. Panel data models with panel-specific autoregressive terms and heteroskedasticity corrections. Standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively. Sources: see Appendix

Table 5: The interaction between developmental state policies and aid: regional growth effects, 1962-2001

	Asia	Africa	Llatin America
DS index	2.103*** (0.785)	0.687*** (0.151)	0.007 (0.442)
Aid pc	-0.309 (0.303)	0.025*** (0.007)	-0.033 (0.030)
DSindexxAid pc	0.021 (0.041)	-0.012*** (0.003)	0.011* (0.006)
Political comp.	0.526** (0.258)	0.201*** (0.065)	-0.177 (0.136)
Initial GDPpc	-0.002** (0.001)	-0.003*** (0.001)	-0.001* (0.001)
Ethnic fract.	-0.714 (4.619)	-1.400 (1.267)	0.608 (2.831)
lcrg inst. Index	-0.021 (0.305)	0.019 (0.161)	1.296*** (0.366)
Exports	0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)
Fixed cap.form.	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
_cons	-8.831 (6.530)	0.991 (1.843)	-0.774 (2.534)
N	30	114	68

Note: Dependent variable: Four-year averages of GDP per capita growth. Panel data models with panel-specific autoregressive terms and heteroskedasticity corrections. Standard errors are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

Sources: see Appendix

To address this ‘African puzzle’, we return to our previous point that developmental state policies are high-risk, high return. They often fail, but their success is indispensable to sustained growth. If we can find out what it is in African developmental state policies that makes them successful but harmful in combination with aid, this could support more specifics about what sorts of developmental state policies are likely to be important to SSA. After all, our index is still a broad one, reflecting many policy options. As elaborated at length in the previous section, we think that SSA particularly needs those developmental state policies that enhance the production and productivity of the agricultural sector. This argument arises both from the large importance of the sector in most SSA economies, and from the vital role that agriculture historically plays in the early development process. We therefore collected data on growth in agricultural value added in

order to explore the link with developmental state policies, aid and growth. Given the focus of this meeting, we do this exclusively for African countries. We use panel data models with panel-specific autoregressive terms and heteroskedasticity corrections and take account of endogeneity concerns by long lagging rather than by GMM or IV techniques, which bring problems of interpretation.

We start with a series of regressions in table 6 where we regress agricultural productivity growth in any four-year period during 1962-2001 on the value of the developmental state policies index in the preceding period. We find that the index correlates significantly to subsequent higher agricultural productivity, also when adding a large number of control variables. In contrast, aid does not correlate to higher agricultural productivity.

Table 6: Developmental Policies support agricultural productivity growth

	Model 1	Model 2	Model 3	Model4
<i>Dependent variable: Four-year averages of agricultural GDP per capita growth</i>				
Developmental policy index, t-1	0.007*** (0.002)	0.010*** (0.003)	0.004 (0.003)	0.018*** (0.006)
Initial GDPpc (\$)	0.000*** (0.000)	0.000* (0.000)	0.000*** (0.000)	0.000 (0.000)
Aid pc (\$)		0.000*** (0.000)	-0.001*** (0.000)	0.000 (0.001)
Educational expenditures			-0.007 (0.005)	-0.019* (0.011)
Fixed capital formation			-0.000** (0.000)	-0.000 (0.000)
exports			-0.000 (0.000)	-0.000 (0.000)
Telephones per population			-0.034 (0.024)	0.038 (0.090)
Political competition				-0.012*** (0.005)
Ethnic fractionalization				0.067 (0.142)
assassinations				-0.133 (0.138)
lcrg institutional index				-0.017 (0.012)
_cons	-0.070*** (0.021)	-0.080*** (0.021)	0.002 (0.041)	0.040 (0.145)
N	119	119	81	49

Note: Dependent variable: Four-year averages of agricultural GDP per capita growth. Panel data models with panel-specific autoregressive terms and heteroskedasticity corrections. Standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively. Sources: see Appendix

The Table 6 findings provide a basis to explore if agricultural productivity is the link from developmental state policies to higher growth. We do this by interacting last-period developmental state policies index value with present-period agricultural productivity growth. Our interpretation of this constructed variable is that it captures the extent to which developmental state policies correlates positively agricultural productivity growth. Higher values for this interaction term may indicate that developmental state policies are more effective in agricultural productivity growth. Our conjecture - based on the

extensive literature review presented in section 3 - is that it is this what sets the 'high risk' developmental state policies apart from the 'high-return' policies. But we also suggest that the *interaction* matters, and not just in the sense of multiplying to variables. Agricultural productivity growth needs to occur in a supportive macroeconomic environment moulded by a developmental state – or it will result in a 'failed Green Revolution', of which Africa has experienced several over the last decades. IN terms of our model, this translates into an expectation that once the beneficial effects of developmental state policies channelled into agricultural productivity growth have been captured in our interaction term, there will be little or no additional correlation to growth from the separate variables.

Table 7 present a series of regressions including the interaction term, its components, aid, and a number of control variables. The findings appear to bear out our line of reasoning. The coefficient for the interaction term is always positive and significant, and its components always negative. So is the coefficient for aid in the preceding period.

Table 7: Developmental policies that support agriculture are good for growth

	modelDS1 b/se	modelDS2 b/se	modelDS3 b/se
Agr. GDPpc growth, t-1	0.417**	0.514***	0.580***
X Developmental policy index, t-2	(0.179)	(0.147)	(0.181)
Agr. GDPpc growth, t-1	-4.170***	-3.045***	-2.713**
Developmental policy index, t-2	(1.105)	(1.079)	(1.278)
Initial GDPpc	-0.323***	-0.326***	-0.373***
	(0.034)	(0.032)	(0.064)
Aid pc	0.000	-0.001***	-0.002***
	(0.000)	(0.000)	(0.000)
Telephones per 1,000 population		0.000	-0.021***
		(0.004)	(0.007)
Expenditures on education		0.569***	1.047***
		(0.169)	(0.180)
Fixed capital formation			0.000
			(0.154)
Exports, bln constant dollars			-0.000
			(0.000)
_cons	0.355	0.993*	1.859**
	(0.315)	(0.535)	(0.722)
N	88	82	62

Note: Dependent variable: Four-year averages of GDP per capita growth. Panel data models with panel-specific autoregressive terms and heteroskedasticity corrections. Standard errors are in parenthesis. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively. Sources: see Appendix

5. In Conclusion

In this paper we connected the ‘developmental state policies’ literature to development economics literature that emphasizes the role of agriculture in the development process. In support of our argument, we presented an empirical analysis involving the construction of a developmental state policies’ index. We find that this index correlates well with growth and - when taking due account of endogeneity issues via a GMM procedure and by using long (4 year) lags – we can also support the claim that developmental state policies appear to *cause* higher growth levels. They also enhance aid effectiveness in Latin America, but not in Asia, where any aid benefits are likely overshadowed by the

success of developmental state policies (themselves, to be fair, importantly supported by aid efforts especially in the 1960s and 1970s). But there is an ‘African puzzle’ in these findings: African growth seems to correlate to developmental state policies and to aid, but not to their combination. We address this puzzle by suggesting that in the African context of large agricultural sectors and an incomplete or only nascent transformation towards a services or industrial economy, only those developmental state policies can succeed which enhance the productivity of the agricultural sector. Empirically, we find that developmental state policies in any four-year period during 1962-2001 do indeed correlate significantly to higher agricultural productivity in the next period. This is never the case for aid – which is unsurprising in view of the anti-agriculture orientation of aid policies in the period we review, and especially since the early 1980s until very recently. Moreover, an interaction term of the lagged developmental state policies with agricultural productivity correlates well to growth. In other words, to the extent that developmental state policies support agricultural productivity growth, they support growth. Once this effect is taken into account, the econometric analysis shows no or negative effect of either agricultural productivity growth policies or developmental state policies by themselves. This supports that agricultural growth is the channel through which developmental state policies have their beneficial effects on economy-wide growth. While this analysis is only exploratory – and its many loose ends invite substantial follow-up research - , it strongly suggests that the recent turn towards more donor attention to agriculture is fully justified. As to the effectiveness of aid for growth, the clear implication is that the over-emphasis since the 1990s on the ‘social sectors’ at the cost of the ‘productive sectors’ needs rectification.

Appendix

Countries in the sample

Afghanistan, Albania, Algeria, Angola, Armenia, Azerbaijan, Bangladesh, Belarus, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, China, Colombia, Comoros, Congo Dem. Rep., Congo Rep., Cuba, Djibouti, Dominican Republic, Ecuador, Egypt Arab Rep. Eritrea, Ethiopia, Fiji, Georgia, Germany, Ghana, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran Islamic Rep. Iraq, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea Dem. Rep., Korea Rep., Kyrgyz Rep., Lao PDR, Lesotho, Liberia, Macedonia FYR, Madagascar, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Micronesia Fed. Sts., Moldova, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Rwanda, Samoa, Sao Tome and Principe, Senegal, Serbia and Montenegro, Sierra Leone, Singapore, Somalia, Sri Lanka, Sudan, Suriname, Swaziland, Syrian Arab Republic, Taiwan, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Tunisia, Turkmenistan, Uganda, Uzbekistan, Vanuatu, Vietnam, West Bank and Gaza, Zambia and Zimbabwe.

Table 1. Variable description and their sources

Variable	Description	Proxy for	Prediction	Source
Dependent variable				
Gross Domestic Product growth rate per capita	Gross Domestic Product annual real growth rate per capita.	Economic growth	Positively correlated with the developmental state policy index	World Development Indicators
Independent variables				
Aid	Official Development Assistance (ODA) as a share of GDP	Development aid		World Development Indicators
Degree of Credibility	Stabs – percentage of veto players that dropped from government between year t and year t + 1, senate changes also Stabns – percentage of veto players that dropped from government between year t and year t + 1, senate does not change	The credibility of the state and therefore the ability of the state to implement a strong developmental policy.	Existence of credibility supports the DS policy index	Beck, Clarke, Groff, Keefer and Walsh (2001), DPI Beck, Clarke, Groff, Keefer and Walsh (2001), DPI
Degree of Authority	Executive recruitment Executive constraints Political competition	Authority measure of the government	A higher authority measurement supports the DS policy index	Marshall and Jagers (2000) Polity IV
Subsidies	Subsidies and other transfers	Promotion of particular industries	High subsidies/other transfers support the DS policy index	World Development Indicators
Reserves ratio	Ratio of commercial banks reserves to the money supply (M1 and quasi money)	Degree of financial repression	A higher degree of financial repression supports the DS policy index	IMF Financial Statistics
Savings	Gross domestic savings rate	Governments' ability to mobilise savings	High savings rates support the DS policy index	World Development Indicators
Exchange rate volatility	<i>De facto</i> classification, measurement based on the actual behaviour of the exchange rate	Control of credit allocation		Reinhart and Rogoff (2002) (Natural classification)

Variable	Description	Proxy for	Prediction	Source
Inequality index	GINI index	Inequality	Low income inequality supports the DS policy index	World Development Indicators
Educational investment	Education expenditure of government as percentage of total government expenditures	Investment in education	Educational investment supports the DS policy index	UN Common Database
Control variables				
Log initial per capita real GDP	Logarithm of per capita PPP real GDP for the first year of each time period, constant 2005 dollars.	Initial economic status of the country		World Development Indicators
Ethnic fractionalisation	Probability that two randomly selected persons from a given country will not belong to the same ethnic group (Mauro, 1995)	Measure of societal conflict, constant value for each country		Easterly and Levine (1997) and Alesina et al. (2002)
Assassinations	The number of assassinations and attempted assassinations per year	Civil unrest		Easterly and Levine (1997) from Banks (2002)
Institutional quality	International Country Risk Guide (ICRG) – Average of five variables to measure the quality of government and bureaucracy; 1980 value used throughout	Security of property rights and efficiency of the government bureaucracy		Knack and Keefer (1995)
M2/GDP	Broad measure of money supply as share of GDP	Development of financial system; lagged one period		World Bank
Enrolment in schooling	Gross enrolment rates in primary and secondary schooling	Level of human capital		World Bank Development Indicators
Infrastructure	Average number of main telephone lines per capita	Level of public infrastructure		World Bank Development Indicators
Exports	Ratio of exports to GDP			World Bank Development Indicators
Investment	Net investment share in GDP	Gross domestic investment		World Bank National Accounts
Sub Saharan Africa	Dummy variable			
South East Asia	Dummy variable			
Latin America and the Caribbean	Dummy variable			

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ⁱ Note, however, that there are important tradeoffs in this context. Agriculture provides cheap rural labor if food prices stay low, but if food prices stay low then this limits disposable rural income and rural demand for nonagricultural goods.

ⁱⁱ Adelman and Morris (1988) report that (p. 133-146): “Great Britain, France, Germany, the United States, Canada, Japan, and Sweden . . . For these countries, a substantial period of rising labour productivity in agriculture preceded the first sustained surge of modern industrial expansion. Then, as industrialization progressed, the agricultural sector played an important role in providing labour, raw materials, and/or capital to the industrial sector and in providing a market for both industrial and agricultural products Belgium, Denmark, the Netherlands, and Switzerland . . . whose agricultural sectors were radically transformed during the last quarter of the 19th century from extensive cultivation to the production of human capital-intensive crops for export. Export markets became even more important to agriculture than domestic markets.”

ⁱⁱⁱ Although Bravo-Ortega and Lederman (2005) find that agriculture has had a much less beneficial impact in Latin America and in developed countries.

^{iv} The one exception is a longitudinal study on India 1970-2000 by Foster and Rosenzweig (2004) who fail to find that agricultural growth spurred broader growth. Also, given that policies will influence multiplier estimates, we should be cautious about attaching undue significance to multiplier studies. Price distortions, for example, could inflate or deflate agricultural growth multipliers, depending on the circumstances. Also,

growth multipliers work in reverse: negative shocks to agriculture (which are common in many parts of the globe) can lead to major costs in the rest of the economy (Block, 1999).

^v Many studies also conclude that consumption linkages between agriculture and other sectors are more important than production linkages. Another common finding is that agricultural multipliers are higher in Asia than in Africa (Delgado, *et al.*, 1998), although recent findings do not indicate an obvious cleavage in this regard.

^{vi} South Korea and Taiwan are peculiar in that land distribution was influenced by both Japanese colonization and American support in the postcolonial era. See page 76 in Wade (1990), pages 160-161 in The World Bank (1993) and Kay (2002).

^{vii} Successful land reforms can be good for overall growth in several ways. First, smaller farms may increase labour productivity by lowering the costs of monitoring hired labour. Second, land can be used as collateral to obtain loans. Third, land reform may preclude civil unrest associated with excessive urbanization and general income disparities.

^{viii} For example, whilst extreme price distortions are sufficient to destroy economic growth, their removal may not be enough to create economic growth (Rodriguez & Rodrik, 2001; Easterly, William R., 2005), especially in a sector which is highly dependent upon public investment, R&D, extension and infrastructure activities (Lipton & Ahmed, 1997; Kherallah, *et al.*, 2002; Thirtle, *et al.*, 2003; Fan & Rao, 2004). Yet another view argues for a strategy in which governments set artificially low agricultural prices at early stages of development, but counterbalance this taxation with high rates of public investment in agriculture, thereby simultaneously ensuring agricultural productivity growth, low food prices, low industrial wages and industrial growth (Wade, 1990).

^{ix} In Japan and the EU tariffs on fully processed food are twice as high as those placed on first-stage processed food; in Canada they are 12 times as high.

^x The implications of OECD subsidies to agriculture are difficult to quantify, and partly depend on the nature of the support, especially whether support is linked to production. The developing countries which suffer most are producers of cotton (West Africa), sugar, tobacco and vegetable oils.

^{xi} Data are available on request. Comparisons over time are somewhat complicated since agricultural aid has been redefined slightly (DFID, 2005c), increasing amounts of aid have been delivered as program or multi-sector aid, and some agricultural aid redirected towards rural people may not be registered as agricultural sector aid.