WP/04/49

IMF Working Paper

Aid and the Dutch Disease in Low-Income Countries: Informed Diagnoses for Prudent Prognoses

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African Department

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Authorized for distribution by Menachem Katz

March 2004

Abstract

This paper demonstrates that the Dutch disease need not materialize in low-income countries that can draw on their idle productive capacity to satisfy the aid-induced increased demand. Diagnoses on, and prognoses for, the Dutch disease should take into account country-specific circumstances to avoid ill-advised policies. The paper emphasizes that using public resources inefficiently can be more painful than real exchange rate appreciations, which may not necessarily embody the Dutch disease.

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I. INTRODUCTION

Since the late 1990s, the international community has increased its focus on poverty reduction as the overarching objective of economic policy for low-income countries (LICs). It has also recognized the importance of increasing official assistance, including through debt relief, to support the implementation of poverty reduction strategies in poor countries. Despite the rhetoric in international forums, total official development assistance (ODA) per capita, as well as in percent of gross national income (GNI) of recipient countries, has been trending down even though many countries, because of insufficient domestic resources, still rely heavily on it to finance investment (see Table 1).[2] For the few countries whose ODA inflows have increased, the large government spending that aid allows tends to create macroeconomic management problems that raise concerns of undermining prospects for long-term growth through Dutch-disease-type effects, namely real exchange rate (RER)[3] appreciation and a shrinkage of the tradables sector. Under the premise that aid is needed to implement programs essential for boosting economic growth, the concerns mean that some countries may be receiving "too much aid" and that, with regard to export promotion and private sector development, they would be better off with less aid. This issue fits into the literature on the diminishing returns to aid that has been gaining prominence in the aid effectiveness debate over the past several years. In this literature, the Dutch disease is cited as one of the channels through which diminishing returns to aid can take place.

This paper analyzes the Dutch disease model to put into context the concerns raised about the adverse effects of large aid flows on export growth. It presents a variant of the core Dutch disease model, highlighting circumstances under which an RER appreciation associated with lower exports and a wider trade deficit can occur. Considering that such circumstances—the premises of the core Dutch disease framework—may not be present in many LICs, the paper presents modifications to the Dutch disease model that make its predictions avoidable.

A diagnosis regarding whether a country is experiencing the Dutch disease as a result of large ODA inflows carries important policy implications and, hence, should be based on a careful analysis of the interaction of different factors that, along with ODA-induced public spending, affect economic performance. The importance of a thorough assessment is twofold. On the one hand, failure to diagnose the Dutch disease encourages a status quo, which can be costly, by letting adverse developments undermine long-term growth prospects. On the other hand, a diagnosis pointing to the "disease" is a double-edged sword: when it is right, it can prompt the implementation of corrective measures needed to curtail adverse developments; however, if it is faulty, the adjustments it would call for can set back actions that could have otherwise contributed to laying the groundwork for long-term growth and poverty reduction. For instance, if a faulty

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[2] The decline should not necessarily be perceived as bad by aid proponents as it could be the result of selectivity that curtails strategic nondevelopmental aid.

[3] The RER is the ratio of the price of nontradables to tradables, such that an increase in the ratio is an appreciation.

Table 1. External Aid and Selected Macroeconomic Indicators, 1985-2001

	1985-89	1990-94	1995-99	2000-01
1. External aid indicators				
Aid per capita (annual average; current US dollars)				
World	8.1	12.1	10.5	9.6
Low-income countries	10.0	13.0	10.5	9.8
Sub-Saharan Africa	27.2	34.5	25.7	20.5
Benin	36.5	53.8	41.9	40.2
The Gambia	107.9	93.3	33.0	37.8
Mali	51.0	48.8	43.2	32.4
Tanzania	34.4	60.5	59.2	35.6
Rwanda	34.1	40.8	29.9	33.1
Uganda	20.2	39.2	35.1	35.6
Aid in percent of GNI (annual average)				
Low-income countries	2.7	3.4	2.5	2.3
Sub-Saharan Africa	5.5	6.6	5.0	4.5
Benin	11.3	15.6	11.1	11.1
The Gambia	40.6	28.5	9.7	12.6
Mali	23.2	18.6	17.2	14.4
Tanzania	10.5	32.3	27.6	17.6
Rwanda	21.2	25.4	13.4	12.3
Uganda	6.0	20.1	11.8	14.1
Aid in percent of gross capital formation (annual average)				
Low-income countries	11.3	13.9	10.7	10.8
Sub-Saharan Africa	34.7	40.7	26.3	23.2
Benin	91.4	103.7	61.1	58.0
The Gambia	225.0	129.1	50.8	70.6
Mali	117.1	78.3	78.2	65.6
Tanzania	68.5	276.4	192.1	97.0
Rwanda	...	94.1	81.6	70.8
Uganda	59.9	133.2	69.4	69.6
2. Selected macroeconomic performance indicators				
GDP growth (annual average; in percent)				
World	3.7	2.1	2.9	2.5
Low-income countries	4.9	2.1	4.0	4.4
Sub-Saharan Africa	2.2	0.6	3.4	3.0
Benin	1.8	4.0	5.0	5.4
The Gambia	3.2	2.6	3.9	5.8
Mali	2.0	1.4	5.8	2.6
Tanzania	2.9	-11.5	15.7	6.3
Rwanda	3.8	2.5	3.8	5.4
Uganda	3.1	6.0	7.7	4.1
External trade balance (annual average; in percent of GDP)				
Sub-Saharan Africa				
Benin	-14.8	-12.5	-12.5	-12.9
The Gambia	-9.5	-13.6	-16.6	-15.7
Mali	-20.0	-17.1	-12.3	-11.3
Tanzania	-10.1	-21.1	-18.7	-16.3
Rwanda	...	-25.6	-13.5	-8.6
Uganda	-6.8	-13.3	-10.4	-13.4
Real effective exchange rate (1990=100; annual average change in percent) 1/				
Benin	-0.1	-6.1	3.8	-0.5
The Gambia	-4.1	-1.1	-0.7	-8.6
Mali	-4.8	-9.6	2.2	-1.7
Tanzania	-28.7	-3.8	8.8	1.3
Rwanda	-2.2	2.6	-2.6	-6.2
Uganda	2.6	-8.2	-2.8	-3.6
Inflation (GDP deflator, annual average percentage change)				
Sub-Saharan Africa				
Benin	-0.8	8.1	6.8	3.2
The Gambia	24.4	7.3	3.2	5.4
Mali	0.9	7.9	5.4	4.8
Tanzania	1.1	13.4	15.3	1.7
Rwanda	20.6	26.3	18.5	7.0
Uganda	148.8	30.5	5.0	6.6

Source: World Bank, *World Development Indicators*, 2003.

1/ The figures shown under 1985-89 represent averages for the 4-year period ended in 1989.

diagnosis leads to a reduction in aid,[4] the adjustment could be an unfortunate slowdown in the implementation of some poverty reduction programs.

An abundant literature analyzes the impact of large ODA flows on macroeconomic management and economic performance in recipient countries. The literature associates massive ODA inflows with a combination of benefits and adverse side effects, including RER appreciations that can undermine exports. Tsikata (1999) and Hansen and Tarp (2000) present surveys of the literature on aid effectiveness. Younger (1992) and Sackey (2001) analyze the impact of aid on macroeconomic performance and the RER in Ghana. White and Wignaraja (1992),Vos and Johansson (1994), Adenauer and Vagassky (1998), Vos (1998), and Nyoni (1998) analyze the macroeconomic problems associated with large aid flows to Sri Lanka, Nicaragua, African countries of the CFA franc zone, Pakistan, and Tanzania, respectively. These studies have reached different conclusions as to whether aid has caused the Dutch disease.

The rest of the paper is structured as follows: Section II points out some findings in the literature on the aid-growth relationship, presents the core Dutch disease model, and introduces a modified model; Section III highlights important points regarding the Dutch disease and long-term economic growth; and Section IV provides some concluding remarks.

II. Aid Flows, Growth, and the Dutch Disease: Background and Analytical Framework

A. ODA and Economic Growth

ODA flows comprise medium- and long-term concessional loans and grants from bilateral and multilateral sources. Some researchers have refined the computation of ODA, defining it as comprised of grants and the grant element of concessional loans (Chang, Fernandez-Arias, and Serven, 1998). ODA is intended to support infrastructure and human capital building, alleviate the foreign exchange constraint on growth by contributing to the financing of imports, easing the service of an otherwise excessive external debt burden, and raising foreign exchange reserves levels. Investment in infrastructure and human capital aims at providing incentives for private sector development. To the degree that ODA allows such investment to take place, it plays a critical role in laying the foundation for sustainable high rates of private sector-led economic growth and poverty reduction.

The effectiveness of ODA has been a contentious area of debate. A brief review of a selected number of studies conducted over the past decade highlights differences in findings. Hadjimichael and others (1995) and Lesink and White (2001) find that ODA has a positive impact on growth, with diminishing marginal returns. Burnside and Dollar (2000) find that ODA is growth enhancing only in a good policy environment. While lending support to the Lesink and White result, Dalgaard and Hansen (2001) find that the Burnside and Dollar (2000) result of a more positive impact of ODA on growth in a good policy environment is not robust. Some researchers have questioned Burnside and Dollar's choice of a small set of policies as determinants

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[4] Donor countries and agencies may have difficulties gathering support for aid levels perceived as causing a "disease."

of aid effectiveness (Dalgaard, Hansen, and Tarp, 2002). Collier and Dollar (2002) revisit and confirm the Burnside-Dollar result in a study using a more comprehensive policy measure, the World Bank Country Policy and Institutional Assessment (CPIA), over a broader sample.[5] They also find support for the notion of diminishing returns and argue that the policy environment significantly and substantially determines how rapidly diminishing returns eliminate the marginal impact of aid on growth. Collier (1999) argues that, while there are diminishing returns to ODA even in a good policy environment, with reasonable policies and institutions and within the range of ODA-to-GDP ratios pertinent to Africa, ODA continues to benefit growth even at the margin, until the ODA-to-GDP ratio reaches 30 percent.[6] Easterly (2003) and Easterly, Levine, and Roodman (2003) highlight the fragility of the Burnside and Dollar (2000) result, which they find to be very sensitive to sample size, the length of time over which variables are averaged, and alternative indicators of policy effectiveness.

Analyzing the impact of ODA on exports on a panel of more than 62 countries, including 28 from Africa, Elbadawi (1999) lends support to the idea of diminishing returns to ODA. He finds that, while the ODA-to-GNP ratio is positively associated with nontraditional exports, there is a threshold beyond which ODA hinders exports. He also finds a significant positive association between nontraditional exports, on the one hand, and human capital, imports of machinery, and RER undervaluation, on the other. Moreover, he finds a negative association between nontraditional exports and RER variability. The results of the study could suffer from the difficulty of isolating the enabling impact of ODA on infrastructure and some variables, such as human capital development and imports of machinery, that are used as regressors in the equation of nontraditional exports.

The different results highlighted above point to the complexity of the macroeconomic implications of ODA. While ODA flows have the potential of contributing to improved macroeconomic performance in recipient countries, they can, at certain levels and in certain circumstances, bring about structural changes that may be undesirable. In that context, large ODA flows, like other resource booms, have been associated with upward pressures on inflation and RER appreciation in recipient countries. An appreciation of the RER and the likely decline in exports that large ODA flows can induce have been compared with symptoms of the Dutch disease.

B. Booming Sectors and the Dutch Disease: Conceptual Background and Selected Cases

The term "Dutch disease" was devised to describe the adverse impact on Dutch manufacturing of the increase in income associated with the discovery of natural gas in the Netherlands in the 1960s, essentially through the appreciation of the Dutch RER. It has since been

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[5] The policy measure used in Burnside and Dollar (2000) was confined to three macroeconomic indicators while the CPIA covers indicators of broad macroeconomic policies and structural and institutional issues.

[6] One problem with the statement is the difficulty of determining what constitutes "reasonable institutions."

used with reference to adverse structural changes that economies undergo as a result of sectoral booms associated with factors such as positive external terms of trade shocks and large capital inflows, including aid. The Dutch disease encompasses RER appreciation and shrinkage of the tradables sector.[7] In the case of a boom resulting from large aid flows, it is also considered that the public sector, recipient of aid, crowds out the private sector through its increased spending associated with aid.

In the literature, analyses of countries' experiences with sectoral booms have revealed varied results. The windfall gains from diamond exports in Botswana have not been associated with the Dutch disease (Harvey, 1992). Benjamin, Devarajan, and Weiner (1989) conduct a simulation with a computable general equilibrium (CGE) model of Cameroon and find that as a result of a boom in the oil sector, the agricultural sector is most likely to be hurt, whereas some components of the manufacturing sector will benefit. On balance, the non-oil tradables sector may not necessarily shrink. In their analysis of the macroeconomic impact of aid in Nicaragua, Vos and Johansson (1994) find that aid is weakly but negatively correlated with export volumes. They indicate that the simple negative correlation, which they find to be stronger during years of small aid inflows (the 1970s) than during the period of large aid inflows (the 1980s and 1990s), does not seem to make the case of a typical aid-associated Dutch disease.

Assessing the impact of aid on macroeconomic management in Ghana, Younger (1992) finds that the increase in ODA to Ghana from an annual average of 3 percent of GDP during 1981– 83 to 6 percent of GDP during 1984–87 gave rise to macroeconomic management problems that were associated with high inflation, an appreciating RER, and tight credit to the nonbank private sector. Whether the changes the Ghanaian economy underwent amounted to a Dutch disease caused by aid is arguable.

First, the increased availability of foreign exchange in the economy did not come from aid alone. The rise in aid flows was accompanied by a significant increase in private transfers and capital, consistent with the idea of procyclicality between private capital, such as foreign direct investment (FDI) and ODA associated with policy reforms. Second, while Younger suggests that the private sector was crowded out, the evidence to support such a claim is, at best, very weak. He indicates that the Ghanaian government's response to aid inflows was a combination of foreign exchange accumulation, provision of credit to the banking sector, and increased public spending, especially on development projects. At the same time, although private investment remained low, as the author indicates, the figures he presents indicate that the private investment-to-GDP ratio doubled to 5 percent during 1984–89, compared with 2.5 percent during 1980–83. Third, not only did Ghana's overall economic performance improve compared with the period preceding the aid increase, but it also compared favorably with the average for LICs in the sub-Saharan Africa region on many indicators, including growth of total and sectoral GDP, exports, and gross domestic investment.

Sackey (2001) analyzes the impact of aid on the RER in Ghana during 1962–96 and finds that aid has a dampening effect on the RER. As he also estimates an export performance model

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[7] This is important because of the tendency to characterize RER appreciations associated with booms as the Dutch disease.

and finds that appreciations in the RER affect export performance negatively, in line with the standard theory, his analysis undermines the applicability of the Dutch disease economics to Ghana during the period under examination. He concludes that, with a good policy environment, aid could contribute to the realization of Ghana's vision of becoming a middle-income country.

Results like Sackey's (2001), challenging the proposition that aid has caused the Dutch disease, have been found also in the case of Tanzania. In a model of the RER for Tanzania during 1967–93, Nyoni (1998) finds that aid was associated with RER depreciation. He presents figures indicating that the RER depreciated more sharply over the period 1985–93 than in the earlier nine-year period, despite a significant increase in ODA flows. This contrasts with the predictions of the Dutch disease model since RER appreciation, the main channel through which aid is conjectured to affect the tradables sector adversely, did not materialize.

In an empirical analysis of the impact of aid on the RER in four CFA countries—Burkina Faso, Côte d'Ivoire, Senegal, and Togo—during 1980–93, Adenauer and Vagassky (1998) find evidence of a direct relationship between aid flows and RER appreciation. They suggest that, during the period when the four countries received large aid flows, their government deficits increased through high wage bills and parapublic spending and their trade balances widened. These developments appear to lend support to the idea of Dutch disease. Nonetheless, as economic performance in the four countries was affected by adverse developments in the world prices of their primary exports and the appreciation of the French franc against the dollar during the latter part of the 1980s, it would have been useful to ascertain the role played by the CFA francs per U.S. dollar or French francs per U.S. dollar exchange rates in the developments of RER.[8] Also, real export figures could help ascertain whether the deteriorating trade balances were driven by declining world prices, declining trade volumes, or both.

In an econometric model of RER behavior for Sri Lanka during 1974–88, White and Wignaraja (1992) find a direct relationship between total aid and remittances and RER appreciation. They suggest that increased aid flows, among other factors, played an important role in the failure of the RER to depreciate, despite depreciations of the nominal rate. Also, they associate the RER behavior with a disappointing performance of the manufacturing sector, lending support to the Dutch disease theory. In contrast, Bandara (1995) does not find support for the Dutch disease theory in an analysis of the impact of foreign capital on macroeconomic performance in Sri Lanka using a CGE model. He indicates that, despite the RER appreciation associated with foreign capital inflows, some tradables sectors may expand, a result in line with that of Benjamin, Devarajan, and Weiner (1989) referred to above. The mixed results on countries' experiences with booms indicate that country-specific circumstances, including policies they implemented or could have implemented, matter. A closer look at the Dutch disease model would help make clear what the model entails.

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[8] Although the authors mention the appreciation of the French franc against the dollar during the period under examination as a problem, they indicate that they choose not to include the nominal exchange rate in the RER regressions because the countries included in the study belong to a fixed exchange rate zone. Actually, prior to the 1994 devaluation of the CFA franc, the fixed exchange rate between the CFA franc and the French franc played an important role in the appreciation of the RER of countries in the CFA franc zone.

C. ODA and the Dutch Disease: The Analytical Framework

The impact of aid on the RER and output is analyzed in a Salter-Swan framework under the assumptions of the core Dutch disease model (Corden and Neary, 1982), namely, full and efficient employment of production factors, a mobile production factor transferable between sectors, and a perfectly elastic demand for tradable goods associated with the small country assumption.

Figure 1. Diagrammatic Approach of the Dutch Disease Model
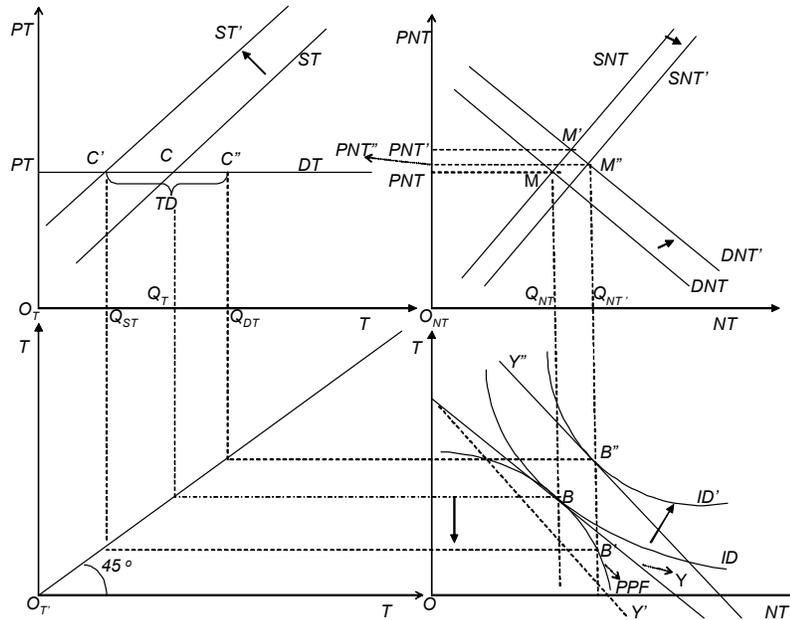
Assume an economy endowed with units of labor used to produce two types of commodities, tradables and nontradables.[9] Large aid inflows, as any resource boom, entail an increase in aggregate expenditure that goes to tradable as well as nontradable goods, thereby influencing the RER. In Figure 1, the economy produces and consumes at B on the production possibility frontier, *PPF*, and on the indifference curve *ID*, in the lower-right quadrant. The upper-left and -right quadrants illustrate the market for tradables and nontradables, respectively. In the tradables sector, the demand, *DT*, is perfectly elastic, in line with the small-country hypothesis. The initial trade balance is zero at point C where the production and consumption of tradables are equal. In the market for nontradables, the initial equilibrium is at M. An increased demand for nontradables, induced by financial inflows, translates into an upward shift in the demand for nontradables, *DNT*, and an increase in their price—a move from point M to M' in the upper-right quadrant. With the price of tradables fixed at *PT*, the RER appreciates. The appreciation of the RER discourages the production of tradables. This is the spending effect. The literature on the Dutch disease highlights two other effects related to the appreciation of the RER: the resource transfer effect and the expenditure-switching effect.

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[9] In the core Dutch disease model, there are three sectors: the booming, the lagging, and the nontradables, with the booming and the lagging sectors producing traded goods. The Salter-Swan framework adopted here has only two sectors, producing either tradables or nontradables.

The resource transfer effect refers to the reallocation of labor from the tradables sector to the booming nontradables sector as a result of the rise in the marginal product of labor employed in the production of nontradables. In the lower-right quadrant, the move from point B to B' on the *PPF* reflects the total reallocation of resources in favor of the nontradables sector, including from the spending effect. This move is reflected also in the upper quadrants by a shift to the left of the supply schedule for tradables, from *ST* to *ST'*, and a shift to the right of the supply of nontradables, from *SNT* to *SNT'*.[10]

The expenditure-switching effect refers to the disincentive to buy nontradables, induced by the appreciation of the RER. Under the assumption that the tradable and nontradable goods are not inferior, the increase in the relative price of nontradables, coupled with the upward shift in real income (a shift from Y to Y'') brought about by financial inflows,[11] is associated with an increase in the demand for tradables from O_TQ_T to O_TQ_{DT}, consistent with a higher level of consumption, B'', on the indifference curve, *ID'*. The reduced production of tradables, together with an increase in consumption at the given world price, leads to a deterioration of the trade balance, which moves from zero to a deficit of $C'C''$ in the upper-left quadrant. As illustrated, the increased spending on tradables that goes to imports allows the financial inflows to be absorbed through a wider trade deficit.[12]

D. Premises of the Dutch Disease Model and Features of Many Low-Income Countries: A Possible Divide

This subsection highlights some notable features of many LICs that are not in line with the assumptions of the core Dutch disease theory. In particular, the assumption of a country producing on its *PPF*—which is tantamount to a full and efficient employment of the country's production factors—raises questions for many countries suffering from high structural unemployment and inefficient use of existing production factors.

The small-country assumption is not realistic as regards many domestically produced importables in LICs. In line with this assumption, the Dutch disease model considers that, as the price of tradables is exogenously determined, upward pressures on wages induced by a booming

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[10] The increase in the price of nontradables from *PNT* to *PNT'* is associated with an internal imbalance represented by M', resulting from the spending effect alone. Equilibrium is reestablished at a subsequent stage when price and cost effects—including the effect of a higher cost of labor—draw labor from the tradables sector, encourage an increased demand for tradables as they become relatively less expensive, and mitigate the increase in the price of nontradables. In the (*NT*, *PNT*) plane, the shift of the supply schedule to the right reflects part of these changes.

[11] The income line Y' is shown only to illustrate the increased relative price of nontradables.

[12] As far as policies are concerned, demand management—including through fiscal and monetary policy—can be used to limit the increase in the disposable real income, the upward shift in the demand for nontradable goods, and the ensuing resource transfer and worsening of the trade balance that appear unavoidable without such policies.

nontradables sector would reduce incentives to produce tradables. The analysis can benefit from a disaggregation of the tradables sector into exportables and importables. To the extent that the "importables" subsector includes import-competing manufactured goods and raw materials, factors that hinder the activities of the subsector would typically pose a threat of deindustrialization, as mentioned in the literature on the Dutch disease. However, in LICs where there is imperfect substitutability between domestically produced manufactured goods and imported ones, the threat is mitigated. This imperfect substitutability provides room for domestic manufacturers to raise prices and increase supply in response to domestic market conditions, such as increased demand, regardless of whether they use imported or domestically produced inputs.

Manufacturing firms that use sizable amounts of imported inputs can benefit from a relatively appreciated domestic currency, as part of their production costs expressed in domestic currency would be subdued. To the extent that there is complementarity between imported and domestically produced inputs in the production process, the demand for domestic inputs can also increase, encouraging suppliers of these inputs to produce more. As to firms that use domestic inputs predominantly, they too can increase the demand for inputs and their supply of goods in response to higher prices and still expand, depending on price elasticities of the supply of inputs and the demand for goods.[13]

E. The Dutch Disease Model Modified

The highlighted possible divide between underlying characteristics of the economic structures of many LICs and the premises of the Dutch disease model prompt a modification of the core Dutch disease model, as shown in Figure 2. The modification—an easing of the model's assumptions—makes its predictions avoidable. Such a modification is relevant to countries that produce below their potential because of supply bottlenecks that can be eased by an efficient use of ODA flows.

In Figure 2, in contrast with the Dutch disease model presented in Figure 1, the economy produces initially at A, within its *PPF*, while consuming at B on the indifference curve ID. Moreover, owing to the relaxation of the small-country assumption, the demand for tradables, DT, is downward sloping. The total supply of tradables, ST, comprises the home supply, H_{ST}, and imports equivalent to the trade deficit, TD. The initial market clearing for the tradables and nontradables sectors is at points C and M, respectively, consistent with a unit RER. As in Figure 1, the increased spending induced by financial inflows causes an upward shift in DNT, the demand for nontradables, and an initial increase in the prices of nontradables from PNT to PNT'. The increase in available resources emanating from financial inflows allows the economy to consume at B' on a higher indifference curve and to increase its use of existing production factors, thereby producing at point A' on the *PPF*.[14] In line with the move to A', the supply schedules for

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[13] In the context of the three-sector core Dutch disease model, these developments would mitigate the risk of deindustrialization. However, as Corden (1984) points out, "deagriculturalization" rather than deindustrialization could be the appropriate term if the shrinking tradables sector produce agricultural products.

[14] Increased production can also result from a shift in the *PPF* induced by improved efficiency. Such a shift—which can result from improved efficiency even if the economy was initially

tradables and nontradables shift to $H_{ST'}$ and SNT', respectively. Consumption at B' is associated with an upward shift in the demand for tradables to $D_{T'}$. The difference between production of tradables at A' and consumption at B' represents the new trade deficit, TD', which is narrower than the initial one. In the nontradables market, the new equilibrium at M'' is consistent with an appreciation of the RER, as the price of nontradables increases more than that of tradables. If the price-elasticity of the supply of nontradables is high—which would be reflected by a flatter supply schedule in Figure 2—the RER may not appreciate.

Figure 2. The Dutch Disease Model Modified
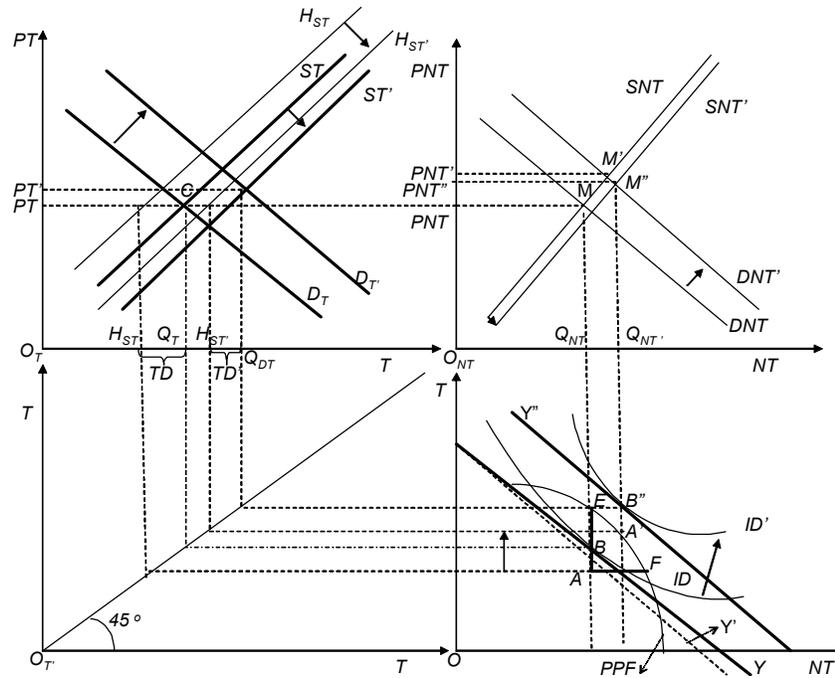
The modified framework illustrates that it is possible to have large ODA flows that finance government spending on socioeconomic programs, RER appreciation, increased production of both tradables and nontradables, and a narrowing of the trade balance. The analysis presented above suggests clearly that the resource transfer effect depicted in the core Dutch disease model is a corollary of the spending effect that occurs only under the assumptions of the Dutch disease model— full employment, primarily. Once the full employment assumption has been relaxed, in contrast to Bandara (1995), the spending effect is not a sufficient condition for Dutch disease-type effects to occur.[15] The relaxation of the small-country assumption also alters the results of the

operating at full employment— is not necessary for the conclusion drawn in this paper to hold although it cannot be excluded from the experience of some countries. The paper concentrates primarily on the increased use of available production factors, allowing the economy to move its production from point A to any point in the area EAF in the lower-right quadrant of Figure 2.

[15] Bandara's statement is at odds with his analysis, from which he concludes that the traditional Dutch disease model does not adequately address the impact of windfall gains on the economic structure of LICs.

Dutch disease model. Benjamin, Devarajan, and Weiner (1989) use the imperfect substitutability between import-competing domestic goods and imports to show that the RER appreciation resulting from an oil boom causes a contraction of the non-oil exportables sector while the importables sector may actually expand its output. In the modified framework presented above, after both the full employment and the small-country hypotheses have been relaxed, there are indications that the RER may not appreciate at all as a result of a spending boom induced by ODA flows, or, if it does, the appreciation will not necessarily give rise to a contraction of the tradables sector.[16] An increased use of available resources allows both the tradables and nontradables sectors to expand, and the trade balance would not necessarily deteriorate.

The magnitudes of the variation in the trade balance and the appreciation of the RER depend on supply- and demand- elasticities. The higher the income elasticity of the demand for nontradables, the larger the RER appreciation. The higher the price elasticity of the demand for nontradables, the smaller the RER appreciation. The higher the price elasticity of supply, the smaller the real appreciation. If a resource boom is accompanied by general equilibrium interactions that encourage an increased production of nontradable goods at initial prices, then a RER appreciation is not inevitable. In economies where resource availability and the nature of the nontradable goods facing increased demand allow a quick response of output to price increases, the appreciation of the RER is very likely to be mild.

Botswana is a good example of an economy where availability of production factors must have played an important role in the country's ability to deal successfully with a resource boom without experiencing the Dutch disease. When mining output grew from almost nothing in 1965 to 50 percent of GDP in 1989, government consumption increased at an annual average rate of 12 percent. Recorded formal employment increased from 48,000 in 1972 to 182,000 in 1989, growing faster than the labor force. Also, employment in the private and parastatal sectors grew faster than in government. The real effective exchange rate (REER)[17] was on a depreciating trend while fluctuating within a narrow range, exports other than diamond increased, and the economy sustained a high annual growth rate, averaging 8.5 percent during 1965-89. Many factors have played a role in the way the country has avoided the Dutch disease, and availability of production factors is a nonnegligible one, lending support to the relevance of the modified Dutch disease model this paper presents.[18]

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[16] Torvik (2001) develops a model in which he keeps the full employment premise; however, by assuming that there are learning spillovers between the tradables and nontradables sectors, he finds that both sectors may grow in the long run, despite the appreciation of the RER in the short run.

[17] The REER is computed as the nominal effective exchange rate (NEER) index adjusted for relative movements in national prices or cost indicators. The NEER index itself is the ratio of an index of period average exchange rates of a country's currency to a weighted geometric average of exchange rates for its trading partners.

[18] Facts on Botswana referred to in this paragraph are drawn from Harvey (1992). More recent developments indicate that Botswana's rate of economic growth continued to be strong in the 1990s, sustained in part by an expansion of the nonmining economy (Auty, 2001).

III. THE DUTCH DISEASE AND LONG-TERM ECONOMIC GROWTH

Prospects for promoting growth in an environment of large aid flows lie in the role that aid-financed public spending plays in the growth process and in the ability of domestic institutions and macroeconomic policies to foster incentives for private investment. The argument that underutilized productive capacity helps mitigate possible Dutch disease effects does not suggest that large ODA flows of any magnitude would help recipient countries improve their growth prospects, regardless of the policies they implement and the use they make of the aid resources.

Where large spending financed with ODA gives rise to short-term macroeconomic management problems capable of affecting the RER or interest rates in a manner that threatens private investment, exports, and long-term growth, these problems have to be dealt with by giving due consideration to country-specific circumstances. In this context, a constant monitoring of developments in key macroeconomic variables and in the cost structure of critical sectors is very important. In case detailed sectoral data are unavailable, a short- to medium-term analysis of the impact of ODA on growth can well be limited to the increased investment in infrastructure and human capital that it enables through increased public spending and its impact on macroeconomic variables that affect private sector development. Diagnoses on whether aid is causing the Dutch disease should, as indicated above, take full account of country-specific circumstances. These circumstances, along with thorough cost-benefit analyses, should guide prognoses. Where available information does not allow meaningful cost-benefit analyses to be conducted, prognoses and policy prescriptions should be prudent.

To the extent that ODA flows involve an upgrade of the physical infrastructure and human capital and affect macroeconomic variables at the same time as other factors that have short- and long-term benefits, as well as adverse effects, their growth and macroeconomic implications are more complex than envisaged in the literature on the Dutch disease. It is true that depreciation of the RER provides incentives for the production of exportables, especially those whose world prices trend down. It is also true that, where basic infrastructure is inadequate and other supply bottlenecks exist, a real depreciation would not necessarily make a significant difference for long-term growth. In that context, there is more at stake than providing incentives to a particular sector to increase its output.

In light of the development objectives of foreign aid, what is at stake in the aid-growth debate is the transformation of entire economies into ones that use their available nonhuman resources to produce cost-effectively, with the participation of a trained and healthy labor force that is thereby given the opportunity to raise its living standard.[19] Where ODA is not foreseen to contribute to an economic transformation that would encourage the emergence of a viable formal private sector that is so crucial for the expansion of the tax base and the sustainability of government spending, the idea that it would help promote long-term economic growth and reduce

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[19] Whether one concurs with the appropriateness of the goals of foreign aid is a different issue. Easterly (2003) calls for a realistic vision for foreign aid. He suggests that the goal of foreign aid is simply to benefit some poor people some of the time rather than fostering societywide transformation from poverty to wealth.

poverty may prove to be an illusion.[20] To encourage such a transformation, deepening structural reforms and monitoring the efficiency of public spending have to remain prominent in the poverty reduction efforts. In essence, as mismanagement of public resources is part of the development problems of many LICs recipient of aid, the increase in government spending associated with ODA should be coupled with an improvement in institutions, so as to boost the transparency of public finances and use resources most efficiently.[21]

Inefficiency in the use of ODA resources, some of which have to be repaid, can have far more devastating consequences than RER appreciations, which, as illustrated in Figure 2, may not necessarily embody the Dutch disease. In a poor country recipient of large ODA flows, whether it has idle productive capacity or not, if ODA resources are spent without due consideration to efficiency, the symptoms of the true Dutch disease could turn out to be not an appreciation of the RER but, instead, wasteful spending that endangers the transformation the economy needs to carry on key public expenditure without a sustained need for aid flows, which could dry up. This line of reasoning is similar to an idea footnoted in Corden (1984, p.359): "Incidentally, it might be argued that the true Dutch disease in the Netherlands was not the adverse effects on manufacturing of real appreciation but rather the use of Booming Sector revenues for social services levels which are not sustainable, but which it has been politically difficult to reduce."

IV. Concluding Remarks

The paper acknowledges that although high externally financed government outlays create macroeconomic management problems and can be associated with a strengthening of the currency of the recipient country, compared with what it would have been otherwise, such a strengthening would not necessarily give rise to the Dutch disease. It argues that not only is the appreciation of the RER avoidable but also that, even if it occurred, it would not necessarily harm exports by generating a resource transfer against the tradables sector. The paper suggests that the resource transfer is a corollary of the spending boom that occurs under the premises of the Dutch disease model: full employment, the efficient use of production factors, and perfect elasticity of the

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[20] If there is a genuine perception that such a transformation would not materialize in countries whose poverty reduction strategies point toward considerable cuts in poverty, these strategies, as well as the underpinning expenditure programs, could be called into question.

[21] In the successful case of Botswana referred to above, increased government spending from the mining boom has transformed the economy remarkably, helping it move from one of the world's poorest countries in 1965 to a middle-income country by the mid-1980s. There has been remarkable progress in the provision of physical infrastructure, education, health, and other government services. This progress has contributed to high rates of economic growth, accompanied by a spread of jobs to rural households and an improvement in living conditions. Transparency and efficiency in the use of public resources played an important role in the successful outcome, easily referred to as an "economic miracle." Auty (2001) mentions that Botswana's consensual democracy exhibited a high level of transparency in public revenue and achieved a corruption perception index on a par with Belgium, Portugal and Japan, and significantly better than the vast majority of developing countries.

demand for tradables. Thus, it does not undermine the core Dutch disease model itself. Rather, it highlights the fact that the model's conclusions may not be applicable in certain circumstances.

After easing some assumptions of the core Dutch disease model, the paper demonstrates that the symptoms of this "disease" need not materialize in poor countries if they can draw on their idle productive capacity to satisfy the increased demand for nontradables that large ODA flows induce, while using ODA flows to ease supply bottlenecks that prevent them from producing at their full potential.

The paper underscores the point that, to the extent that ODA flows involve an upgrade of the physical infrastructure and human capital and affect macroeconomic variables at the same time as other factors that have short- and long-term benefits, as well as adverse effects, their growth and macroeconomic implications are more complex than envisaged in the literature on the Dutch disease. It emphasizes the importance of accompanying increased government spending with improved institutions, so as to boost transparency and efficiency and prevent outcomes that could be far more painful than the perceived symptoms of the Dutch disease.

From a policy standpoint, the ultimate contribution of this paper is to underscore the importance of giving due consideration to country-specific circumstances in assessing whether a country is experiencing the Dutch disease. Also, as in any other policy matter, one should avoid making hard line policy prescriptions, built not only on models whose key assumptions are not fully applicable but also on inadequate assessments made in difficult circumstances.

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