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III. FOREIGN AID INFLOWS AND THE ISSUE OF DUTCH DISEASE⁷

28. In light of the potentially large inflows of foreign financing needed to achieve the MDGs, this chapter seeks to assess the historical relationship between foreign aid and the performance of the external sector in Ethiopia in order to establish whether foreign aid inflows have had an adverse effect on the tradable goods sector in the past – a phenomenon commonly referred to as "Dutch disease."

A. Theoretical Considerations

29. According to the "Dutch disease" hypothesis, foreign aid represents a real transfer of tradable goods, and tends to increase the demand for, and the relative prices of, nontradable goods (a real exchange rate appreciation). The latter could lead to a relative reduction in the size of the tradable goods sector. Given that foreign trade is viewed as an engine for growth in developing countries, aid-driven reductions in the tradable goods sector can block the path to export-based growth even though the total amount of resources available for consumption (temporarily) increases.

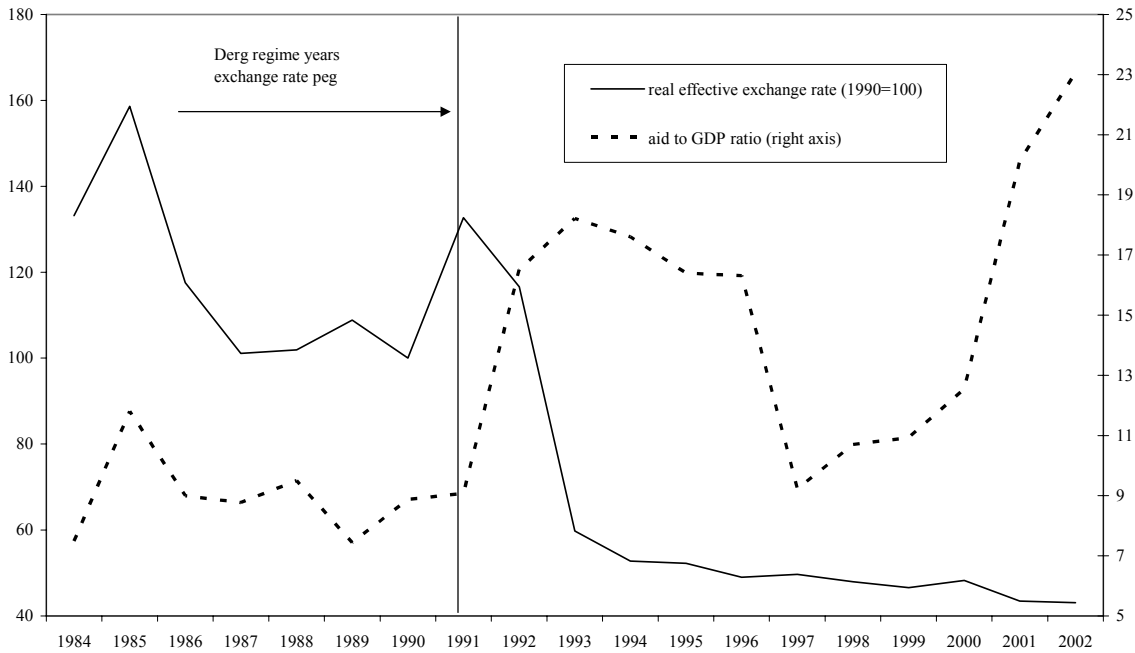
B. Empirical Evidence

30. The focus of the analysis of the historical relationship between aid and the external sector was on the real exchange rate and noncoffee merchandise exports.⁸ The charts below show the real exchange rate, market share developments, and the growth rate of noncoffee exports starting from 1984—the first year for which data on coffee exports is available. A structural break in the behavior of the variables is clearly evident in 1991—the year in which the Derg regime was overthrown. The pre-1991 period is characterized by a fixed nominal exchange rate, low levels of foreign aid, and declining market shares of Ethiopian exports. Aid inflows during that period appear to be strongly and positively correlated with the behavior of the real exchange rate, suggesting that aid was likely spent on domestic consumption. The post-1991 period is characterized by exchange rate flexibility, structural reform, higher and rising levels of aid, and increasing market shares of Ethiopian exports. Unlike in the pre-1991 period, there is no positive correlation between aid and real exchange rate appreciation. On average, the growth rate of Ethiopia's noncoffee exports has exceeded during the reform period the growth rate of world imports but was adversely affected by the recurrent droughts. The developments in the latter period thus suggest that aid must have been used more productively, essentially to expand the production possibilities set, while the level of the exchange rate does not suggest a competitiveness problem in Ethiopia's traded goods sector.

⁷ Prepared by Yuri Sobolev (PDR) and Ayumu Yamauchi (AFR).

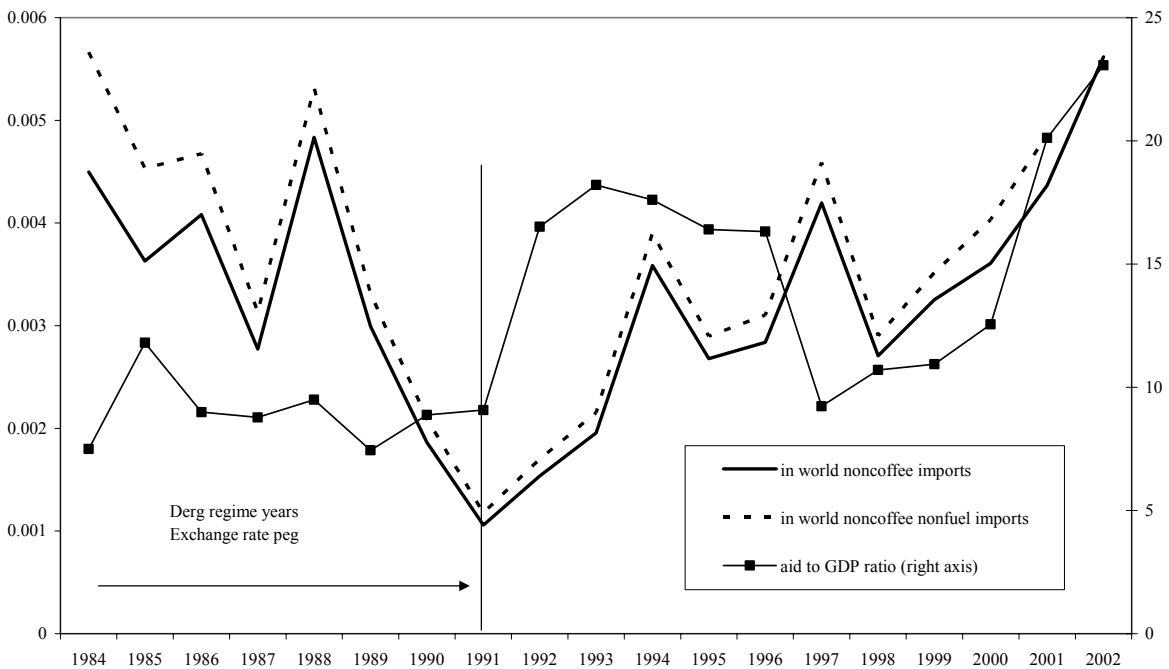
⁸ Coffee exports are driven by international prices and like other primary-sector exports would be much less affected by real appreciation of the exchange rate.

Figure III.1. Real Effective Exchange Rate vs. Aid Inflows



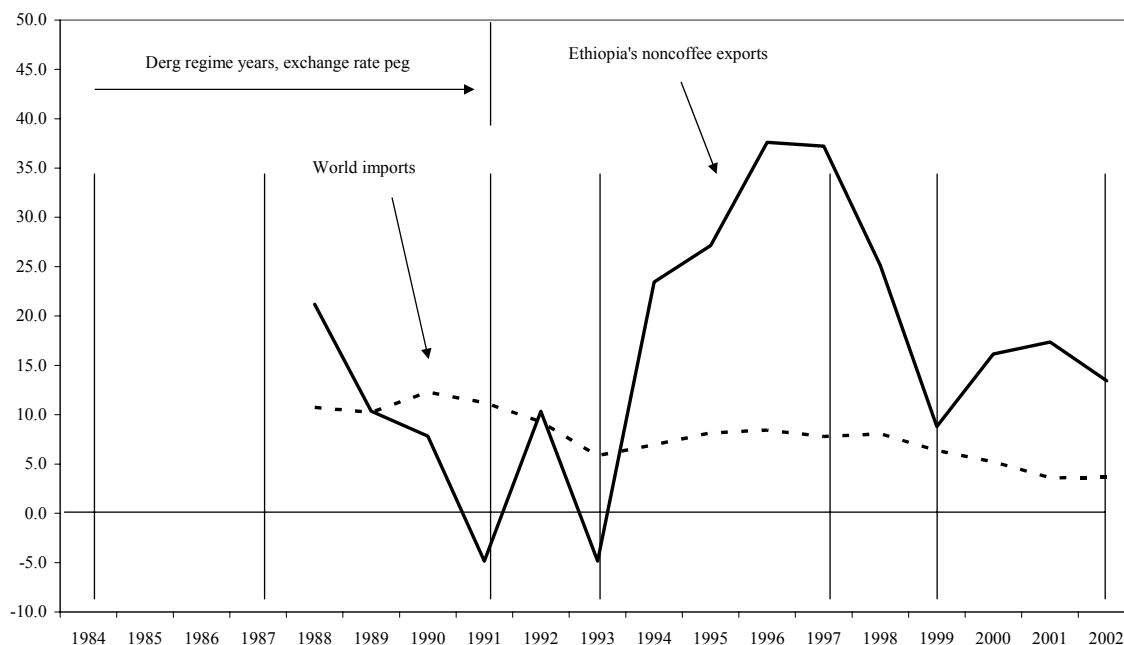
Sources: EDSS; Ethiopian authorities; and staff estimates.

Figure III.2. The Share of Ethiopia's Noncoffee Merchandise Exports



Sources: EDSS; Ethiopian authorities; and staff estimates.

**Figure III.3. Growth Rate of Ethiopia's Noncoffee Exports and World Imports
(Five-year moving average)
(Drought years are shown by the vertical lines)**



Sources: EDSS; Ethiopian authorities; and staff estimates.

C. Empirical Analysis

31. The staff undertook econometric analysis of the historical relationship in Ethiopia between foreign aid (grants and loans) and the real exchange rate and between aid and noncoffee exports (Annex 1). Contrary to the findings of studies that used large country panel data that also included Ethiopia in the sample,⁹ the staff's estimation results suggest

⁹ Most of the existing empirical studies used panel data covering a large number of aid-receiving developing countries to draw generalized conclusions on the relationship between aid inflows and the real exchange rate and export performance. Among the recent empirical studies by Fund staff using country panel data that included Ethiopia in the sample are Arellano *et al* (2003) and Prati *et al* (2003). Prati *et al* (2003) estimate that a one percentage point increase of aid in percent of GDP leads to a 0.31 percent increase in the rate of change of the real exchange rate while Arellano *et al* (2003) estimate that a one percentage point increase of aid in percent of Gross National Income (GNI) leads to 1.11 percentage point decline in the share of nonmining exports or 0.86 percentage points decline in the share of manufacturing exports. The estimation results thus indicate that: (1) foreign aid leads to real exchange rate appreciation; (2) countries with higher aid tend to have lower share of nonmining exports; and (3) countries with rising aid tend to have a declining share of nonmining exports.

that foreign aid has had a positive impact both on Ethiopia's noncoffee exports and their share in total exports. One possible interpretation of this result is that—given the low level of development in Ethiopia (as well as a lower level of aid in per capita terms compared to other aid-receiving countries)—the positive impact of foreign aid on infrastructure and capital investment (and the associated reductions in transaction costs) outweigh, over the long run, any adverse impact that aid inflows might have on the competitiveness of the traded goods sector by pushing out the production possibilities frontier. Regarding the relationship between aid and the real exchange rate behavior, the estimation results are inconclusive. This could be due to severe structural rigidities and the lack of functioning market mechanisms in the Derg regime years and subsequent structural transformation shifts associated with the reform process.

D. Conclusions and Policy Implications

32. The results of the empirical analysis indicate that the historical relationships would not serve as a reliable guide to the potential impact of higher aid flows on Ethiopia's tradable goods sector, not least because foreign assistance needed to achieve the MDGs would be significantly higher than the levels observed in the past, which could, by itself, change the structural relationships. Furthermore, it is clear that some upward adjustment of compensation in the health and education sectors would be needed to help achieve the targets. The emergence of wage and price pressures necessitate the formulation of structural reform measures over the medium term to alleviate such pressures, and hence, prevent a deterioration of the traded goods sector's competitiveness via the real appreciation of the exchange rate. There are two main routes through which the demand-driven pressures on the exchange rate can be moderated: channeling part of the increased domestic demand abroad via further opening up of the economy to foreign trade; and meeting part of the increased demand by boosting productivity and cost efficiency, and thereby increasing the supply of domestically produced goods and services. The speedy implementation of measures to further liberalize the foreign trade regime, eliminate any remaining exchange restrictions, streamline customs procedures, resolve difficulties in the areas of credit, land availability, competition policies, and infrastructure would go a long way towards achieving these objectives. The recently completed Diagnostic Trade Integration Study (DTIS) and the recommendations of the Technical Committee on necessary structural reforms should provide appropriate guidance to the authorities. While some appreciation of the real exchange rate could be unavoidable when rising incomes and productivity lead to an equilibrium real appreciation, the steadfast implementation of the structural reform agenda should prevent any unwarranted appreciation of the exchange rate.

Annex III.1

Impact on exports

33. A time-series analysis using an error-correction model was conducted to estimate the relationship between aid inflows and noncoffee exports, following, in principle, the model specification in Arellano and others (2003). In the estimation, noncoffee exports in percent of GDP was regressed over the period 1972-2001 with aid inflows in percent of GDP, international trade tax in percent of total tax revenue, investment in percent of GDP, and terms of trade. The long- and short-run relationships respectively are:

$$NCof_t = 0.2Aid_t + 0.17Tax_t + 0.54Inv_t + 0.0003TOT_t - 11.48$$

$$\Delta NCof_t = -0.43\Delta NCof_{t-1} + 0.13\Delta Aid_{t-1} - 0.006\Delta Tax_{t-1} - 0.03\Delta Inv_{t-1} - 0.003\Delta TOT_{t-1}$$

where *NCof* is noncoffee exports in percent of GDP, *Aid* is aid inflows in percent of GDP, *Tax* is international trade tax in percent of total tax revenue, *Inv* is investment in percent of GDP, and *TOT* is terms of trade.

34. The estimation results suggest that a one percentage point increase in aid relative to GDP would lead to 0.2 percent increase in noncoffee exports in percent of GDP. All the variables are integrated in the order of one (I(1)) and are significant at 5 percent level, except the terms of trade, and have the right sign, except tax.

35. An estimation based on ordinary least squares using stationary series (at first difference) indicates that only investment is significant at 10 percent level:

$$\Delta NCof_t = -1.07 + 0.09\Delta Aid_t + 0.09\Delta Tax_t + 0.1\Delta Inv_t - 0.001\Delta TOT_t + 0.2LGDP_t$$

where, in addition to the specification in the error correction model, *LGDP* is log of GDP per capita, which was excluded from the error correction model due to overidentification of the cointegrating equation.

36. A modified version of the analysis based on a shorter time series (1984-2001), for which better quality data on the breakdown of coffee and noncoffee exports are available, indicates that a one percentage point increase in aid relative to GDP would result in a 2 percent increase in the share of noncoffee exports in total exports. This stronger positive correlation result is most likely due to the fact that the post-1991 reform period accounts in this case for the larger share of the data sample.

Impact on the real exchange rate

37. A time-series analysis using an error-correction model was conducted for Ethiopia following the model specification in MacDonald and Ricci (2003). In the estimation, the

logarithm of real effective exchange rate was regressed over the period including the Derg regime (1982Q2-2002Q4) as well as over the reform period only (1992Q4-2002Q4), with the real GDP per capita relative to that of trading partners, terms of trade, exports and imports of goods in percent of GDP, fiscal balance (domestically financed) in percent of GDP, and aid inflows in percent of GDP. The cointegrating equation is:

$$\ln e_t = \alpha_0 + \alpha_1 GDPD_t + \alpha_2 TOT_t + \alpha_3 Trade_t + \alpha_4 Fiscal_t + \alpha_5 ODA_t + \alpha_6 t$$

where e_t is real effective exchange rate, $GDPD_t$ is the real GDP per capita relative to that of trading partners (in index with 1995=100), TOT_t is weighted terms of trade, $Trade_t$ is exports and imports of goods in percent of GDP, $Fiscal_t$ is fiscal balance (domestically financed) in percent of GDP, ODA_t is aid inflows in percent of GDP, and t is time trend. Five lags were chosen using a maximum likelihood ratio test.

38. The estimation results suggest that a one percentage point increase in aid relative to GDP would lead to 0.03 percent depreciation of the real exchange rate during the reform period, while, for the period including the Derg regime, a one percentage point increase in aid is associated with 1.5 percent appreciation. All the variables in the cointegrating equation are integrated in the order of one (I(1)) and are significant at 5 percent level.