

## **The Federal Democratic Republic of Ethiopia: Selected Issues**

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THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

**Selected Issues**

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Approved by African Department

July 1, 2008

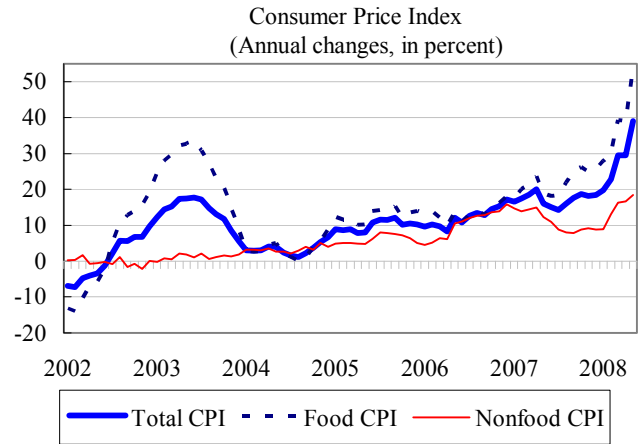
Contents	Page
I. Recent Inflation in Ethiopia and Policy Responses .....	2
A. Introduction .....	2
B. Recent Inflation Developments .....	3
C. Factors Contributing to Recent Inflation .....	4
D. Recent External and Monetary Developments .....	6
E. Experiences in Other Countries .....	9
F. Conclusions .....	12
II. Income Velocity of Money in Ethiopia .....	20
A. Introduction .....	20
B. A Global View of Velocity Over Long Term .....	21
C. Which Variables Affect Velocity in Peer Countries? .....	24
D. Ethiopia's case .....	26
E. Conclusions .....	30
III. External Stability and Competitiveness in Ethiopia .....	33
A. Introduction .....	33
B. Competitiveness and Recent Trends in the Balance of Payments .....	33
C. Assessments of Competitiveness and the Real Exchange Rate Level .....	43
D. Conclusions .....	48
Appendices	
I. I. Regional Inflation Comparison .....	14
I. II. Exchange Rate and External Developments .....	15
I. III. Food Inflation and World Food Commodity Price Developments .....	16
I. IV. Monetary Developments .....	17
I. V. High Inflation in Developing Countries .....	18
II. I. Sample Countries in Each Income Group .....	32

## I. RECENT INFLATION IN ETHIOPIA AND POLICY RESPONSES<sup>1</sup>

### A. Introduction

#### 1. Inflation in Ethiopia has been on the rise for nearly three years.

Notwithstanding past policy measures to address the phenomenon, it reached about 40 percent in May 2008, far exceeding the authorities' policy target of single-digit inflation.<sup>2</sup> At this level, and similar to other countries, Ethiopia faces a significant risk of inflation escalating further as inflation expectations may become ingrained unless appropriate adjustment policies are implemented.



2. **Inflation has been attributed to several factors.** The Ethiopian Development and Research Institute (EDRI, 2007) and FAO (2008) point out that both domestic and external factors account for the recent inflation, among them (i) increasing money supply; (ii) rising world commodity prices; (iii) continued good economic performance, (iv) housing shortages in urban areas; (v) changes in farmers' behavior to supply products more uniformly over the year (improvements in access to credit, storage facilities, marketing information, etc.); and (vi) increased local purchases by governmental food security institutions, agricultural cooperatives, and relief agencies.

3. **While each of these factors—structural, external, and domestic—may be important, a debate on their relative contribution to recent inflation has emerged.** In addition to these factors, once inflation has reached the level of 20–30 percent, the role of past inflation—which likely drives inflation expectation—also warrants attention.

4. **This paper examines the causes of recent inflation and discusses possible policy responses.** Section II provides an overview of recent inflation developments. Section III explores the factors contributing to recent inflation, based on recent studies and the review of recent monetary and external developments. Section IV lays out cross-country analysis with countries experiencing high inflation. Section V presents the main conclusions.

<sup>1</sup> The main contributor to this chapter is Jiro Honda.

<sup>2</sup> These efforts include tripling of minimum reserve requirements on commercial bank deposits from 5 to 15 percent and increases in the minimum time and saving deposit rate.

## B. Recent Inflation Developments

5. **Inflation in Ethiopia has reached a historical peak.** Following a drought-related surge of food prices in 2003, it receded to single digits but soon turned back up in 2004 and gradually increased, reaching about 40 percent on a 12-month basis in May 2008.

6. **Compared with previous periods, recent inflation has some unique characteristics:**

- **It has coincided with high economic growth.**

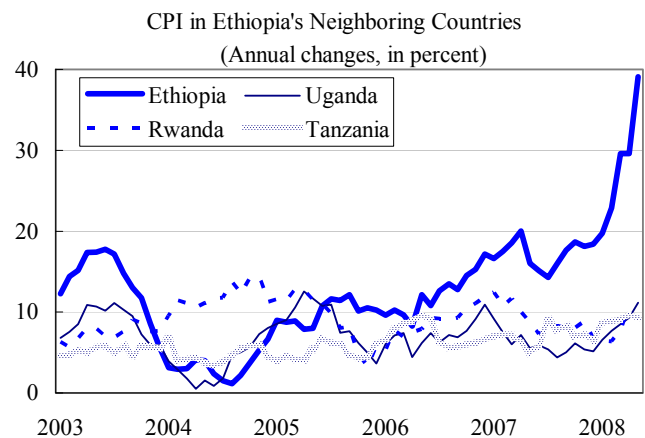
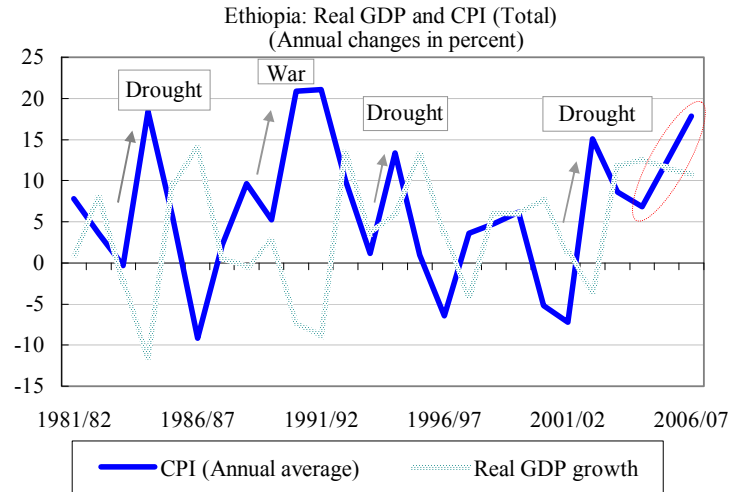
In the past, inflation was largely associated with supply shocks, such as conflicts or droughts. This pattern was particularly apparent for agricultural production and food prices. Thus, the recent surge in food prices despite good harvests is unusual.<sup>3</sup> Some supply-side factors help explain this phenomenon<sup>4</sup>:

(i) farmers have recently been equipped with better access to credit, storage facilities, marketing information and income, leading to

better negotiation powers for higher prices, and (ii) the total supply of cereals has apparently not kept up with the increase in demand, also because some donors have switched from food to cash aid.

- **In recent years inflation has been rising faster in Ethiopia than in its neighbors.**

On closer comparison with other countries, two different dynamics can be recognized (Appendix I). Recent inflation was initiated by sharp increases in nonfood prices in mid-2006, part of which reflected upward price adjustments in retail petroleum products and the construction boom in Addis Ababa. Though nonfood inflation subsided through 2007, food inflation has escalated, while in other countries price rises for non-food



<sup>3</sup> As the Ethiopian Development Research Institute (EDRI) points out, “What makes recent food price developments puzzling is that the food inflation surge is accompanied by four years of successive bumper harvests and unprecedented economic growth.”

<sup>4</sup> See also IMF (2007) and EDRI (2007).

items have been lower.

- **Nonfood inflation has also been on the rise.** Previously, food prices drove inflation trends; nonfood prices were relatively stable. The recent increases in nonfood prices, partly reflecting the hikes in world nonfood commodity prices, especially oil, have contributed to overall inflation.<sup>5</sup>

### C. Factors Contributing to Recent Inflation

7. **This section examines possible factors contributing to recent inflation.** The analysis shows that, at least to date, the role of external factors is relatively limited, although future upward adjustments of retail fuel prices would add some pressures on prices. By contrast, the role of money appears to be larger, following the rise in money growth since 2005. The monetary factor alone, however, cannot explain the recent food inflation. Here, structural factors play a role, including the convergence of prices of some exported agricultural products to international prices.

8. **Two recent studies have attempted to empirically identify the relative importance of each factor contributing to inflation.** Such exercises, however, face serious technical difficulties, due to the scarcity of data and frequent structural changes and external shocks. The studies took two different empirical approaches to address the structural breaks:

- Netsere (2007) estimated a structural vector auto regression model with two variables (real output and CPI) using annual data for three periods: 1965–98, 1965–2002, and 1965–2005. Comparing impulse responses and variance decompositions of output and prices to demand and supply shocks, he found that, when the sample included the most recent period, demand factors became important.
- Ayalew (2007) employed a general equilibrium model using annual data during 1970–2005. To account for structural and policy shifts during the estimation period, many dummy variables were used, including for market reform, rural transformation, price controls under the Derg. While acknowledging the drawbacks of excessive use of dummy variables, he found that supply shocks and the consumer prices of major trading partners were among the most important determinants of inflation in Ethiopia.

9. **EDRI (2007) argues that past trends cannot be expected to explain current developments in light of on-going structural changes in the economy** (Box 1). For instance, the import-to-GDP ratio has steadily increased since 1993, following the lifting of quantitative import restrictions under the Derg. Furthermore, there have been a number of structural changes during the period, including (i) the devaluation of exchange rate (1992),<sup>6</sup>

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<sup>5</sup> Retail fuel prices have been administered; adjustments were made in May and August 2006, January 2007, and January 2008.

<sup>6</sup> The Ethiopian birr was devalued by 59 percent against the U.S. dollar in October 1992.

### Box 1: Implications of Possible Structural Changes in Recent Years

To explore the implications of possible structural changes in recent years, a basic inflation model is estimated using annual data for three periods: 1970–2001, 1970–2004, and 1970–2007. The initial model includes the two lags of inflation, money, income, and import price. Then, a parsimonious inflation model is derived using a general-to-specific model selection procedure.

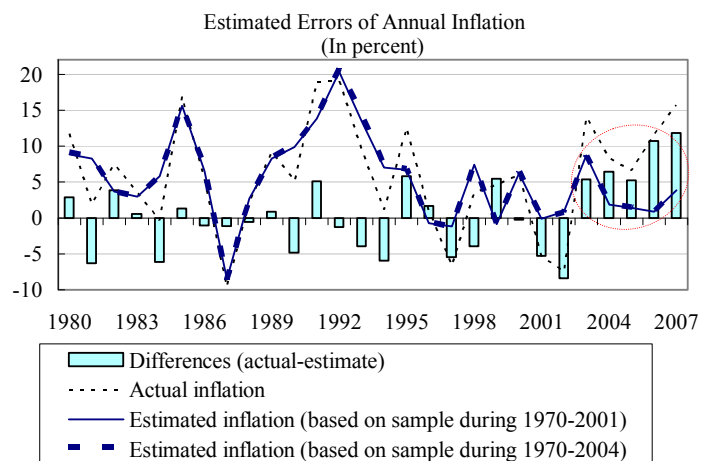
The results indicate some structural changes after 2004. The estimated coefficients are generally stable for the two periods 1970–2001 and 1970–2004. For the period 1970–2007, however, there are some changes; money has a more important role for inflation, while GDP and import price coefficients decline. The coefficient for a lagged CPI is generally stable across the sample periods; past inflation is likely driving inflation expectations and has an increasingly larger impact when inflation is rising. Despite the recent increases in international commodity prices, import prices are less significant, possibly reflecting the administered retail petroleum prices.

	Determinants of Inflation (General-to-Specific Approach)								
	1970-2001			1970-2004			1970-2007		
	Coefficients	t-value		Coefficients	t-value		Coefficients	t-value	
$\Delta \ln$ Currency (t-1)	0.31	2.9	***	0.33	2.6	***	0.33	2.5	***
$\Delta \ln$ Broad money	0.48	5.9	***	0.49	5.0	***	0.54	5.5	***
$\Delta \ln$ GDP	-0.89	-5.8	***	-0.90	-4.8	***	-0.72	-4.1	***
$\Delta \ln$ Import price	0.11	2.2	**	0.12	1.9	*	0.09	1.4	
Observations	32			35			38		
Adjusted R <sup>2</sup>	0.690			0.511			0.443		

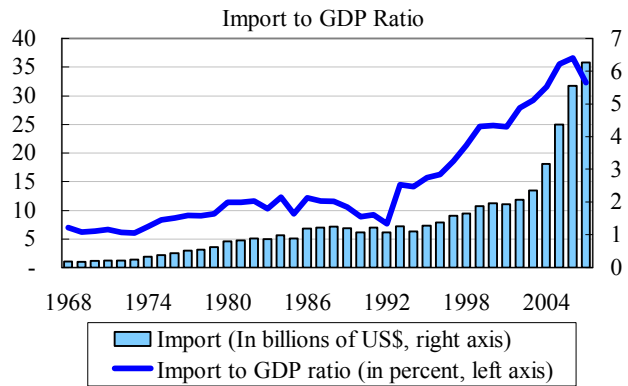
Inflation after 2002 and 2005 are estimated using the coefficients based on the samples of 1970–2001 and 1970–2004, respectively. The estimates are both far lower than actual inflation, which also suggest the existence of structural changes in recent years.

Estimates of the GDP coefficient need careful interpretation in light of recent developments. The coefficient is negative and

statistically significant, reflecting repeated supply shocks in the past, but does not explain the coincidence of recent inflation with high growth. When including more recent data, it became slightly less negative, consistent with the idea of recent demand pressures diluting the past influences of supply effects.



(ii) Substantial reduction in tariffs (through the 1990s),<sup>7</sup> (iii) liberalization of most price regulations (toward mid-1990s).<sup>8</sup> More recently, the unprecedented economic performance in recent years (with double-digit economic growth for four consecutive years) suggests that the economy is going through further structural changes.



## D. Recent External and Monetary Developments

### External Developments

10. **External factors influence domestic prices through three channels:** (i) the exchange rate, (ii) import and export prices, and (iii) changes in import volumes (supply). Among these channels, some pressures are recently emanating from the price adjustment of exportable agricultural products to international prices and the recent depreciation of the exchange rate. However, import prices—despite the recent surges in international food and petroleum prices—have played a relatively limited role to date.

- **Exchange rate:** It has long remained stable vis-à-vis the U.S. dollar, moving by less than 5 percent in the last five years. With the recent modest depreciation against the U.S. dollar, which, in turn, has weakened against other major currencies, Ethiopia's nominal effective exchange rate has depreciated somewhat faster since mid-2007 (about 10 percent annually) than in other countries in the region (Appendix II). This may have put some upward pressures on prices of imported items since mid-2007 but had no significant impact before then.
- **International commodity price:** EDRI (2007) suggests that recent increases in international commodity prices are contributing to nonfood inflation, as evidenced by the high correlation between nonfood CPI and world industrial commodity prices.<sup>9</sup> Most prominently, large fluctuations in nonfood CPI for the last three years have been closely associated with changes in retail petroleum prices, although the fuel price controls have helped mitigate the impact of the hike in surging world oil prices (Box 2). There is, however, a clear upward trend of other nonfood items since early 2006, which suggests a role in domestic factors.

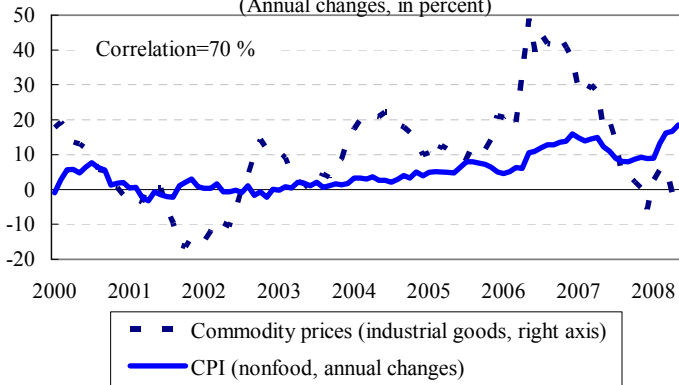
<sup>7</sup> Maximum tariffs were reduced from 230 percent under the Derg to 35 percent by 2003; average tariffs were reduced from 41.6 percent in mid-1990s to 17.5 percent.

<sup>8</sup> Most price regulations were liberalized toward mid-1990s; only petroleum prices remain regulated.

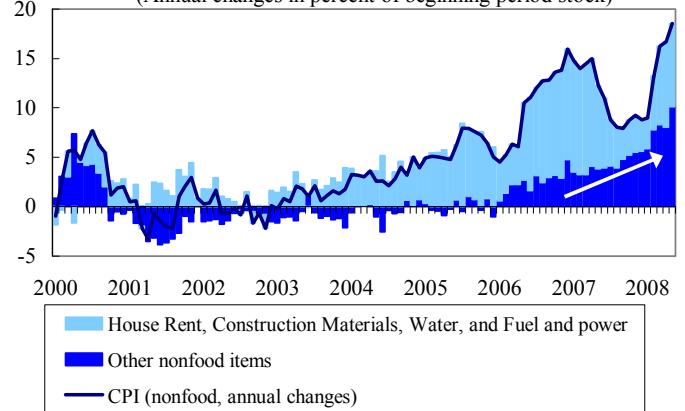
<sup>9</sup> Prices of industrial commodity inputs, including some agricultural raw materials and metals.



Nonfood CPI and International Commodity Prices  
(Annual changes, in percent)



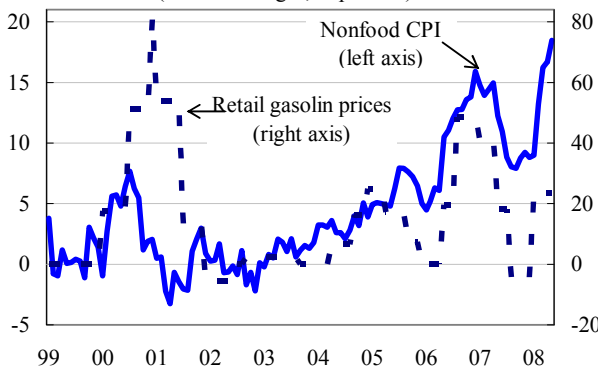
Estimated Noncommodity Nonfood CPI  
(Annual changes in percent of beginning period stock)



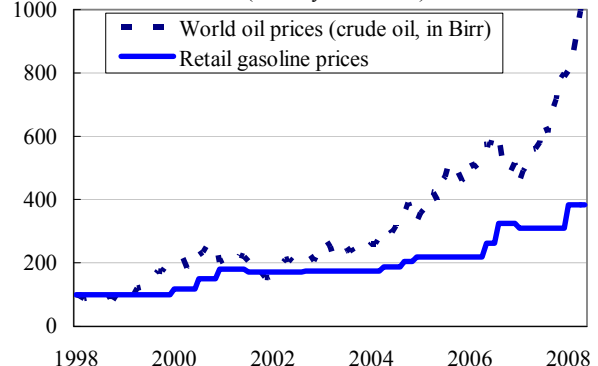
### Box 2: Retail Oil Prices

Retail prices of petroleum products are regulated in Ethiopia. Although they were adjusted in mid-2006, early 2007, and early 2008, they are increasingly isolated from world prices. Price controls may have helped mitigate the impact of the hike in surging world oil prices on domestic prices, but at the cost of increases in implicit subsidies.

Non-Food CPI and Retail Gasoline Prices  
(Annual changes, in percent)



Retail Gasoline Price and World Oil Price  
(January 1998=100)



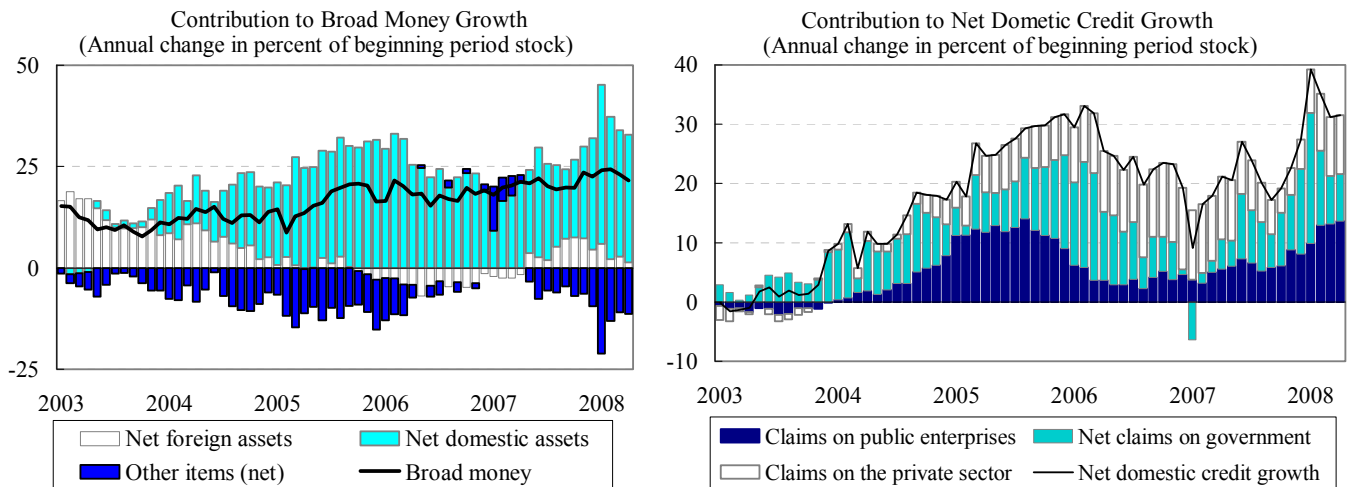
- **Other than petroleum products, the impact of international commodity prices has been relatively small**, in light of the limited size of their imports. Based on customs data, nonfuel commodities represent only about 5 percent of Ethiopia's imports. Food prices were not strongly correlated with world food prices, at least until recently (Appendix III). This is attributed to the fact that Ethiopia's domestic prices for food items have historically been well below world market prices. Therefore, imports of food items are

very limited.<sup>10</sup> From late 2007, however, there are some indications that local food prices may be converging to high (and rising) world prices as exports for some agricultural products, taking advantage of rising world prices, have been increasingly rapidly.<sup>11</sup>

- **Changes in imports** The rapid growth in imports in recent years—doubling the import share of GDP in the last ten years—should have expanded available supply and alleviated inflation pressures. Nevertheless, shifts in food imports may have dampened this effect, especially given the high weight of food in the CPI. For example, food imports were significantly reduced in 2006, following an increase by 160 percent in 2005, and stayed low compared with the average for the last five years.

## Monetary Developments

11. **In recent years, broad money growth has accelerated, mainly driven by domestic credit to the public sectors.** In the past, money growth remained typically at around 10 percent. Since 2005, however, money growth has soared, reflecting, above all, demand for credit from the public sector (Box 3). Significant increases in NBE advances to government in 2005–2006 pushed up currency in circulation and enabled high growth in public credit without crowding out private sector, which also played an important role until recently (Appendix IV). Relatively loose monetary conditions were evident from the existence of excess reserves in the banking system for a prolonged period.<sup>12</sup>



<sup>10</sup> Import data include food aid at international prices. Food aid is not sold commercially in Ethiopia, so it has no impact on domestic prices.

<sup>11</sup> For instance, the local price of oilseeds is increasingly correlated to international prices.

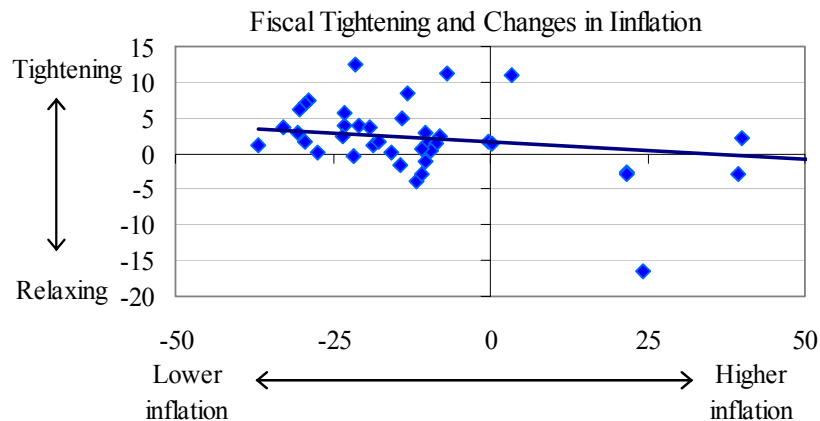
<sup>12</sup> In late 2004, bank reserves exceeded the required level by 35 percent. Since then, excess reserves have been gradually reduced through (i) more use of treasury bills to finance the fiscal deficit; (ii) increases in reserve requirements (July 2007 and April 2008); and (iii) increases in commercial bank credit to the private sector. As a result, excess reserves have fallen below 10 percent, close to the minimum by historical standards.

12. **In addition to the high money growth, inflation expectations are likely becoming ingrained, as evidenced in the recent rising trend of money velocity.** In this context, Section II (“Income Velocity of Money in Ethiopia”) argues that inflation not only reduced the transaction demand for money, but, more importantly, it eroded the credibility of using money as a store of value. Because the real interest rate on deposit accounts was becoming increasingly negative, people have been switching to consumption or alternative investments to protect their wealth, which, in turn, is adding further pressures on prices. In view of further escalation of inflation in recent months, Ethiopia would likely be exposed to a risk of inflation expectations becoming ingrained unless appropriate policy measures are implemented swiftly.

### E. Experiences in Other Countries

13. **This section provides an overview of inflation experiences in other developing countries and policy responses,** focusing on the periods of two years after inflation reached 20 percent. Among 152 developing countries, about 50 countries have experienced high inflation, above 20 percent, in the last fifteen years (Appendix V). According to Fischer et al. (2002), their experience shows that as inflation reached high levels, the probability increases that inflation continues to go up as inflationary expectations begin to build. With this in mind, the following looks at how countries responded to inflation rates of 20–40 percent.<sup>13</sup>

- Most countries tightened their fiscal stance for a period of two years after reaching inflation rates of 20–40 percent, through reducing the fiscal deficits by 0–5 percent of GDP. Most of these countries achieved lower inflation. Some countries experienced an increase of their fiscal imbalances, with several of them experiencing much higher



Note 1: Fiscal tightening is measured by the difference in fiscal balances in terms of GDP between time  $t$  (when inflation reached 20-40 percent) and time  $t+2$  (after two years).

Note 2: Changes in inflation are measured by the difference in a 12-month inflation between the two periods;  $t$  and  $t+2$ .

inflation.

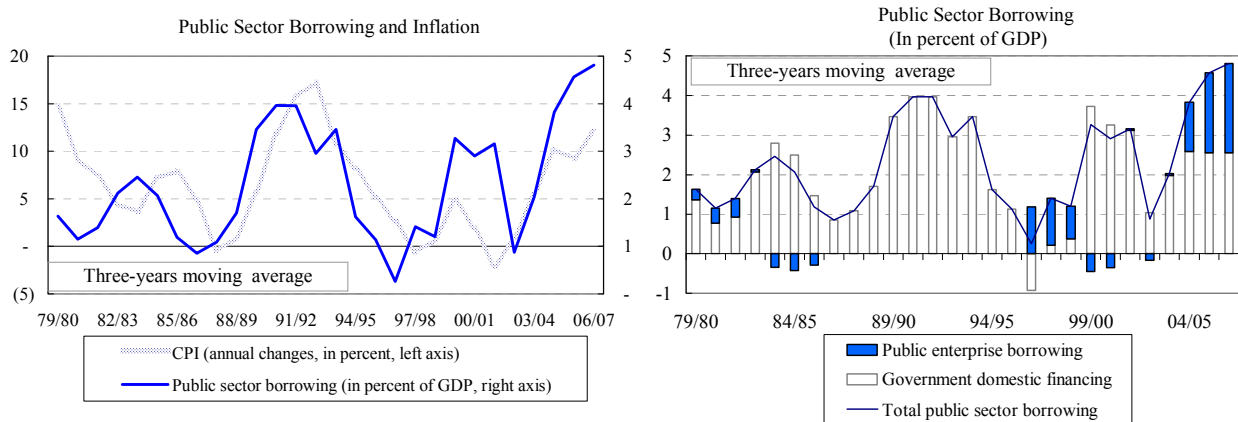
<sup>13</sup> Those which had experienced high inflation in early 1990s but already trended down inflation were excluded from the sample (e.g., some CIS countries).

### Box 3. Public Sector Borrowing

To examine the role of the public sector in recent inflation, public sector borrowing is estimated based on annual changes in credit outstanding to the public sector from the NBE and commercial banks. According to this estimate, domestic public sector borrowing is highly correlated with inflation, likely reflecting the dominant role of the sector in the economy. While this fact alone would not rule out other factors causing inflation, it does suggest that public sector imbalances have played a significant role in Ethiopia's price developments.

For much of the past few decades, public enterprise borrowing from commercial banks was low, possibly because they were financed through other sources, including the government. In recent years, however, public enterprises have borrowed substantially from commercial banks.

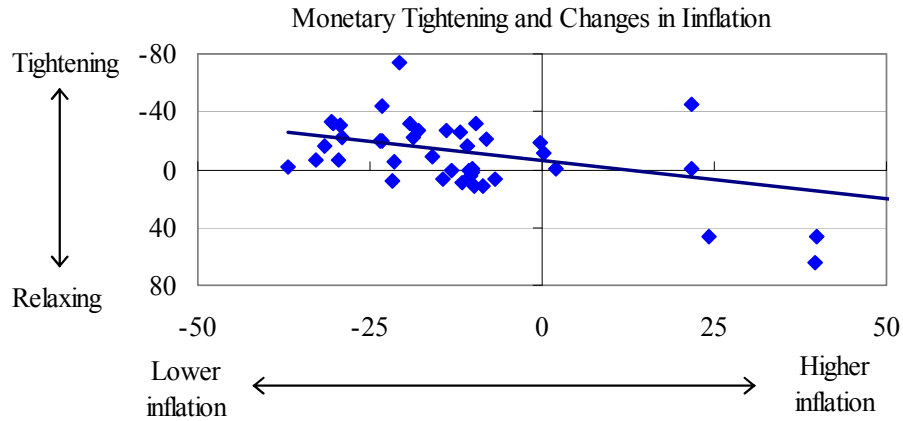
During previous disinflation periods (late 1980s and mid 1990s), inflation was lowered by 8–18 percentage points, following the reduction of the public sector borrowing by 1½–4½ percent of GDP. This is broadly equivalent with empirical results from cross-country analysis.<sup>14</sup>



The nature of spending by government and public enterprises would need to be examined further to assess its impact on prices. For example, if credit is used for capital spending with a high import content, higher borrowing should put more pressures on international reserves, rather than domestic prices. If, however, more resources are spent on recurrent outlays (including nontradables), inflation pressures may heighten.

- There is a clear correlation between monetary tightening and lower inflation. Those countries which lowered money growth achieved low inflation. Some countries experienced significantly higher money growth, and all of them faced even higher inflation within the following two years.

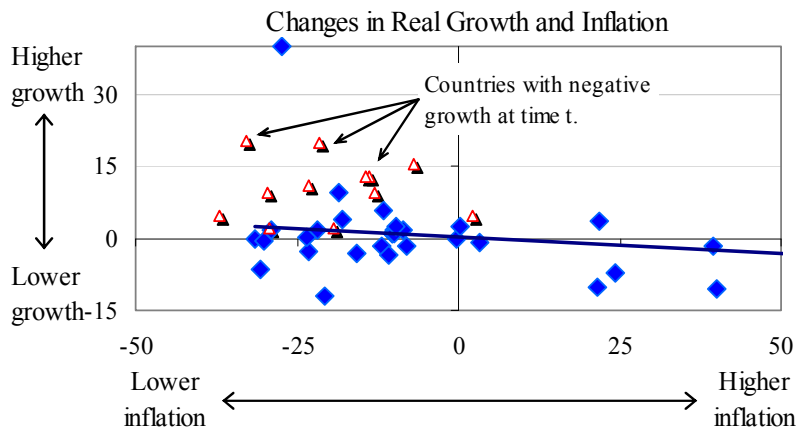
<sup>14</sup> Fischer et al. (2002), using fixed effects in panel of 94 developing countries, estimate that, for high inflation countries, a 1 percentage point improvement (deterioration) in the ratio of the fiscal balance-to-GDP typically leads to a 4.2 percent decline (rise) in inflation, all else constant.



Note 1: Monetary tightening is measured by the difference in broad money growth per annum between time  $t$  (when inflation reached 20-40 percent) and time  $t+2$  (after two years).

Note 2: Changes in inflation are measured by the difference in a 12-month inflation between the two periods;  $t$  and  $t+2$ .

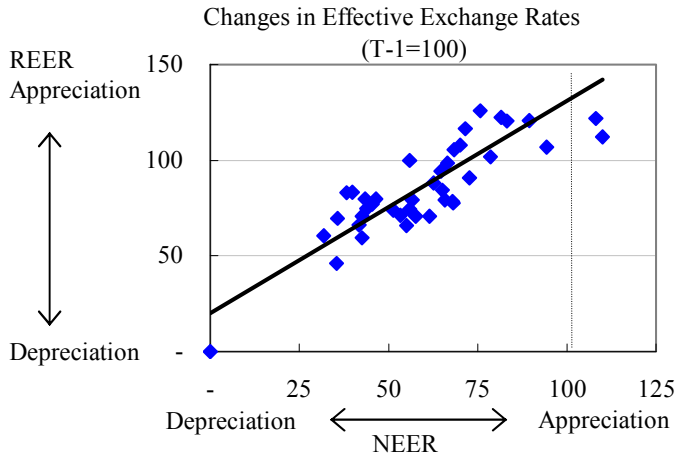
- Decisive disinflation tends to lead to a quick rebound in growth. Countries that were experiencing low growth and high inflation tended to experience higher growth when they reduced inflation. For other cases, growth was either unaffected or reduced somewhat, but there is no indication that the impact of anti-inflation policies on growth was strong. However, countries which failed to reduce inflation tended to see lower growth after some time.



Note 1: Changes in real growth are measured by the difference in a GDP growth between time  $t$  (when inflation reached 20-40 percent) and time  $t+2$  (two years after).

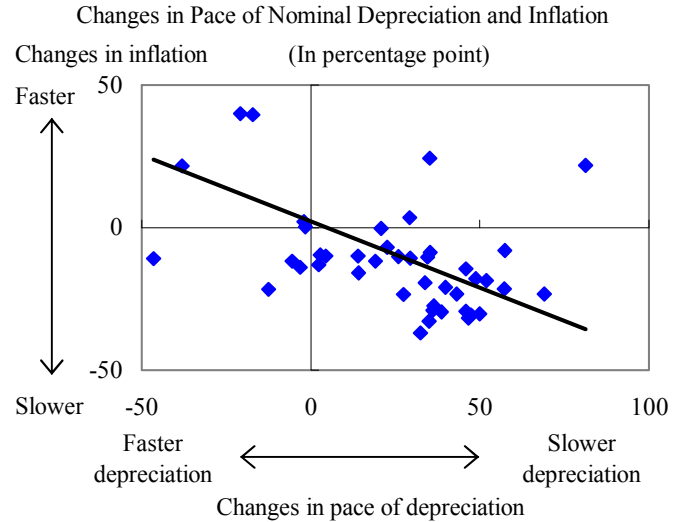
Note 2: Changes in inflation is measured by the difference in a 12-month inflation between the two periods;  $t$  and  $t+2$ .

- For most countries, the exchange rate was not explicitly used to anchor domestic prices. The nominal exchange rate was allowed to depreciate significantly, and may even allow depreciation in real terms. However, the pace of depreciation slowed down significantly for most countries two years after inflation reached 20-40 percent, which often reinforce the move to lower inflation.<sup>15</sup>



Note 1: REER is measured at the end of year t+1 assuming the rate =100 at the end of year t-1.

Note 2: NEER is measured at the end of year t+1 assuming the rate =100 at the end of year t-1.



Note 1: Changes in nominal depreciation are measured by the difference in annual changes (in percent) in NEER between time t (when inflation reached 20-40 percent) and time t+2 (two years after).

Note 2: Changes in inflation is measured by the difference in a 12-month inflation (in percent) between the two periods; t and t+2.

## F. Conclusions

14. **Ethiopia's recent rise of inflation is unusual because it does not coincide, as in the past, with a negative supply shock but, instead, high growth.** While Ethiopia has often been affected by domestic supply shocks, it has rarely experienced high inflation driven by demand factors.

15. **Both domestic and external factors explain recent inflation.** While estimating the precise impact of each factor is technically difficult, given data constraints and continuing structural changes, inflation rates in excess of those experienced by trading partners and in the region point to some Ethiopia-specific factors.

16. **High money and credit growth in recent years has likely played a key role in increasing demand and prices.** More recently, inflation expectations seem to play an increasing role as prices are steadily accelerating. By contrast, the prices of imported goods have played a limited role as (i) the bulk of Ethiopia's imports are manufactured and intermediate goods, whose prices in world markets have increased only modestly; (ii) the

<sup>15</sup> Fischer et al. (2002) suggest that for high inflation cases (i.e., inflation above 100 percent) an exchange rate anchor can reduce the output cost of disinflation.

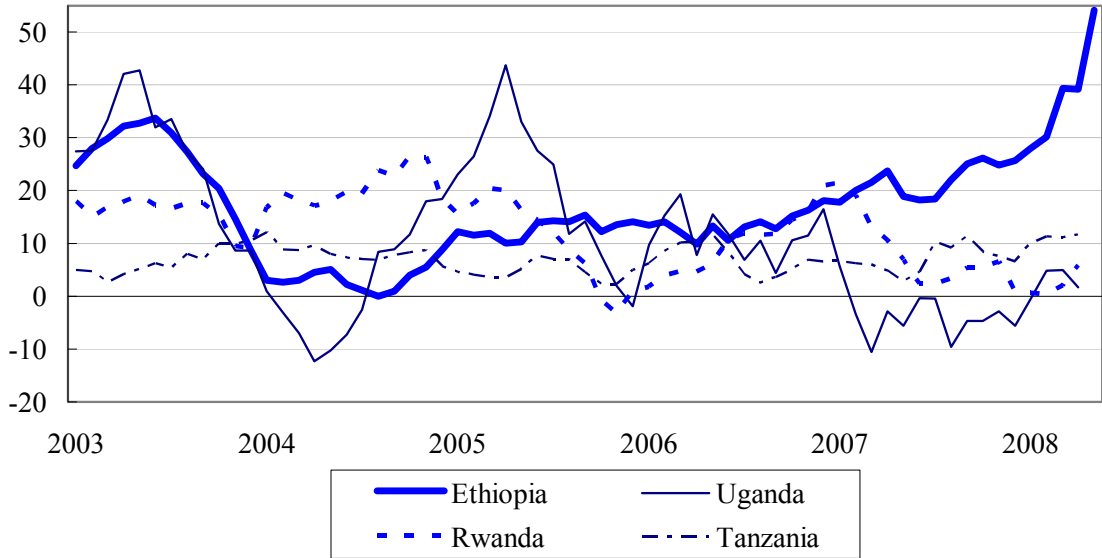
share of imported commodities (for which world prices accelerated in recent years) is small; and (iii) the impact of rising oil prices has been mitigated through lags in adjusting domestic retail prices.

17. **The prices of exportable agricultural products have played a significant role in driving up domestic prices of some food items as they have been converging to higher (and rising) world prices.** This process is in principle desirable as it raises incomes of rural households through trade of their outputs, and price rises stemming from it should come to an end when international prices are reached. However, policy-makers need to pay careful attention if prices for these products begin to exceed their international level as this would indicate that domestic factors push prices beyond their competitive levels.

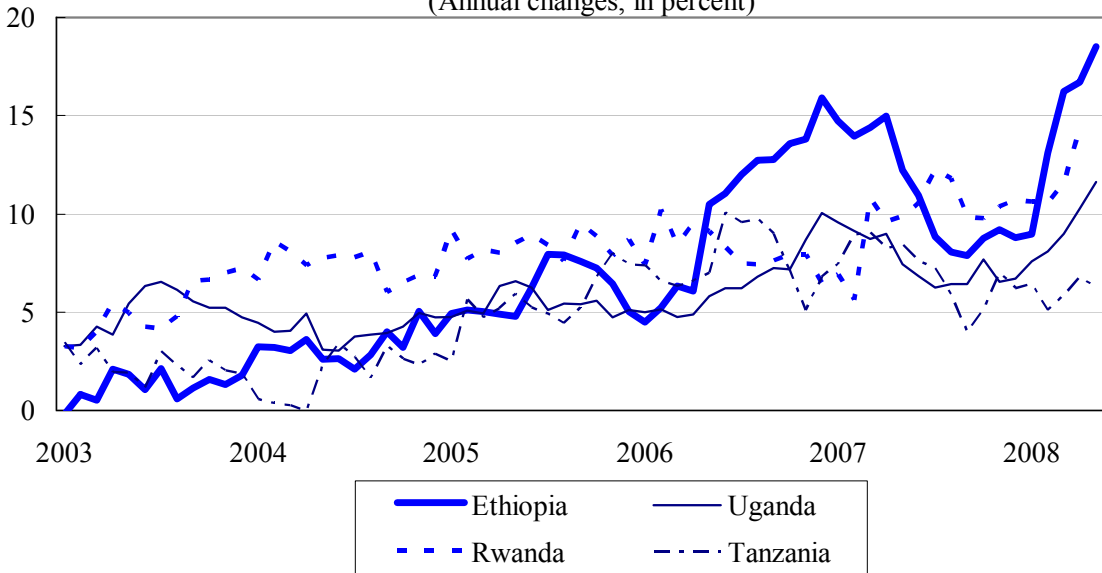
18. **International experience suggests that, as soon as inflationary expectations begin to emerge, a significant tightening of macroeconomic policies is essential.** In doing this, a proper policy mix between fiscal and monetary policies is key to avoid crowding out the private sector and affecting long-term growth potential.

Ethiopia: Regional Inflation Comparison

Food CPI in Ethiopia's Neighboring Countries  
(Annual changes, in percent)

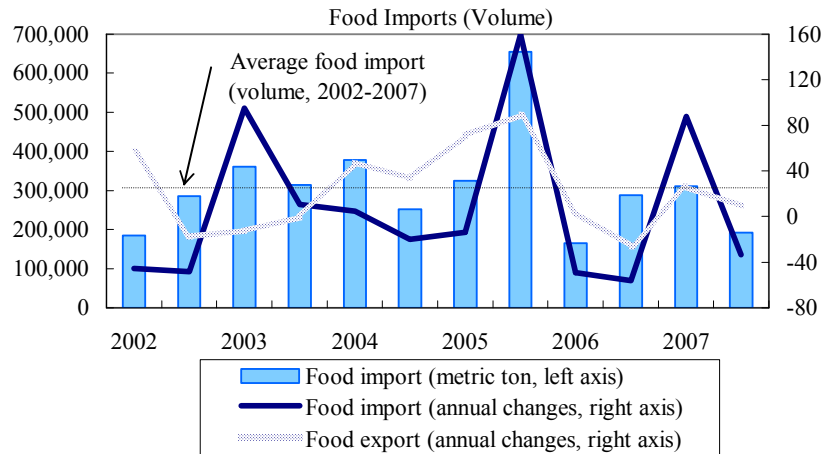
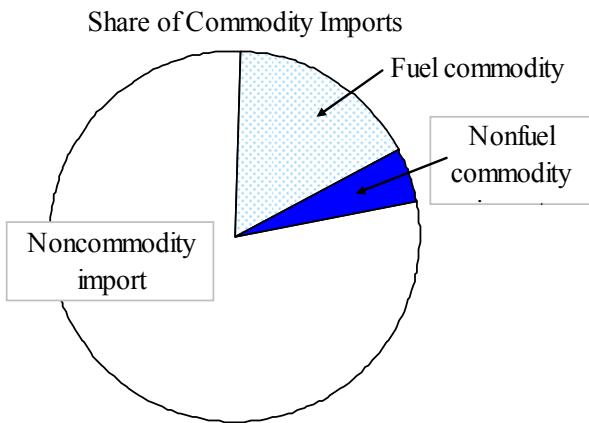
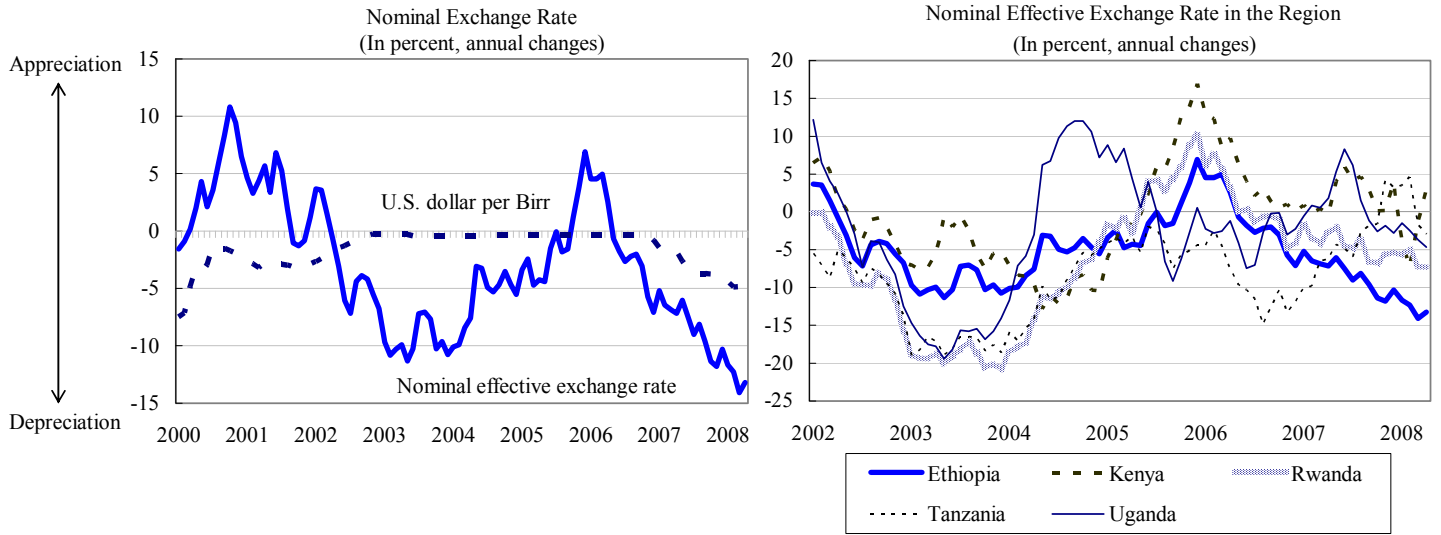


Nonfood CPI in Ethiopia's Neighboring Countries  
(Annual changes, in percent)

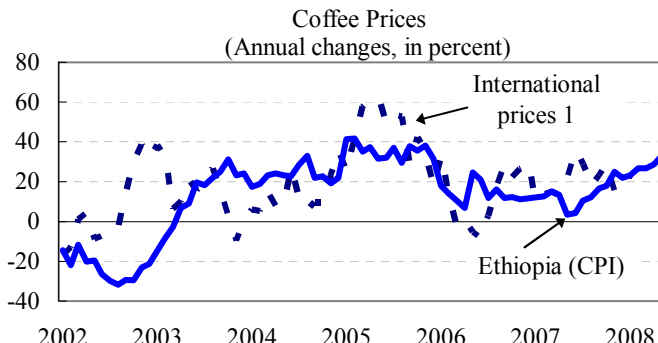
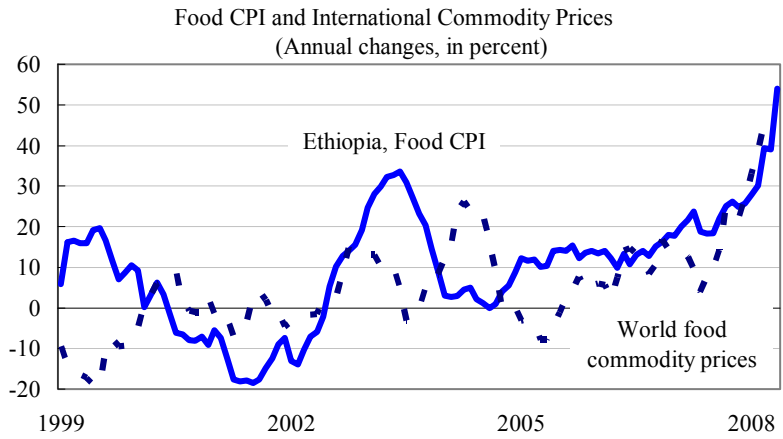




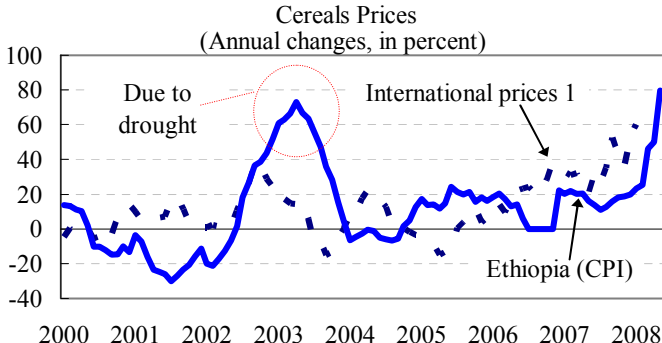
Ethiopia: Exchange Rate and External Developments



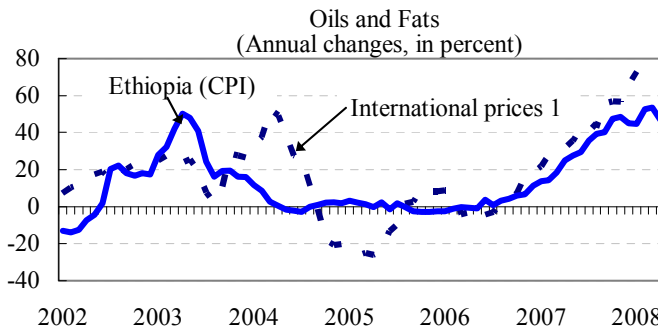
Ethiopia: Food Inflation and World Food Commodity Price Developments



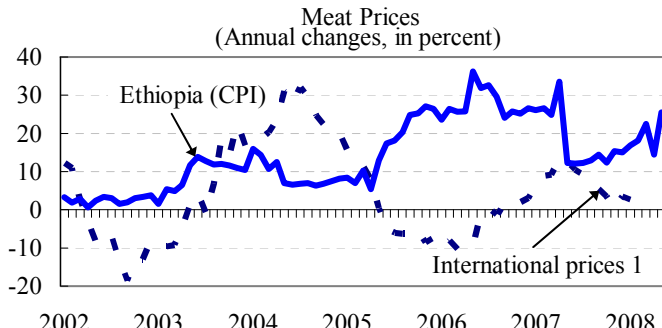
1. International coffee price index, including other mild arabicas and robusta



1. International cereals price Index, including wheat, maize (Corn), rice, and barley

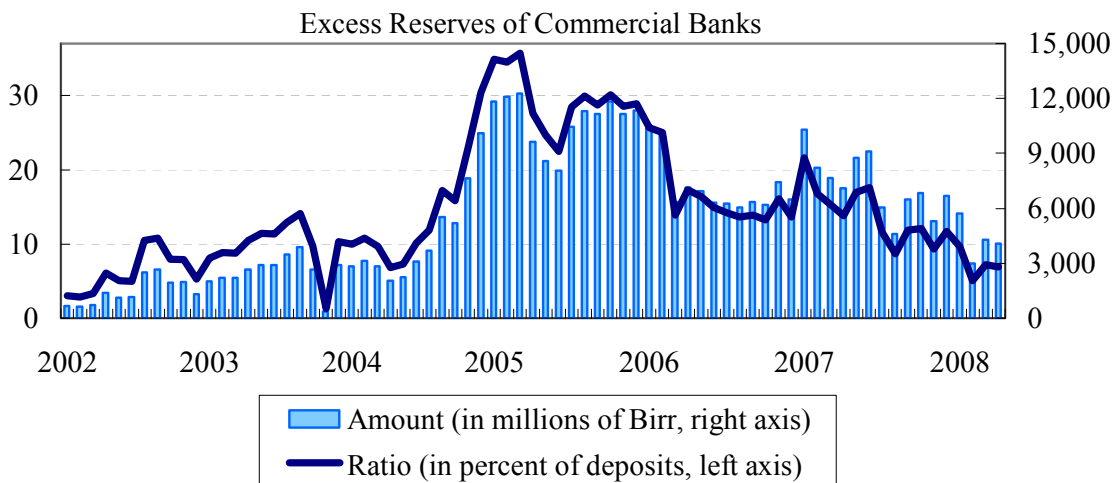
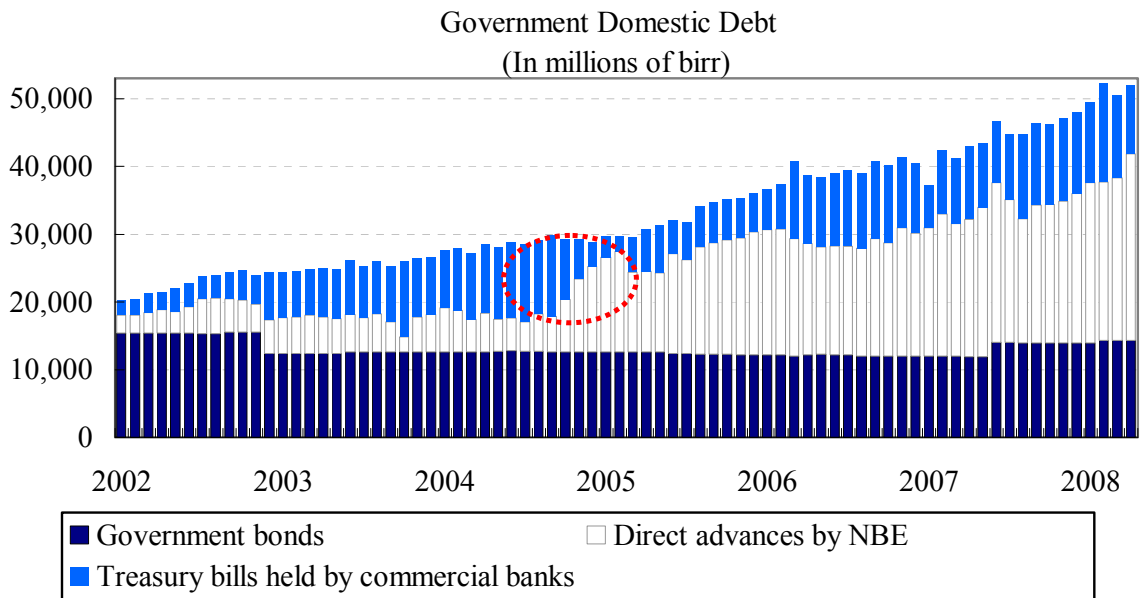
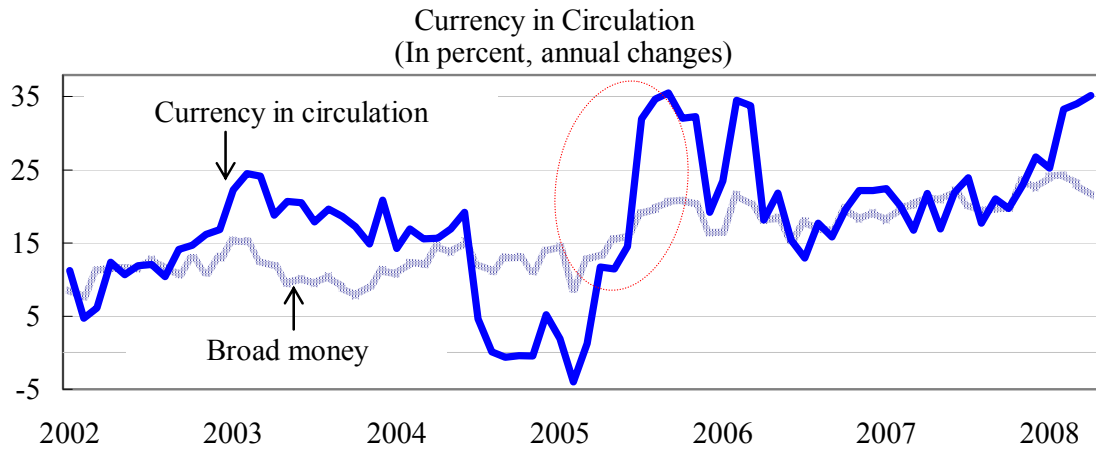


1. International vegetable oil index, including soybean, soybean meal, soybean oil, coconut oil, palm oil, sunflower oil, olive oil, fishmeal, and groundnut price indices



1. International meat price index, including beef, lamb, swine (pork), and poultry price indices

Ethiopia: Monetary Developments



High Inflation in Developing Countries					
(Consumer price index, annual changes, in percent)					
	(Year of time t)	T-1	T	T+1	T+2
Afghanistan, I.R. of	2003	5.1	24.1	13.2	12.3
Albania	1997	12.7	33.2	20.6	0.4
Argentina	2002	(1.1)	25.9	13.4	4.4
Burkina Faso	1994	0.6	24.7	7.8	6.1
Burundi	1996	19.4	26.4	31.1	12.5
Cameroon	1995	12.7	25.8	3.6	4.1
Central African Rep.	1994	(2.9)	24.5	19.2	3.7
China, P.R.: Mainland	1994	14.7	24.1	17.1	8.3
Costa Rica	1995	13.5	23.2	17.5	13.2
Côte d'Ivoire	1994	2.1	26.0	14.1	2.7
Czech Republic	1993	11.1	20.8	10.0	9.2
Dominican Republic	2003	5.2	27.4	51.5	4.2
Ecuador	1997	24.4	30.6	36.1	52.2
Equatorial Guinea	1994	5.5	31.8	19.9	4.5
Eritrea	2003	16.9	22.7	25.1	12.5
Gabon	1994	0.6	36.1	10.0	4.5
Ghana	2000	12.4	25.2	32.9	14.8
Guinea	2005	17.5	31.4	34.7	23.4
Haiti	2003	9.9	39.3	21.2	15.8
Honduras	1994	10.7	21.7	29.5	23.8
Hungary	1995	18.9	28.3	23.6	18.3
Iran, I.R. of	1999	18.1	20.1	12.6	11.4
Iraq	2003	19.3	35.1	7.8	38.5
Kyrgyz Republic	1999	10.4	35.9	18.7	6.9
Lao People's Dem. Rep	1997	19.1	19.5	90.1	128.4
Madagascar	1994	10.0	39.0	49.0	19.8
Malawi	1998	9.1	29.8	44.8	29.6
Mali	1994	(0.6)	24.3	11.6	6.5
Mexico	1995	7.0	35.0	34.4	20.6
Moldova	1999	7.7	39.3	31.3	9.8
Myanmar	2001	(1.7)	34.5	58.1	24.9
Niger	1994	(0.3)	35.5	10.9	5.3
Paraguay	1994	18.3	20.6	13.4	9.8
Russia	1998	14.8	27.7	85.7	20.8
Senegal	1994	(0.7)	32.1	8.1	2.8
Serbia, Republic of	1998	18.3	30.0	41.1	70.0
Sierra Leone	1998	14.6	36.0	34.1	(0.9)
Slovak Republic	1993	10.0	23.0	13.3	10.0
Suriname	1998	7.3	19.1	98.7	58.6
Tanzania	1993	21.9	23.6	37.1	24.0
Togo	1994	(0.1)	35.3	15.8	4.6
Ukraine	1999	10.6	22.7	28.2	12.0
Venezuela, Rep. Bol.	1993	31.4	38.1	60.8	59.9
Zambia	1996	34.9	43.1	24.4	24.5
Zimbabwe	1998	18.8	31.3	58.0	55.6

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## II. INCOME VELOCITY OF MONEY IN ETHIOPIA<sup>16</sup>

### A. Introduction

1. **Understanding velocity is especially important when financial markets are underdeveloped and choices of monetary instruments are limited.**<sup>17</sup> With interest rates ineffective, monetary operations largely depend on targeting money aggregates. To set appropriate targets, a reasonable velocity path is vital. In Ethiopia, a working assumption in the past has been that velocity is declining by 2 percent each year, reflecting monetization and financial deepening (EDRI (2007)). This allows the setting of money growth targets that are higher than the desired growth rates of nominal GDP.

2. **Recent inflation in Ethiopia, however, raises serious doubts about the above approach.**<sup>18</sup> For 2004/05–2006/07, inflation consistently exceeded the levels implied by the differentials between broad money and real GDP growth. While broad money growth undershot levels that are consistent with single-digit inflation, assuming declining velocity, inflation averaged over 14 percent and was on average 7 percentage points higher than the differentials between broad money growth and real GDP growth (Table 1). This “puzzle” suggests a need to carefully examine the movements of the income velocity of money, particularly where inflation is high.

Table 1. Ethiopia: Broad Money Growth and Inflation  
(Percent)

	2004/05	2005/06	2006/07
Policy assumptions			
1 Real GDP growth rate	12.6	11.6	11.4
2 Change in Velocity	-2.0	-1.9	-1.9
3 Inflation target	7.0	7.0	7.0
4 Implied money growth target	21.6	20.5	20.3
Outcome			
5 Money growth	19.6	17.4	19.7
6 Inflation (eop)	13.0	11.6	17.7
7 Change in velocity	2.73	5.35	8.41
Memorandum item:			
Velocity	2.63	2.77	3.01

Sources: EDRI (2007) and IMF staff.

<sup>16</sup> The main contributor to this chapter is Zaijin Zhan.

<sup>17</sup> Income velocity of money in this paper is defined as the ratio of nominal GDP to money aggregates (broad money or narrow money).

<sup>18</sup> Unless otherwise noted, all data for Ethiopia are for fiscal years from July 8 to July 7 (e.g., 2007=2006/07).

3. **The quest for predictable movements in velocity is closely linked to studies on the determinants of and shifts in money demand.**<sup>19</sup> Studies in developing countries generally find evidence for the stability of money demand, unit income elasticity, and a statistically significant impact of inflation on money demand. In the case of Ethiopia, Sterken (2004) examined transactions demand for narrow money (M1) for 1966–94. His findings confirmed that money demand was stable and inflation had a serious effect, but the estimated income elasticity was greater than one, which he attributed to unrecorded black market activities.

4. **However, there is considerable skepticism about the validity of these studies of velocity/money demand in developing countries.** Applying a similar approach in Ethiopia is particularly challenging because since independence Ethiopia has gone through a number of political and economic regime changes as well as numerous exogenous shocks (e.g., periodic droughts). Moreover, the lack of high-frequency data limits model specifications.

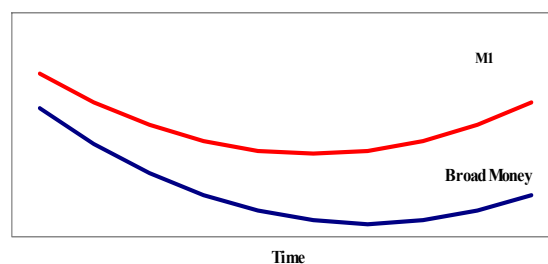
5. **Recognizing the difficulties associated with time-series regressions, this paper adopts a less formal approach to studying velocity in Ethiopia.** In particular, it relies on cross-country comparisons to put Ethiopia's experience in a global context, and compare recent velocity movements in Ethiopia with trends in peer countries.

6. **The paper is organized as follows.** Section B examines how velocity evolves in the long run. Section C studies what affect velocity in low-income countries. Section D applies the discussion to Ethiopia. Section E concludes.

## B. A Global View of Velocity Over Long Term

7. **Bordo and Jonung (1987) argue that over time velocity should form a U-shaped curve (Figure 1), reflecting two opposite forces:** monetization and financial innovation (emergence of money substitutes). Monetization—the rise of the monetary economy at the expense of barter—would increase demand for money. On the other hand, with modern financial innovations, complex transactions might require less money. The relative balance of these two forces would create velocity curves with three stages:

Figure 1. Income Velocity of Money



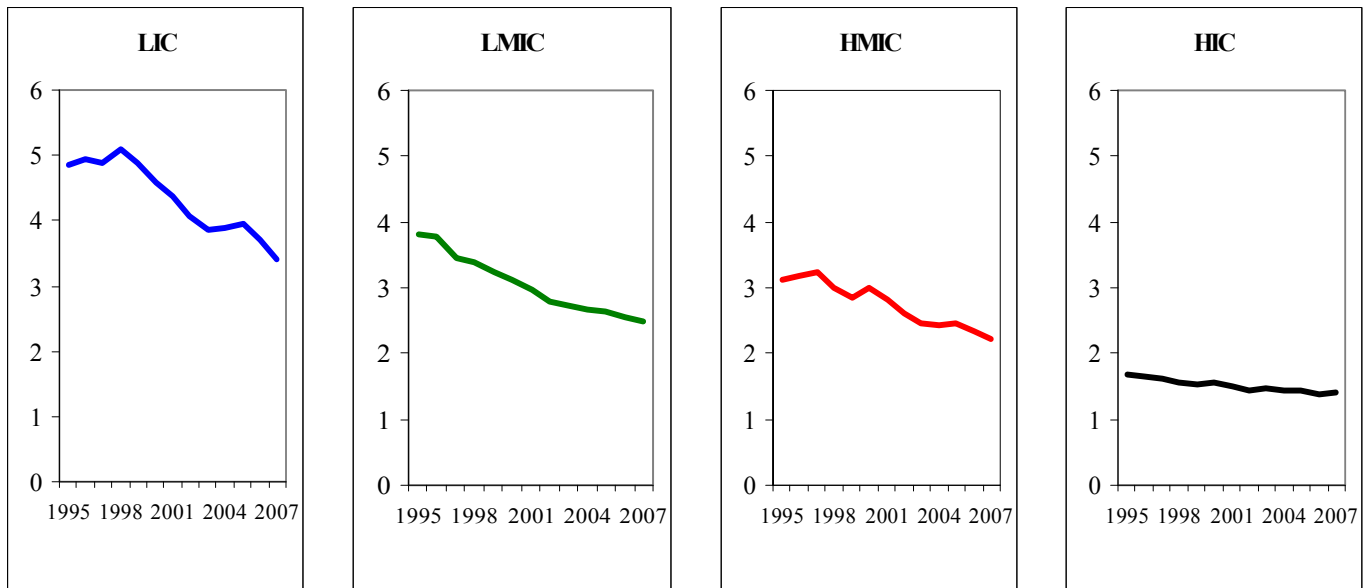
<sup>19</sup> Money demand for a given income level is inversely related to velocity. In the short term, however, it is difficult to separate changes in velocity due to money supply and changes due to money demand. For example, a sudden increase in money supply would at first reduce velocity but over time higher inflation will reduce money demand and lead to an increase in velocity.

- Stage 1: Velocity falls as monetization dominates.
- Stage 2: Velocity is flat, with the two forces roughly balanced.
- Stage 3: Velocity rises when financial innovation dominates.

8. **Bordo and Jonung further argue that the velocity turning point for narrow money (M1) should come earlier than for broad money (BM) because of the switch from non-interest-bearing checking accounts to interest-bearing saving and time deposit accounts.**

9. **Following their methodology, velocity curves by income groups are constructed using data from 1995 to 2007 (Figure 2).** Based on 2006 per capital GNI, IMF member countries/areas with complete GDP and money aggregates series are sorted into four groups: low-income countries (LICs); low-middle-income countries (LMICs); high-middle-income countries (HMICs); and high-income countries (HICs). Excluded from the sample are countries with hyperinflation, defined as 12-month inflation that exceeds 50 percent at any point.<sup>20</sup> The results are broadly consistent with Bordo and Jonung's findings for earlier data (1952–1982).

**Figure 2. Broad Money Velocity by Income Groups (1995–2007)**



- **BM velocity generally declines over time.** During the sample period, 1995–2007, average BM velocity for every income group slopes downward. The cumulative

<sup>20</sup> See appendix I for the countries used in calculation for each income group.



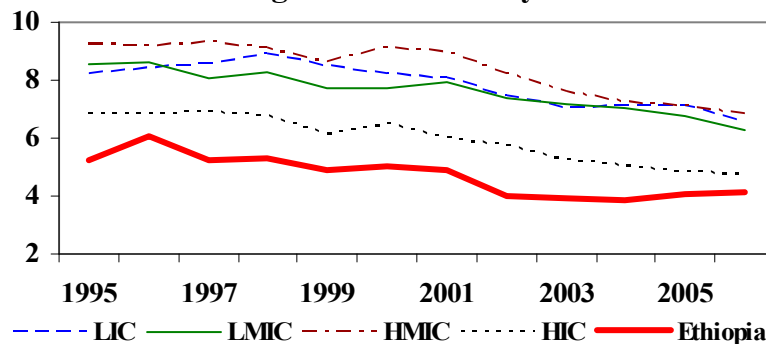
declines range from 17 to 35 percent. Decline is broad based; only 18 of 137 countries in the sample had higher velocity at the end of the 13-year period.

- **BM Velocity declines more slowly as countries become more developed.** This is consistent with the hypothesis that when a country reaches a more advanced stage, modern financial innovations and the increasing importance of nonbank financial institutions begin to counteract the impact on money demand and velocity of financial deepening.
- **Notwithstanding the common trends, the levels of BM velocity vary widely across countries (Table 2).** Even within an income group, cross-country variations are very significant, probably because of circumstances that are unique to each country.
- **M1 velocity, although also sloping downward, is not strictly correlated with income (Figure 3).** While the average is higher for HMICs than for LICs and LMICs, which supports the possibility of reversal of the velocity curve when a country becomes more advanced, the HICs actually have the lowest average M1 velocity of the four income groups. This probably reflects two reasons. One, the shift from checking to saving deposits may not be as significant as Bordo and Jonung have expected because more banks now pay interest on both. Second, since the introduction of Euro, M1 data are not available for Euro countries, which being at the high end of the development ladder, are more likely to see flat or even rising velocity.

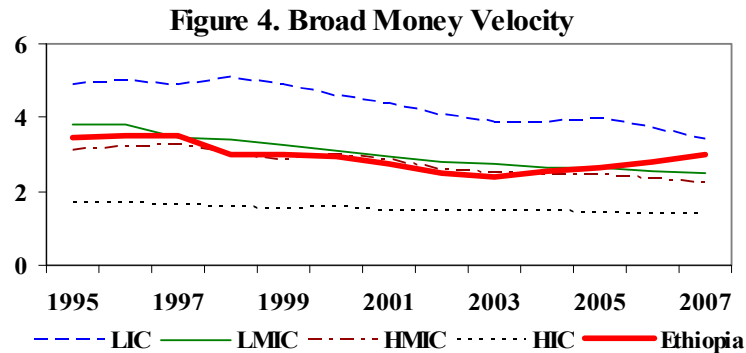
Table 2. Broad Money Velocity in 2007

	Observations	Average	Maximum	Minimum
Ethiopia	...	3.01	...	...
LIC	37	3.4	6.3	0.8
LMIC	43	2.5	9.3	0.7
HMIC	30	2.2	12.3	0.4
HI	27	1.4	3.2	0.3

Figure 3. M1 Velocity



10. For Ethiopia, BM velocity is relatively low compared with the LIC average (Figure 4). Before the recent rise, it was more in line with the LMIC average. While this level differential could be caused by many factors, one possibility is that nominal GDP is more under-recorded than in other LICs.



11. **Rising BM velocity in Ethiopia since 2003 contrasts with the trend in other countries and is also a reversal to its own trend in earlier years.** While most countries in all four income groups experienced a steady decline throughout the sample period, velocity in Ethiopia bottomed out in 2003 and has sloped upward since.

12. **The low M1 velocity in Ethiopia relative to other countries is even more striking (Figure 3).** Since compared with BM, M1 is more closely linked to transactions demand for money, it supports the idea that economic activities are significantly under-recorded. M1 velocity has been relatively stable, though showing a slight upward slope in recent years.

### C. Which Variables Affect Velocity in Peer Countries?

13. **Given that a country's development level has a significant impact on the level and movements of BM velocity, the discussion of factors affecting velocity restricts its attention to LICs** because their economic structure is more comparable to Ethiopia's.

#### Opportunity cost of holding money (inflation)

14. **While holding money facilitates transactions, it has costs—among them inflation, which reduces the purchasing power of money.** It is thus to be expected that high inflation will reduce money demand and, in turn, lead to a higher velocity (money changes hands faster). This expectation is supported by data for LICs, which also seem to support the idea of adaptive behavior: people make decisions on the current money holding in part by inferring the current period inflation from the experience in the previous period. For example, a positive correlation between velocity and inflation is confirmed by a plot of yearly changes in velocity against inflation one year earlier for all 37 LICs for 1996–2007 (Figure 5) and on a more smoothed basis using average velocity change and inflation for the more recent period of 2003–07 (Figure 6).

Figure 5. Velocity Change and Lag Inflation (%)

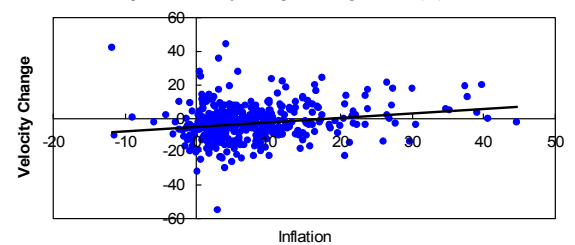
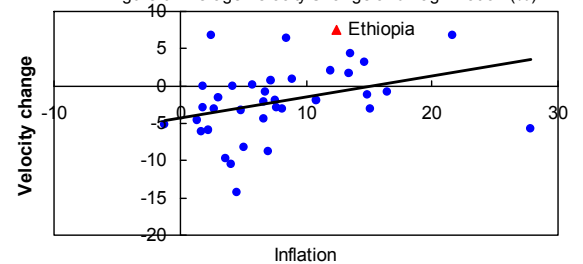


Figure 6. Average Velocity Change and Lag Inflation (%)



15. **Simple regression analysis, based on the underlying data for Figure 5, suggests that a 1 percentage point increase in inflation increases velocity by 0.46 percent one year later.** The implication is that, on average, when inflation exceeds about 14 percent, velocity is more likely to rise than fall. More generally, when inflation rates go up, the probability of rising velocity goes up even faster. (Table 3).

Table 3. Inflation and Velocity

Inflation Cutoff (%)	5	10	15	20	30
Prob. of rising velocity					
Inflation>Cutoff	0.37	0.47	0.52	0.58	0.70
Inflation<Cutoff	0.30	0.28	0.31	0.32	0.33

16. **Velocity rising persistently for several years is rare.** During the recent four years when velocity was rising in Ethiopia, only Haiti saw the same phenomenon. For 1995–2007, among all 37 LICs sampled, only five experienced rising velocity for four consecutive years, and only seven for three consecutive years (Table 4). Most of these countries had double-digit inflation during the period when velocity was rising, and, except for Kenya and Chad, all countries had far higher inflation when velocity was rising than the averages for the whole sample period. When velocity in these countries finally turned downward, most had made great strides in reducing inflation, often to single digits.

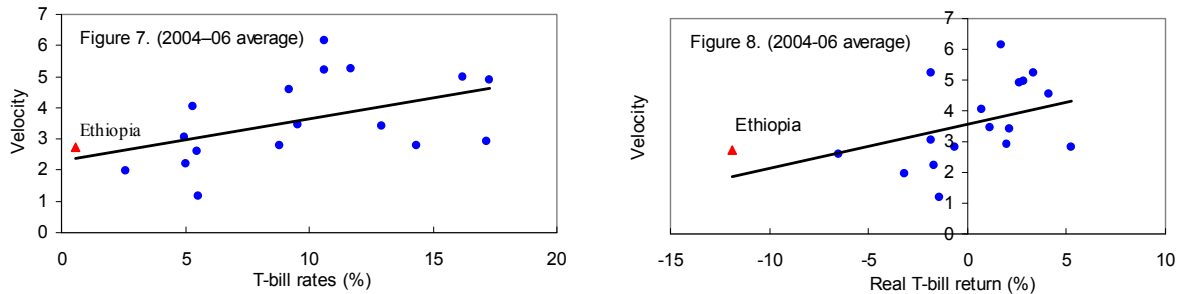
Table 4. Inflation and Broad Money Velocity

Countries with Rising Velocity	Years	Period	Inflation			Prior to Declining Velocity
			Average	Maximum	Ave. (95-07)	
Four consecutive years						
Ethiopia	2004-07	2003-07	12.5	23.5	5.9	...
Haiti	2004-07	2003-07	21.7	37.8	15.9	...
Kenya	1998-01	1997-00	8.7	12.0	9.1	1.6
Tanzania	1996-99	1995-98	17.2	26.8	9.0	7.0
Central African Republic	2000-03	1999-02	3.9	9.1	2.4	-1.3
Three consecutive years						
Chad	2003-05	2002-04	0.9	12.6	3.9	1.8
Kyrgyz Republic	1999-01	1998-00	22.1	39.9	14.7	1.6
Madagascar	2003-05	2002-04	15.1	27.3	12.1	11.5
Mali	1997-99	1996-98	2.3	3.0	2.4	-1.3
Mauritania	2004-06	2003-05	8.3	16.1	6.7	8.9
Niger	1996-98	1995-97	4.7	6.2	2.7	3.4
Papua New Guinea	1998-00	1997-99	7.5	12.5	6.9	10.0

### Return on alternative investments

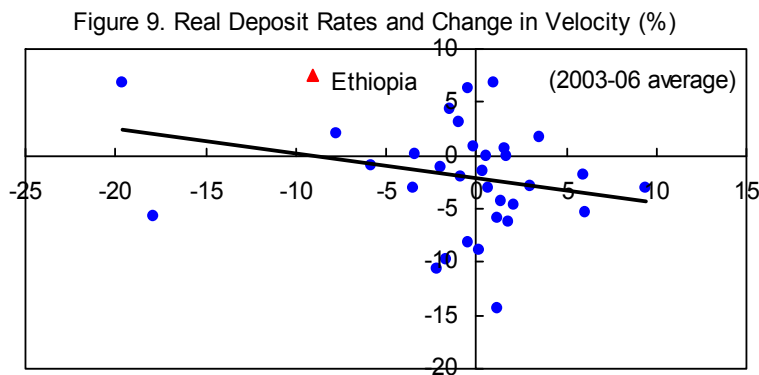
17. **Existing literature has also studied velocity in the context of portfolio choice.** Under this assumption, the opportunity cost of holding money can also be approximated by the return on holding alternative forms of wealth. While in financially more developed

countries portfolio choices are quite wide, in most LICs, there are not many alternatives. T-bills are probably the most widely available investment vehicle with little credit risk. As expected, velocity increases with T-bill rates, which means lower money demand (Figure 7). The positive relation holds if nominal T-bill rates are replaced with real returns, defined as nominal rates minus CPI inflation (Figure 8). Ethiopia has the lowest nominal T-bill rate among all 18 LICs for which data are available. Together with double-digit inflation, this has driven the real return on T-bills in Ethiopia deep into negative territory—almost 6.5 percentage points below the next lowest one.



### Return on holding deposits

18. **Velocity and money demand are also affected by the change in returns for holding money itself.** Unlike M1, which mainly serves as the medium of exchange, BM includes a large amount of saving deposits, which compete with other types of investments as a store of value. Plotting average real deposit rates against the average velocity change for 2003–06 suggests that a higher real return on deposits causes velocity to decline and money demand to increase (Figure 9). In recent years, high inflation in Ethiopia has put a significant dent in the real return of saving deposits. Only two other LICs, Haiti and Guinea, had lower real returns, and both experienced double-digit inflation and rising velocity.



### D. Ethiopia's case

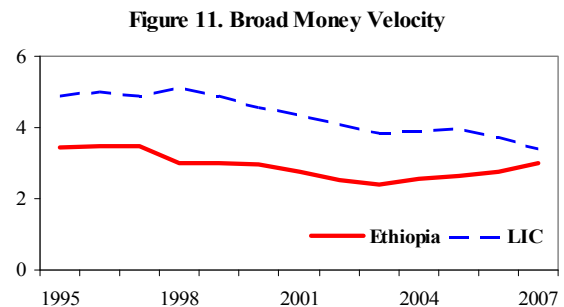
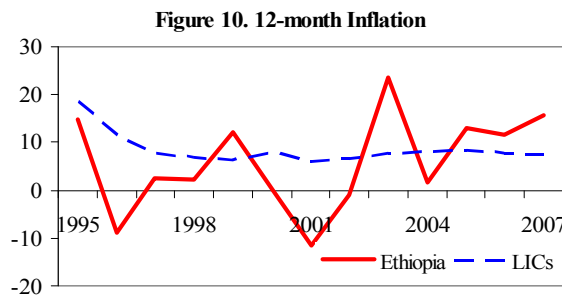
19. **Against this background, high inflation and the associated negative real interest rates seem to have reduced the incentives for holding money in Ethiopia and led to an**

**increase in velocity in recent years (Table 5).** Inflation in Ethiopia has generally been modest, spiking temporarily when harvests were poor. However, since 2004, inflation has largely stayed in double digits and continued to rise despite favorable harvests. Meanwhile, average inflation in LICs was low and continued to decline. The real interest rate on saving deposits in Ethiopia was about 8 percentage points below the LIC average.

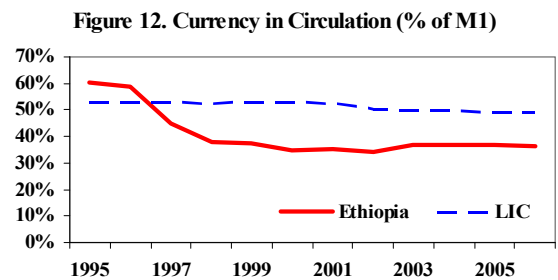
Table 5. Ethiopia vs. Other LICs  
(04-07 averages in percent unless otherwise noted)

	Velocity Change	Inflation	Change in Inflation (04-07, cumulative, in percentage points)	Real return	
				T-bill (2003-06)	Saving deposit (2003-06)
Ethiopia	5.74	10.50	13.97	-11.90	-9.02
LICs	-1.96	7.89	-0.74	-0.17	-1.06
Impact on velocity	...	up ↑	up ↑	down ↓	up ↑

20. **The central role of inflation in explaining rising velocity in Ethiopia is more evident when the time series is longer** (Figure 10 and 11). Before 2003, velocity in Ethiopia followed the LIC downward-sloping trend as its inflation rate was broadly below the LIC average. In 2003, inflation in Ethiopia exceeded the LIC average for the first time since 1999 and velocity began to move up, deviating from the LIC trend. The divergence continued after 2003 as inflation in Ethiopia stayed above the LIC average.

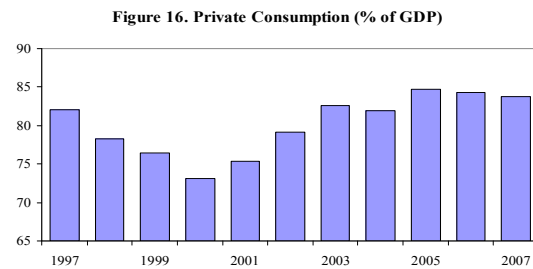
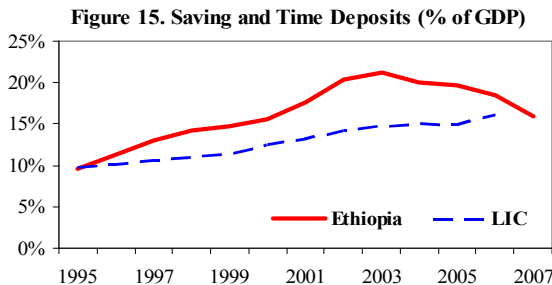
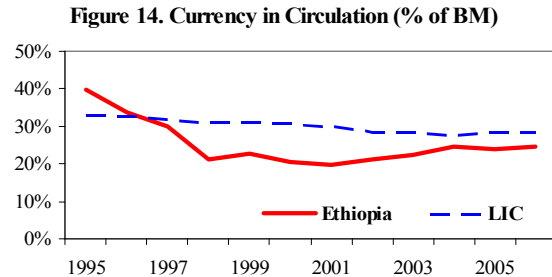
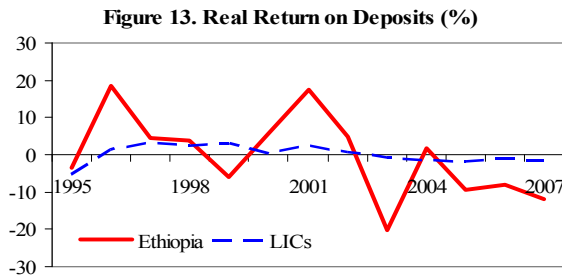


21. **The components of broad money reveal clues about why high inflation in recent years has led to a decline in money demand and rising velocity.** With inflation persistently high, holding money for transactions became increasingly costly as its purchasing power eroded. Almost all demand deposits earn no interest in Ethiopia and daily transactions can be handled more easily by cash; high inflation would certainly favor cash over demand deposits. Indeed, within M1, there has been a small but steady increase in the

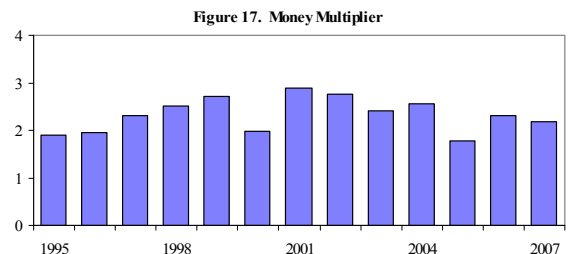


share of currency in circulation (CIS), from 34 percent in 2002 to 36 percent in 2006 (Figure 12). The small magnitude of the change could be explained by the fact that Ethiopia was already a heavily cash-based economy.

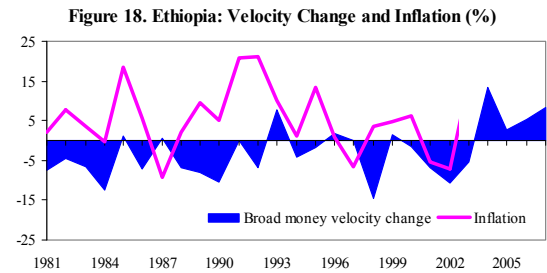
22. **Inflation also eroded the credibility of using money as a store of value.** Because the real interest rate on deposit accounts was significantly negative and declining (Figure 13), people have been switching to consumption or alternative investments to hold their wealth. Consequently, the disappearance of saving deposits has led to a noticeable rise of CIS as a share of BM (Figure 14). The ratio of saving and time deposits to nominal GDP has been declining since 2002 (Figure 15). With alternative financial investment in Ethiopia limited, high inflationary expectations appear to have caused a shift away from future consumption (savings) toward current consumption (Figure 16).



23. **The decline in money multiplier, which accompanied rising velocity, has reduced the effectiveness of monetary policy** (Figure 17). As persistent high inflation pushed people away from bank deposits in recent years, the money multiplier reversed its rising trend and has headed downward. Thus, a given size intervention by the monetary authorities would have less impact on broad money growth and inflation.

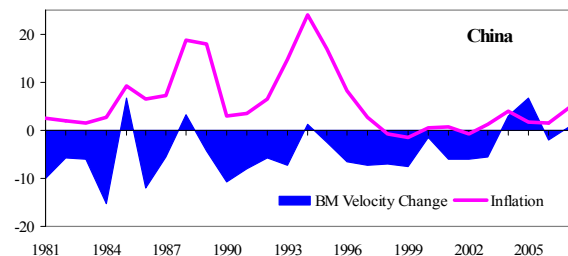


24. **Ethiopia's shift to rapid growth and likely structural breaks in economic performance do not appear to account for the switch in velocity trend.** In almost all years over the past 25 years, when velocity was rising, inflation was high or rising (Figure 18). The experience in other fast growing economies in Africa and Asia also confirm a robust correlation between inflation and velocity (Box 1).

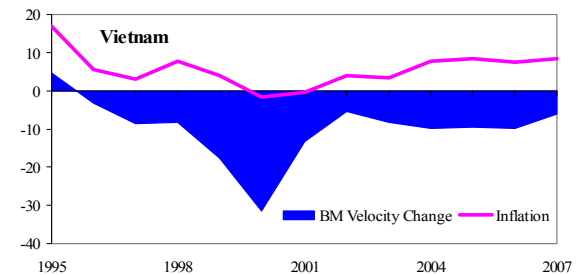


### Box 1. Inflation and Velocity

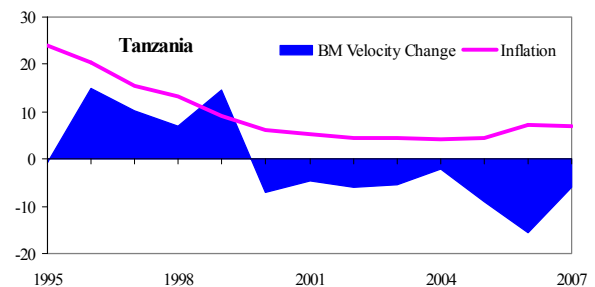
Movements of velocity and inflation in China, one of fastest growing transition economies, are positively correlated. Over the last three decades, China saw five noticeable spikes of inflation: 1984–85, 1987–88, 1993–94, 2003–04, and 2006–07. Without exception, they were all accompanied by rising broad money velocity starting in the second year of the inflation surge.



The experience in Vietnam, another fast-growing Asian transition economy, although not as clear-cut as China's, is also consistent with the view that inflation tends to reduce demand for money. When Vietnam experienced double-digit inflation in the mid-1990s, broad money velocity rose. Since then, velocity has turned downward. However, the size of yearly decline in velocity seems to be negatively correlated with inflation. When inflation is high, the size of decline is smaller and vice versa.



Successful disinflation in Tanzania, a strong growth performer in Africa, also put velocity back on a downward path. In the second half of the 1990s, Tanzania experienced a long period of double-digit inflation and strong growth. During this period, broad money velocity increased every year. Just before the turn of the century, inflation in Tanzania was brought under control and fell to single digits. One year later, velocity started to decline and has continued to do so as inflation remains relatively low. Growth remained strong after inflation was reduced.



## E. Conclusions

25. **Experience for Ethiopia and a broad range of countries point to high inflation being associated with rising velocity.** Therefore, looking ahead, conservative money growth targets will be needed to offset the impact of rising velocity caused by Ethiopia's high inflation. A monetary program based on a declining velocity or even a neutral assumption on velocity (no change) is likely to continue to lead to excess money supply and higher inflation than targeted. If the authorities are to achieve their goal of single-digit inflation, a much more conservative money growth taking into account the recent experience of rising velocity is called for.

26. **Measures to move real interest rates to positive territory would also help restore the credibility of money as a store of value and create an environment for more effective monetary operations.** Moreover, healthy growth of bank deposits will help promote financial intermediation and meaningful interest rates would help allocate the economy's resources more effectively.



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## Sample Countries in Each Income Group

Low Income	Low-Middle Income	High-Middle Income	High Income
Bangladesh	Albania	Argentina	Antigua and Barbuda
Benin	Algeria	Belize	Australia
Burkina Faso	Armenia	Botswana	Bahamas, The
Burundi	Azerbaijan, Rep. of	Brazil	Bahrain, Kingdom of
Cambodia	Bhutan	Chile	Barbados
Central African Rep.	Bolivia	Costa Rica	Brunei Darussalam
Chad	Cameroon	Croatia	Canada
Comoros	Cape Verde	Dominica	China,P.R.:Hong Kong
Côte d'Ivoire	China,P.R.: Mainland	Equatorial Guinea	Cyprus
Eritrea	Colombia	Gabon	Czech Republic
Ethiopia	Congo, Republic of	Grenada	Denmark
Gambia, The	Djibouti	Hungary	Estonia
Ghana	Dominican Republic	Kazakhstan	Euro Area
Guinea	Egypt	Latvia	Iceland
Haiti	El Salvador	Lebanon	Japan
India	Fiji	Libya	Korea
Kenya	Georgia	Lithuania	Kuwait
Kyrgyz Republic	Guatemala	Malaysia	Malta
Madagascar	Guyana	Mauritius	New Zealand
Mali	Honduras	Mexico	Saudi Arabia
Mauritania	Iran, I.R. of	Oman	Singapore
Mongolia	Jamaica	Panama	Sweden
Mozambique	Jordan	Poland	Switzerland
Nepal	Kiribati	Seychelles	Taiwan Prov.of China
Niger	Lesotho	Slovak Republic	Trinidad and Tobago
Nigeria	Macedonia, FYR	South Africa	United Kingdom
Pakistan	Maldives	St. Kitts and Nevis	United States
Papua New Guinea	Moldova	St. Lucia	
Rwanda	Morocco	St. Vincent & Grens.	
Senegal	Namibia	Uruguay	
Solomon Islands	Nicaragua		
Tanzania	Paraguay		
Togo	Peru		
Uganda	Philippines		
Vietnam	Samoa		
Yemen, Republic of	Sri Lanka		
Zambia	Swaziland		
	Syrian Arab Republic		
	Thailand		
	Tonga		
	Tunisia		
	Ukraine		
	Vanuatu		

### III. EXTERNAL STABILITY AND COMPETITIVENESS IN ETHIOPIA<sup>21</sup>

#### A. Introduction

1. **The sharp rise in the real effective exchange rate in recent years merits close examination because of the potential risks to competitiveness and external stability.** Since 2004, the real exchange rate has appreciated by 25 percent while the import coverage of reserves has declined from 5 months to under 2 months. The appreciation of the exchange rate has reflected much higher inflation in Ethiopia compared with partner countries; the trade-weighted nominal effective exchange rate has tended to depreciate since 2002. The real appreciation has not prevented strong export growth, but import growth has been even faster, leading to a considerable widening of the trade deficit.
2. **The exchange rate is a key equilibrating mechanism for the balance of payments.** Real depreciation can help to stem or reverse the trends in the trade deficit. However other factors are also important, including the growth of the economy and related demand for imports and cost factors that affect export performance. And more generally, higher external financing, if sustainable, would allow Ethiopia to run persistently large trade deficits.
3. **Against this background, this paper reviews indicators of the competitiveness of exports and applies various techniques to assess whether the real exchange rate is above the level associated with fundamentals and macroeconomic stability.** Given data limitations and difficulties in assessing key inputs to the analysis—such as the cyclical state of the economy and the sustainability of external financing—the results are highly tentative. They do, however, suggest some potential overvaluation of the real exchange rate at present.

#### B. Competitiveness and Recent Trends in the Balance of Payments

4. This section reviews the factors behind recent trends in Ethiopia's balance of payments, the competitiveness of exports, and the reasons for the surge in imports.

##### **Current and capital accounts and reserve cover**

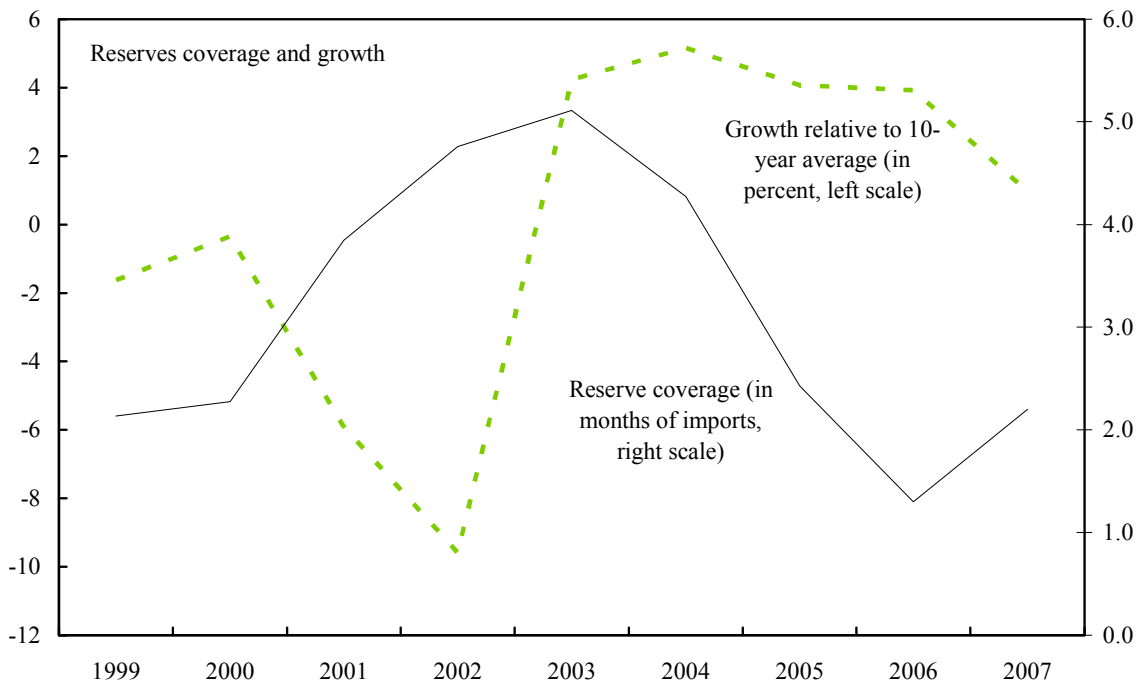
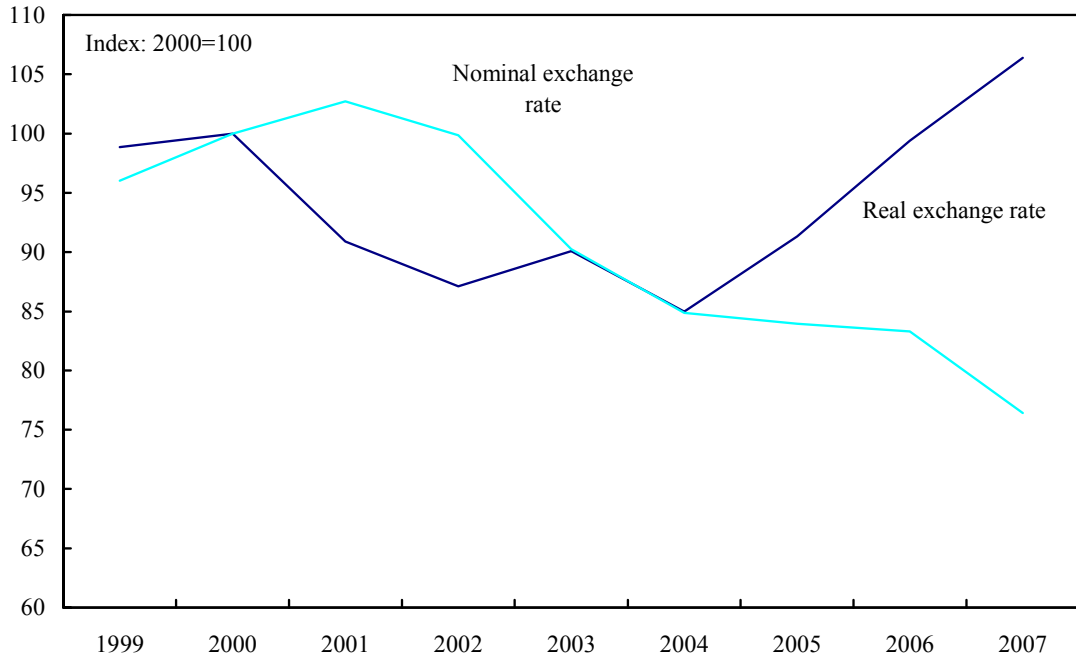
5. **The deficit on goods and services has deteriorated considerably since early 2000 and is currently running at about 20 percent of GDP.** This deterioration has been heavily influenced by import growth, with the ratio of imports to GDP rising by 10 percentage points of GDP since 2000/01 to 32 percent in 2006/07. Exports have also grown in relation to output but at a slower rate. The deterioration in the current account has been more modest as a result

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<sup>21</sup> The main contributor to this chapter is Alun Thomas.

of increases in private and official transfers. These have grown from 10 percent of GDP in 2000/01 to about 15 percent in 2006/07 and have helped to maintain the current account deficit at about 5 percent of GDP on average over this period.

Reserve coverage, growth, and the real exchange rate 1999-2007



Source: WEO, INS

6. **The decline in external reserves in recent years is thus partly due to deterioration in the capital account.** Since 2001/02 the capital account has deteriorated, mainly on account of a fairly persistent decline in net borrowing. Indeed, since 2003/04, the cumulative disparity between the capital and current account has reached 3 percent of GDP. However, in 2006/07 the overall balance of payments was almost zero, allowing reserve coverage to stabilize at 2 months of imports. Reserve cover is quite cyclical. During the drought years of 2001 and 2002, imports were compressed considerably leading to a build up of reserve coverage. Since then, as the economy has expanded rapidly, reserves have fallen to low levels and pose a risk over the medium term as the economy continues to expand.

7. **In practice there is considerable blurring of the elements of the current and capital account.** External official financing switches between grants (transfers) and lending while private transfers are a relatively autonomous source of financing for private imports. Errors and omissions have also been a volatile and sometimes sizable component of the balance of payments. From this perspective, the decline in reserve cover is due to a failure of external financing more broadly defined (including transfers and errors and omissions) to keep pace with the rapid widening of the deficit on goods and services.

#### **Factors contributing to the recent healthy performance exports**

8. **Exports have been strong in recent years.** While coffee exports represented about 0.6 percent of world coffee exports in 2003-04, the ratio rose to an average of 0.9 percent in 2005-06.<sup>22</sup> Export shares in Ethiopia's other main commodity export markets have also risen, with oilseeds and flowers demonstrating the largest export market gain of almost ½ percent of the world market. In addition, although figures for world market share are not available for 2007, growth in exports has been strong in all categories except for coffee.

9. **As price takers on the world market handicapped by the land-locked status of the country, three factors are crucial in enhancing the competitiveness of Ethiopian exporters: wage costs, the ease of doing business and changes in infrastructure.** Although wage data is difficult to obtain, reports from the main business journal in India on the health of the flower sector indicate that the wage for a farm laborer in Ethiopia is only \$20 per month while the corresponding wage in India is about \$60 per month. Indeed, a number of Indian entrepreneurs are relocating to Ethiopia to develop its thriving flower industry and this development has led to gains in market share at the expense of neighboring countries (Box 1). Similarly, the 2005/06 report on Africa in the Foreign Direct Investment magazine indicates that Ethiopia is the most cost effective country on the continent with manual workers earning about \$60 a month. This figure is comparable to the Indian laborer

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<sup>22</sup> The average of the calendar years 2003 and 2004 (2003-04) is used as the base period to minimize the impact of the drought in 2002.

wage. As a comparison, the ILO estimates that the average wage for a manufacturing worker in China is about \$190 per month.

### Box 1. Ethiopia's blooming flower industry

Ethiopia's flower industry began as recently as four years ago when the government made an aggressive push for investments by establishing a presence at major international floricultural events. Since this time, export earnings from this sector have grown to about US\$65 million in 2006/07 and are projected to double over the next few years. Ethiopia is well positioned in this export niche because highland temperatures make it ideal for horticulture, the wage rate is low at only US\$20 per month, the price of leased land is reasonable at about US\$13 per hectare, and the government has facilitated tremendously entry of new businesses into this sector in recent years.

Some analysts believe that Ethiopia could rapidly increase its market share in cut flowers over the medium term. This view is supported by the fact that a number of Indian businesses have relocated to Ethiopia to take advantage of the cheaper costs available in this country and the generosity of the government in attracting investment. Moreover, the country is also gaining market share at the cost of Kenya, the current leading exporter of cut flowers in Africa. The table below shows that Ethiopia is competitive with both India and Kenya in attracting investors to the horticultural sector. Moreover, this will be amplified in 2008 when Kenya's horticultural industry will be subject to a new 5 percent tariff because of its inclusion in the Generalized System of Preferences.

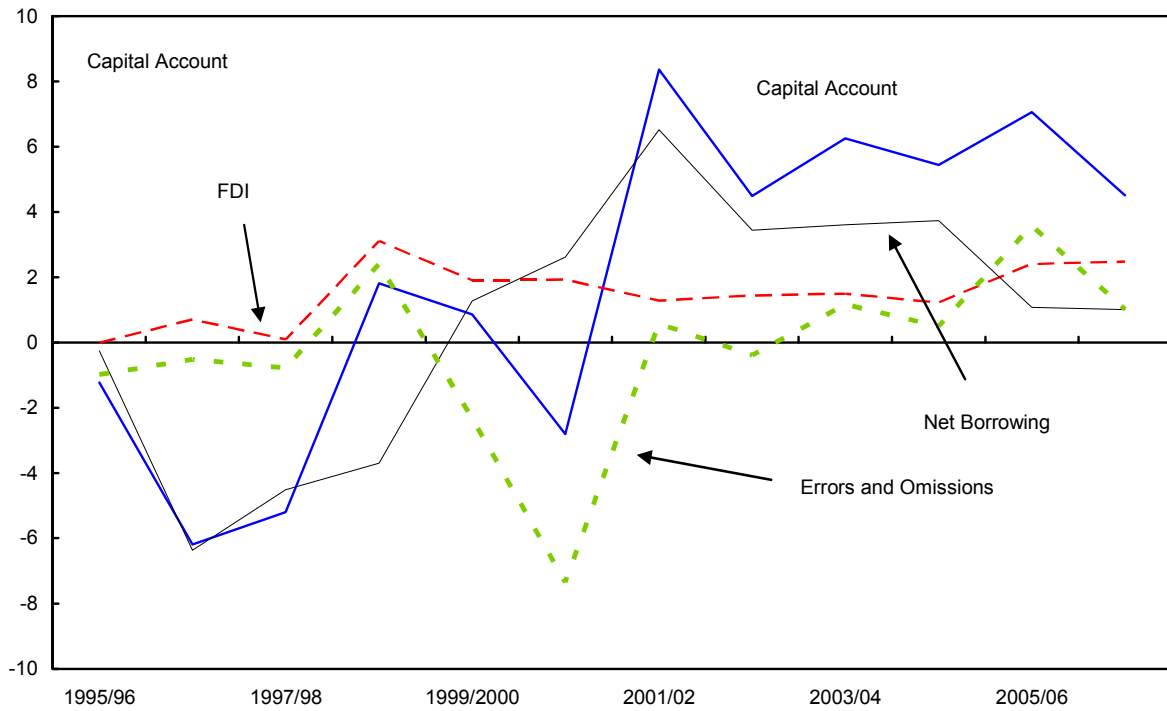
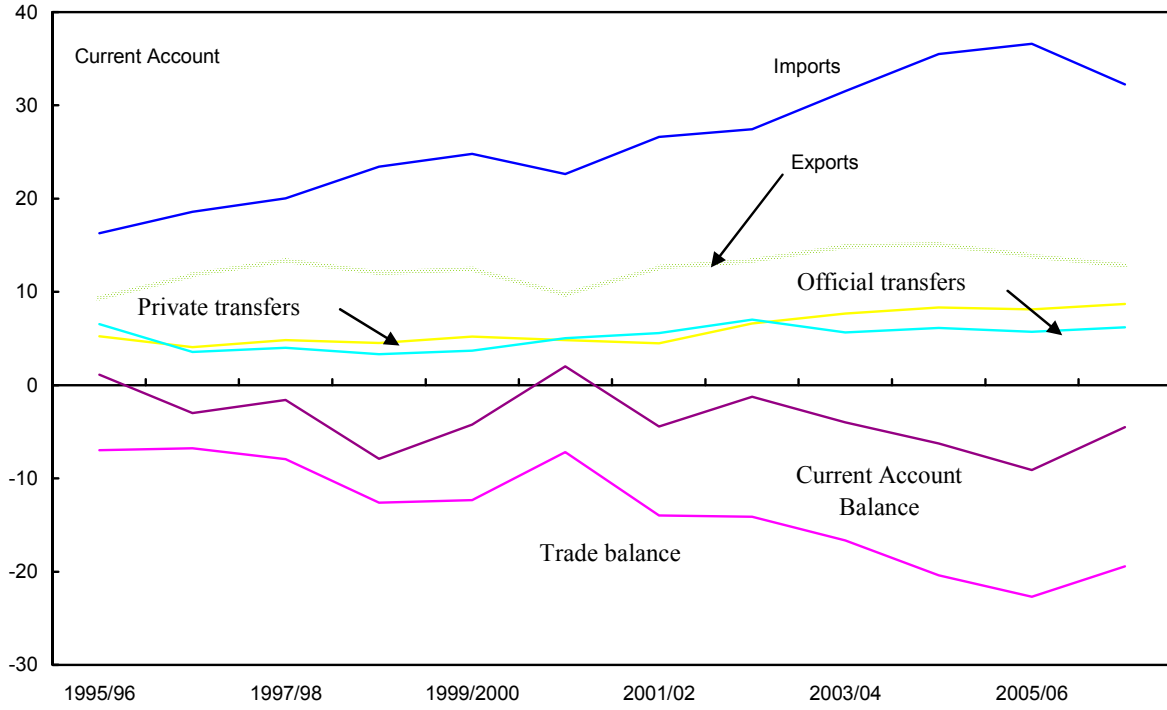
Factors Affecting Location of Horticultural Investment

	Wage Rate (USD per month)	Land price (USD per hectare)	Freight (USD per kilo)	Customs Duties (in percent)
Ethiopia	20	13	1.5-2	0
Kenya	44	n.a.	1.6	0 (5 percent from 2008)
India	58	6500	2	6-9

Sources:

India Business Times; Kenya's Cut-Flower Cluster, mimeo; ILO; Horticulture in Eastern and Southern Africa, Price Waterhouse Coopers

Current and Capital Accounts  
(in percent of GDP)



Source:

Development of Ethiopia's export market share (exports in percent of world exports)					
	Coffee	Oil seeds	Leather products	Live animals	Flowers
2003-04	0.62	0.34	0.13	0.03	0.12
2005-06	0.93	0.79	0.18	0.22	0.67
Change 2005-06 relative to 2003-04 (in percent of world exports)	0.31	0.45	0.05	0.19	0.55
Ethiopia export growth in 2007 (in percent)	-1.5	22.2	20.1	29.9	133.4
Sources: World Integrated Trade System Database					

Factors Associated with Export Competitiveness						
	Wage Rate	Ease of doing business	Time to start a business	Cost to export	Cost to import	Investor Protection
	(USD per month)	(rank)	(days)	(USD per container)	(USD per container)	(rank)
Ethiopia		97	16	1700	2455	118
Farm Laborer	20					
Manual Laborer	61					
Botswana		48	108	524	1159	118
Kenya		83	54	1980	2325	60
South Africa		29	35	850	850	9
China	187	93	35	335	375	83
India		134	35	864	1244	33
Farm Laborer	58					
Manual Laborer	68					
Sources: India Business Times, FDI magazine, ILO, World Bank Doing Business survey						

10. **Of course, low wages are only beneficial for promoting export growth in agriculture if they remain low and there are sufficient opportunities for increased production through greater development of acreage and higher productivity (or yields).** Unfortunately, there is no time series data available on wages in Ethiopia—only a snapshot of the wage level. But although wages are likely to be growing fast on account of the continued high inflationary pressures in Ethiopia, rapid rising agricultural productivity is helping to restrain the growth in unit labor costs as suggested by the table below on recent estimates of increased acreage and yields for the major agricultural export. With improved use of fertilizer and better seeds, this positive assessment is likely to continue, unless a sharp drought reoccurs.



Trends in cultivated area and yields for major export categories and cereals

	Cultivated Area			Yield		
	(percent change)			quintal per hectare		
	2004-05	2005-06	2006-07	2004-05	2005-06	2006-07
Cereals	9.3	5.7	4.7	13.1	14.4	15.2
Pulses	22.7	-4.2	6.4	10	9.8	11.5
Oil seeds	44.6	-3.5	-7.2	6.4	6.1	6.7
Coffee		0.4	13.0	6.0	6.6	8.2

11. **In terms of doing business, Ethiopia ranks high among African countries, only surpassed by Botswana, Kenya and South Africa.** For example, it takes only 16 days to set up a new business in Ethiopia and about 133 days to obtain a new license. On the other hand, export and import shipment costs are fairly prohibitive because of the country's land-locked status and investor protection is weak. To foster export development, the government has provided a number of incentives for companies to invest in Ethiopia. These include a 5-year tax holiday, duty free machinery imports, and easy acquisition of leased government land at low cost. While the government's initial focus was on the flower sector, the government recently announced the provision of 750 hectares of free land for investors willing to invest in fruits and vegetables. These incentives are already providing a strong boost to exports and hence competitiveness. Indeed, the availability of direct flight connections to Europe, Asia, and North America is key to the success of the industry.

12. **Over the past two years, Ethiopia's position on the global competitiveness index has improved somewhat, albeit from a low base level.** Ethiopia is in the top decile of countries that are the least competitive. Characteristics that continue to deter improvements in competitiveness include the quality of staff, the brain drain phenomenon, the absence of foreign ownership, and the lack of access to loans and venture capital. However, while its logistics performance index is also below that of neighboring Kenya, its ranking at the 69<sup>th</sup> percentile is higher than for the global competitiveness index. This solid performance is associated with low logistics costs and timeliness although the economy continues to be hindered by weak infrastructure relative to other countries, especially in the area of telecommunications.

## Factors Associated with Export Competitiveness in 2007

	Ease of doing business	Global competitiveness		Business competitiveness	Logistics Performance Index	
	(rank)	2007 (percentile)	2006 (percentile)	(percentile)	(rank)	(percentile)
Ethiopia	97	94	95	89	104	69
Botswana	48	58	47	57		
Kenya	83	76	72	47	76	51
South Africa	29	34	30	26	24	16
China	93	27	28	47	30	20
India	134	37	34	24	39	26

Sources:

India Business Times, FDI magazine, ILO, World Bank

13. **Infrastructure is at a relatively basic level, but is improving rapidly.** Although up-to-date information on air and road transportation is limited, available data indicate that air transport of freight (in terms of million tonnes per km) rose by 46 percent between 2002 and 2005 and air transport of passengers rose by almost 9 percent, slightly below corresponding figures for Kenya at 76 and 9 percent respectively. The road network rose by almost 5 percent per year between 2000 and 2006 while it was barely unchanged in Kenya. Moreover, the World Bank recently extended its investment in road infrastructure in Ethiopia through 2012 with the objective of improving its reliability. The investment will support the government's goals of raising the road network by an additional 11,000 km of new federal roads and 5,500 km of new regional roads (a combined increase of about 40 percent in the road network).

14. **Investment in telecommunications lags that in other areas of infrastructure.** Ethiopia has the lowest mobile cell phone converge in the world with only about 20 per 1000 people currently owning a cell phone compared to over 700 in South Africa. However, cell phone coverage has been growing rapidly from a low base and the telecommunications company has ambitious investment plans with target coverage of 60 per 1000 people by 2009/10.

## Imports

15. **Rapid import growth in recent years has partly reflected Ethiopia's development focus on improving infrastructure, which has a high import content.** While all import components are making contributions, the fastest growing component is for capital goods, especially in road and air infrastructure. The substitution of foreign goods for domestic goods

associated with the real exchange rate appreciation and the rapid rise in economic growth have also contributed to the import surge (Box 2).

### Box 2. Import Determinants

To assess the relationship between imports, economic growth, and the real exchange rate, a regression of import volume on real GDP and the real exchange rate was conducted over the period 1991/92 – 2006/07. All variables are measured in logarithms. Since real GDP and real imports have risen over time it is necessary to check for stationarity of the data. The Phillips-Perron statistic indicates that the error term is stationarity and hence allows for valid inference. The regression yields a coefficient of 1.37 on real GDP and a coefficient of 0.24 on the real exchange rate (the significance of the real GDP term cannot be determined because it is non-stationary). While considerably below unity, the real exchange rate coefficient is significantly greater than zero, supporting the view that the recent real appreciation of the currency has stimulated import demand. Given structural changes in the Ethiopian economy, a significant degree of uncertainty surrounds the estimates. The elasticities are, however, within the range typically found for many countries.

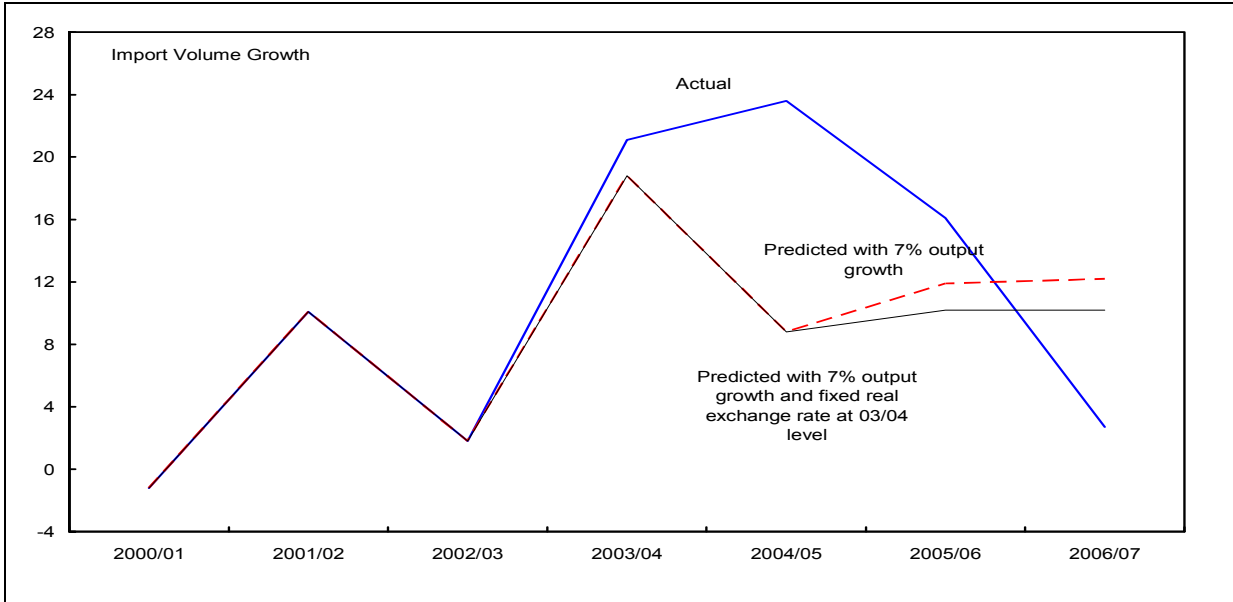
#### Determinants of Real Imports

Real GDP	1.37
Real exchange rate	0.24 *
No. of observations	16
R squared	0.94
Phillips –Perron statistic	-2.84 *

Notes:

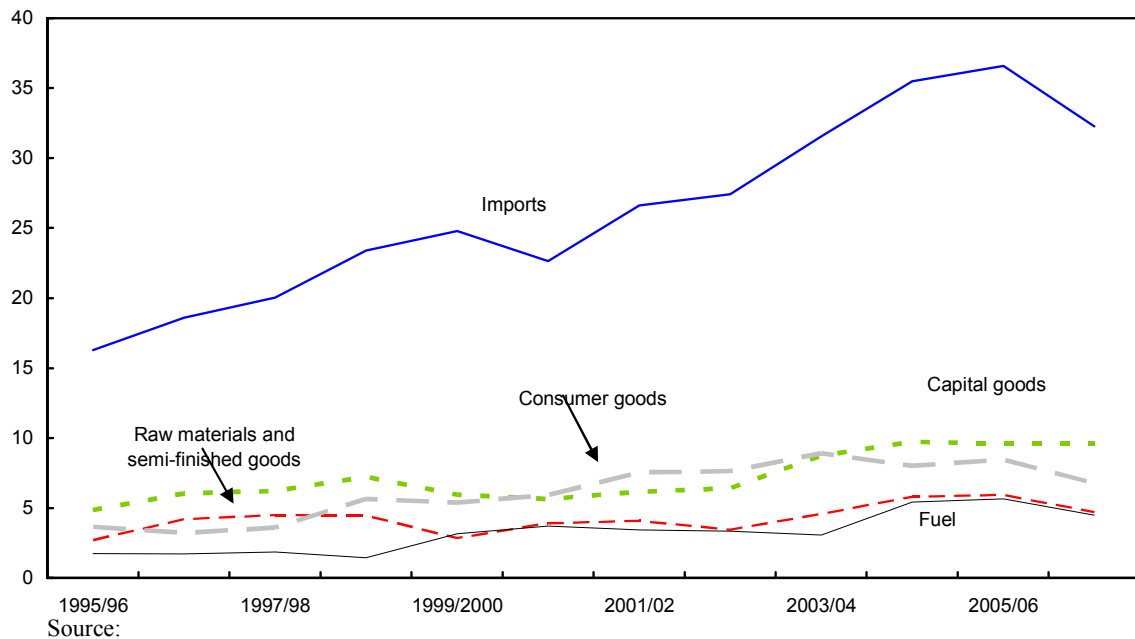
\* indicates significance at the 10 percent level

To assess the extent to which the recent rapid growth experience and real appreciation have influenced the behavior of import volumes, a counterfactual analysis was conducted. The chart below shows the counterfactual import volume growth behavior assuming that the real exchange rate was fixed at its 2003/04 level through 2006/07 and that output grew at its 10-year historical average growth rate of 7 percent over the same period.



The chart shows that the counterfactual developments would slow import volume growth considerably in 2004/05 and 2005/06. In 2006/07 when the authorities postponed imports related to large infrastructure projects, the counterfactual scenarios would be above the actual outcome. Over the 3 year period, import volumes grew by 14.1 percent per annum, while the scenario with output fixed at its historical growth rate would yield an average import volume growth rate of 11 percent per annum. If the real exchange rate was also fixed at its 2003/04 level, import volume growth would decline an additional 1.3 per annum to 9.7 percent.

Composition of Imports  
(in percent of GDP)



Source:

### C. Assessments of Competitiveness and the Real Exchange Rate Level

16. **This section applies IMF methodological approaches<sup>23</sup> to assess whether the real exchange rate is at an equilibrium level**—i.e., at a level either consistent with “fundamental” determinants or at a level consistent with a sustainable medium-term current account balance.

#### Equilibrium real exchange rate analysis

17. **Single equation (“reduced form”) models find that Ethiopia’s real exchange rate is above the equilibrium level predicted by fundamentals.** For example, Gilmour and Chudik’s single country analysis (2006), and Chudik and Mongardini’s panel analysis (2007) find that Ethiopia’s real exchange rate is positively related (as suggested by theory) to the terms of trade, productivity in Ethiopia relative to its major trading partners, and government consumption in relation to GDP.<sup>24</sup> It is negatively related to openness, measured as the ratio of imports and exports to GDP. Based on fitted values for the long-run cointegrating relationship from Gilmour and Chudik’s estimated equations, the real effective exchange rate was about 25 percent above its level based on fundamentals in 2007.

18. **However, model results are sensitive to changes in assumptions.** A shortcoming of the analysis is that the net foreign asset (NFA) position is not included in the equilibrium exchange rate panel specification because of its insignificant effect when countries are treated as a group. A stronger NFA would, other things equal, allow a country to have a higher real exchange rate because it would provide room to borrow more to finance a larger current account deficit. Ethiopia’s NFA position has improved considerably in recent years following the HIPC and MDRI initiatives. When the ratio of NFA to GDP is included in the single equation analysis the estimated overvaluation of the real exchange rate largely disappears (Box 3). The amended estimates suggest that the real exchange rate was close to equilibrium through 2007, but that subsequent real appreciation through April 2008 has made the real exchange rate somewhat overvalued.

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<sup>23</sup> See Lee, Milesi-Ferretti, Ostry, Prati and Ricci, IMF Occasional Paper no. 261 (2008).

<sup>24</sup> Gilmour and Chudik, mimeo, (2006); Chudik and Mongardini, IMF working paper 07/90 (2007).

### Box 3. Alternative estimates of the equilibrium real exchange rate

When net foreign assets are included in a regression of Ethiopia's real exchange rate, they have significant explanatory power and the error term remains stationary. At the same time, the effect on the real exchange rate of openness and terms of trade is considerably stronger, while government consumption has the wrong sign.

Determinants of the Real Effective Exchange Rate  
(In percent of GDP, unless otherwise stated)

	Gilmour and Chudik	Chudik and Mongardini	Revised	
Openness	-0.447	-0.473	-1.32	
Government consumption	0.559	0.227	-0.14	
Growth differential	1.016	1.040	0.86	
Terms of trade (index)	0.255	0.186	0.39	
Net foreign assets	...	...	0.44	
No. of observations 1/	28	26	16	
R squared	n.a.	n.a.	0.89	
Phillips-Perron statistic	n.a.	n.a.	-3.21	**

Notes:

\* indicates significance at the 5 percent level

1/ For Chudik and Mongardini, number of observations are per country; there are 18 countries

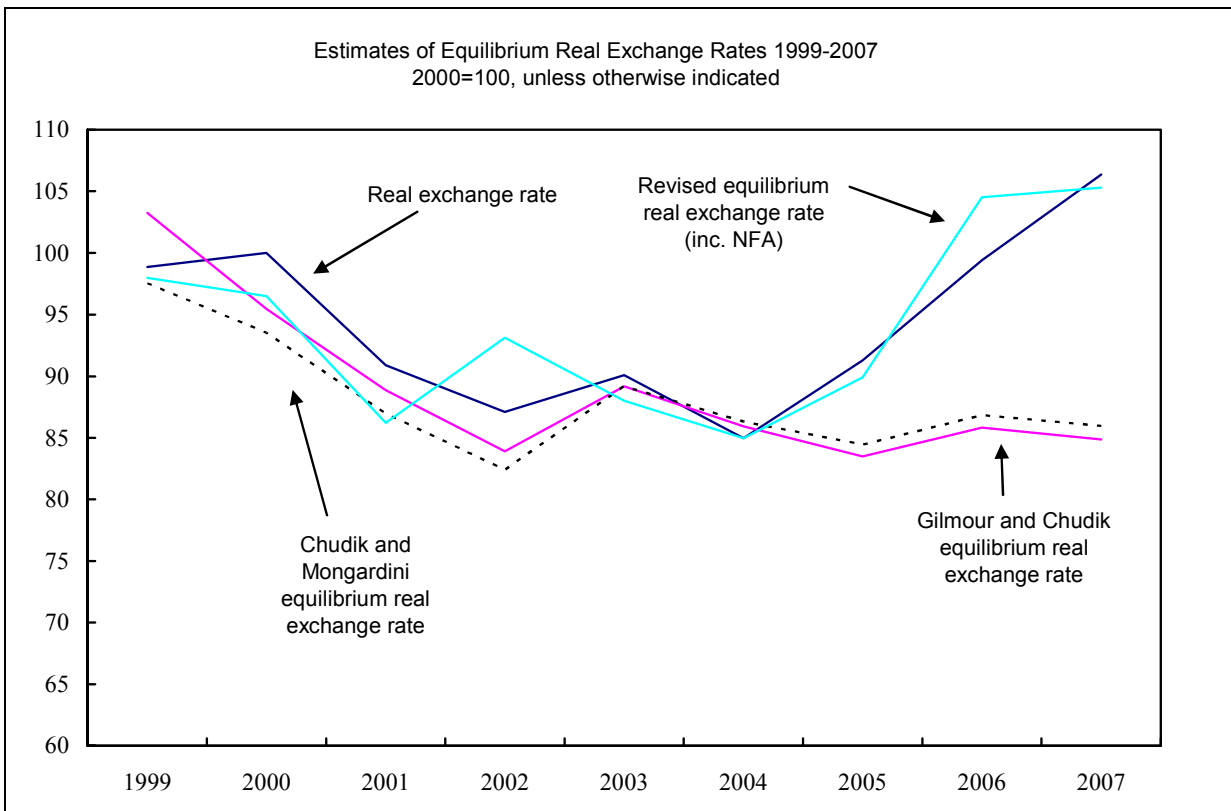
## External Sustainability Analysis

### *Flow analysis*

19. **The analysis of external stability through flow and stock analysis is an alternative way of assessing the level of the real exchange rate.** For flow equilibrium, the method estimates how much the real exchange rate would need to change to bring the current account into line with a sustainable level of medium-term external financing assuming full capacity utilization. The method used here differs slightly from the macro-balance approach to external stability in that it assumes a reserve cover target as its anchor rather than an equilibrium current account estimated on fundamentals. This is justified because reserve cover is currently judged to be too thin to provide adequate cushion against external shocks. For Ethiopia, the methodology requires a number of difficult-to-quantify assumptions:

- What is a reasonable/sustainable level of grant and debt financing flows?
- What should be a satisfactory level of reserve cover in the medium term?
- How overheated is the domestic economy at present?

- What is the responsiveness of exports and imports to changes in the real exchange rate?



20. **The first two assumptions fix the equilibrium or sustainable current account deficit.** The medium-term reserve cover target, assumed to be at the mid-point of the authorities' target of 10-12 weeks of imports, is important because the analysis needs to incorporate the policy objective of running an overall balance of payments surplus to bring reserve cover to a more comfortable level. That is, the average current account deficit over the medium term must be lower than the estimated available external financing if the balance of payments is to reach a sustainable level.

21. **The third assumption is needed to estimate the underlying current account and the fourth assumption is required to estimate how much the real exchange rate would need to change to bring the underlying current account deficit in line with the equilibrium level.** For example, if GDP is in excess of potential (because, for example, the economy has been growing at too fast a pace) then a return to potential through slower growth would by itself lower import demand and the current account deficit and could obviate the need for a real exchange rate depreciation. The underlying current account deficit is a measure of the deficit assuming output is at its equilibrium level. However, while rising inflation at a time of good harvests is prima facie evidence that the economy is overheating, the extent of overheating is hard to estimate. If the underlying current account still differs

from its equilibrium level trade elasticities are required to partial out the amount of real exchange rate change that would be needed to eliminate the disparity. The amount of needed depreciation gives an estimate of the extent of overvaluation.

22. **Since there is considerable uncertainty about the degree of overheating and sustainable financing, results are presented using a range of estimates for these variables.** Three scenarios are used for the domestic imbalances or “output gap”: high (5 percent of GDP), medium (3 percent of GDP), and low (zero). Three external financing scenarios are also used: one based on current IMF official financing estimates and the other two assuming additional/reduced 1 percent of GDP per annum borrowing over the next five years. The real exchange rate movement needed to achieve the target of 2 ¾ months of imports by 2012/13 for each permutation of output gap and financing is then derived based on the estimated income and price elasticities for imports in Box 2.<sup>25</sup>

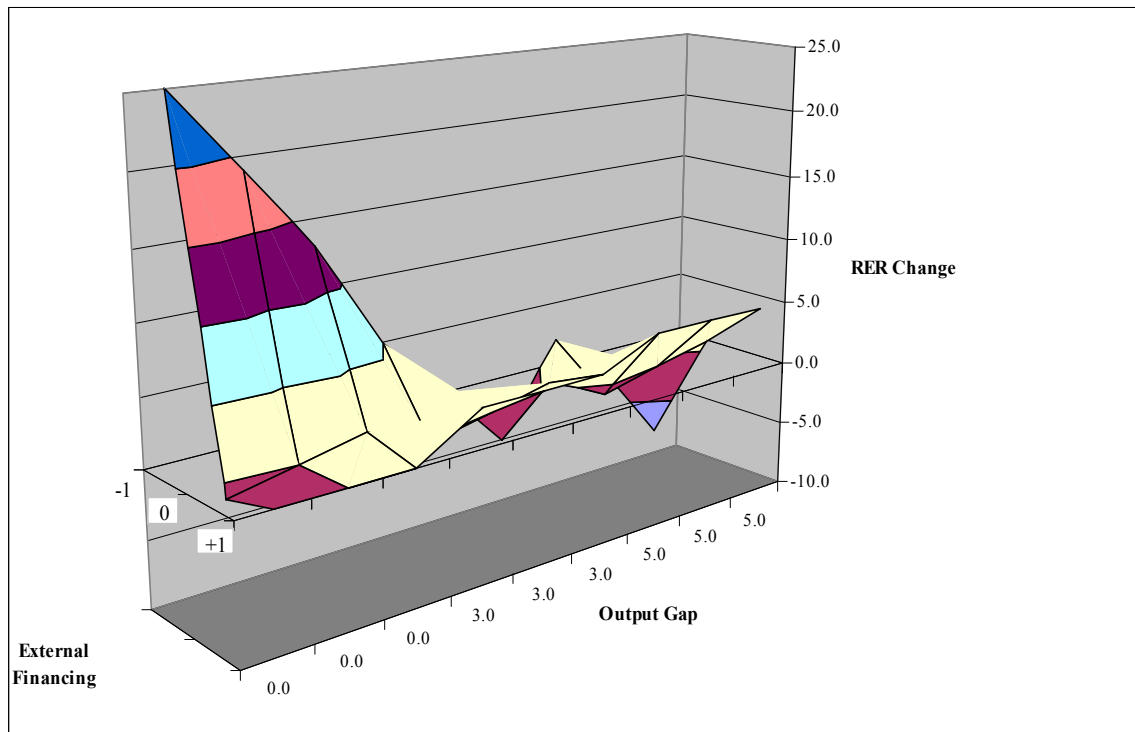
23. **Based on these assumptions, the magnitude of the real exchange rate change required to satisfy the reserves target varies from a depreciation of 25 percent to an appreciation of 8 percent.** The 3-dimensional chart below shows output gap alternatives in the x plane, real exchange rate changes in the y plane and the three external financing options in the third dimensional axis. Scenarios suggesting little need for real exchange rate depreciation or possibly appreciation assume there is a large output gap and external financing will be above current expectations. The latter assumption softens the needed reduction in the current account deficit and the former assumption puts the onus of adjustment to a lower deficit on a reduction in domestic economic imbalances through lower growth relative to potential. These scenarios are shown on the far right of the chart. At the other extreme as the output gap is assumed to be smaller and external financing falls short of the baseline projection, the real exchange rate would need to depreciate by up to 25 percent to bring the current account deficit down to a sustainable level. The mass of observations is located above the horizontal axis at zero, indicating that the most likely equilibrium outcome is a depreciation of the real exchange rate.

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<sup>25</sup> For exports a similar sized, although oppositely signed, elasticity is assumed to apply.



## 3-dimensional view of real exchange rate outcomes

*Stock Analysis*

24. **The stock approach to medium-term debt sustainability is akin to analyzing whether the ratio of net foreign assets to GDP is on a stable path except that it uses a long-term projection for debt rather than the current value of NFA.** The debt trajectory is based on assumptions about exports, imports, and grant and loan financing and is assessed against the benchmark for debt sustainability established by the international community. If the debt trajectory is within reasonable bounds and the underlying trajectories of the components of the balance of payments are credible, the current real exchange rate is assumed to be in equilibrium.

25. **The baseline scenario in the Joint IMF and World Bank Debt Sustainability Analysis (DSA) provides a long-run profile of the level of debt and shows that the ratio of debt to exports stays within prudent limits.** However, the room for maneuver is slight suggesting that any additional financing to shore up reserves should be concessional. One of the scenarios assumes that Ethiopia obtains greater external financing to relieve some of the pressure on reserves (DSA appendix). If additional financing were obtained on market terms it would raise the ratio of the NPV of debt to exports to considerably to 142 percent at its peak, compared with 119 percent under the baseline scenario. By contrast, if the financing were obtained on IDA terms, the ratio of the NPV of debt to exports would reach 127 percent at its peak.

#### D. Conclusions

26. **Analysis of competitiveness and the real exchange rate paints a mixed picture, although on balance there is a likelihood that real appreciation has resulted in a real exchange rate that is above the level associated with fundamentals and macroeconomic stability.** On the one hand, Ethiopia has succeeded in raising its global export market share; low wages, rising productivity and an improving infrastructure should enable the country to continue to attract foreign investment and expand its export base. On the other hand, the rapid growth in imports, in large part associated with the infrastructure development, has led to a wide trade deficit and low reserve cover. Part of the weakening of the balance of payments position is almost certainly cyclical and would be eased by a moderation of growth to eliminate overheating pressures. There is also scope for more financing to alleviate the external constraint—although nonconcessional borrowing would need to be considered carefully. But on balance, analysis of a sustainable external position points to a degree of overvaluation. This is also confirmed by updated single equation estimates that suggest that the real exchange rate may be moving above a level determined by fundamentals.

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