Ethiopia: Updated Inflation Forecasts

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The purpose of this section is to simulate some possible policy scenarios and thus predict the CPI over June 2009 to December 2010 for illustrative purposes. The empirical models used are Model 1 and Model 4 from Loening, Durevall and Birru (2009); we need to estimate both models simultaneously to predict the error correction term, which is endogenous.

Making forecasts is a challenge since there are many uncertainties, so the numbers reported should not be taken at face value. As Elliot and Timmermann (2008) show, even the best of models face significant difficulties when predicting the future. The major uncertainties here are the future evolution of world food prices, exchange rate and monetary policy, and domestic agricultural production, which are the three key determinants of the CPI according to our inflation model for Ethiopia. Moreover, to evaluate the role of policies, we would need to estimate a structural model or at least ensure that the policy variables are super exogenous to avoid the Lucas critique.

We use projections from the Development Prospects Group of the World Bank (DECPG) for the annual grain index for 2009 and 2010 to forecast world food prices. The accuracy of the predications can be discussed because historical comparisons show that commodity forecasts are surrounded with a large degree of uncertainty (Deaton, 1999). This is also evident from most recent projections. Even though they were made in late 2008, the monthly grain index had a lower value in November 2008 than the projected average mean value for 2009, in spite of the fact that the projection shows a decline in grain prices. Thus, we simply assume that the monthly index is constant over the period 2008:12 – 2010:12.

We use two scenarios for the exchange rate, assuming there is no substantial change in the Dollar-Euro exchange rate during the period 2009-2010. In the first case the Birr-Euro exchange rate depreciates by 10 percent annually from May 2009, and in the second case, it depreciates by 20 percent. The actual depreciation of the Birr-Euro exchange rate during last year, 2007:11-2008:11, was 15 percent.

We also use two alternative scenarios for agricultural growth. In the first case, agricultural growth is assumed to follow a path similar to the one in 2003 from the beginning of 2009, when according to official data it grew by above 10 percent. The growth peaks in mid-2010 and then declines. In the second case, we assume an output gap is similar to the drought in 2002/03, which corresponds to a contraction in agricultural output of about 20 percent. Note that agricultural production is not assumed to be as low as in 2002/03, but to decrease by the same percentage. In both scenarios, the negative output gap decreases to zero during the first half of 2009 so the bumper harvest and drought apply to the fiscal year 2009/10.

Money supply growth is assumed to be 20 percent annually, corresponding to somewhat accommodating monetary policy.

We combine the scenarios into four main cases. Case 1 is the worst outcome for consumer prices: a drought and 20% annual currency depreciation. In Case 2 we also have a drought but only 10% annual currency depreciation. Case 3 has a good harvest and 20% depreciation. Finally, Case 4 has good harvest and 10% annual currency depreciation. Table 6 summarizes the cases.

Table 1: Forecast scenarios

	Agricultural production	Exchange rate
Case 1	-20% maximum decline	20 percent depreciation
Case 2	-20% maximum decline	10 percent depreciation
Case 3	+10% maximum growth	20 percent depreciation
Case 4	+10% maximum growth	10 percent depreciation

Figure 1 depicts the forecast for Case 1, the worst case, together with two times the standard error, where we have forecasted annual inflation growth to facilitate interpretation. The fan chart shows the range of uncertainty indicated by the shaded area around the central projection. Initially, inflation will continue falling down to about 5 percent, but it then rises during the drought. The reason for the rapid decline during 2009 is that world food prices are constant, and domestic prices are high due to recent past and current high inflation. As a result, the real exchange rate is appreciates in spite of the depreciation of the nominal exchange rate. In other words, the disequilibrium in the external sector reduces inflation through the error correction term. The forecast thus illustrates how international market integration keeps domestic prices from moving too far from world market prices. The drought hits the economy during the

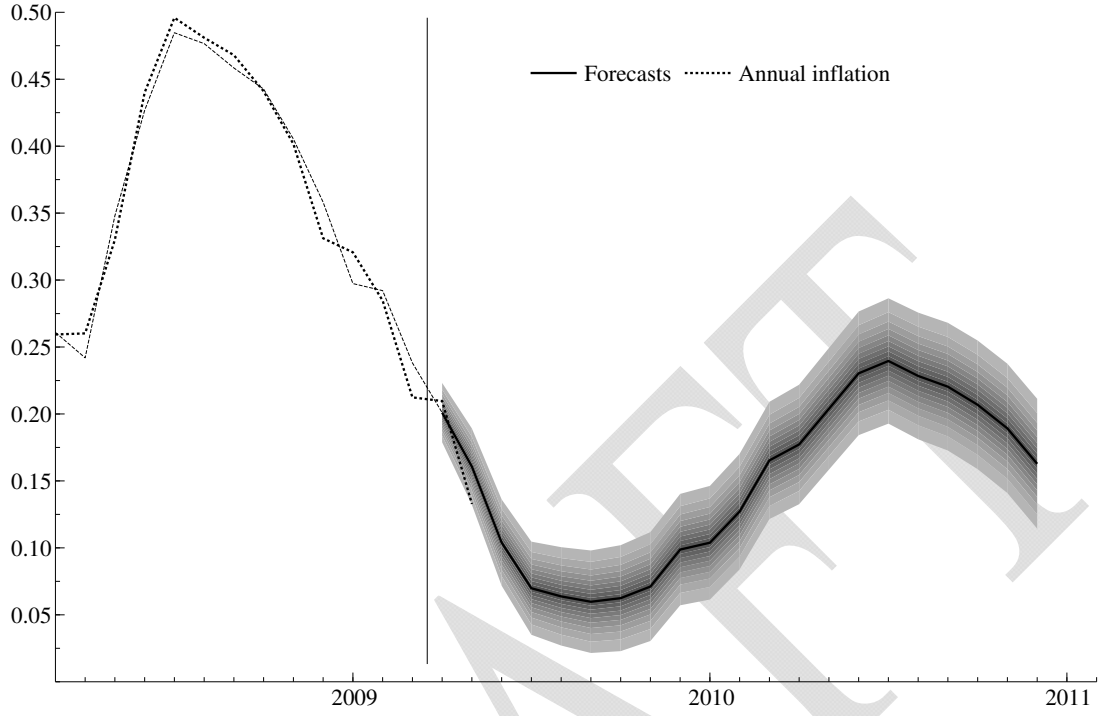
latter half of 2009 and raises inflation to over 20 percent. Of course, these results hinges on the assumed depreciation of the exchange rate, if the value of the Birr were to fall much more, possibly due to shortages of foreign reserves, inflation could actually increase.

It is worth emphasizing that although inflation growth declines, it is still positive and high, and the consumer price level keeps rising. Moreover, the model does not imply that domestic food prices eventually will decline, even if world food prices fall since the exchange rate can depreciate, nor does it show that domestic prices eventually will be equal to import parity prices, since the long-run relationship is an index set to unity in 2006:12.

Figure 12 shows the expected developments for annual inflation for all the four cases. Because of the high past inflation and stable world prices, domestic prices adjust towards long run equilibrium in all four scenarios during 2009. Case 2 illustrates the role of the exchange rate, limiting the depreciation to 10 percent makes inflation increase less. In the third case, there is a good harvest and 20 percent depreciation. As expected, inflation rises a lot less than in the previous cases, peaking at 14 percent. In the final case, a good harvest and and relatively stabke exchange rate, keep inflation at single-digit levels most of the time.

Although highly tentative, our four scenarios show the following. First, annual inflation *growth* in Ethiopia is likely to decrease over the coming years. This is mainly because of the strong effect of international food prices on domestic inflation. Yet, annual inflation growth is still positive, so the *level* of the overall consumer price index will continue to increase. Moreover, it is also important to mention that if international prices would start increasing again, they would to have a strong impact on Ethiopia, and the model predictions will not be valid.

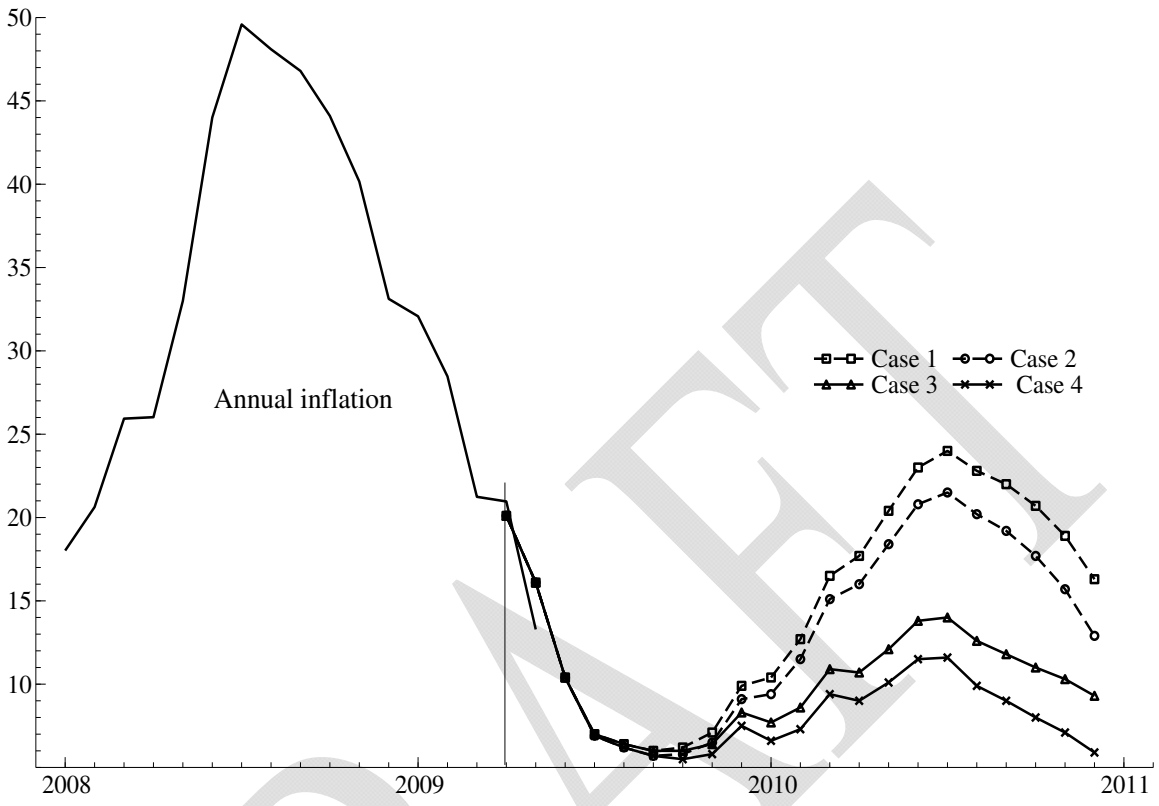
Figure 11: Predicted CPI inflation growth for Case 1, 2009:4-2010:12 (annual log growth rates)



Second, inflation inertia prevents a rapid stabilization of inflation even in very good circumstances. This is because past inflation to some extent carries over to current inflation, so it takes several months for a one-time decrease in inflation to have its full impact.

Third, under the presented assumptions, the findings suggest that one of the main driving forces behind domestic inflation is agricultural output growth. While exchange rate and monetary policies can make a significant difference, it is crucial to take into consideration the development of the agricultural economy, in particular the cereal market. Our findings thus suggest that successful policies should consider supporting both exchange rate stabilization, controlling money supply growth, and most importantly, boosting and stabilizing domestic food supply. It is important to mention, however, that the framework presented here is for illustrative purposes only, as it is based on relationships observed in historical and highly aggregated data, which should be ideally supported by microeconomic evidence, to draw stronger conclusions. Moreover, a more complete macro-model would have incorporated the balance of payments and foreign exchange shortages.

Figure 12: Illustrative forecast scenarios, 2009:4-2010:12 (annual growth grates in percent)



APPENDIX

Table A1: Four Inflation Scenarios

	Case 1	Case 2	Case 3	Case 4
2009-4	20.1	20.1	20.1	20.1
2009-5	16.1	16.1	16.1	16.1
2009-6	10.4	10.4	10.4	10.4
2009-7	7.0	6.9	7.0	6.9
2009-8	6.4	6.2	6.4	6.2
2009-9	6.0	5.7	6.0	5.7
2009-10	6.2	5.8	6.0	5.5
2009-11	7.1	6.5	6.4	5.8
2009-12	9.9	9.1	8.3	7.5
2010-1	10.4	9.4	7.7	6.6
2010-2	12.7	11.5	8.6	7.3
2010-3	16.5	15.1	10.9	9.4
2010-4	17.7	16.0	10.7	9.0
2010-5	20.4	18.4	12.1	10.1
2010-6	23.0	20.8	13.8	11.5
2010-7	24.0	21.5	14.0	11.6
2010-8	22.8	20.2	12.6	9.9
2010-9	22.0	19.2	11.8	9.0
2010-10	20.7	17.7	11.0	8.0
2010-11	18.9	15.7	10.3	7.1
2010-12	16.3	12.9	9.3	5.9