

Turkey Macro View

Inflation Prospects: Secular headwinds vs. cyclical tailwinds

- The dominant view among policymakers seems to suggest that the marked deterioration in Turkey's inflation performance this year is largely due to unfavorable food prices and that attaining the 5% target in 2015 still remains feasible. At first blush, one may be tempted to concur with this view and argue that Turkey is probably experiencing one of its typical cyclical inflation episodes ([Turkey Macro View - Inflation Remains Hostage to Cyclical Factors](#)). The relevant narrative is rather simple: while the depreciation of the lira and unfavorable food prices (or oil prices) drive inflation higher, the inflation rate softens later thanks to the stabilization of the currency and the correction in food inflation.
- We challenge this view and posit that there are signs suggesting that a secular deterioration in Turkey's inflation dynamics may be underway. Our analysis shows that food is not the only culprit behind the recent deterioration in Turkey's inflation performance. It is true that aggressive food inflation, which is widely attributed to one of the most severe droughts in 14 years, is complicating the inflation process. However, with core measures hovering around 10%YoY and service inflation fluctuating at about 8%YoY, we find it difficult to concur with policymakers' and the markets' relatively sanguine take on Turkey's inflation outlook.
- Our more cautious view on Turkey's inflation prospects is also underpinned by our empirical findings. Specifically, a battery of statistical tests demonstrate that there has indeed been a structural break in the inflation process, which coincides with the introduction of the CBT's unconventional monetary policy. Empirical findings lend support to our view that the CBT's unorthodox strategy, which is based on multiple goals, excessive discretion and ad hoc actions in the conduct of monetary policy, undermined the country's inflation performance. In this respect, we stress that the CBT's selective tightening in response to only a single source of inflation—the exchange rate—has failed to restore price stability.
- Given the likely structural break in the disinflation process, we argue that the country's inflation outlook has become more challenging. Nonetheless, we recognize the possibility of cyclical (largely base-effect related) improvements in annual inflation next year. Specifically, we believe that year-on-year inflation may fall as low as about 6.0% by the summer of 2015 (Figure 19). However, we expect a pick-up in annual inflation in 4Q 2015 for the reasons discussed in this note.
- Against this backdrop, we think that the bond market may get carried away with the likely cyclical decline in inflation next year (mostly in 1H). However, investors should be cognizant of the fact that a lasting improvement in inflation is unlikely to occur without a durable deceleration in service inflation (Figure 15), which would require a more conventional monetary policy focusing primarily on price stability.

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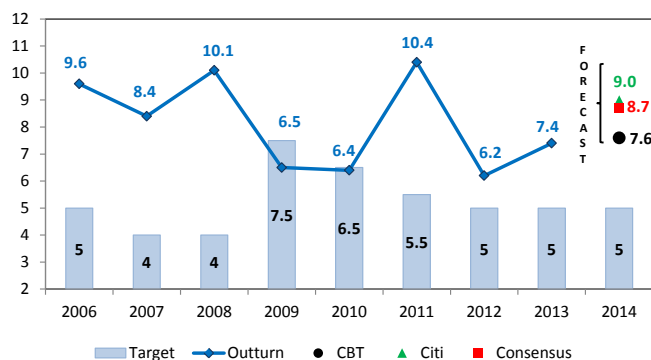
See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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Overview

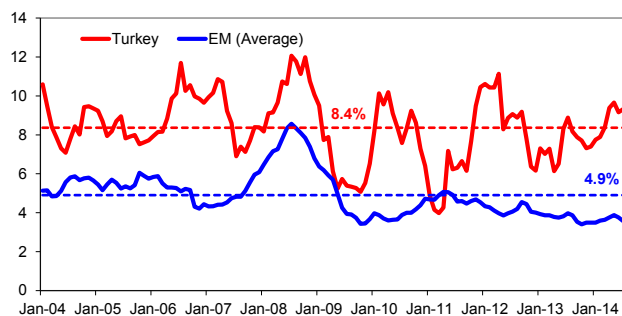
Despite the CBT's poor track record in meeting its targets and Turkey's disappointing relative inflation performance with respect to its peers, the markets seem rather sanguine about the possibility of another miss this year (Figures 1 and 2). As has been the case for the past several years, the CBT remains optimistic about its ability to bring inflation to 5% by the end of next year, which has so far been nothing but wishful thinking, while blaming unfavorable food prices for the recent higher-than-expected readings (Figures 3 and 4).

Figure 1. Inflation: Outturn vs. Target (%)



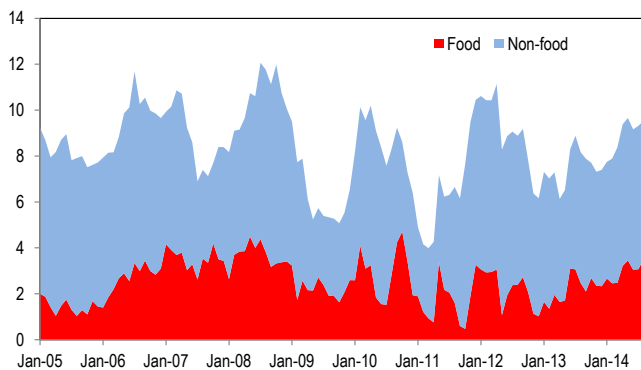
Source: CBT, Haver and Citi Research

Figure 2. Inflation (%YoY): Turkey vs. EM (average)



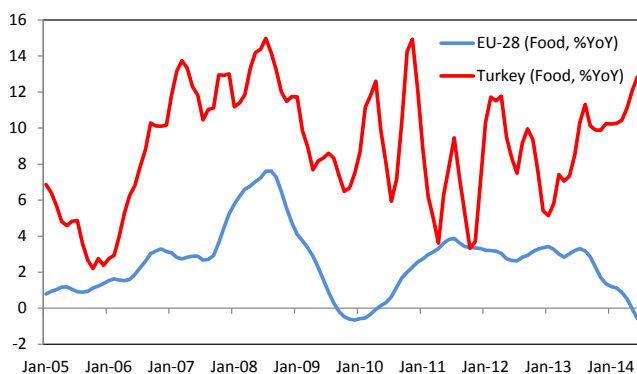
Source: Citi Research

Figure 3. Contribution to Inflation: Food vs. Non-Food



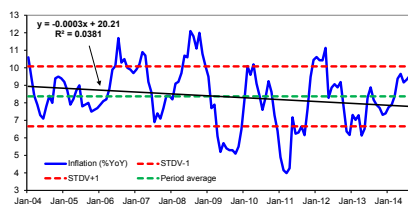
Source: Haver and Citi Research

Figure 4. Food Inflation (%YoY): Turkey vs. EU-28



Source: Haver and Citi Research Note: 3-month moving average

Figure 5. Inflation (%YoY)



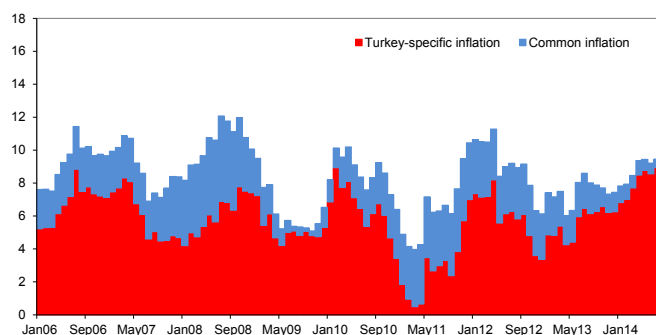
Source: Haver and Citi Research

At first blush, one may be tempted to conclude that Turkey is experiencing one of its typical cyclical inflation episodes ([Turkey Macro View - Inflation Remains Hostage to Cyclical Factors](#)). The relevant narrative is rather simple: while the depreciation of the lira and unfavorable food prices (or oil prices) drive inflation higher, the inflation rate softens later thanks to the stabilization of the currency and the correction in food inflation (Figure 5). However, *will this time be different?* This note aims at shedding light on this question—an issue which will have important implications for the performance of Turkish assets and the CBT's rate trajectory. The remainder of the note is structured as follows. The next section empirically investigates whether there has been a meaningful change in Turkey's inflation process. Sections 3 and 4 focus on food inflation and whether it matters for forward-looking inflation expectations. Section 5 centers on non-food inflation dynamics. Finally, Section 6 concludes the note.

Did CBT's unorthodox policy hurt inflation performance?

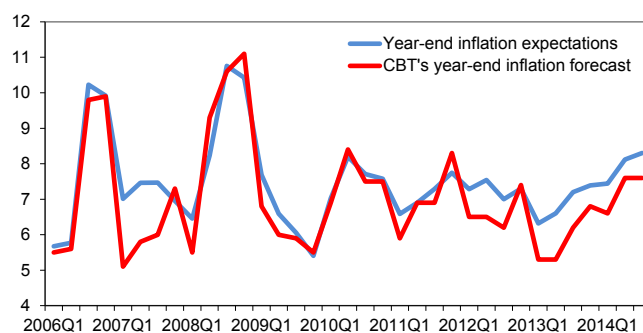
The available evidence suggests that the deterioration in Turkey's inflation is largely home-grown—not driven by external factors (Figure 6). Moreover, the rising disconnect between the CBT's year-end inflation forecasts and market expectations as well as the divergence of forward-looking inflation expectations from the target also demonstrate that the credibility gap of monetary policy has widened (Figures 7 and 8). In fact, our analysis suggests that Turkey's steady state inflation has risen considerably since the inception of the unconventional monetary policy (Figure 9).

Figure 6. External and Domestic Components of Inflation (%)



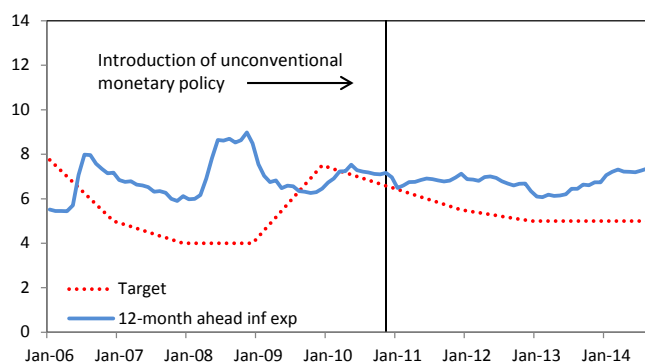
Source: Haver and Citi Research. Note: We calculate common inflation by using Turkey's basket weights to average EU28 inflation rates for detailed HICP components

Figure 7. Year-end Inflation: CBT's forecasts vs. Expectations (%)



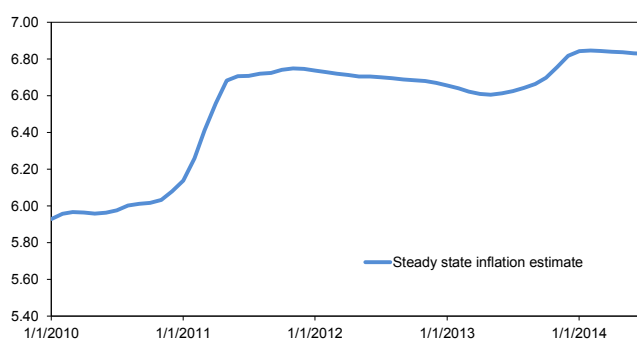
Source: CBT and Citi Research

Figure 8. Inflation Expectations and the Target (%)



Source: CBT and Citi Research

Figure 9. Evolution of the Steady State Inflation Estimate (%)¹



Source: Haver, CBT and Citi Research

A more formal analysis summarized in the Appendix 2 (Figure 29) corroborates our concern that there may be a structural break in Turkey's inflation process following the adoption of the CBT's unorthodox policy. In particular, various model specifications including the exchange rate, global food prices, oil prices and the output gap suggest that there was a structural break in October 2010, just around the time of the inception of the CBT's unconventional policy.

¹ We consider a basic Phillips curve inflation equation and estimate

$$\pi_t^e = \alpha + \beta_1 \pi_{t-1} + \beta_2 \pi_t + u_t \text{ for the period between Jan-05 and July-14 (using rolling}$$

regression, 60-m window). π_t represents the CBT's interpolated inflation target. We then calculate

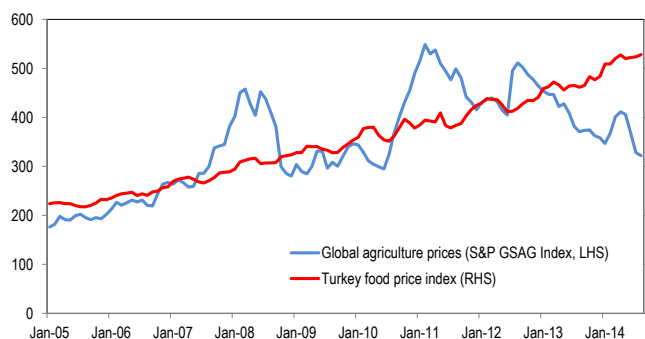
the implied steady state inflation rate that satisfies the condition of $\pi_t^e = \pi_{t-1} = \pi_t$ (Figure 9).

Assessing food inflation

The decoupling of Turkey's food inflation from global agriculture prices so far in 2014 is noteworthy (Figures 4 and 11). To shed some light on the relative importance of global factors in shaping Turkey's food inflation, we carry out a simple exercise. Specifically, we calculate what can be referred to as "*common food inflation*" by applying Turkey's basket weights to average EU-28 inflation rates for the detailed food component of HICP. The common food inflation component aims to capture the impact of global food price developments, which would, in turn, allow us to analyze country-specific (home-grown) food inflation.

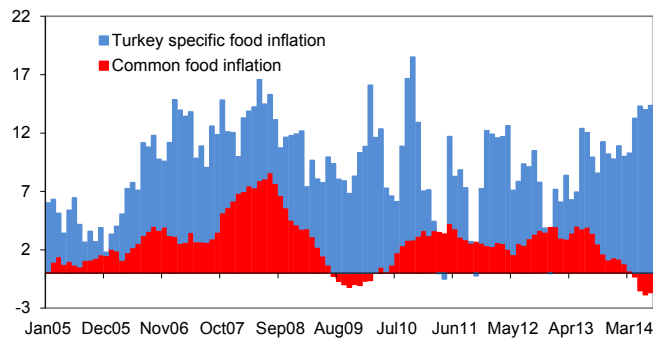
Our analysis suggests that food inflation in Turkey is largely driven by domestic factors (Figure 11). For instance, since July 2010 Turkey's food prices have risen by about 50%, of which Turkey-specific factors' contribution accounted for around 40pp. Moreover, a comparison of Turkey's detailed food items with that of Europe reveals two important points (Please refer to the Appendix 1, Figures 21 through 28). First, on average Turkey's food inflation is more volatile and higher than that of Europe. Second, bread/cereal, milk/cheese/egg, fruit, meat and sugar/jam are the main culprits behind the recent surge in food inflation in Turkey. A quick glance at Figures 21 through 28 in the Appendix 1 also shows that the broad-based nature of the current high food inflation episode is different from other similar episodes in the past since previous similar episodes (such as 2008) were mainly driven by global factors (Figures 10 and 11). This, in turn, raises the question of whether we are facing a change in pricing behavior in the domestic food market.²

Figure 10. Food Prices: Global vs. Turkey



Source: Haver, Bloomberg and Citi Research

Figure 11. Food inflation: Turkey-specific vs. External



Source: Eurostat and CIRA

Should we care about food inflation?

Whether the CBT should treat the adverse impact of food prices on inflation as a temporary phenomenon has stimulated much debate. We believe that benign neglect of food inflation may be a risky strategy. Adverse shocks in food prices can complicate the conduct of monetary policy in countries such as Turkey where food accounts for a relatively large share of the consumption basket. This is because agricultural shocks can not only increase short-run inflation, but also generate a sustained increase in the inflation rate if they raise inflationary expectations. Our empirical analysis lends support to this conjecture. Specifically, we revisit our previous investigation ([Turkey Macro View - The Case Against Benign Neglect of Food Inflation](#)) in which we considered a number of simple models to

² There are widespread media reports suggesting that hoarding of non-perishable agriculture products may have contributed to the deterioration in Turkey's food inflation.

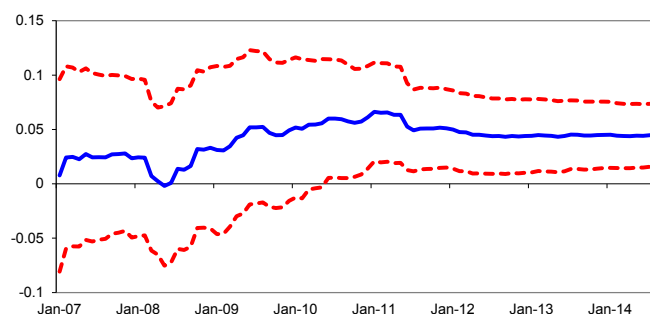
determine the impact of food inflation (FOOD) on the change in the 12-month inflation expectations (ΔEXP) after controlling for the currency appreciation (APR) and the depreciation (DEP), as well as the standard core measures (I and H).³

Figure 12. Models for Inflation Expectations (Jan 04-Aug 2014)

	Model 1	Model 2	Model 3	Model 4
Constant	-0.05 (-1.86)	-0.11 (-3.54)	-0.14 (-2.82)	-0.11 (-2.33)
ΔEXP_{t-1}	0.55 (7.75)	0.57 (9.25)	0.56 (8.88)	0.57 (9.16)
$FOOD_{t-1}$	0.04 (2.50)	0.04 (3.10)	0.04 (3.11)	0.04 (3.08)
APR_t	...	0.01 (0.62)	0.01 (0.70)	0.01 (0.62)
DEP_t	...	0.06 (5.80)	0.06 (5.78)	0.06 (5.77)
H_{t-1}	0.05 (0.77)	...
I_{t-1}	0.01 (0.10)
R^2	0.37	0.53	0.53	0.53
Adj. R^2	0.36	0.51	0.51	0.51
F-stat	36.97	34.66	27.75	27.50
Prob(F-stat)	0.00	0.00	0.00	0.00

Source: Citi Research Note: Numbers in parentheses are t-statistics

Figure 13. Recursive Coefficient on FOOD



Source: Citi Research Note: Model 2 in Figure 12

Our empirical findings suggest that food inflation has a statistically significant impact on inflation expectations, even after controlling for a number of important variables (Figure 12). Specifically, we calculate that a one percentage point rise in seasonally adjusted food prices raises 12-month ahead inflation expectations in the following month by 0.04 percentage points. Our findings also suggest that, while food inflation has almost always had a positive impact on inflation expectations, it has become statistically significant only since early-2010 (Figure 13).

A quick glance at Figure 12 suggests that while the currency appreciation doesn't have a statistically significant impact on inflation expectations, the depreciation plays a significant role in pushing expectations higher. Finally, the standard core measures (H and I) don't have a statistically significant effect on inflation expectations.

In summary, our analysis demonstrates that it may not be prudent to regard headwinds from food inflation as temporary, given their impact on forward-looking expectations. In addition, the empirical results indicate that the CBT should not bank on currency appreciation to offset the adverse impact of rising food prices on headline inflation since, unlike depreciation, appreciation doesn't have a statistically significant effect on expectations.

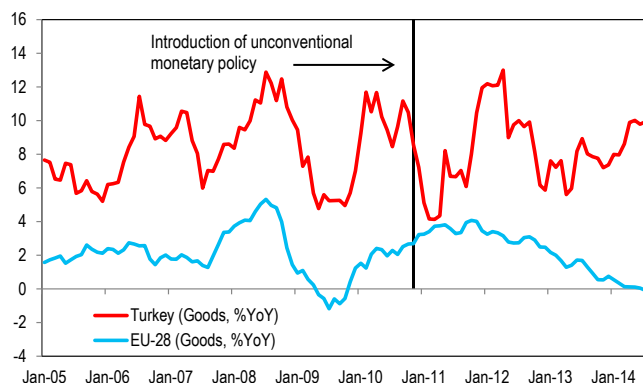
Assessing non-food Inflation

Figures 14 and 15 suggest that the deterioration in Turkey's inflation performance with respect to the EU-28 isn't solely driven by food inflation.

We see a sharp deterioration in Turkey's service and core goods inflation—particularly since the inception of the CBT's unorthodox policy in late 2010. Moreover, there is some evidence suggesting that there may be a structural break in core and service inflation (Figures 16 and 17). This conjecture is also supported by our principal component analysis, which also shows that there may be structural break in Turkey's underlying inflation process (Figure 18).

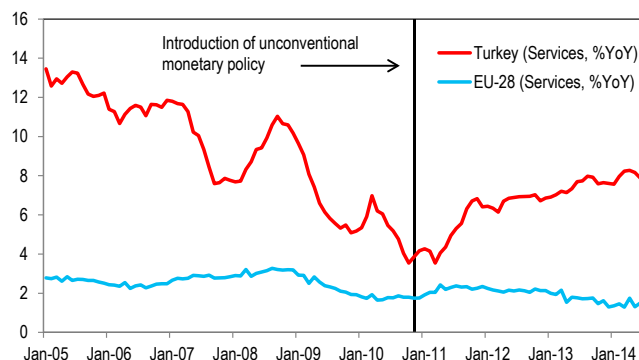
³ In the analysis, we use seasonally adjusted data to calculate monthly changes in food prices and H and I indices. Moreover, in the case of the exchange rate (lira basket against the USD and EUR), we avoid using future information by considering only the first 20 days of the month in question since survey results are typically released after the 20th.

Figure 14. Core Goods Inflation (%YoY)



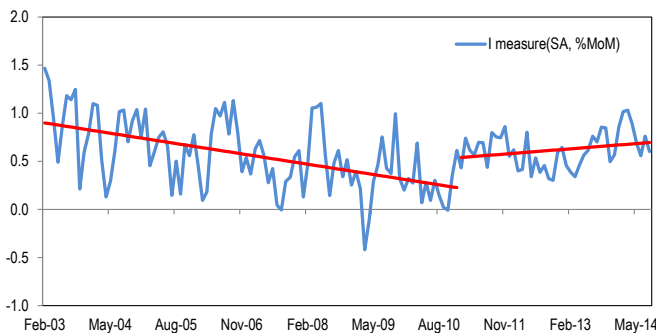
Source: Haver and Citi Research Note: Excluding food and energy.

Figure 15. Service Inflation (%YoY)



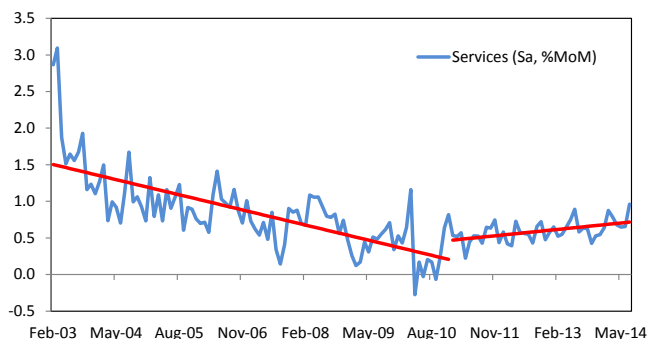
Source: Haver and Citi Research

Figure 16. Turkey: Core Inflation (SA, %MoM)



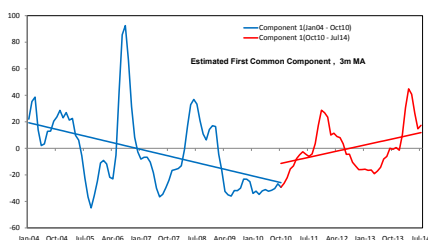
Source: Haver and Citi Research

Figure 17. Turkey: Service Inflation (SA, %MoM)



Source: Haver and Citi Research

Figure 18. Common Inflation Component



Source: Haver and Citi Research Note: First common component based on Principal Component Analysis (PCA) of 44 sub-components of inflation (SA mom).

A more formal analysis to determine the presence of a structural break in core and services inflation suggests that there was indeed a break around the time of the inception of the CBT's monetary policy (Appendix 2, Figures 30 and 31). Moreover, our empirical results are in line with the observed break in the disinflation process summarized in Figures 16 and 17. In all models for core inflation (Figure 30 in the Appendix 2), while trend variables before the structural break have statistically significant negative coefficients, they turn positive but not statistically significant. The results for service inflation also point to a disruption in the disinflation process after 2010. In our view, the structural break—and the observed stickiness—in service inflation is a worrisome development, threatening the CBT's ability to bring inflation closer to the 5% target.

Inflation Outlook: Cyclical vs. Secular Forces

The empirical results corroborate our view that there has been a structural break in Turkey's inflation process, which coincides with the inception of the CBT's unorthodox monetary policy. Moreover, with core measures hovering around 10%YoY and service inflation fluctuating at about 8%YoY—not to mention the marked deterioration in forward-looking inflation expectations—we find it difficult to concur with policymakers' and the markets' relatively sanguine take on Turkey's inflation outlook.

Given the likely structural break in the disinflation process, we argue that the country's inflation outlook has become more challenging. Nonetheless, we recognize the possibility of cyclical (largely base-effect related) improvements in annual inflation next year. Specifically, assuming a normal harvest year and using Citi forecasts for commodity prices (oil/gold/wheat) as well as the exchange rate, we believe that year-on-year inflation may fall as low as about 6.0% by the summer of 2015 (Figure 19). However, we expect a pick-up in annual inflation in 4Q 2015 following the general elections on the back of the reversal of favorable base effects and the likely administrative price adjustments (Figure 20).

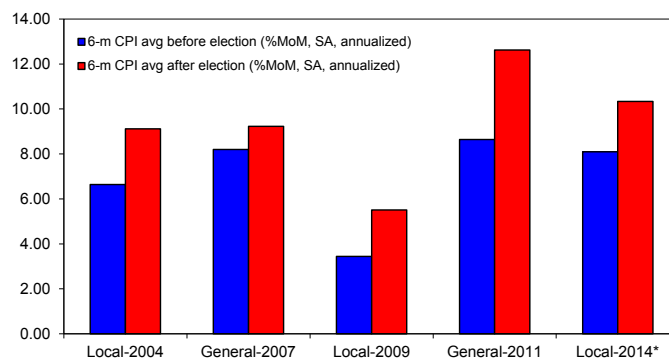
In light of our inflation forecast trajectory, we are aware of the possibility that the bond market may get carried away with the likely cyclical decline in inflation next year (mostly in 1H). However, investors should be cognizant of the fact that a lasting improvement in inflation is unlikely to occur without a durable deceleration in service inflation (Figure 15), which would require a more conventional monetary policy focusing primarily on price stability.

Figure 19. Inflation Forecast Trajectory (%YoY)



Source: Haver and Citi Research

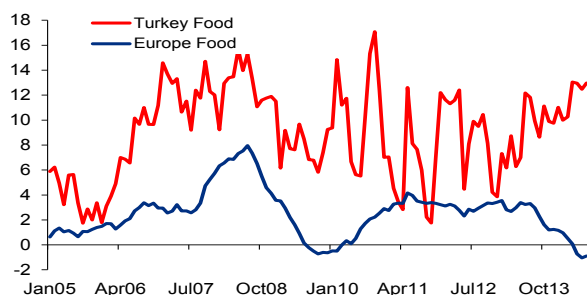
Figure 20. Electoral Cycles and Inflation (%)



Source: Haver and Citi Research * for 5 months

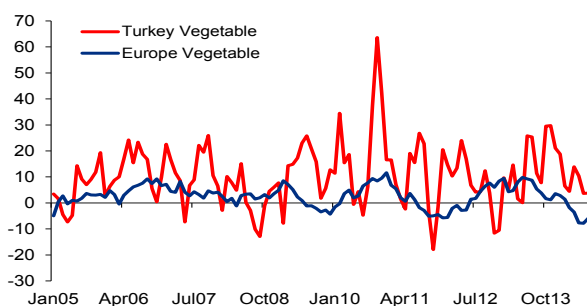
APPENDIX 1: Food Prices—Turkey vs. EU 28

Figure 21. Food Inflation (%YoY)



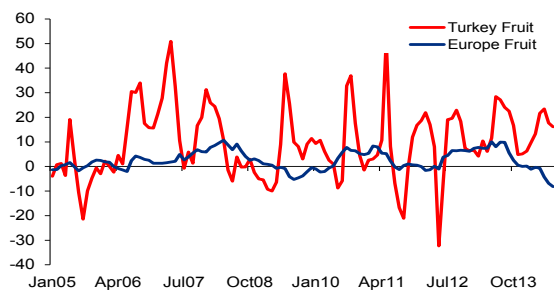
Source: Haver and Citi Research

Figure 22. Vegetables including Potatoes & Tubers (%YoY)



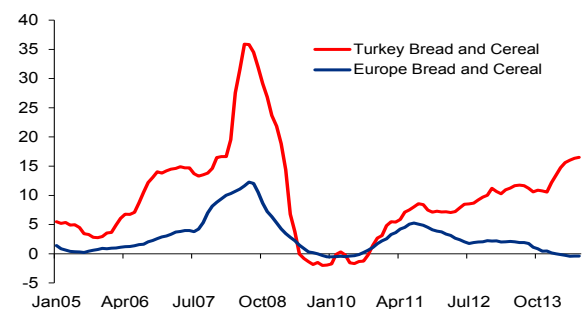
Source: Haver and Citi Research

Figure 23. Fruit (%YoY)



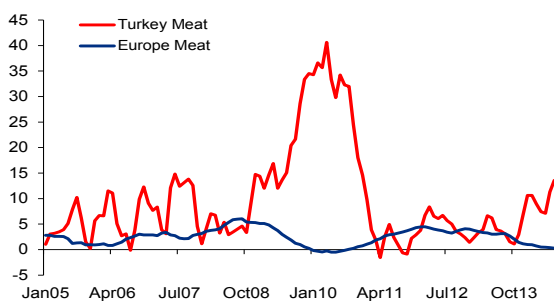
Source: Haver and Citi Research

Figure 24. Bread and Cereals (%YoY)



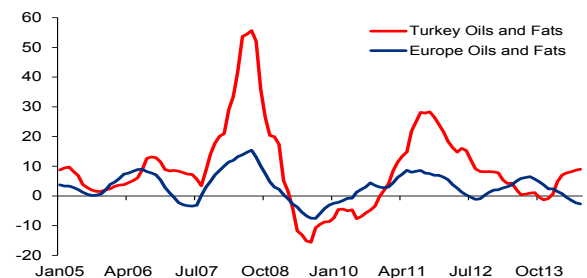
Source: Haver and Citi Research

Figure 25. Meat (%YoY)



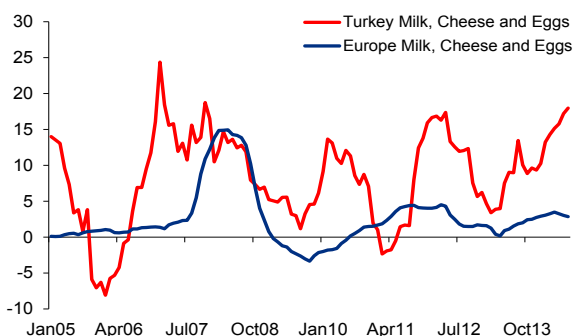
Source: Citi Research

Figure 26. Oils and Fats (%YoY)



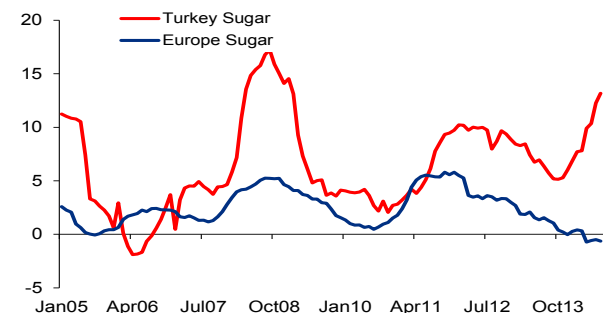
Source: Citi Research

Figure 27. Milk, Cheese and Eggs (%YoY)



Source: Haver and Citi Research

Figure 28. Sugar, Jam, Honey, etc. (%YoY)



Source: Haver and Citi Research

APPENDIX 2: Structural Break Tests

Figure 29. Bai-Perron Structural Break Test⁴ (Dependent Variable: Headline Inflation)

Est. Break Period Indep. Vars.	Model1	Model2	Model3	Model4
	2003M02 - 2014M07	2003M04 - 2010M09	2003M04 - 2010M09	2003M04 - 2010M09
C	0.76 (8.96)	0.63 (5.39)	0.66 (6.63)	0.64 (5.44)
Trend	-0.001 (-0.94)	0.000 (-0.20)	0.000 (-0.13)	0.000 (-0.10)
FAO(-2)	- -	0.06 (3.21)	0.05 (2.83)	0.05 (2.81)
TRYBasket(-1)	- -	0.03 (2.06)	0.03 (2.02)	0.03 (1.95)
Oil(-1)	- -	0.00 (0.23)	0.00 (0.22)	0.00 (0.19)
Est. Break Period Indep. Vars.		2010M10 - 2014M08	2010M10 - 2014M07	2010M10 - 2014M07
C	- -	0.14 (0.22)	-0.02 (-0.03)	-0.02 (-0.02)
Trend	- -	0.004 (0.73)	0.005 (1.00)	0.005 (0.96)
FAO(-2)	- -	-0.09 (-3.05)	-0.09 (-2.99)	-0.09 (-2.97)
TRYBasket(-1)	- -	0.01 (0.48)	0.01 (0.41)	0.01 (0.36)
Oil(-1)	- -	0.06 (3.66)	0.06 (3.56)	0.06 (3.56)
Non-breaking variables				
Lagged Dep	- -	0.05 (0.59)	- -	0.03 (0.40)
Gap(-1)	- -	- -	0.01 (1.19)	0.01 (1.10)
R-squared	0.01	0.22	0.23	0.23
F-statistic	0.88	3.61	3.71	3.37
Prob(F-statistic)	0.35	0.00	0.00	0.00

Source: Citi Research

⁴ Bai and Perron (2003), "Computation and Analysis of Multiple Structural Change Models," Journal of Applied Econometrics, 6, 72–78.

Figure 30. Bai-Perron Structural Break Test (Dependent Variable: Core Inflation)

Est. Break Period		Model1	Model2	Model3	Model4
		2003M02 - 2010M11	2003M03 - 2010M10	2003M03 - 2010M10	2003M03 - 2010M10
Indep. Vars.					
C		0.91 (15.71)	0.50 (5.65)	0.51 (5.89)	0.52 (6.04)
Trend		-0.007 (-6.96)	-0.004 (-3.50)	-0.004 (-3.71)	-0.004 (-3.67)
TRYbasket (-1)		- -	- -	0.01 (1.57)	0.01 (1.44)
Est. Break Period		2010M12 - 2014M08	2010M11 - 2014M08	2010M11 - 2014M08	2010M11 - 2014M07
Indep. Vars.					
C		0.22 (0.58)	0.18 (0.56)	0.11 (0.33)	-0.04 (-0.12)
Trend		0.003 (1.06)	0.001 (0.53)	0.002 (0.71)	0.003 (1.13)
TRYbasket (-1)		- -	- -	0.03 (2.01)	0.03 (1.88)
Non-breaking variables					
Lagged Dep		- -	0.43 (5.68)	0.42 (5.60)	0.40 (5.37)
Gap (-1)		- -	- -	- -	0.01 (1.96)
R-squared		0.27	0.40	0.43	0.45
F-statistic		16.93	22.16	16.36	14.80
Prob(F-statistic)		0.00	0.00	0.00	0.00

Source: Citi Research

Figure 31. Bai-Perron Structural Break Test (Dependent Variable: Service Inflation)

		Model1	Model2	Model3	Model4
Est. Break Period		2003M02 - 2005M11	2003M03 - 2006M03	2003M03 - 2010M10	2003M03 - 2010M03
Indep. Vars.					
C		1.99 (18.92)	1.78 (18.33)	0.87 (6.86)	0.81 (6.39)
Trend		-0.041 (-7.78)	-0.031 (-7.30)	-0.008 (-5.21)	-0.006 (-3.98)
TRYbasket(-1)		- -	-0.02 (-1.60)	-0.01 (-0.97)	-0.01 (-1.13)
Est. Break Period		2005M12 - 2008M11	2006M04 - 2010M10		
Indep. Vars.					
C		0.97 (3.79)	1.52 (9.41)	- -	- -
Trend		-0.003 (-0.71)	-0.014 (-5.78)	- -	- -
TRYbasket(-1)		- -	0.01 (0.64)	- -	- -
Est. Break Period		2008M12 - 2014M07	2010M11 - 2014M07	2010M11 - 2014M07	2010M04 - 2014M07
Indep. Vars.					
C		-0.06 (-0.31)	0.11 (0.30)	0.08 (0.23)	-0.50 (-1.75)
Trend		0.006 (2.98)	0.004 (1.28)	0.002 (0.79)	0.007 (2.78)
TRYbasket(-1)		- -	0.01 (0.66)	0.01 (0.30)	0.01 (0.45)
Non-breaking variables					
Lagged Dep		- -	- -	0.39 (5.38)	0.40 (5.62)
Gap (-1)		- -	- -	- -	0.00 (0.90)
R-squared		0.62	0.61	0.63	0.63
F-statistic		43.10	25.44	36.99	31.70
Prob(F-statistic)		0.00	0.00	0.00	0.00

Source: Citi Research

Appendix A-1

Analyst Certification

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