

## 4. Supply and Demand Developments

The GDP data of the third quarter of 2013 suggest that economic activity remained largely consistent with the outlook presented in the October Inflation Report. Seasonally adjusted data point to an increase by 0.9 percentage points in the GDP on a quarterly basis. Thus, economic activity, which gained momentum in the first half of the year, continued with a steady upward trend in the third quarter. Having followed a flat course in the previous quarter, final domestic demand recorded a mild increase in the third quarter. The mild course of domestic demand in the last two quarters is attributed to public expenditures. In fact, the analysis of final domestic demand components indicates that the private sector demand continued with a stable uptrend, while the public sector demand, which posted a fall in the second quarter after a robust increase in the first quarter, also fell in the third quarter. On the other hand, both imports and exports recorded a quarter-on-quarter decline in this period. As imports contracted more than exports, net exports contributed positively to quarterly growth. Thus, the balancing among demand components pointed to a positive outlook compared to the first half of the year, as projected.

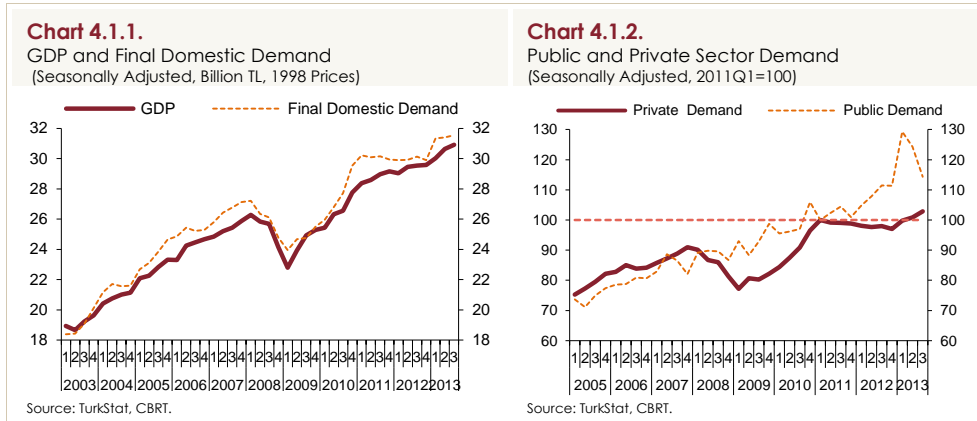
The final-quarter data suggest that economic activity will continue to record a mild increase in the last quarter of 2013. On the production side, in the October-November period, industrial production stood above its average level of the previous quarter and maintained its stable uptrend on a quarterly basis. Out of the December indicators, those pertaining to PMI and BTS production of the last three months point to a positive outlook in the last quarter as well. On the expenditures side, data on production and imports of both consumption and investment goods show that private sector demand will preserve its steady uptrend in the last quarter.

Indicators regarding external demand suggest that exports of goods and services will record a larger increase than imports thereof in the last quarter. A similar situation applies to indicators on non-gold exports and imports, which reflect the underlying trend in exports and imports, respectively. Accordingly, the improvement seen among demand components in the third quarter is expected to continue in the last quarter and the current account deficit will contract slightly on a quarterly basis.

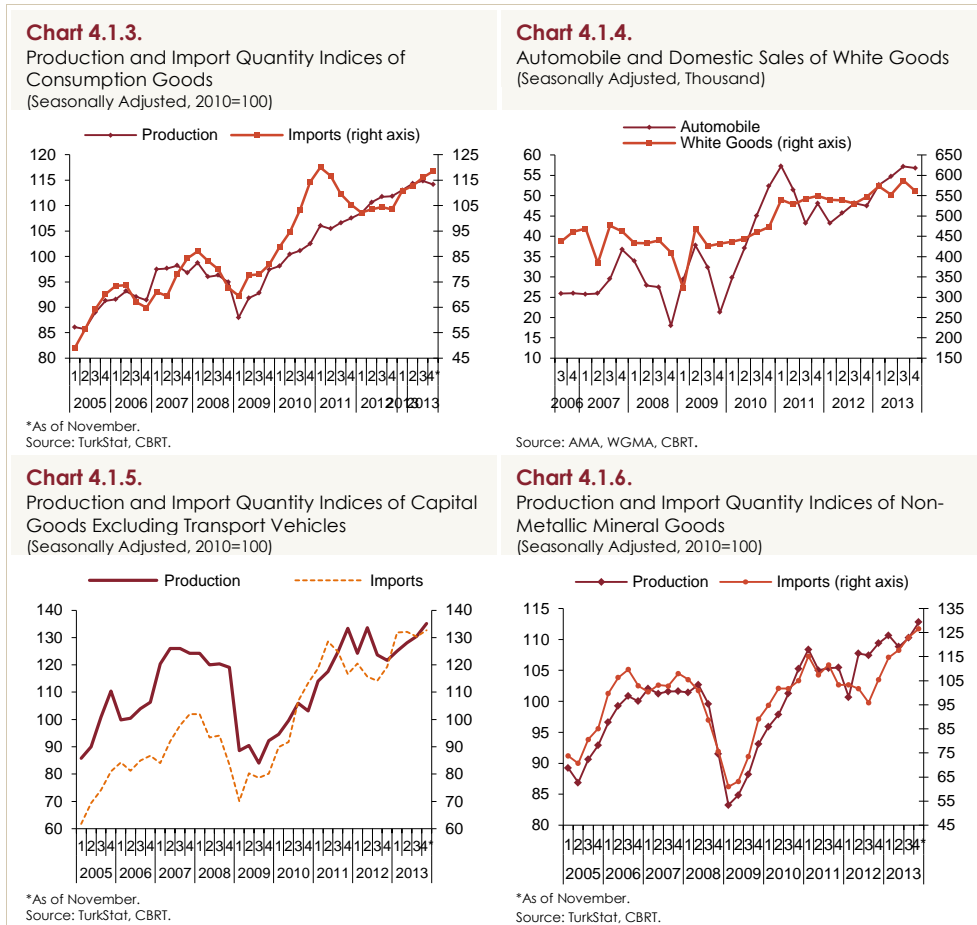
In sum, domestic demand is projected to have continued with a steady course in the last quarter. The recovery in the European economies is believed to bolster growth through the export channel in the upcoming period. On the other hand, the recent depreciation of the Turkish lira and the rise in interest rates aggravated the downside risks to the future course of domestic demand. Against this background, domestic demand developments are expected to support the disinflation process and contribute to the recent improvement in the current account deficit.

### 4.1. Gross Domestic Product Developments and Domestic Demand

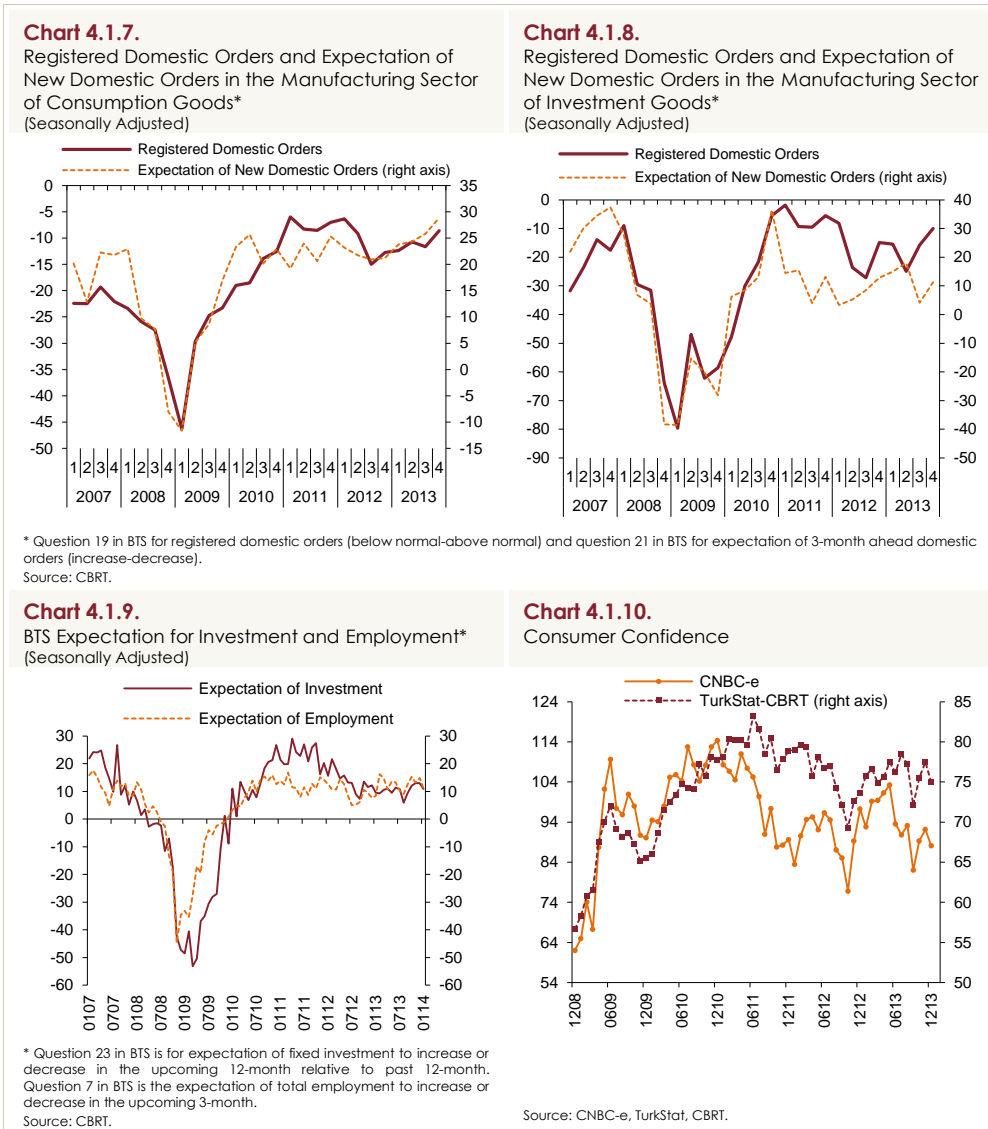
According to the national accounts data released by TurkStat, the GDP posted a year-on-year increase by 4.4 percent in the third quarter of 2013. In seasonally adjusted terms, the GDP recorded a quarter-on-quarter increase by 0.9 percent. The final domestic demand, which remained almost flat in the second quarter following a surge in the first quarter, displayed a mild increase in the third quarter (Chart 4.1.1). Due to the high volatility of public expenditures in 2013, examining the final domestic demand by private and public sector breakdown enables a more reliable analysis. In fact, private sector demand followed a steady uptrend in 2013, while public demand recorded a fall after the surge in the first quarter (Chart 4.1.2).



The final-quarter data show that private consumption and private investment demand, which recorded increases for three consecutive quarters in 2013, will remain on an upward trend. In the October-November period, imports of consumption goods remained on the rise, while production thereof decreased (Chart 4.1.3). Among the indicators on the demand for durable consumption goods, sales of automobiles remained flat, while the sales of white goods declined (Chart 4.1.4). Both imports and the production of investment goods excluding transport out of indicators regarding machinery and equipment investments recorded an increase (Chart 4.1.5). The data on construction investment indicate that construction investment continues to increase (Chart 4.1.6).



BTS indicators for manufacturing sectors on consumption and investment goods suggest a sustained recovery in domestic demand. In fact, for the manufacturing sector on consumption goods, the indicator on the normality of registered domestic market orders neared the 2010-2011 period, which was marked by robust demand. On the other hand, expectations of orders proved even more favorable than the 2010-2011 period (Chart 4.1.7). Domestic market expectations of the manufacturing sector of investment goods indicate an increase in investments (Chart 4.1.8). The course of investment and employment, which shows the relatively longer-term decisions of firms, also started to recover in the last quarter (Chart 4.1.9). Meanwhile, consumer confidence did not exhibit a strong pace (Chart 4.1.10).

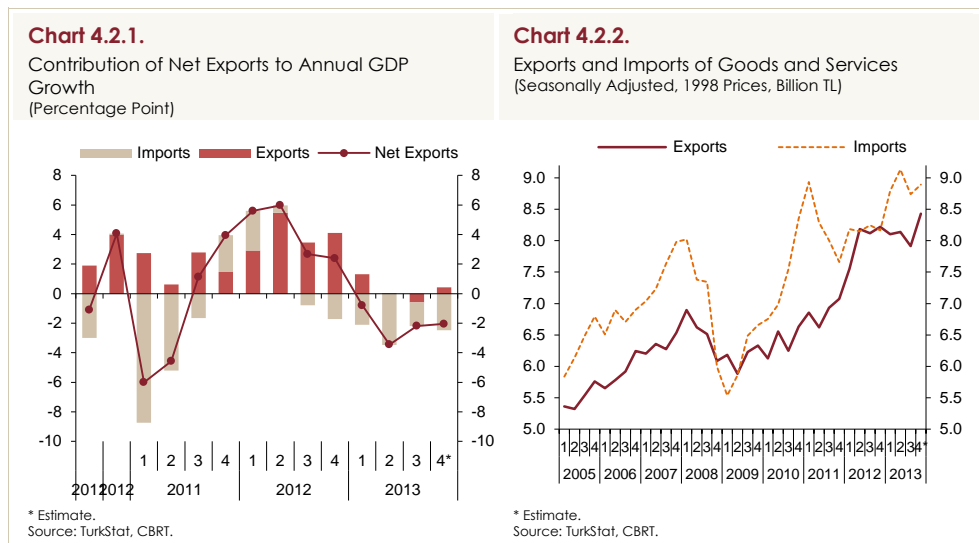


Coupled with accelerating economic activity, the rebound in the European economies is expected to support the upward trend of the domestic demand in 2014. On the other hand, the cautious monetary policy stance, adopted macroprudential measures and the weak course of capital flows are projected to bring credit growth rates to more plausible levels. Accordingly, the rise in final domestic demand is expected to be

moderate. Meanwhile, the recent depreciation of the Turkish lira, the rise in interest rates as well as the decline in consumer and investor confidence have heightened risks on the recovery in domestic demand. All these aggravate the downside risks on the strength of recovery, and the upside risks on the volatility of demand. Thus, the high-frequency data on domestic demand should be interpreted also considering whether these figures reflect a permanent trend or not. Under these circumstances, domestic demand developments are expected to partially restrain the recent cost-side pressures. Moreover, the anticipated slowdown in domestic demand is believed to support the recent improvement in the current account deficit and the balancing process.

## 4.2. External Demand

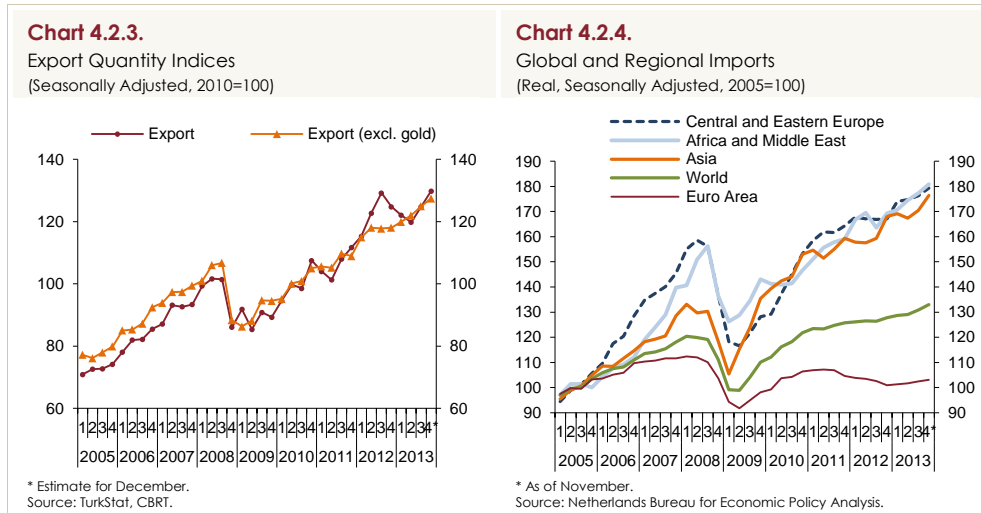
National accounts data of the third quarter indicated that exports of goods and services fell by 2.2 percent, while imports thereof rose by 6.0 percent in annualized terms. Thus, the negative contribution of net exports to annual growth continued into the third quarter (Chart 4.2.1). Seasonally adjusted data suggest that both exports and imports recorded a quarterly decline. Yet, the balancing among external demand components presented a better outlook than the second quarter as exports experienced a relatively smaller fall than imports (Chart 4.2.2).



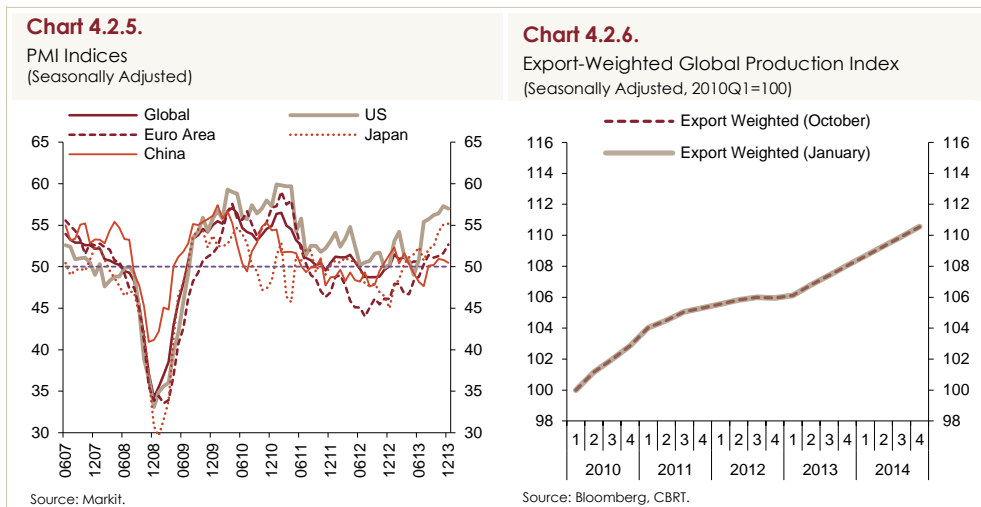
The final-quarter data reveal that the export quantity index rose in the October–November period. The core index excluding gold exports continued with its steady trend and posted a quarter-on-quarter increase (Chart 4.2.3). Recent indicators point to a possible month-on-month increase both in the headline export quantity index and the export quantity index excluding gold in December. Accordingly, the quarterly rate of increase in exports and exports excluding gold may even exceed the current level measured by the average of the October–November period data.

Global trends reveal that the mild increase in the global import demand slightly gained pace in the October–November period. The accelerating import demand from the Euro Area, which has a major share in our exports, has recently got stabilized following a prolonged sluggish course. The Asian import demand

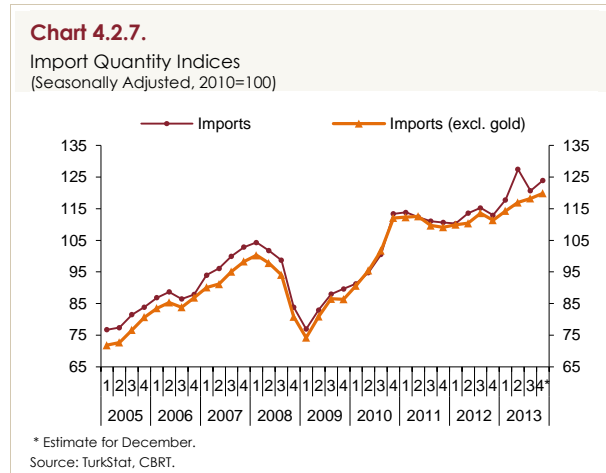
recovered after posting a decline in the second quarter, while the increase in the import demand from Africa and Middle East continued (Chart 4.2.4).



PMI indicators show that economic activity continues to recover on a global scale. In fact, having maintained an uptrend, the global manufacturing index climbed notably above the neutral 50 (Chart 4.2.5). After registering a surge in the third quarter, the US PMI index continued to increase in the last quarter, albeit at a slower pace. Meanwhile, the Euro Area PMI index increased at an accelerating pace towards the year end. The Chinese PMI index remained weak just above the neutral level, while the Japanese PMI displayed a marked surge. On the other hand, the export-weighted global growth outlook, one of the medium-term indicators, remained broadly unchanged in the inter-reporting period (Chart 4.2.6). Global PMI and import indicators point to a more favorable outlook in external demand conditions compared to the first nine months of the year. Against this background, the underlying trend of exports of goods and services is expected to continue with an upward track in the fourth quarter (Chart 4.2.2).

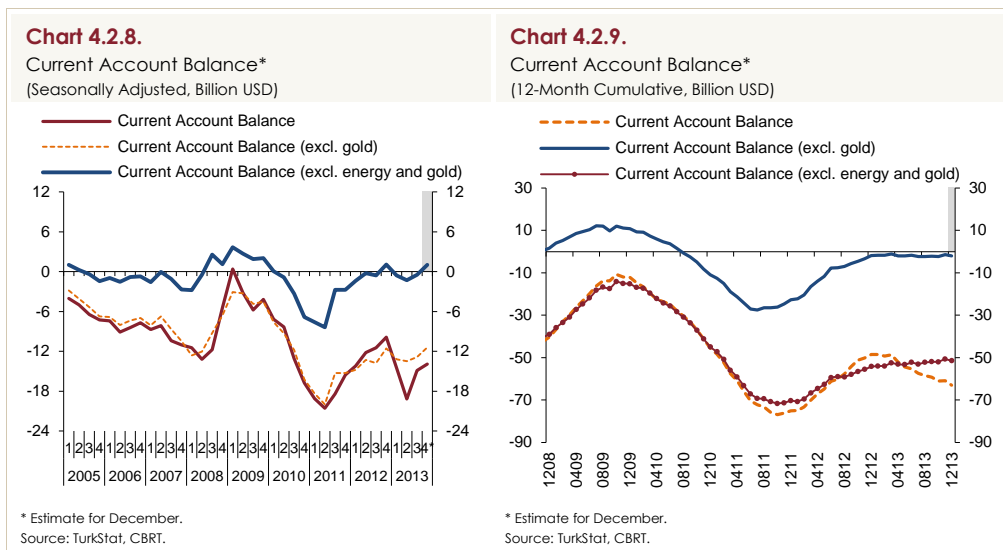


Having registered a decline in the third quarter, the import quantity index moved upwards again in the October-November period by 3 percent compared to the third quarter. The rise in imports excluding gold stood at relatively moderate levels in this period. Recent indicators point to a mild increase in December in both measures for imports. Thus, both total imports and imports excluding gold are anticipated to register a quarter-on-quarter increase in the final quarter amid the expected mild recovery in domestic demand (Chart 4.2.7). Accordingly, imports of goods and services are also expected to record an increase in the third quarter (Chart 4.2.2).



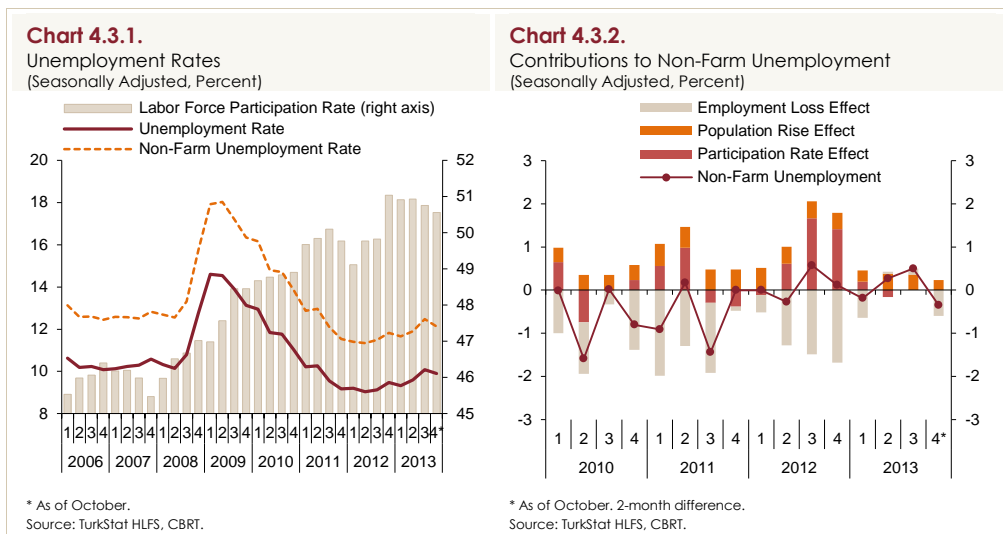
In the last quarter of the year, net exports are expected to continue with negative contributions to growth, albeit at a slightly slower pace than the third quarter (Chart 4.2.1). The projected mild course of final domestic demand and the signs of a rebound in the Euro Area are considered to be favorable regarding further balancing in the upcoming period.

The improvement in the seasonally adjusted current account balance is expected to continue in the last quarter, albeit at a slower pace. In the same period, the current account balance excluding energy and gold is envisaged to display a stronger performance (Chart 4.2.8). On the other hand, the deterioration of the 12-month cumulative current account balance in nominal terms persisted (Chart 4.2.9).

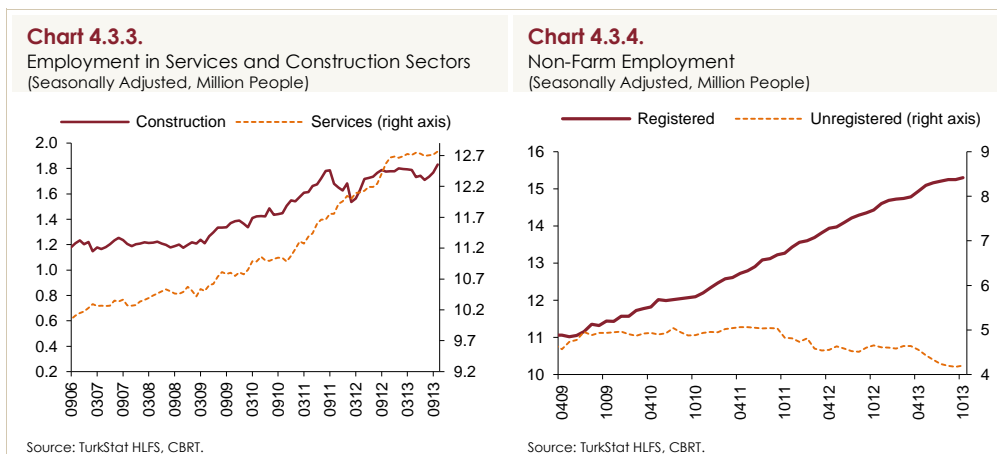


### 4.3. Labor Market

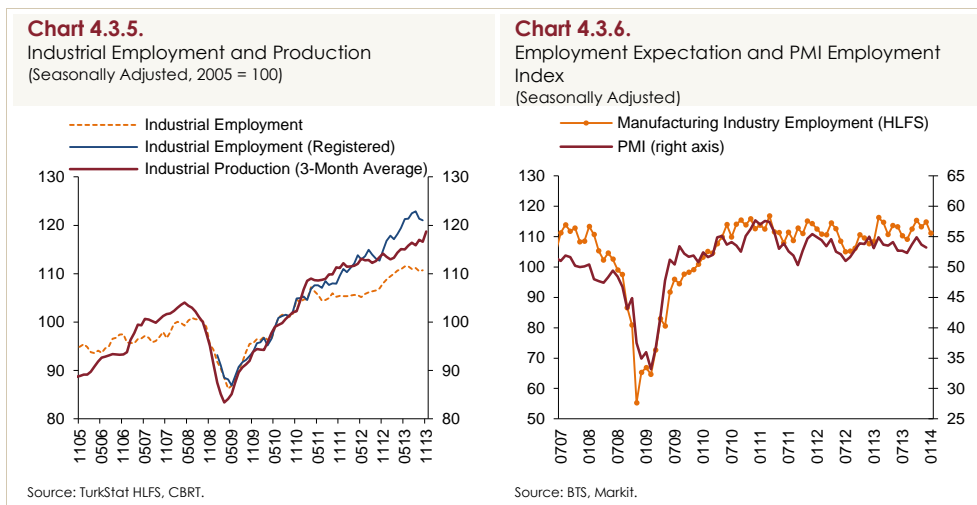
Unemployment rates have recorded an increase as of April 2013 amid the sluggish course of non-farm employment. The third quarter was marked by the deepest slowdown in employment such that the unemployment rates surged, while non-farm employment decreased (Charts 4.3.1 and 4.3.2). On the other hand, according to the most recent data as of October, unemployment registered a quarter-on-quarter decline in the last quarter. However, despite the pause in the unfavorable course of unemployment, the rise in non-farm employment in October was limited to certain sectors (Chart 4.3.2).



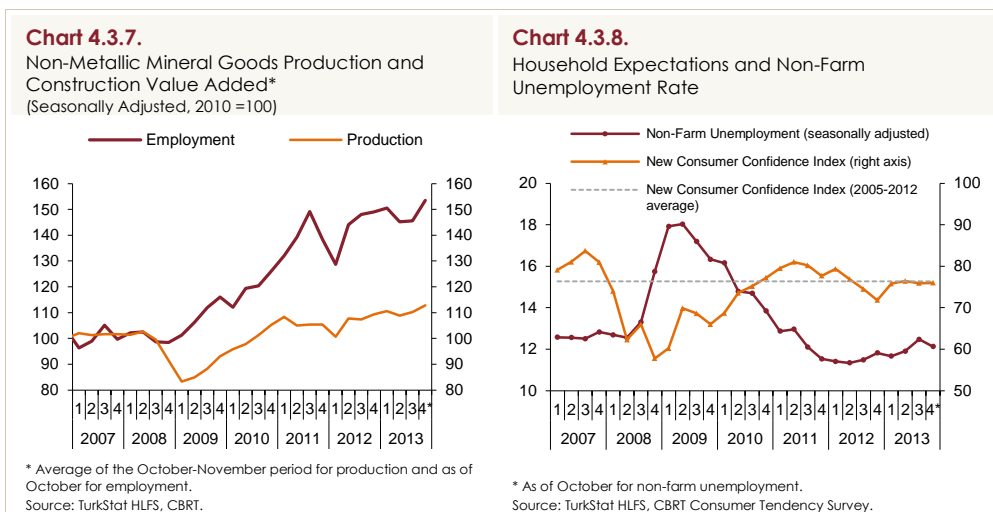
The slowdown in non-farm employment as of the second quarter of 2013 spread across sub-sectors. Thanks to the industrial and business services sectors, non-farm employment recorded an increase in the first quarter of 2013. In the succeeding period, the employment outlook deteriorated due to the slowdown in these sectors as well as employment losses in the construction sector (Charts 4.3.3 and 4.3.5). According to data releases in October, construction and services sectors pushed the non-farm employment upwards in the last quarter of the year. The construction sector employment went above the early-2013 level amid the increase in the unregistered construction employment. Another highlight regarding the labor markets in 2013 has been the fall in unregistered employment. The rate of increase in registered employment gradually slowed down in this period, while unregistered employment declined (Chart 4.3.4).



The persistent weak course in industrial employment since the second quarter of 2013 notwithstanding the uptrend in industrial production also continued in October (Chart 4.3.5). Leading indicators signal that no additional deterioration will be seen in industrial employment in the last quarter of the year. The BTS indicator of expectation on employment, which reflects views of the private firms operating in the manufacturing industry sector, posted an increase in the last quarter of 2013, yet trended back again in January 2014 (Chart 4.5.6). Similarly, the PMI indicator, which is a benchmark for the manufacturing industry employment, also recorded a limited rise in the last quarter (Chart 4.3.6). In addition, production developments in the manufacturing of non-metallic mineral goods, which provides the construction sector with intermediate goods, signal an increase in construction activities by trending upwards in November after a protracted period of slowdown (Chart 4.3.7). Construction employment developments in October are consistent with this indicator.

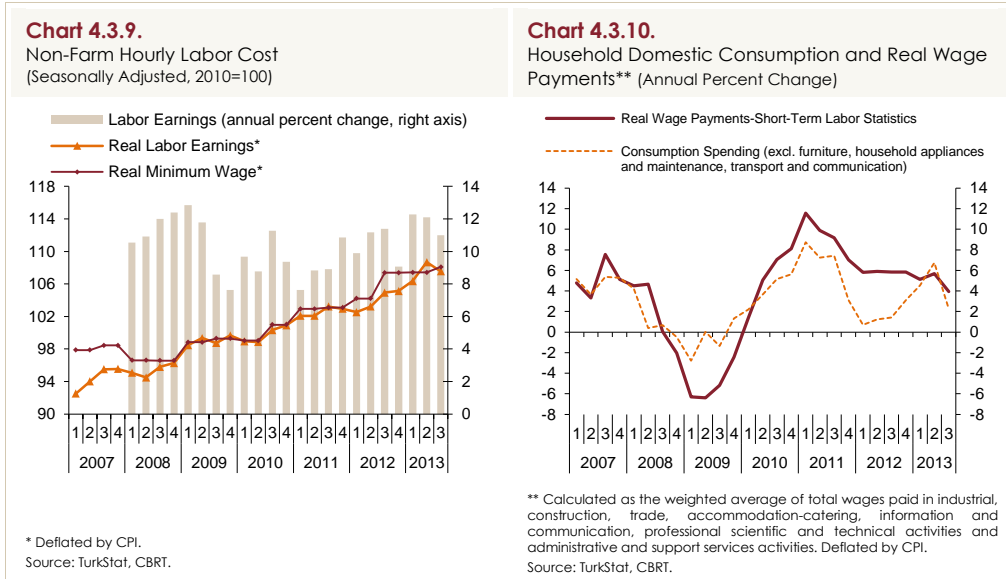


The CBRT's consumer confidence index, which reflects households' sentiments across Turkey, increased in the first quarter of 2013 to its long-term average (Chart 4.3.8). Having followed a flat course afterwards, it maintained this level in the last quarter of 2013. Given that the unemployment rate follows the confidence index with a lag, this outlook points to a sluggish course of unemployment growth in the last quarter.

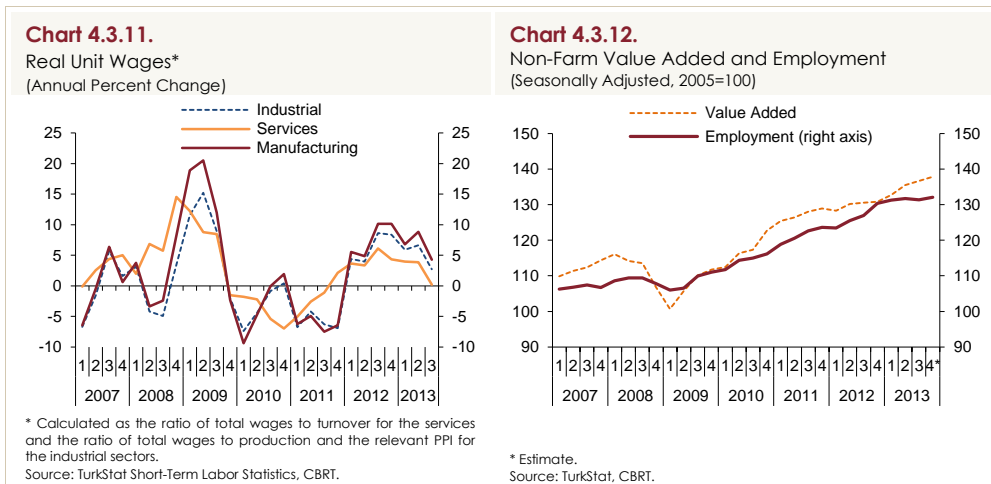




Analysis of labor market developments with regard to domestic demand suggests that the growth of labor earnings, one of the determinants of private consumption spending, receded in the third quarter of 2013 (Chart 4.3.9). Having surged in the first half of 2013, real hourly earnings declined in the third quarter. This enabled the increases in hourly earnings since end-2012 to near the minimum wage rise. In addition to the drop in real hourly earnings, the weak course of employment in the same period diminished the support that total wage payments provide to domestic consumption spending (Chart 4.3.10).



In the first half of 2013, the rise in hourly wages and the sluggish course of average productivity caused real unit wages to continue with an upward trend. Due to the deceleration both in the rise in turnover and hourly wages, this trend paused in the third quarter (Chart 4.3.11). In view of the inflation projections, the recently released minimum wage amounts to apply for 2014 indicate a real increase in wages. According to the new arrangement, the gross monthly minimum wage was set as 1071 TL for the first half of 2014 and 1134 TL for the second half. These amounts imply an average annual increase by 10.2 percent and 2.5 percent, respectively in nominal and real terms. Given that hourly wages move in tandem with minimum wages in the medium term, if not accompanied by productivity growth, the increases in wages may aggravate inflation rigidity, especially in the services sector with high labor intensity.



In sum, non-farm employment receded and the unemployment rate increased in the third quarter of 2013. Unemployment rates declined in October amid higher employment in construction and services. Meanwhile, the industrial employment continued to present a weak outlook. Leading indicators point to a mild increase in non-farm employment in the last quarter of 2013 (Chart 4.3.12). However, the political uncertainty that may deteriorate future investment decisions and the lower-than-expected global economic recovery are considered to be factors which may restrain the improvement in employment conditions.

Box  
4.1

## Determinants of Machinery and Equipment Investments of the Private Sector

Fixed capital investments play a major role on the long-term growth of income and employment. This box gives an analysis of the long and short-term determinants of machinery and equipment investments in the private sector. Adopting various theoretical approaches in the economic literature, investment factors are classified under two major categories as economic and non-economic factors. Non-economic factors include institutional quality, legal arrangements, bureaucracy, property rights, political rights and infrastructure, while economic factors include income, expectations about the economy, economic uncertainties, investment costs (interest rates, the price of investment goods, the real exchange rate), public sector investments, Capacity Utilization Ratio (CUR), financing opportunities (credits), indicators on external funding and profitability (Serven and Solimano, 1991).

This box shows the long-term and short-term relationship between the machinery and equipment investments of the private sector and the economic factors.<sup>1</sup> As some of the macroeconomic variables which are considered to influence machinery and equipment investments of the private sector include unit root, the existence of a co-integration between investment and factors affecting investment was tested through the bound test using an Autoregressive Distributed Lag (ARDL) model by utilizing quarterly data covering the 1991Q2 – 2013Q2 period. In the model employing machinery and equipment investments of the private sector as a dependent variable, the above-mentioned variables were used and the existence of a co-integration was tested through the following ARDL model such that:

$$\Delta investments_t = \beta_0 + \sum_{i=1}^p \beta_i \Delta investments_{t-i} + \sum_{j=1}^q \delta_j \Delta x_{t-j} + \gamma_0 investments_{t-1} + \gamma_j x_{t-1} + e_t$$

The above equation examines the existence of a co-integration between investment and other series by testing the  $H_0: \gamma_0 = \gamma_j = 0$  hypothesis. According to the estimation results, variables which are co-integrated with investments are the following:

$x_{1t}$  = income (to prevent simultaneity problems in the model, private sector machinery and equipment investments were subtracted from the GDP and the residual series was used as the income indicator)

$x_{2t}$  = interest rate (rate on GDDBS)

$x_{3t}$  = real exchange rate

$x_{4t}$  = capacity utilization rate

$x_{5t}$  = expectations (BTS, 12-month ahead expectations of firms on investment spending)

$x_{6t}$  = credits utilized by firms (the sum of TL- and FX-denominated credits extended to firms by resident banks and the external long-term credits extended to the private sector)

Coefficients and t-statistic values for the relevant variables in the estimated ARDL model are displayed in Table 1. Income, CUR, expectations and credits have a positive relationship with investments as expected. In line with the theory, increases in interest rates decrease investments, while appreciation of the TL boosts investments.

<sup>1</sup> Machinery and equipment investments of the private sector will briefly be referred to as investments in the rest of the box.

**Table 1. Long-Term ARDL Model Results**

Dependent variable:  $\Delta investments_{t-1}$

Explanatory variables	Coefficient	Standard error	t-statistics	p-value
Constant	0.05	0.02	2.44	0.02**
$investments_{t-1}$	-0.15	0.06	-2.50	0.01**
$income_{t-1}$	0.24	0.12	2.00	0.05*
$exch_{t-1}$	0.14	0.06	2.18	0.03**
$cur_{t-1}$	0.08	0.04	2.03	0.05*
$expectation_{t-1}$	0.20	0.04	4.83	0.00***
$interest_{t-1}$	-0.11	0.06	-1.80	0.08*
$credits_{t-1}$	0.16	0.06	2.40	0.02**
$\Delta income_t$	0.77	0.27	2.83	0.01**
$\Delta exch_t$	0.19	0.07	2.85	0.01**
$\Delta cur_t$	0.13	0.06	2.14	0.03**
$\Delta credits_t$	0.19	0.08	2.30	0.02**
$\Delta investments_{t-2}$	0.16	0.09	1.76	0.08*
$\Delta expectation_t$	0.20	0.06	3.30	0.00***
R-square	0.64	Adjusted R-square		0.57

Note: 1) The symbol "Δ" refers to the first difference of series in the model.  
 2) Series were seasonally adjusted through the TRAMO/SEATS method. All series except the capacity utilization rate, expectations and the interest rate were transformed into logs.  
 3) (\*\*\*), (\*\*) and (\*) denote statistical significance at 1, 5 and 10 percent, respectively.  
 4) The diagnostic tests show that the error terms are not correlated; error terms are homoscedastic and normally distributed.  
 5) In order to test for weak exogeneity, each independent variable in the model was treated as a dependent variable and tested for co-integration. Accordingly, series were only found to be co-integrated in the setting where investments are the dependent variable.

Table 2 displays the standardized long-term coefficients of the variables.<sup>2</sup> Accordingly, the variable with the highest coefficient is income, which is followed by expectations, credits and the real exchange rate. Long-term coefficients of the interest rate and the capacity utilization rate are lower than that of other variables in absolute terms.

**Table 2. Long-Term Coefficients of Variables**

Income	1.61	Real	0.95
Expectations	1.38	CUR	0.55
Credits	1.06	Interest	-0.75

The error correction term in Table 3 is statistically significant and has a negative sign as expected. Against this background, if investments deviate from the long-term equilibrium value, 16 percent of this deviation is corrected within a quarter, while it takes around 1.6 years for investments to reach the long-run equilibrium value.

**Table 3. Cointegration Model Results**

Dependent variable:  $\Delta investments_{t-1}$

Explanatory variables	Coefficient	Standard error	t-statistics	p-value
Constant	0.05	0.02	2.16	0.03**
$ect_{t-1}$	-0.16	0.06	-2.90	0.00***
$\Delta income_t$	0.58	0.26	2.19	0.03**
$\Delta interest_{t-1}$	-0.07	0.04	-1.74	0.09*
$\Delta exch_t$	0.21	0.06	3.61	0.00***
$\Delta exch_{t-2}$	0.16	0.05	3.05	0.00***
$\Delta cur_t$	0.21	0.04	5.14	0.00***
$\Delta credits_{t-1}$	0.14	0.08	1.78	0.08*
R <sup>2</sup>	0.60	Adjusted R <sup>2</sup>		0.55

Note: 1) The symbol "Δ" refers to the first difference of series in the model.  
 2) Series were seasonally adjusted through the TRAMO/SEATS method. All series except the capacity utilization rate and the interest rate were transformed into logs.  
 3) (\*\*\*), (\*\*) and (\*) denote statistical significance at 1, 5 and 10 percent, respectively.  
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## REFERENCES

Serven, L., A. Solimano, 1991, Private Investment and Macroeconomic Adjustment: Theory, Country Experience and Policy Implications, World Bank Policy Research Working Paper Series No. 606.

<sup>2</sup> Standardized coefficients are calculated by multiplying the estimated coefficients by standard error(y)/standard error(x), where the numerator shows the standard deviation of the dependent variable and the denominator shows the standard deviation of the respective independent variable.

Box  
4.2

## The Number of Newly Established Firms and Business Cycles

This box presents the relation between the number of newly established firms officially declared by the TOBB (Union of Chambers and Commodity Exchanges of Turkey) to business cycles and investments.<sup>3</sup> From 1985 to 2010, the data on the number of newly established firms were published by TurkStat. The number of newly established and closed firms in addition to the relevant sector information as well as firms' capital and title were later announced by TOBB on a monthly basis using the registers of the daily Turkish Trade Registry Gazette.<sup>4</sup>

The literature reports simultaneous entry and exit of firms where the relevant industries also display high correlation. Moreover, the number of newly established firms is procyclical (Gil, 2010). The correlation coefficient between the number of newly established firms and the GDP varies between 0.70 and 0.73 and the number of newly established firms leads the GDP with a quarter (Devereux et al., 1996). In addition, Lewis (2006) showed that the number of newly established firms, like investments, has a volatile structure relative to the GDP and consumption. Klapper and Love (2012) showed that the number of newly established firms declined after the global financial crisis, but rebounded by the end of 2012, especially in emerging economies.

After this brief introduction, the relationship between the above data and macroeconomic indicators is examined in the first section of the box. Then, the cyclical relation between the number of newly established firms and macroeconomic indicators is presented by using the HP filter (Hodrick and Prescott, 1997). These analyses show that the number of newly established firms is closely related to business cycles, particularly investment. The fact that the number of newly established firms is related to the rate of change in business loans and the capacity utilization rate provides a hint about the transmission mechanism through investment.

#### The Number of Newly Established Firms and Macroeconomic Indicators

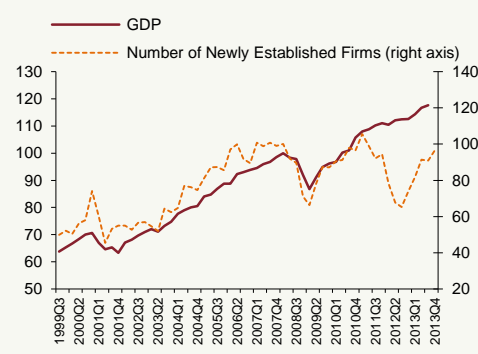
Charts 1 and 2 exhibit the number of newly established firms, the GDP and private investments in machinery and equipment. As illustrated, the number of newly established firms moves in tandem with the trend of GDP, whereas it fails to entirely capture the fluctuations in the GDP. On the other hand, the number of newly established firms moves almost parallel to private investments on machinery and equipment.<sup>5</sup>

<sup>3</sup> TOBB announces the number of closed firms. However, statistics on the number of newly established firms are considered to entail more reliable information due to some legal arrangements.

<sup>4</sup> Analyses are conducted using quarterly averages for comparability of total number of newly established firms to industrial production and external trade indices.

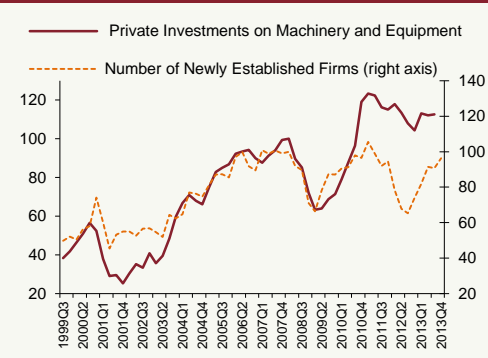
<sup>5</sup> It should be underlined that further analysis showed that the total industrial production and final domestic demand have a similar outlook to the GDP, while the outlook for total private investments and production of capital goods resembles to private investments on machinery and equipment.

**Chart 1. GDP and the Number of Newly Established Firms**  
(Seasonally Adjusted, 2008Q1=100)



Source: TurkStat, TOBB.

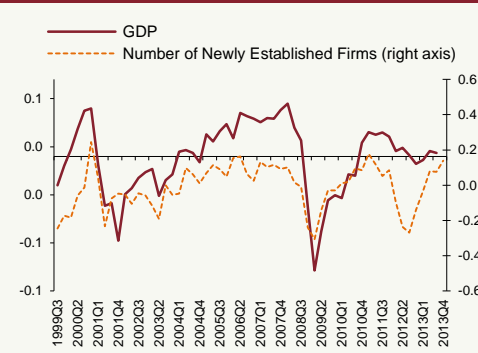
**Chart 2. Private Investments on Machinery and Equipment and the Number of Newly Established Firms**  
(Seasonally Adjusted, 2008Q1=100)



**The Number of Newly Established Firms and Business Cycles**

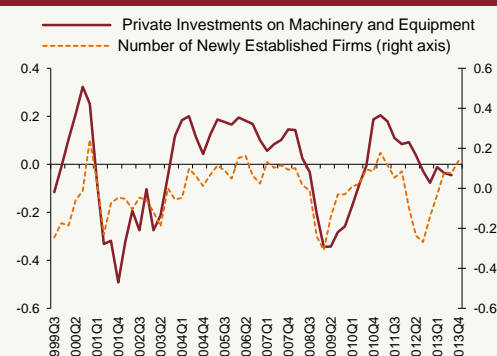
The seasonally adjusted series in logs were HP filtered to gain a better grasp of the relationship between the number of newly established firms and the selected indicators. As illustrated in Charts 3 and 4, the cyclical component of the number of newly established firms moves in tandem with the cyclical component of the respective selected indicator.

**Chart 3. GDP and the Number of Newly Established Firms**  
(Seasonally Adjusted, HP Filtered, 2008Q1=100)



Source: TurkStat, TOBB.

**Chart 4. Private Investments on Machinery and Equipment and the Number of Newly Established Firms**  
(Seasonally Adjusted, HP Filtered, 2008Q1=100)



The number of newly established firms, like investments, is a relatively more volatile series. Table 1 shows the volatility of some HP filtered macroeconomic series relative to the standard deviation of the GDP, indicating that the volatility of the number of newly established firms is similar to investments.

Table 2 displays cross-correlation coefficients between the

cyclical component of the number of newly established firms and the selected indicators. As illustrated in the table, the highest coefficient is obtained in the lagged value. This finding shows that the number of newly established firms is a leading indicator for the economic activity.

**Table 1. Relative Standard Deviations**  
(As a ratio to the standard deviation of the GDP)

GDP	1.0
Private Consumption	0.9
Private Investment	4.2
Private Investments on Machinery and Equipment	5.2
Number of Newly Established Firms	4.5

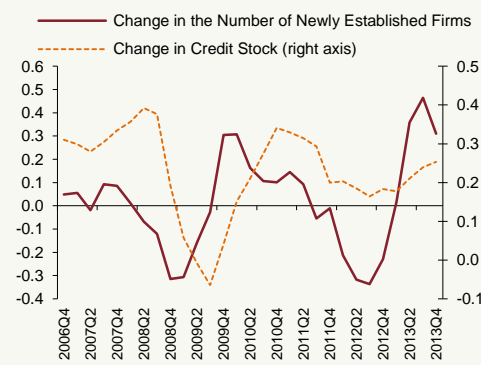
**Table 2.** Cross Correlation Coefficients

	Number of Newly Established Firms (t-1)	Number of Newly Established Firms (t)	Number of Newly Established Firms (t+1)
GDP (t)	0.72	0.67	0.40
Private Investments on Machinery and Equipment (t)	0.75	0.67	0.43
Industrial Production (t)	0.60	0.51	0.20

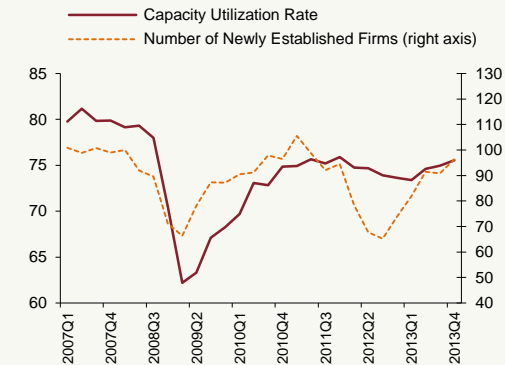
Findings obtained so far are quite consistent with the literature. In fact, the number of newly established firms in Turkey leads the total output with a quarter. The correlation coefficient for lagged values ranges between 0.70 and 0.73 as suggested by the literature and the series has a relatively volatile structure.

### The Number of Newly Established Firms and Investments

The relationship between business loans and the capacity utilization rate is analyzed to examine the relationship between the number of newly established firms and investments. Chart 5 displays the annual change in business loans and the number of newly established firms. Accordingly, the annual change in the number of newly established firms and business loans move parallel; the number of newly established firms leads credit developments. In fact, a cross-correlation analysis indicates that the simultaneous correlation between the annual changes in the number of newly established firms and the credit stock is 0.2, while the correlation between the annual changes in the number of newly established firms with a one period lag and the credit stock is 0.40. This generates the idea that the number of newly established firms can be a leading indicator data for business loans as well as economic activity. Hence, one can infer that eligible economic circumstances facilitate the establishment of new firms and the credit stock will rise as new firms are established. However, it should still be noted that this hypothesis calls for a more detailed econometric study.

**Chart 5.** Annual Changes in Credit Stock and the Number of Newly Established Firms

Source: TurkStat, TOBB, CBRT.

**Chart 6.** Capacity Utilization Rate and the Number of Newly Established Firms (2008Q1=100)

Furthermore, the possibility of a close relationship between the number of newly established firms and the capacity utilization rate may also be considered. As new firms are added to the present ones, the capacity utilization rate may vary depending on the extent of de facto capacity utilization by new firms relative to their current physical capacities. Chart 6 shows the quarterly relationship between the capacity utilization

rate and the number of newly established firms. As evident from the monthly values of the series and correlation coefficients, the number of newly established firms is a leading indicator.<sup>6</sup> The correlation coefficient between the number of newly established firms with one period lag and the capacity utilization rate is 0.60. Hence, the newly established firms utilize most of their physical capacities, thereby raising the sector's average.

This preliminary analysis indicates that establishment activities of firms are closely related to the increase in commercial loans, capacity utilization and investments in the following period. The data on the number of newly established firms, which have long been published, are considered to have high informative value in terms of economic activity and particularly investments.

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<sup>6</sup> As the quarterly data have a relatively short time series, the correlation coefficient was estimated using monthly data.



Box  
4.3

## Factors Affecting the Coverage Ratio

The coverage ratio, calculated by dividing the quantity of exports of a country by its imports, shows the extent to which exports cover imports.<sup>7</sup> This ratio is closely related to the external trade deficit because a decline in exports or an increase in imports both widens the trade deficit and decreases the coverage ratio. Unlike the external trade deficit that is denominated in USD or TL, the coverage ratio is a normalized measure of the trade deficit.<sup>8</sup>

The coverage ratio is usually calculated only for goods, although calculating it jointly for goods and services has a potential to be more informative. As Turkey runs an external trade deficit in goods trade but has a substantial trade surplus in services, it can be placed on the list of exceptional countries where the total external trade deficit (goods+services) diverges considerably from the deficit in goods trade. Yet, as illustrated in Chart 1, both ratios follow a similar pattern, even though the coverage ratio for goods in levels is remarkably different than that for total trade in Turkey.

The bilateral coverage ratio ( $Z_{c,t}$ ) between Turkey and country  $c$  is defined as  $Z_{c,t} = X_{c,t}/M_{c,t}$ . In this ratio,  $X_{c,t}$  is exports of goods from Turkey to country  $c$  in year  $t$ , while  $M_{c,t}$  denotes Turkey's imports of goods from that country. To examine the behavior of the coverage ratio, the following equation was estimated using bilateral imports and exports of Turkey with 91 countries in the 1994-2012 period:<sup>9</sup>

$$Z_{c,t} = \alpha_0 + \alpha_1 Z_{c,t-1} + \varphi_{1,c} + \varphi_{2,c} t + \varphi_t + \beta_0 \log(RER_{c,t}) + \beta_1 \log(GDP_{c,t}) + \varepsilon_{c,t}$$

The  $RER_{c,t}$  variable in this equation shows the real exchange rate of country  $c$  in year  $t$ . An increase in  $RER_{c,t}$  implies a real appreciation of that country's currency. The GDP of each trade partner is also included in the estimation equation.<sup>10</sup>

Estimation results are shown in Table 1. Accordingly, appreciation in the currencies of trade partners raises Turkey's coverage ratio. A real exchange rate increase of 1 percent in the currency of a trade partner raises the coverage ratio against that country by 0.6 percentage points. (This, for example, can be achieved by an increase in bilateral exports that is equivalent to 0.6 percent of bilateral imports from that country.)

Table 1 indicates that coverage ratios are quite sensitive to GDP as well. A 1-percent increase in Turkish GDP or a 1-percent decrease in trade partners' GDP reduces the coverage ratio by around 1.5 percentage points. (This, for example, can be achieved by an increase in bilateral exports that is equivalent to 1.5 percent of bilateral imports from that country.)

<sup>7</sup> For example, see Mikic and Gilbert (2009).

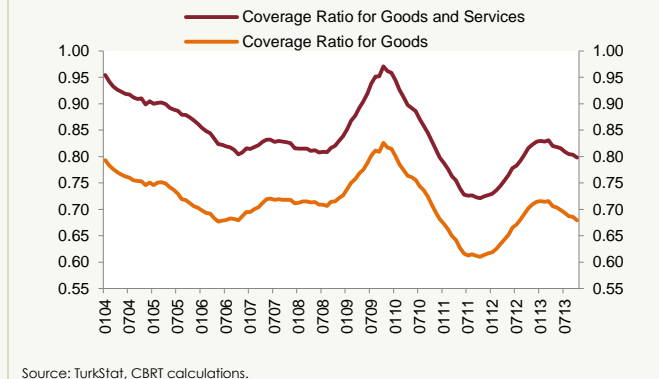
<sup>8</sup> Dividing the trade deficit by GDP is another commonly used method for normalization. Still another option is to normalize by the trade volume, which is essentially equivalent to the coverage ratio.

<sup>9</sup> The 91 countries account for 80 percent of exports and 92 percent of imports of Turkey in 2012. The reason underlying the difference between these two numbers is the exclusion of Iraq due to data constraints even though it has a large share in Turkish exports.

<sup>10</sup> GDP data for Turkey and for trade partner countries are obtained from the TurkStat and the World Bank, respectively, while the real exchange rate series are obtained from the IMF's IFS statistics.

In sum, the coverage ratio is found to be sensitive to the exchange rate and the GDP. These findings are consistent with the projections that the expected upward movements in external demand in 2014 and the recent depreciation of the Turkish lira will increase the import coverage ratio of exports, and contribute to the balancing of domestic and external demand in the upcoming period.

**Chart 1. Import Coverage Ratio: Comparison of Coverage Ratio for Goods Trade with the Coverage Ratio for the Total External Trade (12-Month Average)**



Source: TurkStat, CBRT calculations.

**Table 1. Estimation Results (Independent Variable:  $Z_{c,t}$ )**

$\log(RES_{c,t})$	0.59***
$\log(GDP_{c,t})$	1.48***
$Z_{c,t-1}$	0.002
Year Fixed Effects	Yes
Country Fixed Effects	Yes
Country-Specific Linear Time Trend	Yes
Constant	119.01
Number of Observations	1585
R-square	0.79

Notes: (1) Observations are weighted by each country's total foreign trade volume with Turkey. (2) Standard errors are clustered at country level in estimations. (3) \*\*\* percent denotes significance level of 1 percent.

## REFERENCES

Mikic, M., J. Gilbert, 2009, Trade Statistics in Policy Making: A Handbook of Commonly Used Trade Indices and Indicators, United Nations Economic and Social Commission for Asia and Pacific.

Box  
4.4

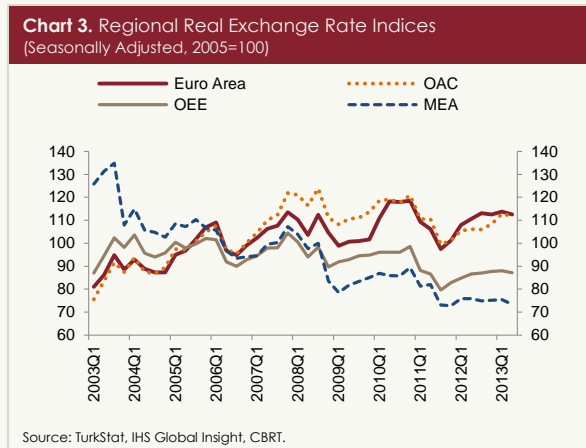
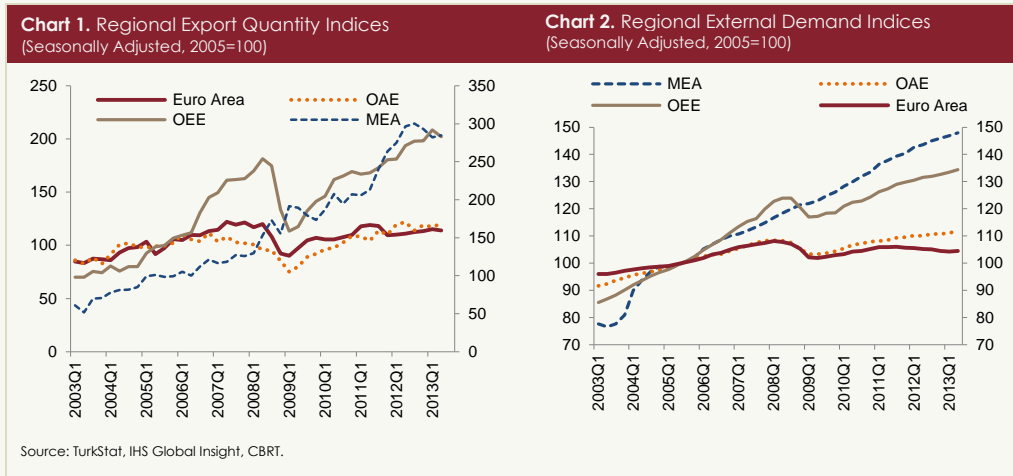
## A Glance at Income and Price Elasticities of Exports in Turkey: The Importance of Regional Differences

The sensitivity of exports to the changes in external demand and international competition conditions may differ across markets. In that case, the size of the influences of shocks as well as the policy remedies may be different than projected when market differences are ignored. In this respect, the change in the regional and sectoral distribution of exports in the last decade in Turkey suggests that differences across export markets should be taken into consideration for the estimation of export demand function. This box presents a comparison of the effects of regional demand developments and relative price changes on exports, particularly the Euro Area as well as the Middle East and Africa (MEA).

To this end, an analysis was conducted using a Vector Autoregression (VAR) model, where regional variables were constructed by using quarterly data covering the 2003Q1-2013Q2 period. Regional variables<sup>11</sup> cover 81 countries, of which 17 is in the Euro Area, 17 in the MEA region, 16 in the other advanced economies (OAC) region and 31 in the other emerging economies (OEE) region. These countries make up around 85 percent of total exports excluding gold, and 90 percent of the foreign trade volume. In order to avoid noise effects from extraordinary and temporary gold foreign trade that occurred especially during 2012 and 2013, gold trade is excluded from the dataset. The real export data were obtained by dividing regional exports denominated in USD by the monthly export price index published by the TurkStat. Regional external demand data were defined as the real growth rates of countries weighted by their export shares. The regional real exchange rate index was deflated by consumer prices and weighted by each country's share within the external trade volume excluding gold. All the series have the base year 2005 and are seasonally adjusted.

Real exports in Turkey trended upwards until the global crisis. In regional terms, this uptrend continued incessantly in the MEA region, except for occasional fluctuations, and gained momentum particularly as of late 2011. In other regions, real exports contracted remarkably starting from 2008. The demand variable for the MEA region deteriorated in the start of the analysis period, particularly upon the developments in Iraq. Apart from this period, the export demand has followed a stable path in the MEA region. Given that the largest export market of Turkey is the Euro Area according to the regional classification used in the analysis, the considerable slowdown in the rate of increase in exports in 2012 and the contraction in the Euro Area demand especially as of late 2011 seem consistent. During this period, despite the mostly parallel move, real exchange rates proved relatively more appreciated in the Euro Area and other advanced economies. This leads to the idea that in these markets where exported products utilize more advanced technology, and hence, have higher prices, not only demand developments but also the competitiveness has adversely affected the export performance. It is quite striking that in a considerable part of the analysis period, the real exchange rate against the currencies of the MEA region and other emerging economies remained below 100, unlike advanced economies (Charts 1- 3).

<sup>11</sup> The MEA region was included in the econometric analysis to start from 2005.



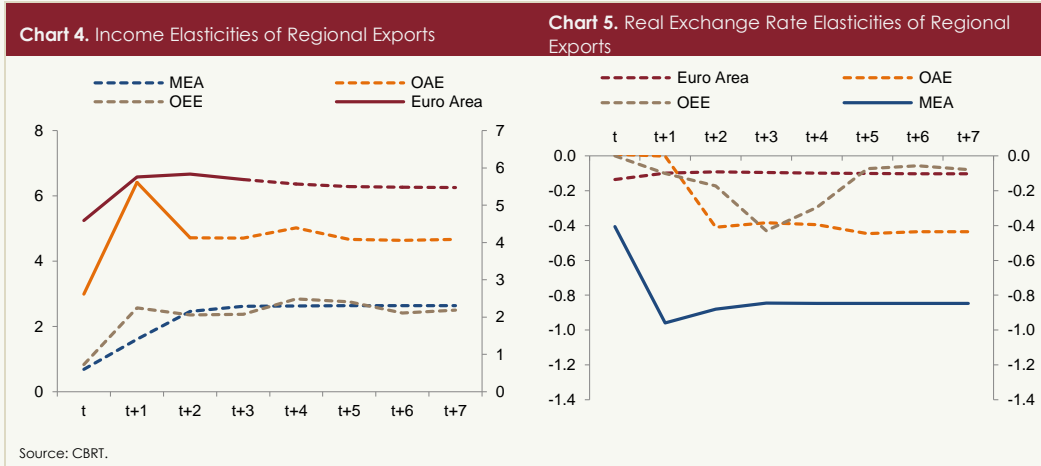
VAR models were estimated for four regional markets in the study and elasticity coefficients were calculated by the cumulative impulse-response functions.<sup>12</sup> In order to obtain error terms that are not auto-correlated and that meet normality conditions, different specifications were adopted for regions in the choice of the number of lags and the use of the global crisis dummy variable.<sup>13</sup> All variables in the analysis are in logarithmic differences, and hence stationary since none of them are integrated of order two.

Chart 4 displays the cumulative elasticity estimations. In this respect, dashed parts of the series indicate that confidence intervals cover the zero value or are widened enough to cover zero. Accordingly, income elasticity of exports in advanced economies, particularly the Euro Area is remarkably higher. Income elasticity of exports is calculated as 4.6 in the Euro Area, and 3.0 in other advanced economies. In other words, a quarterly increase by 1 percent in the Euro Area external demand index will simultaneously raise Turkey's exports in this region by 4.6 percent. As for MEA and other emerging economies, the income elasticity of exports is 0.7 and 0.8, respectively.

<sup>12</sup> For instance, income elasticity of exports is calculated as the response of the export quantity to one standard deviation shock in the external demand divided by the response of the external demand itself.

<sup>13</sup> For the Euro Area and the MEA countries, the model is specified with one lag, while for other advanced economies and other emerging economies, the model is specified with two lags and four lags, respectively. A global crisis dummy variable is used in all specifications except for the Euro Area.

An analysis of the real exchange rate elasticity of regional exports highlights that the MEA region diverges from others. The real exchange rate elasticity of exports in the MEA region is measured as -0.41, while the elasticity for both the Euro Area and other emerging economies is found to be smaller than 0.1 in absolute terms (Chart 5).



These findings seem to confirm that there are regional differences among the determinants of exports parallel to the different structure of the composition of exports of goods. Accordingly, demand developments in advanced economies constitute a key factor for the exports to these regions, whereas exports to emerging economies are more influenced by real exchange rate developments. In this context, the acceleration of the recovery in advanced economies, particularly the Euro Area, stands out as a factor to contribute to the balancing process in Turkey.

