# 4. Supply and Demand Developments

National accounts data for the second quarter of 2012 suggest that economic activity remained broadly consistent with the outlook presented in the July Inflation Report. Even though national income displayed a remarkable quarterly increase in the second quarter, this is attributed to the compensation of temporary factors like weather conditions in the first quarter, and therefore, the underlying trend of economic activity is considered to be mild. Domestic demand remained sluggish in this period, while net exports were the main driver of growth, thus adding to the balancing of demand components.

Third-quarter data indicate that economic activity has decelerated. Having increased for four consecutive months between the February-May period, industrial production has recently exhibited a fluctuating course, and production displayed a decline in the July-August period on a quarterly basis. On the other hand, recent data releases suggest that consumption demand recovered modestly, while investment demand remains sluggish on the elevated levels of demand uncertainty.

Latest indicators signal for recovery in the last quarter. In fact, following the unfavorable outlook in August, leading indicators for production and sales point to a rebound in September. Recent improvements in firms' expectations for orders also signal for recovery in the last quarter. Although global growth forecasts are revised downwards in line with the lingering problems regarding global economy, exports are expected to perform well in the forthcoming period on the back of the product and market diversification as well as implemented stabilizing policies. Accordingly, while aggregate demand conditions support the disinflation process, the current account deficit continues to taper off.

The mild economic growth is expected to continue in the forthcoming period. Factors such as the gradual materialization of the effects of the monetary policy, the upturn in the current account balance (which is led by the economic balancing process) to improve risk perceptions, unemployment rates that hover even below the pre-crisis levels are anticipated to bolster the demand for consumption. On the other hand, persisting global uncertainties pose downside risks to investment demand, particularly through the confidence channel. In fact, indicators on the propensity to invest, which reflect

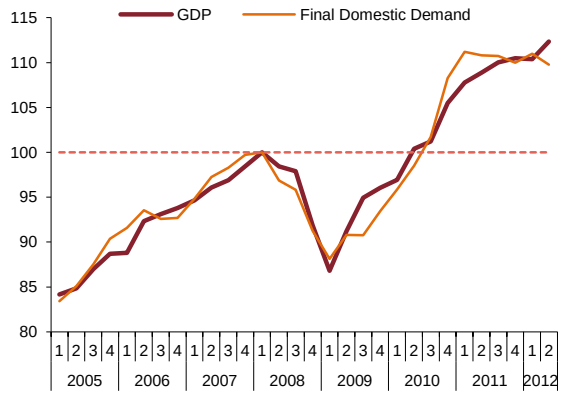
perceptions for relatively longer terms, have continued to remain weak in the inter-reporting period.

## 4.1. Gross Domestic Product Developments and Domestic Demand

National income data released by TurkStat indicate that GDP posted a year-on-year increase by 2.9 percent in the second quarter of 2012. Demand components were balanced further at a stronger pace in this period. The analysis of contributions to annual growth suggests that net external demand had a notably boosting effect, while private demand for consumption and investment as well as inventories had negative contributions.

Seasonally adjusted data reveal that GDP registered a 1.8 percent quarter-on-quarter growth in the second quarter. This robust increase in economic activity is largely attributed to the compensation of the first quarter as also stated in the July Inflation Report. Thus, the underlying trend of the economic activity is considered to be a mild growth. Private and public consumption offered limited contributions to quarterly growth in this period, while domestic demand posted a decline upon the slump in investments (Chart 4.1.1).

**Chart 4.1.1.**
GDP and the Final Domestic Demand
(Seasonally Adjusted, 2008Q1=100)

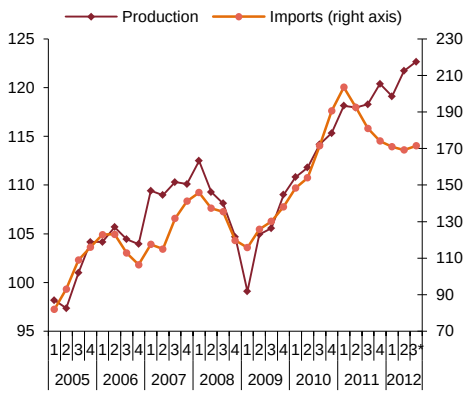



Source: TurkStat, CBRT.

Third-quarter data point to a modest rise in final domestic demand. In fact, the production of consumption goods, which are among the indicators of private consumption demand, went up in this period, while the rise in imports remained comparatively limited (Chart 4.1.2). On the other hand, domestic

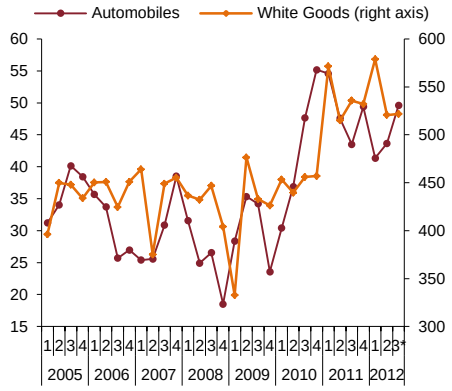
sales of automobiles surged in the third quarter, while sales of white goods were unchanged (Chart 4.1.3). Furthermore, the consumer confidence index decreased, while the consumption index stayed on an upward track (Chart 4.1.4). Domestic sales of non-durable goods increased, while domestic sales of durable goods declined in the July-August period (Chart 4.1.5).

**Chart 4.1.2.**
Production and Import Quantity Indices of Consumption Goods
(Seasonally Adjusted, 2005=100)



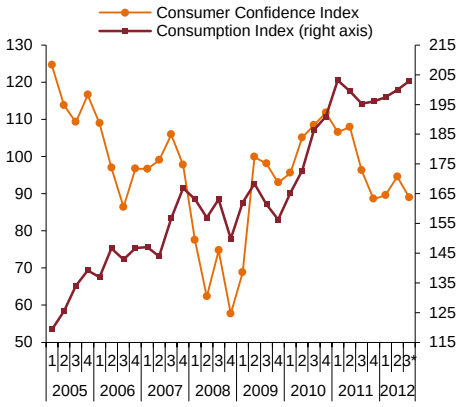

* As of August.
Source: TurkStat, CBRT.

**Chart 4.1.3.**
Domestic Sales of Automobiles and White Goods
(Thousand, Seasonally Adjusted)



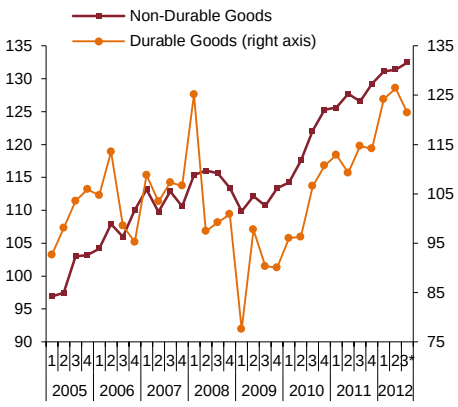

* As of August for white goods.
Source: AMA, WGMA, CBRT.

**Chart 4.1.4.**
CNBC-e Consumption and Consumer Confidence Indices




* As of August.for consumption index.
Source: CNBC-e, CBRT.

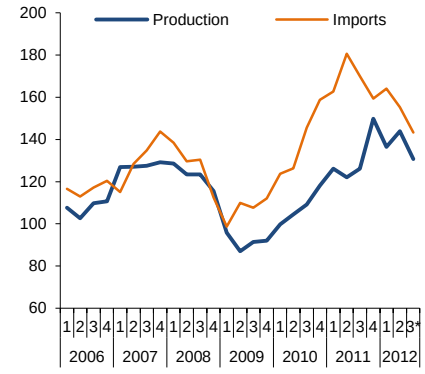
**Chart 4.1.5.**
Domestic Sales Index for Consumption Goods
(Seasonally Adjusted, 2005=100)




* As of August.
Source: TurkStat, CBRT.

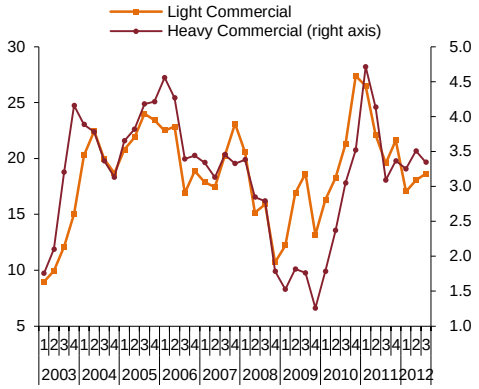
Recent indicators suggest that the investment demand contracted further in the third quarter. Production and imports of capital goods saw a decline in the July-August period (Chart 4.1.6). Domestic sales of light commercial vehicles went up, while domestic sales of heavy commercial vehicles went down in the third quarter (Chart 4.1.7).

**Chart 4.1.6.**
Production and Import Quantity Indices of Capital Goods Excluding Transport Vehicles
(Seasonally Adjusted, 2005=100)




* As of August.
Source: TurkStat, CBRT.

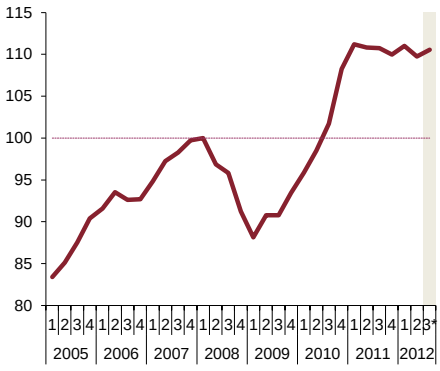
**Chart 4.1.7.**
Domestic Sales of Commercial Vehicles
(Thousand, Seasonally Adjusted)




Source: AMA, CBRT.

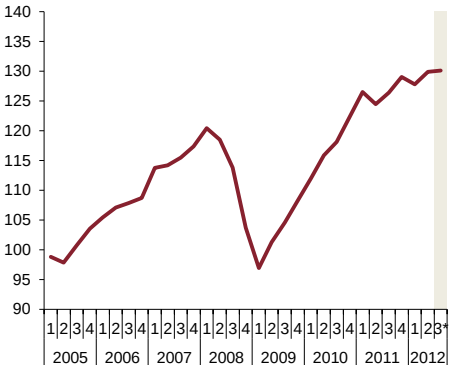
In sum, third-quarter indicators suggest that domestic demand will increase mildly on the back of consumption expenditures (Chart 4.1.8). The analysis of economic activity on the production side reveals that July-August average of seasonally adjusted industrial production posted a quarter-on-quarter decline. The production plunge in August is attributed to the Ramadan holiday besides the Victory Day (on August 30) and the extra days-off taken in between. Production indicators point to a weak production activity in the third quarter (Chart 4.1.9).

**Chart 4.1.8.**
Final Domestic Demand
(Seasonally Adjusted, 2008Q1=100)




* Estimate.
Source: TurkStat, CBRT.

**Chart 4.1.9.**
Industrial Production
(Seasonally Adjusted, 2005=100)

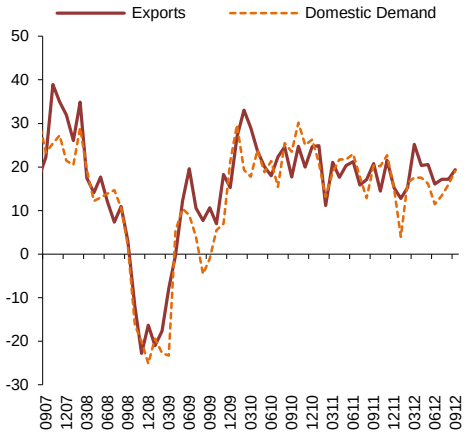



* Estimate.
Source: TurkStat, CBRT.

Meanwhile, recently released indicators suggest that economic activity will go up in the last quarter. The slight recovery in the 3-month ahead expectations for orders on domestic and external market released by the BTS in

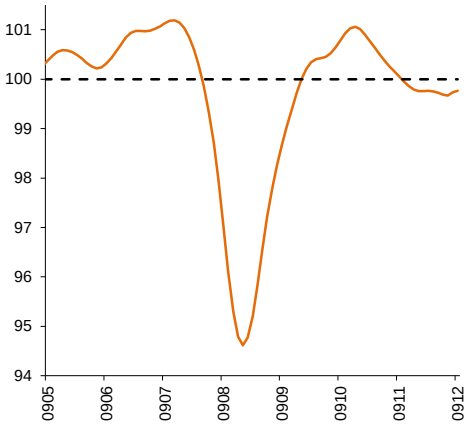
September, as well as the leading indicators index support this outlook (Charts 4.1.10 and 4.1.11).

**Chart 4.1.10.**
3-Month Ahead Expectations for Orders
(Up-Down, Seasonally Adjusted, Percent)




Source: CBRT.

**Chart 4.1.11.**
Leading Indicators Index*
(Seasonally Adjusted)

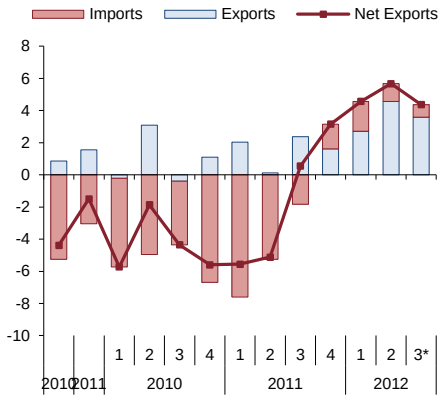



* Methodology is based on CBRT Economic Notes No.12/02.
Source: CBRT.

## 4.2. External Demand

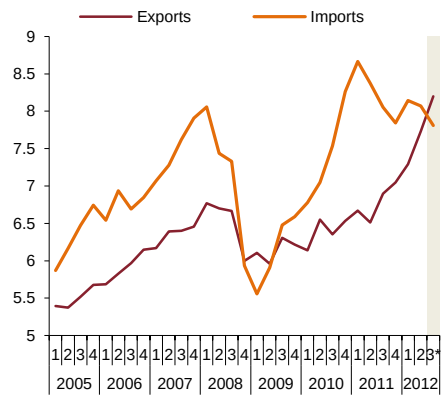
National income data for the second quarter of 2012 suggest that the balancing in demand components continues as envisaged in the previous reporting period. Exports of goods and services posted an annual increase by 19.8 percent, while imports of goods and services went down to 3.6 percent. Thus, net exports provided the largest contribution to annual growth in this quarter, similar to the preceding two quarters (Chart 4.2.1). With respect to this large contribution of net exports to annual growth, the influence of net gold exports should be noted (Box 4.3). Quarterly analysis shows that exports of goods and services surged in seasonally adjusted terms, while imports followed a weak course in the second quarter (Chart 4.2.2).

**Chart 4.2.1.**
Contribution of Net External Demand to Annual GDP Growth
(Percent)




* Estimate.
Source: TurkStat, CBRT.

**Chart 4.2.2.**
Exports and Imports of Goods and Services
(Seasonally Adjusted, 1998 Prices, Billion TL)

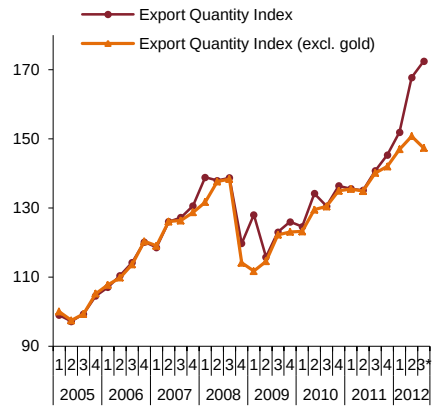



* Estimate.
Source: TurkStat, CBRT.

Having followed an upward track in the July-August period, the export quantity index displayed an increase for five consecutive quarters. Gold exports have remained high since the first quarter of 2012, thus providing a significant support to the robust course of overall exports. On account of the quarterly increase in external gold demand which is thought to be only temporary, export quantity index excluding gold is monitored in order to assess the underlying trend of exports. The core index constructed in this context indicated a quarter-on-quarter decline in the July-August period, contrary to the overall index (Chart 4.2.3). Although pointing to a weakening course in the underlying trend of exports, TEA figures show that exports excluding gold improved slightly in September.

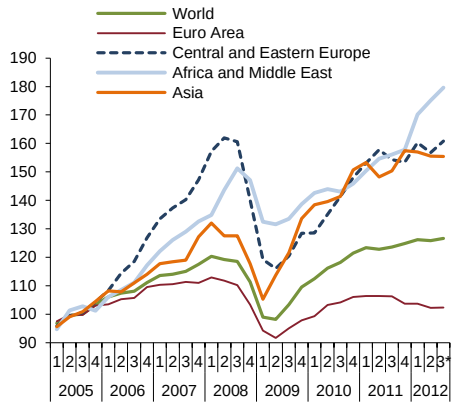
Global trends indicate that import demand across the world recorded a quarter-on-quarter increase in July, albeit limited. Nevertheless, the import demand of the Euro Area, one of our major trading partners, continues to remain weak. In addition to the Euro Area, emerging Asian economies also put a cap on the global import demand. On the other hand, the import demand of the African and Middle Eastern countries, which have a growing share in our exports, continues to rise (Chart 4.2.4). Moreover, the Central and Eastern Europe is another group of countries contributing positively to the global import demand. Against this background, it should be highlighted that external demand conditions did not exhibit any additional deterioration. Thus, exports of goods and services are estimated to have preserved the upward trend in the third quarter of the year (Chart 4.2.2).

**Chart 4.2.3.**
Export Quantity Index
(Seasonally Adjusted, 2005=100)




* As of August.
Source: TurkStat, CBRT.

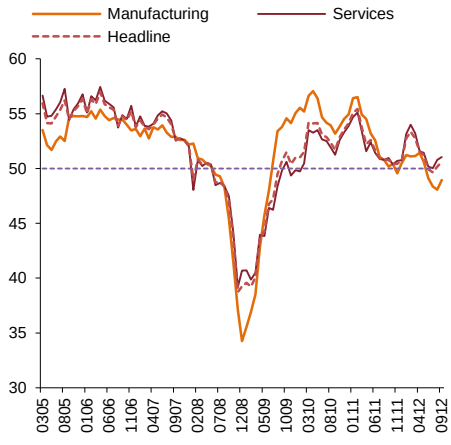
**Chart 4.2.4.**
Global and Regional Imports
(Real, Seasonally Adjusted, 2003=100)




* As of July.
Source: Netherlands Bureau for Economic Policy Analysis.

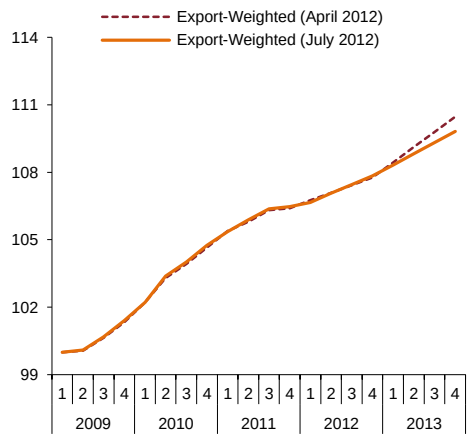
Sluggish global economic activity accompanied by persisting problems in financial markets continue to pose downside risk on external demand. In fact, global PMI manufacturing index remained weak also in September and stayed below 50 for four consecutive months. On the other hand, the overall index was close to the neutral level due to the mild rebound in the services sector (Chart 4.2.5). Slight downward revision of the export-weighted global production index in the inter-reporting period confirms that risks remain brisk (Chart 4.2.6).

**Chart 4.2.5.**
JP Morgan Global PMI Indices




Source: Markit.

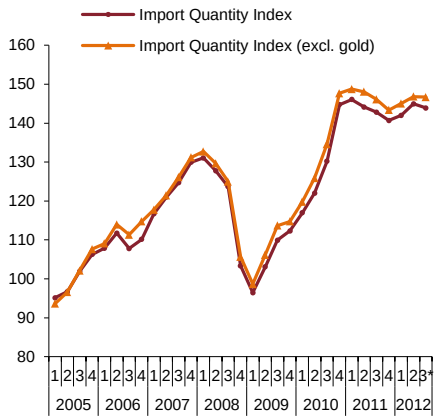
**Chart 4.2.6.**
Export-Weighted Global Production Index
(Seasonally Adjusted, 2009Q1=100)




Source: Bloomberg, CBRT.

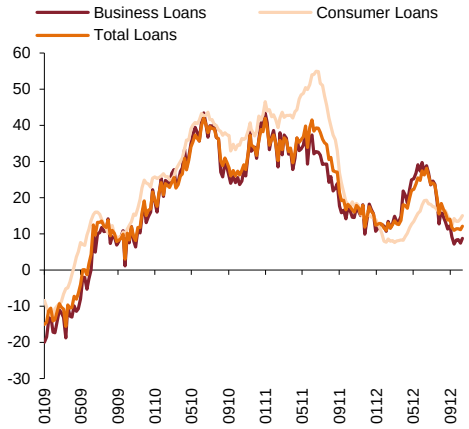
Import quantity index posted a quarter-on-quarter decline in the July-August period. Meanwhile, import quantity index excluding gold, which is an indicator for the underlying trend of imports, followed a flat course (Chart 4.2.7). Credit channel continues to give decreasing support to imports. In fact, both business and consumer loans remain on a declining track (Chart 4.2.8). Moreover, final domestic demand remained mild in the third quarter of 2012 and the relative price effect continues to restrict import demand. In this context, imports of goods and services are expected to fall in the third quarter (Chart 4.2.2).

**Chart 4.2.7.**
Import Quantity Index
(Seasonally Adjusted, 2005=100)




* As of August.
Source: TurkStat, CBRT.

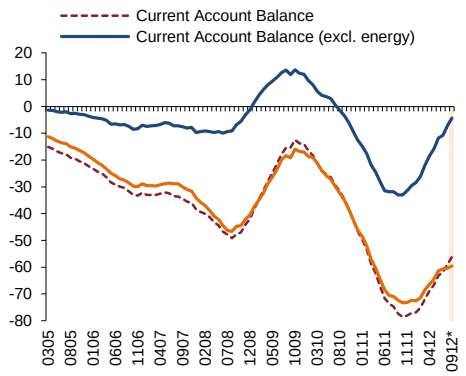
**Chart 4.2.8.**
Loan Growth Rates
(Adjusted for Exchange Rate, 13-Week Average, Annualized, Percent)




Source: CBRT.

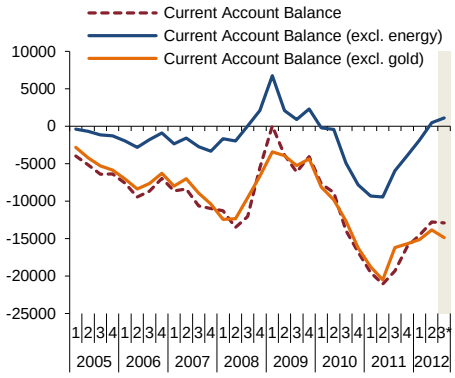
In sum, recently released indicators suggest that the balancing process continues in the third quarter. Accordingly, 12-month cumulative data show that both the current account deficit and the current account deficit excluding energy taper off. On the other hand , the improvement in the current account balance is more limited when excluding gold (Charts 4.2.9 and 4.3). Seasonally adjusted data indicate that current account balance and current account balance excluding gold posted a limited deterioration, while current account deficit excluding energy continues to improve, albeit at a slow pace (Chart 4.2.10). Sustaining structural reforms to bring down savings deficit will contribute to the current account deficit to reach desired levels in the medium term.

**Chart 4.2.9.**
Current Account Balance
(12-Month Cumulative, Billion USD)




* Estimate for September.
Source: TurkStat, CBRT.

**Chart 4.2.10.**
Current Account Balance
(Seasonally Adjusted)

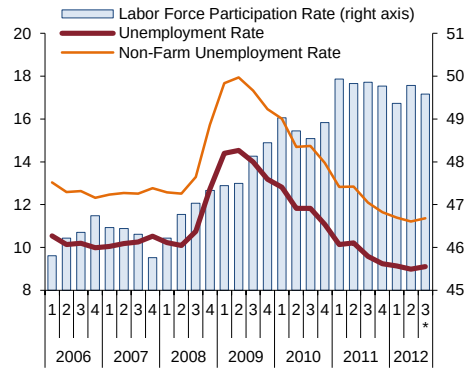



* Estimate for September.
Source: TurkStat, CBRT.

## 4.3. Labor Market

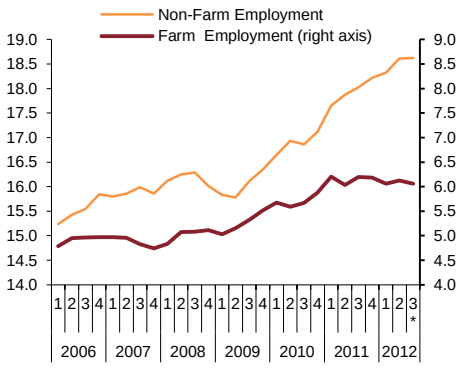
In the second quarter of 2012, unemployment rates continued with a downward course in tandem with increases in non-farm employment. Non-farm labor participation rate posted a quarterly increase in the second quarter of the year. Nevertheless, the weak course of non-farm labor participation rate since 2010, which was particularly owed to the strong pace of women participation rate that started in 2008 to decelerate as of 2010, had a curbing effect on unemployment rates. Accordingly, seasonally adjusted total and non-farm unemployment rates recorded a quarterly decline by 0.2 and 0.3 percentage points to 8.9 percent and 11.1 percent, respectively. However, total and non-farm unemployment rates posted a quarter-on-quarter increase by 0.2 percentage points in July to 9.1 and 11.4 percent, respectively (Charts 4.3.1 and 4.3.2).

**Chart 4.3.1.**
Unemployment Rates
(Seasonally Adjusted, Percent)




* As of July.
Source: TurkStat, CBRT.

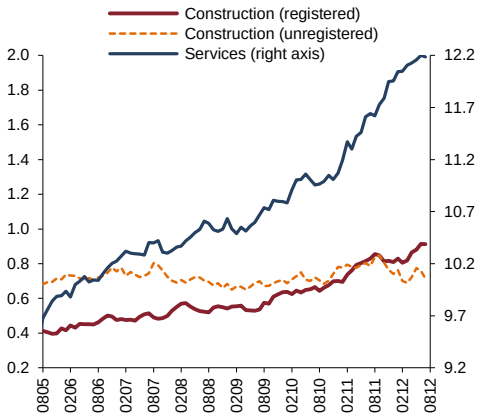
**Chart 4.3.2.**
Farm and Non-Farm Employment
(Seasonally Adjusted, Million)




* As of July.
Source: TurkStat, CBRT.

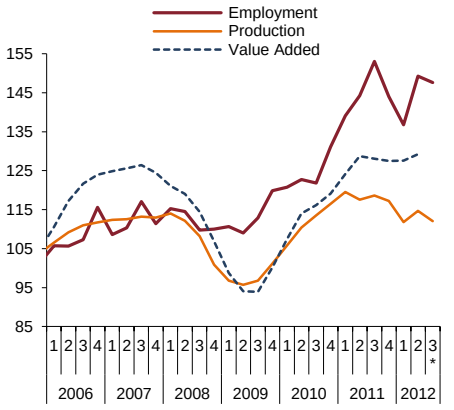
Unemployment rates soared in July amid falling non-farm employment. In this period, although farm employment remained unchanged, non-farm employment fell by 0.3 percent on a quarterly basis. The decline in the non-farm employment was driven by the fall in construction and services sectors, while industrial employment remained unchanged. The uptrend in the construction employment since March was reversed in July (Chart 4.3.3). The decline in the construction employment in this period was mostly seen in unregistered employment. The upward course of services employment lost pace in July, recording a quarter-on-quarter decline (Chart 4.3.3). In this period, employment in the social services sector continued to increase, while employment in the commercial sector plummeted. Moreover, manufacturing of non-metallic mineral products, which are inputs for the construction sector with informative value for the construction sector activity decreased in the third quarter of 2012, bearing a depressive effect on expectations regarding construction employment in the respective period (Chart 4.3.4).

**Chart 4.3.3.**
Employment in Services and Construction Sectors
(Seasonally Adjusted, Million)




Source: TurkStat, CBRT.

**Chart 4.3.4.**
Employment, Production and Value Added in the Construction Sector
(Seasonally Adjusted, 2005 = 100)

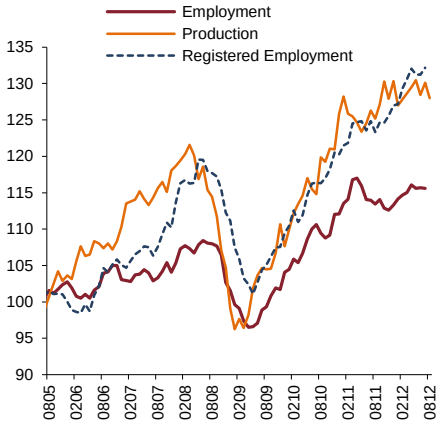



* As of July for employment, and August for non-metallic mineral products production.
Source: TurkStat, CBRT.

Industrial production posted a quarter-on-quarter increase in the second quarter of 2012. Amid elevated production, registered industrial employment recorded a quarterly increase, while unregistered employment posted a decline in the second quarter (Chart 4.3.5). Meanwhile, industrial production has maintained a continuous and mild growth despite the month-on-month decline in August. Accordingly, industrial production is expected to rebound in September, and converge to the second quarter figures in the third quarter of the year.

Leading indicators suggest that PMI employment declined further in the third quarter, without pointing to an unfavorable outlook (Chart 4.3.6). Total Employment Expectation from the CBRT's Business Tendency Survey, which reflects 3-month ahead expectations for orders of the manufacturing industry firms, displayed a quarter-on-quarter decline, yet remained above 100 denoting an optimistic outlook (Chart 4.3.7). Moreover, Total Employment Expectation recorded a notable increase in October. Against this background, industrial employment is expected to creep up further in the third quarter, while adverse developments and uncertainties regarding the global economic outlook are believed to curb the improvement in employment conditions.

**Chart 4.3.5.**
Industrial Employment and Production
(Seasonally Adjusted, 2005=100)



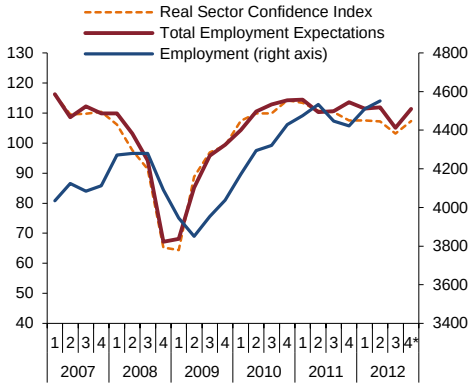

Source: TurkStat, CBRT.

**Chart 4.3.6.**
Manufacturing Industry and PMI Employment
(Seasonally Adjusted)


Source: TurkStat, Markit, CBRT.

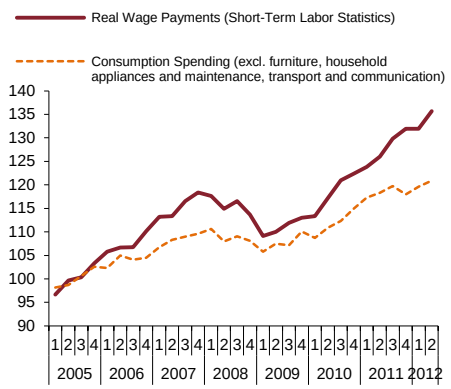
Analysis of labor market developments as per domestic demand reveals that there is a long-term and stable relationship between reel wage and household expenditures on semi-durable and non-durable consumption goods as well as services; yet consumption expenditures increase at a slower pace compared to real wages (Chart 4.3.8). Real wage payments, which remained flat in the first quarter of 2012, recorded hikes in the second quarter and continued to boost household expenditures.

**Chart 4.3.7.**
Manufacturing Industry Employment and Employment Expectations*
(Seasonally Adjusted, Million)




* As of October. Quarterly averages of the CBRT's Real Sector Confidence Index and total employment expectations.
Source: TurkStat, CBRT.

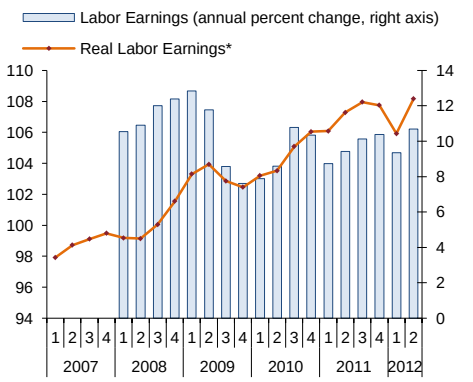
**Chart 4.3.8.**
Household Consumption and Real Wage Payments*
(Seasonally Adjusted, 2007=100)




* Calculated as the weighted average of total wages paid in industrial, construction, trade, accommodation-catering services, transport-warehousing sectors. Deflated by quarterly CPI.
Source: TurkStat, CBRT.

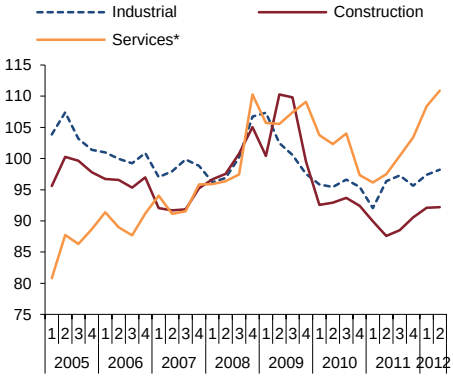
An analysis of wage developments as a cost factor suggests that non-farm hourly real earnings index released under Labor Cost Indices posted a quarter-on-quarter increase in the second quarter of 2012 (Chart 4.3.9). Real unit wages that also include productivity improvements posted quarterly increases in industrial and services sectors, and remained unchanged in the construction sector in the second quarter of 2012 (Chart 4.3.10). Despite increasing non-farm production, real unit wages went up on the back of soaring total wage payments. Moreover, real wages per hours worked increased across all non-farm sectors in this period. Real unit wage increases in the service sector continue to be a risk factor on the prices of services (Box 4.4).

**Chart 4.3.9.**
Non-Farm Hourly Labor Cost
(Seasonally Adjusted, 2008=100)




* Deflated by CPI.
Source: TurkStat, CBRT.

**Chart 4.3.10.**
Real Unit Wages (Wages per hour worked/Productivity)
(Seasonally Adjusted, 2008=100)



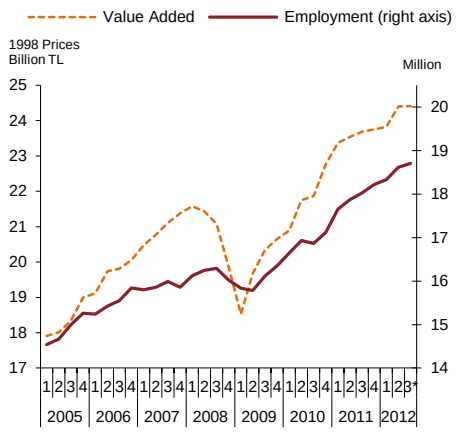

* Calculated as the weighted average of total wages paid in industrial, construction, trade, accommodation-catering services, transport-warehousing sectors. Deflated by CPI.
Source: TurkStat, CBRT.

In sum, all non-farm sectors, in particular the construction, contributed to soaring employment in the second quarter of 2012. Leading indicators point that the rise in industrial employment will slow down in the third quarter. The job opportunities index under the TurkStat-CBRT's Consumer Tendency Survey, which reflects employment prospects for households, registered a slight decline in the third quarter compared to the previous periods (Chart 4.3.11). Nevertheless, job opportunities index still hovers above long-term averages. Accordingly, non-farm employment is estimated to increase mildly in the third quarter (Chart 4.3.12). However, leading indicators suggest that should unfavorable developments and uncertainties in the global economy persist, rises in employment may decelerate further in the forthcoming periods.

**Chart 4.3.11.**
Job Opportunities Index and Non-Farm Employment/Labor Force
(3-Month Average)


Source: TurkStat, CBRT.

**Chart 4.3.12.**
Non-Farm Value Added and Employment
(Seasonally Adjusted)



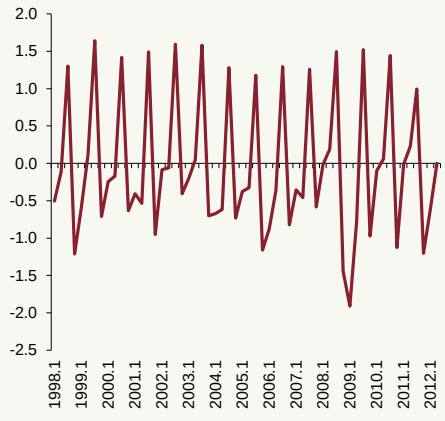

* Estimate.
Source: TurkStat, CBRT.

## Box 4.1 Recent Movements in Inventories

National income data are published by TurkStat from the production and spending side. National income data from the spending side, which contain information regarding private and public sector demand, net exports and inventory changes, are crucial in terms of monitoring effects of the implemented policies on the economy. For example, analysis of the abovementioned figures indicates that final domestic demand has been flat, while the contribution of net exports to growth has soared recently. However, inventory changes may occasionally contribute significantly to growth. Hence, analyzing solely the final domestic demand and net exports in certain periods may hamper understanding the sources of growth. Accordingly, this Box examines movements in inventory changes, a component of demand other than these two main items.

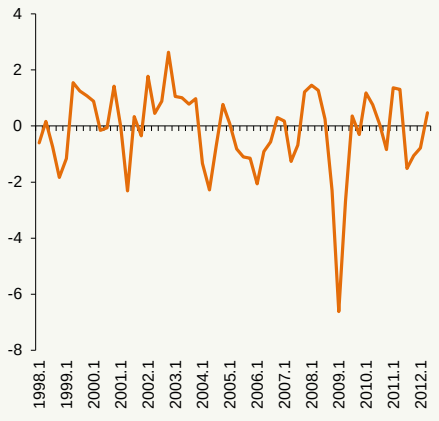
Inventories may lessen fluctuations arising from divergences in supply and demand resulting from various reasons.[1] For example, seasonally unadjusted inventories rise in the third quarter during harvest time (Chart 1). Thus, demand may be met through inventories throughout the year, even though supply may be concentrated in certain periods.

**Chart 1.** Changes in Inventories
(1998 Prices, Billion TL)




Source: TurkStat.

**Chart 2.** Changes in Inventories/GDP
(Seasonally Adjusted, Percent)




Source: TurkStat, CBRT.

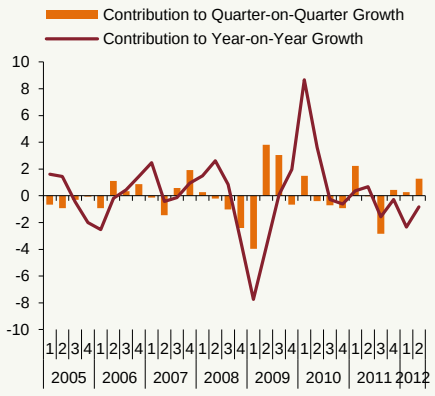
[1] Demand for consumption, investment and exports are met via imports and production. The gap between supply and final

In addition to these seasonally observed inventory movements, firms may accumulate inventories or resort to destocking depending on their expectations regarding demand conditions in the economy. For example, in cases of optimistic expectations regarding demand, firms may accumulate inventories. Conversely, during periods of heightened uncertainty about demand conditions, firms may prefer to meet demand via accumulated inventories, and be unwilling to accumulate inventories later on. Hence, changes in inventories can be better interpreted in seasonally adjusted terms. In fact, in seasonally adjusted terms, firms have accumulated inventories in the post-2001 crisis, while inventories were significantly reduced in the first quarter of 2009 when the global crisis was markedly felt, which later on was followed by absence of a stable inventory accumulation (Chart 2).

At this point, it should be emphasized that changes in inventories published within national accounts data do not contain information on total inventories, but are only indicative of the inventory changes for the relevant period. This points that even in periods of destocking, changes in inventories may contribute positively to GDP growth. This is because the contribution of the change in inventories to growth may be calculated by dividing the difference between the change in inventories at period t and the change in inventories at period t-k to the GDP at period t-k. Hence, even if the change in inventories at period t is negative, it may still support growth if it is less negative than the change in inventories at t-k. For example, the seasonally adjusted changes in inventories in Chart 2 show that even though the change in inventories in the first quarter of 2012 is negative, it is less negative compared to the last quarter of 2011. Hence, changes in inventories contribute positively to quarterly growth (Chart 3). Meanwhile, for some periods, changes in inventories have been revised significantly when compared to preliminary data releases on annual GDP growth (Chart 4). Hence, recent data on changes in inventories need to be cautiously evaluated due to revisions in sub-items of the national income.[2]

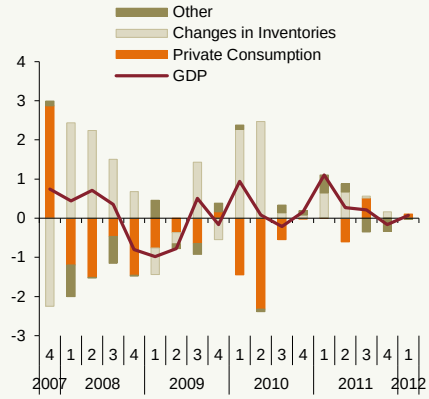
[2] For further details on revisions to GDP, see Günay (2011).

**Chart 3.** Contribution of Changes in Inventories to Growth
(Percent)




Source: TurkStat, CBRT.

**Chart 4.** Contribution of Revisions to GDP Growth
(Percent)




Source: TurkStat.

Besides challenges in estimating inventories, the inclusion of statistical error in changes in inventories also necessitates data on inventories to be cautiously handled. Hence, analyzing alternative information sources on inventories will be useful. In this framework, surveys constitute a major source. For example, BTS, PMI and TEPAV Retail Confidence Indicator (TEPE) ask questions on inventories.

BTS asks firms about the level of their finished goods inventories compared to the normal. Accordingly, inventory indicators are close to pre-crisis levels in consumption and intermediate goods manufacturing sectors, while inventories are weak in manufacturing sectors for investment goods (Chart 5). This points out to differences in inventory accumulation behavior across sectors. However, firms' perception regarding the level of "normal" may also change over time, thus warranting a cautious approach in analyzing this indicator.

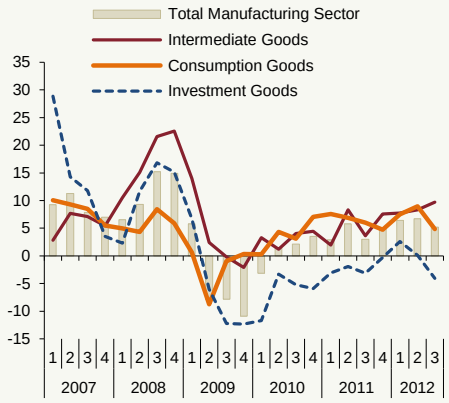
Another survey indicator on inventories is finished goods inventories published within PMI (Chart 6). BTS asks firms about their level of inventories compared to normal, while PMI asks firms about changes in their inventories. Hence, joint evaluation of BTS and PMI is useful. Meanwhile, PMI also contains information regarding inventories of purchases. The PMI indicator on inventories of purchases started to decline below the neutral level of 50 in the second quarter of 2006 and following the first quarter of 2011, when the economy has started to slow down. In the meantime, PMI indicators point that inventories of purchases reacted more swiftly and aggressively than finished goods inventories during the crisis period. The same observation also holds true for the EU data.[3]

[3] ECB (2012) includes an analysis on this issue.

BTS and PMI are surveys for manufacturing industry firms, while TEPE inquires about inventories in the retail sector. Despite having a limited number of observations since the survey was launched in May 2008, the survey indicator still points that inventories differ across sectors for retail firms as well (Charts 7 and 8).

In sum, besides the closely monitored aggregate demand items such as final domestic demand and net exports, changes in inventories also have the potential to entail significant information regarding economic activity. This is because, in some periods such as the second quarter of 2012, final domestic demand and net exports fail to fully account for the quarterly GDP growth. National accounts data as well as survey indicators point out that inventory accumulation has not started yet in the post-crisis period. A better analysis of the inventory accumulation behavior will be enabled as more observations on survey data accumulate in the period ahead.

**Chart 5.** BTS Inventory Indicators
(Seasonally Adjusted, Above -Below Normal)

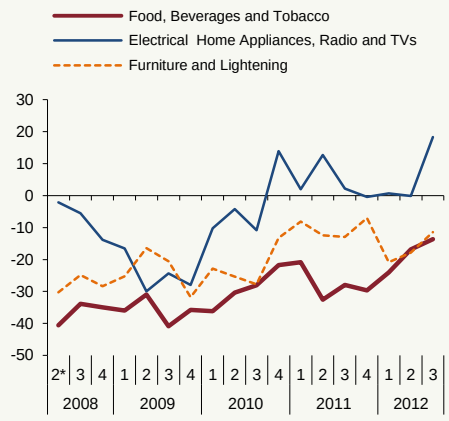



Source: CBRT.

**Chart 6.** PMI Inventory Indicators
(Seasonally Adjusted)

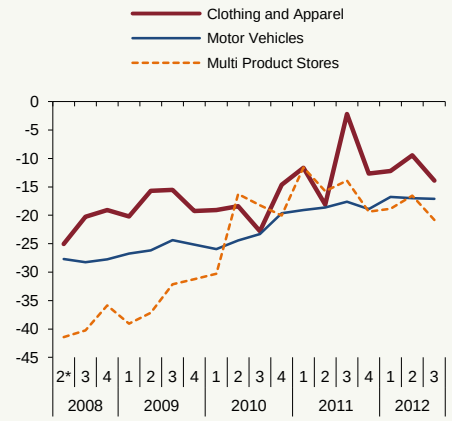

Source: MARKIT.

**Chart 7.** TEPE Sectoral Inventory Indicators
(Seasonally Adjusted, Above -Below Normal)




* Average for May-June.
Source: TEPAV, CBRT.

**Chart 8.** TEPE Sectoral Inventory Indicators
(Seasonally Adjusted, Above -Below Normal)




* Average for May-June.
Source: TEPAV, CBRT.

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## Box 4.2 Estimating Turkey's Gold Stocks

Physical gold, which is treated as a traditional saving instrument by Turkish households, is also a jewelry item and a store of value. Soaring gold prices in the aftermath of the global crisis have once again raised the issue of bringing in the gold stored under the mattresses to the economy. Accordingly, the CBRT brought new regulations enabling to hold a percentage of TL required reserves as unprocessed standard gold. Upon this regulation, the share of CBRT's gold holdings increased sharply in net international reserves. Given the easy convertibility of gold assets to FX in international markets, gold stocks should be taken into account considering the net FX position of Turkey. Hence, estimating the size of gold stocks in Turkey is crucial.

Estimating Turkey's gold stocks is challenging due to lack of historical data, whereas gold has been accumulated over the centuries. However, by measuring intertemporal flow data, stock data for gold can be calculated for the relevant period. Accordingly, by using imports, exports and production figures for 1984-August 2012 period, flow data for gold is estimated annually. Consequently, by aggregating the flow data, cumulative gold stocks since 1984 are measured.

The methodology for calculating flow data (FG) since 1984 is shown in equation 1:

$$FG_{(t)} = Imports_{(t)} + Production_{(t)} - Exports_{(t)} \quad (1)$$

Aggregating the flow data $FG_{(t)}$ since 1984, gold stocks for 2012 ($GS_{2012}$) are estimated as below:

$$GS_{2012} = \sum_{t=1984}^{2012} \left(FG_{(t)}\right) \quad (2)$$

Gold imports and exports used in the calculation include unprocessed and processed gold. Data on unprocessed gold for non-monetary gold exports are derived from CBRT's balance of payments statistics for 1984-2012. Data on exports and imports of processed gold are based on TurkStat's foreign trade statistics.[4] Data on unprocessed gold trade for non-monetary gold are released nominally in USD denomination instead of quantity. In order to estimate data on non-monetary gold trade in quantity, annual values of gold exports and imports are divided by the benchmark gold prices for the relevant year. The same methodology was also applied to processed gold exports and imports.

[4] Derived from the jewelry and jeweler's good items with code numbers 711319 and 711419 in Customs Tariff Statistical Positions released by TurkStat.

**Table 1:** Turkey's Gold Stocks (1984-August 2012)

| | Total Exports (Tons) | Total Imports (Tons) | Production (Tons) | Stock (Tons) | Stock (Billion USD) |
|---|---|---|---|---|---|
| 1984 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1985 | 0.0 | 26.4 | 0.0 | 26.4 | 0.3 |
| 1986 | 0.0 | 8.1 | 0.0 | 34.5 | 0.4 |
| 1987 | 0.0 | 8.5 | 0.0 | 43.0 | 0.6 |
| 1988 | 0.0 | 2.3 | 0.0 | 45.2 | 0.6 |
| 1989 | 0.0 | 85.2 | 0.0 | 130.4 | 1.6 |
| 1990 | 0.2 | 124.3 | 0.0 | 254.4 | 3.1 |
| 1991 | 0.5 | 99.1 | 0.0 | 353.0 | 4.1 |
| 1992 | 1.1 | 125.7 | 0.0 | 477.6 | 5.4 |
| 1993 | 2.0 | 158.1 | 0.0 | 633.7 | 7.5 |
| 1994 | 3.6 | 38.8 | 0.0 | 668.9 | 8.3 |
| 1995 | 4.9 | 107.0 | 0.0 | 771.0 | 9.5 |
| 1996 | 8.9 | 135.1 | 0.0 | 897.3 | 11.2 |
| 1997 | 15.3 | 178.3 | 0.0 | 1060.4 | 11.3 |
| 1998 | 22.3 | 191.4 | 0.0 | 1229.5 | 11.6 |
| 1999 | 32.2 | 123.7 | 0.0 | 1320.9 | 11.8 |
| 2000 | 85.7 | 219.8 | 0.0 | 1455.0 | 13.0 |
| 2001 | 69.0 | 121.7 | 1.1 | 1508.8 | 13.1 |
| 2002 | 85.2 | 150.6 | 4.3 | 1578.4 | 15.8 |
| 2003 | 93.6 | 241.0 | 5.4 | 1731.3 | 19.9 |
| 2004 | 111.4 | 283.0 | 5.0 | 1907.9 | 25.1 |
| 2005 | 119.3 | 291.0 | 5.0 | 2084.6 | 29.9 |
| 2006 | 118.0 | 228.3 | 8.0 | 2202.8 | 43.1 |
| 2007 | 139.8 | 260.6 | 10.0 | 2333.6 | 52.4 |
| 2008 | 213.9 | 200.3 | 11.2 | 2331.2 | 65.3 |
| 2009 | 201.5 | 62.2 | 14.3 | 2206.2 | 69.2 |
| 2010 | 108.4 | 75.0 | 16.4 | 2189.2 | 86.1 |
| 2011 | 84.7 | 134.6 | 24.0 | 2263.1 | 114.0 |
| 2012 (August) | 218.8 | 126.6 | 15.6 | 2189.1 | 115.5 |

Source: TurkStat, Istanbul Gold Market and CBRT calculations.

Table 1 presents Turkey's exports, imports and production of gold since 1984. Accordingly, Turkey's gold stocks are estimated to have risen by 2189 tons during 1984-August 2012 period. In other words, taking the beginning of 1984 as zero, Turkey's gold stocks are estimated to be 2189 tons as of August 2012. This amount corresponds to nearly USD 115.5 billion. It should be underlined that this amount of gold stock is the lowest that can be estimated by the available data under our assumptions. In view of the fact that gold has been saved and used as a jewelry item for centuries, Turkey's gold stocks are expected to be much higher than our estimations.

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Aktaş Z., A. Altan, F. Aydın, İ. Bozok and İ.B. Kanlı, 2012, Türkiye'de Altın: Dış Ticaret, Cari İşlemler Dengesi ve Büyüme Üzerine Etkisi (in Turkish), CBRT Economic Notes No.12/29.

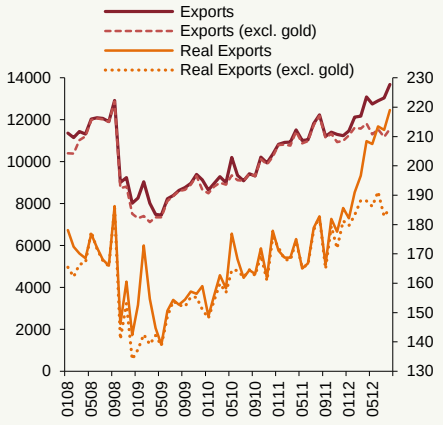
## Box 4.3 The Effect of Gold on Current Account Balance and Growth

Gold exports to Iran surged dramatically in 2012. Consequently, gold imports also rose. This Box analyzes effects of soaring gold exports and imports on foreign trade, current account balance and growth.[5]

### The Effect on Current Account Balance

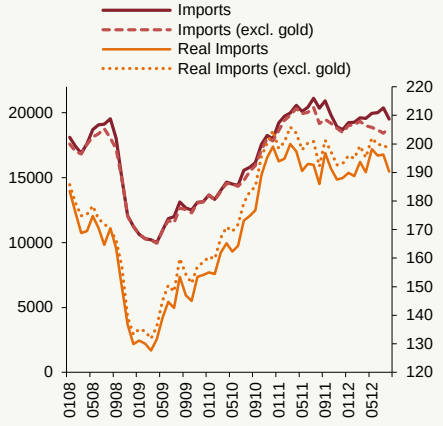
The analysis of both nominal and real export figures shows that exports excluding gold have been almost flat since the onset of 2012, while total exports have accelerated (Chart 1). In nominal terms, growth of imports has recently been mild, while imports excluding gold have fallen. Meanwhile, total imports and imports excluding gold have diverged notably in real terms (Chart 2).

**Chart 1.** Nominal and Real Exports
(Seasonally Adjusted)




Source: TurkStat, CBRT.

**Chart 2.** Nominal and Real Imports
(Seasonally Adjusted)




Source: TurkStat, CBRT.

Both the volatile course of net gold imports and the upward course of gold prices have significantly affected the current account balance. Hence, analyzing current account balance excluding gold is crucial. Table 1 presents current account balance figures with both the inclusion and exclusion of gold.

Table 1. Effect of Gold Trade on Current Account Balance
(Billion USD)

| | 2009 | 2010 | 2011 | 2012* |
|---|---|---|---|---|
| **1. Total** | **-13.99** | **-46.64** | **-77.14** | **-59.01** |
| 2. Excluding Gold | -17.00 | -46.19 | -72.36 | -60.39 |

* As of August, annualized.

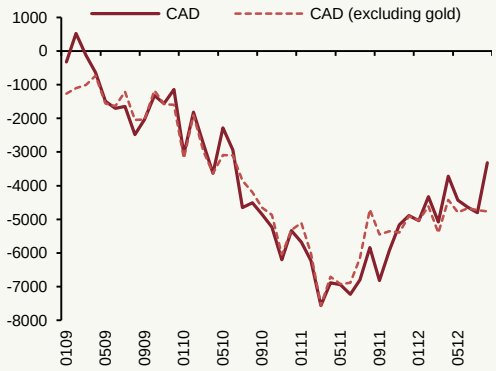
[5] For further details, see Aktaş et al. (2012).

While current account deficit declined to USD 14 billion, gold exports rose dramatically in 2009, especially in the first quarter of the year, and Turkey has been a net exporter of gold throughout the year. Excluding for gold, the current account deficit was USD 17 billion. The increase in foreign trade deficit was influential on the widening of the current account deficit in 2010. Foreign trade deficit continued to soar in 2011 and the current account deficit hit USD 77 billion. However, excluding the USD 5 billion net gold imports in 2011, the current account deficit was USD 72 billion. In 2011, net gold imports accounted for 16 percent of the USD 30 billion worsening of the current account deficit .

High level of gold exports were largely met by imports in the first 8 months of 2012 and net gold exports totaled USD 3 billion. As of August 2012, the current account deficit amounting to USD 59 billion in annualized terms is USD 60.4 billion with the exclusion of gold. In other words, 20 percent of the USD 15 billion improvement in the current account deficit was driven by net gold exports.

In seasonally adjusted terms, the abovementioned course of foreign trade was also observed in the current account balance. Current account balance excluding gold has recovered mildly since the beginning of 2012, while total current account deficit narrowed significantly (Chart 3).

**Chart 3.** Current Account Deficit (CAD)
(Billion USD, Seasonally Adjusted)




Source: CBRT.

**Effect on Growth**

In order for net gold exports to affect GDP, a portion of exports has to be produced or processed domestically. Even though gold exports do not have any value added, they may still change the composition of GDP on the spending side. Accordingly, the effect of gold exports on GDP growth and demand composition has been analyzed in terms of sources of gold exports.

Gold exports in a period can be met by gold imports or domestic gold production in the same period or gold inventories accumulated by previous domestic production or gold imports. Meanwhile, a portion of gold exports can also be met by smuggled gold in the current or previous periods. Effects of gold exports on GDP and demand composition are presented in Table 2.

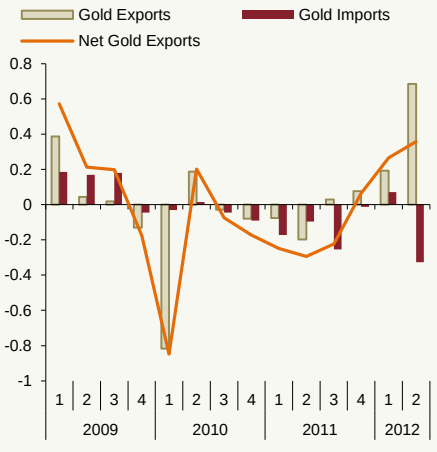
Table 2. The Effect of Gold Exports on GDP and Expenditure Items*

| Gold Source | t-k | | t (Export Period) | |
|---|---|---|---|---|
| Export of Gold Produced at Period t | | | Export (+)<br>Import (0) | Inventories (0)<br>GDP (+) |
| Export of Gold Imported at Period t | | | Export (+)<br>Import (-) | Inventories (0)<br>GDP (0) |
| Export of Gold Imported at Period t-k | Export (0)<br>Import (-) | Inventories (+)**<br>GDP (0) | Export (+)<br>Import (0) | Inventories (-)<br>GDP (0) |
| Export of Gold Produced at Period t-k | Export (0)<br>Import (0) | Inventories (+)**<br>GDP (+) | Export (+)<br>Import (0) | Inventories (-)<br>GDP (0) |
| Export of Smuggled Gold | | | Export (+)<br>Import (0) | Inventories (-)<br>GDP (0) |

* The sign in the parenthesis shows the contribution of the relevant sub-item to GDP.
** Table is based on the assumption that previously produced or imported gold is not consumed or used as an input to production.
Source: TurkStat.

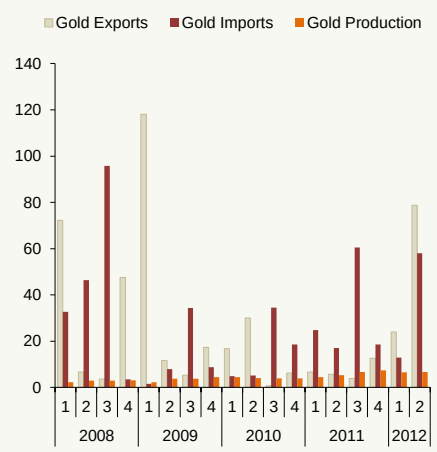
Against this background, estimations show that gold export contributed 0.69 percentage points to GDP in the second quarter of 2012, while gold imports provided a negative 0.33 points (Chart 4). Net gold exports will affect growth only if the portion of gold exports which are not met by imports are produced domestically. Otherwise, net gold exports will only affect the composition of growth.

**Chart 4.** Contribution of Gold Trade to Net Exports (Percentage Points)




Source: TurkStat.

**Chart 5.** Production, Export and Imports of Gold (Tons)




Source: Istanbul Gold Market, TurkStat.

As presented in Chart 5, only a marginal portion of the gap between exports and imports of gold is met via production. In fact, in the second quarter of 2012, net external demand for gold increased by 32 tons annually, while gold production raised by 1.4 tons in the same period. This indicates that the share of domestic production in meeting net external demand for gold, and hence, the recent movements in the gold trade have a rather limited contribution to annual GDP growth.

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Aktaş Z., A. Altan, F. Aydın, İ. Bozok, İ.B. Kanlı, 2012, Türkiye'de Altın: Dış Ticaret, Cari İşlemler Dengesi ve Büyüme Üzerine Etkisi (in Turkish), CBRT Economic Notes No.12/29.

## Box 4.4 Real Unit Wage in Trade-Services Sector

Real unit wage in trade-services sector is obtained by dividing gross salary wages (total wage payments) published under TurkStat's quarterly trade-service index by the turnover index. Due to absence of production data for this sector, turnover data are used in estimations. When computed by using production data, real unit wages show unit labor cost, whereas when computed by the turnover data, real unit wages display the share of wages in the turnover. A ceteris paribus higher share of wages indicates a lower profit margin. Assuming that this observation on macro data is valid at the micro level for an average firm, an increase in real unit wage can be interpreted as a higher probability for a firm seeking constant profit margin to reflect soaring costs on prices.

Real unit wages, which have been on an upward course since end-2010, have recently increased by 16 percent. During this period where the average hourly wage has soared by 6 percent in real terms, the increase in real unit wage has mainly been driven by the weak course of average productivity (Table 1).

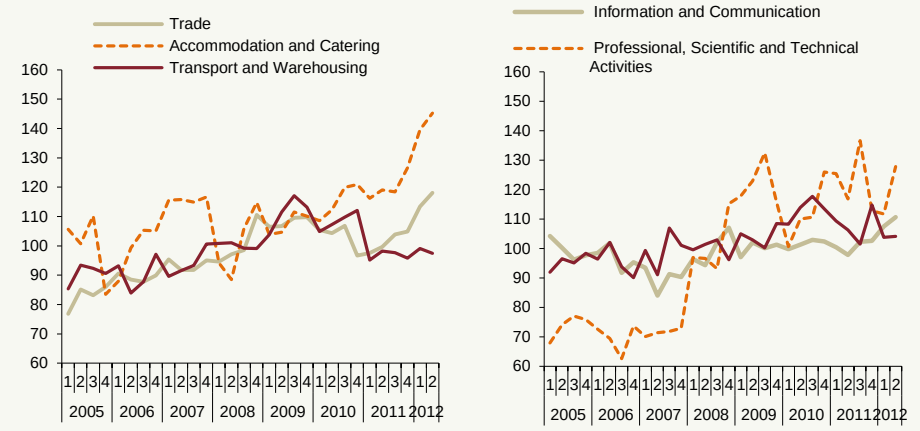
**Table 1:** 2010Q4: 2012Q2 Real Unit Wage in Trade-Services in 2010Q4:2012Q2*
(Logarithmic Difference, Seasonally Adjusted)

| | Trade-Services | Trade | Accommodation-Catering | Transport-Warehousing | Information-Communication | Professional Scientific and Technical Activities | Administrative and Support Services Activities |
|---|---|---|---|---|---|---|---|
| Real Unit Wage ***(1)=(2)-(3)*** | 0.16 | 0.20 | 0.18 | -0.14 | 0.08 | 0.01 | -0.09 |
| Hourly Real Wage ***(2)*** | 0.06 | 0.04 | 0.09 | 0.02 | 0.04 | 0.05 | 0.18 |
| Productivity (Real Turnover/Hours Worked) ***(3)=(4)-(5)*** | -0.10 | -0.16 | -0.10 | 0.16 | -0.04 | 0.03 | 0.27 |
| Turnover (Real) ***(4)*** | 0.00 | -0.02 | 0.04 | 0.35 | -0.05 | 0.06 | 0.07 |
| Hours Worked ***(5)*** | 0.10 | 0.14 | 0.14 | 0.19 | -0.01 | 0.03 | -0.20 |
| Share of Turnover (2009) | 100 | 78.1 | 9.9 | 2.7 | 3.6 | 3.4 | 2.4 |

* Average unit wage for trade-services sector is obtained by dividing total wage payments by turnover. In case of dividing the numerator and the denominator of this ratio by the price and hours worked indices, respectively, unit wage can be expressed as the ratio of hourly real wage to the average real turnover per hours worked, in other words average productivity. Service prices excluding rent are used in calculations as the price index.
Source:TurkStat, CBRT.

Minimum wage was up 5 percent in real terms during the same period. The average increase in services prices excluding accommodation and catering in addition to administrative and support services activities lagged behind the increase in minimum wage (Table 1). The hourly real wage in administrative and support services activities was supported by the improvement in productivity. Meanwhile, on contrary to wage developments, productivity declined in accommodation and catering services.

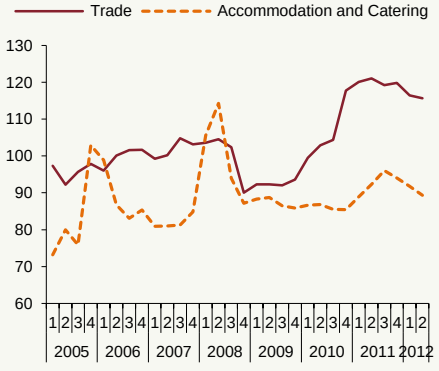
**Chart 1. Real Unit Wage in Sub-Items of the Services Sector (2008=100)**
(Seasonally Adjusted)




Source:TurkStat, CBRT.

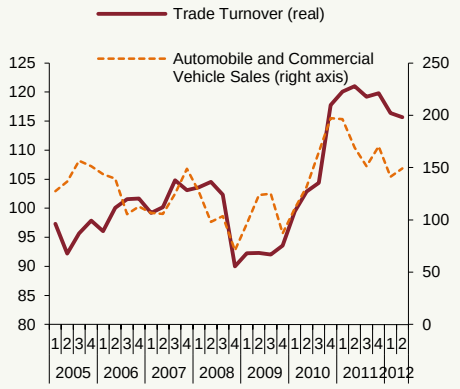
The analysis of the sub-items of trade-services according to NACE.Rev2[6] classification shows that the uptrend in real unit wages does not reflect the overall outlook, but is only specific to trade and accommodation-catering services as well as information and communication sectors (Table 1 and Chart 1). According to annual Industrial and Services Statistics for 2009, trade and accommodation-catering services account for 80 and 10 percent, respectively of the overall trade-services sector (Table 1). Hence, the overall trend in trade-services sector mainly reflects the developments in the trade sector. The increase in real unit wage in the trade sector is largely fuelled by the decline in partial productivity, while real unit wage in the accommodation and catering services soared on the back of both rising wage and declining productivity (Table 1).

**Chart 2.** Turnover in Selected Services Sectors
(Seasonally Adjusted, Real, 2008=100)




Source: TurkStat, CBRT.

**Chart 3.** Turnover in Trade and Automobile Sales
(Seasonally Adjusted, 2008=100)




Source: TurkStat, AMA, CBRT.

[6] Updated statistical classification of economic activities in EU.

In addition to developments in hours worked, the decline in turnover was also influential on the productivity decline in trade and accommodation-catering services (Chart 2). A closer scrutiny at the trade sector, which has a major share in trade-services, reveals that developments in wholesale and retail trade of motor vehicles and motorcycles with a 7 percent share in overall trade were also effective on the declining turnover (Chart 3).

In sum, the continuing increase in real unit wage in some services sectors implies an increased pressure on wages from prices. However, the increase in real unit wages was partially driven by the decline in turnover amid slowdown in the economic activity, which thus limited the potential pass-through from higher labor cost to prices.