

## 4. Supply and Demand Developments

According to the national accounts data for the last quarter of 2012, economic activity recorded a less favorable outlook than presented in the January Inflation Report, and followed almost a flat course on a quarterly basis. Thus, annual growth stood at 2.2 percent in 2012. Alongside the ongoing contraction in private sector investment, the downturn in private consumption demand led the domestic demand to remain sluggish in the last quarter. In the meantime, the considerable contribution of net exports to growth was sustained, resulting in further balancing of the demand composition in the last quarter.

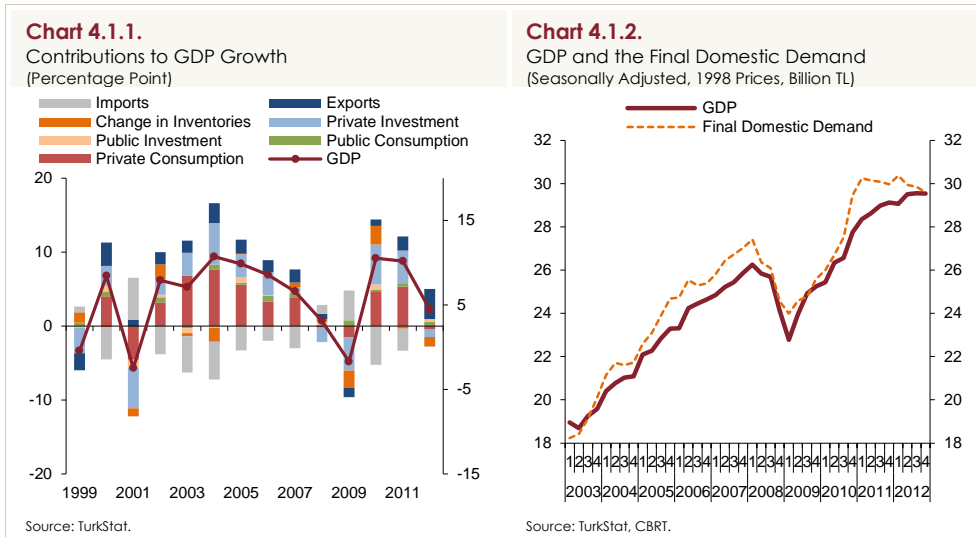
Data regarding the first quarter of 2013 indicate that economic activity settled into a recovery track. In fact, production and imports of consumption and investment goods, which are one of the demand indicators, registered quarter-on-quarter increases in the January-February period. Production and imports of other minerals, which are investment indicators, also increased in the same period compared to the last quarter. In addition to these indicators, total credits remained above 2012 levels, thus suggesting that final domestic demand increased in the first quarter. External trade data indicate that excluding for gold, exports and imports will record a mild increase in the first quarter, and the ongoing positive contribution of net external demand to growth will continue, albeit at a slower pace.

Income, financing and expectations channel that influence domestic demand also support recovery. In fact, non-farm employment continued to rise in the last quarter and demand was supported via the disposable income channel. Financial conditions also underpin the recovery in demand. On the other hand, global economic uncertainties continue, albeit at a diminishing pace, standing out as a factor to restrain recovery. In fact, even if consumer and investor confidence record an improvement, the currently weak level of indices compared to times of robust growth poses a downside risk to the private sector demand.

## 4.1. Gross Domestic Product Developments and Domestic Demand

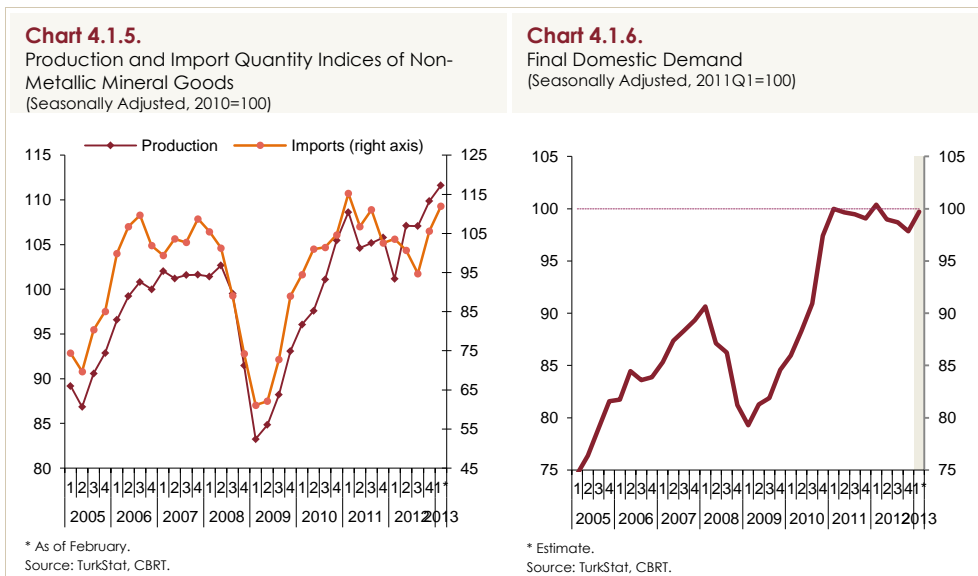
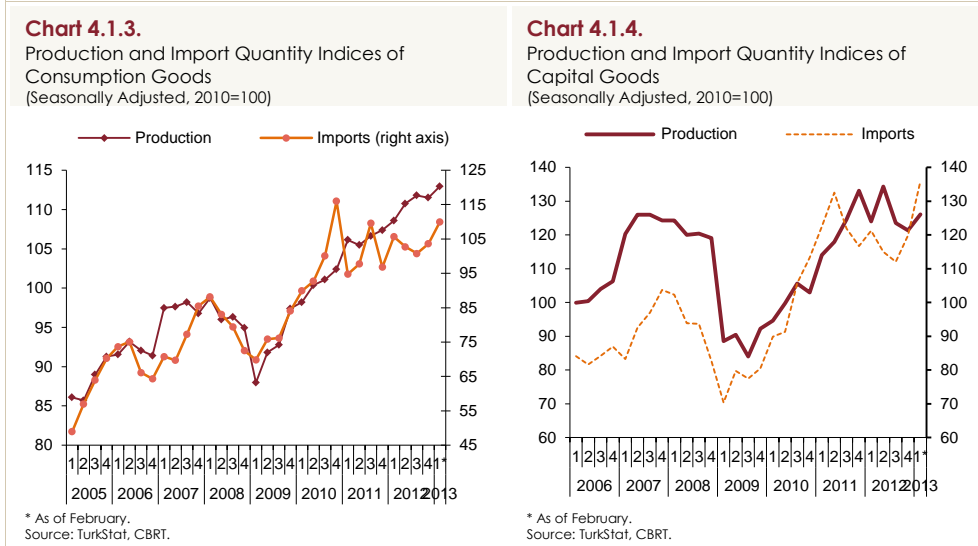
According to the national accounts data released by the TurkStat, GDP recorded a year-on-year increase by 1.4 percent in the last quarter of 2012. Changes in inventories and aggregate final domestic demand continued to weigh on annual growth; while net exports remained as the main driver of annual growth in this quarter. Annual growth stood at 2.2 percent in 2012 (Chart IV.1.1). Growth was mainly fuelled by exports during the last year, while private sector contributed negatively to growth. Thus, 2010 and 2011 were marked by significant rise in growth mainly on the back of private demand, while current account deficit also rose remarkably; whereas 2012 proved to be a year of stabilization of the demand components.

Seasonally adjusted data suggest that the quarter-on-quarter GDP remained unchanged in the last quarter. Net exports continued to contribute positively to quarterly growth in the last quarter. In the meantime, final domestic demand went down further amid declining private sector demand (Chart 4.1.2).



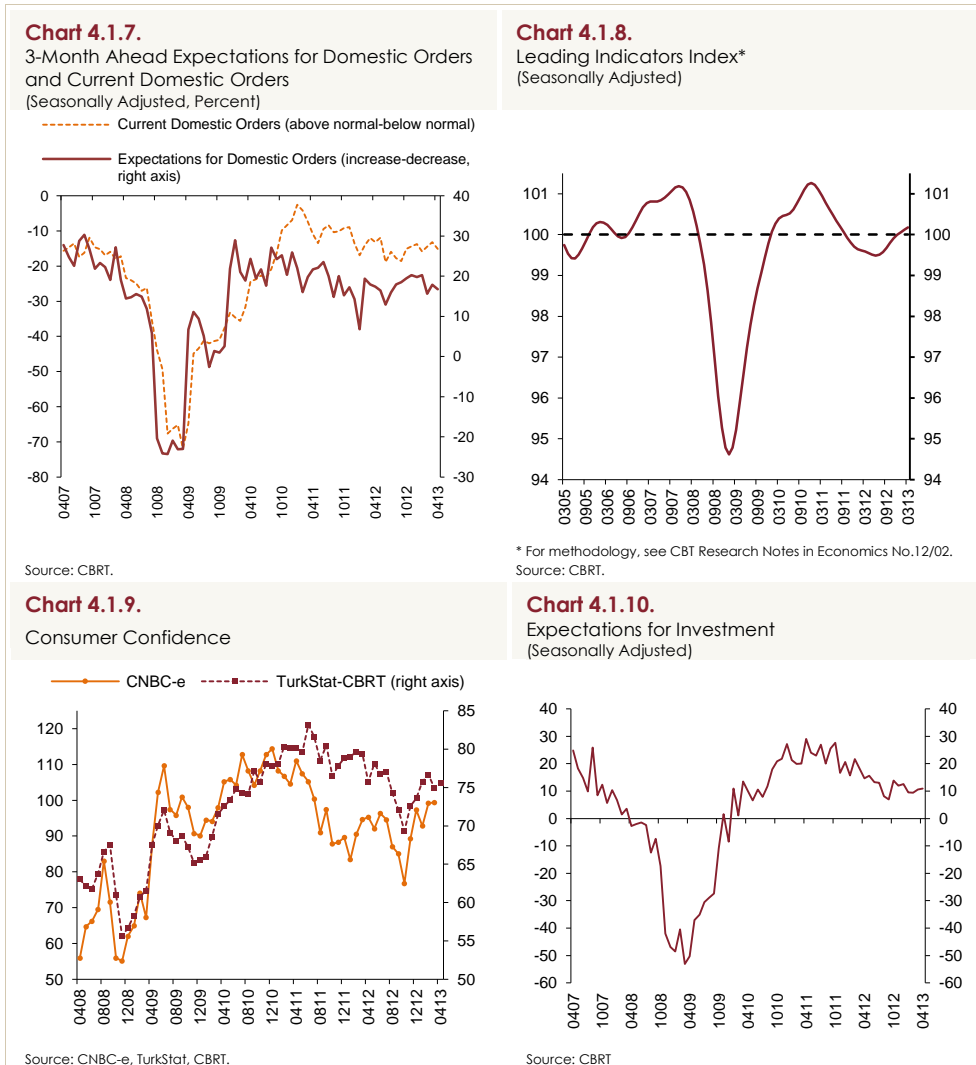
Recently released data point to a mild increase in final domestic demand. In fact, production and imports of consumption and investment goods, which are demand indicators, posted a quarter-on-quarter increase in the January-February period (Charts 4.1.3 and 4.1.4). Production and imports of other minerals, one of the indicators on construction investments, also saw a

quarter-on-quarter increase in the first quarter (Chart 4.1.5). In sum, final domestic demand is expected to increase in the first quarter (Chart 4.1.6).



BTS indicators regarding domestic demand indicate a mild recovery for the period ahead (Chart 4.1.7). Indicators pertaining to the overall course of the economic activity also hint at a recovery for the upcoming period (Chart 4.1.8). The analysis of recent developments in the labor market indicates that non-farm employment is on an upward track, and it supports demand through the disposable income channel. Financial conditions also underpin the recovery in demand. Accordingly, domestic demand is expected to improve further in the forthcoming period. On the other hand, persisting global economic

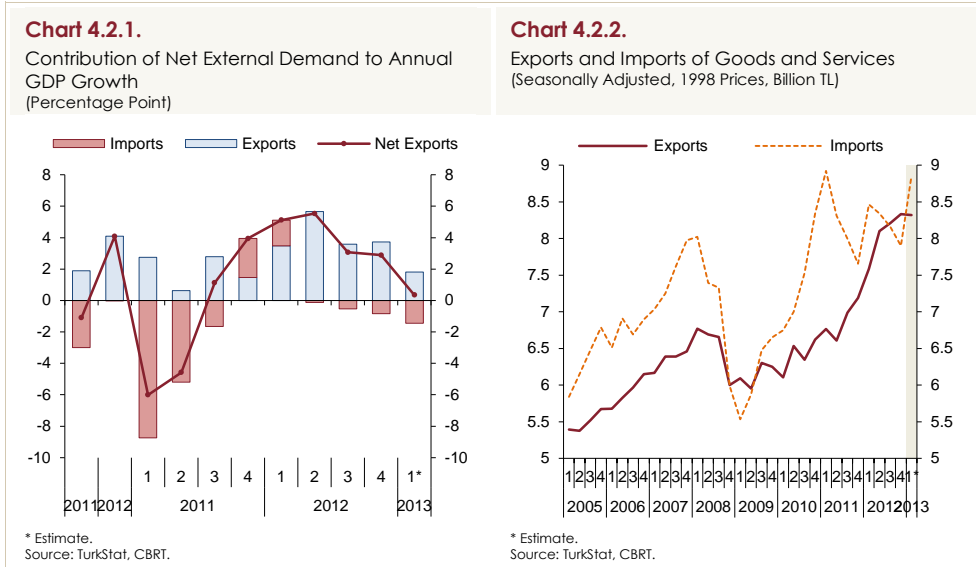
uncertainties remain as a factor to restrain recovery. In fact, despite the recovery in consumer and investor confidence, indices are still weak compared to times of robust growth (Charts 4.1.9 and 4.1.10).



## 4.2. External Demand

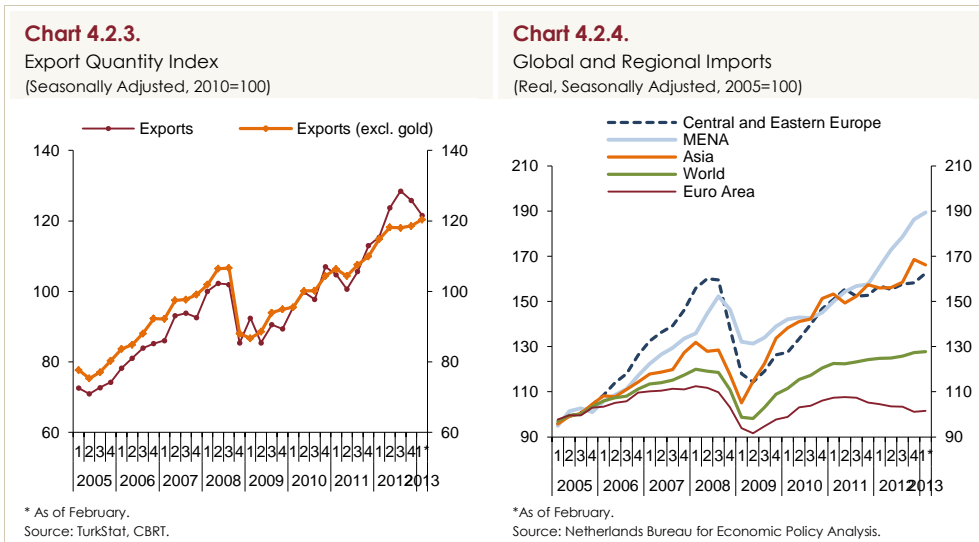
National accounts data for the last quarter of 2012 point that demand components were balanced further. Exports of goods and services posted an annual increase by 15.0 percent in this period, while imports rose by 3.2 percent. Thus, net exports have stood as the largest contributor to annual growth in the last five consecutive quarters and net external demand remained as the driver of growth (Chart 4.2.1). Seasonally adjusted data indicate that exports of goods

and services recorded uninterrupted increases in the last six quarters; whereas imports of goods and services remained sluggish (Chart 4.2.2).

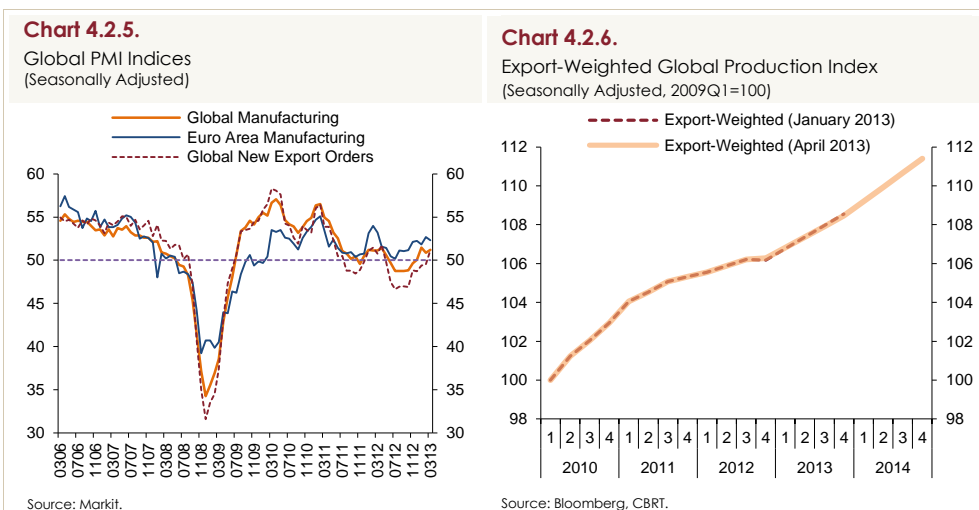


The data pertaining to the first quarter of 2013 show that exports quantity index continued to decline in the January-February period. This decline is attributed to the slowdown in gold exports (Box 4.3). In fact, the core index excluding gold exports registered a mild increase in contrast to the headline index in the said period (Chart 4.2.3). Recent indicators point to a possible fall in headline exports index and a monthly decline in exports quantity index excluding gold in March; however, in quarterly terms, the course of exports will remain in tandem with the current outlook.

Global trends indicate that world demand for imports continued to remain on an upward track and increased slightly in the January-February period. Import demand of the Euro Area, our major trading partner with a large share in Turkey's exports, has recorded a slight increase for the first time since the second quarter of 2011. Meanwhile, the import demand of MENA countries continues to be robust. Moreover, the import demand of the Central and Eastern European countries recorded a notable improvement. However, having surged in the last quarter of 2012, import demand of Asia posted a decline in the January-February period (Chart 4.2.4). Against this background, it should be highlighted that external demand conditions saw a mild recovery. Accordingly, the underlying trend of exports of goods and services are estimated to have been stronger; while exports of goods and services followed almost a flat course due to the decline in gold exports in the first quarter of the year (Chart 4.2.2).

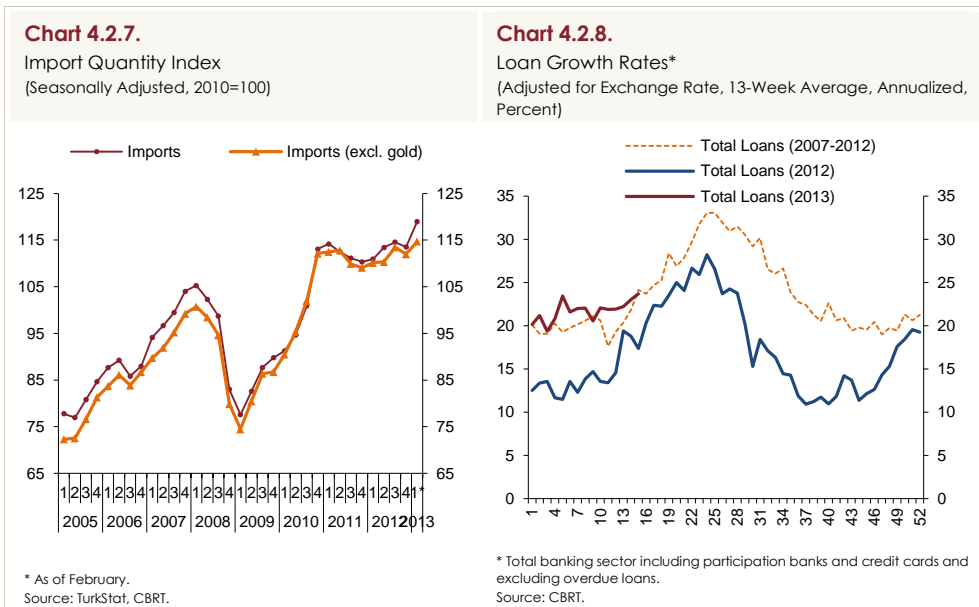


Global PMI indicators signal for a recovery in the global economic activity. More specifically, global PMI manufacturing index continued to hover above 50 in March. Moreover, services index continued with an upward trend in the first quarter hinting at an acceleration in the production of services. Additionally, global new exports orders went above 50 for the first time in March after a 10-month period (Chart 4.2.5). Export-weighted global growth outlook, one of the medium-term indicators, remained broadly unchanged since the publication of the previous Inflation Report. In this context, growth of external markets is expected to gain pace in 2013 on an annual basis (Chart 4.2.6).

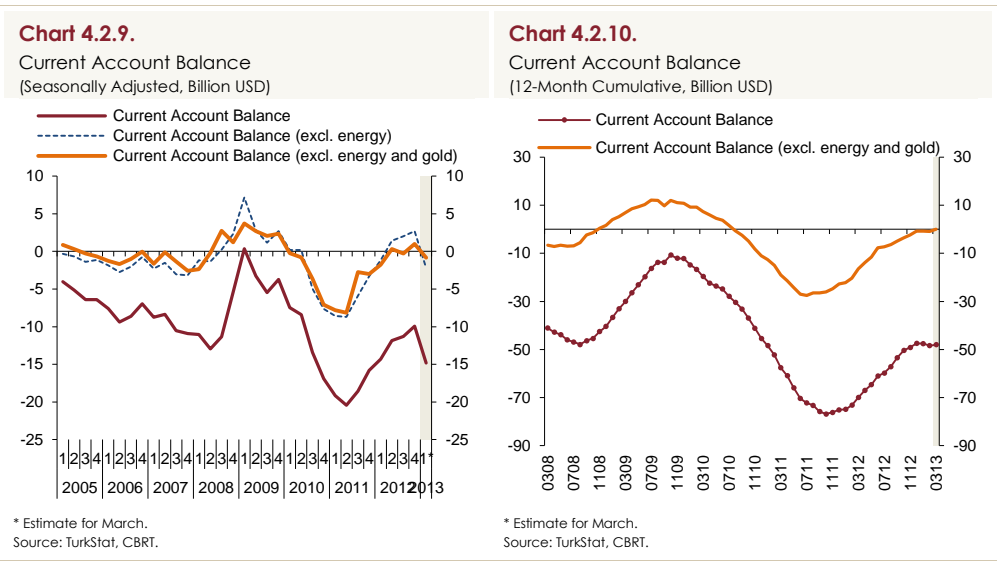


In the January-February period, import quantity index recorded a notable quarter-on-quarter increase by 4.8 percent. Although recent indicators point that the import quantity index declined in March, imports of goods are

estimated to have surged in the first quarter. Nevertheless, imports quantity index excluding gold, which is one of the indicators on the underlying trend of imports, saw a milder increase compared to the previous quarter (Chart 4.2.7). Accordingly, imports of goods and services are estimated to have recovered in the first quarter (Chart 4.2.2). Total credits remained close to the average of 2007-2012 period, yet stronger than 2012, which saw languish domestic demand (Chart 4.2.8). In addition, the improvement in confidence indices and the low course of interest rates pose an upside risk on the final domestic demand. Against this background, it is projected that domestic demand will offer greater contribution to growth, which will result in a stimulated import demand in the period ahead.

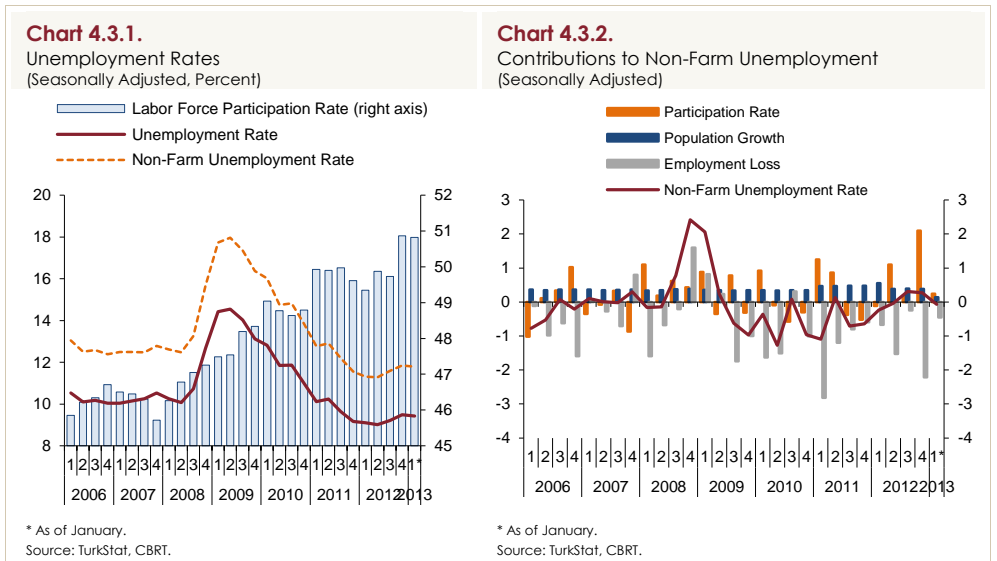


The recent improvement in the current account balance was interrupted by the brisk growth in import demand in the first quarter of 2013. However, the deterioration in the current account balance excluding gold and energy, which is among the indicators of the underlying trend of the current account balance, proved more limited. Current account balance excluding energy saw a higher decline than current account balance excluding energy and gold, thereby showing that the external gold trade also played a significant role in this deterioration (Chart 4.2.9). Interruption of the improvement in the current account deficit also brought about a flat course in the 12-month cumulative in the last couple of months (Chart 4.2.10). The domestic demand should closely be monitored for the current account deficit to reach sustainable levels.



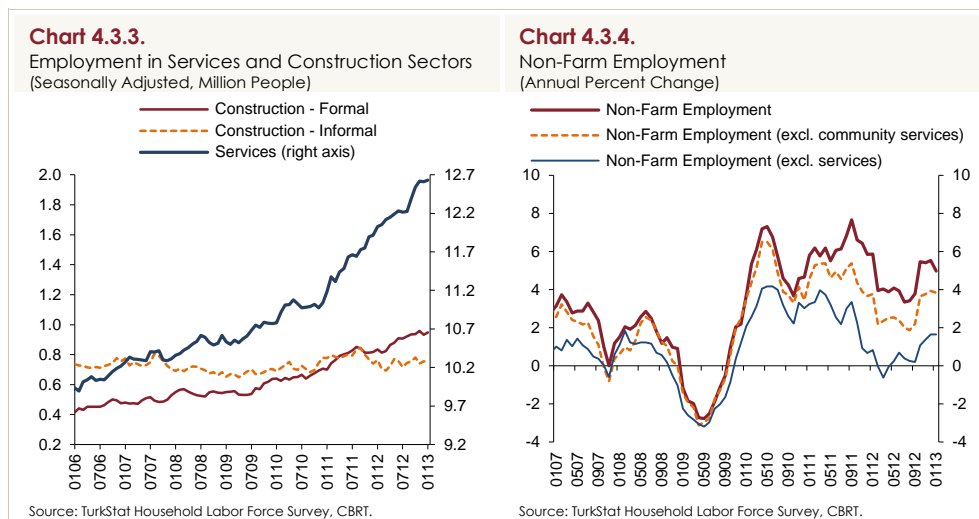
### 4.3. Labor Market

Total and non-farm unemployment rates posted a quarter-on-quarter increase in the last quarter of 2012 (Chart 4.3.1). Despite the notable increase in the non-farm employment in this period, the effect of the labor force participation rate on the unemployment rate got stronger (Chart 4.3.2). Labor force participation rate recorded a stable upward trend in past years (Box 4.4). Meanwhile, in January 2013, total and non-farm unemployment rates, which increased in December 2012, decreased to 9.4 and 11.8 percent, respectively (Chart 4.3.1). This decrease was driven by higher non-farm employment as well as the as the rate of population increase to lag well behind the potential increase in population.

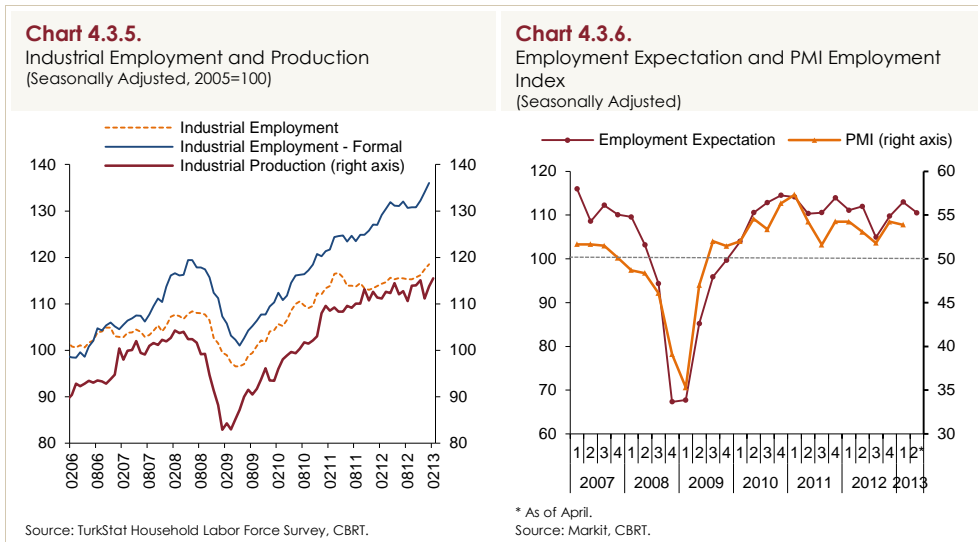




In 2012, increases in non-farm employment were mainly driven by services sector. The largest contributions within the services sector were provided by financial institutions, real estate leasing and business services; and community services that include public management, education and healthcare services. However, employment in the services sector has lost pace since November, and declined in December (Chart 4.3.3). In December 2012, the annual rate of increase in non-farm employment stood at 5.5 percent. In the same period, non-farm employment excluding community services recorded an increase by 3.9 percent, while with the exclusion of overall services, this rate went down to 1.6 percent (Chart 4.3.4). Employment in the services sector registered a slight month-on-month increase in January 2013 (Chart 4.3.3). Yet, the contribution of the services sector to the annual increase in the non-farm employment declined in January 2013 (Chart 4.3.4).

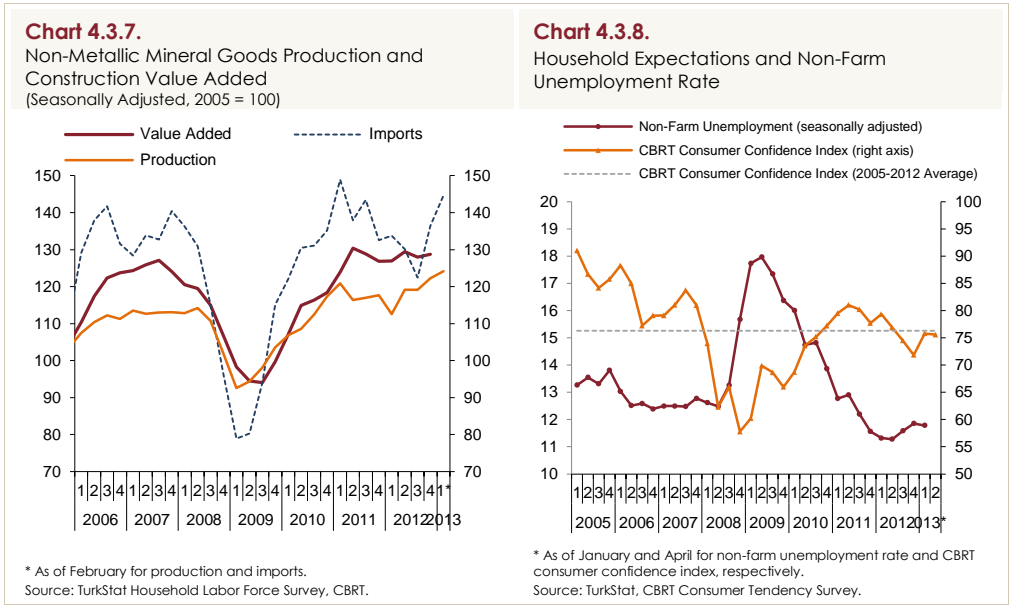


Similarly, the construction sector employment, which has trended upwards since early 2012, was interrupted in late 2012. Having recorded a quarterly increase in the last quarter, construction sector employment decreased in December. In January 2013, construction sector employment posted a monthly increase, albeit limited (Chart 4.3.3). Moreover, industrial employment registered month-on-month increases both in December 2012 and January 2013. Increases in industrial employment were influential on the rise in non-farm employment in this period. Registered employment in the industrial sector continued to rise amid rising production in the industrial sector (Chart 4.3.5).

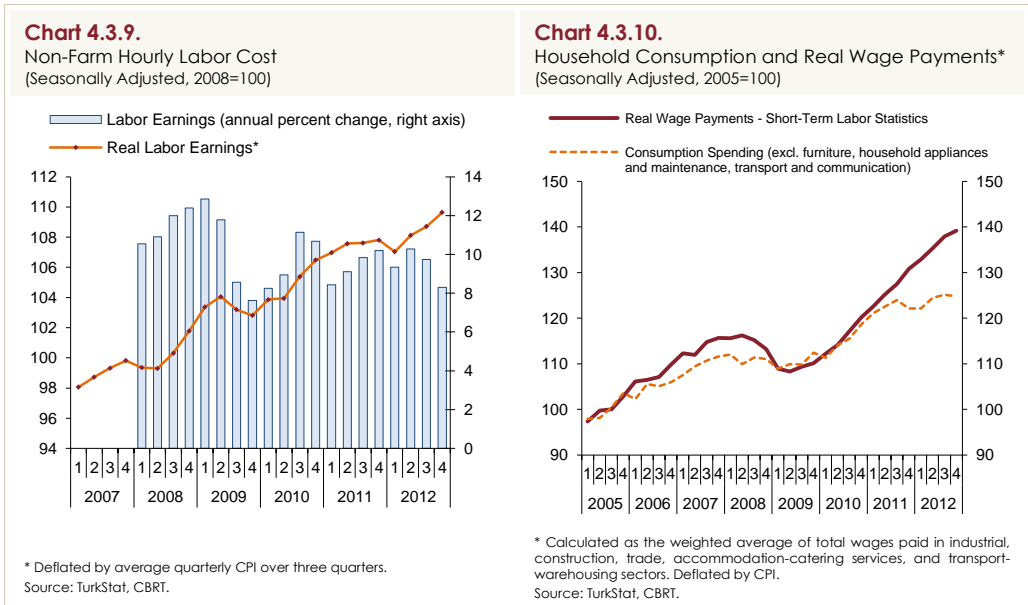


Leading indicators signal for favorable employment conditions for the first quarter of 2013. Firstly, industrial production posted a year-on-year increase in the January-February period (Chart 4.3.5). Moreover, the PMI employment, an indicator for the manufacturing industry employment, recorded a quarterly decline in the first quarter of the year; yet continued to be driven by optimistic expectations (Chart 4.3.6). Similarly, Total Employment Expectation, which is among the BTS indicators and reflects the views of the firms' operating in the manufacturing industry sector, posted a remarkable quarter-on-quarter increase in the first quarter of 2013 (Chart 4.3.6). Total Employment Expectation edged down in April, yet remained on a course in line with the optimistic expectations. Furthermore, production and import developments in the manufacturing of non-metallic mineral products, which provide the construction sector with intermediate goods, point to an improvement in construction activities in the first quarter. Manufacturing of mineral products edged up in the January-February period, while imports of mineral products expanded considerably (Chart 4.3.7).

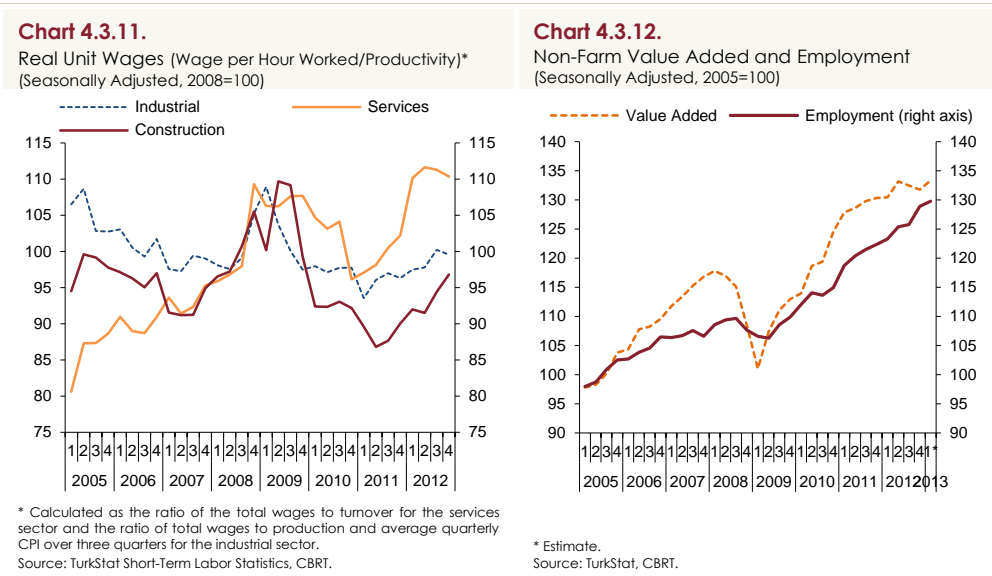
The CBRT's Consumer Confidence Index, which reflects households' views across Turkey, recorded an increase in the first quarter of 2013 and reached its long-term average (Chart 4.3.8). Although the Consumer Confidence Index edged down in March on a monthly basis, it trended upwards again in April. Similarly, Expectation of the Number of Unemployed, which is among the sub-items of the Consumer Confidence Index, plummeted in March, but increased slightly in April. It should be noted that this signal, which contradicts with other leading indicators of the labor market, should be monitored.



Analysis of labor market developments with regard to domestic demand suggests that the rise in total wage payments offered support to domestic consumption spending throughout 2012. Parallel to the increase in the minimum wage, non-farm hourly earnings index released under Labor Cost Indices remained on an upward trend in real terms in the last quarter of the year (Chart 4.3.9). Nevertheless, household domestic consumption spending which excludes spending on durable goods, remained broadly unchanged in 2012 (Chart 4.3.10).



An analysis of wage developments as a cost factor suggests that real unit wages in the industrial and services sectors recorded a quarter-on-quarter decline in the last quarter of 2012 (Chart 4.3.11). The ongoing upward trend in real unit wages in the services sector since 2011 was interrupted by the rise in turnover in the second half of 2012. In this period, the industrial sector experienced an increase both in total wage payments and production (Chart 4.3.11).



In sum, non-farm sectors saw increases in employment in the last quarter of 2012. However, faster growth of the labor force participation rate led to a rise in unemployment rates compared to the previous quarter. Leading indicators in the first quarter of 2013 besides the January 2013 data on labor market suggest that non-farm employment are expected to increase further in the first quarter (Chart 4.3.12). Meanwhile, uncertainties regarding the global economic outlook may restrain the improvement in employment conditions, especially in the industrial sector.

Box  
4.1

## Revisions to the Industrial Production Index

Industrial production index (IPI) is one of the indicators monitored for analyzing the course of economic activity. The IPI, which was released for the first time in 1989 by the TurkStat as 1986=100, was later revised as 1992=100 and 1997=100. Publication of the 1997=100 index was terminated in October 2008, and TurkStat started to release data according to the NACE Rev.1.1, which is the Statistical Classification of Economic Activities in the European Community (Table 1). On the other hand, NACE Rev.2 was introduced as of January 2011 with the base year remaining unchanged. From January 2013 and onwards, the IPI data were published as 2010=100. In the forthcoming period, such revisions will be introduced to both IPI and other indicators as well. Against this background, this Box compares 2005=100 and 2010=100 based IPI data and analyzes the course of economic activity following the revisions.

Table 1. Industrial Production Index

Base Year	Classification	Date of Issue	Start of Data	End of Data
1997=100	ISIC	1999	January 1997	October 2008
2005=100	NACE 1	2008	January 2005	December 2010
2005=100	NACE 2	2011	January 2005	December 2012
2010=100	NACE 2	2013	January 2005	-

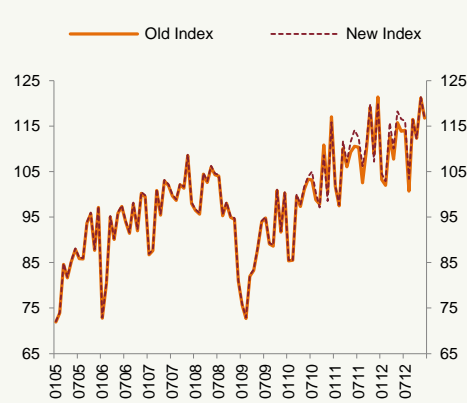
In order to better reflect structural changes in the economy, base year was changed in the new index and the scope of the index was widened by increasing the number of workplaces and materials. Accordingly, weight structure of the sub-items of the industrial production index was also changed. In this respect, weights of mining and quarrying as well as electricity, gas and steam increased, while share of the manufacturing industry declined (Table 2).

Table 2. Weights of Sub-Items of IPI (Percent)

NACE Rev.2	2005=100	2010=100
B- Mining and Quarrying	3.60	6.05
C- Manufacturing Industry	85.85	81.51
D- Electricity-Gas-Steam and Climatization	10.55	12.44
<b>Total Industry</b>	<b>100.00</b>	<b>100.00</b>

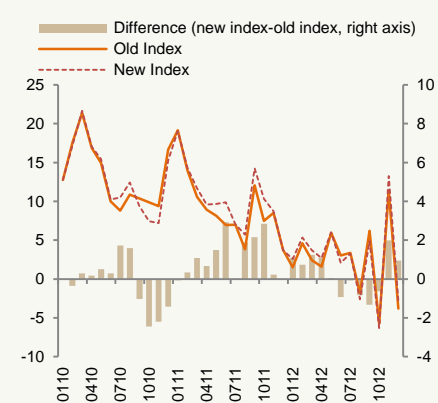
Main and sub-items of the new index with base year 2010 are interpolated backwards by the annual growth rates of the old index with base year 2005. Thus, pre-2010 data in two indices do not display a noticeable difference, although post-2010 levels thereof diverged in certain periods due to the varying weight structure (Chart 1). Meanwhile, analysis of annual percentage changes in 2010 and in the succeeding period reveals that divergences up to 2.9 percentage points are seen in certain months (Chart 2). Nevertheless, it should be noted that indices have converged by December 2012.

**Chart 1.** Comparison of the Old and the New Index (2010=100)



Source: TurkStat.

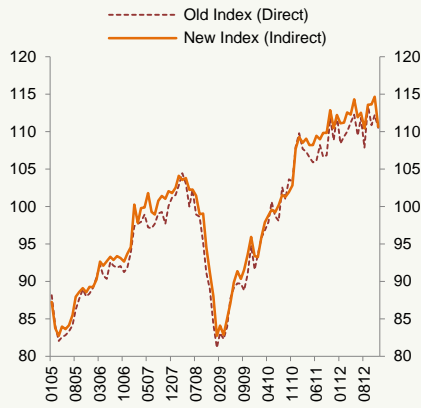
**Chart 2.** Annual Percent Changes in the Old and the New Index



Source: TurkStat.

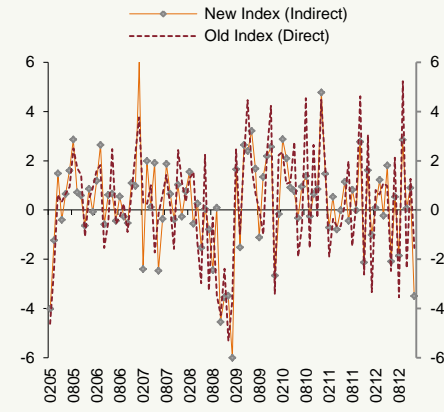
One of the most significant changes in the newly released index is the seasonal adjustment method. For analysis of the recent time periods, IPI should be seasonally adjusted due to varying weather and demand conditions. Being an unobservable variable, the seasonal component should be estimated by various methods (such as TRAMO SEATS and X12). In addition to the selection of the estimation method for the seasonal component of the data released as a compilation of various data, a question arises as to whether the seasonally adjusted data will be *directly* or *indirectly* calculated. According to the method of direct seasonal adjustment, sub-components of the respective series are obtained, and then this series is seasonally adjusted. As for the indirect method, after all the sub-components are seasonally adjusted, seasonally adjusted data of the main series is obtained as the weighted average of these series. The TurkStat released IPI through the direct seasonal adjustment method in the 2005-based index; while for the new index, indirect seasonal adjustment method that entails weighting of the seasonally adjusted data on sectors such as food, textiles and furniture was adopted.

**Chart 3. Direct and Indirect Seasonal Adjustment of IPI (2010=100)**



Source: TurkStat.

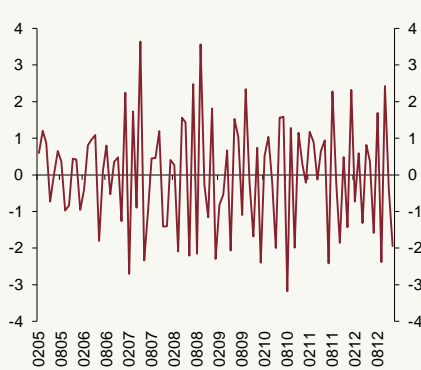
**Chart 4. Direct and Indirect Seasonal Adjustment of IPI (Monthly Percent Change)**



Source: TurkStat.

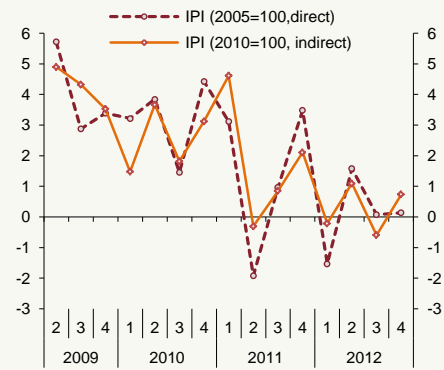
An analysis of the revisions in seasonally adjusted data suggests that the old index calculated by direct adjustment diverges occasionally from the new index, which is indirectly seasonally adjusted. To be more specific, both indices were quite close at end-2012, while they diverged significantly in the past due to various dynamics (Chart 3). The directly adjusted index followed a fluctuating course between January 2011 and December 2012; whereas the indirectly adjusted index displayed a less volatile course as also confirmed by the monthly changes. Although monthly changes of the old index have recently been quite volatile, monthly changes of the new index are fluctuating in a narrow band, thereby causing a considerable gap between monthly changes in some months (Charts 4 and 5).

**Chart 5. Difference of Monthly Percent Change (Seasonally Adjusted, New Index-Old Index)**



Source: TurkStat.

**Chart 6. Quarterly Change in IPI (Seasonally Adjusted, Percent)**



Source: TurkStat.

There is no theoretical or empirical finding in the literature asserting which method is better in the seasonal adjustment of a series like IPI (Eurostat, 2009). On the other hand, due to varying effects of the recent global crisis on sectoral dynamics, the indirect approach in seasonal adjustment gained importance. For example, in their analysis on the industrial production in the Euro Area, Koçak, Mazzi and Moaura (2010) showed that direct or indirect methods can produce different signals during a crisis. In fact, for the seasonal adjustment of the Euro Area data, the Eurostat has also adopted the indirect method as of January 2012 (ECB, 2012). As for the Turkish economy, the choice of direct or indirect method of seasonal adjustment of the GDP data can lead to different signals in the aftermath of a crisis (CBRT, 2012).

In sum, structural changes that occur due to the dynamic structure of the economy call for revisions to data. As a result of these revisions, the data may occasionally produce different signals. For example, an analysis of the quarterly change in the seasonally adjusted IPI points that the 2005=100 data do not signal for notable change in the IPI in the third and last quarters of 2012; while revised data can be interpreted as the contraction of production in the third quarter followed by a recovery in the subsequent quarter (Chart 6). This may also change the previous implications regarding the relationship between survey indicators, exports and imports and financial conditions and the IPI. In this respect, it should be noted that series like IPI and the GDP may be subject to revisions, and these revisions may necessitate the analysis of these series to be retrospectively revised.

## REFERENCES

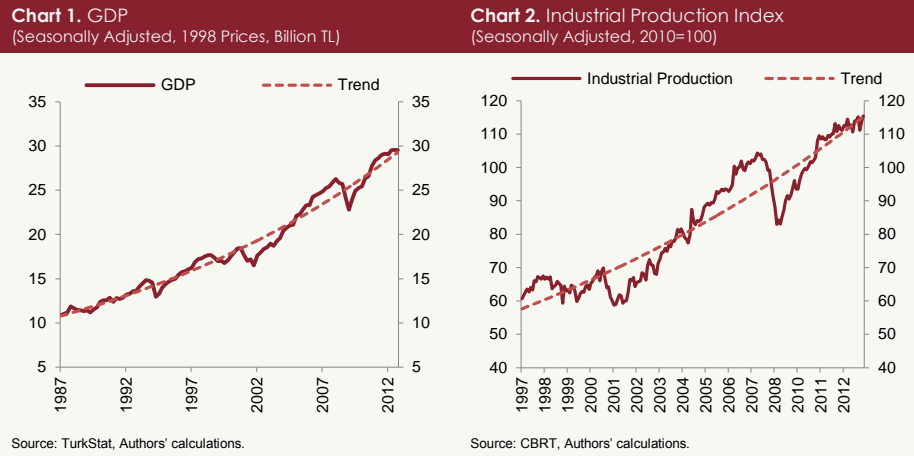
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Box  
4.2

## Effect of Capital Accumulation on Capacity Utilization Rates

During fast recovery of the economic activity following the 2009 crisis, leading macroeconomic indicators like GDP and the industrial production index rebounded rapidly to their pre-crisis levels (Charts 1 and 2); however, manufacturing industry capacity utilization rate (CUR) remained well below the pre-crisis levels (Chart 3). Being one of the significant indicators closely monitored for its informative value regarding inflationary pressures, the CUR moves inconsistently with other indicators on output gap, thus challenging the implementation of the monetary policy. This Box analyzes the effect of investments on this inconsistency.<sup>1</sup>

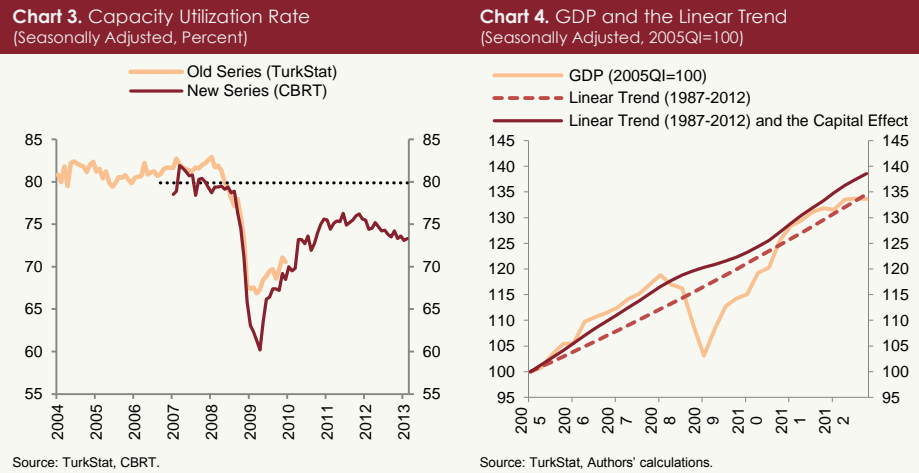


Investments followed a robust course during the growth period following the 2001 crisis. In general, production capacity leaps in times of strong investments and if the increase in production capacity is higher than the rise in the quantity of production, then the capacity utilization rate declines. Chart 4 compares the rise in GDP to the increase in the production capacity driven by strong investments in the post-2005 period.<sup>2</sup> The dashed line in the diagram illustrates the average growth trend of the GDP in the 2005-2012 period. The measure, which comes out when the effect of the above-average growth in capital is added to this average linear trend, is depicted in the same chart, and shows that strong investments kept the capacity growth above the average growth rate in the 2005-2012 period. The rise in the GDP, on the other hand, stood below the rise in this measure

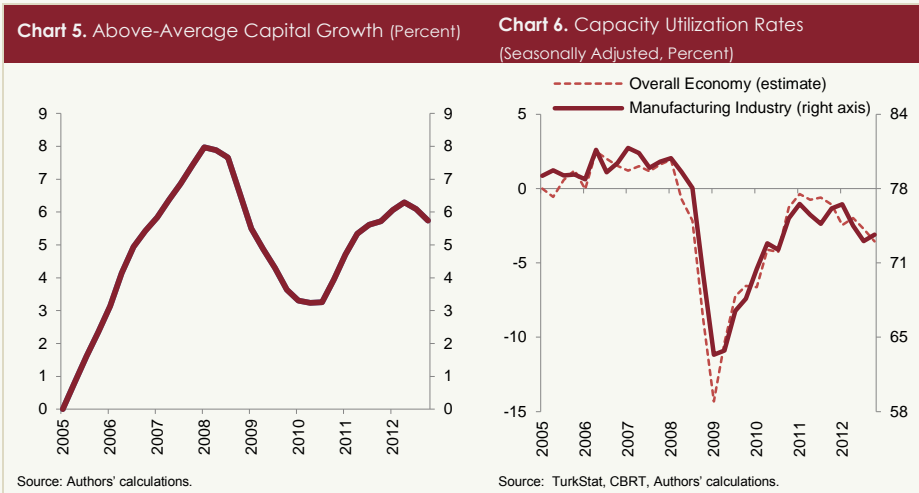
<sup>1</sup> This Box is based on Demirođlu and Sankaya (2013).

<sup>2</sup> The analysis starts at 2005, which is the year when the first quarter output gap is close to 0.

and hovered around the average trend. The above-average capital accumulation, which is the source of this capital effect, is depicted separately in Chart 5.<sup>3</sup>

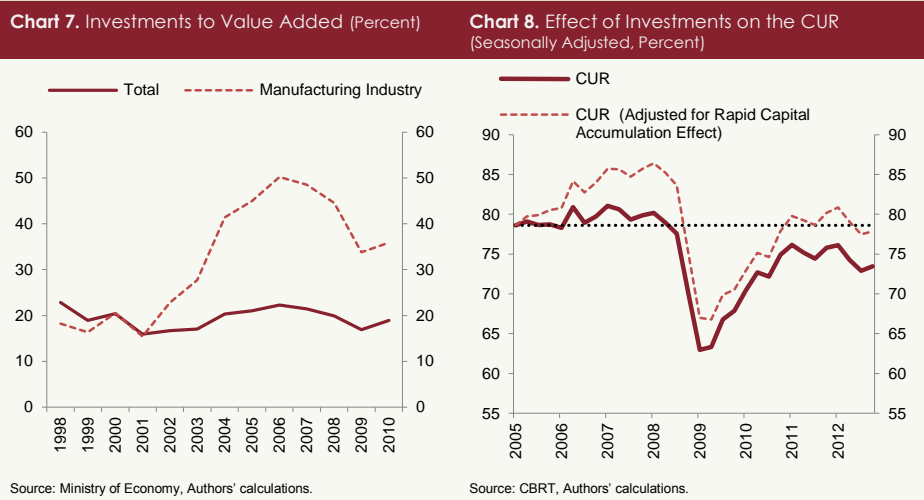


When the GDP is defined as the percentage of the production capacity in Chart 4, a measure comes out, which can be interpreted as the capacity utilization rate for the overall economy (dashed line in Chart 6). Although the GDP rebounded to its pre-crisis trend, this measure failed to capture the pre-crisis trend owing to the effect of capital accumulation.



<sup>3</sup> This series denotes the cumulative sum of the above-average growth of the capital index calculated in Demiroğlu (2012). The capital effect in Chart 4 is found by multiplying this cumulative sum by 0.5, the capital share. For further details, see Demiroğlu and Sankaya (2013).

Investments in the manufacturing sector also remained strong in the said period, implying that there is a strong capital effect, which may have kept the capacity utilization rate low in this sector (Chart 7). In fact, the CUR series for the manufacturing industry in Chart 6 has a similar pattern to CUR series for the overall economy.<sup>4</sup> However, the capital effect estimated above for the overall economy cannot be calculated directly for the manufacturing industry.<sup>5</sup> On the other hand, as seen in Chart 7, the robust course of investments in the manufacturing industry proved stronger than the overall economy. Therefore, manufacturing industry may have experienced a capacity increase as implied in Chart 5 in addition to the increase as envisioned by the average trend.<sup>6</sup> Given the recovery in the manufacturing industry production, the CUR without such a capacity increase would be found via multiplying the CUR series by the percentages depicted in Chart 5 (Chart 8). Accordingly, calculations show that the CUR data would have reached a higher level after the crisis (2005 figures) without the capacity increase in the manufacturing industry. This new series in Chart 8 is consistent with the recovery in GDP and the industrial production depicted in Charts 1 and 2.



In sum, the relatively low level of CUR is attributed to the strong pace of investments, which has been in effect since the pre-crisis period. The rapid growth in investments, which caused capital accumulation in turn, enabled an above-average growth in the production capacity; while production recorded an average growth rate in this period. This is evaluated to be a significant factor that led the capacity utilization rate to remain below the pre-crisis trend.

<sup>4</sup> The old and the new series of CUR are merged in Chart 6, and hence, the CUR series in Chart 6 is different than in Chart 3.

<sup>5</sup> This is the reason for not decomposing the investment data by sectors.

<sup>6</sup> CUR is based on the question in the BIS asking "the actual capacity utilization relative to physical capacity". In view of the fact that firms reply by taking into account of the utilization rate of their physical capital, 1-percent additional capital (keeping production constant) will require the capacity utilization rate to be 1 percent lower.

## REFERENCES

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Demirođlu, U. and . Sankaya, 2013, The Capacity Buildup over the Past Decade and the Capacity Utilization Rate in Turkey", CBT Research Notes in Economics No. 13/12.

Box  
4.3

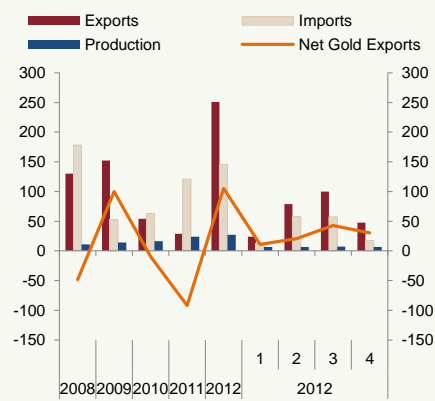
Effects of the External Gold Trade on Macroeconomic Aggregates

While nominal gold imports rose by 22.2 percent, nominal gold exports soared by 804.8 percent in 2012. The evident jump in gold exports compared to imports brought about debates on the effects of external gold trade on macroeconomic aggregates. This Box examines the effects of external gold trade on the GDP growth and the current account deficit.

In order for net gold exports to contribute to growth, gold should be produced or processed domestically in the respective exporting period. Exports of gold not produced or processed domestically do not change growth, yet influence the composition of growth.<sup>7</sup>

An analysis of external gold trade in quantity shows that approximately 251 tons were exported, 146 tons were imported and 27 tons were produced in 2012 (Chart 1). In this period, gold exports went up by 222 tons compared to the previous year, while imports and production rose by 25 tons and 3 tons, respectively. In other words, net gold exports increased by around 197 tons, and only 3 tons of this increase was met by the rise in production. Thus, it is estimated that the share of domestic production within the current year is quite low in meeting the net external demand for gold; and therefore, the recent high-rated gold exports will have a rather limited effect on the GDP growth.

**Chart 1. Production, Exports and Imports of Gold (Tons)**



Source: BIST Precious Metals and Diamond Market, TurkStat, Authors' calculations.

**Chart 2. Contributions to GDP Growth in 2012 (Percentage Point)**



Source: TurkStat, Authors' calculations.

<sup>7</sup> For the effect of net gold exports on the growth and composition of GDP, see Aktaş et al. (2012).

Accordingly, our calculations show that the net effect of gold exports on growth is assumed to be less than 0.1 percentage points. On the other hand, exports including gold contributed by 4.1 percentage points to annual growth, while the exclusion of gold pulls this figure down to 3.6 percentage points. Imports excluding gold contributed positively to growth, albeit limited; while imports including gold did not have any contributions. Thus, it is estimated that a significant portion of the net gold exports were met by gold inventories, which pulled the contribution of inventories down by around 0.4 percentage points (Chart 2).

The effect of external gold trade on the current account balance is depicted in Table 1. The rise in gold imports in 2011 added to the current account deficit by around USD 4.3 billion. In 2012, around USD 10.5 billion of the improvement in the current account balance by USD 27.6 billion was met by net gold exports. Meanwhile, the recovery of the current account balance was mainly provided by the narrowing of the current account deficit excluding gold by USD 17.1 billion in line with the policy measures.

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

	2009	2010	2011	2012
		<i>(level)</i>		
<b>1. Total</b>	<b>-12.2</b>	<b>-45.4</b>	<b>-75.1</b>	<b>-47.5</b>
2. Excluding Gold	-15.2	-45.0	-70.3	-53.2
		<i>(annual difference)</i>		
<b>1. Total</b>		<b>-33.3</b>	<b>-29.6</b>	<b>27.6</b>
2. Excluding Gold		-29.8	-25.3	17.1

Source: CBRT, Authors' calculations.

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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), CBT Research Notes in Economics No.12/29.

Box  
4.4

## Contributions to the Labor Force Participation Rate

Labor force participation rate in Turkey exhibited a stable uptrend in past years. The uptrend in the labor force participation rate has gradually gained importance as a factor to decelerate the fall in unemployment rate. According to the Household Labor Survey data released by the TurkStat, labor force participation rate went up by 3.7 percentage points to 50 percent between 2007 and 2012. In this period, male labor force participation rate rose by 1.3 percentage points to 71.1 percent, while female labor force participation rate increased by 5.9 percentage points to 29.5 percent. Against this background, this study examines contributions to the labor force participation rate in Turkey by age and gender for the period between 2005 and 2012.

Equation (1) estimates the year-on-year change in the labor force participation rate by aggregating all age groups. The first component at the right-hand side of the equation shows the “*labor force participation rate*” effect under the assumption that the share of the respective age group within the population at the working age remains unchanged from the previous year. The second component denotes the “*population structure*” effect, which occurs when the labor force participation rate of the respective age group remains unchanged from the previous year. Sum of both factors shows the contribution of the respective age group to the year-on-year change in total labor force participation rate.

$$\Delta LFPR_t = \sum_{a=1}^k \Delta LFPR_{at} = \sum_{a=1}^k \{[\Delta LFPR_{at} * P_{at-1}] + [LFPR_{at-1} * \Delta P_{at}]\} \quad (1)$$

$LF_t$ : Labor force

$N_t$ : Population at the working age

$LFPR_t$ : Labor force participation rate

$P_t$ : Share within the population at the working age

$\Delta LFPR_t$ : Year-on-year change in the labor force participation rate

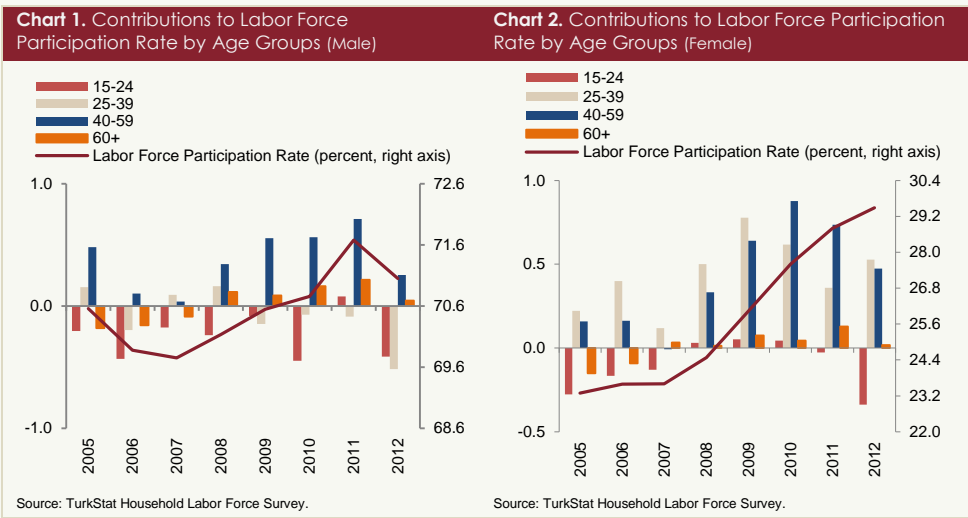
$\Delta P_t$ : Year-on-year change in the share within the population at the working age

$a$ : Age interval or level of education

$t$ : time (year)

According to this approach, contributions of age groups to total labor force participation rate is divided into two components as the labor force participation rate of the respective age group and its share within total population of working age. Contributions to the labor force participation rate are separately calculated for male and female, and analyzed in four age groups as 15-24, 25-39, 40-59 and above 60.

An analysis of the contributions of age groups to annual changes in the male labor force participation rate suggests that the mature population at the working age (40-59) has greater contribution than other categories (Chart 1). This fact, which was observed in the aftermath of 2007, is attributed to the gradual increase of the age of retirement due to legal arrangements introduced to the social security system.<sup>8</sup> During the same period, 60-years and older individuals provided positive contributions. On the other hand, young population of the working age between 15-24 and 25-39 contributed negatively to labor force during the analyzed period. The strong and negative contribution of these age groups to the change in the labor force participation rate in 2012 is particularly worth noting.



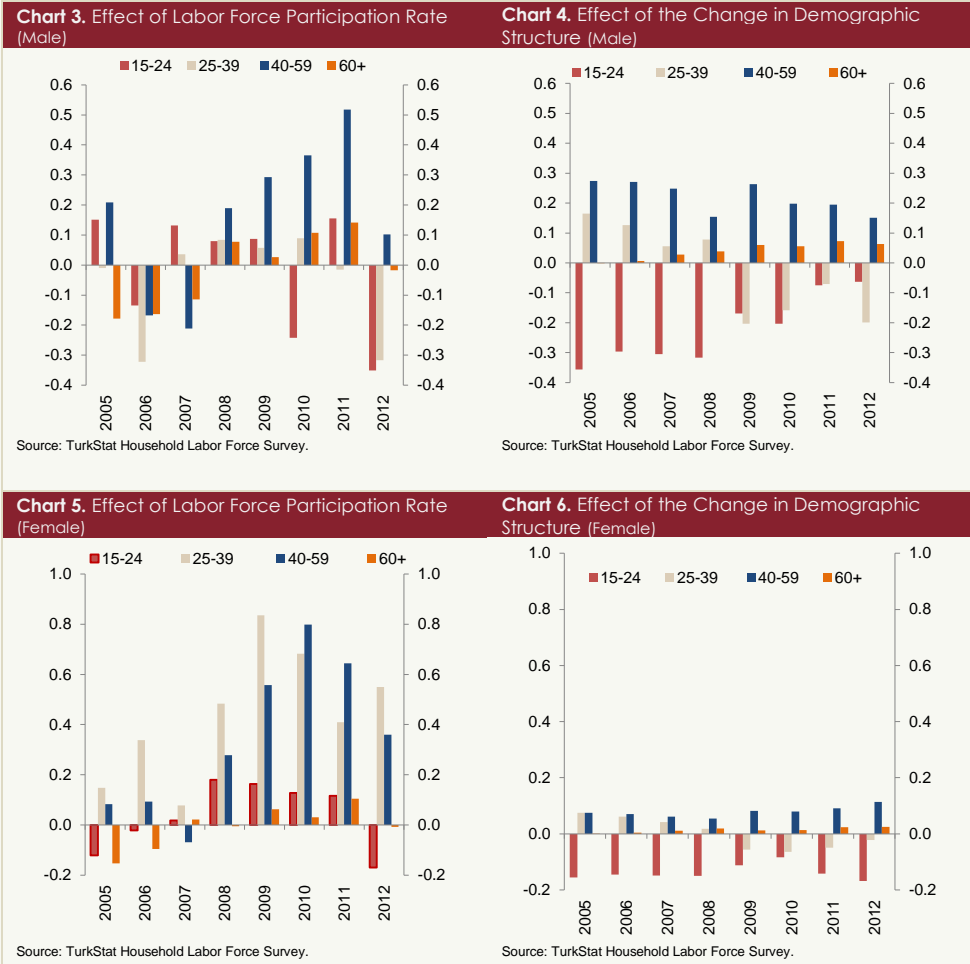
As for the female labor force participation rate, it was fuelled both by the young population of working age (25-39) and the mature population (40-59) (Chart 2). Incentive policies implemented by the public sector during the global crisis aimed at stimulating the economy. Against this background, the employment package envisioned employer's share of the social security premiums for the young and female workers to be paid by the Treasury as of July 2008 (Ministry of Development, 2010). These incentive policies are assessed to have positive

<sup>8</sup> See Law No. 4759, which was accepted on May 23, 2002 and published in the Official Gazette on June 1, 2002.



contributions on the labor force participation rate.<sup>9</sup> Moreover, similar to males, the rise in the contribution of the working age 40-59 to the female labor force participation rate is also attributed to the gradual increase of the age of retirement.

The participation rate effect proves stronger than the effect of the change in the demographic structure with regard to the increases in the labor force participation rate both for males and females (Charts 3 to 6). This is particularly evident for female labor force participation rate. Despite explaining nearly 50 percent of not being included in the labor force, the share of the sub-item "being busy with household chores" displayed a sizeable decline in the analyzed period. This finding is compatible with the rising female labor force participation rate.



<sup>9</sup> Balkan, Başkaya and Tümen (2013) indicate that these incentives lead to a considerable increase, especially in the female employment of age 30 and above.

In sum, labor force participation rate displayed a notable increase in Turkey during 2007-2012, which is attributed to the rise in the female labor force participation rate. Mature population at the working age 40-59 provided the largest contribution to the increase in both male and female labor force participation rate. Demographic projections by the TurkStat envision that population growth will slow down and the share of the working age within the total population will increase in the years ahead. However, given the expected gradual increase in the age of retirement, the labor force participation rate is estimated to grow even more strongly.

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Box  
4.5

## Effect of 2008 Employment Incentives on Employment by Various Demographic Groups

Many countries implement programs to stimulate employment, and the effect of these programs on employment is analyzed extensively in the economic literature. The content of these programs varies according to the final goal of the policymaker; i.e., in some cases, these programs aim at stimulating the overall employment; while in some others, these programs target specific groups like women and young people, which have relatively smaller share in total employment. Labor incentive programs are under the Active Labor Market Programs (ALMPs), which usually cover (1) incentives to create new employment, (2) direct incentives to lower the cost of employment for the employer (3) incentives to encourage the unemployed for entrepreneurship.

By adopting a microeconomic approach, this Box analyzes the effects of employment incentive package in Turkey, which was put into effect at end-2008, on the job prospects of various demographic groups. Yearly data from Turkstat's Household Labor Survey is used in this study, covering the 2004-2011 period.

The analyzed employment incentive package was put into effect in May 2008 and started to be implemented on July 1, 2008 by the Law No. 5673. The planned date for the termination of applications was initially June 30, 2009 and then extended until June 30, 2010. Within this program, up to a portion of the SSI premiums that would equal the minimum wage of women and young people (18-29 years of age) who were unofficially employed within the last 6 months were paid by the state budget, instead of by firms. In this respect, the incentives within this program would classify as "direct incentives to lower the cost of employment for the employer".

The study analyzes the change in employment level by demographic groups before and after the implementation of the program by using difference-in-differences method. As the program was put into effect in July 2008, and the available data only allow a comparison on an annual basis, two alternative experimental assumptions were held. In the first assumption, observations till 2007 are included in the control group, while observations from 2008 and onwards are included in the implementation group. Hence, potential effects of the program which are likely to emerge in 2008 are also taken into account. In the second assumption, observations till 2008 are included in the control group, while observations after 2008 are included in the implementation group. The main econometric specification used in the analysis is as follows:

$$y = \beta_0 + \beta_1 dT + \beta_2 dM_{<30} + \beta_3 dF_{<30} + \beta_4 dF_{\geq 30} + \delta_1 dM_{<30} \cdot dT + \delta_2 dF_{<30} \cdot dT + \delta_3 dF_{\geq 30} \cdot dT + \theta'X + \varepsilon$$

$y$ : Binary variable which is equal to 1 if the person is employed, and 0 if not

$dT$ : Binary variable which is equal to 1 if the observation is during the implementation of the program, and 0 if not

$dM_{<30}$ : Dummy variable which is equal to 1 for male workers less than 30 years of age, and 0 otherwise

$dF_{<30}$ : Dummy variable which is equal to 1 for female workers less than 30 years of age, and 0 otherwise

$dF_{\geq 30}$ : Dummy variable which is equal to 1 for female workers above 30 years of age, and 0 otherwise

$X$ : Independent variables controlling other demographic and economic factors

Main parameters to be estimated in this study, as can also be inferred from the difference-in-differences method are  $\delta_1$ ,  $\delta_2$  and  $\delta_3$ , which denote interaction between the policy variable and the target variables. These parameters show how the job prospects for male workers less than 30-years of age, female workers less than 30-years of age and female workers above 30 years of age change relative to the reference group of male workers above 30 years of age with the implementation of the incentive package. Estimations are conducted individually for the above-mentioned alternative assumptions. Accordingly, the estimation results are presented in Table 1.

Table 1. Estimation Results				
Parameter	Estimate	Standard Error	p-value	
2008				
$\beta_1$	-0.001	0.008	0.952	
$\delta_1$	0.011*	0.006	0.067	
$\delta_2$	0.011	0.013	0.412	
$\delta_3$	0.029**	0.010	0.004	
2009				
$\beta_1$	0.001	0.008	0.873	
$\delta_1$	0.006	0.006	0.297	
$\delta_2$	0.019	0.015	0.191	
$\delta_3$	0.043**	0.010	0.000	

Notes: \* and \*\* denote significance level of 10 and 1 percent, respectively. Regression is based on probit functional specification and marginal effects are reported in the table. Data are weighted for providing representativeness at a national scale. Standard errors are reported according to NUTS2 aggregation. Number of observations is 2.876.518.  $R^2$  for both regressions is found to be 0.19.

Given the parameter estimations presented in Table 1, main findings of the study can be summarized as follows: The positive values of the parameters help infer that the incentive package increased employment level for all demographic groups, which are covered by the program. In the first specification where the effects of the program were manifested by 2008, coefficients are statistically significant for male workers of age less than 30 years and female workers of age

above 30 years. Compared to the control group of male workers at age above 30 years, the program increased the job prospects by 2.9 percent for female workers of age above 30 years, and by 1.1 percent for male workers of age less than 30 years. In the second specification where the effects of the program were manifested by 2009, the coefficients are statistically significant only for female workers above 30 years of age. In that case, job prospects for female workers above 30 years of age increased by 4.3 percent relative to male workers above 30 years of age. Ignoring the significance level, the second most powerful effect is observed for female workers of age below 30 years. The policy has been less effective on male workers. In order to test the robustness of these results to regression specification, alternative regression models were also estimated. In the less preferred alternative models, estimations are also statistically significant for both male and female workers of age less than 30, while Table 1 results are still valid.<sup>10</sup>

In sum, the employment incentive package, which was put into effect at end-2008 has mostly been influential on female workers of age less than 30 years. On the other hand, the program had a limited effect on male employment. The policy has been effective in terms of providing support to employment prospects for potential workers with limited access to labor market.

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Balkan, B., Y. S. Başkaya and S. Tümen, 2013, 2008 İstihdam Teşvik Paketinin Etkisinin İncelenmesi (in Turkish), CBT Research Notes in Economics, forthcoming.

<sup>10</sup> For further details, see Balkan, Başkaya and Tümen (2013).

