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## Labor force participation rate and economic growth: observations for Turkey<sup>1</sup>

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### Abstract

*Although some discussions about the relation between population and the economic growth are made for a long time, today there is a general opinion that the population growth has positive relation with the economic growth. This opinion is also supported by the empirical studies. Despite there is a growth directly advancing with the population growth, the advancing of the population in the opposite direction with the rate of the labor force participation is thought to be a paradox. This paradox reveals some concepts, namely, "jobless growth" and "unskilled growth". In this study, an explanation is sought about the remaining or less increasing of the rate of the labor force participation although a linear relation between the GDP and the population and the labor. The official statements refer that this paradox is related with the lack of female participation in the labor force and employment in the agricultural sector to be falling. This study tries to point that this quantity cannot create a quality although the growth is quantitative.*

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**Key words:** Economic Growth, Labor Force Participation Rate, Labor Markets, Turkey Economy.

### 1. Introduction

Classical wage fund theory predicts that workers would remain at subsistence wage level in long term. Marxist economy predicts a similar theory through the concept of "spare labor". Keynes has argued for these two descriptions and derivations regarding slackness of wages, that wages are downward sticky because of syndical effects. It was foreseen to have been absorbed by the fall in general price level resulting due to lack of demand in monetary wages to arise depending on the increase in labor supply. And the "natural rate of unemployment" has come into our nowadays' agenda as it foresees a rate of unemployment to be sufficient to control rate of inflation. Briefly, labor growth in the economic theory is a reason for economic development, it will be the reason as well for an increase in labor that contradicts with the rationale of the growth and how this could be associated with an optimal and long term growth is one of the deepest problems that cannot be told yet resolved. Indeed the labor force participation rate and the growth rate are required being equal and keep unemployment rate constant, number of countries where the growth rate increases more than labor force participation rate nevertheless unemployment rate increases gradually. Development theories coming on the scene after Second World War have focused on development through effective use of the labor, endogenous growth models stresses upon qualitative capacity of the labor. So, economical practices along with theoretic studies keep standing on the capacity and quality of the labor. This study attracts attentions on theoretic mismatch between the growth rate, in Turkey's economy practice, and labor participation rate and discusses the effectiveness of taking control created on wages to control inflation, rather than a decrease in supply of labor. Despite the supporting character of the relation between monetary wages and real wages, the hypothesis that its relation with hunger and poverty does not show the same parallel in improvement of living standards and could be used as a tool in taking general prices level under control, have been tried over Turkey's economy data.

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Since increasing monetary wages in a consistent manner with inflation will cause wages to remain stationary a possible stress on the inflation will be prevented. Thus to remove inflationist and at the same time wearing influence of real labor costs and accelerating the growth rate has been tried. During stable growth periods of economies, declined unemployment and increasing employment are expected (Khemjar et al 2006). However, though this is theoretically possible, in practice some periods have also been observed where the growth had been possible without creating any employment. Okun (1962) has asserted that the increase of output more than decline in unemployment could be due to the increase in capacity utilization rates and/or working hours. This is consequently a most important theoretic explanation indicating that the unemployment does not linearly decline always even it follows a stable growth process/trend of an economy (Plosser and Schwert, 1979). For example the correlation between GDP and unemployment in Turkey's economy (See Annexes, Table-2. Correlation = 0.263172) is quite weak.

The most discussed and even more referenced basic growth-employment and unemployment theories may be listed as Classical, Marxist, and Keynesian and Neo-Classical theories. The most known approach in Classical Theory is Malthus's law of population and thus influenced classical theory. Malthus argued that population multiplies geometrically and food arithmetically; therefore, the population will eventually outstrip the food supply, so controlling the population becomes a must. In the Marxist approach, the accumulation of capital is in itself limiting the demand for labor and the "reserve labor force" to be created for this reason will create pressure on wages, which forms fundamental characteristic of capitalism. Eventually, however, surplus-value to be seized by the capitalist will increase. It as well has been disclosed as a natural expectation in the capitalist system towards an increase in supply of labor. In Harrod-Domar-Singer growth model, a Keynesian approach, the increase of population is claimed to adversely affect the growth. Since high growth of population will lead to a decrease in savings per capita and per household, it will affect the growth process adversely. Finally, while the Neo-Classical Solow model accounts for a casualty from population towards growth but any contrary incidence may not be taken into consideration. That's to say, increase in population increases the growth as well, but the growth does not cause any increase in population. In spite of these theories considering population as an exogenous variable, internal growth theories asserting that the growth theory is endogenous through intensifying on the quality of population instead of the quantity, the process of growth may be supported by the population internally by investments as such in training, infrastructure and R & D.

On the other hand, if the population in an economy is in progress with a comparatively high rate, realization of parallelism relation in that economy between economic development and labor force participation rate will also be expected. Population growth will support both fronts of growth of production as well consumption. Despite all the theoretical discussions, there are quite a lot empirical studies regarding existence of a direct linear relation between the growth of population and economic development. For example a very powerful relation like 0.993 is subject to consideration, between GDP and non-institutional population growth as calculated in this study (See: Annexes, Table2). However this study emphasizes, its fundamental question, although a linear relation should be considered between growth of the population and economic development, is to conduct a research on the reasons of a continuous decline in labor participation rate and at the same time to clarify why the unemployment rate has not declined.

## 2. Turkey's Labor Participation Rate

Structural and chronic problems of Turkey's economy include mainly unemployment along with current accounts deficit, indebtedness and hypersensitivity of the economy to political developments. Put an end to considering unemployment as a problem will also be a key factor for the solution of other problems. Unemployment covers persons included in the economically active population but cannot find any job despite of having sought employment. The labor force consists of economically active non-institutional population. It means that the labor force (*LF*) in an economy is equal to the total of Employed (*EMP*) and Unemployed (*UE*) persons. Unemployment rate is obtained by dividing number of the unemployed to the labor force. In this case labor participation rate (*LPR*) is the share of labor force in the non-institutional economically active population. Economically active population (the population in employment age) is shown in statistics as the population over 15 years of age. In spite of economically active population is continuously increasing (Average Quarterly growth rate) a relatively low level of labor participation rate is seen. In Turkey, the most significant effect on the labor market is because of seasonal weight of tourism and agricultural industries. This effect, according to Turkstat is close to 30%. "During periods where agricultural activities are intense, persons working as unpaid family workers are included in the category not included in the Labor Force in winter season, Labor Participation rates differ as in periods" (TÜİK, 2012:31).

Again, according to Turkstat, two reasons are there in low rates of participation in labor force. First of these reasons is "the low level of education in general. As level of education increases the labor participation rate also will increase". And the second one is "the low women labor participation rate" (TÜİK, 2012:32). The decline in labor participation rate exhibited in time is also linked again to agricultural sector. "Labor participation rate in 1988 is 57.5%, and the share of agricultural sector in total employment is 46.5%. When it comes to the year 2006, the labor participation rate demonstrated a continuous decline up to 48% and the share of agricultural sector in total employment had become 27.32%" (TÜİK, 2012:34) was stated. Having less women in the work life has been expressed by Bağdadioğlu (2010) also as the reason of low labor participation rate.

The level of average labor participation rate is 70.9 in OECD countries is and 73.4 in G7 countries. While these averages are valid in 2012, it was at a level of 54% in Turkey. For the first quarter of 2013, it has fallen below 50% and realized as 49.92%.

The main reason for low labor participation rates are linked to the development level of the country. "Labor participation rates of elderly workers in developed regions like Europe and North America are seen to be much lower than underdeveloped regions such as Africa and Asia. The basic reason for this is that labor force in underdeveloped regions live at a large proportion in rural areas and a great majority has no possibility similar to retirement" (Gündoğan, 2001:99). Based on this overview, to expect labor participation rates in an economy with rapid growth process, naturally rises will not be wrong.

Even if targets regarding for increasing labor participation rates are put in development plans, it has been asserted that "no progress in rates of labor participation and employment rates have been recorded, the reason of such lower rates are due to insufficient participation of women in labor force and employment" and being considered as unpaid family worker in rural areas and "housewife" in cities, consequently becomes a reason for being not included in labor force and employment calculations (Önder, 2013; Korkmaz & Korkut, 2012).

Many studies on the reason of lower labor participation rates in Turkey's economy (e.g. Özer & Biçerli, 2003; Aşık, 2012; Kutlar et al. 2012) reflect Turkstat's view at an extent. But in this study I departed from expected results of the economic development, I am trying to attract attention on labor participation rate required to be higher as a result of economical development, but is still low. The reason for this, the

economical growth cannot create expected qualitative results despite quantitative indicators. This situation can find a place in points where the growth and development concepts differentiate from each other theoretically: Despite the fact that Turkey's economy is a rapid growing economy, these growth rates do not support the development concept that points out an improvement at a qualitative aspect. Therefore the noteworthy point here is not to investigate and/or to inquire the reason why labor participation rate remains lower, instead to mention remaining lower labor participation rates despite higher growth rates. If we would need to express in other words, the growth scenario cannot reproduce a systematic structure through self-sustaining mechanisms and organizational arrangements. Because a growth scenario containing high growth rates will be expected to have supplied labor force to be needed by this growth or determined roles to include the population not yet entered into labor force into the labor force needed then and have supported the same. At this very moment women labor migration from rural areas to cities might be pointed out as a sample to this case.

While women labor participation in rural areas decline, labor participation in urban areas has a tendency to increase. However, as a decline from a level of 55% towards 35% has been experienced, increase in urban area has been realized from 28% to 32% (1988-2012 data, TÜİK). These data indicate at first glance that the women labor force has shifted from rural area to urban area. However the insufficient labor participation increase in urban area indicates the reality that the woman coming into cities participates in labor force too little. This also justifies general criticisms on female labor force and indicates that the women coming to cities work either as unregistered workers or remained as "housewives". This situation, although being an issue to be subject to another study, with the first observations, one may say that the women migrating to cities did not have the qualification to be employed in areas needed by the urban life and industrial conditions of the life in cities.

This also holds a position of effective evidence in the alleged hypothesis. Though "high growth rate growth scenario" cannot raise a skilled labor force it needs, improper qualification of migrating labor force, becomes a reason not being able to participate in the labor force instead remaining as "housewives". As a result, pointing out that the growth scenario focuses on quantitative increases instead of qualitative progresses will not be wrong. The following analysis has been presented as geometrical evidences for this fundamental hypothesis for the relation between labor force and growth data.

### 3. Some Observations on Turkey's Data

Relations of variables with each other, selected regarding labor market in Turkey's economy such as non-institutional population, labor force, unemployment, employment and labor participation rates and that of with GDP has been tried to analyze through observing trends provided by 6th degree functions. Variables cover quarterly data for the period of 2000:01-2013:03 seasonal affects have been cleared off from all the series. The correlation among these variables has been indicated in Table-1.

**Table 1.** Correlations among Variables

Variables	GDP	LPR	UE	EMP	LF	NIP
GDP	1	-0,02944	0,068385	-0,04596	0,010739	0,006244
LPR		1	-0,37332	0,913833	0,660036	0,226582
UE			1	-0,71473	0,073315	0,340008
EMP				1	0,467854	0,026131
LF					1	0,866821
NIP						1

It is seen when Table-1 is studied that no meaningful correlation may be subject to consider among economical growth and none of labor force variables. Economical growth does effect neither employment nor unemployment, as well has no meaningful correlation with labor participation rate even. That irrelevance supports the thesis of the “jobless growth”. At the same time, the statistically most meaningful correlation has been observed between non-institutional population and labor force variables (0.866821). And another meaningful relation is between employment and labor participation rate (0.913833).

As the second phase of the analysis, 6th degree polynomials of variables were obtained. These polynomials and R<sup>2</sup> values have been indicated in Table-2.

**Table 2.** R<sup>2</sup> values of 6th Degree Polynomials.

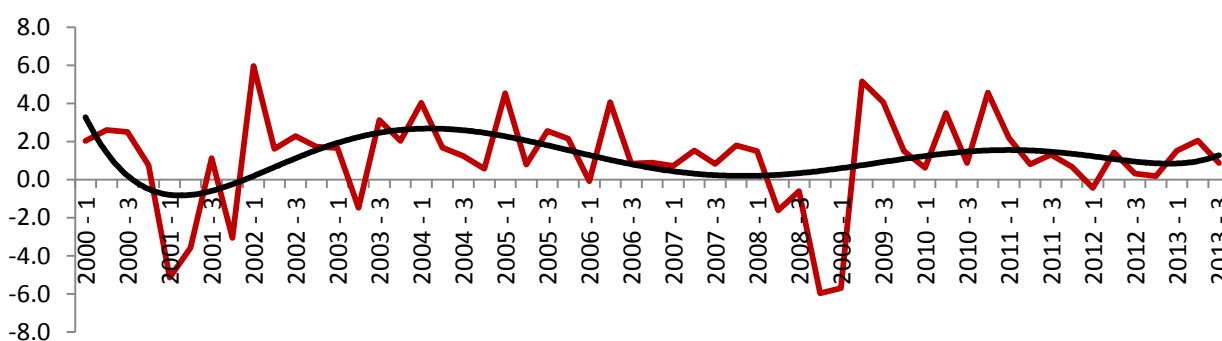
Variables	Polynomials	R <sup>2</sup>
GDP	$y = 7E-08x^6 - 1E-05x^5 + 0.0009x^4 - 0.0306x^3 + 0.4854x^2 - 3.1179x + 5.9378$	0.1485
LPR	$y = 3E-08x^6 - 4E-06x^5 + 0.0003x^4 - 0.0073x^3 + 0.0774x^2 - 0.3234x + 50.173$	0.8026
UE	$y = 9E-08x^6 - 1E-05x^5 + 0.0009x^4 - 0.0232x^3 + 0.2731x^2 - 0.8683x + 7.2655$	0.8223
EMP	$y = -2E-08x^6 + 3E-06x^5 - 0.0001x^4 + 0.0038x^3 - 0.0492x^2 + 0.034x + 46.663$	0.8501
LF	$y = 2E-05x^6 - 0.0039x^5 + 0.2499x^4 - 7.0406x^3 + 81.173x^2 - 242.83x + 23132$	0.9197
NIP	$y = 2E-05x^6 - 0.0035x^5 + 0.2259x^4 - 6.4546x^3 + 76.605x^2 - 103.1x + 46012$	0.9874

Graphical demonstrations of polynomials in Table-2 have been given in numbered between Graph-1 to Graph- 5. When trends shown by polynomials are studied, following observations could have been obtained. However, to mention general statuses of variables will be beneficial.

Average unemployment for the period 2000:01-2013:03 has been 10.17%; average growth rate of labor force 0.43%; average growth rate of non-institutional population 0.35% and finally average labor participation rate has been calculated as 48.49%. Labor participation rate for Turkey is quite low. Labor participation rates for selected countries have been given in Annex -1 (Table-4). The highest rate as for the year 2012 is 78.6 in Denmark and 78.4 in Norway. The lowest rate is in Turkey with 54%. While average rate for EU countries is 70.2%; average for OECD 70.9% and average for G-7 countries became 73.4%. Through these references labor force participation rate is seen to be very low in Turkey's economy (See Annex Table 4).

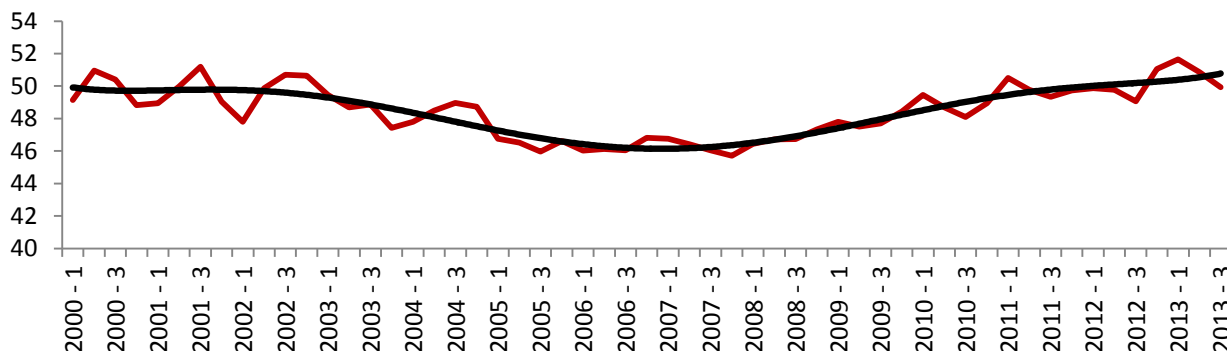
When Graph- 1 and Graph- 2 are compared, the labor force participation rate will be seen not to be effected from growth. Moreover, while non-institutional population exhibits a linear increase, does not show conformity with the labor force participation rate.

**Graph 1.** GDP



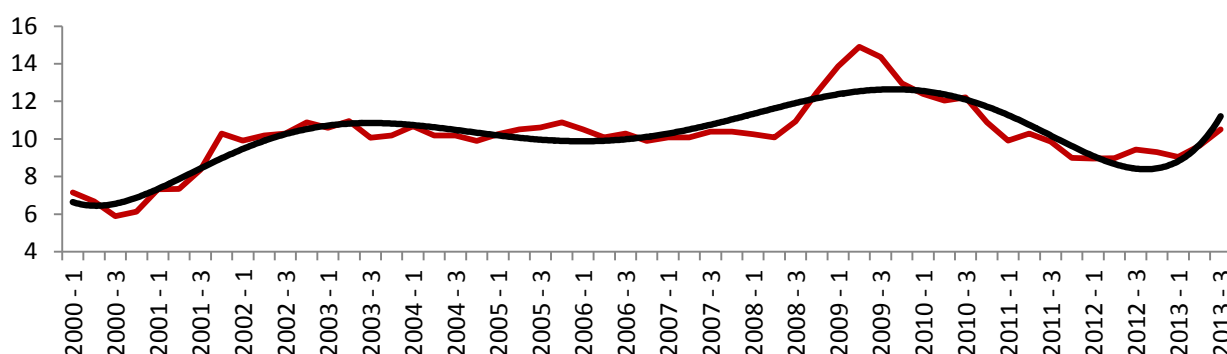
Graph- 2 shows that the decline started in 2002 and continued up to 2007, has started to increase after that year and could reach to its level prior to 2002. However the mobility in labor force participation rate is seen to be irrelevant with wavelengths and depths in the data of growth and unemployment. Indeed the labor force participation rate has shown a very small increase in spite of high growth rates.

**Grafik 2. Labor Participation Rates**

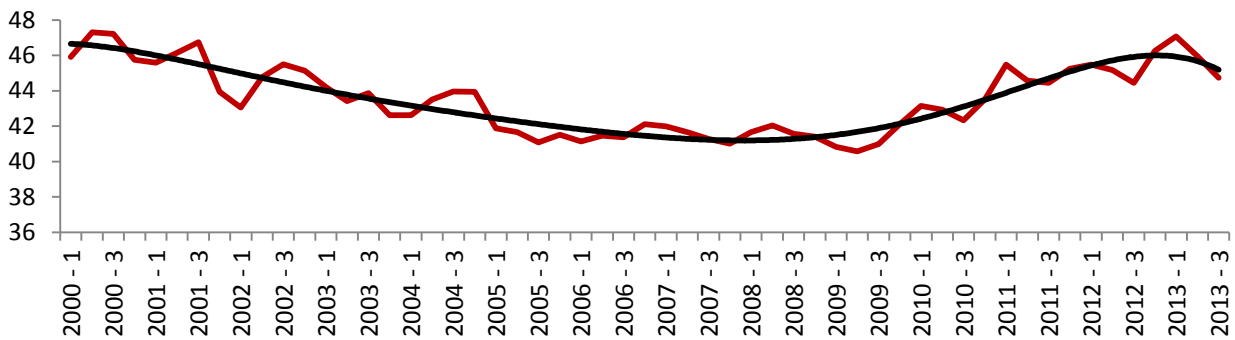


Graph- 3 points out the progress of unemployment rates. This effects shows itself because of agricultural and construction sectors. It is possible to see on the 6th degree polynomial created for the series cleared off from seasonal effects, that the unemployment data for the period of 2000-2013 has followed a generally increasing progress and reached at peak due to 2008 crisis. And the polynomial indicates that following a decline in unemployment after 2008, it has entered into an increase in the year 2012. The basic reason for this situation can be observed through Graph- 1, that although 2008 crisis caused a decline in GDP variable, this crisis was reflected to unemployment variable as well. The polynomial created for GDP (Graph- 1) and the polynomial created for unemployment (Graph- 3) represent the adverse relation between these two variables. During periods where waves of GDP rise, unemployment rates have been observed to decline.

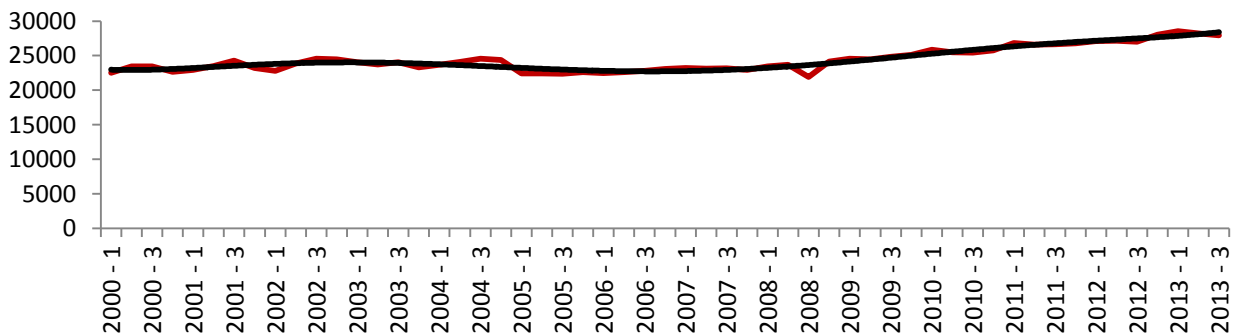
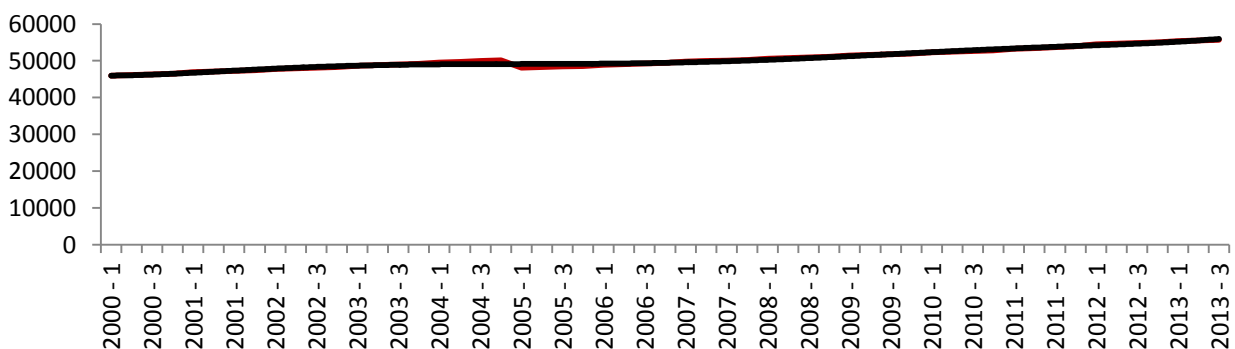
**Graph 3. Unemployment**



When Graph- 4 is studied to see adverse directional movement of employment data and unemployment is possible. However as the employment follows a more stable progress, the unemployment (Graph- 3) follows and adverse directional movement according to GDP and much more waving motion when compared to employment. Therefore the unemployment could be expressed to be quite sensitive before economical modulations.

**Graph 4. Employment**

Graph- 5 indicates labor force and Graph- 6 shows non-institutional population and as it is seen there both variables continue their growth in a quite close way to linear trend. A strong correlation of 0.8668 exists between non-institutional population and labor force. The reason for breaking in Q4 2004 is due to variation in definition of the calculation by TÜİK. The reason for this powerful relation between the labor force and non-institutional population lies in remaining lower of labor force participation rate in a stable manner.

**Graph 5. Labor Force****Grafik 6. Non-Institutional Population**

#### 4. Conclusion

In this study where we tried to bring an explanation to the concept of the “jobless growth” through labor force participation rate, despite that the population increases in a linear trend (approximately), labor force participation rate has been seen to remain too low. High growth rates have not been reflected to labor force market values.

While number of the unemployed as in 2001:Q1 is at a level of 1.786 thousand; increased to a level of 2.806 thousand in 2013:Q3. While number of employment is 19.856 thousand reached to a level of 25.960 thousand.

**Table 3.** 2001:01-2013:03 Period Labor Force Changes

Değişkenler	2001:01	2003:03	Değişim
İşgücüne Katılım Oranı	47,2	49,2	%4,23
Kurumsal Olmayan Nüfus	45,868,000	55,175,000	%20,29
İşsizler	1,786,000	2,806,000	%57,11
İstihdam edilenler	19,856,000	25,960,000	%30,74
İşsizlik Oranı	%7,1	%10,5	%47,88
İstihdam Oranı	%45,9	%44,72	%-2,57
İstihdam Edilmeyenler	24,226,000	26,949,000	%11,23

As it is seen in this Table-3, the rate of unemployed in the studied period is quite higher than those employed. At the same time a decrease by 2.57% has occurred in employment rate. Despite Non-institutional Population has increased by 20.29%, the rate of employed was realized very low and remained at a level of 11.23%.

Turkey's economy has an average growth rate in the studied period (as quarterly periods). This high growth rate is seen not to have created any employment. In order to eliminate this contradictory situation in line with participation of woman labor force into economy, creating new job opportunities will be necessary. The growth in labor force participation rate shall have a quite effective contribution into the growth process.

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## Appendix:

**Table 4:** Selected Countries and the Labour Force Participation Rates by Country Groups

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
OECD	69.9	69.7	69.8	69.6	69.9	70.1	70.4	70.5	70.8	70.7	70.7	70.6	70.9
G7	73.3	73.3	73.2	73.1	73.2	73.4	73.7	73.8	73.9	73.8	73.5	73.2	73.4
Europe	67.2	67.1	67.3	67.3	67.7	68.1	68.4	68.6	69	69.3	69.5	69.8	70.2
EU	69.4	69.4	69.9	70.2	70.8	71.3	71.9	72.2	72.6	72.8	72.8	73	73.4
Russian	70.9	69.5	70.1	69.9	71.1	71.5	72	72.9	73.2	73	72.7	72.8	73
Brazil	-	71.1	72.1	72.2	73.1	74.1	73.7	73.5	73.7	73.9	-	71.8	73.1
USA	77.2	76.8	76.4	75.8	75.4	75.4	75.5	75.3	75.3	74.6	73.9	73.3	73.1
UK	76.4	76.1	76.2	76.3	76.2	76.3	76.8	76.5	76.8	76.6	76.3	76.5	77.1
Spain	66.7	65.8	67.1	68.5	69.7	70.8	71.9	72.6	73.7	74	74.4	74.7	75.1
Portugal	71.2	72	72.6	72.8	72.9	73.4	73.9	74.1	74.2	73.7	74	74.1	73.9
Norway	80.7	80.3	80.3	79.3	79.1	78.9	78.2	78.9	80.2	79	78.2	78	78.4
Mexico	61.7	61	61.1	60.7	62.2	61.9	63	63.3	63.6	62.8	63.7	63.3	64.5
Japan	72.5	72.6	72.3	72.3	72.2	72.6	73.1	73.6	73.8	73.9	74	73.8	73.9
Korea	64.4	64.8	65.6	65.4	66.1	66.3	66.2	66.2	66	65.4	65.8	66.2	66.4
Italy	60.3	60.7	61.2	61.6	62.5	62.4	62.7	62.5	63	63.3	63.1	63.1	64.6
Greece	63	62.1	64.2	65.2	66.5	66.8	67	67	67.1	67.8	68.2	67.7	67.9
Germany	71.1	71.5	71.5	71.3	72.6	73.8	75	75.6	75.9	76.4	76.6	77.2	77.1
France	68.8	68.6	69	69.9	69.9	69.9	69.8	69.9	70	70.5	70.5	70.4	71
Denmark	80	79.2	79.6	79.5	80.1	79.8	80.6	80.1	80.7	80.2	79.4	79.3	78.6
Turkey	52.4	52.3	52.3	51.1	49.6	49.8	49.8	49.8	50.6	51.7	52.7	53.8	54

Data: OECD. OECD.StatExtracts