Economic Reforms and Income Distribution in Turkey[§]

Ayşe Aylin Bayar and Öner Günçavdı[*]

Istanbul Technical University, Faculty of Management &
Economic and Social Research Centre (ITUESRC)

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ABSTRACT: The aim of this paper is first to find out the income sources of the improvement in income inequality in the reform period between 2002 and 2007. Second, we aim to assess the distributional impacts of macroeconomic policies in the 2002-2007 reform period by examining the contributions of different income groups into overall inequality. Income data obtained from *Household Budget Surveys* of *TurkStat* covering the 2002-2013 period is used. The results show that there has been significant improvement in income distribution after 2002. The extent of this improvement seems to have been evidently higher in the 2002-2007 reform period than the rest of the period after 2007. Entrepreneurial and financial income groups were the most distinctive income groups in this improvement. The results also indicate that the contributions of transfer payments into improvement was very small, but surprisingly positive in both the 2002-2007 and 2007-2009 periods, and expectedly negative in the 2009-2013 period.

Key Words: Income distribution, Shorrocks & Jenkins decomposition, economic reform, Turkey
JEL Classification: O15, O50, P47.

1. Introduction

After suffering a large-scale economic crisis in 2001, Turkey underwent a major economic transformation, which led to an astonishing economic performance in the early 2000s. The coalition government led by the prominent leader of the Turkish Left, *Bülent Ecevit* initiated a reform programme, and *Kemal Derviş*, former vice-president of the World Bank, was invited to take in charge of implementing the programme.[1] Many international observers agree that the radical reform efforts that were made to provide a sound fiscal standing, disinflation policies, and good macroeconomic management accounted for this success. It is also widely considered that the political stability brought by the single party government of the *Justice and Development Party* (AKP), improved the business climate and strengthened the positive perceptions of international investors. In addition to political reforms undertaken as a pre-condition of likely EU membership, the strong commitment of the government to these reforms and the application of sound macroeconomic policies gave rise to high economic growth rates, particularly during the 2002-2007 period. Moreover, this high level of growth resulted in a sharp decline in inequality and resulted in a significant rise in public support for the government. Thus, the aim of this paper is first to see which aspect of economic reform is responsible most for this initial decline in income inequality. Second, we aim to examine the relationship between different macroeconomic policies and income distribution by putting forward various channels through which the different elements of macroeconomic policies affect income distribution.

The distributional issue is particularly critical in the Turkish case because Turkey had previously recorded the worst income distribution record among OECD countries (OECD, 2012; Gürsel et al., 2000). There are a number of significant factors behind this poor distributional outcome: earlier successive economic crises usually followed by austerity programmes, a persistently high inflation record, ongoing high interest rate policies, and political and economic instability. These factors all produced negative effects on income distribution that lasted for many years. Moreover, the population of Turkey had become tired of the continuous political struggles of the decade prior to 2001 without seeing any significant change in their living standards. In this

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[1] *Kemal Derviş* is not only a high level officer in international organizations, such as the World Bank and UNDP, is also well-known and widely acknowledged development economist. His appointment as a minister who was responsible for economic reforms was well taken by international investors, and was seen sufficient to pave the way for capital inflows that was badly required in the beginning of the 2000s by Turkey.

respect, the public considered the economic crisis of 2001 to be an opportunity to shatter the existing political establishment and pave the way for one led by the AKP (Öniş, 2005 and 2010).

The new political establishment took this opportunity and initially conceded all of the politically unpopular terms and conditions of the stand-by agreement with the IMF and the World Bank. The 2002-2007 period was marked by the incoming government's good economic conduct and commitment to political and economic reforms and saw a resulting improvement in income distribution. The government quickly realised the importance of the distributional impact of good macroeconomic governance in gaining people's confidence. Consequently, successive AKP governments have intentionally made use of all formal and informal distributional tools to *first* gain electoral support, and *then* to sustain and even enlarge this support over time.

However, the distributional outcomes of the policies enacted during the 2002-2007 period have been mixed. Strong economic growth in a favourable international setting initially eased the use of redistribution policies, and gave rise to a sharp decline in inequality. After the downturn in the global economy between the years 2008-2009, the pace of this improvement slowed, and the overall level of inequality became almost constant. These different distributional outcomes inevitably give rise to the question of whether or not the government's commitment to both macroeconomic reforms and good governance – initially resulting in low inflation, low interest rates, and stability in the foreign exchange rate – are key reasons for the sharp decline in inequality between 2002 and 2007.

Of course, policies conducted in different macroeconomic settings have different impacts on income distribution and contribute to the overall improvement (or deterioration) in inequality to various extents. Despite the positive macroeconomic outcomes of earlier economic reforms, the AKP government later become extremely reluctant to undertake further reforms after the stand-by agreement with IMF ended in 2007, preferring instead to follow populist macroeconomic policies. Both the worldwide financial crisis, which erupted in the USA in 2008, and the government's return to economic populism to maintain its electoral majority accounted for the changes in macroeconomic policy. Therefore, the case of Turkey allows the examination of possible links between income distribution and macroeconomic policy changes.

Attempts have been made to examine the distributional impacts of macroeconomic policies in different countries, but these have been very limited in number (e.g. Bulíř, 2001; Sarel, 1997; Blejer and Guerrero, 1990). The unpopularity of this type of research arises mainly from the theoretical difficulty in identifying the channel through which macroeconomic policies

affect income distribution. For example, a particular policy, which could be intended to have clear-cut distributional consequences, may sometimes result in different distributional outcomes at the aggregate level, especially when combined with other policy elements embodied within a comprehensive economic reform programme. Given the theoretical difficulty of the treatment of distributional aspect of macroeconomic policies, researchers have often been concerned only with the microeconomic dimension of income distribution.[2]

However, there has recently been a growing awareness of the macroeconomic dimension of the distributional issue (e.g. Agénor, 2004; Bourguignon et al, 2008). Research into this dimension is particularly important for a country like Turkey, where far-reaching and successful economic reforms took place, and it provides room to assess empirically the distributional consequences of these economic reforms. Taking into account these theoretical difficulties, it was determined that our approach to the issue must be solely empirical.

This study identifies the mechanism through which macroeconomic policies and variables interact and affect different income groups for different periods. The whole period of 2002-2013 is divided into three sub-periods: 2002-2007; 2007-2009 and 2009-2013[3]. This is because the income flows of each income group are affected by the different measures and variables that accompany a particular macroeconomic policy, and they in turn contribute to the overall level of inequality. For this purpose, we decomposed inequality into its sources for a particular year by using the *Shorrock*s decomposition method, and then examined which income group(s) accounted for changes in inequality over time by applying the *Jenkins* decomposition methodology.

The next section contains a brief history of economic reform and the main macroeconomic indicators that operate under different macroeconomic settings. Section 3 introduces the links between macroeconomic policies and the earnings of different income groups. Section 4 contains the empirical results, and Section 5 is devoted to the conclusion.

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[2] Studies in the literature differ from each other in terms of their usage of methodology, and many adopted a *cross-sectional data analysis*. An econometric approach using a sufficiently lengthy time series has not been popular in research of this kind. To our knowledge, Blinder and Esaki (1978), Blejer and Guerrero (1990) and Birchenall (2007) have been the exceptions to using an econometric approach. However, the use of this methodology requires high-frequency data, which is not available in our case.

[3] For the empirical analysis, the years at these sub periods both represents the terminal year of the first period and the beginning of the second period.

2. Economic reforms and macroeconomic performance

The year 2001 was an important milestone as it brought the worst crisis in Turkish economic history.[4] Just after the crisis erupted, the coalition government of the time, led by the leader of the Turkish Left Bülent Ecevit, was urged to implement an old-style austerity programme in order to stabilise the economy. The government immediately invited internationally acknowledged economist Kemal Derviş, as a leverage in order to constitute the reputation of the Turkish economy. He first designed a classical IMF-World Bank based stabilisation and structural adjustment programme, and then took in charge of implementing the reform programme. Of course, the austerity measures, together with structural reform measures undertaken later, brought about economic costs that had inevitable political consequences (Demery and Addison, 1987). Since the government was a very weak coalition of the three main political parties, it was not surprising that it was broken up within the sixth months of the crisis. The subsequent election was held in November 2002, and it paved the way for a new right wing political formation led by the recently established AK party (AKP).

Although the AKP came into power by promising to act differently to the political establishment, they did not show any unwillingness to adopt the earlier stand-by agreement and reform programme. On the contrary, the first AKP government continued with the economic measures undertaken by the earlier government, and most importantly, they showed a strong commitment to reform until the stand-by agreement ended in 2007. By examining, the reason behind this strong commitment to reform, Öniş (2010) argues that the nature of these reform policies was in line with the post-Washington consensus. Unlike those undertaken earlier, the new reforms recognized the need for regulations, and took into account the social failures of the free market mechanism by introducing various formal and informal social net mechanisms. Given the well-established perception regarding the detrimental effects of market-based economic reforms on income distribution, there was a significant and expected improvement in inequality after the reforms of 2001.

(*Table 1 about here*)

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[4] Derviş (2005) provides a good account of the overall reform period with a comprehensive narrative about the reason behind the requirement for these reforms. For the experiences of Turkey with earlier reforms, see Arıcanlı and Rodrik (1990) and Boratav *et al.* (2000).

Differences in macroeconomic performance soon become evident and are given in Table 1. The government's commitment to reform eventually resulted in good macroeconomic performance which reached a peak during the 2002-2007 period. A sound fiscal stance and low *public sector borrowing requirement* (PSBR) allowed the government to reduce the chronically high inflation rate from 69.5 percent in the 1995-2000 period to 12.8 percent in the 2002-2007 period. A reduction in the use of financial resources, along with easy access to international finance, led to relatively low interest rates during the post-2002 period.[5] Most importantly, the economic growth rate hit 6.8 percent in the period between 2002 and 2007. Despite a 2.1 percent decline in the period of the sub-prime mortgage crisis between 2008 and 2009, the Turkish economy managed to recover quickly and achieved a 6 percent growth rate for the 2010-2013 period, however the economic growth performance of the two years just after the sub-prime mortgage crisis accounted for this. Growth in 2012 declined to 2.1 percent, and this was followed by an improved but moderate growth rate of 4 percent in 2013.

With regard to macroeconomic performance, the entire period between 2002 and 2013 can be examined by dividing it into two sub-periods. The first covers the period between 2002 and 2007, during which the AKP government demonstrated full commitment to the conditions of the stand-by agreement that allowed it little freedom to implement independent macroeconomic policies. In addition, reforms were made on the political front, mainly due to the bilateral negotiations for the likely membership of Turkey to the EU. In the eyes of the public (and even of the international community), this first AKP government indeed deserves to be considered *reformist*. These developments and reforms eventually generated a level of optimism in the public, together with hopes that the new political establishment would solve the long-standing economic and political problems of the country, including income inequality.

The second period follows the sub-prime mortgage crisis of 2008-2009. This was when the government lost interest in continuing with economic and political reforms and returned instead to populist policies. These were achieved through an increasing reliance on domestic

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[5] After 9/11 in 2001 USA began to expand international liquidity dominated in US dollar, and reduced interest rates. This new financial stance presented favourable international environment for developing countries with easy access to foreign credit at a lower cost. Moreover, after the sub-prime mortgage crisis in 2008, FED further decreased interest rates, and US-10 year bonds' rates have reached their lowest levels since WWII. Emerging market economies, including Turkey, then benefitted from this condition in international financial markets, and managed to grow their economy fast and, accordingly, to maintain low inflation rates (see Akyüz, 2012).

credit booms and public expenditure to sustain moderate levels of economic growth. Maintaining economic growth at high levels became particularly important in extending the AKP's electoral dominance after the local elections of 2009 resulted in a decline in public support.

In contrast to these positive performance indicators, high *current account deficits* (CAD) and low domestic saving rates remained the main weaknesses of the economy. As the share of CADs in GDP remained as low as 3 percent between 2002 and 2007, it surged to around 8 percent in the period between the years 2010-2013. In fact, the extent of these deficits reached 9.7 percent in 2011. This was the highest rate in the economic history of Turkey and shows that foreign savings were driving economic growth. In addition, the continued easy access to international liquidity allowed the government to slow their economic reforms with no major concerns regarding its impact on capital inflows.

(*Figure 1 about here*)

On the distributional front, an interesting inference can be made from an analysis of the data given in Figure 1, which shows the evaluation of Gini coefficients over time. The Gini coefficients in this case followed two distinctive patterns after 2002. First, the drastic decline over the 2002-2007 period implies that substantial improvements in inequality took place during the reform period. Second, improvements in inequality slowed, and even began to follow a relatively stable path between 2009 and 2013. Although there have been minor improvements (and some deterioration) in income distribution during this period, there is also doubt about the statistical significance of these changes. These distinctive features of the Gini coefficients give rise to a concern regarding the determinants of income distribution and their relationship with different macroeconomic settings. In order to answer this question, the channels through which macroeconomic policies and variables interact to affect income distribution must be identified empirically.

Selected studies on income inequality in Turkey

Inequality has long been an issue of interest to mainly different social groups only soasfar as social justice matters. Apart from the normative point of view, income distribution and income inequality have not empirically been studied widely due to the lack of reliable data. As a joint effort of the World Bank and EU, Turkey began to improve the quality of economic data after

2001, and initiated to collect micro level data from households on their income and consumption annually. At time being, there are two microeconomic level data sources for studies on income distribution in Turkey, namely *Household Budget Survey Data*, covering the period 2002-2017, and *Survey of Income and Living Conditions* for the period 2006-2017. Unfortunately there have so far been a few empirical published studies on this issue, most of which were published by local journals in Turkey. However, Gürsel *et. al.* (2000) come forward as a recent pioneering study, albeit written in Turkish, in this field, and examined income distribution for 1987 and 1994 by using household data available before 2002. Selim *et.al* (2014) is the continuation of Gürsel *et. al.* (2000), and examines income distribution and inequality from the country-wise and regional perfectives. Both studies are reports funded by TUSİAD, Turkish Business Association.

Recently Başlevent (2014) studied particularly the role of male labour income in the income inequality in Turkey. His research period however were restricted to only two years, namely 2008 and 2013. Using a similar Shorrocks decomposition method, he empirically found that male labour earning contributes positively into existing inequality in Turkey. In another study, Başlevent (2018) examined descriptive analyses to determine the extent to which transfers and pension payments influence income inequality, and empirically found that pension payments received particularly by female household members reflect a strong attachment to the labor market in the past. His findings also point to the importance of the continued economic activity of women in terms of social justice.

Another recent study by Bahçe and Köse (2014) aims to reveal the effects of public transfer policy by using *Household Budget Surveys* from *TurkStat* for the period of 2002-2010. They examine the distributional impact of the welfare regime upon both inter and intra class income by decomposing Gini coefficients, and found that the new welfare regime implemented after 2002, to great extent, depends on a "selective, infrequent and discretionary provisioning of public transfers" and help the government control the existing inequality level between different social classes. The most equalizing effect of these public transfers comes out on labouring classes and peasantry. However, this new welfare system fails to eradicate existing income inequality between social classes.

Buğra (2018) is another study discussing the social dimension of structural transformation under the AKP ruling after 2002. She emphasized transformation in social policy environment, and intuitively discussed the relationship between social policy and different dimension of inequality. She also argued that the recent emerging social regime in Turkey paved the way for

new inequalities of class and gender, which were determined by flexibility in labour market associated with market-based reform policies.

Using a different methodology, Torul and Öztunalı (2018) studies income and wealth inequalities in Turkey. They developed a model-based approach, which was calibrated at the macroeconomic level by using recent parameter estimates for Turkey. They compared Turkey's calculated inequality measures with other countries, and concluded that Turkey is one of unequal countries.

Despite these studies in the literature, there has not been any study examining the relationship between economic reforms (or any aspect of the reform) and income distribution in Turkey. In this paper, we however assume that economic reform paved the way for the practice of good governance and sound macroeconomic performance, which were both associated with *low inflation*, *low interest rate*, *stable foreign exchange rate* and relatively *high economic growth rates* as outcomes of the economic reforms programme in 2001. In particular, the reforming the public sector and financial stability, as the integral elements of the overall reform programme, became an encouraging factor for international investors bringing financial and real capital into Turkey. In what follows, we connect different outcomes of the reform programme with different sources of income, such as financial earning, entrepreneurial earning, labour income and agricultural income.

3.   Macroeconomic policies and the earnings of different income groups

A sound macroeconomic policy creates good business environment, which expectedly improves the efficiency of the factor of production in use and, in turn, increases economic growth. Different income groups then benefit from this business environment, depending on the relative prices (featured by interest rate, inflation and foreign exchange rate) associated with a particular macroeconomic policy. The different aspects of macroeconomic policies affect household income, which are earned from different sources. We empirically examine the extent of changes indifferent income components of households coming from different sources after a particular policy change occurs. In the Turkish data, it is possible decompose total income into six different income groups with respect to their functions in production. To a certain extent, they can be considered as functional income groups. They are namely the *labour-income group* the *agricultural-income group,* the *entrepreneurial-income group*, the *financial-income group*, the

retirement-income group and the *transfer-income group*. The earnings of these income groups are generated in different factor markets associated with different macro aspects of reform policies.

Macroeconomic policies unequally influence the earnings of different income groups. These impacts would be unequal because each market available in the economy has a different structure characterized with different frictions, which generate different market responses to policy changes. Moreover, a particular macroeconomic policy can be proposed just to have the expected responses of markets that would result in different income levels. Even though different income sources can be indifferent to macroeconomic policy change, the market structures produced by various inefficiencies and market failures can cause inequality between different income groups. For example, a disinflation policy can be expected to increase the real wage level, and may encourage the labour supply to participate in the labour force by raising the share of overall labour income. However, the presence of various legal and economic obstacles, skill differences, and educational, regional and gender-based differences may make it impossible to eradicate inequality among labour-income earners.[6]

(*Figure 2 about here*)

The relationship between factor income and macroeconomic policy practices during different periods can intuitively be examined by studying the data given in Figure 2. The rows of Figure 2 give the indicative information of the market condition of a certain factor market, both during and after the economic reforms. The first row of Figure 2 contains two figures, each of which shows the response of the labour market, in terms of wages and employment, to the measures undertaken during the reforms. These figures show the improvement in labour income during the reform period. Despite a 31.9 percent increase in nominal wages in 2001, the presence of extremely high inflation – surging to around 69 percent – resulted in a deterioration in overall

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[6] Bakış and Polat (2015) empirically show that difference in education and skill accounted for wage inequality in the 2002-2010 period. San and Polat (2012) focus on another institutional reason behind wage inequality between the public and private sectors and conclude that as the wage gap at the lower reaches of the distribution is explained by human endowment, sectoral discrimination accounts for inequality for the upper reaches. Additionally, studies focusing on the gender-based wage inequality argue that gender discrimination, not the difference in human endowment, is another cause of the wage gap between male and female wage earners (Aktaş and Uysal, 2012). Tansel and Bircan (2012), on the other hand, argue that differences in educational endowment reduces wage inequality for men. Besides, throughout years, the informality in Turkey is reduced and in some studies the impact of this issue on the inequality is examined. For instance, Onaran and Oyvat (2016) focuses on the role of informality in labour force.

labour income in 2001. Nevertheless, a sudden drop in average inflation to around 12.8 percent over the 2002-2007 period, along with a 17.8 percent increase in average nominal wages, led to an almost 5 percent income gain in real terms (Table 1). The data in Figure 2 also shows that having jumped from 7 percent in 2001 to 10.8 percent in 2002; the unemployment rate remained at around 10 percent during the reform period. This suggests that both disinflation and an increase in the nominal wage rate over the inflation rate accounted for the overall improvement in labour income during the reform period.

The Turkish government failed to hold the unemployment rate at 10 percent after the reform period. It first jumped to 11 percent in 2008, and then to 14 percent in 2009, along with a decline in labour income in the 2008-2009 period. This was rather an expected result due to the global economic crisis, which was not under control of the Turkish government. The government managed to reduce the unemployment rate to around 10 percent after the global economic crisis and real wages increased to pre-crisis levels. This was an expected result because the high wage policy became a crucial component of the domestic demand-driven growth policies adopted during the post-crisis period.

The second income group in Figure 2 is the agricultural-income group. Agricultural markets in Turkey are extensively managed by the government, and agricultural incomes are determined directly by the government's spending policy, which is tied to the support pricing scheme widely prevalent in Turkish agriculture markets (Doğruel et al., 2003; Çakmak, 2003; Çakmak et al., 1999). The first figure of the second row in Figure 2 shows the share of agricultural support payments from the budget, which increased until 2006 and reached 2.7 percent in 2006. After a drop to 1.7 percent in 2009, this share recovered slightly, and remained relatively stable at over 2 percent after 2008-2009. Most importantly, Figure 2 indicates that domestic relative prices changed mostly in favour of agricultural products during the reform period, and this compensated for the earlier income losses. The pricing mechanism allowed this small improvement for lasting until 2005. In the following years (except 2010), agricultural product prices fell. In addition, the size of land owned by households in agriculture and its distribution can be considered as another source of inequality in Turkey; more land owned by households, more is income earned.

Entrepreneurship income earners are the third income group in Figure 2; this income is related to the profitability of business, and it is highly linked to business environment and market conditions. Disinflation, a sharp decline in interest rates, and stability in the exchange rate (and

even an appreciation in TL) improved the prevailing market conditions during the reform period and gave rise to an increase in the profitability of business. Entrepreneurial income is also related to the size of the business and it is affected unequally by changes in macroeconomic settings according to this size. For example, a small business is likely to be influenced more by a marginal improvement in macroeconomic environment than a large one, and *vice versa*,[78] and their entrepreneurial income can catch up the income level of relatively big business fast along with rendering better income distribution than before.

Financial earnings have long been a crucial component of household income in Turkey, particularly before 2001. Despite its negative impact on income distribution, unsustainable PSBR and the need to use foreign savings led to the practice of high interest rate policies during the 1990s. At the same time, this high interest rate policy encouraged Turkish households to accumulate financial assets due to their positive income effect on household budgets (see. Akyüz, 1995). Given the theoretical fact that incentive to save at margin is higher for rich households than the poor, financial assets, dominated mainly by time deposits, were distributed unevenly among households and thus is expected to have exhibited a detrimental effect on overall income distribution even before 2001.

The lowering of interest rates after 2001 immediately reduced financial earnings and many households, particularly lover income level, opted for consumption rather than holding financial assets at low interest rates. However, households at different income levels break into their bank deposits and consume at a *different pace* due to differences in their marginal-propensity-to-save (or dis-save) (MPS). This then causes a skewed distribution of the associated financial assets and earnings, mostly in favour of high-income households. This unequal response of households with different income level distorted assets distribution further, together with

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[7] From the *Household Budget Survey* in Turkey, entrepreneurs can be divided into four distinct groups according to the size of their business. Group 1 stands for the smallest business employing one to nine workers; Group 2 employing 10 to 24 workers, Group 3 employing 25 to 49 workers, and finally Group 4 employing 50+ workers. In 2007, almost 93% of entrepreneurs were within Group 1, whereas only 1% were in Group 4. In addition, the average income level of entrepreneurs in Group 1 appears to have risen by 21% in constant increases from 2002 to 2007. An increase in the average income level of Group 4 was 107% for the same period. Considering the larger share of Group 1, its contribution to the rise in total entrepreneurs' income was higher than those of the latter group were, and reduced inequality within the group.

[8] Rani and Fuller (2016) decompose income inequality into factor incomes for selected G20 countries and analyze the contributions of different factors to income inequality and labor income inequality in 13 G20 countries for mid-2000s. Their study shows that labor markets dominate the determination of inequality. Besides, they separately examine, the contributions of entrepreneurial earnings of employers and entrepreneurial earnings of own-account workers to inequality. They concluded that, the own-account workers significantly contribute the decline in inequality.

interest rate earnings. The second figure on the third row of Figure 2 supports this expectation and shows a rise in the share of the holders of large bank deposits.[9] It is also clear from this figure that the share of small deposits, which can be assumed to belong to relatively low-income households, underwent a decline from 2001 and throughout the 2002-2007 period.

Lastly retirement and transferred earnings altogether can be considered as *lump-sum payments* to households by the government, and they show a considerable variation. Transfer payments are particularly important income source because they have been the subject of a prolonged political dispute prevailing in the recent Turkish politics. Critics have often accused the government of misusing the transfer payment system in order to extend its electoral support. After the AKP took office in 2002, the government was particularly keen to establish formal as well as informal transfer payment mechanisms to protect vulnerable people, which were exposed to the negative effects of the stabilisation and reform programme. Nevertheless, it is also important to have an efficient operating mechanism for transfer payments to eradicate income gaps (Başlevent, 2014). The information given in Figure 2 shows that there was a sharp rise in the share of transfer payments from the public budget after 2010, reaching 6.6 percent in 2012, which was far above the maximum level of the share of support payments to agriculture in 2007.[10]

4.   Data and empirical results

(a)   Data

The data for this empirical analysis is based on the *Household Expenditure Survey* of *TurkStat* covering the 2002-2013 period[11]. The data comprises information collected regularly from different parts of Turkey starting from 2002, and a brief descriptive summary of households and

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[9] The figure shows the share of the number of deposit holders grouped by the sizes of their deposits. These deposits are savings deposits by households, and exclude commercial enterprises.

[10] Before 2006, the great extent of these payments had been informally distributed to households in need by private organizations. Later, the government became involved in this distribution and controlled it through a committee under the auspices of the prime minister's office. Local municipalities also took part in the distribution mechanism by generating their own financial resources. More recently, budgetary transfer payments to households were brought under the control of the newly established *Ministry of Family and Social Policies*.

[11] As we are interested in seeing the changes in inequality for a long time period where different macroeconomic policies were at work, and analyze interactions between changes in inequality and macroeconomic policies, this investigation requires data covering longest period particularly early 2000s. Household budget survey is the only source that covers early 2000s. Therefore, this survey is preferred instead of Survey of Living conditions which is covered the after the year 2006. In that sense, once we use this data source, consistence also requires to continue to employ the same data from the same source.

some general measures of inequality is given in Table 2. The decomposition of households with respect to their major income sources, together with their general statistical features, can also be seen in the same table. This type of decomposition is particularly important because it allows for the examination of both the contributions of different sources of income into income inequality and the interaction between income sources and macroeconomic policy changes.

(*Table 2 about here*)

It is possible to make a number of interesting observations from the date in Table 2. Primarily, it is worth noting that the mean annual income of labour earners runs parallel to the mean annual income of the sample total[12]. This income group and its main features dominate the sample due to its larger share. Unlike agricultural earnings, retirement earnings and transfer payments, the mean annual income of the remaining sub-groups appears to be higher than that of the whole sample. Interestingly, despite the small share of financial earnings (less than one percent in almost all of the years covered by this study), the mean annual income of the households in this group is much higher than the mean annual income of the entire sample.

Regarding the distributional features of the sub-groups, *within-group* inequalities, as measured by Gini coefficients, are very high in almost all cases (except the retirement-income earning group), but have undergone a gradual decline. Overall inequality, however, declined from 0.44 in 2002 to 0.37 in 2013. Although this reduction was very sharp, dropping from 0.44 in 2002 to 0.38 in 2007, it later surged to around 0.38. In addition, the Gini coefficients for three distinctive income groups, namely the financial earnings group, the entrepreneurial earnings group, and the agricultural earnings group, remained above 0.40 over the entire period. Inequality in the labour income group, on the other hand, declined persistently from 0.40 in 2002 to 0.35 in 2013. The inequality between labour income earners is even lower. It recorded a Gini coefficient of 0.37, compared to an overall inequality rate of 0.39. Having seen these high but

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[12] The mean equivalent annual incomes are represented in the table. For the empirical analysis the unit of analysis and measure the inequality is overall household disposable income which is defined as the total income plus transfer income from the government or other institutions plus interest income minus income taxes (TurkStat, 2011). As equal sharing of individuals within a household is assumed in the present paper, equivalent scale is used as a tool to assess individual equivalent disposable income measure. The calculation of the equivalent scale is as follows: $N = S^e$, $0 \leq e \leq 1$ where S is the household size, e is the elasticity of the scale rate with respect to household size. The value of 0.5 is employed as elasticity of scale for obtaining the individual equivalent income. The disposable income for the individuals is calculated as follows: $Y_{ij} = R_i / S_e$ where R_i and Y_{ij} is household total disposable income and individual equivalent disposable income (where i refers to households and j refers individuals)

different within-group inequalities among income groups, it is interesting to examine which income group(s) is responsible more for these differences.

(b)   The sources of income inequality

In this section, the sources of inequality are identified empirically. The *Shorrocks decomposition method* is widely used for this purpose. Unlike the Gini coefficient, the Shorrocks method is based on the decomposition of the *coefficient of variation*, (Shorrocks, 1982). The coefficient of variation is a general measure of inequality, and takes into account all possible forms of distribution, rather than imposing only one form on different samples regardless of skew. (Cowell, 2011; Kimhi, 2009; Litchfield, 1999). The use of this type of measure is particularly common in empirical studies because it gives proportionately more weight to gaps in the upper reaches of a given distribution when measuring income inequality. Therefore, it is appropriate to adapt this measure for countries in which there are greater income gaps among households, particularly within the higher income group.

In practice, the Shorrocks decomposition requires three sets of information, each of which is used to decompose overall income inequality into different income sources. The first set is the data for each functional income in total, which requires only a simple calculation to make it available for this study. The second set is the proportional contribution of each functional income group into overall inequality, which is calculated by the Shorrocks decomposition method. Finally, relative inequality measures are calculated as a ratio of the proportional contribution of income groups to their shares. It is also worth remembering that the inequality measure of each income group derived from the Shorrocks decomposition are *static* in the sense that they are only comparable with the inequality measures of other income groups within a particular time-frame.

Shorrocks (1982) basically suggests a general decomposition method which is applicable to all measures of inequality in the literature. Methodologically it is assumed that total income inequality across observations is expressed as the sum of each contribution to inequality from the sources of income.[13] Assuming that Y_k is the income of an individual in the income category of k, total income can be written as follows:

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[13] Shorrocks (1982) shows that before using a particular decomposition method, one must be sure that it complies with a number of assumptions: (*i*) Inequality must be continuous and symmetric; (*ii*) the contribution of the each income source is continuous; (*iii*) symmetric treatment of income sources (the contribution of any one income source should not depend on how many other types if income are distinguished); (*iv*) independence of the level of disaggregation; (*v*) consistent decomposition; (*vi*) population symmetry; (*vii*) two income source symmetry.

$$\sum_{k=1}^{k} Y_k = Y \tag{1}$$

The income inequality can also be written as the sum of its components by sources as follows:

$$\sum_{k=1}^{k} S_k = I_2(Y) \tag{2}$$

where *I(Y)* stands for total income inequality, which will be measured by any income inequality measure available in the literature; S_k is the contribution of income group *k* into total income inequality. Also it can easily be defined as a proportion, $s_{k,}$ as follows:

$$s_k = S_k / I_2(Y) \tag{3}$$

Upon substituting equation (7) into equation (6), the following condition can be derived as well:

$$\sum_{k=1}^{k} s_k = 1 \tag{4}$$

Equation (1)-(4) defines the Shorrocks decomposition method that is to be employed in the section.

A number of descriptive results can be obtained from the calculations of income share.[14] Accordingly, labour income constitutes an average of 50 percent of the total income in the Turkish economy. Entrepreneurial income is the second income group with a 15 percent average share. Despite the presence of a large rural population, agricultural income averages only 8.2 percent. The income of these three groups is earned according to their contributions to productive economic activities, and it is accounted for an average of 73 percent of total income. With regard to the remainder, 25.3 percent of total household income, on average, is earned from transfer payments (including retirement and transfer earnings). This represents a considerable amount of income paid to households, which is, in fact, not in return for their contributions into any production activity, but is rather income generated by other income groups and transferred only for the purpose of social protection. This is evident from Figure 3 that unlike our expectation. This could be considered as a structural feature of the Turkish economy where the most of households receiving any form of transfer payment also possess other income sources. In addition, in Turkey there are households which continue to work after retirement and which

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[14] These results are available upon request.

unofficially receive labour income. The selected and more intuitive results are shown in Figure 3.

The data given in Figure 3a shows the proportional contribution of each income group into total inequality. This data reveals that entrepreneurial and labour income are the most important sources of inequality. In particular, entrepreneurial income contributed an average of 53 percent to overall inequality between the years 2002-2013, whereas labour income accounted for only 34.7 percent. However, all income groups exhibited a similar tendency towards inequality over the same period. Most surprisingly, transfer payments appeared – albeit to a small extent – to have been a source of inequality, thereby indicating a problem in the distribution mechanism of transfer payments among households in need.

In order to determine the relative importance of income groups in causing inequality, the values in Figure 3a must be adjusted according to their share of total income. Figure 3b shows these adjusted values. The resulting numbers are classified as relative inequality indicators. In assessing the values in Figure 3b, any value below unity can be considered as a low, even negligible, contribution to inequality, whereas values above unity can be seen as an indication of a significant contribution to inequality.

Having adjusted the propositional contributions to inequality of each income group, financial earnings can be immediately identified as the most important source. Despite the small share of this group, the contribution of financial earnings into inequality appears to be much higher than any other group in almost all of the years under analysis. Entrepreneurial income is the second highest contributor, but still maintains its level of importance all over the period under consideration. Other income groups exhibit small, even negligible in some cases, contributions to overall inequality. Therefore, it can be concluded that financial and entrepreneurial earnings were the main determinants for both increased and decreased levels of inequality over the 2002-2013 period.

This result is particularly important for an assessment of the impacts of macroeconomic policies and variables on income distribution. This is mainly because changes in macroeconomic settings become evident in the earnings of two income groups. For example, entrepreneurial earnings are dependent on the profitability of business activities, and it is to be expected that they are determined by the conditions prevailing in the market. On the other hand, financial earnings

show great variability depending on both the interest rate, which is a function of monetary policy and macroeconomic management, in general and financial asset stocks in particular. Therefore, any change in the contributions of these two income groups to inequality can be considered as a good indication of the detrimental impacts on income distribution of the prevalent macroeconomic policies of different periods. However, the *static nature* of the Shorrocks decomposition method does not allow for the dynamic comparison of changes in these contributions over time, and requires an additional forward step in calculations of this type.

(c)   The sources of changes in inequality

Jenkins (1995) suggests a decomposition method to reveal changes in the contributions of all income groups to inequality over time, rather than to changes in inequality itself. This calculation requires a choice of two terminal years and the results are sensitive to this choice. Since the aim of this study is to examine the impacts on inequality of different macroeconomic settings, namely different levels of economic growth and inflation, as well as changes to interest rates and expenditure policies, then three distinctive periods can be identified as an appropriate choice for the application of the Jenkins decomposition method. These are the reform period between 2002 and 2007, the period of the sub-prime mortgage crises between 2007 and 2009, and finally the period of economic growth under stress from 2009 onwards.

The Shorrocks decomposition method allows us only to examine the sources of income inequality just at a certain time domain, but is not appropriate to examine changes in income inequality over time. Instead, Jenkins (1995) suggests a more appropriate method, which allows us to measure the extent of dynamic changes in inequality and its sources over time. Accordingly, Jenkins (1995) first calculates absolute changes in income inequality from time *t* to time *(t+Δt)* as follows:

$$\Delta I_2 = I_2(Y)_{t+\Delta t} - I_2(Y)_t = \sum_k \Delta S_k \tag{5}$$

where Δ indicates changes in inequality in level; Δt shows the time interval between two terminal years of the surveys in examination. Depending on the availability of data, the interval in empirical studies would be a time period covering a number of years with a particular starting and end years. In our empirical study, the time interval is taken either as one year, or in same case

as an electoral period covering four years in the Turkish case. The percentage change in inequality, as we calculate for the Turkish economy, can also be derived from (5) as follows:

$$\nabla I_2 = \Delta I_2(Y)/I_2(Y) = \sum_k s_k \nabla S_k \qquad (6)$$

where ∇, instead of Δ, shows the percentage changes in inequality. Equation (6) is applied the Turkish budget survey data in order to examine the sources of changes in inequality in connection with macroeconomic policies implemented under two AKP governments. The results are given in Figure 4.

(Figure 4 about here)

There are three panels in Figure 4. The contribution of each income group to *changes* in inequality are given in panel (a). The results in panel (a) are obtained through the use of both the changes in the share of the income groups, as given in in panel (b), and changes in inequality *within* the groups are given in panel (c).

The Jenkins decomposition reveals an interesting result regarding our examination of how much change in inequality occurred during these periods. There was a 56.3 percent improvement for the entire period between 2002 and 2013. The largest improvement took place during the 2002-2007 period, which recorded a 65 percent decline in inequality. This is followed by a 35.2 percent decline in the period between the years 2007-2009, which was mainly due to the effects of the sub-prime mortgage crises. Finally, the improvement in inequality continued during the 2009-2013 period, which saw a 7.5 percent decline. These results therefore imply that the reform period between 2002 and 2007 was a very distinctive period in terms of creating improvements in inequality, which together with high economic growth performance, can be considered as the indication of the success of the macroeconomic policies in place at the time.

The examination of the contributions of different income groups in these improvements is more informative. Panel (a) in Figure 4 shows the contributions of each income group to the improvement (or deterioration) in inequality over different time periods. All income groups, except that of retirement earnings, contributed into the improvement in inequality during the reform period between 2002 and 2007. Among the others, financial and entrepreneurial earnings largely accounted for the distinctive and high-level of improvement over the same period. In particular, the contribution of financial earnings to the improvement in inequality was 32.8 percent, and this is followed by entrepreneurial earnings at 28.1 percent.

These findings imply that good macroeconomic settings, as determined by high economic growth, disinflation, a decline in interest rates, a stable foreign exchange rate and a good fiscal stance, generated improvements in inequality. Most importantly, a sharp decline in interest rates and inflation after the 2001 crisis appears to have discouraged financial asset holders from keeping their savings in banks, which accounted for the 32.8 reduction in the share of financial earnings, as shown in panel (b). Surprisingly, this decline took place while the distribution of financial earnings was increasing within this group. Panel (c) shows that the improvement in *within-group* inequality reached almost 21 percent. It is plausible to conclude that the contribution of financial earnings into the improvement in inequality between 2002 and 2007 was due to both a decline in the share of financial earnings and improvements in within-group inequality. Indeed, an improvement in within-group inequality, together with a decline in the share of financial earnings, took place due to the relative rise in the share of high-value financial deposits.

Over the same period, relatively low-income households inclined towards consumption, rather than holding financial assets. This can be considered as the reason for the major contribution the financial income-earning group makes to inequality. However, this increase in consumption, in turn, helped to improve the business climate by generating high levels of domestic demand that were encouraged by lower inflation and a more stable foreign exchange rate. Accordingly, the share of entrepreneurial earnings increased by 8.7 percent over the 2002-2007 period. More precisely, 28.1 of the 65 percent improvement (approximately 43 percent) during this period came from entrepreneurial earnings. Obviously, the members of households within this group benefited from this good macroeconomic performance and increased their income share by 8.7 percent. An improvement in within-group inequality (-31.2 percent in Panel c) implies that the overall increase in entrepreneurial income occurred due to the earnings of relatively small businesses.

Labour earnings was the third group that benefited from the favourable macroeconomic setting of the reform period. This group increased its share of total income by almost 23 percent. This was the largest rise in income share and accompanied an improvement in within-group inequality, thereby implying that low-labour-income-earners disproportionally benefited from this more than high-labour-income households.

Finally, there was a decline in the total share of agricultural-earning households. This was due to the policies implemented in accordance with the stand-by agreement and overall reform

programme to curb public expenditure. Despite this decline in the share of agricultural-income, the improvement in within-group inequality indicates that low-income-agricultural earners were less affected by this decline than others within the group.

Lastly, transfer payments did not have a major impact on inequality during the reform period between 2002 and 2007. The improving effects of both components of transfer payments remained at almost zero: 0.7 for retirement earnings and 0.1 for transfer payments. Despite a small increase in the share of retirement earnings, this increase took place disproportionally and increased the income gap within this group.

5.   Conclusion

After the economic crises of 2001, Turkey undertook a comprehensive economic reform programme to enhance its capability for economic growth by reforming the public sector and providing financial stability. The distinctive feature of the 2002-2007 period was the commitment of the government to continue with these reforms. Turkey's macroeconomic performance initially recorded high economic growth, declining inflation and interest rates, and stability in the foreign exchange rate. With the help of a favourable international environment, this reform period lasted until the end of 2007. The distributional consequences of the economic reforms were also very impressive, and although Turkey had been among the countries with the highest inequality measure in the OECD, income distribution greatly improved. However, this performance could not be maintained after the reform period was brought to an end in 2007.

The aim of this paper is first to compare the distributional performance of the economy during and after the reform period, and then to identify the channel(s) through which the Turkish economic reforms influenced income distribution by decomposing overall inequality into its income sources. Two income groups played very distinctive roles in changing the level of inequality; these are entrepreneurial and financial earnings. In particular, the contributions of financial earnings to overall inequality have been far above those of other income groups across almost all of the years covered by this study. A sharp decline in interest rates during the reform period can be claimed to account for the effect this income had on reducing inequality. However, financial earnings have continued to be the major source of inequality, even after the reform period. This may be because of the deterioration in the distribution of financial assets among

households with different income levels. The improvements in inequality from this income group remains dependent on interest rates.

Additionally, our results show that the Turkish economic reforms strongly influenced income distribution through increases in entrepreneurial earnings. These earnings are generally a function of the profitability of business, and they are affected by macroeconomic settings, which are determined by reform-related macroeconomic variables, such as high economic growth, low interest rates, low inflation, and stability in the foreign exchange rate (even an overvaluation of TL). Our results indicate that entrepreneurial earnings increased during the reform period; most importantly, improvements in *within-group* inequality imply that this increase favoured low-income entrepreneurs.

In sum, the great extent of the improvements in inequality took place during the reform period between 2002 and 2007; and these were accompanied by good macroeconomic performance. High earnings and reductions in within-group inequality were the major reasons behind the improvement in overall inequality, and our results indicate that labour, entrepreneurial and agricultural earnings rose more during the reform period than at other times. In addition, increases in these groups' shares in total income, and improvements in their within-group inequalities accounted for the significant reductions in overall inequality during the reform period. This could have eased the way for the governing AKP to extend its electoral support from these income groups to remain in power. However, our empirical findings in this paper give rise to concerns regarding whether or not changes in inequality are *cyclical*, and if they may again trend upwards, depending on future levels of economic growth, inflation and interest rates. Basing on the empirical finding in this research, sound macroeconomics policies and good governance, associated with low interest rate, low inflation, stable foreign exchange rate and high growth, are both preconditions for a policy that aim to improve income inequality in Turkey. However, the contribution of the presence of favourable international financial environment into this improvement in inequality cannot be ignored.

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Table 1 – Main macroeconomic indicators

	1995-00	2001	2002-07	2008-09	2010-13
	%				
GDP Growth	4.7	-5.7	6.8	-2.1	6.0
Inflation Rate	69.5	68.5	12.8	8.1	7.6
Interest Rate	74.4	62.5	26.0	14.3	15.1
	% of GDP				
PSBR	7.3	12.1	3.2	3.4	1.0
Current Account Balance	-1.1	1.9	-3.9	-4.0	-7.5
	% Change				
Real Effective Rate*	7.6	-21.2	9.0	-5.2	0.4
Nominal Exchange Rate	66.6	96.5	1.5	9.5	5.4
Nominal Wage Index	77.3	31.9	17.8	8.3*	7.9*

Sources: SPO, *Economic and Social Indicators*. http://evds.tcmb.gov.tr/cbt.html.
* Nominal wage index, which was previously available from Economic and Social Indicators, ends in 2008; nominal wage index for the manufacturing sector becomes available from TUIK for recent years.

Table 2 – Summary Table

Income Groups	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total												
SS*	9530	25727	8534	8441	8540	8523	8533	10019	10061	9896	9951	10038
MHS*	4.3	4.2	4.1	4.2	4.1	4.1	3.9	3.8	3.8	3.8	3.6	3.7
MEAI*	4490	5330	6510	7490	8595	9404	10840	11852	12851	14964	16895	18080
Gini	0.44	0.43	0.41	0.39	0.38	0.38	0.39	0.39	0.38	0.38	0.38	0.37
Labour												
SS(%)	53.1	45.5	46.9	49.5	51.1	50.7	49.9	50.3	50.2	52.8	50.9	50.6
MHS	4.5	4.4	4.4	4.5	4.4	4.4	4.3	4.2	4.1	4.1	4.0	4.0
MEAI	4160	5120	6230	7239	8380	9296	10682	12061	13125	14827	17609	19072
Gini	0.40	0.40	0.38	0.38	0.36	0.36	0.37	0.37	0.36	0.37	0.36	0.35
Agricultural												
SS(%)	5.7	12.3	10.3	9.7	8.5	7.8	6.3	8.7	7.7	7.0	6.7	7.4
MHS	5.1	5.2	5.2	5.0	4.8	5.0	4.5	4.5	4.5	4.5	4.7	4.6
MEAI	3690	3920	4560	5460	6039	6592	7620	8300	9556	12577	13082	13698
Gini	0.42	0.42	0.43	0.42	0.39	0.38	0.42	0.41	0.39	0.40	0.41	0.39
Entrepreneurial												
SS(%)	16.6	15.7	15.8	15.2	14.5	13.7	13.5	12.4	11.8	11.7	12.3	13.5
MHS	4.7	4.5	4.5	4.3	4.3	4.4	4.2	4.1	4.1	4.1	4.0	4.0
MEAI	6660	7890	9930	10569	12612	13765	16490	18135	19052	22843	24717	24922
Gini	0.50	0.48	0.45	0.40	0.40	0.42	0.42	0.44	0.43	0.42	0.47	0.44
Financial												
SS(%)	1.1	0.6	0.3	0.3	0.2	0.1	0.3	0.3	0.2	0.2	0.1	0.1
MHS	3.2	3.1	3.3	3.3	3.2	2.9	2.7	2.7	2.7	2.5	1.9	2.1
MEAI	14200	16000	15200	23305	22419	10821	24203	43720	47884	66991	93511	42106
Gini	0.65	0.52	0.57	0.51	0.37	0.25	0.47	0.54	0.51	0.31	0.41	0.38
Retirement												
SS(%)	16.6	18.0	17.5	16.4	17.3	18.6	20.0	16.7	17.9	18.0	18.9	17.5
MHS	3.3	3.3	3.2	3.2	3.1	3.1	3.0	2.9	2.9	2.7	2.7	2.8
MEAI	3570	4830	6010	7390	8162	8942	10143	10614	11903	13124	14470	15602
Gini	0.28	0.29	0.27	0.27	0.26	0.26	0.27	0.26	0.27	0.26	0.26	0.26
Transfer												
SS(%)	7.0	8.0	9.2	9.0	8.4	9.1	10.0	11.5	12.2	10.3	11.2	10.9
MHS	3.0	2.9	2.9	3.1	3.0	3.0	3.1	2.9	3.0	2.7	2.7	2.5
MEAI	3210	3990	4910	5595	6202	6776	7101	7690	8712	10588	10975	11757
Gini	0.40	0.40	0.41	0.44	0.38	0.40	0.38	0.40	0.39	0.40	0.35	0.35

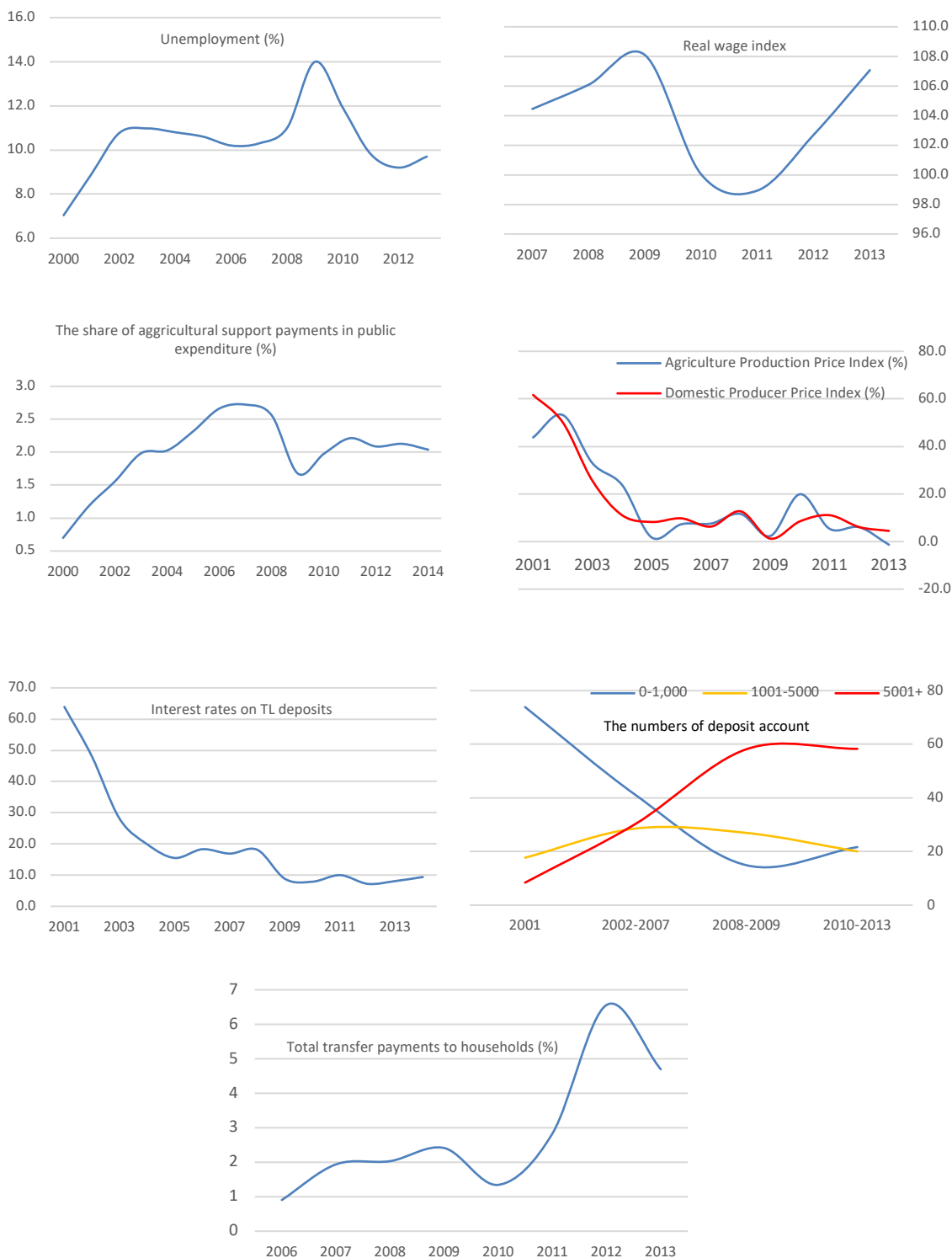*Source: Authors' calculations based on HBS 2002-2013 microdata.*

*SS: Sample Size(%); MHS: Mean Household size; MEAI: Mean equivalent annual income

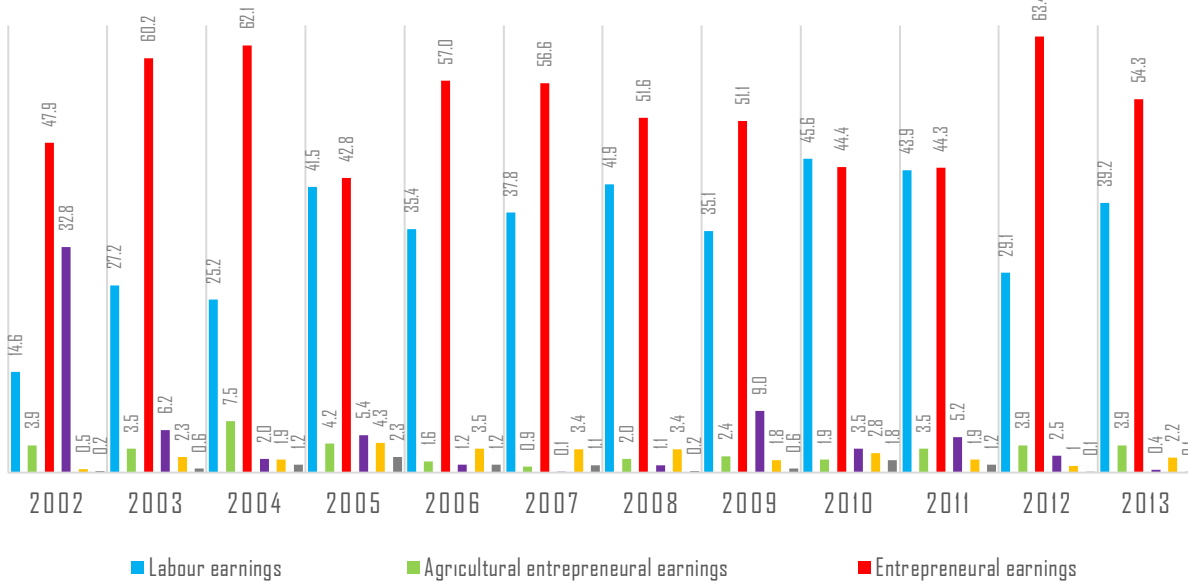**Figure 1- Gini Coefficient and Coefficient of Variation**
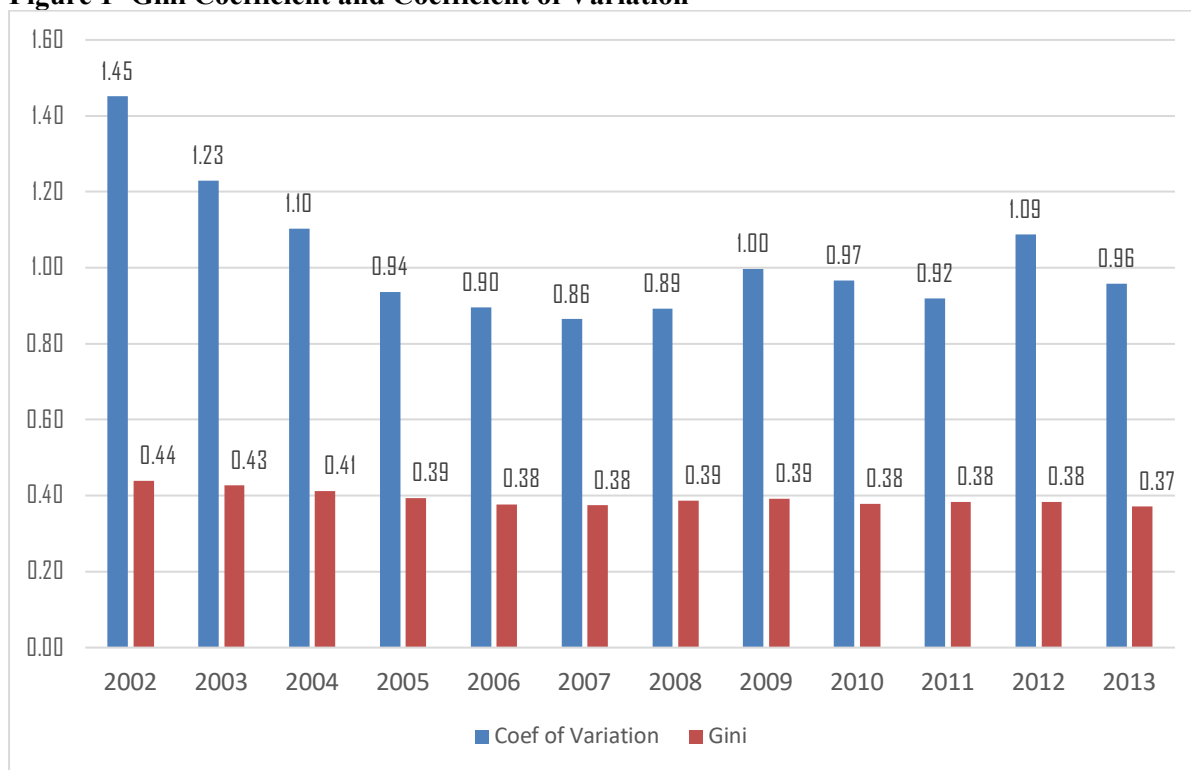
Source: Authors' calculations based on HBS 2002-2013 microdata.

Figure 2: Macroeconomics factors affecting the earnings of different groups

Sources: The unemployment and real wage index: www.tuik.gov.tr. The share of agricultural support from public budget accounts and relative prices: http://evds.tcmb.gov.tr/. The interest rates on TL deposits and the numbers of deposit accounts https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59. Total transfer payments to households: http://evds.tcmb.gov.tr/

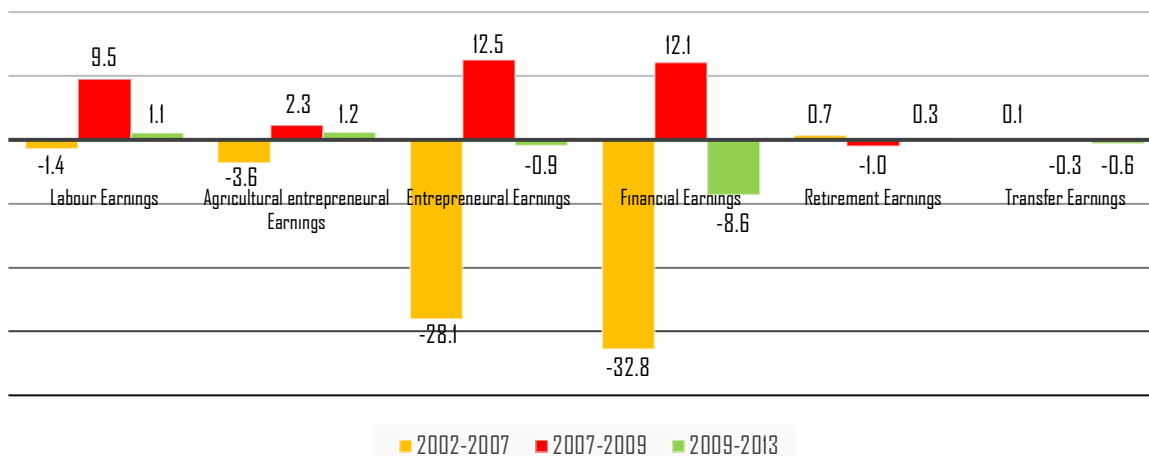**Figure 3– The results of Shorrocks decomposition**

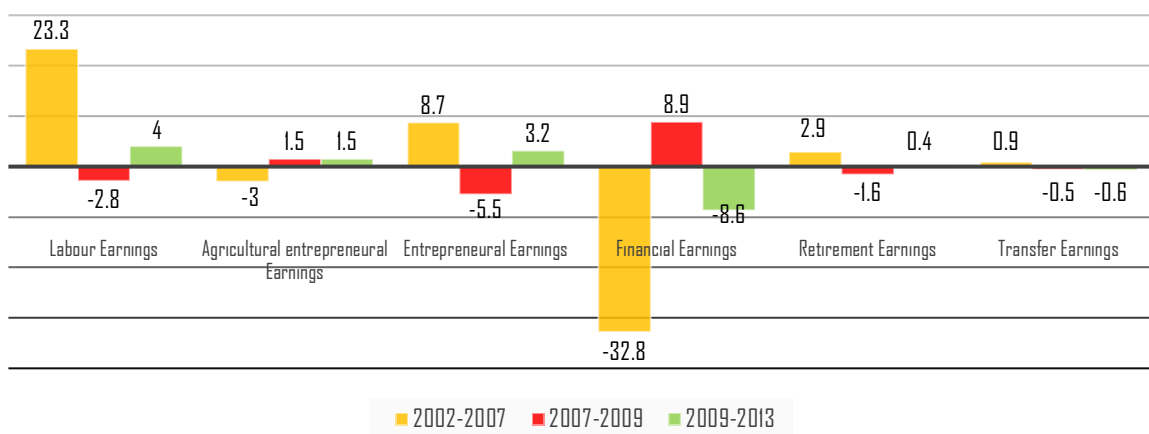(a)   The contributions of each income group into inequality (%)

(b)   The contributions of income groups adjusted by their income shares (%)

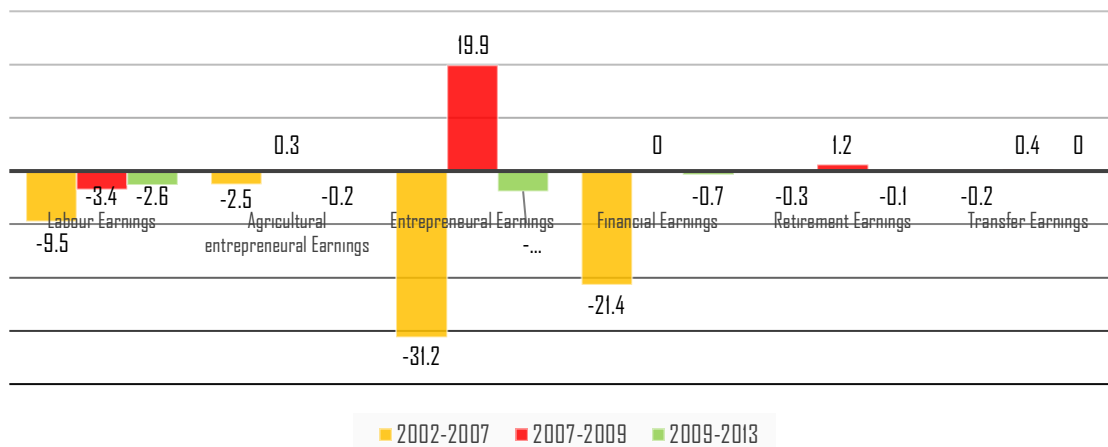*Source: Authors' calculations based on HBS 2002-2013 microdata.*

Figure 4 –The Results of the Jenkins Decomposition

(a) Changes in the effects of each income source to overall inequality (%)

(b) Changes in the share of income groups (%)

(c) Changes in inequality within each group (%)

Source: Authors' calculations based on HBS 2002-2013 microdata.