

Evaluating the impacts of the COVID-19 pandemic on unemployment, income distribution & poverty in Turkey

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Abstract: The recent *World Economic Outlook* by the World Bank forecasts a 3.8 % decline in GDP in 2020. However, the impacts of the pandemic on inequality and poverty are likely to be unprecedented, and this issue has largely been ignored. The objective of the present paper is to estimate the likely impact of the Covid-19 pandemic on unemployment, inequality and poverty in Turkey. The paper proposes a *heuristic approach* to estimate the impacts of the pandemic on unemployment in different sectors and on inequality and poverty. A hypothetical condition is generated under different scenarios that propose a particular impact pattern for the pandemic, and the data from the *Survey of Income and Living Conditions* in 2017 is used for the simulations of different scenarios. The results show that the pandemic is likely to cause a dramatic increase not only in unemployment but also in inequality and poverty in Turkey

Key words: COVID-19, outbreak, inequality, poverty, Turkey

JEL Classification : J60, O15, O50, P46

Introduction

The outbreak of the Covid-19 pandemic was officially announced on the 11th of March 2020 in Turkey, and various measures -including lockdown at home and bans on domestic and international travel - to contain the spread of virus were implemented right after this announcement. The Turkish economy was inevitably hit by these measures, but the timely response of the government to the pandemic seems to have been sufficient to prevent the country from facing a tragedy like some European countries, such as Italy, Spain, and the UK, faced during the pandemic. Despite the lack of sufficient financial resources to compensate for the economic loss that the pandemic caused, Turkey has performed relatively well in implementing containment measures compared to other countries in Europe.

What happened economically after the outbreak was not something new for Turkey, but could be regarded as another development that has caused the existing economic outlook to

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deteriorate from poor to an impending crisis. Low economic growth, unemployment, deteriorating income distribution, and poverty have been the Achilles' heel for the government, which is hungry for approval by the public. Due to the high unemployment rate, highly unstable exchange rate and low economic growth rates, erosion in the support for the economic policies of the government had started to increase before the outbreak emerged. The good handling of the outbreak and the containment policy of the government helped it gain praise of course, but these economic problems inherited from the past left insufficient room to manoeuvre to regain the public's confidence in handling the economy. In particular, insufficient economic growth in recent years has been one of the worrying developments in the economy and has sparked the unemployment problem together with serious concerns about the distribution of income. The outbreak has in no way helped the government come up with sustainable solutions to deal with any of these economic problems.

The World Bank has recently illuminated the scale of the damage and forecasted a 5.2 % contraction in the world's GDP, while also warning policy makers all over the world of the danger of increase in inequality and poverty. According to World Bank (2020), 40-60 million people face the danger of falling into extreme poverty, mostly in the sub-Saharan and South Asian countries. In the midst of unprecedented contractions in economic activities and extraordinary jumps in unemployment rates, policy makers all over the world have introduced massive fiscal measures. However, reviving economic growth has, to a great extent, been the main concern of these measures while the impact of the pandemic on inequality and poverty has widely been ignored. This is also true for Turkey.

The World Bank estimates a 3.8 % fall in Turkey's GDP in 2020. The pandemic is expected to have a greater impact on the Turkish economy for several reasons. *First*, the fiscal capability of the Turkish government is very limited to introduce comprehensive and inclusive fiscal measures to manage the adverse effects of the outbreak on the sources of increases in inequality. *Second*, many people are employed in the informal sector, and the measures to control the spread of the pandemic endangers sustainability of their income flow. The size and the scope of the fiscal measures have so far been inadequate to compensate for losses in income and employment, and this inevitably leads to many people falling into poverty. *Third*, some measures taken by the policymakers in Turkey are likely to increase the risk of greater inequality. Easing the access to cheap credit can account for uneven asset accumulation mainly because not all households have equal capability to access the credit. In the short term, priority has been given to reviving domestic demand by increasing the spending of middle and high-income households. Low-income, low-skill households are to a great extent left alone to deal with the risk of poverty. However, this risk can only be avoided by either direct cash transfers from the public budget for a period of time or by establishing an institutional, and most importantly, enduring framework for an income support system such as basic income.

The purpose of this research is to estimate the extent to which the outbreak exacerbates existing economic problems. Low economic growth, unemployment, inequality, and poverty are four important economic channels that are critical in observing the impacts of such a widespread outbreak on the economy, and this study is an attempt to empirically measure the impacts of the COVID-19 outbreak on these economic problems.

In what follows, this paper has been divided into seven sections to accomplish our task. Following the introduction, Section 2 summarizes Turkey's policy responses to the pandemic. The economic outlook of Turkish households is examined in Section 3. The estimation approach and corresponding scenarios are introduced in Section 4. Section 5 and Section 6 examine the impacts of the pandemic on unemployment, inequality, and poverty respectively. Finally, Section 7 is devoted to conclusions and policy implications.

Turkey's policy response to the outbreak

The Covid-19 has led to an extraordinary hit to economic activities, and caused a need for huge fiscal expenditure to compensate for the damage that economies confronted after the outbreak emerged; the higher the damage, the more fiscal expenditure required. The fiscal response of governments during an extraordinary circumstance like the one we are all in varies by both the scope and the size of the fiscal expenditure, and it depends on financial sources available for use and the severity of the damage that the outbreak may cause. Measures such as locking down a large share of the economy, social distancing, and prohibiting domestic and international travel are seen as the most efficient measures to contain the spread, but they also generate great economic costs. Some governments cannot afford such huge costs and choose to postpone these measures. Expectedly, such a poor and untimely response of a government increases the death toll of the pandemic (Baldwin and di Mauro, 2020).

Figure 1 gives a general idea about the performance of Turkey to avoid the spread of the virus. It seems from Figure 1 that a rise in the number of confirmed new cases stopped almost one month after the outbreak, and even began to fall afterward. The pace of increase in the number of deaths seems to have slowed down significantly after the middle of May, and it almost stabilised before the removal of the lockdown on the 1st of June 2020. Although the number of tests has often been criticized as being insufficient, it appears in Figure 1 that their number continuously increased.

(Figure 1 about here)

Various measures were taken to contain the spread of the COVID-19 virus in Turkey. All of them had inevitable negative impacts on economic activities. Interestingly, all these and similar measures were put into effect at the same time as measures in other countries in the world and led to a general slow-down in the world economy. Turkey was exposed to the pandemic relatively late and had time to revise its response and take timely actions. Like many countries, Turkey gradually closed its borders to neighbouring countries, then suspended outbound and inbound international flights and reduced the mobility of people of certain ages on certain days. The government tirelessly reminded people to maintain a 2-meter *social distance* between individuals in public, and wearing *medical masks* became mandatory when they went out. All *shopping malls* were closed to reduce physical contact between people. *Education* from pre-school to universities was taken from classroom and lecture rooms to online. Offices, those of mostly white-collar workers, were transferred to homes; restaurants, eating out, and business meetings were replaced with online deliveries and video conferences. Business (mostly in the service sector) that requires *face-to-face*

physical contact with people was, to a great extent, suspended for some time.¹ In accordance with these changes in our daily lives, the consumption behaviour of people also changed drastically. As the spread continued at full speed in April and May, the government adopted further measures such as *lockdown*, a *ban* on travelling in and out of big cities, and *curfews* in certain circumstances.

(Figure 2 about here)

For many people, these changes were meant to be a simple pause in economic activities and a change in our daily life practices for a short time, but for the vast majority of people it was something like doomsday coming early. These measures to contain the virus inevitably halted some sectors and drastically slowed down others, resulting in massive job losses and reductions in income and bankruptcies. They are likely to have a serious impact in many countries. Figure 2 indicates how serious this concern in the Turkish case is. In Figure 2, changes in the values of production indices in industries in April 2020 are shown.² This figure is the first indicator announced by TurkStat showing the seriousness of the economic impacts of the outbreak.³ All sectors in this group appear to have declined in April when the impacts of the pandemic were the greatest. This figure can be taken as one of the leading indicators of the economic impacts on industrial production of the outbreak, and the outcome appears to have been in accordance with expectations so far.

To compensate for the economic fallout from the new coronavirus, the Turkish government promptly announced a 100 billion TL fiscal aid programme to combat the negative impacts of the outbreak.⁴ However, the extent of this fiscal aid programme was not adequately high, and its scope was limited by leaving the most vulnerable strata of the Turkish society, such as poor and economically dependent women, untouched (*see Bayar et al., 2020*). The responses of governments to these impacts of the outbreak varied according to their budgetary facilities and monetary capabilities (*Elgin et al., 2020*). First, fiscal and monetary measures were implemented after the pandemic started. The world economy has witnessed monetary responses, mainly by the Fed and ECB, to keep the markets as liquid as possible at a time in which spending has drastically slowed down. Unlike earlier economic crises, such as the

¹ The Covid-19 virus is highly contagious and is transmitted through respiratory channels. Since social distancing is seen to be the most efficient way of controlling the spread, all countries experiencing this pandemic have promoted social distancing in daily life and reducing face-to-face contact with people as much as possible. However, our knowledge about the impacts of social distancing on the current economic fall in the world has been very limited or does not even exist. One reason for this is the lack of an appropriate variable to capture the effects of social distancing to employ in an empirical study. Attar and Tekin-Koru (2020) have made a good attempt to generate a variable, which they call MIDIS, and found a positive correlation between this variable and output losses in many cases including in Turkey.

² These early results are in accordance with the findings of Yeldan and Voyvoda (2020). Unlike ours, their analysis is based on a computable **General Equilibrium Model**, and they estimate a 26.7% loss in GDP and a 22.8 % loss in employment. They note that the Covid-19 has taken effect in Turkey, especially in a condition in which the Turkish economy had already been poorly performing, and the presence of these unfavourable initial conditions inevitably causes a striking deterioration in macroeconomic conditions.

³ <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=33799>

⁴ TL 75 billion of this package was used to finance fiscal measures undertaken, and TL 25 billion was directed to the amount in the credit guarantee funds. <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#T>

2008-2009 sub-prime mortgage crisis, fiscal responses by governments became mandatory in this outbreak. This is basically because the pandemic impacts both the supply and the demand sides of economies. The needs of medical supplies, subsidising small and medium-sized firms, and financial support to keep people employed were immediate short-term requirements after the outbreak started. In addition, Turkey has also forgone some public revenue through the cancellation of taxes and deterred social security and tax payments as well as debt servicing of households and firms. Easy access to cheap credit, especially through public banks, was made possible for households and firms.

It appears in Figure 3 that the *monetary response* of the Turkish government was tremendous. Like other countries during the outbreak, Turkey also expanded the money supply and opted to finance its public expenditure by monetarising the economy. However, this trend in money supply (M1) in Figure 3 seems not to be something new but rather had started far before the outbreak began. It is obvious that the monetary expansion was just speeded up after the official announcement of the Covid-19 pandemic in March. In addition to the expansion in money supply, the Central Bank continued to lower the interest rate.

(Figure 3 about here)

The Turkish government took some immediate actions to compensate for the impacts of the pandemic. Decree 7244,⁵ for example, proposes to reduce the impact of the Covid-19 pandemic on economic and social life. The decree included financial measures to support minimum wage in order to decrease the cost of employment for employers. Dissolving labour contracts was also prohibited for 3 months, but employers were also given the right in return to release workers without payment. In that case, payments of 39 TL per day (1170 TL per month, which is equivalent to approximately \$170 calculated with 7 TL/\$ exchange rate) were granted to those who were not eligible to receive unemployment benefits. Besides, *short-term working allowance* was given to all workers who were employed in the firms scaling-down or stopping production. By April 22, 270 thousand companies, comprising over 3 million employees, applied for short-term employment allowance.⁶ This number alone is sufficient to prove how serious the employment effect of the pandemic would have been. However, not all employees are able to apply for this allowance. In order to become eligible to apply, first, an employee must have paid 450 premiums to unemployment insurance funds. Second, he or she must have been employed for 60 days before his or her application. And most importantly, the eligibility for application does not cover non-registered employees, the self-employed, unpaid family workers and immigrant workers. Turkey has also given 1000 TL (approximately \$150) cash support to 2.1 million poor households.

In addition, the government, led by President *Recep Tayyip Erdoğan*, initiated a **Social Assistance and Solidarity Campaign** to raise money to help households in need. Nearly 180 million TL (approximately \$26 million) was donated to this campaign by individuals and

⁵ Decree 7244 was the first comprehensive legislative action taken after the official announcement of the pandemic on the 17th of April 2020. <https://www.resmigazete.gov.tr/eskiler/2020/04/20200417-2.htm>

Dünya Newspaper, 16 May 2020; <https://www.dunya.com/kose-yazisi/covid-19-salginina-karsi-alinan-tedbir-ve-onlemler-iii/470450>

⁶ <https://www.aa.com.tr/tr/turkiye/bakan-selcuk-kisa-calisma-odenegine-su-ana-kadar-3-milyonu-askin-basvuru-oldu/1814696>

private as well as public institutions. The government later put approximately 350 million TL (about \$51 million) additional funds into this campaign.

(Figure 4-6 about here)

The Economic outlook of Turkish households

In this section, the general outlook of the Turkish economy and household characteristics are examined based on both the data obtained from the Survey of **Income and Living Conditions** for 2017 and economic growth statistics regularly published by TurkStat. The first part of our examination involves the sectoral distribution of individuals whose income contributes to household income. Since the outbreak and containment policies are expected to influence economic activities to different extents, the income of individuals earning money from these sectors will not be exempt from these impacts. Then, these sectoral impacts can be considered important economic channels of the impact of the outbreak on households.

Figures 4 and 5 both report the sectoral distributions of individuals employed in households. It is evident from Figure 4 that almost 49 % of individuals in all households are employed and generate income from three main sectors, namely agriculture, manufacturing, and wholesale & trade sectors. Adding the 8 % employment in the construction sector, this share exceeds 50 % of the overall population. Therefore, over 50 % of individuals are employed and generate income from four main sectors: agriculture, manufacturing, wholesale & trade, and construction.

Poverty is an important economic problem in Turkey, and it constitutes one of the greatest vulnerabilities in the economy. If one examines the sectoral distribution of individuals whose household income is below the pre-determined poverty line, then Figure 5 can be obtained. Like in Figure 4, poor individuals are also largely employed in the agriculture, construction, and wholesale & trade sectors. These three sectors altogether constitute 66 % of total employment of individuals under the poverty line. When the share of the manufacturing sector, which is less than 10 %, is included, the total share of poor individuals reaches 75 %. Therefore, the future state of these sectors is regarded as an important factor that determines the well-being of people under the poverty line.

Another piece of crucial information comes out in Figure 6, which reports the distribution of Gross Domestic Product (GDP) of economic activities in the Turkish economy in 2019. In particular, Figure 4 becomes meaningful together with the contributions of each economic activity into overall output. According to Figure 6, the manufacturing sector leads all economic activities in the economy with its 16.5 % share in overall value added. This is followed by the wholesale & trade sector with 12.1 %. The transportation & storage (8.2 %) and the real estate (8.1 %) sectors come third and fourth respectively. The construction sector (7.2 %) ranks only sixth overall in its economic contribution. Interestingly, the agriculture sector, which employed 16% of individuals in the Survey of Income and Living Conditions in 2017, comes only after the construction sector with its 6.2% share in GDP. Implying the presence of *excess* employment in comparison with its low contribution to GDP, the agriculture sector poses *low* average productivity. **Hence, low average productivity and excess employment in agriculture raises the likelihood of being poor for those who earn income from agricultural economic activities.**

As the Covid-19 virus has been spreading all over the world, the expectation of the future state of the world economy has become less than promising. A recent forecast by the World Bank estimates a 5.2% contraction in world income in 2020. Turkey, on the other hand, is expected by the World Bank⁷ to grow 0.5 % (World Bank, 2020). This growth rate would, however, be insufficient for Turkey, which is currently in a struggle to cope with increasing unemployment and income distribution problems. Turkey, a country having one of the worse income distributions in the OECD, had been astonishingly successful in improving income inequalities, but it has lately failed to continue improvements (Bayar and Günçavdı, 2020). Unfortunately, this outbreak appears not be helpful in seeing further improvements in income distribution. In Figure 7 the trends of income distribution –measured by the Gini coefficient⁸- and the poverty rate⁹ can be seen together. A substantial improvement in inequality is apparent until 2014. Putting the 2008-2009 period of the sub-prime mortgage crisis aside, high economic growth can, to a great extent, account for this improvement. However, all these improvements in the end did not prevent Turkey from being among the worst performing countries in the OECD (OECD, 2019). Turkey’s performance seems to be much better in poverty than in income distribution. The number of households remaining under the poverty line seems to have continuously fallen and dropped to under 14 %. If the poverty ratio is taken as 18.5 % in 2006, then this overall improvement indicates an almost 5-point decline within 11 years.

(Figure 7 about here)

Another challenge for Turkey was the continuously rising unemployment rate in the economy before the outbreak started. The containment policy and insufficient fiscal response of the government would unfortunately not make this situation any better. Figure 8 shows three descriptive indicators of labour markets. They are namely the unemployment rate, employment rate and unemployment rate outside of the agriculture sector. These figures are collected by TurkStat, and announced monthly with a three-month lag. It must be noted that the labour market data for each month is in fact calculated as an average of the previous three months. The data for March 2020 for example is the average of January, February and March. The data in Figure 8 are obtained from the website of Turkish Statistical institute and include the latest figures for March 2020.¹⁰ March figures are particularly important because the outbreak was officially announced on the 11th of March 2020 by the *Minister of Health*, and it is followed by the implementation of the containment policies. Therefore, this latest announcement by *TurkStat* was the first data that partly contains the impacts of the outbreak on the Turkish labour market.

⁷ World Economic Outlook 2020.

⁸ The *Gini coefficient* is the well-known indicator of income distribution and takes a numerical value between zero and unity. As the coefficient approaches zero, it indicates an improvement in income distribution, vice versa. This data is taken from TurkStat.

⁹ The *Poverty rate* (Head-count ratio) is a simple ratio that shows the number of households below a pre-determined income level. This pre-determined income level is known as the poverty line, and it is taken as 50 % of the median income of entire household income. For instance, the threshold income level for the poverty line is only 7944 TL for 2017 (\$2176, calculated with 3.65 as the exchange rate for 2017).

¹⁰ Labour market data for March 2020 was announced on the 10th of June.

<http://www.tuik.gov.tr/PreHaberBultenleri.do?id=33787>

(Figure 8 about here)

Another important structural feature of the recent state of the labour market in Turkey is that the unemployment rate has been increasing for a long time, which has discouraged unemployed people from searching for a job. These people, however, are excluded from the labour force in calculating the unemployment rate. This is because they are considered as unemployed by choice. In the recent announcement of TurkStat, this new figure seems to have reached a record high¹¹ and causes a peculiarity in the unemployment data. It is clear in Figure 8 that unemployment rates successively show a declining trend, even in the period of the outbreak. This rather unexpected result immediately sparked a hot debate in public about the reliability of the data announced by TurkStat. The government, under the stress of deteriorating economic conditions, was accused of intervening in the data collection and calculating procedure.¹² The recent data announced by TurkStat indicates a fall in unemployment ratio from 13.6 % in February to 13.2 % in March. The same ratio had declined from 13.8 % in January. This puzzling result is actually a result of an increase in the number of people with no hope of finding a job and going out of the labour force. Even if unemployment increases, then the unemployment rate may decrease due to a larger decline in the labour force than in unemployment. Therefore, the employment rate, instead of the unemployment rate, would be an appropriate measure to show the actual situation in the Turkish labour market. From Figure 8, the employment rate has apparently been falling starting from August 2018. Besides, it seems that this decline sped up during the period of the outbreak. However, labour market data in August 2020 is needed to see the entire picture of the Covid-19 pandemic. Impacts of the outbreak on income distribution and poverty must be examined when new **Survey of Income and Living Conditions** data for 2020 become available only in 2022. This shortage of data causes the government to fail to see the extent of the entire damage that this outbreak caused. Besides, **the availability of data on the current state of unemployment, inequality and poverty may be of great help to the government in developing a timely and adequate response to the economic damage of the pandemic.**

Estimation approach and scenarios

Estimating the economic impacts of the Covid-19 pandemic is a difficult task, and various approaches have been implemented during the outbreak. Although they have their advantages and disadvantages, all estimate a drastic fall in income and employment in the Turkish economy. The most recent one, developed by Voyvoda and Yeldan (2020), possesses a very restricted structural framework of a **Computable General Equilibrium (CGE)** Model and imposes certain functional forms on macroeconomic relations. Even though the production technology of this model relies on the input-output table of Turkey available only for 2012, Voyvoda and Yeldan (2020) estimate 26.7% losses in GDP, and 22.8% losses in total employment.

¹¹ In the bulletin of March 2020, the number of people with no hope of finding a job exceeded 1 million people, and this corresponds to a 108.5 % increase from the same month in 2019.

¹² TurkStat is a public institution and administratively dependent on the government. However, TurkStat collects the data and uses common definitions which have been previously agreed on with Eurostat.

Taymaz (2020) provides another interesting study that benefits from a very restrictive **Leontief assumption** on the production technology, and employs the latest input-output table available only for 2012 with different scenarios on employment and income conditions. Despite this defect, Taymaz (2020) does not provide a promising picture of the Turkish economy in 2020. He predicted 19-29 % decline in non-agriculture labour demand under different impact scenarios, causing 4.2-6.5 million additional unemployed on top of the current 4.5 million. Unlike others, Taymaz (2020) also calculates the economic cost of compensating at least some of these deteriorations in income and employment, and predicts that 4% of GDP will be *sufficient* to eliminate half of the fallout in employment and income. Neither Voyvoda and Yeldan (2020) nor Taymaz (2020) assumes a second wave in the pandemic.

Two highly experienced economists and professors, Güven Sak and Fatih Özatay, on the other hand, use a **heuristic approach** by basing their model on the response of the Turkish economy to previous crises and estimating how much the economy may drift away from the trend before the outbreak. They propose a different scenario by assigning different impact factors on sectoral income and employment (Özatay and Sak, 2020). If the pandemic lasts for one year, Özatay and Sak (2020) estimate a 38% drop in GDP. This astonishing fall in GDP is also accompanied by losses in consumption of different goods. They assign a different impact factor to different consumption items by depending on the extent of the impact of the pandemic on different sectors. They also estimate a 20% fall in GDP if the effects of the outbreak last for six months and the second wave does not come about. **None of them, however, studies the impact of the pandemic on income distribution and poverty.**

Our analysis emphasizes measuring the effects of the Covid-19 pandemic on the income and employment status of individuals who are employed in different income generating sectors. It is assumed that each industry (or sector) is assumed to be influenced, to a different extent, by the pandemic, and different impact factors, accordingly, are assigned to each sector by calculating the extent of these impacts. Then, changes in employment and income level of households and individuals are calculated as the difference between the original *ad hoc* values of employment and income given in the **Survey of Income and Living Conditions** and those values obtained in the scenario-based generated hypothetical cases. The impact factors that are assigned to different sectors are pre-determined by looking at the responses of each sector after the outbreak of the pandemic. These observation-based impact factors are reported in Table 1.

(Table 1 about here)

These groups of sectors are already given by TurkStat and are available in the **Survey of Income and Living Conditions**. Individuals in households are employed in and generated an income from economic activities in these sectors. The effects of the lockdown on the economy immediately appeared in the service and service-related sectors. One part of retailing overwhelmingly increased their economic activities due to the sudden rise of online shopping. The health sector is another sector that outperformed during the pandemic, and the highest score is assigned to it. We predict the impacts of the pandemic on unemployment, income distribution, and the poverty rate in three different scenarios. Each scenario differs from the others by the presumed impacts of the pandemic which affects households through different channels. The impact factors in Table 1 show the extent of how each sector is

supposedly affected by the pandemic. Scenarios involve the channels of effects on different income type of households.

In **Scenario 1 (S1)**, for example, the immediate effect of the pandemic is assumed to be on casual work income because of the ease of laying off casual workers. Firms are assumed to maintain regular workers at work but to lay off casual workers as their immediate response to the pandemic. Therefore, only households earning *casual income* are affected by the pandemic according to the impact factors given in Table 1.

In **Scenario 2 (S2)**, all occupational groups and employment types are assumed equally to be affected by the pandemic, but differentiation occurs only among different sectors. Along with casual workers, regular wage earners are assumed to lose their jobs under this scenario. Presumed losses in income and employment are assumed to be by the amount given in Table 1 again.

Scenario 3 (S3) is a more *comprehensive* scenario than the others. In addition to assuming that the pandemic influences each sector differently (Table 1), we also assume that the impacts of the pandemic on each employment type also differ. Different impact coefficients are accordingly assigned to each employment type available in different sectors. Table 2 reports likely impact factors that we hypothetically assigned to each sector and each employment type.

We also assume that the pandemic is expected to last until the end of June without having the second wave. The economy is assumed to begin recovery from June onwards.

(Table 2 about here)

Measuring the impact of the Covid-19 outbreak on *employment and income*

Unlike other studies, our approach is a *microeconomic approach*, which attempts to directly measure the impacts of the Covid-19 pandemic on households. The **Survey of Income and Living Conditions** microdata in 2017 available for the public use was re-generated under different scenarios, and differences between actual and re-generated data on income, employment, inequality, and poverty were attributed to the effects of the pandemic. Before reporting the calculated results of our analysis, it must be noted that *TurkStat* announces the data of the **Survey of Income and Living Conditions** with a one-year delay. The survey data published, for example, in 2017 actually belongs to the income and living conditions of households in 2016. Therefore, the year 2016 will be taken as the initial terminal point in our empirical analysis. *Ex post* labour market indicators in 2016 and 2019 are reported in column one and two respectively.¹³ As noted in the previous section, the pandemic is assumed to last until the end of June 2020, and the condition of the labour market as of the end of June 2020 are shown in the third column. The indicators in this columns are *ex ante* values, and their *ex post* values will be available in September 2020. We projected the value of each indicator in June 2020 by using the monthly growth rates which are calculated from 2016 and 2019. The calculation is *implicitly* based on the assumption of how the labour market indicators would

¹³ The *Survey of Income and Living Conditions* microdata is available for 2016, having been published in 2017. Unfortunately, the same survey has not been published for 2019 yet, and the labour market indicators in Table 3 are the aggregate variables calculated by *TurkStat* and are taken from its website.

have evolved if there had been no pandemic. The impacts of the Covid-19 are finally calculated under Scenarios 1 and 2, and are given in the fourth and fifth columns, respectively.

(Table 3 about here)

There are several interesting results in Table 3. First, the number of unemployed labour increased from 4 million 536 thousand in 2016 to 4 million 709 thousand in 2019. This indicates almost a 3.8 % increase in unemployment. The unemployment rate in the second panel of Table 3 also shows 2.8-point increase. Second, unemployment would have increased by 0.6% by June 2020 even if the Covid-19 pandemic had not existed. And the number of the unemployed in the labour force is estimated to be 4 million and 738 thousand without any impact of the Covid-19 outbreak.

The most striking results, however, come about under the scenarios. Under **S1**, for example, casual employees are assumed to be laid off while regular employees are assumed to remain employed. The number of unemployed labour under **S1** is supposed to rise to almost 7 million from 4 million 469 thousand in 2019, indicating an almost 58 % increase in the number of unemployed labour from 2019 to 2020 under **S1**. The unemployment rate, calculated by excluding unpaid-family workers, is estimated to be 23.6 %, rising from 15.1 % in 2019. The employment capability of the entire economy without including unpaid-family workers is estimated to fall from 43 % in 2019 to 40.3 % in 2020 under **S1**.

Under **S2**, the Turkish economy is anticipated to perform even worse, and the number of unemployed labour is expected to increase to 9 million 958 thousand in 2020 under **S2**. This massive increase in unemployment comes about due to the assumption that allows for laying off regular and casual employees together, and means a 20.4% increase in the number of unemployed labour from 2019. The unemployment rate without including unpaid family workers, on the other hand, rises to 28.4 % in 2020 under **S2**. Besides, the employment rate drastically declines from 43 % in 2019 to 37.8 % in 2020 under **S2**.

(Table 4 about here)

Under a more comprehensive scenario, labour market outcomes are likely to be more dramatically affected than in the other scenarios. First, the number of unemployed individuals is likely to increase more than in the others, and reach 9 million 958 thousand. This corresponds to a sharp increase of 40.7 % in the number of unemployed in **S3**. Second, another drastic change can be expected in the employment rate, which shows job opportunities available in different circumstances. The employment rate, which was 43% in 2019, shows a sharp decline, and is expected to drop to 35.4% in 2020 according to scenario **S3**.

Table 4 shows the sectoral sources of losses in employment and income, and reports the extent of losses in total employment caused by *badly* and *very badly* affected industries. 32 % of total employment is in the badly and very badly affected industries, and this amounts to 6 million 800 thousand jobs. 39 % of total regular employees are also employed in these badly and very badly affected industries. 35 % of total casual employees also appear to be in these industries. Regular employees appear to lose approximately 3 million 500 thousand jobs, whereas only a loss of 1 million jobs is likely to take place for casual employees. Under the assumed-impact factors in Table 1, total employment also appears to fall from 28 million in

2019 to 21 million after the Covid-19 pandemic hits the Turkish economy. **The extent of this fallout in employment corresponds to a 24 % fall, which implies how serious the impact of the pandemic on employment and income distribution in Turkey will be.**

Table 4 also reports the extent of losses in the income of entrepreneurs and self-employed individuals. Entrepreneurs' income, for example in the very badly affected sectors, is estimated to decline by 70 %. The income of the same group is likely to fall 44 % in the badly affected sectors. The income of self-employed individuals is not much different from entrepreneur income. In the badly affected sectors, self-employment income is expected to be reduced by 75 %, whereas falling only 60 % in the badly affected sectors. **This finding indicates that losses in income of entrepreneurs and self-employed individuals are likely to be as bad as losses in the employment of the labour force.**

It must be noted that Table 4 also shows a positive development for the regular employees employed in the sectors where the effect is considered "very good". The employment level in these sectors is expected to rise 392 thousand under our assumed scenario given in Table 1. However, this increase in employment is not sufficient to compensate for the extent of losses in employment in the entire economy. We must also note the surprising rises in entrepreneurs' and self-employed individuals' income in the unaffected and "very good" affected sectors.

Measuring the impacts of the Covid-19 outbreak on *income distribution and poverty*

As Covid-19 hit the Turkish economy, it also exposed its various weaknesses. Income distribution is one of these weaknesses and had started long before the pandemic broke out. However, the pandemic can be expected to widen the existing disparities in Turkish society and to worsen the distribution of income. So far, none of the existing studies in the literature on the impacts of the Covid-19 pandemic has attempted to quantify its impact on income distribution in Turkey.¹⁴ The advantage of our research is the use of micro-level data from the **Survey of Income and Living Conditions**, which allows for a study measuring the likely impacts of the outbreak on income distribution.

(Table 5 about here)

Gini coefficients, a well-known measure of income distribution, are calculated for the different scenarios and reported in Table 5. The first column is a proxy indicator for the present state of inequality, which is calculated by the authors by using the **Survey of Income and Living Conditions** in 2017. *TurkStat*, however, announced the Gini coefficient for 2018

¹⁴ Although the pandemic broke out in March, there has been a substantial amount of research on its impact on the Turkish economy in a very short time. To the best knowledge of the authors, the majority of these studies have been an attempt to estimate likely output and employment losses (Özatay and Sak, 2020; Taymaz, 2020; Gürsel and Şahin, 2020; Bayar et al., 2020a, 2020b and 2020c). A study by Uysal (2020), for example, is an attempt to estimate the impact of the pandemic on employment in the *informal* economy. The study by Attar and Tekin-Koru (2020) emphasizes the different aspects of the pandemic in the context of countries infected by the Covid-19 virus. Generating a proxy variable for social distancing, they estimate the impacts of social distancing on economic activities in these countries, including Turkey.

as 0.408 which differs only at the third digit from the authors' calculation.¹⁵ The other columns show the states of income distribution that are likely to appear under different scenarios. From the most optimistic scenario (S1) to the most pessimistic one (S3), income distribution seems likely to worsen. The most striking result, however, appears in the case of S3, and it implies the Gini coefficient is likely to rise to 0.450. Despite this drastic rise, our analysis and methodology is not able to capture the exacerbating impacts on income distribution of some of measures that the government undertook. The Turkish government has undertaken various measures to compensate for losses in income and to control further deterioration in income distribution. Among others, increased employment protection by relaxing the short-term work allowance rule,¹⁶ a ban on layoffs by state subsidies for employees affected by the pandemic, two-third of workers' salaries paid by the government, and finally social assistance to families in need are expected to bring some relief for households badly affected by the economic impacts of the Covid-19 outbreak. However, these measures are widely seen as insufficient to fully cover all losses in income. Even so, it must be noted that our simulations under different scenarios do not take into account these cash support measures to households.

Direct cash support measures of the government have, to a great extent, been under stress due to the shortage of adequate finance. Before the pandemic broke out, the government had been under severe financial pressure and had had difficulty in sparing additional finance for the policy at the beginning of the outbreak.¹⁷ The Turkish government was smart enough to re-direct the financial burden of the pandemic to the shoulders of the financial market. In particular, the Central Bank of Turkey sharply increased the money supply (see Figure 3) to keep the financial markets as liquid as possible; low-interest loans have been made available for households and small-sized enterprises by the banking sector, particularly public banks. The purpose of these loans is to revive domestic demand hit badly by the pandemic. The real estate, vehicle trade, durable goods, and tourism sectors were given preference as the sectors to which additional spending was re-directed. However, the distributional effects of all these measures inevitably came about. First of all, all households do not have the same ability to access credit or the equal capability to pay it back. These differences certainly generate an uneven asset accumulation, and these measures implemented through the market have paved the way for unfair welfare gains by favouring *middle-* and *high-*income households through more and cheap consumption. Secondly, reviving domestic demand, particularly for non-tradable goods, brings about a rise in prices, and feeds higher prices in general in the economy. This channel of transmission eventually becomes important for a country already having a high inflation problem, without mentioning its impact on the real exchange rate.¹⁸

¹⁵ Until the time that this research was underway, the **Survey of Income and Living Conditions** data for 2018 was unavailable for our use. Although we have officially applied to *TurkStat*, the data is most likely to take some time to arrive to us. <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=30755>

¹⁶ As of April 22, there had been over 3 million applications to benefit from this allowance. The number is a very informative indicator of how serious the impacts of the pandemic will be on household income. <https://www.aa.com.tr/tr/turkiye/bakan-selcuk-kisa-calisma-odenegine-su-ana-kadar-3-milyonu-askin-basvuru-oldu/1814696>

¹⁷ According to Elgin *et al.* (2020), Turkey's financial size of the fiscal measure is estimated as 2 % of GDP.

¹⁸ A change in the sectoral composition, particularly in favour of non-tradable goods, distorts relative prices, and eventually creates pressure on domestic currency to rise. In the case of Turkey, the government has not recently been keen on allowing an increase in nominal foreign exchange and has

Our simulation is unable to capture these impacts on inequality, but we expect that they certainly bring about a worsening effect on income distribution.

(Table 6 about here)

Table 5 indicates that there is more likely to be a drastic rise in inequality under the conditions depicted by **S3**. The calculated level of the Gini coefficient in **S3** can also be taken as the baseline level of inequality, and we must note that there is high probability of having an even higher level than this baseline inequality when taking into account the impacts that our simulation is unable to capture. Another important issue in this regard is to examine which income source best accounts for this drastic increase in inequality. The *Shorrocks decomposition* of an inequality measure, like the Gini coefficient, is a well-known method, and we employ it in this section.

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.¹⁹ Assuming that Y_k is the income of an individual in the income category of k , total income can be written as follows:

$$\sum_{k=1}^k Y_k = Y \quad (1)$$

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

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

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 to total income inequality. Also it can easily be defined as a proportion, s_k , as follows:

$$s_k = S_k / I_2(Y) \quad (3)$$

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

$$\sum_{k=1}^k s_k = 1 \quad (4)$$

Equations (1)-(4) define the Shorrocks decomposition method that is to be employed in this section.

occasionally been intervening in the foreign exchange market by selling foreign exchange from public banks-backed up by the Central Bank. High import dependence and the indebtedness of the private corporations in foreign exchange could be considered as the reasons for these interventions by the government.

¹⁹ 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.

We define eight different income sources available in *TurkStat's Survey of Income and Living Conditions* as seen in Table 6. There are three panels in Table 6. The first on the top is the proportional contributions of income sources into a change in inequality. The second in the middle is the shares of each income source in total income; they are used to adjust the contribution of each income group, given in the first column, according to their income shares. The last panel at the bottom of Table 6 shows the relative inequality indicators; and each value in this panel is, in fact, the proportional contribution of each income group into a change in inequality adjusted by their income shares.

The first columns, on the other hand, are the values at the initial condition without considering the impact of the pandemic. The values in the second columns shows the new values of each corresponding variable after the COVID-19 pandemic started. Important information that has to be noted at this stage is that the relative inequality contributions calculated by the Shorrocks decomposition method is a *static* approach, and each value in the columns must be considered within the condition given in this column. In other words, it would be wrong to compare the values in the first and second column with each other.

A positive value in columns in the top and the bottom panels shows a positive contribution of an income source to inequality, *vice versa*. Before adjusting the contribution of each income group by their income shares, entrepreneur, labour and financial earnings are the most distinctive income groups that contribute to inequality positively in the initial state of the economy.²⁰ The same sectors, along with others, continue to contribute to inequality positively even after the Covid-19 outbreak.

However, the results in Table 6 cannot be considered as an explanation of how the Covid-19 pandemic affected income distribution through the contributions of different income groups. Jenkins (1995) proposes a *dynamic* decomposition method that allows us to estimate the dynamic contributions of each income groups into a *change* in inequality from one year (or state of the economy) to another. 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 $(t+\Delta t)$ as follows:

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

where Δ indicates changes in inequality level; Δt shows the time interval between two terminal years of the surveys in the examination. Depending on the availability of data, the interval in empirical studies would be a time period covering a number of years with particular start and end years. In our empirical study, the time interval is taken either as one year, or in the same case as an electoral period, covering four years in the Turkish case. The percentage change in inequality that we calculate for the Turkish economy can also be derived from (5) as follows:

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

where ∇ , instead of Δ , shows the percentage change in inequality. We apply (1)-(6) to the original and *hypothetical* Survey of Income and Living Conditions data generated under **S3**.

²⁰ This result is similar to those in Bayar and Günçavdı (2020).

(Figure 9 about here)

The results are depicted in Figure 9. Figure 9 shows the positive contributions of almost all income groups, except entrepreneurial income, into the change in inequality between the states before and after the outbreak. The pandemic is most likely to worsen income distribution by increasing the contributions of almost all income groups to this deterioration.²¹ However, the contributions of two income groups, namely labour and entrepreneurial income groups, are likely to cause the most distinctive effects in the change in inequality. Both impacts are in *opposite* directions though. In the results in Figure 6, labour income is likely to increase inequality, and accounts for almost 14 % of the change in income distribution. This is mainly because the pandemic affects mostly both low-income regular workers and casual employees and worsens the within-group distribution by reducing income of relatively low-income employees more than that of high-income workers. This asymmetric distributional impact is partly a reflection of our expectation according to which we simulate the sectoral impact factors, and it is also the *ex post* results of what we have observed in the market (see Gürsel and Şahin, 2020 and Uysal, 2020).

The most striking result of our simulation appears in the impact of the entrepreneurial income group, which leads to an improving effect on overall inequality. In Figure 9, this effect is likely to cause a 16.1 % reduction in the change in inequality. **This improvement must not be considered as a positive impact of the pandemic, but it should rather be attributed to the structure of the entrepreneurial income group.** As clearly seen in Figure 10, the great majority of enterprises consist of small companies which employ less than 11 employees. Almost 90 % of these companies can be considered as artisans, and they have been more likely to be affected by the pandemic and impacted to a much greater degree than others (see TURKONFED, 2020). Most probably, some of these enterprises have gone out of business since the pandemic broke out, and then the share of the small enterprises would likely be reduced, and the distribution of the entrepreneurial income group become much better than before. This improvement in distribution is actually a clear indication of how seriously the entrepreneurial income group, most particularly small enterprises, has been affected by the pandemic and the containment policy.

(Figure 10 about here)

Poverty

The impacts of the Covid-19 pandemic and containment policy measures can be examined by calculating both headcount and poverty gap ratios. The former shows the number of poor households whose income remains under a pre-determined income level. This reference income is pre-determined as 50% of median income from the **Survey of Income and Living**

²¹ Jenkins decomposition is usually applied to understand the sources of a change in inequality between two distinctive points in time. Unlike this conventional usage of this decomposition, we attempt to distinguish the sources of a change in income distribution between two different states of the economy and to estimate the main sources of a change in inequality between the states of the economy before and after the Covid-19 outbreak. In this estimation we consider each state of the economy as if it is the data from a different year. The main source of the change between these states of the economy can certainly be attributed to the impacts of the Covid-19 pandemic, as we have done here.

Conditions in 2017. This income level is then brought to the level in 2020 through adjusting for inflation. In Table 5, the poverty ratio for the present state of the economy is 0.404 and it is most likely to rise to 0.450 under the most comprehensive **S3**. **This scenario indicates a likelihood of a huge increase in poverty.**

The second measure is the poverty gap ratio and shows how severe being poor is. The poverty gap ratio in fact measures the distance of the income level of poor households from the poverty line; the longer the distance is, the more severe being poor is. A high poverty gap ratio is also considered as a high cost of reducing the severity of poverty. Any policy to reduce the severity of poverty necessitates more financial resources to bring the income level of poor households close to the level of the poverty line. **In the case of having a high poverty gap ratio, the cost of combating poverty by reducing its severity would inevitably be high** (see Foster *et. al.*, 2010).

In Table 5, the poverty gap ratio in the present condition is 26.4 %, but it is expected to increase to 43.9 % under **S3**. This is a clear indication of how new economic conditions after the outbreak may lead to a 62.9 % jump in the severity of poverty. This predicted high level of a poverty gap would require a tremendous amount of funding to reduce its severity.

(Figure 11 about here)

Increased poverty has been a concern of policy-makers all over the world, and sustainable and inclusive growth is considered to be necessary for recovery. However, **the deterioration in poverty to the extent seen under S3, and drastic jumps in the poverty gap ratio immediately reveal a need for concern about distributional policies.** To decide how vital, the distributional policy in the Turkish case is, it would have to be possible to calculate the contributions of both economic growth and redistribution into a change in poverty. For the time being, the Datt-Ravallion method of decomposition is the best method that can be used for this purpose (see Datt and Ravallion, 1992). According to this approach, changes in poverty can be decomposed into two distinctive components, namely economic growth and distributional components:

$$\Delta P = G(t, t + \tau; r) + D(t, t + \tau; r) + R(t, t + \tau; r) \quad (7)$$

where ΔP is the change in the poverty rate; G and D are growth and re-distribution components respectively, R stands for the residual term, and r is the reference year. According to (7), changes in poverty stem from two sources; namely *i*) growth in income (the **economic growth effect, G**) and *ii*) changes in within-group income distribution (the **distributional effect, D**).

Both measures of poverty, namely the headcount ratio and poverty gaps, are decomposed into their growth and redistribution components as in (7), and the results are reported in Figure 11. The left-hand side of Figure 11 shows a change in the headcount ratio together with its growth and redistribution components, whereas the components of the poverty gap ratios and a change in it are placed on the right-hand side of Figure 11. It seems that the size of the change in the headcount ratio is higher than that of the poverty gap ratio. Besides, **the contributions of the re-distributional component are more dominant in both cases.** This can be taken as an indication that the distributional policies would be a more effective policy than the policy of stimulating economic growth alone.

Conclusion and Policy Implications

As the Covid-19 virus spread all over the world, it hit the world economy in an unprecedented way, and it has prompted many governments to introduce unusual policies and measures to cope with the undesirable impacts of the outbreak. Despite all these efforts, the world economy is expected to shrink a 5.2 % in global GDP (World Bank, 2020). In the same report, Turkey is also expected to contract 3.8 % in 2020.

Governments all over the world have introduced unusual measures and implemented policies to deal with the economic consequences of the pandemic. As the size and the scope of these measures became the concern of public debate, observers have occasionally accused many governments of doing little and acting too late. Although international institutions such as the World Bank warn governments of the danger of increased inequality and poverty problems, governments have mostly chosen policies that aim at both economic stability and promoting economic growth. In its latest outlook of the world economy, the World Bank estimates that the Covid-19 outbreak will cause millions of people all over the world to fall into extreme poverty. The recent simulation of the Bank forecasts that 40-60 million people - most of them from Sub-Saharan African and South Asian Countries- face this danger of falling into extreme poverty (World Bank, 2020).²²

So far, Turkey has put its emphasis on the policies focusing on stabilising the economy and the promotion of the measures undertaken along with these policies, but this approach has received a great deal of criticism. Deterioration in the fiscal stance of the economy, which had started before the pandemic broke out, has become the main obstacle in implementing far-reaching containment policies and fiscal stimulus in the economy. Turkey has already spared approximately 2 % of GDP to finance the proposed fiscal stimulus and containment policy.

Various studies in the literature are based on the different assumptions of the occurrence of impacts of the pandemic, and accordingly estimate the financial size of these policy measures depending on the likely impacts of the pandemic on economic activities and employment. However, present studies in Turkey have all overlooked the impact of the Covid-19 pandemic on income distribution and poverty. The aim of the present study is to initially fill this gap and to estimate the likely impact of the outbreak on employment, income distribution and poverty. Unlike the studies in the literature, the present study proposes different scenarios regarding the occurrence of the impacts of the pandemic through industries. In addition to the sectoral impacts of the pandemic, we also propose *hypothetical different shocks to the labour markets (S3)*. Under this relatively comprehensive scenario, the pandemic in Turkey is likely to increase the unemployment rate without unpaid family workers to 33 % under **S3** from 15.1 % in 2019. In addition to these astonishing results, falls in employment as well as entrepreneurial and self-employment income are likely to be drastic. Entrepreneurial and self-employment income, for example, are estimated to decline by 70 % or even more than 70 % in 2020. According to our empirical analysis, labour and entrepreneurial income groups are two distinctive income groups that are affected by the pandemic. Both groups are likely to have the largest contributions to change in income distribution. We show that the pandemic worsens income distribution by an increase of 5 % in the Gini coefficient. Our empirical examination also reveals that the entrepreneurial income group and labour income group are

²² According to the World Bank, extreme poverty is the situation of a household or an individual living on \$1.9 per day.

likely to be the most negatively affected income groups as a result of the pandemic. In particular, small size-artisan business enterprises are likely to be affected more than others. The result also implies that various fiscal supports given to these small-artisan business enterprises would be appropriate.

Our empirical investigation also reveals that there is a danger of an increase in the poverty rate and the severity of poverty due to the pandemic. This finding implies that macroeconomic policies reviving economic growth must be as *inclusive* as possible for the mostly-affected groups. Besides, macroeconomic policies should be accommodated with the policies at the micro level. It seems that Turkey is most likely to require a *re-distributional policy* to control a drastic increase in poverty. To reduce the severity of being poor in the short term, the poor households are in need of a financial support. A direct cash support programme or a more formal framework of an income support system, such as *basic income*, would help for this purpose.

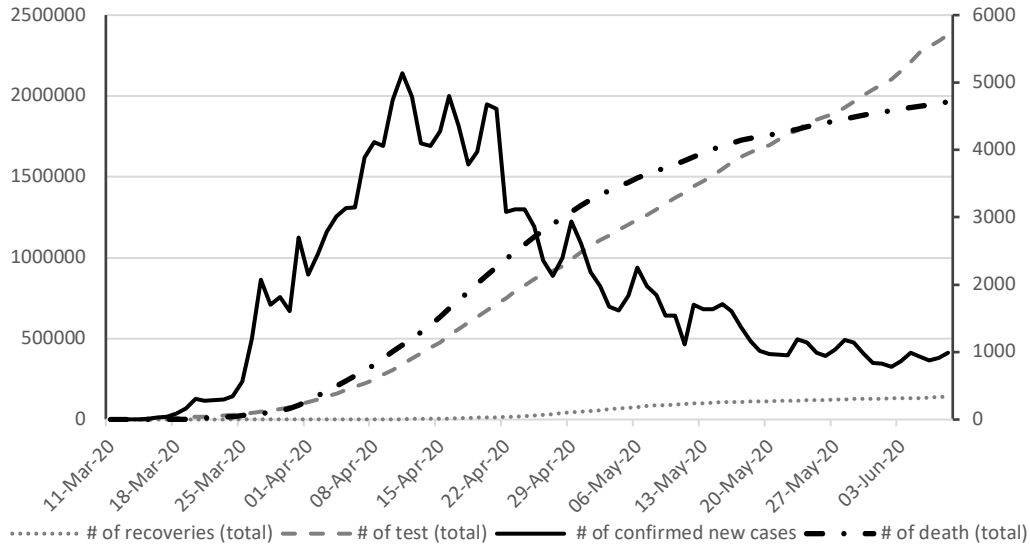
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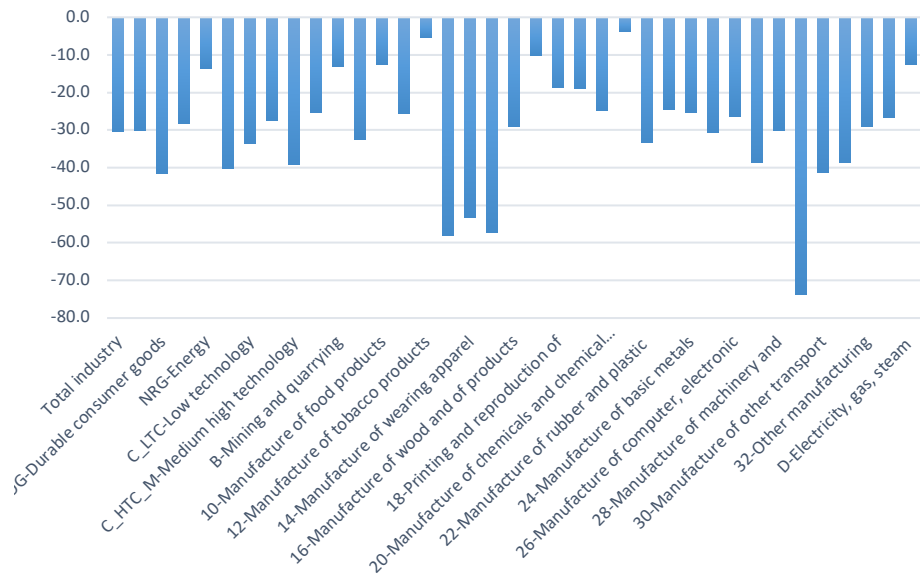
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Figure 1 - COVID-19 cases and deaths in Turkey, nationwide



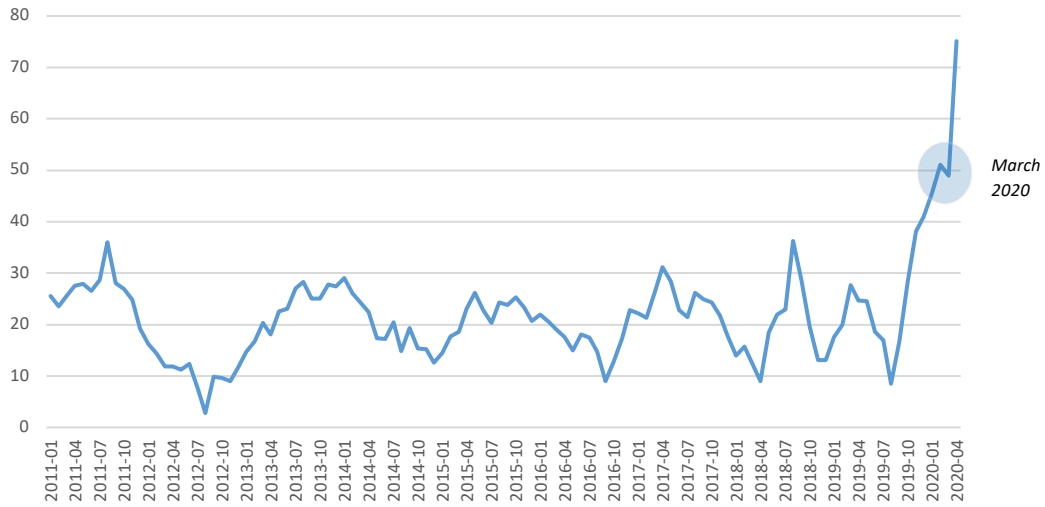
Source: The Ministry of Health via https://en.wikipedia.org/w/index.php?title=Template:COVID-19_pandemic_data/Turkey_medical_cases&veaction=edit

Figure 2 - Changes in production index in April 2020 (%)



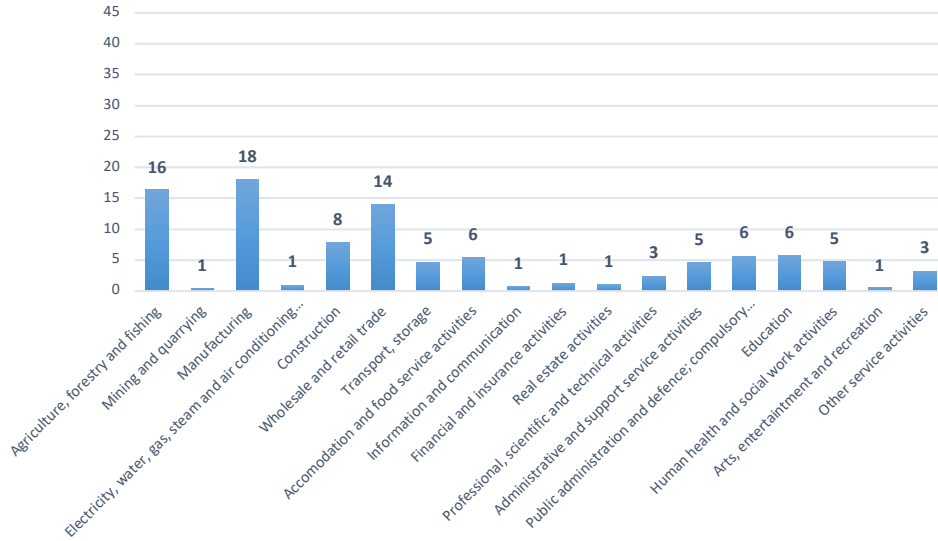
Source: Turkish Statistical Institute website database, Industrial Production Index, April 2020.

Figure 3 - Money supply, annual changes - M1 (000TL)



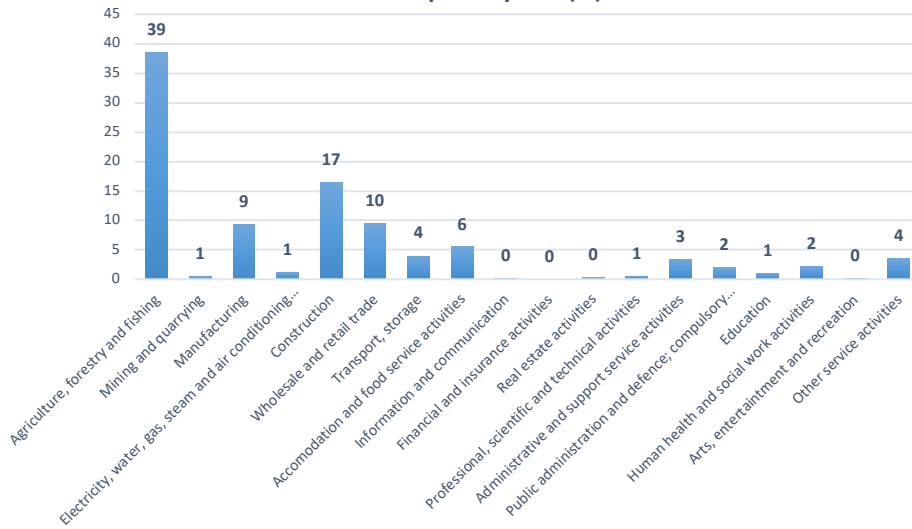
<https://evds2.tcmb.gov.tr/index.php?/evds/serieMarket>.

Figure 4 - Sectoral distribution of individuals employed in households (%)



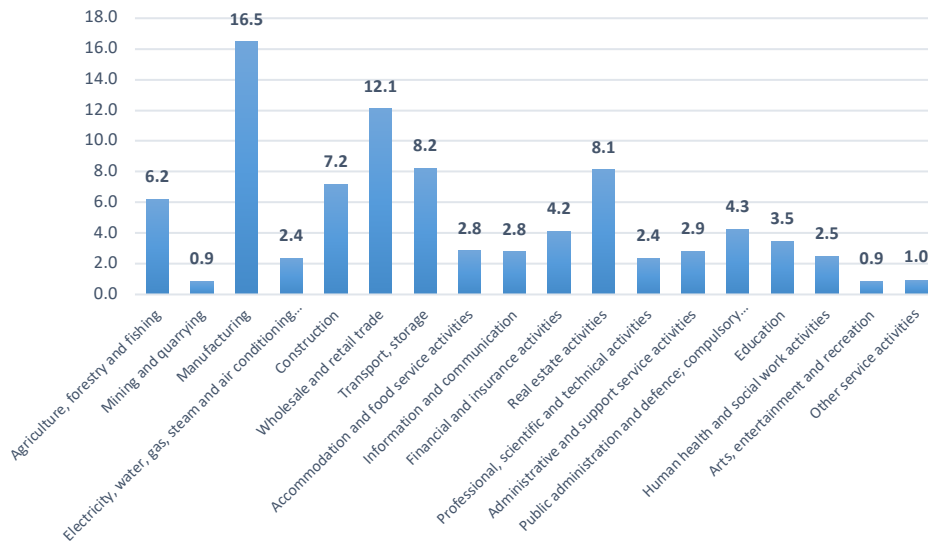
Source: Authors' calculation based on SILC 2017 microdata

Figure 5 - Sectoral distribution of individuals employed in households under the poverty line (%)

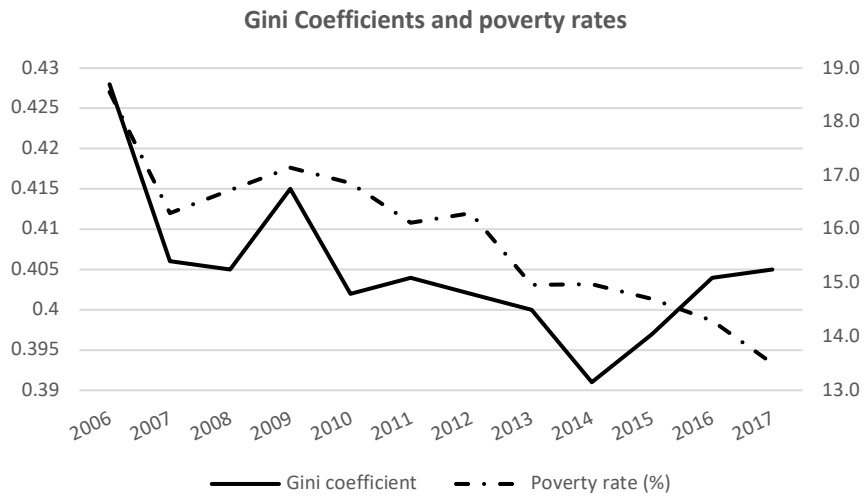


Source: Authors' calculation based on SILC 2017 microdata.

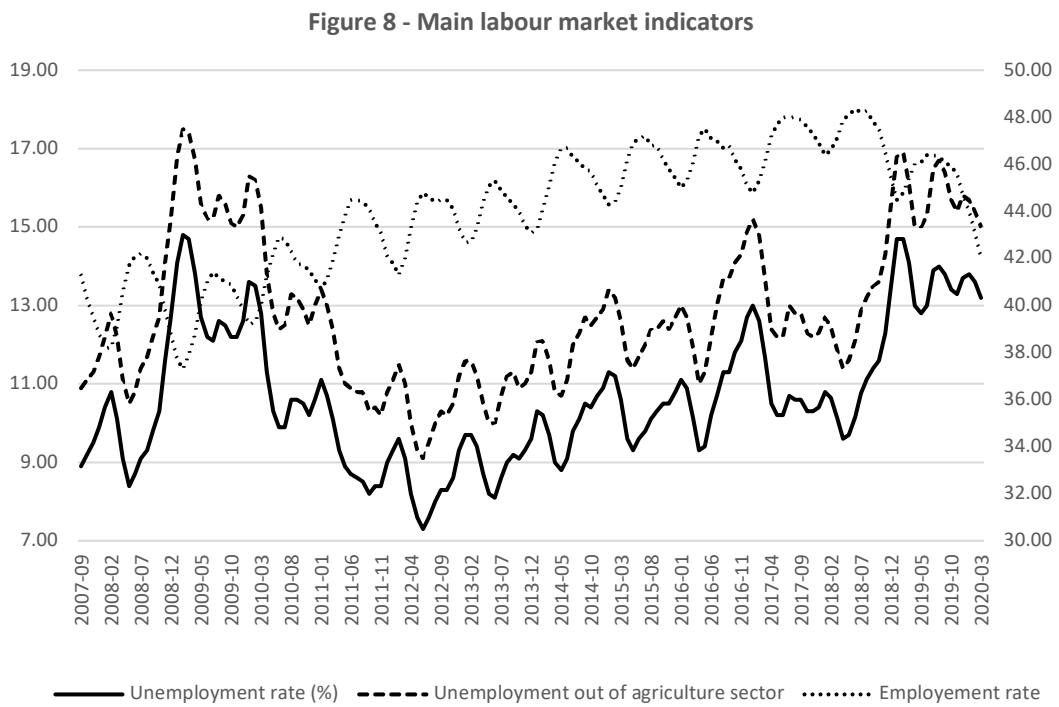
Figure 6 - The shares of economic activities in GDP (%)



Source: Turkish Statistical Institute website database.

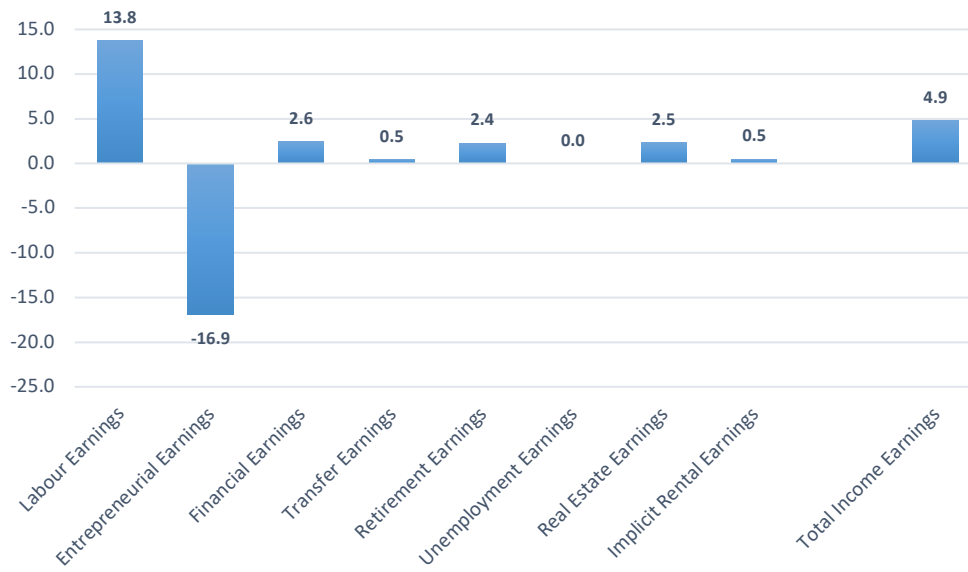


Source: Income Distribution and Living Conditions and Poverty Statistics, TurkStat website database.



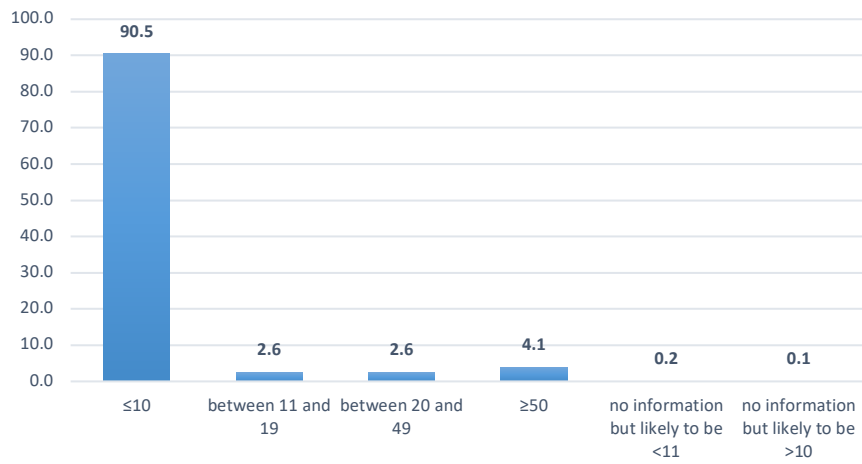
Source: Labour Force Statistics, Turkish Statistical institute website

Figure 9 – Jenkins decomposition results based on S3



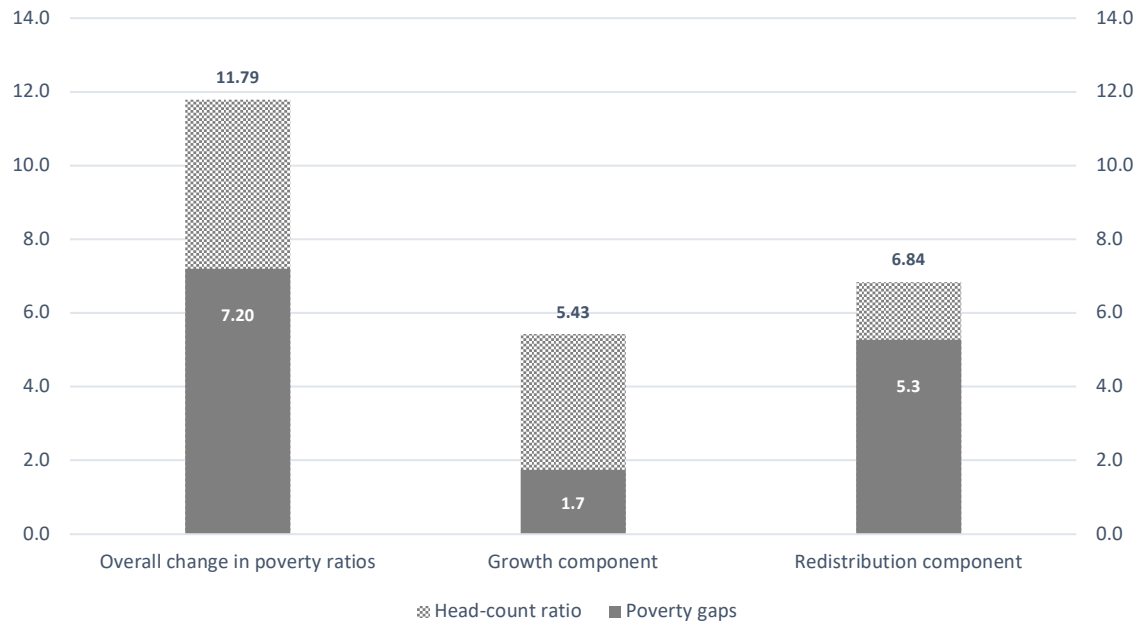
Source: Authors' calculation based on SILC 2017 microdata.

Figure 10 - The sizes of business within the entrepreneurial income group - # of employment (%)



Source: Authors' calculation based on SILC 2017 microdata.

Figure 11 - The decomposition of poverty measures - Datt-Ravallion decomposition



Source: Authors' calculation based on SILC 2017 microdata.

Table 1 - Sectors and their hypothetical impact factors

Sectors	Assigned impact factors	
1	Agriculture, forestry and fishing	Normal (3)
2	Mining and quarrying	Normal (3)
3	Manufacturing	Bad (2)
4	Electricity, water, gas, steam and air conditioning supply	Normal (3)
5	Construction	Very bad (1)
6	Wholesale and retail trade	Good (4)
7	Transport, storage	Normal (3)
8	Accommodation and food service activities	Very bad (1)
9	Information and communication	Very good (5)
10	Financial and insurance activities	Bad (2)
11	Real estate activities	Very bad (1)
12	Professional, scientific and technical activities	Bad (2)
13	Administrative and support service activities	Bad (2)
14	Public administration and defence; compulsory social security	Normal (3)
15	Education	Normal (3)
16	Human health and social work activities	Very good (5)
17	Arts, entertainment and recreation	Very Bad (1)
18	Other service activities	Bad (2)

Table 2 – Hypothetical shocks to labour market (Scenario 3)

		<i>LIKELY LOSSES IN EMPLOYMENT</i>	
		<i>I</i>	<i>II</i>
		<i>Regular employee</i>	<i>Causal employee</i>
1	Agriculture, forestry and fishing	0.1	0.3
2	Mining and quarrying	0.4	0.4
3	Manufacturing	0.4	0.8
4	Electricity, water, gas, steam and air conditioning supply	0.2	0
5	Construction	0.6	0.8
6	Wholesale and retail trade	0.2	0
7	Transport, storage	0.3	0.1
8	Accommodation and food service activities	0.6	0.8
9	Information and communication	0	0
10	Financial and insurance activities	0.3	0.8
11	Real estate activities	0.7	0.8
12	Professional, scientific and technical activities	0.4	0.8
13	Administrative and support service activities	0.3	0.8
14	Public administration and defence; compulsory social security	0	0
15	Education	0	0
16	Human health and social work activities	-0.3	-0.3
17	Arts, entertainment and recreation	0.7	0.8
18	Other service activities	0.5	0.8

Source: Authors' assumptions based on SILC 2017 microdata.

Table 3 – Summary information on the labour market

	2016	2019	June 2020	S1	S2	S3
Population (000)	79,800	83,200	83,781	83,781	83,781	83,781
Population at working age	58,720	61,469	61,940	61,940	61,940	61,940
Labour force	30,537	32,549	32,897	32,897	32,897	32,897
Employment	27,205	28,080	28,229	26,688	25,241	23,809
Employee	18,377	19,216	20,180	18,394	16,947	15,514
Employer	1,239	1,253	1,255	1,130	1,130	1,130
Self-employed	4,536	4,709	4,738	4,265	4,265	4,265
Unpaid family worker	3,053	2,902	2,900	2,900	2,900	2,900
Unemployed	3,332	4,469	4,693	7,078	8,525	9,958
<i>Labour market indicators (%)</i>						
Unemployment rate	10.9	13.7	14.3	21.5	25.9	30.3
Employment rate	46.3	45.7	45.6	43.1	40.8	38.4
Dependency rate	34.1	33.8	33.7	31.9	30.1	28.4
<i>Labour market indicators excluding unpaid-family workers¹ (%)</i>						
Unemployment rate	12.1	15.1	15.6	23.6	28.4	33.2
Employment rate	43.4	43.0	42.9	40.3	37.8	35.4
Dependency rate ²³	30.3	30.3	30.2	28.4	26.7	25.0

Source: Authors' calculation based on SILC 2017 microdata.

Table 4 – Income and output losses in affected industries

	Very bad (1)	Bad (2)	Normal (3)	Good (4)	Very good (5)	TOTAL
Total employment	2,287,000	4,539,400	10,974,100	1,646,000	1,886,100	21,332,600
# of regular employees	1,121,800	3,687,400	4,077,500	1,645,000	1,822,100	12,353,800
# of causal employees	188,200	59,000	445,600	1,000	9,000	702,800
<i>Changes in employment and income (number of people and %)</i>						
Losses/gains in regular employees	-1,625,200	-1,657,600	-691,500	0,00	392,000	-3,582,300
Losses in causal employee	-752,800	-220,000	-110,400	0,00	0,00	-1,083,200
Losses/gains in entrepreneur income	-70.00	-44.00	8.00	0.00	15.00	
Losses/gains in self-employed income	-75.00	-60.00	3.00	0.00	10.00	

Source: Authors' calculation based on SILC 2017 microdata.

²³ The *dependency ratio* is a measure of the number of dependents aged zero to 14 and over the age of 65, compared with the total population aged 15 to 64. A higher dependence ratio indicates an increased burden of dependent population on the working group in the economy.

Table 5 – Income distribution and poverty measures under different scenarios

	<i>Presumed Present condition</i>	<i>S1</i>	<i>S2</i>	<i>S3</i>
<i>Gini Coefficient</i>	0.404	0.424	0.423	0.450
<i>Headcount Ratio P₀ (%)</i>	13.2	17.5	18.6	24.9
<i>Poverty Gap P₁ (%)</i>	26.4	36.9	33.8	42.9
<i>Poverty Line (TL)</i>	7,983.4	7,983.4	7,983.4	7,983.4
<i>Poor (thousand)</i>	10,385	13,773	14,640	19,604
<i>Total Population</i>	78,795,330	78,795,330	78,795,330	78,795,330

Source: Authors' calculation based on SILC 2017 microdata.

Table 6 – Contributions of income sources to changes in inequality: *Shorrocks Decomposition*

<i>Sources of income</i>	<i>Initial Distr.</i>	<i>S3</i>
<i>(1) Proportionate contribution of factor incomes to total inequality</i>		
<i>Labour-income earnings</i>	30.98	42.47
<i>Entrepreneurial-income earnings</i>	40.12	22.04
<i>Financial-income earnings</i>	11.53	13.39
<i>Transfer-income earnings</i>	0.56	1.04
<i>Retirement-income earnings</i>	5.66	7.61
<i>Unemployment earnings</i>	0.23	0.25
<i>Real Estate Earnings</i>	8.84	10.71
<i>Implicit Rental Earnings</i>	2.04	2.45
<i>(2) Factor shares in total income (%)</i>		
<i>Labour-income earnings</i>	46.31	44.16
<i>Entrepreneurial-income earnings</i>	17.93	14.50
<i>Financial-income earnings</i>	2.66	3.08
<i>Transfer-income earnings</i>	5.49	6.35
<i>Retirement-income earnings</i>	11.82	13.66
<i>Unemployment earnings</i>	0.52	0.60
<i>Real Estate Earnings</i>	9.02	10.43
<i>Implicit Rental Earnings</i>	6.22	7.19
<i>Relative inequality indicator ((1)/(2))</i>		
<i>Labour-income earnings</i>	0.67	0.96
<i>Entrepreneurial-income earnings</i>	2.24	1.52
<i>Financial-income earnings</i>	4.33	4.35
<i>Transfer-income earnings</i>	0.10	0.16
<i>Retirement-income earnings</i>	0.48	0.56
<i>Unemployment earnings</i>	0.44	0.42
<i>Real Estate Earnings</i>	0.98	1.03
<i>Implicit Rental Earnings</i>	0.33	0.34

Source: Authors' calculation based on SILC 2017 microdata.