

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

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ABSTRACT

In the recent World Economic Outlook, the IMF indicates that world output shrank by 3.5% in 2020. Despite all pessimistic expectations, the Turkish economy was one of the few countries to have a positive, albeit low, economic growth rate in 2020. This was, however, achieved at the expense of high social and economic costs. The present research examines the distributional costs of this economic growth during the pandemic and suggests economic measures required to control them. The empirical examination is based on generating unavailable income and living conditions for 2020 by using the results available in TurkStat's 2017 Income and Living Conditions Survey. The actual changes in sectoral output and employment, which are available as of March 2021, are used to generate changes in the income levels of households in TurkStat's 2017 survey. The research empirically shows that adequate fiscal support with a large scope for households and businesses is necessary to compensate for economic losses caused by the pandemic. The short-run working allowance policy appears to have been very important to improve income distribution, which might have deteriorated due to the pandemic. Direct cash support to households is considered another essential policy measure that is required to mitigate the severity of increased poverty.

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1. 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 the 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 initially seems to have been sufficient to prevent the country from facing a tragedy like some European countries such as Italy, Spain and the UK experienced during the pandemic. Despite the lack of sufficient financial resources to compensate for the economic loss that the pandemic caused, at first Turkey performed relatively well in implementing containment measures

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compared to other countries in Europe.¹ However, as the economic burden of the pandemic piled up, the government failed to maintain the lockdown measures. In the end, it could not resist the pressure from business owners and sectoral representatives from the tourism and service sectors and had to open up the economy. Restrictions on movement domestically were lifted in June 2020 together with other containment measures. The worst had been experienced in the first quarter, and the economy began to revive significantly in the summer of 2020, but at the expense of a rising number of infected people and deaths due to the Covid-19 virus from October.

What happened economically after the outbreak was not new for Turkey, but could be regarded as another development causing the existing economic outlook to 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 from the general public. Due to the high unemployment rate, a highly unstable exchange rate and low economic growth rates, support for the government's economic policies had increasingly started to erode before the outbreak. Initially, its good management of the outbreak and containment policy won praise, but the economic problems inherited from the past left the government insufficient room to manoeuvre to regain the public's confidence in handling the economy. In particular, insufficient economic growth has been a worrying development in recent years and sparked unemployment problems, together with serious concerns about the distribution of income. The outbreak has in no way helped the government in finding sustainable solutions for dealing 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 policymakers of the danger of increasing inequality and poverty. According to the [World Bank \(2020\)](#), 40–60 million people are in danger of falling into extreme poverty, mostly in sub-Saharan and South Asian countries. In the midst of unprecedented contractions in economic activities and extraordinary jumps in unemployment rates, policymakers all over the world have introduced massive fiscal measures. However, reviving economic growth has, to a great extent, been the main concern, while the impact of the pandemic on inequality and poverty has been widely ignored. This is also true for Turkey.

Turkey has been in a low growth era for some time, growing by only 0.9% in 2019, for example. Despite the World Bank's estimate of a fall in GDP by 3.8% in 2020, Turkey was able to achieve a positive, albeit small growth rate. The recent announcement of TurkStat shows that economic growth in 2020 was 1.8%, which can be considered a rare example of positive growth in today's world economy during the pandemic. This was, however, extremely costly ([TurkStat, 2021](#)). Turkey relied excessively on credit expansions and keeping financial markets repressed over the whole of 2020 to achieve this exceptional positive but low growth rate, with the Central Bank losing \$128 billion in foreign exchange reserve. The indebtedness level of the non-financial private sector and households also increased substantially, which in turn increased the need for high growth rates in subsequent years to depreciate this debt stock.

However, the growth rate is insufficiently high to deal with existing economic problems such as low employment capability, income inequality and poverty. Most importantly, it has been clear for a long time that economic growth led to low employment, and today's low economic growth performance has therefore inevitably paved the way for a deterioration in employment and income distribution. Additionally, the pandemic worsened all these problems for several reasons. *First*, the Turkish government's fiscal capability to introduce comprehensive and inclusive fiscal measures to manage the adverse effects of the outbreak on sources of increasing inequality is very limited. This is, in fact, the reason why the Turkish government relied excessively on costly credit expansions together with low interest rates. *Second*, many people are employed in the informal sector, and the measures to control the spread of the pandemic endanger the sustainability of their income flow. [Gürsel et al. \(2021\)](#) show that informal employment seems to have declined drastically during the pandemic. Accordingly, the ratio of non-agricultural informal employment to non-agricultural total employment first declined from 21.5% in January 2020–17.3% in April, then rose slightly to 18% in November. The size and 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 policymakers in Turkey are likely to increase the risk of greater inequality. Easing access to cheap credit can account for uneven asset accumulation mainly because not all households have equal capability to access 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 and low-skill households are to a great extent left alone to deal with the risk of poverty. However, this risk can only be avoided either by 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 this 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 order to design appropriate policies in a timely fashion, it is crucial to observe the economic outcomes of the pandemic and the policy response of the government. The performance of employment and economic growth can easily be observed in the short run mainly because these data become available at the macroeconomic level early on in the subsequent year. The impacts of the pandemic on income distribution and poverty, however, require data collection at the microeconomic level regarding the living conditions of households during the pandemic. In the data calendar of TurkStat, these data will, unfortunately, become available no

¹ From the eruption of the pandemic, there has been widespread distrust regarding the accuracy of the official numbers of infected persons and deaths announced by the Minister of Health. There has been continuous inconsistency between the official numbers of patients and those announced by various independent medical bodies. It is notable that the Turkish Ministry of Health was once exposed to criticism from the World Health Organisation (WHO) regarding the accuracy of the official numbers.

earlier than 2022. It is therefore important to *simulate* the likely impacts of the pandemic on income distribution and poverty by using already *realised* values of sectoral output and employment without waiting for another year at least.

The Turkish government has been unable to come up with a satisfactory public support policy to overcome the increased economic burden of the pandemic on households and businesses. The short-term working allowances were, although insufficient and with a relatively narrow scope, the most distinctive policy measure implemented during the pandemic. The second aim of the paper is to examine how different fiscal measures, such as short-term working allowances and direct cash supports to households and businesses in need, are crucial in mitigating the distributional consequences of the pandemic.

The rest of the paper is structured as follows. The next section summarizes Turkey's policy responses to the pandemic. The economic outlook of Turkish households is examined in Section 3. A brief discussion on the estimation approach is introduced in Section 4. Section 5 describes how we generate data on changes in income and living conditions in 2020 that are not readily observable at the moment. Section 6 empirically reports the distributional consequences of the pandemic. Finally, Section 7 is devoted to conclusions and policy implications.

2. Turkey's policy response to the outbreak

2.1. The spread of the virus and containment measures

Covid-19 has led to an extraordinary hit in economic activities and caused a need for huge fiscal expenditure to compensate for the damage that economies confronted after the outbreak; the higher the damage, the more fiscal expenditure was required. The fiscal response of governments during extraordinary circumstances like these varies both in the scope and size of the fiscal expenditure, and depends on the 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 also generate great economic costs. Some governments cannot afford such huge costs and choose to postpone measures. Expectedly, such a poor and untimely response increases the death toll of the pandemic (Baldwin and Weder di Mauro, 2020).

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

As the spread of the Covid-19 virus slowed down toward the summer of 2020, this was taken as the excuse for removing the lockdown and travel bans. But the pandemic revived drastically at the end of the summer. Until November, the Turkish Minister of Health used to announce information on symptomatic new cases and was able to hold the numbers as low as possible. However, the WHO warned its Turkish counterpart to announce all information including symptomatic and asymptomatic cases, and the government began sharing this information with the public from 25th November. In Fig. 1, the number of affected patients, which is shown in grey, expectedly jumped significantly.

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. However, these measures differed for the first and second waves of the pandemic due to the negative impacts on the economy. Interestingly, all these and similar measures were put into effect at the same time as in other countries, leading 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 during the first wave. Like many countries, Turkey gradually closed its borders to neighbouring countries, then

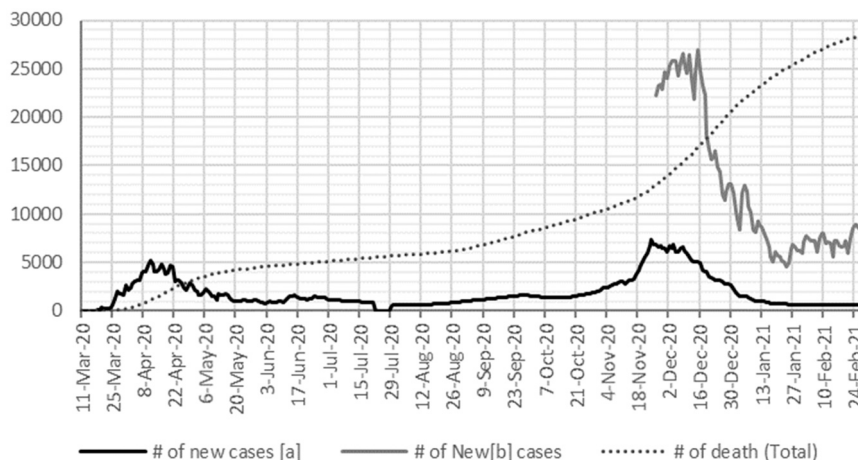


Fig. 1. COVID-19 cases and number of deaths in Turkey, nationwide,

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

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-metre *social distance* between individuals in public, and wearing *medical masks* became mandatory when going out. All *shopping malls* were closed to reduce physical contact between people. *Education* from pre-schools to universities was taken from classrooms and lecture rooms to online. Offices, mostly those of 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 required face-to-face physical contact was, to a great extent, suspended for some time.² In accordance with these changes in 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 a *lockdown*, a *ban* on travelling in and out of big cities, and *curfews* in certain circumstances.

For many people, these changes were meant to be a simple pause in economic activities and a change in daily life practices for a short time, but for the vast majority, it was somewhat like doomsday coming early. The measures to contain the virus inevitably halted some sectors and drastically slowed down others, resulting in massive job losses, overwhelmingly in the service sector, reductions in income, and bankruptcies. They are likely to have a serious impact in many countries. Fig. 2 indicates how serious this concern was in the Turkish case, and shows changes in the values of production indices in industries in April and December 2020.³ These figures are all from TurkStat, showing both the seriousness of the economic impacts of the outbreak in the beginning and how the economy recovered at the end of the year.⁴ All sectors in this group appear to have declined in April when the impacts of the pandemic were the greatest. However, after eight months following this fall, changes in the industrial production index turned positive, but industrial production does not seem to have revived sufficiently. Unlike the industrial sector, the service sector has been affected the worst by the containment measures and suffered most of the losses of employment and income in the economy. It is expected to begin its recovery with the removal of all restrictions and a return to normal living conditions, but not earlier, surely depending on how successful the vaccination is in containing the spread of the virus.

In the first quarter of 2020, the year-to-year output growth in the general service sector declined by 25.7%. Despite the sector recovering a bit due to the easing of containment measures in the summer (with a significant contribution by domestic tourism), year-to-year growth remained at 0.1% in the second quarter. Once the government eased the restrictions significantly due to economic considerations, in the fall of 2020, the sectoral year-to-year growth rebounded by 4.6% (TurkStat, 2021). However, the employment level has not revived and unfortunately continued to decline. The fall in employment in the service sector had already begun before the outbreak in March 2020 and unemployment in Turkey was a concern of the public long before the Covid-19 pandemic,⁵ which only deteriorated the prevailing conditions. Despite a decline in employment in the service sector, the employment levels in manufacturing and construction seem to have remained relatively stable during the pandemic. Several important factors must be noted here. *First*, the service sector is the largest employment source in the Turkish economy, constituting over 60% of total employment. *Second*, there has been a layoff ban for businesses meeting certain conditions. This paved the way for businesses mainly in the manufacturing sector to hold the unemployment level steady. *Lastly*, the layoff ban has been applied to formally employed workers who easily provide the legal conditions. However, informal employment is widespread in the service sector and these workers were not able to benefit from the protection of this law.

2.2. Compensating economic measures

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.⁶ However, its extent was not adequately high, and its scope was limited by leaving the most vulnerable strata of Turkish society, such as poor and economically dependent women, untouched (Bayar et al., 2020c). The response of governments to these impacts of the outbreak varied according to their budgetary 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 the ECB, to keep the markets as liquid as possible at a time when

² 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 the 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 nonexistent. One reason for this is the lack of an appropriate variable to capture the effects of social distancing for empirical study. Attar and Tekin-Koru (2020) have made a good attempt to generate a variable they call MIDIS, and found a positive correlation between this variable and output losses in many cases, including in Turkey.

³ 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 Covid-19 has had a large effect in Turkey, especially since the Turkish economy had already been performing poorly, and the presence of these unfavourable initial conditions inevitably causes a striking deterioration in macroeconomic conditions.

⁴ <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=33799>

⁵ The Turkish economy has long had difficulty in creating sufficient employment, and economic growth has not been a good stimulus to generate sufficiently high employment even in high growth eras. This ability of creating jobs declined particularly with the appearance of a fall in economic growth rates. Gürsel and Bakış (2021) have recently drawn attention to the employment elasticity of economic growth, and estimated it to be approximately 0.40, which is very low to deal with unemployment.

⁶ TL 75 billion of this package was used to finance fiscal measures, and TL 25 billion was directed to the amount in the credit guarantee funds (IMF, 2021b).

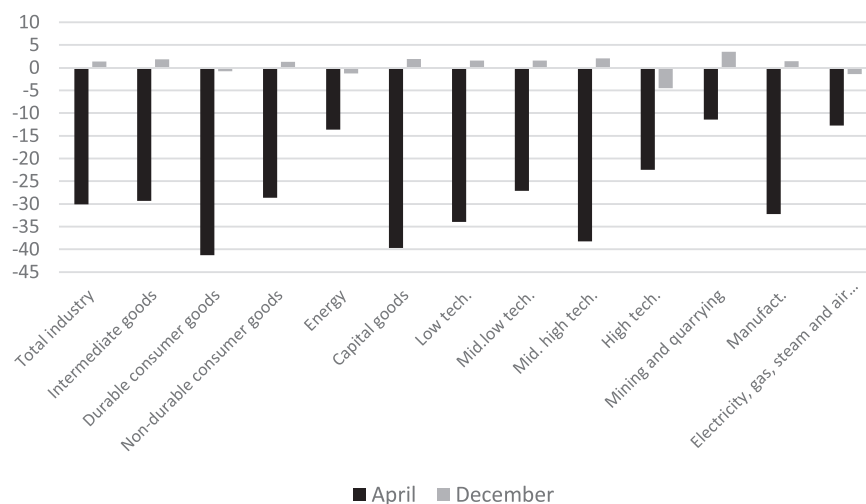


Fig. 2. Changes in industry production index in April and December 2020 (%).

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

spending drastically slowed down. Unlike earlier economic crises, such as the 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 demand sides of economies. The need for 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 available for households and firms.

It appears in Fig. 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) seems not to have been new but rather started long before the outbreak. It is obvious that the monetary expansion was just sped up after the official announcement of the Covid-19 pandemic in March. In addition to the expansion in the money supply, the Central Bank continued to lower the interest rate. Prevailing credit expansion, together with deteriorating expectations in the economy, kept the public from redirecting their additional purchasing power to commodity markets, and instead encouraged them to boldly accumulate assets, and at a certain point, to raise the demand for foreign currency. This expectedly increased the exchange rate, the Turkish Lira lost 8.6% of its value between March and July, and the Turkish monetary authority decided to control the credit expansion and reversed the increase in M1 sharply in July. But the depreciation in TL continued, and it lost an additional 16.8% of its value between July and November. This development was considered alarming as the Central Bank had lost \$128 billion in foreign exchange reserve but had been unsuccessful in providing stability in the foreign exchange market. Finally, the Central Bank returned to a high interest rate policy by raising it substantially in November, opting for a tight monetary condition in the money market.



Fig. 3. Money supply, annual change (M1).

Source: Central Bank of Turkey website database, <https://evds2.tcmb.gov.tr/index.php?/evds/serieMarket>.

The Turkish government took some immediate actions to compensate for the impacts of the pandemic. Decree 7244,⁷ for example, proposed 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 in return employers were also given the right to release workers without payment. In that case, payments of 39 TL per day⁸ were granted to those who were not eligible for unemployment benefits. This policy implication was extended until the end of March 2021, and it was announced that this was the last extension.

This was in fact a policy implication to keep the unemployment rate from surging drastically, but not all working individuals were eligible to benefit. In particular, the informal labour force was exempt from this protection.⁹ A *Short-term working allowance* was given to all workers who were employed in firms scaling down or stopping production. By April 22, 270 thousand companies, comprising over 3 million employees, applied for short-term employment allowance.¹⁰ 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, an employee must first have paid 450 premiums to unemployment insurance funds. Second, they must have been employed for 60 days before the application. And, most importantly, the eligibility does not cover non-registered employees, the self-employed, unpaid family workers, and immigrant workers. Turkey also gave 1000 TL (approximately \$150) in 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) were donated to this campaign by individuals and private as well as public institutions. The government later put approximately 350 million TL (about \$51 million) additional funds into this campaign.

According to the IMF, Turkey's support package amounted to 646 billion TL as of January, which was, at that time, 12.8% of GDP. The detailed account is as follows: i) credit guarantee funds to firms and households to keep their payments and consumption as smooth as possible (6.4% of GDP); ii) loan service deferrals by state-owned commercial banks (2.6% of GDP); iii) tax deferrals for business (1.4% of GDP); iv) equity injection to state-owned banks (0.4% of GDP); v) short-term working scheme, which cost the government only 0.7% of GDP; vi) a reduction in VAT on foods and accommodation services (IMF, 2021b). Nevertheless, Turkey was one of the countries relying mostly on compensating economic support through financial markets rather than giving cash support to households from the public budget (Günçavdı, 2020).

Recent statistical figures show the healing effects these measures had on the economy. Although figures on income distribution and poverty will take some time to come out, the employment effects of the pandemic can be assessed with the available data.

3. The economic outlook of Turkish households

In this section, the general outlook of the Turkish economy and household characteristics are examined based on both data obtained from the Survey of Income and Living Conditions for 2017 and the 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. Bearing in mind the fact that the outbreak influenced different economic activities to a different extent, the effects of the pandemic on the income of households with income from these sectors would also likely be different.

The outbreak and containment policies are expected to influence economic activities in different sectors to different extents, and 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 outbreak's impact on households.

Figs. 4 and 5 both report the sectoral distributions of individuals employed in the survey. It is evident from Fig. 4 that almost 49% of individuals in all households are employed and generate income from three main sectors, namely the agriculture, manufacturing, and wholesale and 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 and trade, and construction.

Poverty is another important economic problem in Turkey, and it constitutes one of the greatest vulnerabilities in the economy. Fig. 5 examines the sectoral distribution of individuals whose household income is below the pre-determined poverty line. Like in Fig. 4, poor individuals are also largely employed in the agriculture, construction, and wholesale and trade sectors. Together these three sectors constitute 66% of the 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 determining the well-being of people under the poverty line.

Another piece of crucial information is shown in Fig. 6, which reports the distribution of the Gross Domestic Product (GDP) of economic activities in the Turkish economy in 2019. In particular, Fig. 7 becomes meaningful together with the contributions of each

⁷ Decree 7244 was the first comprehensive legislative action taken after the official announcement of the pandemic on 17th 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>

⁸ This is TL1170 income per month, equivalent to approximately \$170 calculated with a 7 TL/\$ exchange rate in 2020, and increased by 47TL in 2021.

⁹ Informal employment in Turkey makes up 19% of total non-agriculture employment and would be the first group to be unemployed in response to the shock starting March 2020 (Gürsel et al., 2021).

¹⁰ <https://www.aa.com.tr/tr/turkiye/bakan-selcuk-kisa-calisma-odenegine-su-ana-kadar-3-milyonu-askin-basvuru-oldu/1814696>

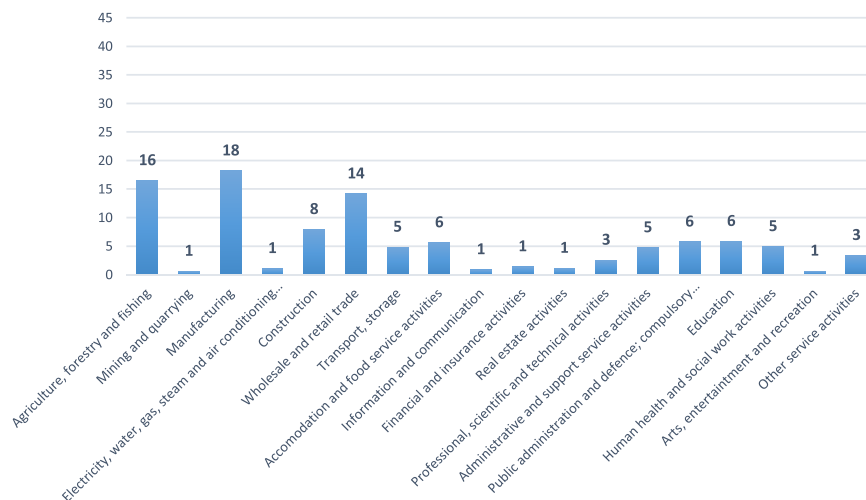


Fig. 4. Sectoral distribution of individuals employed in households (%).

Source: Authors' calculation based on SILC 2017 microdata.

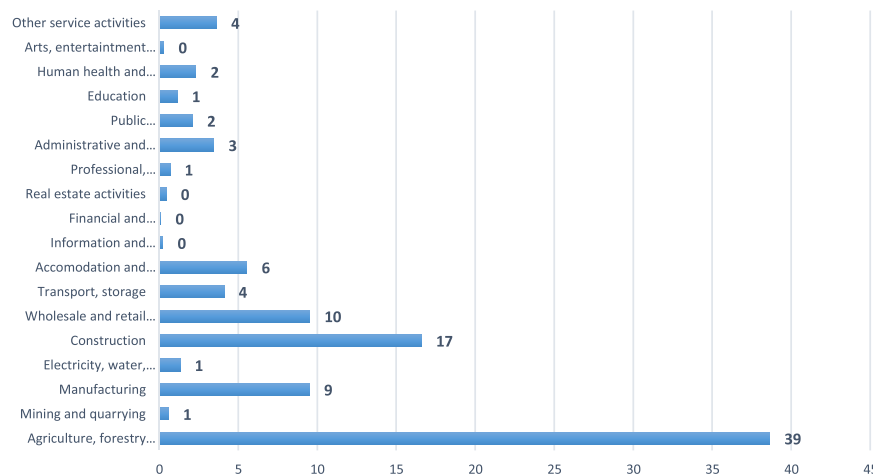


Fig. 5. Sectoral distribution of individuals employed in households under the poverty line (%).

Source: Authors' calculation based on SILC 2017 microdata.

economic activity to overall output. According to Fig. 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 and trade sector with 12.1%. The transportation and storage (8.2%) and the real estate (8.1%) sectors come third and fourth, respectively. The construction sector (7.2%) ranks only sixth overall. 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 raise 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, was expected by the World Bank to grow by 0.5% (World Bank, 2020). This was the most optimistic growth forecast, and closest to the level of the *ex post* growth rate announced as 1.8% for 2020. These growth rates would, however, be insufficient for Turkey, which is currently struggling to cope with increasing unemployment and income distribution problems. Turkey, with one of the worst income distributions in the OECD, had been astonishingly successful in improving income inequalities, but has lately failed to continue on this path (Bayar and Günçavdı, 2021). Unfortunately, this outbreak does not appear to help bring about further progress in income distribution. In Fig. 7, the trends of the income distribution measured by the Gini coefficient¹¹ and the poverty rate¹² can be seen. A substantial improvement in inequality is apparent until 2014. Aside from the 2008–2009 period of the sub-prime

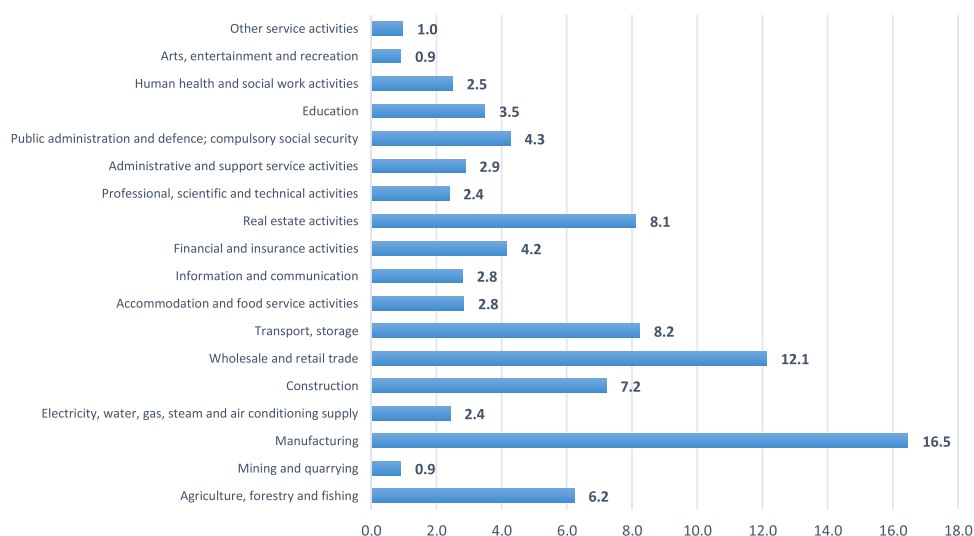


Fig. 6. The shares of economic activities in GDP (%).
Source: Turkish Statistical Institute website database.



Fig. 7. Gini Coefficients and poverty rates.
Source: Income Distribution and Living Conditions and Poverty Statistics, TurkStat website database.

mortgage crisis, high economic growth can to a great extent account for this improvement. However, in the end all these improvements did not prevent Turkey from being among the worst performing countries in the OECD (OECD, 2019). Turkey's performance seems to be much better regarding poverty compared to 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.

Another challenge for Turkey was the continuously rising unemployment rate before the outbreak. The containment policy and insufficient fiscal response of the government would unfortunately not make this situation any better. Three descriptive indicators of labour markets can be seen in Fig. 8. They are namely the broadly defined unemployment rate, the employment rate, and the informal employment rate in non-agriculture sectors. 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 Fig. 8 are obtained from the website of the Turkish Statistical Institute and include the latest figures for November 2020.¹³ March figures are particularly

¹¹ The *Gini coefficient* is a 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, and vice versa. This data is taken from TurkStat.

¹² 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 is taken as 50% of the median income of the 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).

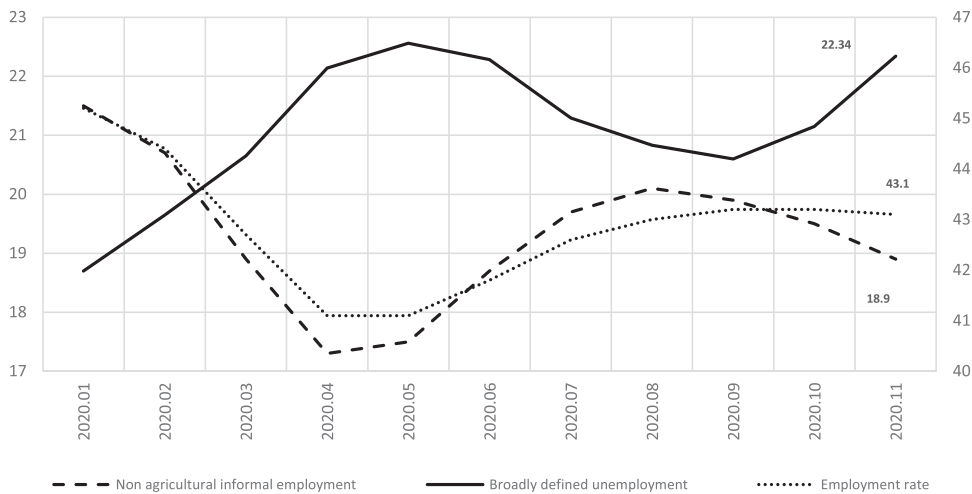


Fig. 8. Main labour market indicators during the pandemic.

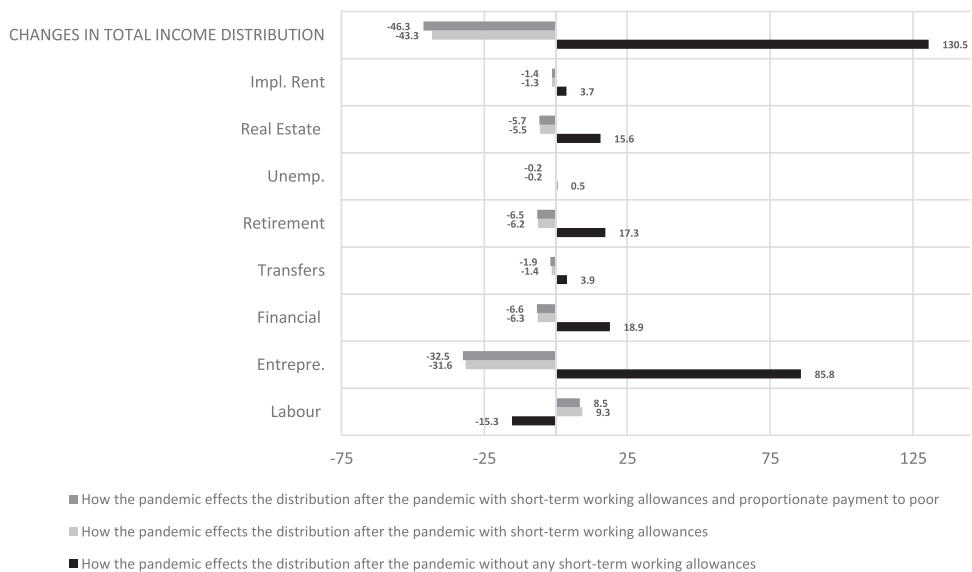


Fig. 9. Income sources of changes in income distribution - Jenkins decomposition.

Source: Authors' calculation based on SILC 2017 microdata.

important because the outbreak was officially announced on the 11th of March 2020 by the *Minister of Health*, followed by the implementation of lockdown measures and containment policies.

Fig. 8 shows how the labour market in Turkey responded to the lockdown and containment measures undertaken after the announcement of the pandemic. These three measures are important but have been a source of public disagreement regarding their definitions. The employment rate is a well-known labour market measure, and the most proper in a situation with no settled agreement about how best to measure the unemployment rate in Turkey. Fig. 8 shows a drastic fall in the employment rate right after the announcement of the containment measures in March. Reaching the lowest level in April, the employment rate recovered until August due to the easing of lockdown measures during the summer. This slackness in containment measures revived the spread of the virus and brought the measures back in force. The employment rate accordingly began to decline after August and fell to 43.1% in November.

Another crucial measure of the labour market in Turkey is the informal employment rate. The presence of the informal sector is important in developing countries. Elgin et al. (2020) measure the ratio of the volume of the informal economy to GDP as 27% in 2017 and imply that informal employment is an important source of employment in Turkey. Besides, employers choose to give up

¹³ Labour market data for March 2020 was announced on the 10th of June. <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=33787>

informal employment first in a deteriorating economic environment. Hence, informal employment has been the type of employment bearing the largest economic burden of the pandemic. In Fig. 9, there is a drastic fall in the informal employment rate in March–April 2020. Strikingly enough, informal employment seems to have recovered earlier than the overall employment rate in the summer of 2020. But, shortly after August, it began to decrease, reaching 19% in November.

There has been widespread distrust in the correctness of unemployment rates announced by TurkStat. The Turkish public believes that the officially announced unemployment rate does not show the actual extent of unemployment and the government intervenes in the data to give the appearance of a low unemployment rate and healthy economic conditions. However, TurkStat generates economic and social data in accordance with the definitions and directives supervised by Eurostat. The peculiarities of the Turkish labour market and the institutional weakness regarding political interventions can be seen as the reasons for this distrust of official data, and in turn the internationally agreed definition of unemployment does not seem fit to describe the conditions in the Turkish labour market.

It is an important structural feature of the recent state of the labour market in Turkey that the unemployment rate has been increasing for a long time, and finding a job has become extremely difficult for some. Those affected eventually seem to lose hope of finding jobs and stop searching. They are excluded from the labour force because they do not search for a job and are officially classified as workers with no hope of finding a job. TurkStat calculates the unemployment rate by excluding this hopeless stratum of the labour force. However, as more and more people lose hope of finding a job in the pandemic-hit economy, the labour force used to calculate the unemployment rate becomes narrower and renders lower than expected unemployment rates. In the recent announcement by TurkStat, this new figure seems to have reached a record high¹⁴ and causes an important peculiarity in the unemployment data. It is now common among the Turkish public to regard TurkStat's unemployment rate as narrowly defined, and it is generally suggested to use a broadly defined unemployment rate to examine the exact features of the developments in the labour market in Turkey. This new measure of unemployment is more informative and inclusive than the former one, and includes those who lost hope of finding a job as well as those who are willing to work if a job becomes available in the number of unemployed individuals.

It is clear that the broadly defined unemployment rate had been increasing before March 2020, and this trend continued sharply after the pandemic erupted.¹⁵ Having reached its peak in May, it slowly began to decline during the summer of 2020. This is a clear indication of the effects of the containment measures on the labour market. However, the broadly defined unemployment rate started to rise again in October and reached 22.3% in November.

It must be noted that the impacts of the pandemic on the labour market are a crucial channel that appears to show the exact extent of the damage caused by containment measures. However, income distribution and poverty effects of this pandemic can only be examined in detail when the Survey of Income and Living Conditions in 2020 becomes available in 2022. Until then, we can make up for this deficiency by simulating hypothetical income and living conditions for 2020 based on the known data of the labour market and output levels.

4. A brief discussion of available estimation approaches

Estimating the economic impacts of the Covid-19 pandemic is a difficult task, and various approaches have been implemented during the outbreak. Although each has advantages and disadvantages, they all estimated a drastic fall in income and employment in the Turkish economy. The most recent one, developed by Voyvoda and Yeldan (2020), uses the 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, they estimated 26.7% loss in GDP and 22.8% loss in total employment.

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

On the other hand, two highly experienced economists and professors, Güven Sak and Fatih Özatay, use a **heuristic approach** by basing their model on the response of the Turkish economy to previous crises and estimating how far the economy might 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 lasted one year, they estimate a 38% drop in GDP. This astonishing fall in GDP would also be accompanied by losses in the consumption of different goods. They assigned a different impact factor to different

¹⁴ In the bulletin of March 2020, the number of people with no hope of finding a job exceeded 1 million, which corresponds to a 108.5% increase from the same month in 2019. There was, however, no change in this ratio in the latest bulletin in November 2020.

¹⁵ The recent data announced by TurkStat indicates a fall in the narrowly defined unemployment rate 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 due to an increase in the number of people with no hope of finding a job and going out of the labour force. According to TurkStat, the narrowly defined employment rate has apparently been falling from August 2018.

consumption items depending on the extent of the impact of the pandemic on different sectors, and also estimated a 20% fall in GDP if the effects of the outbreak lasted for six months and a second wave did not come about. Unfortunately, all these national and international studies failed to predict the ex post growth rate recently announced by TurkStat. It is now clear that none of them took into account the massive credit expansion that took place after the pandemic erupted. Turkey was successful in bringing about economic growth at the expense of inflation and losing a massive amount of foreign exchange reserve.¹⁶ Whether or not this pays off is, of course, another issue to examine. **None of them, however, studies the impact of the pandemic on income distribution and poverty.** It is a well-known fact that not all business owners and households have the same ability to access credit and financial services, which will expectedly lead to an undesirable distributional effect. Since information about income and living conditions during the pandemic will take some time to be available, it is important to examine the current impacts of various counterfactual policy responses to deteriorations in income distribution and poverty.¹⁷

5. The data generating procedure of income and living conditions in 2020

Unlike other studies, we use a *microeconomic approach* that attempts to directly measure the impacts of the Covid-19 pandemic on households. The income and living conditions of households after the pandemic emerged in 2020 were simulated by relying on the assumption that income and consumption patterns in 2020 were similar to those in 2017.¹⁸ 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 in 2017, for example, is from the income and living conditions of households in 2016.

Our analysis emphasizes measuring the effects of the Covid-19 pandemic on the income and poverty of individuals who were employed in different income-generating economic activities before the outbreak. Unfortunately, information regarding changes in households' employment and income during and after the pandemic is not readily available. The distributional and poverty effects of the pandemic can only be examined by observing the changes in income flow and employment status of households during the period of the pandemic. Therefore, it is necessary to simulate likely effects of the pandemic on both income flows and employment status. Otherwise, we must wait at least two more years for the relevant income and household survey to become available. However, designing an appropriate policy measure to alleviate poverty and inequality requires a timely response by policymakers to minimize the social cost of the pandemic.

Measuring the distributional cost of the pandemic is a difficult task, particularly if there is no timely data on changes in household income and living conditions. However, it is empirically possible to estimate these changes in income and living conditions by using already realized data. This is what we do in this section.

It is assumed that changes in household living conditions due to the pandemic are to a great extent related to changes in their employment positions, which in turn determines income flows to households. The presently available data showing changes in the *realized* employment status of individuals is used to simulate *unobservable* changes in income and living conditions of individuals during the pandemic. Our first task is to generate unobservable information on the employment status of individuals included in the Income and Living Conditions Survey with observable changes in employment calculated from the Labour Force Survey. Data on employment is made available monthly in the Labour Force Surveys, and the most recent data was announced by TurkStat for December 2020. Besides, changes in employment can be observed on a monthly basis from this data by sector, gender and the formality/informality of employment.

Our calculation consists mainly of three stages. *In the first stage*, likely losses in income in the Income and Living Conditions Survey during the pandemic are empirically calculated based on actual changes in sectoral output and employment. To ease the economic burden of the outbreak, a number of fiscal measures have been taken by the government. The short-term working allowance scheme has been the most comprehensive, albeit less inclusive, social policy measure, and has certainly had a significant impact on the well-being of households during the pandemic. But there are many practical difficulties when attempting to include this impact in the calculation of the change in the living conditions of individuals during the outbreak, and it is inevitable to make some assumptions to deal with them. The most important difficulty is to find how the short-term working allowance must be distributed among the individuals in the Income and Living Conditions Survey. *In the second stage*, these allowances are distributed *randomly* among the individuals who meet the legal requirements.

The Covid-19 pandemic has reduced the income of households by affecting economic activities through which individuals earned their income. However, we have no information on these effects since the data regarding the income and living conditions during the pandemic are not available at the moment. Instead, another simulation procedure must be put forward to capture the likely impacts of the pandemic on economic activities. In this respect, economic growth rates at the sectoral level are available to propose a simulation framework. We used the data of chain-linked GDP volume indices by type of economic activity as a data source to simulate the effects of the pandemic on income and living conditions of individuals. *In the third stage*, output growth rates in economic activities were used as a proxy for *unobservable* changes in the income level of individuals. The calculated annual sectoral growth rates from the *National Income Statistics* for 2020 were taken as proxy growth rates of the *unobservable* income level of individuals

¹⁶ TurkStat has recently announced 1.8% economic growth for 2020. On the supply side of this estimate, a great portion of overall economic growth is contributed by the finance and insurance industry, which was a result of credit expansions (TurkStat, 2021).

¹⁷ The pandemic is expected to affect the data collection procedure carried out by TurkStat, and it is highly possible that the timing of data announcement could consequently be delayed.

¹⁸ The 2017 *Income and Living Conditions Survey* data was the latest available data when this paper was written.

available in the Income and Living Conditions Survey. Then, individuals' income levels during the outbreak are assumed to change in line with the ex post changes already available in national account statistics.

5.1. How to calculate losses in employment?

As of March 2021, the realized values of economic activities and employment at the sectoral level are already available. Unobservable levels of household employment status and income levels can hypothetically be simulated by using the changes in the available data.

Employment data are taken from TurkStat's Monthly Labour Force Surveys. *First*, it must be noted that all monthly employment data are seasonally adjusted. It is important to indicate that employing unpaid family workers is common in the agriculture sector, and it is difficult to observe any significant change in the number of unpaid workers in the short run.¹⁹ Most importantly, they are more likely to be unaffected by the outbreak mainly because they work outside. *Second*, employment in the agriculture sector is therefore kept exempt from the effects of the pandemic. Another widespread employment type in Turkey is employment in the public sector. *Third*, the level of public employment during the pandemic is assumed to be unaffected, and any individual in the Income and Living Conditions Survey is presumably less likely to be unemployed even during the period of the outbreak. It is thus excluded from the calculation of the impacts of the pandemic on the employment of households. *Fourth*, it is assumed that employment levels in all economic areas, except in the agriculture and public sectors, were affected by the pandemic.

At the next stage, individuals in the Labour Force Survey are divided into different "clusters" according to their gender, economic activities where they are employed, and the formality/informality of their employment. The levels, as well as the magnitudes of changes in employment in each cluster, were observed from the data in the Labour Force Survey. Later, these monthly changes were used to calculate the average annual change in employment in each cluster. In the case of a small sample, some sub-clusters (such as informal employment in the finance and insurance sector and/or employment of a particular gender in the construction sector) are merged to have sizable sample sizes. We ended up with 42 sub-clusters with sizeable sample sizes.

The same clusters, which were previously determined for Labour Force Surveys, were used to cluster the data in the Income and Living Conditions Survey. The previously calculated changes in clustered employment from the Labour Force Survey were then adopted as a similar change in the employment status of individuals in the Income and Living Conditions Survey, and the likely losses in employment of the household survey were calculated by relying on this assumption. This simulation is accomplished by leaving randomly determined wage earners in each cluster unemployed.

It is important to note that self-employed and entrepreneurial individuals become unemployed due to the pandemic. Using the rates of change in employment derived from the Labour Force Survey, the likely amount of losses in labour was calculated. Despite the presence of the distinction between self-employed and entrepreneurs in the Labour Force Survey, unfortunately this distinction is not available in the Income and Living Conditions Survey. Unemployed individuals in each cluster were randomly determined, but the overall losses of employment in the cluster were held under control to not exceed 5%. Different unemployment quotas were predetermined for each sub-cluster by taking into account the findings of the existing literature. In this respect, employment losses for informal self-employed individuals in the service sector were expected to be higher than in other sectors because of their highly vulnerable employment according to previous findings. Another important assumption based on our empirical observation regarding the fast recovery in the industrial sector was that employment losses in industrial economic activities appeared relatively lower than in other sectors. Besides, it was further assumed that there were no losses in employment among self-employed individuals and entrepreneurs in the industrial sector.

By definition, the income level of individuals who lost their jobs is assumed to be zero; but their other income, of course if any exists, is left unchanged.

5.2. How to deal with short-term working allowances?

The government implemented a short-term working allowance scheme for individuals complying with pre-determined legal conditions. However, there is no well-organised data or readily available detailed information on this policy in practice. It has been announced by the Ministry of Family and Social Assistance that approximately more than 3.5 million individuals were found eligible and received this assistance. Unfortunately, we are unable to know how much was paid and how long they received this income. Therefore, the allowance was distributed among individuals in need under certain assumptions.

Despite the fact that the minister announced the total number of individuals receiving this assistance, there is no information regarding the length of time or the amount. In addition, the second crucial problem is that this scheme has been regarded by many companies as a financial support. Some individuals who became eligible for this allowance were allowed to continue to work in the same firms, and were paid their normal income by their employers with the extra payment on top of the short-term working allowance. This information is not available either.

Given this uncertainty, it was first attempted to determine individuals who might be eligible for receiving an allowance in each cluster, with only those who had formally been working and receiving wage income included in the data. It is assumed that this policy practice became ineffective after the first quarter of 2020. Besides, since a substantial recovery in some sectors appeared to take place

¹⁹ Almost half of sectoral employment is comprised by unpaid family workers.

towards the end of 2020, it was assumed to be a 45% reduction from the actual income of approximately 2 million individuals (not 3.5 million as the official figures indicate) who had already been employed. The individuals whose income was reduced were randomly selected in each cluster among those eligible to receive this allowance according to the method of determination of losses in employment.

5.3. Direct cash supports to households

A distinctive feature of the Covid-19 pandemic in Turkey was that the government was under severe budgetary constraints and not able to give any direct cash support to households at the expense of social and economic costs. Although these costs can only be directly observed in the future, at least the distribution cost can be measured empirically. In this respect, we assume that the government would give away a certain level of equivalent income to individuals and households to reduce the income gaps appearing after the pandemic. Then we calculate changes in the severity of poverty if the government had given this cash to households.

Since the main purpose of direct cash supports is to reduce the severity of poverty, we first increase the income level of poor households at least to the level of 40% of the median income. The targeted equivalent income gap between actual income and the income level supported by the cash transfer from the government is then calculated as follows:

$$x_i = Z - inc_i$$

where x_i is the equivalent income level, Z is the targeted equivalent income level, and finally, inc_i is the actual equivalent income level. The amount of cash support given to households is then calculated as

$$X_j = \sum_i^k x_i$$

where X_j stands for the equivalent income gap of a household, and k is the number of individuals in the households. The total amount of this support scheme in the government budget is finally calculated as the sum of the equivalent income gaps of all households. The simple setup of this scenario is empirically useful to show the importance of any direct cash support to households in need to compensate for losses incurred due to the pandemic.

5.4. How to measure changes in income?

The impacts of the outbreak on income flows of individuals were simulated in accordance with changes in economic activities derived from the national income account, and hence *hypothetical* income and living conditions were generated for the year 2020.

Table 1 reports the calculated changes in income and employment by sector, gender and type of employment. The values are calculated based on the values of output and employment that were realized at the end of 2020 and show the actual effects of the pandemic on sectoral output and employment. Any value greater than unity indicates outperforming sectors due to an increase in output and employment, whereas a value lower than one, resulting from a decline, shows poor responses of the relevant variable to the pandemic. The unobservable changes in household income are hypothetically calculated under the assumption that income and employment of households during the pandemic are realized in accordance with these given actual changes in income and employment.

Table 1

The realized changes in output and employment levels by sector, gender and type of employment in 2020.

	Change in income	Change in employment			
		Men		Female	
		Formal	Informal	Formal	Informal
Agriculture, forestry and fishing	1,00	1,00	1,00	1,00	1,00
Mining and quarrying	1,02	0,89	0,89	0,89	0,89
Manufacturing	1,02	0,91	0,69	0,90	0,73
Electricity, gas, steam, etc.	1,02	0,71	0,86	0,71	0,86
Construction	0,96	0,71	0,57	0,71	0,57
Wholesale and retail trade	0,96	0,92	0,78	0,87	0,74
Transport and storage	0,96	0,93	0,80	0,75	0,75
Accommodation and food services	0,82	0,80	0,62	0,75	0,35
Information and support service activities	1,14	0,78	0,78	0,68	0,68
Financial and insurance activities	1,21	0,79	0,79	0,84	0,84
Real estate activities	1,03	0,83	0,58	0,83	0,58
Professional, scientific and technical activities	0,95	0,89	0,89	0,89	0,89
Administrative and support services	1,01	0,88	0,88	0,83	0,76
Public administration and defence	1,00	1,00	1,00	1,00	1,00
Education	1,03	0,94	0,94	0,92	0,79
Human health and social work activities	1,03	0,94	0,94	0,92	0,79
Arts, entertainment and recreation	0,90	0,70	0,50	0,70	0,59
Other social, community and personal services	1,03	0,82	0,54	0,72	0,59

No change is observed in two sectors, namely the agriculture and the public service sectors, with the coefficients of income and employment, and all coefficients corresponding to these sectors, remaining one. This is an expected result of our initial assumptions that employment and income in both sectors remained unchanged. There seems to be a small increase in the output level in the mining and electricity-gas-steam sectors. Having impact coefficients greater than one, the information and support services and the financial and insurance activities sectors appear to have performed distinctly well by increasing their output levels during the pandemic. However, their employment levels seem to have declined substantially. The education and health sectors were among the outperforming sectors in output, but their employment capacities evidently seem to have fallen.

Table 1 also reveals interesting facts about the Turkish labour market. First, from the distinction in employment by gender, there is a clear difference in the impacts on employment between males and females in favour of men. The pandemic seems to have deteriorated the employment conditions for women in some sectors, such as the accommodation and food services, information and support activity, and wholesale and retail trade sectors. Second, informal employment appears to be the most disadvantaged group during the pandemic.

6. 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, and the wide disparity in income 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 income distribution. So far, none of the existing studies on the impacts of the Covid-19 pandemic has attempted to quantify its impact on income distribution in Turkey.²⁰ The advantage of our research is the use of micro-level data from the Income and Living Conditions Survey, which allows measuring the likely impacts of the outbreak on income distribution. More importantly, the simulated income and living conditions for the period of the pandemic were generated by relying on the *realized* outcomes of the labour market and output.

Gini coefficients, a well-known measure of income distribution, are calculated for the different scenarios and reported in Table 2. The first column is a proxy indicator for the present state of inequality, which is calculated by the authors using the Income and Living Conditions Survey in 2017.²¹ TurkStat announced the Gini coefficient for 2018 as 0.408, which differs only at the third digit from our calculation.²² The other columns show the states of income distribution that are likely to appear under different conditions. Three different conditions were generated for our exercise here. Each corresponds to a case where two distinctive public policy measures, namely the short-term working allowance scheme and cash transfers to households, are implemented separately.

In all cases in Table 2, the income distribution seems likely to worsen. The most striking result, however, appears if there are neither cash transfers to households nor short-term working allowances (column 2). If the fate of households in Turkey had been left directly to the mercy of the pandemic without any economic support measures, we would have obtained the most dramatic impacts on income distribution and poverty, as seen in the second column. Accordingly, the Gini coefficient appears to rise to 0.55, which would be an exceptionally high level; the poverty rate would also be expected to have increased from 13.2% at the beginning of 2020–30%. Another indication of the deterioration in economic conditions can be seen in the fall of the level of the poverty line. Despite a positive growth “achievement” of the government, the poverty line, whose value previously was 7983 TL, could have fallen to 3646 TL due to the pandemic. This can be considered as an indication of how inclusive this positive economic growth was in 2020.

The results show that the Gini coefficient rose to 0.46 in the case of the presence of short-term working allowances, indicating a drastic deterioration in income distribution. Besides, the short-term working allowance alleviates the deterioration in income inequality and brings the level of the Gini coefficient from 0.40 to 0.465, not to 0.553. Regarding poverty, the headcount ratio showing the proportion of the population whose income is under the poverty line increased to 21.3% from 13.2%. The short-term working allowance could thus be regarded as a policy measure bringing the poverty rate down from 30% to 21.3%. There also seems to be a drastic decrease in the number of people that are defined as poor from 23.5 million to 16.4 million.

Despite this drastic rise in poverty no matter the scenario, the purpose of our analysis is to capture the exacerbating impacts of the pandemic on income distribution and to examine the effectiveness of fiscal measures taken by the government to mitigate the distributional consequences of the outbreak. The Turkish government has taken various measures to compensate for losses in income and to control further deterioration. Among others, increased employment protection by relaxing the short-term work allowance rule,²³ a ban on layoffs by state subsidies for employees affected by the pandemic, two-thirds of workers’ salaries paid by the

²⁰ 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 of our knowledge, the majority of these studies have attempted to estimate likely output and employment losses (Özatat and Sak, 2020; Taymaz, 2020; Gürsel and Şahin, 2020; Bayar et al., 2020a, 2020b, 2020c). A study by Uysal (2020), for example, attempts 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.

²¹ As noted earlier, the results of the Income and Living Conditions Survey for 2020 will become available to the public in 2022. Until then, a simulation exercise like the one in this paper is the only way of examining the distributional impacts of the pandemic.

²² At the time this research was underway, the Income and Living Conditions Survey 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 become available to us. <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=30755>

²³ As of April 22, 2020 there had been over 3 million applications for this allowance. The number is a very informative indicator of how serious the impacts of the pandemic will be on household income. However, the government has recently announced that the practice of this payment would be

Table 2
Income distribution and poverty measures under different conditions.

	Presumed present condition (1)	Simulated conditions		
		Without short-term working allowances (2)	With short-term working allowances (3)	With cash supports by a % of GDP and short-term working allowance (4)
Gini Coefficient	0.404	0.553	0.465	0.437
Headcount Ratio P_0 (%)	13.2	29.9	20.5	20.5
Poverty Gap P_1 (%)	26.4	47.2	45.9	17.3
Poverty Line (TL)	7983.4	3646.4	6496.5	6496.5
Poor (thousand)	10,385	23,549	16,184	16,184
Total Population	78,795,330	78,795,330	78,795,330	78,795,330

Source: Authors' calculation based on SILC 2017 microdata.

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. From the results in Table 2, they seem not to have been satisfactory in stopping the deterioration in income distribution. Even with the short-term working allowances, the Gini coefficient is expected to show a significantly high deterioration in inequality in 2020. The difference in the Gini coefficients between the beginning and the end of 2020 can be considered an indication of the extent of the deterioration in income distribution due to the pandemic.

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 difficulty sparing additional finance for the policy at the beginning of the outbreak.²⁴ The Turkish government was smart enough to re-direct the financial burden of the pandemic to the financial market. In particular, the Central Bank of Turkey sharply increased the money supply (see Fig. 4) to keep the financial markets as liquid as possible; low-interest loans were made available by the banking sector and particularly by public banks for households and small-sized enterprises. The purpose of these loans was to revive the 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, all households do not have the same ability to access credit or equal capability to pay it back. These differences certainly generate an uneven asset accumulation, and the 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 generally higher prices in the economy. This channel of transmission eventually becomes important for a country already having problems with high inflation, without mentioning its impact on the real exchange rate.²⁵ 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 3 indicates that a drastic rise in inequality is more likely to occur under different conditions. Another important issue in this regard is to examine which income source accounts most for this drastic increase. The *Shorrocks decomposition* of an inequality measure is a well-known method, and we employ it in this section.

6.1. Which income source is responsible for the increase in inequality?

Shorrocks (1982) suggests a general decomposition method that is applicable to all measures of inequality in the literature.²⁶ 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.²⁷ Assuming that Y_k is the income of an individual in the income category of k , total income can

(footnote continued)

stopped at the end of March 2021, exactly one year after the eruption of the pandemic. <https://www.aa.com.tr/tr/turkiye/bakan-selcuk-kisacalisma-odenegine-su-ana-kadar-3-milyonu-askin-basvuru-oldu/1814696>

²⁴ According to Elgin et al. (2020), Turkey's financial size of the fiscal measure is estimated as 2% of GDP.

²⁵ A change in the sectoral composition, particularly in favour of non-tradable goods, distorts relative prices and eventually creates pressure on the 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 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 private corporations in foreign exchange could be considered as the reasons for these government interventions.

²⁶ The Shorrocks method decomposes inequality at a certain time period into its components. In this paper, our use of the Shorrocks technique aims at distinguishing which income source mostly accounts for inequality during the period of the pandemic. However, this method is based on decomposing the *coefficient of variation* as the measure of inequality, in addition to the Gini coefficient.

²⁷ 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 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 of income sources are distinguished); (iv) independence of the level of disaggregation; (v) consistent decomposition; (vi) population symmetry; (vii) two income source symmetry.

Table 3Contributions of income sources to changes in inequality: *Shorrocks Decomposition*.

		Simulated conditions		
Sources of income	Initial Distr.	Without short-term working allowances	With short-term working allowances	With cash supports by a % of GDP and short-term working allowances
(1) Proportionate contribution of factor incomes to total inequality				
Labour-income earnings	30.98	6.79	28.39	28.39
Entrepreneurial-income earnings	40.12	54.62	40.60	41.17
Financial-income earnings	11.53	13.22	12.10	12.29
Transfer-income earnings	0.56	1.94	0.94	0.12
Retirement-income earnings	5.66	9.97	6.56	6.52
Unemployment earnings	0.23	0.33	0.26	0.27
Real estate earnings	8.84	10.62	8.98	9.08
Implicit Rental earnings	2.04	2.51	2.12	2.13
(2) Factor shares in total income (%)				
Labour-income earnings	46.31	17.77	45.91	45.06
Entrepreneurial-income earnings	17.93	17.26	11.35	11.15
Financial-income earnings	2.66	4.84	3.18	3.13
Transfer-income earnings	5.49	9.98	6.57	8.31
Retirement-income earnings	11.82	21.47	14.12	13.86
Unemployment earnings	0.52	0.94	0.62	0.61
Real estate earnings	9.02	16.40	10.78	10.59
Implicit rental earnings	6.22	11.31	7.43	7.30
(3) Relative inequality indicator ((1)/(2))				
Labour-income earnings	0.67	0.38	0.62	0.63
Entrepreneurial-income earnings	2.24	3.16	3.58	3.69
Financial-income earnings	4.33	2.73	3.81	3.93
Transfer-income earnings	0.10	0.19	0.14	0.01
Retirement-income earnings	0.48	0.46	0.46	0.47
Unemployment earnings	0.44	0.35	0.45	0.44
Real estate earnings	0.98	0.65	0.83	0.86
Implicit rental earnings	0.33	0.22	0.29	0.29

Source: Authors' calculation based on SILC 2017 microdata.

be written as follows:

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

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 Eq. (7) into Eq. (6), the following condition can be derived as well:

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

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

We define eight different income sources available in TurkStat's Survey of Income and Living Conditions. There are three panels in Table 3. The first at the top contains the proportional contributions of income sources to a change in inequality. The second in the middle shows 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 contains the proportional contributions of income sources to the change in inequality, all adjusted by their income shares.

At this stage it is important to note that the Shorrocks decomposition method to calculate relative inequality contributions 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 any one column with those in others.

A positive value in columns in the top and bottom panels shows a positive contribution of an income source to inequality, and vice versa. Before adjusting the contribution of each income group by its income share, entrepreneur, labour and financial earnings are the most distinctive income groups contributing positively to inequality in the initial state of the economy.²⁸ The same sectors, along with others, continue to contribute positively to inequality even after the Covid-19 outbreak.

Table 3 shows the relative contributions of different income sources to the inequality which arises in different

economic circumstances. The results in the first column belong to the initial condition where there is no adverse economic effect of the pandemic. Entrepreneurial and financial service incomes already appear to have very distinctive effects on inequality before the pandemic started. The second column gives the contributions of each income group to inequality under the condition where there are no compensating income effects in response to the pandemic. It enables us to see how the pandemic affects the contributions of different income sources to inequality without the government giving any direct cash supports to individuals. The third column is generated to examine the changes in the contributions of income sources to inequality if short-term working allowances are paid to individuals who comply with selective conditions. Finally, the fourth column shows the case where hypothetical lump-sum cash supports are given to individuals in need, together with short-term working allowances, and their impacts on the contributions of different income groups can be examined empirically.

Table 3 offers several important results. First, among others, the labour-income earnings constitute almost 46% of total income in the first column. However, this seems to go down to 17.8% with a dramatic decline caused by the pandemic if the government takes no compensating action. This is a clear indication of who bears the economic burdens of the pandemic if the labour income earner group is left to its mercy. However, compensating policy measures such as bans on laying off labour force and short-term working allowances appear to recover the losses of labour income earners, albeit in a limited amount, and allow the income share to stay at 46%.

The share of entrepreneurial income comes second after the labour income earnings and constitutes almost 18% of total income, as seen in the first column. This share seems to remain almost unchanged in the second column under the conditions created by the outbreak. However, once compensating policy measures are put into action, its share falls to 11%, implying that the short-term working allowance policy has no impact on entrepreneurial income.

Table 3 also reveals the relative contributions of income sources to inequality under a given the conditions described in each column. In the first column, financial income earnings pose the highest contribution to inequality without being exposed to the pandemic. Despite its small share in total income, a similar high contribution of financial income is also derived by Bayar and Günçavdı (2021) for the period between 2002 and 2007. The entrepreneurial income contribution comes second. The effects of the Covid-19 pandemic do not change the leading contributions of these two income sources, but the size of their impacts changes in that the contribution of financial earnings comes second. In the third column, where the compensating policy measure is put into action, this result remains unchanged.

6.2. The income sources of the change in inequality

Next we examine which income source can be considered most responsible for the deterioration in income distribution during the pandemic. Having determined the income group(s) that caused this deterioration, it would be easy to design social and economic policies targeting them.

However, the results in Table 3 cannot be considered 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 group to 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 affecting changes in inequality between two circumstances. Accordingly, the first absolute changes in income inequality from time t to time $(t + \Delta t)$ are calculated 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 the level of inequality, and Δt shows the time interval between the two terminal years of the surveys we examined. 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 an electoral period, 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.

Fig. 9 shows which income source comes to the fore in explaining the change in inequality from one condition to another. According to the results, there are positive contributions of almost all income groups, except entrepreneurial income, to 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.²⁹ However, the contributions of two income groups, namely

²⁸ This result is similar to those in Bayar and Günçavdı (2021).

²⁹ The Jenkins decomposition is usually applied to understand the sources of a change in inequality between two distinctive points in time. Unlike this conventional usage, 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 like data from a different year. The main source of change between these states of the economy can certainly be

labour and entrepreneurial income, are likely to cause the most distinctive effects on the change in inequality. However, the impacts go in opposite directions. In the results, 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 low-income regular workers and casual employees and worsens the within-group distribution by reducing the 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, as well as the ex post results of what we have observed in the market (Gürsel and Şahin, 2020; Uysal, 2020).

It is clear from Fig. 9 that the outbreak is expected to increase inequality by almost 130.5%. Additionally, short-term working allowances, which are given at least to formal labour, would have mitigated income distribution by 43.3%. Furthermore, according to the figures, it seems that a possible additional cash support scheme would have reduced the overall deterioration in income distribution by an extra 46.3%. Both measures can then be considered as essential to control the deterioration in income distribution after the pandemic.

The income group affected worst by the outbreak is entrepreneur income. Both compensation measures would appear to have helped this income group to ease the overall deterioration in income distribution. First, short-term working allowances seem to reduce the initial contribution of this income group by 31.6%, and the cash support to households seems to provide an additional reduction in the contribution of entrepreneur income to the increase in overall inequality. This finding shows that entrepreneurs are affected most by the outbreak, and both measures help in compensating for these adverse effects on entrepreneurs' income. Short-term working allowances are most likely to decrease their labour cost on the supply side, whereas cash supports to households would revive domestic demand conditions and help at least some of them remain in business.

Labour income, as the largest income group, constitutes over 45% of total income, and its contribution to the deterioration in inequality seems to decline by 15.3% in the case where there is no public support to households and income groups. This might seem surprising at first, but can be regarded as an expected effect because the pandemic mostly affected informal labour and casual workers, and this immediately got them out of the labour force. The remaining labour income level decreased but its within-group inequality improved substantially. These two forces in opposite directions reveal the mitigating effects of labour income groups on overall inequality. This result implies that the scopes of both measures seem insufficiently wide. The implementation of both was not inclusive enough at first, and many labour income earners, particularly those not under any legal protection, were unable to access them. This practice finally creates a deteriorating effect on the general income distribution by increasing within-group inequality.

Whereas the contributions of other income groups increase inequality if no fiscal action is taken, the implementation of short-term working allowances and direct cash supports turns these contributions in the opposite direction and reduces inequality. All these findings consistently show that various fiscal measures, particularly targeting self-employed entrepreneurs and direct cash supports to households, are vital to mitigate increased inequality during the pandemic.

6.3. Poverty

Poverty is another structural problem of the Turkish economy and, as expected, increased during the pandemic. We employ two measures of poverty in this paper, namely the headcount ratio and the poverty ratio. The former measures the proportion of individuals whose incomes are lower than the pre-determined income level. The latter shows how far the income levels of the poor are from the poverty line, indicating the severity of poverty. A high poverty gap ratio also means a high cost of reducing the severity of poverty. Any policy to reduce the severity of poverty requires 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 (Foster et al., 2010).

The poverty line is pre-determined as 50% of the median income from the Income and Living Conditions Survey in 2017. This income level is then brought to the 2020 level by adjusting for inflation. In Table 2, the poverty ratio, which is initially 13.2%, is expected to rise to 29.9% under the assumption of no fiscal support available to households and businesses. In the case of short-term working allowances only, the poverty rate is assumed to decrease to 20.5%. And finally, if the government had given direct cash supports, the poverty rate would have remained at 20.5%.

The clear impact of fiscal measures, particularly the practice of direct cash supports, appears in the poverty gap ratio. The poverty gap, showing the severity of poverty, is initially 26.4% in Table 2. It would have increased to 47.2% if there had been no government interventions to ease the effects of the outbreak. However, the most significant effect would have been obtained by decreasing the poverty gap to 17.3% if direct cash supports had been given to households. Therefore, it should be noted that direct cash supports would have been the most efficient way to mitigate the severity of poverty. Besides, if the extent of the cash support had been high enough, there would have been a substantial fall in the poverty ratio as well.

At the macroeconomic level, there are two policies available for this purpose, namely high but inclusive economic growth with the available economic resources and implementation of a wide-ranged re-distributional policy. Given the fact that Turkey has lately experienced problems in attaining high economic growth rates, the first option would most likely not be among the policy choices, and redistribution policies would have to gain more importance in the future.

For the time being, the Datt-Ravallion method of decomposition is best suited to distinguish the importance of economic growth and redistribution policies in changes in poverty under different circumstances after the outbreak (Datt and Ravallion, 1992).

(footnote continued)

attributed to the impacts of the Covid-19 pandemic, as we have done here.

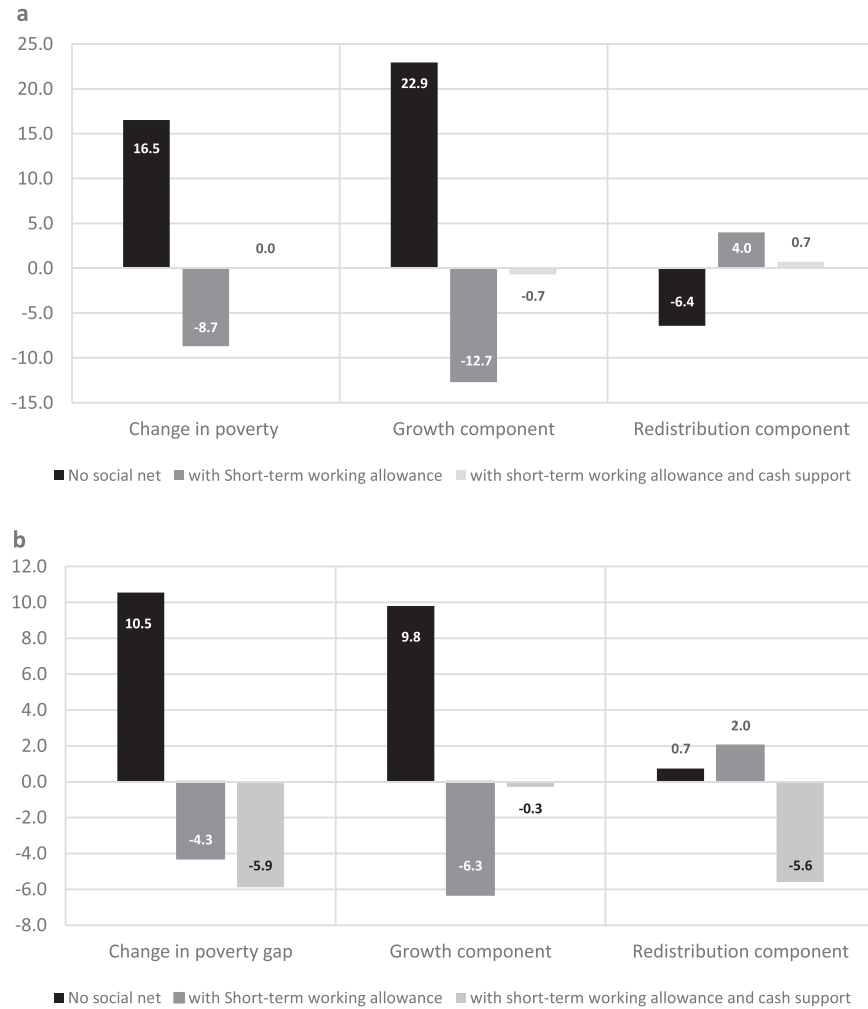


Fig. 10. (a). Decomposition of changes in poverty, 10b. Sources of changes in the poverty gap, Source: Authors' calculation based on SILC 2017 microdata.

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 Fig. 10. Fig. 10a 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 seen in Fig. 10b.

A change in the poverty rate occurring if the government takes no action after the pandemic is seen in the black-coloured column in Fig. 10, and shows a 16.5% jump in the poverty rate. It also shows that the insufficient economic growth rates account for the majority of this deterioration in the poverty rate. The distributional components, on the other hand, exhibit just the opposite effect by reducing the poverty rate by 6.4%. This rather expected outcome is because low-income households and those not under any legal protection are most likely to lose their position in the labour force as well as their income sources easily. This paves the way for a relatively better income distribution with the available income owners. This dramatic increase in the poverty rate after the pandemic requires the government to act promptly, but it is also important to decide how to act. Short-term working allowances are one of the measures that affect the income levels of labour earners and entrepreneurs, and implementing them seems to reduce the poverty rate by 8.7%. Only 12.7% of this reduction comes from economic growth. The distributional component, on the other hand, has an increasing effect on the poverty rate, which is calculated at 4%. In fact, this takes place because the implementation of this policy measure is limited to the formal labour force complying with certain pre-determined legal conditions. Direct cash support seems to

have no significant effect on the change in the poverty rate after the pandemic. This support, given to individuals as a certain pre-determined amount in total, is expected to affect the severity of poverty rather than reducing the poverty rate.

Fig. 10b shows changes in poverty gaps under different circumstances. It is clear from the light-grey-coloured last column that cash support measures in addition to short-term working allowances enhance the improvement in poverty. Their distributional effect in particular is worth noting, exhibiting a reduction by 5.6%. From these empirical findings, short-term working allowances are significantly effective in reducing the poverty rate after the outbreak, whereas direct cash supports only mitigate the severity of poverty.

7. Conclusion and policy implications

As the Covid-19 virus spread all over the world, it hit the world economy in an unprecedented way, and has prompted many governments to introduce unusual policies and measures to cope with the undesirable impacts of the outbreak. Despite all these efforts, world output shrank by 5.2% in 2020 (IMF, 2021a). In the same report, however, Turkey experienced 1.2% growth in the same year. Turkey's positive, albeit low, economic growth performance is a success with high social and economic costs. The question to be asked at this stage is whether this growth is sustainable and inclusive enough to obviate the increased social and economic costs such as inequality and poverty.

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 scope of these measures sparked a public debate, observers have occasionally accused governments of doing little and acting too late. Although international institutions such as the World Bank warned governments of the danger of increased inequality and poverty problems, governments have mostly chosen policies that aim at economic stability as well as promoting economic growth. In its latest outlook on 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. A recent simulation of the bank forecasts that 40–60 million people – most of them from Sub-Saharan African and South Asian Countries – are in danger of falling into extreme poverty (World Bank, 2020).³⁰

So far, Turkey has put its emphasis on policies focusing on stabilising the economy and the promotion of 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 13% of GDP to finance the proposed fiscal stimulus and containment policy. However, the majority of this support was indirect and did not require any direct cash transfer from the budget to households and business. Under the very restricted budgetary conditions, the government was only able to give 0.7% of GDP directly to labour income earners as short-term working allowances. This implementation was unfortunately stopped on the 31st of March 2021, although the pandemic was not yet over.

Various studies in the literature are based on different assumptions of impacts of the pandemic, and accordingly, they estimate the financial size of these policy measures depending on the likely impacts of the pandemic on economic activities and employment. However, previous studies in Turkey have overlooked the impact of the Covid-19 pandemic on income distribution and poverty. Additionally, we empirically show how fiscal supports from the government budget to households in need are essential to cope with undesirable distributional consequences of the outbreak. Since the actual data on household income and living conditions takes at least two years to come out, empirical studies like the present one are important to examine the distributional effects of both the pandemic and likely fiscal measures.

We showed in this paper that the pandemic and the containment measures taken afterwards evidently have a huge distributional effect with the possibility of increasing the Gini coefficient from 0.404 to 0.55. Our empirical examination also indicates that the availability of budgetary measures to households in need mitigates this distributional consequence. Moreover, direct cash supports to households, together with short-term working allowances, reduce the severity of poverty by decreasing the poverty gap drastically. Most importantly, only 1.6% of GDP (approximately \$9 billion) is estimated to be sufficient to reduce the severity of the poverty increase after the eruption of the pandemic. Therefore, fiscal supports to households by the government from the budget are necessary to control the distributional effect of the pandemic.

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³⁰ According to the World Bank, extreme poverty is the situation of a household or an individual living on \$1.9 per day.

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