An appraisal of Turkey's voluntary individual pension system from a perspective of pension equality

Babat, S., Gultekin Karakas, D. & Hisarciklilar, M.

Author post-print (accepted) deposited by Coventry University's Repository

Original citation & hyperlink:
Babat, S, Gultekin Karakas, D & Hisarciklilar, M 2021, 'An appraisal of Turkey's voluntary individual pension system from a perspective of pension equality', Social Policy & Administration, vol. 55, no. 5, pp. 784-801.
https://dx.doi.org/10.1111/spol.12659

DOI 10.1111/spol.12659
ISSN 1478-2189
ESSN 1557-0681

Publisher: Wiley

This is the peer reviewed version of the following article: Babat, S, Gultekin Karakas, D & Hisarciklilar, M 2021, 'An appraisal of Turkey's voluntary individual pension system from a perspective of pension equality', Social Policy & Administration, vol. 55, no. 5, pp. 784-801, which has been published in final form at https://dx.doi.org/10.1111/spol.12659. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving.

Copyright © and Moral Rights are retained by the author(s) and/ or other copyright owners. A copy can be downloaded for personal non-commercial research or study, without prior permission or charge. This item cannot be reproduced or quoted extensively from without first obtaining permission in writing from the copyright holder(s). The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the copyright holders.

This document is the author's post-print version, incorporating any revisions agreed during the peer-review process. Some differences between the published version and this version may remain and you are advised to consult the published version if you wish to cite from it.

This is an Accepted Manuscript of an article published by Blackwell Publishing Ltd. in Social Policy and Administration online on 25 October 2020, available online: https://doi.org/10.1111/spol.12659

AN APPRAISAL OF TURKEY'S VOLUNTARY INDIVIDUAL PENSION SYSTEM FROM A PERSPECTIVE OF PENSION EQUALITY

Abstract

Since 2003, Turkey's pension policy has been increasingly based on facilitation of individual savings administered by private pension funds. The introduction of private pensions is expected to reinforce inequalities as a result of socio-demographic features and pension system design. This article evaluates voluntary individual pension system with a perspective on pension equality. Monthly contributions to pension accounts are explored on the basis of socio-economic and demographic characteristics of the customers of a currently operating pension company. Findings reveal that differences in people's saving capacities have become a source for pension inequality. Furthermore, state subsidies, which increase in proportion to individual contributions, strengthen unequal distributional dynamics. Pension privatization harms social solidarity as it intensifies existing social inequalities.

Keywords: Pension reform, multi-pillar pension system, pension inequality, Turkey

1. Introduction

Social security protects labour against risks, though this comes with an economic cost. The critical questions are, who would bear it and to what extent. The World Bank (WB 1994) and the Organization for Economic Co-operation and Development (OECD 2000) have advocated pension system redesign with reasons of ageing population and unsustainable deficits. The WB's 1994 report, *Averting the Old Age Crisis*, largely shaped pension reforms towards a multi-pillar pension system in many countries. Governments in tens of countries reduced pension levels, increased pension age and restructured the public-private mix by strengthening private pensions (Behrendt 2000; Mesa-Lago 2014). This universal trend - justified by the rationale of financial sustainability - raised concerns for social sustainability because of its old-age poverty and inequality effects (Ebbinghaus 2019; European Commission 2015).

Similarly, in the 1990s the Turkish social security system had growing deficits due to early retirement age, various amnesty laws applicable to receivables, high unregistered employment, and low premium collection rates (Social Security Institution 2019). The International Labor Organization (ILO 1996) and business associations emphasized that the social security funds used for political goals and mismanaged; such a financially unsustainable system could not meet the pension and healthcare needs of an ageing population that has yet to emerge. Consequently, under the auspices of the International Monetary Fund (IMF) and WB in the 2000s, the pension system was transformed to reduce transfers and benefits for participants while increasing individual contributions (Erdoğdu 2006; Yılmaz Akın 2018). At a time of worsening income distribution, this transformation led to the exclusion of the poor from the public social security system by increasing the pension age and the length of premium payments (Erdoğdu 2006). In this process, a shift to a multi-pillar pension system was projected.

As the social security was treated as a financial burden rather than an element of social cohesion, the goal of pension funds was redefined with an emphasis that the pension system needed to foster economic growth by channelling more resources to the financial markets. Implementation of the voluntary individual pension system (IPS) in 2003 started a transition that gradually shifts the responsibility of securing sufficient retirement income to individuals.

The multi-pillar pension system consists of private companies and public institutions, though it is increasingly based on individual savings. As of 2016, the pension system in Turkey consisted of "a large first pillar, a small second pillar and a modest but growing third pillar" (IMF 2016:13). The first pillar consists of unfunded social security benefits publicly administered through the social security institution. The public pension system is based on the Bismarck model: premiums drawn from the wages of employees are collected in a joint pool and benefits after pension entitlement are provided based on premiums paid (Social Security Institution 2019). The first pillar included three social security institutions: The Social Insurance Institution for blue-collar

workers in the public and private sectors, the Retirement Fund for civil servants, and the Social Insurance Institution for Tradesmen and Craftsmen and Other Self-Employed People. In 2006, these three institutions were united under a single roof, the 'Social Security Institution'. The second pillar mainly consists of two mandatory occupational pension schemes - one for the military personnel and the other for the employees of the state-owned coal mining companies - as well as some 250 voluntary occupational pension schemes that are very small in size and coverage (Peksevim & Akgiray 2019). The third pillar encompasses the private individual pension accounts, which was initially based on a voluntary basis. However, because the public interest in the system was lower than expected, as of January 1, 2017, the automatic enrolment system (AES) was additionally put into practice, contributing to the growth of the third pillar. In the AES, contributions are automatically collected from all workers and civil servants under the age of 45. Implementation of the AES was spread over six stages within two years. The system started with enrolment of employees of the largest businesses and completed with enrolment of employees in the smallest workplaces on January, 1 2019 (PMC, 2018). The number of participants in the AES quickly raised to a level close to the voluntary IPS but its fund size has not yet reached to a comparable level. As of June 12, 2020, there were 6.9 million participants in the voluntary IPS with a total fund size of 135.8 billion TL while the respective numbers were 5.5 million participants and 9.7 billion TL for the AES (PMC 2020). Currently, voluntary participation and automatic enrolment are implemented simultaneously in IPS.

The state has subsidized the IPS continuously. Initially, the subsidies were in the form of tax advantage; from January 2013 participants started to benefit from a government matching contribution of 25% of investment, capped at 25% of the annual minimum wage (IMF 2016). This 25% state contribution was also added to the employee contributions in the AES with an additional one-off payment of 1,000 TL at the first entry into the system (PMC 2018). Participants in both the voluntary IPS and the AES can receive the full government contribution when they stay in the

system for at least 10 years.[1] Therefore, the state contribution has been designed to discourage the exits. Besides, since the government contribution is in proportion to individual contribution, participants are encouraged to save more. Introduction of the state contribution strongly influenced the IPS participation (Figure 1); between 2006 and 2019, the number of participants increased from 1.1 million to 6.9 million while the total asset size increased from 2.1 billion TL to 101.9 billion TL (PMC 2020).

[Insert Figure 1 here]

This study empirically investigates the distributional effects of the voluntary IPS on future savings of participants by using simulations based on a regression model of monthly contributions. It first investigates whether savings decisions of participants differ according to socio-economic and demographic indicators. Secondly, it examines the consequences of matching state subsidies from a perspective of pension equality.[2] Although a few studies on Turkey address the equality implications of the IPS with a gendered perspective (Bozkuş & Elveren 2008; Elveren 2008; Şahin *et al.* 2010; Elveren 2013), to the authors' knowledge, this is the only study that examines the role of state subsidies and the overall inequality effects in participants' future savings. This study uses individual level data retrieved from voluntary individual pension accounts to demonstrate the inequalities in individual savings. By doing so, it fills a gap in literature that is dominated by macro data studies.[3] The paper further contributes to the literature on pension reform in middle-income countries. Turkey started its pension reform later than many other countries and continued to deepen privatization while many countries in Latin America and Europe were reversing their reforms. Displaying regressive distributional impact of privatization provides a basis for policy-makers to revalue and reverse the pension reform especially at the dawn of a new wave of global economic crisis triggered by the Covid-19 pandemic.

The rest of the paper is organized as follows: Section 2 reviews the literature on distributional effects of the private pension system. Section 3 presents the data and the model.

Results of the regression analysis are discussed in Section 4. Role of matching state contributions is evaluated in Section 5. Section 6 concludes.

2. Private Pensions and Inequality: Findings in the Literature

Pension reforms have been advocated to provide individuals with more choice in their retirement decisions (OECD 2000; WB 1994). However, pension privatization is expected to exacerbate social inequalities and old-age poverty because of investment risks, higher administrative costs, and inability of private markets to provide retirees with affordable, indexed and certain annuities (Festic and Mencinger 2009). In most cases, it has led to inadequate coverage, in particular for the unpaid workers, the unemployed, or those employed in the informal sector (Behrendt 2000). Full privatization of the pension system in Chile in 1981 and partial privatization in Argentina in 1994 are the Latin American examples to diminishing coverage (Willmore 2007; Mesa-Lago 2009).

Private pensions deepened existing labour market inequalities in industrialized countries by leading to uneven coverage and inequality in pension benefits in particular for older pensioners, single pensioners, women and ethnic minorities (Behrendt 2000; Sunley 2000). Rising inequality and old-age poverty effect is also found by Zaidi *et al.* (2006), Been *et al*. (2017) and Piirts & Võrk (2019) in the EU. Similarly, the shift to a mixed pension model from 1991 to 2015 in China generated pension inequality and wider social stratification by privileging the better off (Zhu and Walker 2018). Pension reforms in many countries have gradually increased official retirement ages with concerns for financial sustainability disregarding the disparities among old-age workers (Ebbinghaus 2019). Etgeton (2018), based on simulation results of an increase in the retirement age for West German men, concludes that poverty-vulnerable groups are hit the hardest.

Pension privatization reinforces gender inequalities too. As pensions are calculated based on mortality tables differentiated by sex, women's early retirement coupled with their higher life

expectancy have widened the gender pension gap in Latin America (Mesa-Lago 2009). Under the adverse effects of the 2008 crisis, the gendered nature of retirement income is expected to be reinforced in the EU (Foster 2014; Burkevica *et al*. 2015; Betti *et al.* 2015). Simulating the effects of recent pension system reforms in Denmark, Finland, the Netherlands, Germany and the UK, Beach & Bedell (2019) find that low educated workers with no job security and women who do unpaid domestic or care work are forced into an impossible choice: exiting the labour market and being penalized financially or remaining in employment and face deteriorating health due to harsh working conditions or neglecting care responsibilities. Further, family caring commitments result in fragmented employment patterns and lower supply of hours, enforcing differences in hourly pay, occupational status and career trajectories, which then transform into pension inequalities later in life (Palmer 2017). Lis & Bonthuis (2019) confirm this for Italy, Latvia, Norway, Poland, and Sweden; and Bonnet *et al.* (2018) for France.

As of 2018, eighteen of the thirty countries in Latin America, Eastern Europe, the former Soviet Union and Africa that fully or partially privatized their public mandatory pensions during 1981-2014 have reversed their privatization by loosening age requirements, increasing pension benefits, and expanding coverage (Ortiz *et al.* 2018). Argentina, Bolivia, Czech Republic, Hungary, Kazakhstan and Poland had returned to or strengthened their public pension schemes. Estonia, Latvia, Lithuania and Slovakia drastically reduced the size of their individual schemes (ILO 2017). This retreat was a response to the undesirable effects of pension privatization that were voiced even within the World Bank (see Orszag & Stiglitz 2001; Gill *et al.* 2005; Kay & Sinha 2008). A large majority of those countries turned away from privatization after the 2008 crisis during which drawbacks of the private system became more evident with a variety of social and fiscal impacts (Ortiz *et al.* 2018).[4] However, OECD (2019) and IMF (2019; 2020) continued to support pension privatization by warning that pension systems can be fragile in the face of future economic crises

and the ageing population. Meanwhile, inequality and social sustainability continue to remain secondary in the rhetoric of the international institutions.

While the state has subsidized the shift to private pensions in Turkey, its unequal distributional impact has not been considered in the pension system design. Pension levels are determined by individual contributions. Differences in people's saving capacities, therefore, became a source for pension inequality in the IPS. Besides, policy makers have ignored regressive effects of state subsidies transferred to private pensions.

Studies on the gender dimension in Turkey show how women's disadvantaged position in the labour market and their higher life expectancy negatively affect their retirement benefits (Elveren & Hsu 2007; Elveren 2008). Elveren & Hsu (2007) calculate the retirement benefits for women to be 55 to 75 percent of those of men while Elveren (2008) reports a higher gender gap. Using individual level data, Bozkuş & Elveren (2008) and Şahin *et al.* (2010) examine the gender differences in regular monthly contributions. These studies find that endowment and social status differences lead to differing monthly contributions in favour of men.

Country examples from literature reveal that the private pension systems tend to exacerbate social inequalities rather than providing pathways towards a more egalitarian distribution. Studies commonly point to the wealth inequality consequences arising from the disadvantaged position of some groups in the labour market - such as the women, elderly or the disabled - and/or the disadvantages created by the differences in employment patterns and issues around job security. The emphasis is mostly on the rising social inequalities due to certain segments of the society not being able to fully participate in the system. This study follows a different approach, in that leaving the inadequate coverage of the IPS aside, we focus on those who are in a position to participate in the system with regular contributions and examine the pension inequalities within that relatively better-off segment in the society. We differentiate two complementary sources of inequalities amongst system participants: (i) pension contribution differences created by their endowment

differences; (ii) the amplifying role of 25% state contributions on the future wealth of participants. Hence, this study contributes to the literature by empirically investigating the distributional effects of the IPS on participants' future savings by using simulations based on a regression model of monthly contributions. After estimating the effects of socio-economic and demographic indicators on monthly contributions, we reveal the role of state contributions in deepening the inequalities across different segments of the society.

3. Data and Model

For a discussion of pension privatization in Turkey from a perspective of pension equality, this work first explores whether savings decisions of IPS contributors differ in terms of their socio-economic and demographic characteristics. To this end, we estimate a regression model explaining the variation in monthly contributions. The coefficient estimates from this model are then used in a simulation exercise to examine the role of state subsidies, which increases in proportion to contributions made by the participants, and the inequalities that these subsidies are likely to create on the expected future savings.

The dataset in this study is taken from a currently operating private pension company that had a market share of around 6% participants as of December 20, 2012. The database includes the most recent information on all 184,520 customers who were paying regular contributions. Updates on participant details were made by the company and no information was kept in the database for those who exited the system for any reason. The database includes information on various indicators but those which raised concerns about accuracy or those with a lot of missing values were not included in the analysis. We also excluded 1,074 participants who were residing abroad. Our estimation sample includes 124,890 observations due to this exclusion as well as missing observations for some individuals.

The monthly contributions in the sample have a mean value of 197.8 and a median of 150. The demographic and socio-economic indicators that are included in the model are: age, marital status, gender, monthly income, education level, and development level of the place of residence.[5] Place of residence (81 municipalities) are grouped into four categories according to their development levels: the first 20; 21st to 40th; 41st to 60th, and 61st to 81st. This classification is made using the socio-economic development ranking of municipalities in 2011 by the Ministry of Development (2013) based on 61 indicators covering demographics, education, health, employment, competitive and innovative capacity, financial capacity, accessibility, and standard of life. 69.9% of the participants in the data are residing in the cities ranked in the first 20, while the percentages are declining as we move towards the least developed regions.[6]

Preliminary observations on the summary statistics provided in Table 1 are in line with the results in literature. 70% of the participants are male while 72% are married. Females appear to be underrepresented in the system, constituting only 30% of the participants. Around 57% of participants are aged below 40. The average monthly contributions for both men and women are 198 TL, with variations across marital status categories. In our regression model, this differing impact of marital status on monthly contributions is captured by an interaction of the marital status variable with the female dummy.

[Insert Table 1 here]

Results presented in the following section are based on data from a pension company. It was not possible to obtain data through any other additional source. Though the Pension Monitoring Center of Turkey provides aggregate statistics, these were not detailed enough to integrate in our analysis. We checked the representativeness of our data by comparing sample

distributions of a group of indicators with their corresponding distributions in the sector. We applied chi-squared test and G-test to compare the relative frequency distributions of the following indicators (Mangiafico 2016)[7]: gender, age group, development level of the municipality of residence, geographical region of residence. The results from both tests suggest that the sample distributions of these indicators are statistically different from the distributions in the sector. Although the differences are found to be statistically different from each other, the bar plots of all indicators, with the exception of gender with a 10.4 percentage points difference, do not reveal large differences in magnitude (see Figure 2). This suggests that the rejection of the equality of relative frequency distributions is mainly driven by the large sample size, where even the smallest difference appears to be statistically significant, rather than large differences in sample and sector proportions[8]. We continue with monthly contribution regression estimations in the next session as we believe that the observed differences in relative frequency distributions are not large enough to bias the coefficient estimates on the effects of the regressors. However, mindful of the issues around sample representativeness, we refrain from making any savings gap calculations at the aggregate level. Instead, we limit the analysis to revealing the contribution of each individual endowment difference to the total individual savings over the 10 and 20 years.

[Insert Figure 2 here]

4. Regression Results

The sample used in this study has a cross-section structure. It was not possible to track individuals over time because the information previously collected on participants was replaced by the most recent figures as the company updated its database. Since the variable of interest - monthly contributions - is a continuous variable, we used Ordinary Least Squares to estimate the impact of each individual characteristic. Logarithmic transformation is applied to the monthly contributions variable as the Bowley measure of skewness (-0.73) reveals that it is strongly left-skewed. Table 2 reports the estimation results. All independent variables are statistically significant at 0.1%, but

gender, which is significant at 1%. The effect of each dummy variable on the monthly contribution is calculated by applying the following transformation:

$$[\exp(\hat{\beta}) - 1] \times 100$$

where $\hat{\beta}$ is the estimated coefficient on the relevant independent variable. These percentage effects are reported in the last column of Table 2.

[Insert Table 2 here]

According to our estimation results, holding all other factors constant, single women, on average, pay 1.26% less contribution than single men while married women pay 3.48%[9] higher contribution than their male counterparts. Marital status appears to have a reducing impact on monthly contributions paid by men (1.25%) while it has an increasing impact for women (3.49%). Although estimation results suggest that the monthly contribution is the highest for married women, this group is likely to be the most disadvantaged in the public pension system due to their low participation.

Contributors living in the second most developed set of municipalities pay 1.28% higher contribution than those living in the first group. The amount of contributions declines as we move towards the third and fourth (least developed) groups, respectively, by 2.80% and 4.24%. Results for age dummies reveal increasing quantities of monthly contributions as we move towards higher age categories. In comparison to the 18-29 age category, contributors aged 30-39, 40-49, 50-59 and 60 or above, respectively, pay 2.81, 8.01, 12.60 and 25.89 percent higher contributions.

A similar increasing pattern is also observed for the monthly income and education dummy variables; for these two sets of dummies, as we move from the lowest to the top category, we observe effects increasing in a multiplicative manner. Contributors in the highest income group (people who earn above 5000 TL a month), on average, pay 41.62% higher than those in the lowest income group while contributors with an income between 3001 TL and 5000 TL pay 10.84% higher

than the lowest earners. In comparison to the contributors with an education at primary school level or lower, contributors with university and postgraduate degrees pay, respectively, 29.96% and 36.36% higher.

The signs of the regression results are consistent with the expectations and findings in literature. Among the social and demographic factors that are included in the model, income, education level and age are the top three sources of the dispersion in IPS contributions.

5. Role of State Contributions

In the second stage of our analysis, we use the coefficient estimates obtained from our model and calculate how differences in individual characteristics and endowments, together with government subsidies reinforce inequalities in individuals' future wealth. Our calculations are based on the guidelines provided in Treasury's circular on saving and repayment tables (see Turkish Treasury 2010) to be used in IPS. Accordingly, we assume regular monthly contributions over durations of 10 and 20 years and use a pessimistic 6% gross rate of return.[10] Each contributor receives a government subsidy of 25% on the contribution that she makes.

In Table 3, the impact of each factor on total savings is assessed by comparing each category with the base category of that dummy variable set while holding all other factors constant. In each case, an individual in the base category is assumed to pay a monthly contribution of 200 TL (the sample average of monthly contributions is 197.8 TL); the expected contributions in other categories are predicted by using the coefficient estimates reported in Table 2. For the interacted gender and marital status variables, for example, the first column indicates that in comparison to a single man who pays a contribution of 200 TL a month, a married man with similar characteristics (i.e. all factors other than marital status is kept constant) is expected to pay 198 TL while a married woman pays 204 TL. Similarly, for our education dummies, we observe that each additional educational degree is expected to boost the monthly contributions further. As another indicative example, in comparison to an individual with a primary school or lower educational qualification,

a secondary school graduate with similar characteristics is expected to pay a contribution of 208 TL while the premiums for vocational high school, high school, university and postgraduate degrees are estimated to be 18, 30, 60, and 73 TL, respectively.

The second and third columns in the table show, respectively, the total invested capital over 10 years and the total value of that investment with a 6% yearly gross rate of return. The fourth column shows the difference in individual savings arising from endowment differences. Columns V to VII show the corresponding figures based on a state contribution of 25% on an individual's investment. As an indicative example, while an individual with a primary school or lower educational qualification receives a monthly state contribution of 50 TL for each 200 TL of individual contribution, an individual with a postgraduate degree would be receiving a monthly state contribution of 68.25 TL based on their 273 TL contribution. The total savings column (column VIII) is the sum of savings gained by individual (column III) and state (column VI) contributions. Finally, column IX shows the differences in 10 years of savings arising from differences in the respective explanatory variable. Columns X to XVII repeat these calculations for a duration of 20 years.

Both the individual and state contributions are kept in a retirement fund. The monthly rate of return on these contributions is calculated by assuming a fund management fee of 1.5% and 0.37% for, respectively, the individual and state contribution funds. Accordingly, the monthly rate of returns on individual and state contributions are calculated to be, respectively, 0.367% and 0.457%.[11] Accordingly, while the monthly rate of return for individual savings is 0.6821%, it is 0.7691% for state contributions.

Table 3 presents the role of endowment differences in individuals' future savings over 10 and 20-year periods. It also reveals how state contributions that are paid in proportion to individual savings exacerbate the inequalities. In line with the regression results, differences in age, educational attainment and monthly income create the widest gap, producing a total savings

difference up to, respectively, 10,000, 14,000, and 16,000 TL in 10 years and 26,000, 36,000 and 41,000 TL in 20 years.[12] The worsening impact of IPS on gender inequalities has been widely emphasized in literature. Our results, at first sight, seem to contradict these findings. However, only 30% of contributors in our sample are women, which suggests that, in comparison to men, women are underrepresented in the system. Besides, the reported results only reflect the differences arising from differences in gender and marital status for individuals of the same age, living in cities with the same development level, and more importantly, with the same income and educational attainment.

Indeed, a big proportion of women in the society do not have the means to participate in IPS. In 2013, the female labour force participation rates for the never married, married and divorced were, respectively 37.9%, 30.5%, and 50.9% while the corresponding figures were 61.4%, 77.3%, and 72.9% for men.[13] Whilst the labour force participation rate is the lowest for married women, it is the highest for married men. Married women participants in the IPS (20.2%) are likely to have higher monthly contributions in order to partially compensate for their otherwise disadvantaged position due to their low and interrupted participation in the labour market, hence their lack of social security. Hence, one can state that for women that are entangled in the traditional family model, the private pension system gives them an opportunity to save, contributing to at least a partial improvement in their lives. However, we need to stress that this compensation could not be a real choice in terms of social security for most women who do not have sufficient saving capacity. Latest employment figures in Turkey reveal that in 2019, only 31.8% of the employed were women. Of those who were in employment, 25.11% (14.9%) of women (men) were in agriculture while 22.9% (4.5%) of women (men) were unpaid family workers.[14] Therefore, not only women are underrepresented in the Turkish labour market, but also, in comparison to men, they are more likely to be unpaid family workers or are employed in agriculture. Therefore, it can be concluded that IPS cannot be seen as a mechanism to compensate gender-based inequalities in reaching pension

security; on the contrary, it contributes to growing socio-economic gulf between different classes of women.

The simulation results presented in the study are based on a few assumptions. First, following the guidelines of the Treasury, we assume regular monthly contributions over durations of 10 and 20 years. As stated in section 2.1, the system is designed to discourage early exits: participants would be receiving government contributions in full only when they stay in the system for at least 10 years. Because we aim to reveal the worsening impact of government contributions, we choose a minimum of 10 years of participation in the system. An early exit from the system comes with a high opportunity cost, which the financially better-off participants could avoid more easily while those who cannot afford to make regular payments for at least 10 years would lose a part of their potential earnings. This may imply greater inequalities than what our calculations reveal. We additionally assume that the coefficient estimates on the characteristics that we include in our regression model remain constant over time. Differences in contributions of people from different backgrounds may narrow down over time with, for example, the changing roles of women in the family or in the labour market; relative importance of skill-level (measured by educational attainment) in the labour market; or the changing levels of economic activity of municipalities. The implications of these changes on our calculations are hard to predict and this is a limitation that we acknowledge. However, the simulation results are still informative as they show how the government contributions could worsen the distribution of savings given the currently observed characteristics.

Furthermore, the analysis presented here is based on individuals who have IP accounts. Exclusion of those who do not have the means to participate in the IPS is an important limitation and is likely to lead to sample selection bias.[15] A more precise assessment would be to examine IPS's distributional effects across all segments of the society, which is expected to be worse than what this study reports. The IPS favours a group of people who are already in an advantaged

position while economically inactive population, informal sector employees, unpaid family workers and/or individuals engaged in agricultural activities are mostly neglected. In 2013, the unemployment rate in Turkey was 9%; in 2014, 29.5% of the employed were in either self-employment (17.3%) or unpaid family work (12.2%). In age group 30-34, where the number of participants peaks in our data, the labour force participation rate in 2016 was 69.3% (95.6% for men and 42.5% for women) while the unemployment rate was 7.7% for men and 12% for women.[16] These figures, overall, suggest that a segment of the population, who is in the highest need of a better social security system is pushed in a disadvantaged position. While those who enter the labour market as wage laborers participate in the insurance realm as customers, the non-working poor depend on social aids (Özdemir & Yücesan-Özdemir 2006). Erdoğdu (2006) advocates that in a time of worsening income distribution and rising flexibility of employment, the real need was indeed for a reform that could improve social security conditions of low-income groups; instead, the poor were excluded from the obligatory public social security system.

[Insert Table 3 here]

6. Conclusion

With the shift in Turkey's pension system, individuals have been directed towards developing their own solutions against the old-age risks to the extent of their saving capacities. Confirming the literature, this article found that socio-economic and demographic characteristics play important roles in the voluntary IPS participants' savings decisions. In general, weaker social segments such as the young, women, low-income earners, low-educated people and those living in less developed municipalities are found to be at a disadvantaged position. Our calculations further show that the state incentives reinforce these inequalities by transferring more resources to those with higher savings.

Our results suggest that married women pay higher contributions than others (i.e. men and single women). However, women, overall, are underrepresented in the system. While married

women who have the ability to pay contributions try to compensate for their disadvantaged position via private pensions, most women, without having sufficient savings capacity, do not have access to this opportunity. Therefore, we conjecture that individuals who are not included in the compulsory public social security system, who are unable to save through the IPS, and who are out of auto-enrolment based private pension programs (as they do not have regular jobs and sufficient incomes) will be pushed out of social security in terms of retirement.

Moreover, the IPS can only provide security in proportion to individuals' savings, unlike the public system which supports individuals throughout their lifetime. The IPS provides returns that are directly affected by the market performance of assets; hence, there is no guaranteed future income. The substantial drop in the private-funded pensions' assets during the 2008 crisis or the 2020 coronavirus outbreak exemplify the volatile nature of the financial markets. The financial market risk caused by this volatility could lead to inadequate pensions that undermine social security and worsen unequal outcomes (Orenstein 2013). Therefore, governments have been under rising pressure to regulate the pension markets to ensure stability in pension provision as the search of pension companies for higher yield itself exacerbates market volatility (Hassel *et al.* 2019).

As well, the literature provides evidence on the worsening consequences of the 2008 financial crisis on the income and wealth inequalities. Preceding the crisis, the rich were able to accumulate more financial assets backed by loans to the lower income groups who suffered from a massive income erosion in the USA (Kumhof 2015). After the crisis, plummeting house prices together with stock market booms have increased the wealth inequality further as the leveraged middle-class have a higher share of their wealth in housing while the portfolios of the rich are dominated by equities (Kuhn *et al*. 2018). This increased flow of funds between wealthy creditors and lower-income debtors increases the size and the instability of the financial sector (Landy 2013). Under such conditions, individually-funded pension systems will aggravate inequalities as the poor have become more indebted and unable to finance sufficient pension incomes for the future.

Furthermore, the IPS's contribution to reaching the national savings targets is debatable. Only 23.9% of the funds in the IPS were new savings and the rest were transfers from existing deposit accounts (Eren and Genc-Ileri 2015). In an effort to increase saving rates, around 14 years after the implementation of the voluntary IPS, the AES was additionally put into practise in 2017. However, withdrawals from the system have been very high (over 50%) since its introduction (Peksevim & Akgiray, 2019). Further measures are being considered to reduce withdrawals such as not allowing participants to withdraw after the initial 2-month opt-out period except for certain circumstances such as serious illness, first-home purchase or marriage. Due to the short duration of time since its introduction and the large withdrawal ratio, it has not been possible to predict to what extent the automatic participation will mobilize savings. Conclusions of this study are based on an analysis of the voluntary IPS contributions but similar rules in terms of conditions for retirement and matching state contributions of 25% also apply in the AES. Therefore, we conjecture that the savings inequality implications will be similar in these two private pension components. Though, we do acknowledge that, as new data becomes available, the effects of the mandatory system on social equity and income distribution should also be analysed.

The partial shift to the private pension system in Turkey has eroded the principles of social equality. Under the private individual pension schemes, state incentives have been designed to favour higher-income groups. The eleventh five-year development plan of Turkey (2019-2023) reveal plans to strengthen the role of IPS by introducing measures to increase the participant numbers and the total funds in the system, and to extend periods of participation (Turkish Presidency 2019). These measures will form the basis of a move towards a Complementary Pension System where the burden on the public pension system is lifted over time. It is also planned to expand the scope of the second pillar within the Complementary Pension System. As the simulations show, the income inequality effect will increase cumulatively while the IPS or the AES continue to be in practice. Further, the structural dynamics that are present in the third pillar are

likely to be present in the second pillar too, with similar undesirable implications on the pension savings distribution once it is expanded across the population. On this basis, we argue that the pension privatization policy should be reversed in Turkey. Instead, we suggest a defined-benefit-based compulsory public pension system that rests on wide coverage, equity and poverty reduction. The discussion of the widening social exclusion of the poor and marginalized that are deprived of opportunities to access the IPS is beyond the scope of this paper. This possible source of pension inequality associated with the shift to private pension programs can be addressed in future research in detail.

Appendix

[Insert Table 4 here]

Notes

[1] The participant is entitled to receive the state contribution in proportion to the years they stay in the system. Participants who are at least 56 years of age and have completed 10 years are entitled to receive the full amount of the state contribution fund (PMC 2018).

[2] Because the data for the analysis was retrieved from voluntary pension accounts, the appraisal of the partial privatization will be based on the voluntary IPS.

[3] As van Vliet *et al.* (2012) stress, current individual pension benefits depend on long-term effects such as the lifetime wages or contributions paid in the past, which could not be captured in a macro-level analysis. Therefore, research relying on micro-data may shed more light on the distributional effects of pension reform by controlling for individual characteristics.

[4] Regarding the retreat from pension privatization see also; Orenstein (2013); Cohen and Cienski (2014); Bielawska *et al.* (2017); Diaz (2018).

[5] All these indicators are included as categorical variables. Although it is expected to be an important determinant of monthly contributions, we exclude occupation due to low quality of data for this variable: 15.37% of observations are classified as "other", which is likely to be heterogeneous. Considering the strong relationship between occupation and earnings as well as the education level, exclusion of occupation is not expected to create a substantial bias in the coefficient estimates.

[6] See Table 4 in Appendix for percentage distributions of monthly contributions by individual characteristics.

[7] The tests are performed for each indicator separately rather than using their joint distributions. This is because it was not possible to obtain multidimensional statistics from the Pension Monitoring Center's database.

[8] See Appendix B for percentage distribution tables and test results.

[9] $[\exp(0.0469 - 0.0127) - 1] \times 100$

[10] The Treasury forecasts pessimistic and optimistic gross rates of return of 6% and 10%, respectively. Calculations reveal even higher degrees of inequalities when an optimistic rate of 10% is used. See Table A1 in online Appendix for these calculations.

[11] $[(1 + 0.06 - 0.015)^{1/12} - 1] \times 100$ yields the former and $[(1 + 0.06 - 0.0037)^{1/12} - 1] \times 100$ the latter.

[12] The total savings differences are 4,255, 5,957, 6,809 Euro in 10 years and 11,064, 15,319, 17,447 Euro in 20 years for age, educational attainment and monthly income, respectively.

[13] Statistics are obtained by using the "dynamic search" links on <http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007> [accessed 21.11.2017]

[14] Statistics are available from http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007 [accessed 24.03.2020]

[15] Addressing this issue would require a comprehensive dataset which includes a similar set of information on both the participants and non-participants as well as their economic activity and employment status. This would allow us not only to model the monthly contributions but also to examine factors that determine participation in the system.

[16] Statistics are obtained by using the "dynamic search" links on <http://www.turkstat.gov.tr/PreTablo.do?alt_id=1007> [accessed 21.11.2017]

References

Beach, B. & Bedell, G. (2019). Exploring pension reforms, work, and inequalities. The EXTEND Project, UK, April, ILC-UK 2019, ILC.

Been, J., Caminada, K., Goudswaard, K., & van Vliet, O. (2017). Public/private pension mix, income inequality and poverty among the elderly in Europe: An empirical analysis using new and revised OECD data. Social Policy and Administration, 51, 7, 1079-1100.

Behrendt, C. (2000). Private pensions- a viable alternative? Their distributive effects in a comparative perspective. International Social Security Review, 53, 3, 3-26.

Betti, G., Bettio, F., Georgiadis, T., Tinios, P. (2015). Unequal ageing in Europe. Women's independence and pensions. Palgrave Macmillan, New York.

Bielawska, K. and Chłoń-Domińczak, A. and Stańko, D. (2017). Retreat from mandatory pension funds in countries of the Eastern and Central Europe in result of financial and fiscal crisis: Causes, effects and recommendations for fiscal rules. MPRA Paper 83345, University Library of Munich, Germany.

Bonnet, C., Meurs, D., Rapoport, B. (2018). Gender inequalities in pensions: Different components similar levels of dispersion. Journal of Economic Inequality, 16: 527–552.

Bozkuş C. & Elveren A. (2008). An analysis of gender gaps in the private pension scheme in Turkey. Ekonomik Yaklasim, 19, 69, 89-106.

Burkevica, I., Humbert, A.L., Oetke, N. & Pats, M. (2015). Gender gap in pensions in the EU. The European Institute for Gender Equality (EIGE) Research Note, Lithuania.

Cohen, N. & Cienski, J. (2014). Poland pension reform reversal highlights public disillusion. Financial Times, February 5.

Díaz, L. D. (2018). The reversal of pension privatization in Venezuela. Extension of Social Security (ESS), Paper No. 71, Geneva: ILO.

Ebbinghaus, B. (2019). Pension reforms and old age inequalities in Europe: From old to new social risks? University of Oxford, European Sociological Association, Conference, Manchester, 21 August.

Elveren, A. Y. (2008). Assessing gender inequality in the Turkish pension system. International Social Security Review, 61, 2, 39-58.

Elveren, A. Y. & Hsu, S. (2007). Gender gaps in the individual pension system in Turkey. Working Paper, No. 2007-06, The University of Utah, Salt Lake City, UT.

Elveren, A.Y. (2013). A critical analysis of the pension system in Turkey from a gender equality perspective. Women's Studies International Forum, 41, 35–44.

Erdoğdu, S. (2006). Sosyal politikada değişim ve sosyal güvenlik reformu. Mülkiye Dergisi, 30, 252, 211-236.

Eren, O. & Genc-Ileri, S. (2015). Government subsidized individual retirement system. Working Papers 15/20, Research and Monetary Policy Department, Ankara: Central Bank of the Republic of Turkey.

Etgeton, S. (2018). The effect of pension reforms on old-age income inequality. Labour Economics, 53, 146-161.

European Commission (2010). Green paper: Towards adequate, sustainable and safe European pension systems. Brussels.

European Commission (2015). The 2015 ageing report - Economic and budgetary perceptions for the 28 EU member states (2013-2060), Brussels.

Festic, M. & Mencinger, J. (2009). The perspective of pension system reforms in the new member states. Prague Economic Papers, 4, 291-308.

Foster, L. (2014). Women's pensions in the European Union and the current economic crisis. Policy & Politics, 42, 4, 565-580.

Gill, I., Packard, T., Yermo, J. (2005). Keeping the promise of social security in Latin America. Washington, DC: World Bank.

Hassel, A., Naczyk, M., Wiß, T. (2019). The political economy of pension financialisation: public policy responses to the crisis. Journal of European Public Policy, 26, 4, 483–500

ILO (1996). Social security and health insurance reform project, Social security final report, ILO/TF/Turkey/R.60, Geneva.

ILO (2017). The world social protection report 2017–19. Geneva: ILO.

IMF (2016). Turkey selected issues. IMF Country Report. No.16/105, April, Washington: IMF.

IMF (2019). The Future of Saving: The role of pension system design in an aging world. D. Amaglobeli, H. Chai, E. Dabla-Norris, K. Dybczak, M. Soto & Alexander F. Tieman, IMF Staff Discussion Notes, SDN/19/01.

IMF (2020). Getting older but not poorer. D. Amaglobeli, E. Dabla-Norris & V. Gaspar, Finance and Development, March, 57,1, 31-34.

Kay, S. J. & Sinha, T. (2008). Overview. In Lessons from pension reform in the Americas. Ed. S. J. Kay and T. Sinha. Oxford: Oxford University Press.

Kuhn, M., Schularick, M., Steins, U. (2018). How the financial crisis drastically increased wealth inequality in the U.S. Harvard Business Review, September 13.

Kumhof, M. (2015). Income inequality causes higher debt leverage among all but the richest households, and makes economies more vulnerable to financial crises. LSE USCentre. Available from http://bit.ly/1JEjGP3 [accessed 03.02.2020]

Landy, B. (2013). A tale of two recoveries: wealth inequality after the great recession. The Century Foundation, August 28. Available from https://tcf.org/content/commentary/a-tale-of-two-recoveries-wealth-inequality-after-the-great-recession/?agreed=1 [accessed 03.02.2020]

Lis, M. & Bonthuis, B. (2019). Drivers of the gender gap in pensions: Evidence from EU-SILC and the OECD pension model. Discussion Paper No. 1917 | April 2019, the WB: Washinghton DC.

Mangiafico, S.S. (2016). Goodness-of-Fit Tests for Nominal Variables. Summary and analysis of extension program evaluation in R. Available from http://rcompanion.org/handbook/H_03.html [accessed 07.03.2020].

Mesa-Lago, C. (2009). Re-reform of Latin American private pensions systems: Argentinian and Chilean models and lessons. The Geneva Papers on Risk and Insurance- Issues and Practice, 34, 602-617.

Mesa-Lago, C. (2014). Reversing pension privatization: The experience of Argentina, Bolivia, Chile and Hungary. Extension of Social Security (ESS) Paper Series No. 44, Geneva: ILO.

Ministry of Development (2013). İllerin ve Bölgelerin Sosyo-ekonomik Gelişmişlik Sıralaması Araştırması (SEGE-2011), Ankara, Turkey.

Orenstein, M. A. (2013). Pension privatization: Evolution of a paradigm. Governance: An International Journal of Policy, Administration, and Institutions, 26, 2, 259-281.

OECD (2000). Reforms for an ageing society. Paris: OECD.

OECD (2019). Pensions at a glance 2019: OECD and G20 Indicators, Paris: OECD.

Ortiz, I., Duran-Valverde, F., Urban, S., Wodsak, V., Yu, Z. (2018). Reversing pension privatization: Rebuilding public pension systems in Eastern European and Latin American countries (2000-18). ESS Working Paper, No:63, ILO, Geneva.

Orszag, P. & Stiglitz, J. (2001). "Rethinking pension reform: Ten myths about social security systems". In New Ideas about Old Age Security: Towards Sustainable Pension Systems in the 21st Century, ed. R. Holzmann and J. Stiglitz, Washington DC: WB.

Özdemir, A. M. & Yücesan-Özdemir, G. (2006). Türkiye'de sosyal güvenliğin derin dönüşümü: Farklı birey tahayyülleri. İktisat Dergisi, 478, 48-54.

Palmer, E.K. (2017). Structural disadvantage: evidence of gender disparities in the Norwegian pension system. Social Sciences, 6, 22; 1-15.

Peksevim, S. & Akgiray, V. (2019). Reforming the pension system in Turkey: comparison of mandatory and auto-enrolment pension systems in selected OECD countries, OECD. Available from www.oecd.org/pensions/Reforming-the-Pension-System-in-Turkey-2019.pdf [accessed 21 June 2020]

Piirits, M. & Võrk, A. (2019). The effects on intragenerational inequality of introducing a funded pension scheme: A microsimulation analysis for Estonia. International Social Security Review, 72, 1, 33-57.

PMC (Pension Monitoring Center of Turkey) (2018). Individual Pension System Progress Report 2017. Available from https://egm.org.tr/data-center/individual-pension-system-progress-reports/ [accessed 20.06.2020]

PMC (2020). Weekly Statistics. Available from https://www.egm.org.tr/bilgi-merkezi/istatistikler/ [accessed 20.06.2020]

Social Security Institution (2019). Social security system. Available from http://www.sgk.gov.tr/wps/portal/sgk/en/detail/social_security_system [accessed 27.09.2019]

Sunley, P. (2000). Pension exclusion in grey capitalism: Mapping the pensions gap in Britain. Transactions of the Institute of British Geographers, 25, 4, 483-501.

Şahin Ş., Rittersberger-Tılıç H. & Elveren A. (2010). The individual pension system in Turkey: A gendered perspective. Ekonomik Yaklasim, 21, 77, 115-142.

Turkish Presidency (2019). Eleventh Development Plan 2019-2023. Available from https://www.egm.org.tr/Sites/1/upload/files/On-Birinci-Kalkinma-Plani_SBB-1016.pdf [accessed 21.06.2020]

Turkish Treasury (2010). Circular on probable accumulation and repayment tables to be used in individual pension system. Dated: 23 August, No: 2010/10.

van Vliet, O., Been, J., Caminada, K., Goudswaard, K. (2012). Pension reform and income inequality among older people in 15 European countries. International Journal of Social Welfare, 21, 8-29.

Willmore, L. (2007). Universal pensions for developing countries. World Development, 35, 1, 24-51.

World Bank (1994). Averting the old age crisis: Policies to protect the old and promote growth. Oxford: Oxford University Press.

Yılmaz Akın, B. G. (2018). Turkish individual pension system: from voluntary basis to automatic enrolment. Research and Policy on Turkey, 3, 2, 201-216.

Zaidi, A., Grech, A.G. & Fuchs, M. (2006). Pension policy in EU25 and its possible impact on elderly poverty. Centre for Analysis of Social Exclusion London School of Economics, Case/116, December.

Zhu, H. & Walker, A. (2018). Pension system reform in China: Who gets what pensions? Soc Policy Admin. 52:1410–1424.

Author Contributions

All the authors were involved in study design, data collection and manuscript development. They commented on all versions of the manuscript and approved the final version.

Table 1

Variable definitions and summary statistics

Variable	Categories	Frequency	Share (%)
Gender	Male†	87,455	70.0
	Female	37,435	30.0
Marital status	Single†⋆	35,490	28.4
	Married	89,400	71.6
Development level of the city of residence	First 20 developed cities†	87,253	69.9
	Second 20 developed cities	20,192	16.2
	Third 20 developed cities	10,620	8.5
	The least developed 21 cities	6,825	5.5
Age	Age 18-29†	22,400	17.9
	Age 30-39	48,623	38.6
	Age 40-49	33,754	27.0
	Age 50-59	16,101	12.9
	Age 60 and above	4,372	3.5
Monthly income (TL)	0 - 1.500†	40,611	32.5
	1.501 - 3.000	50,887	40.7
	3.001 - 5.000	21,031	16.8
	5.001 and above	12,361	9.9
Education level	Primary school and below†	25,720	20.6
	Secondary school	54,050	43.3
	High school	11,553	9.3
	Vocational high school	29,970	24.0
	University	3,246	2.6
	Postgraduate	351	0.3

† The base category during estimations.

⋆ The single category includes people who have not been married, were divorced, or lost spouse.

Table 2

Estimation results for monthly contribution

Ln (Monthly Contribution)	Coefficient	Standard Error	Percentage Effect
Gender and marital status			
Female	-0.0127*	0.0046	-1.26
Married	-0.0126**	0.0035	-1.25
Female*Married	0.0469**	0.0055	4.81
Development rank of city of residence			
Ranked 21-40	0.0128**	0.0032	1.28
Ranked 41-60	-0.0284**	0.0042	-2.80
Ranked 61-81	-0.0434**	0.0052	-4.24
Age			
Aged 30-39	0.0277**	0.0035	2.81
Aged 40-49	0.0771**	0.0039	8.01
Aged 50-59	0.1186**	0.0046	12.6
Aged 60 and above	0.2302**	0.007	25.89
Monthly income (TL)			
1.501 - 3.000	0.0097**	0.0028	0.98
3.001-5.000	0.1029**	0.0036	10.84
5.001 and above	0.348**	0.0044	41.62
Education			
Secondary school	0.0378**	0.0031	3.85
Vocational high school	0.0871**	0.0046	9.10
High school	0.139**	0.0036	14.91
University	0.2621**	0.0077	29.96
Postgraduate	0.3101**	0.0219	36.36
Coefficient	4.9154**	0.0044	-
Number of observations		124,890	
Adj R-squared		0.1112	

** p-value < 0.001, * p-value < 0.01

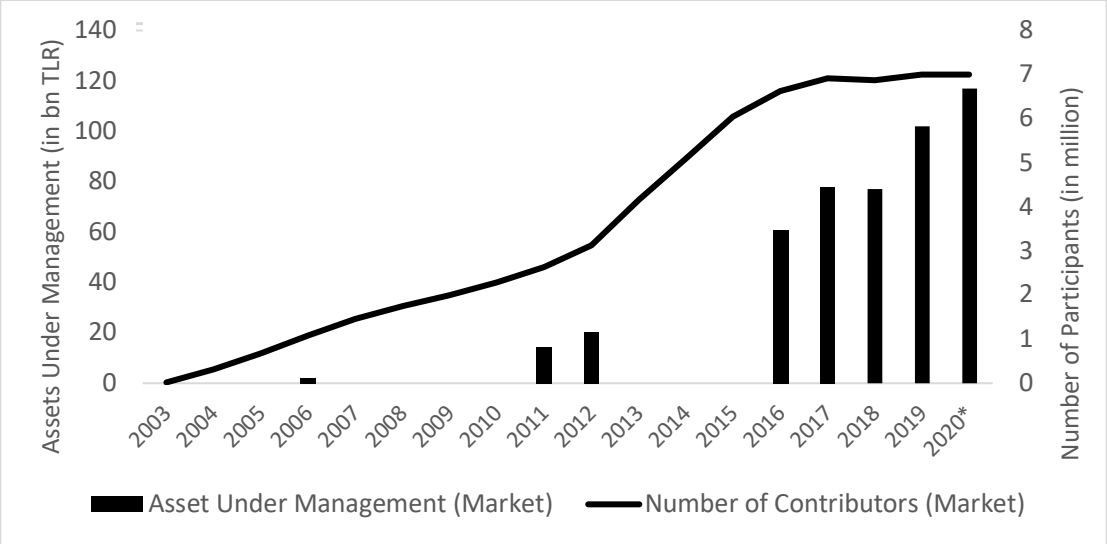
Table 3. Individual savings, government contributions and total saving differences (TL): 6% annual gross rate of return, 10 and 20 year periods

Categories	(I) Regular Monthly Cont. (TL)	10 Years (Comparing to base Categories)								20 Years (Comparing to base Categories)							
		Individual Savings			Government Contribution			(VIII) Total Savings	(IX) *Total Savings Difference*	Individual Savings			Government Contribution			(XVI) Total Savings	(XVII) *Total Savings Difference*
		(II) Invest	(III) Invest + Income	(IV) *Diff.*	(V) Invest	(VI) Invest + Income	(VII) *Diff.*			(X) Invest	(XI) Invest + Income	(XII) *Diff.*	(XIII) Invest	(XIV) Invest + Income	(XV) *Diff.*		
Base Category	*200*	*24,000*	*30,206*	*0*	*6,000*	*8,007*	*0*	*38,213*	*0*	*48,000*	*77,114*	*0*	*12,000*	*21,855*	*0*	*98,969*	*0*
Married man	198	23,760	29,904	**-302**	5,940	7,927	**-80**	37,831	***-382***	47,520	76,343	**-771**	11,880	21,636	**-219**	97,979	***-990***
Single woman	197	23,640	29,753	**-453**	5,910	7,887	**-120**	37,640	***-573***	47,280	75,958	**-1,157**	11,820	21,527	**-328**	97,485	***-1,485***
Married woman	204	24,480	30,810	**604**	6,120	8,168	**160**	38,977	***764***	48,960	78,657	**1,542**	12,240	22,292	**437**	100,948	***1,979***
City of residence: Ranked 21-40	203	24,360	30,659	**453**	6,090	8,128	**120**	38,786	***573***	48,720	78,271	**1,157**	12,180	22,183	**328**	100,454	***1,485***
Ranked 41-60	194	23,280	29,300	**-906**	5,820	7,767	**-240**	37,067	***-1,146***	46,560	74,801	**-2,313**	11,640	21,199	**-656**	96,000	***-2,969***
Ranked 61-81	192	23,040	28,997	**-1,208**	5,760	7,687	**-320**	36,685	***-1,529***	46,080	74,030	**-3,085**	11,520	20,981	**-874**	95,010	***-3,959***
Aged 30-39	206	24,720	31,112	**906**	6,180	8,248	**240**	39,360	***1,146***	49,440	79,428	**2,313**	12,360	22,510	**656**	101,938	***2,969***
Aged 40-49	216	25,920	32,622	**2,416**	6,480	8,648	**641**	41,270	***3,057***	51,840	83,283	**6,169**	12,960	23,603	**1,748**	106,887	***7,918***
Aged 50-59	225	27,000	33,981	**3,776**	6,750	9,008	**1,001**	42,990	***4,777***	54,000	86,754	**9,639**	13,500	24,587	**2,732**	111,340	***12,371***
Aged 60 and above	252	30,240	38,059	**7,853**	7,560	10,089	**2,082**	48,149	***9,935***	60,480	97,164	**20,050**	15,120	27,537	**5,682**	124,701	***25,732***
Monthly income: 1,501 – 3,000	202	24,240	30,508	**302**	6,060	8,088	**80**	38,595	***382***	48,480	77,885	**771**	12,120	22,073	**219**	99,959	***990***
3000,1 – 5,000	222	26,640	33,528	**3,323**	6,660	8,888	**881**	42,417	***4,203***	53,280	85,597	**8,483**	13,320	24,259	**2,404**	109,856	***10,887***
5,001 and above	283	33,960	42,741	**12,535**	8,490	11,331	**3,323**	54,072	***15,858***	67,920	109,117	**32,002**	16,980	30,925	**9,070**	140,041	***41,072***
Secondary school	208	24,960	31,414	**1,208**	6,240	8,328	**320**	39,742	***1,529***	49,920	80,199	**3,085**	12,480	22,729	**874**	102,928	***3,959***
Vocational high	218	26,160	32,924	**2,719**	6,540	8,728	**721**	41,652	***3,439***	52,320	84,055	**6,940**	13,080	23,822	**1,967**	107,876	***8,907***
High school	230	27,600	34,737	**4,531**	6,900	9,209	**1,201**	43,945	***5,732***	55,200	88,681	**11,567**	13,800	25,133	**3,278**	113,814	***14,845***
University	260	31,200	39,267	**9,062**	7,800	10,410	**2,402**	49,677	***11,464***	62,400	100,249	**23,134**	15,600	28,411	**6,556**	128,660	***29,691***
Postgraduate	273	32,760	41,231	**11,025**	8,190	10,930	**2,923**	52,161	***13,948***	65,520	105,261	**28,147**	16,380	29,832	**7,977**	135,093	***36,124***

Note: It is assumed, during the calculations, that an individual in the base category of each set of dummies pay an average monthly contribution of 200 TL.

Figure 1

Number of Contributors (million people) and Total Assets under Management (billion TL) in the IPS, 2003-2020.



* Figure as of June, 12, 2020.

Data Source: PMC (2020) Weekly Statistics.

Figure 2

Comparison of sample data with sector information

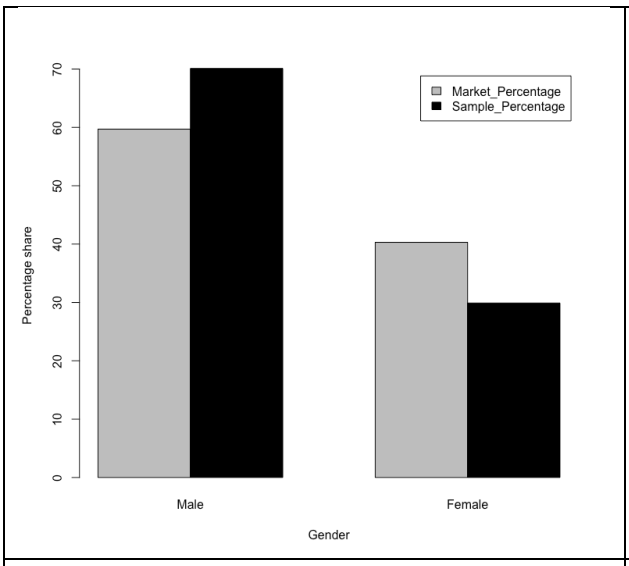


Figure 2a. Gender

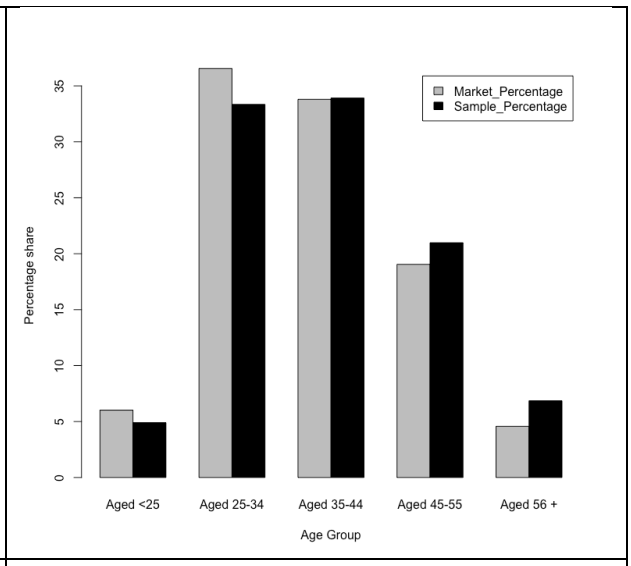


Figure 2b. Age groups

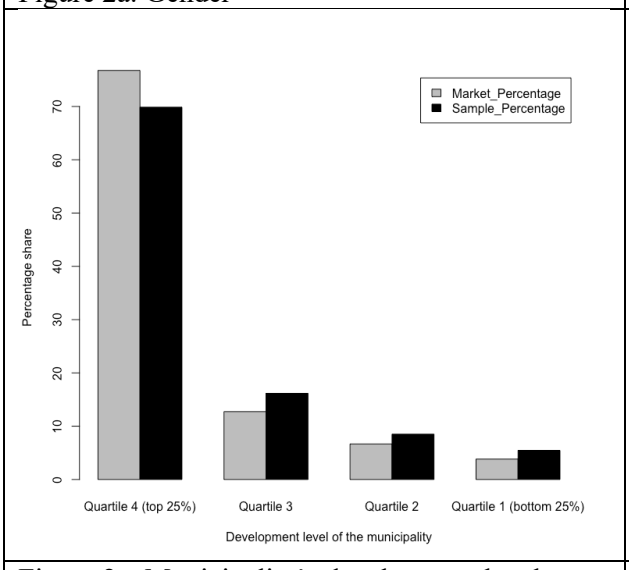


Figure 2c. Municipality's development level

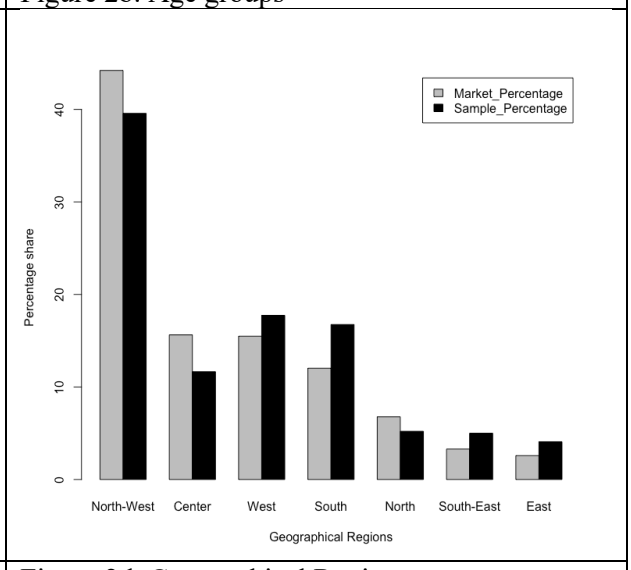


Figure 2d. Geographical Regions