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## Introduction

Since the 1980s many countries reformed social security, moving from pay-as-you-go (PAYG) systems, in which the annual contributions of the working population are used to finance the payments of the current retired population, to variants of privatized social security<sup>1</sup>. PAYG systems were under stress due to aging populations, an expanding informal economy, low pension coverage, and inefficiency in the administrative and political management of funds, all of which increased their fiscal costs. Social security reforms were undertaken according to neoliberal principles of economic efficiency and financial sustainability, which are seen as paramount goals. Through these reforms governments also altered the basis of retirement income from defined benefit (DB)<sup>2</sup>, in which the benefits of the retiree are based on the worker's wage and years of service, to defined contribution (DC) schemes, in which benefits are determined by the worker's total contribution to the system and the investment return of contributions.<sup>3</sup> The PAYG plans assign accrual risk to the state, while DC plans assign accrual risk to the individual worker. Even conditional on an earnings history, retirement benefits in DC plans depend on the efficacy with which contributions are financially managed and *luck!*

There is a sizeable literature on social security reforms addressing relative advantages of defined benefit and defined contribution schemes. Gender has been an important analytical category in these analyses that recognize that due to the gender

<sup>1</sup> Introduction of the privately managed individual pension schemes is referred as “privatization of social security.”

<sup>2</sup> Defined benefit schemes assign accrual risk to the state, while defined contribution schemes assign risk to the individual, since the funds are invested in private assets that represent ownership claims on real capital.

<sup>3</sup> It is possible for PAYG systems to be based on DC plans as is observed in the new pension reforms in Sweden. However, in this paper we consider the general case in which traditional PAYG systems based on DB and DC plans are referred to as funded schemes, i.e. individual pension plans (Ståhlberg et al 2006).

division of labor, including unpaid family work and informal paid work, women are more likely to be excluded from social protection and have fewer benefits.

This literature has also recognized that social security reforms that do not consider the differences between men and women in terms of their pension eligibility requirements or gender differences in the demographic profile and labor market participation create unequal results for women. Gender segregation in the labor market, wage differentiation, and fewer working hours for women, all of which are the result of gender-specific constraints related to women's reproductive work, have a considerable negative impact on women's earnings in private pension schemes.

This paper examines the gender implications of Turkey's private pension scheme introduced in 2003 as a part of ongoing social security reform. While there is a growing literature on Turkey's social security reform, there are no studies on the gender dimension of social security and gender effects of reform. By examining the gender gap in benefits that arise from the defined contribution schemes in a series of projections, this study seeks to address this gap. This paper first reviews the literature on gender inequality in social security systems. In Section 2, we present a brief history of the social security in Turkey and the Individual Pension System. Section 3 outlines the model, which is a series of projections given gender differences in contributions over time. The final section is dedicated to summarizing the results and discussion.

## 1. Gender Inequality and Social Security

The social security system<sup>4</sup>, as a key institution in the structure of social order, includes a gender dimension, since the state's policies, even if they are seemingly gender neutral, differentially affect men's and women's welfare. Mainstream economists have continued to ignore the gendered nature of the social security system (Orloff 1996), even as women's role in both the private and public spheres has been changed by the welfare regime, as women caregivers became major workers of the welfare state (Orloff 1996).

Gender bias in the welfare state has been an ongoing and important topic of discussion for scholars. Gender-aware analyses note that there exist unequal conditions for women and gender-biased social relations that are reproduced by means of the welfare state (see Andrew 1984, Fraser 1994, and Quadagno and Fobes 1995 among many others). Women are at a disadvantage as citizens of the state. Women are in general given social rights as a mother or wife, rather than as a citizen. Benefits are tied to these reproductive roles, in which women are seen as dependent upon the "male breadwinner." In this situation, the adult male household member—usually the husband—works for pay, while the adult female household member remains at home to care for children and/or elderly as an unpaid worker. In addition, for the welfare state, the unit of distribution is the family, rather than the individual; and a variety of family laws and policies ties women's rights to those of men.

The dependency of women has been maintained in post-reform pension schemes, particularly those in Latin America (Gimenez 2005). Many argue that women were

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<sup>4</sup> We use "social security" as a general term (used by the ILO and others) covering both "social insurance," which refers to systems that workers themselves contribute to, and "social assistance", which refers to non-contributory social benefits in general. The welfare state itself is a broader concept that covers the social security system, universal citizenship entitlements, and public services.

better off before pension reforms because social benefits were usually more generous in traditional systems (*ibid*). Although in some cases women seem better off after reforms, this improvement often comes with more dependence on the “breadwinner,” and not with greater autonomy for women.

Estes (2004) discusses social security privatization, explaining why privatization is harmful to women. Private social security systems do not recognize reproductive labor and favor the “male breadwinner” model, in which women rely upon men’s higher income to provide their livelihood both before and after retirement. This imposes a penalty on women who labor within the home, who are entitled to a share of their husbands’ retirement income. Moreover, women who are in the labor force tend to earn less than men, partly due to wage discrimination against women, and end up with lower retirement income. Greater longevity for women also means that women are more likely to become widows during their lifetime, and to become financial dependents of the state.

Privatization, explains Estes, makes “male breadwinner” bias more explicit by failing to recognize the reproductive work of women and by allowing the government to absolve itself from responsibility for the financial welfare of aging women, who are often the most disadvantaged members of society. The impact of divorce, longevity, lower wages, or disability upon social security in a privatized system can dramatically worsen the financial status of women, since women receive benefits based on their own contributions and lose some rights to benefits in widowhood. In sum, a policy that is gender neutral in letter has the outcome of being gender biased in practice.

Therefore, it is critical to avoid social security policies that make women more dependent on the labor market in order to obtain more social benefits as seen in

privatized systems. These types of social security regulations may work in the long run under the assumption that women's participation in the labor market will increase; however, in the short run this results in a decrease in the well-being of women. Women's well being does not improve as dependency is shifted from benefits associated with one's husband to the labor market. Therefore, it seems there is a need to analyze this issue further in order to redesign social security programs that provide more equal opportunities for women by recognizing the disadvantaged conditions of women in the labor market (MacDonald 1998).

Reforming the social security system does not just lead to a change in responsibilities of the state and the market but also to a change in gender dependency, household labor, and caregiving. Cuts in social benefits by the state lead to a higher burden for women since they shoulder the extra responsibilities both in the household and in the labor market in order to maintain the family's life-standard. That is, the distribution of the responsibility for caregiving and dependency is directly affected by the structure of the social security reforms. Evidence from many countries shows that even in the most developed countries, about 80% of care is provided by family systems (O'Connor 1996).

Proponents of privatization of social security consider the reforms to be economic or institutional reforms, which hold economic and financial efficiency as the goal (Gimenez 2005). Thus, governments, in order to promote competitiveness and attract foreign direct investment, loosen the regulations in the labor market in favor of employers, lower the shares of employers' contributions in public pension schemes and cut income security programs, which Standing (2003) refers to as *social dumping*. This type of reform obscures the primary objective of the social security systems, which

should be to increase people's well-being, rather than to target financial sustainability. Another result of ignoring the human dimension of pension reforms is that entitlement to benefits, particularly by women, is neglected.

Reforms are undertaken in a context where women are disadvantaged already in terms of available work roles due to pregnancy, child birth, breastfeeding, and socially-ascribed roles and responsibilities such as caring for children and family. Women essentially become "secondary earners." Undertaking a huge proportion of unpaid care labor causes women to remain in full-time employment for less time than men. This translates into lower real earnings that result in a significantly smaller pension in privatized pension schemes (Williamson and Rix 1999).

Female wages during working years, and therefore in retirement, are also jeopardized by the existence of the informal sector. Evidence shows that a substantial proportion of female employment in developing countries is in the informal economy, where they earn low incomes (Sabates-Wheeler and Kabeer 2003). Informal work includes short-term contract labor, casual work, part-time work, and home-based piece work. Women remain in the informal sector because of poverty, lack of skills and education, and employer preferences for informal labor. Confinement to informal labor is one of the main reasons for the income vulnerability of women, as well as for their job insecurity and placement in the lower rungs of the labor market. This, in turn, makes women more dependent on men since they earn less (because although their total work time is higher than men, since unpaid work consists of a large part of it they earn less and they are paid less than men for the same job). This issue has major implications, particularly for private pension schemes. Because women are less likely to have and

remain in full-time employment, they pay a smaller premium into the private pension systems and receive a lower return than men do (MacDonald 1998).

Privatization is worsened for women since they tend to live longer than men. Women at age 60, in most countries, have a life expectancy that is three to five years greater than that of men (James et al. 2003). This higher life expectancy naturally implies that women are more likely to become widows than men are to become widowers. Public systems (i.e. PAYG) which treat men and women equally by using “unisex” life tables, redistribute income in favor of women (James et al. 2003). By contrast, any given DC accumulation yields lower annual benefits to women, especially if gender-specific tables are used, as in Latin America (James et al 2003). Since women have a higher life expectancy even if they have the same capital accumulation through their working years compared to men, women’s retirement income will be lower because the total amount is distributed during a longer time period. Therefore, joint annuity regulations have an important role as a redistribution mechanism from men to women (James et al 2003). This is one the main implications of the new pension regulations in Latin America, in which benefits are calculated not only based on one’s age and sex but also on that of dependents (Bertranou 2006). In addition, greater longevity means that inflation-adjusted annuities would be more expensive for women (IWPR 2000).

Privatization also hurts women since they tend to be more risk-averse as investors than men, which may affect women negatively due to the differences between public and private schemes as discussed earlier. Women who prefer less risky portfolios will have smaller returns. So, under the assumption that women continue to be more risk-averse, it is argued that this will hurt women over the long run (Williamson and Rix 1999). Some

studies also conclude that it is not gender alone that determines investment decisions, but also marital status and the ability to share risks within the household (Ståhlberg et al. 2006).

The penalty for early retirement is higher in private pension schemes than in the traditional PAYG system. Women who must leave the workforce in order to care for their families are likely to lose more of their benefits under a privatized scheme. In addition, since individuals' contributions into the system are invested in capital markets by insurance companies, administrative costs raise as an important issue in private pension systems. Considering that administrative costs are one of the important factors in providing lower returns in defined contributions schemes, as observed in Chile, the UK and some other Latin American countries, it can be argued that this cost is even higher for women since they have smaller accounts (Williamson and Rix 1999).

In countries that privatized their social security systems, there is evidence of a rising gender disparity in retirement income. De Mesa and Montecinos (1999) show that the transformation of Chile's public system to a private system entirely based upon lifetime employment earnings sharply curtailed the amount of retirement benefits that women could expect to receive, increasing income inequality dramatically. Because women typically earn less than men, and may work intermittently due to childrearing, their post-retirement income was also significantly decreased.

Countries that base pension benefits on a privatized collection of employment earnings include, but are not limited to, El Salvador, Peru (where if the private option is chosen, there is no turning back), Mexico, Chile, Bolivia, and the Dominican Republic (SSA 2006). Countries that have a safety net for the very poor still have a gender gap in

pension income due to gender earnings differences. Those who are not very poor are not compensated for this pension differential. Programs without means-tested provisions for the very poor manifest even greater gender bias, as a greater proportion of the poor are often women.

James et al. (2003) investigated the impact of pension reform on men and women in Chile, Argentina and Mexico, in which countries switched from defined benefit PAYG systems to defined contribution individual accounts (i.e. full privatization<sup>5</sup>). Since the new systems are not yet mature, James et al. construct scenarios based on a “typical” man and woman in the system by using cross-sectional data providing current behavior to proxy the lifetime employment, wage, and contribution trends. They assume that labor force participation and wage growth (assumed to be 2% in the economy) will remain the same over time, and the real rate of return on investment is taken as 5%. The authors use national data sets for urban areas since social security coverage is very limited in rural areas. Looking at the link between contributions into the system and benefits, they state that women accumulate only 30 to 40% of what men accumulate in terms of retirement funds and private annuities. However, the total lifetime retirement benefits for women reach 60 to 80 percent of those for men, with the help of some redistribution mechanisms, particularly targeting low earners and joint annuity requirements in Chile, Argentina and Mexico. A similar gender gap is identified in the Australian private pension scheme. Jefferson and Preston (2005) show that the scheme generates a 35% smaller return for women than men due only to gender earning(s) differences. They indicate that when one

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<sup>5</sup> In addition to defined individual accounts, Chile has a guaranteed minimum pension, Argentina has a flat benefit pension, and Mexico has a social quota, i.e. the state contributes to finance of the system, and a minimum guarantee (see James et al. (2003) for details).

considers other differences that affect lifetime earnings, such as gender differences in occupation and promotion, this gap is likely to be much higher.

The literature on Turkey provides some clues on gender differences that would lead to a gender gap in pension benefits. As elsewhere, women in Turkey, particularly married women in urban areas, have a shorter working history in paid-work due to the gender division of labor. Women tend to participate in the labor market at early ages and then drop out. Women have the highest participation rate between 20 and 24, which declines as a result of marriage and childbirth in the thirties (see Dedeoğlu 2002).

There is gender segregation in the labor market, with lower earnings for women than men. Esim (1996) shows that marital status, ratio of time spent in non-market work over market work, childcare arrangements, location of business, and working in traditional sectors were significant gender-based factors in determining women's income in Turkey. She finds that even in the same subsectors, women earn less than men (Cited in Anbarci and Cinar (2000)). Çağatay and Berik (1990), Selim and İlkkaracan (2002), and Kasnakoglu and Dikbayır (2002) show that there is gender segregation in economic activity in general, as women are over-represented in the food and textile industries and non-production activities, export-oriented sectors and are usually employed as unskilled workers. Segregation in the public sector is greater than in the private sector. The possible reason behind this is the persistence of the traditional male bread winner model in society. And the reason why females are concentrated in unskilled jobs is due to women's limited education and experience. In addition, women mostly work in the informal sector and have part-time jobs, in which wage rates overall are lower and they

are paid less than men for the same job after controlling for age and education (Tansel 2000 and Tan et al 2001).

In sum, privatization of pension funding systems and transition to a defined contribution scheme pose a threat to the sustainability of aging women, as women are forced to rely upon benefits that reproduce discrimination that they have already confronted in younger years.

## **2. The Social Security System in Turkey**

### **2.1 A Brief History**

Turkey's transition to a partly privatized, earnings-related pension system, has not taken into account the gender bias that these types of programs necessarily entail. There is a need for studies on social security in Turkey that examine the gender dimension. This study contributes to the existing literature by showing that the private pension segment in Turkey is gender-biased, as has been shown for other countries.

Social security, in its modern form, has not existed for long in Turkey. Its social security system was based on concepts used in European welfare regimes. In the 1990s, the welfare regime started to become more market-oriented, in conformity with the dominance of neoliberal ideology (Özbek 2006).

The Turkish social insurance system consists of three main institutions: the Social Insurance Institution (SSI), the Retirement Fund (RF), and the Social Security Institution of Craftsmen, Tradesmen and other Self-Employed (Bag-Kur). They were set up in 1946, 1950 and 1971, respectively, and were designed to cover blue-collar workers employed in the public sector and all workers in the private sector; civil servants; farmers

and artisans; and other self-employed people. The Green Card Program, the main part of the social assistance system, covers 13.5 million individuals and was introduced in 1992. The objective of the program is to provide health services to poor people who do not have any social security. Table 1 summarizes the structure of the system.

**Table 1: The Structure of the Social Security System in Turkey before the reform**

Social Insurance	Social Assistance
SII , 1946	The Social Assistance Supplement, 1977
RF, 1950	The Old Age and Disability Assistance Scheme, 1977
Bag-Kur, 1971	The Social Services and Child Protection Agency, 1983 The Social Assistance and Solidarity Encouragement Fund, 1986 The Green Card Program, 1992

Pension benefits under SII, RF and Bag-Kur rely on the state-funded pay-as-you-go (PAYG) system, which is financed by contributions of the current workforce, as well as through a deficit-guarantee of the government. This system began to produce a deficit in the 1990s, due not simply to the aging of the population as in developed countries like the EU-15, but by some structural problems of the economy such as chronic shortfall of tax revenues<sup>6</sup> (Köse and Yeldan 1999).

The problems of the system are caused by factors that include low levels of employer compliance with pension laws, poor enforcement of the laws by authorities, and the informal nature of much of the economy. An increasing number of unregistered

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<sup>6</sup> The tax collection compliance rate is around 50%.

workers diminishes the number of formal wage-earners who pay social security contributions. Also, low rate transfer penalties, in case employers withhold these contributions, do not provide any sufficient incentive to respect pension laws. That is, there are serious problems with the collection of social security contributions and with the administration and management of the funds (Pamukcu and Yeldan 2005).

The total deficit of the social security system in Turkey was predicted in 1995 to reach 10.1% of GDP by 2050, if the system continued as it was (ILO 1995), although a more recent projection from 2005 predicted that the total deficit would reach 5.7% of GDP by 2050 ([http://www.calisma.gov.tr/birimler/sgk\\_web/html/beyazkitap.html](http://www.calisma.gov.tr/birimler/sgk_web/html/beyazkitap.html)). The deficit in 2005 was actually 4.5% of GDP.

Given the danger of incurring a very large public deficit, the government focused on social security reform as a way to reduce costs, and embarked on a reform. The path of reform was led by the ILO Report, “The Turkish Government Social Security and Health Insurance Project” (ILO 1995). Two reforms were implemented, in 1999 and 2006. These reforms were projected to reduce the deficit of the system by 2040 to less than 1% of GDP.

Turkey’s 1999 reform implemented a two-pillar system, maintaining public social security institutions with some changes (the first pillar) and introducing private pension schemes (the second pillar). The government also hoped to increase the average contribution period and shorten the benefit period by gradually increasing the minimum retirement age from 58 to 65 for women and from 60 to 65 for men by 2045. The first proposal outlined the legal aspects of the Individual Pension System that we will examine

next. The second proposal in the reform package was to set up a series of administrative reforms to rein in the deficit of the state social security institutions, SII, RF and Bag-Kur.

The 2006 reform launched the General Health Insurance system according to the “Proposal for Reform in the Social Security System 2004” (SSI 2004), to provide wider coverage for basic health services, reform the existing public institutions, establish a new retirement insurance program, and set up a new institutional umbrella that would combine current institutions under a single administrative arm.

## **2.2 The Individual Pension System**

Due to mounting fiscal constraints of the PAYG system, in which a defined benefit required the government to subsidize pension payments, Turkey introduced the private pension system in 2003 as a complement to the public scheme that had been introduced as part of the 1999 reform. The purposes of the private pension scheme were to provide additional income to individuals during their retirement; to increase national savings by directing individuals’ savings into long term investments, and therefore to increase employment, boost production, and deepen financial markets<sup>7</sup> (Elveren 2003).

According to the Individual Pension Savings and Investment System Law adopted in 2001, ten pension companies were granted the license to transform from life insurance companies to pension companies, and one company was given the license to be established as a pension company. The Undersecretariat of the Treasury was authorized to grant these licenses. In total, IPS officially commenced with eleven companies at the

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<sup>7</sup> However, there is a considerable literature on defined contribution schemes which debunks the myths about partial or full privatization of social security (see Elveren forthcoming for a discussion for Turkey).

end of 2003 ([www.bireyselemeeklilik.gov.tr](http://www.bireyselemeeklilik.gov.tr)). The system is a voluntary private pension system; it is a fully funded DC system based on individual accounts where participants have investment alternatives at every stage of the system, and participants are provided with tax incentives at the stages of saving, investment and retirement (i.e. investment returns are not taxed during the contribution period).

In IPS, the participants are able to retire at the age of 56 with a minimum participation period of ten years. The individuals have the right to receive a lump sum payment on retirement or take their payments in the form of an annuity.

Pension companies may deduct up to 8% from the premiums as administrative costs. The pension company can also charge a fund management fee, which should not exceed 0.01% of the portfolio. The share of foreign stock cannot exceed 15% of the portfolio and at least 30% has to consist of public domestic debt bonds, i.e. treasury bonds. One cannot invest more than 15% of the funds in a portfolio that has more than 80% foreign assets. Similarly, the participant is required to invest at least 30% of his or her funds in a portfolio in which 80% consist of government bonds. The goal of these requirements is to prevent high fluctuations in returns and high amounts of investment in foreign assets. ([www.egm.org.tr](http://www.egm.org.tr)). According to different projections, it is expected that there will be 2.5 to 3 million participants and total funds accumulated will reach 10% of GDP in ten years. According to the Pension Monitoring Center data, there are 1,008,368 participants and the accumulated funds reached 2.6 million YTL by the end of 2005.

Although Turkey continues to maintain its public social security system, we shall limit our discussion to the gendered effects of the reform component, the individual pension system. We argue that, as observed in other countries, funded DC schemes lead

to unfair outcomes for women, due to their higher life expectancy, shorter and intermittent work lives compared to men. Individual pension plans need some regulations in order to prevent this inequality for women.

While Turkey still maintains its government pension system, the threat of full privatization increases with every call for reliance on capital returns. Under a privatized scheme, returns for higher wage workers would likely be higher than returns for low wage workers. This benefits higher wage workers, but also increases inequality between those who earn more and those who earn less. Those who earn less tend to be women.

### **3. Modeling Gender Bias in Turkey's IPS**

There is only one precedent for a model of retirement benefits based on the private pension scheme in Turkey. In this project, Teksoz and Sayan (2002) assume four different investment strategies under the privatized pension plan in Turkey. These are (i) investment in equities, (ii) investment in bonds, (iii) investment for fifteen years in equities and then bonds, and (iv) investment in half equities and half bonds<sup>8</sup>. They use an autoregressive stochastic model per A.D. Wilkie (1995) that incorporates data on the correlation of real returns as well as some randomization. Teksoz and Sayan (2002) show that the most profitable investment scheme is investment in equities, although the riskiness of such a strategy may not justify the potential returns. Another round of simulations was conducted which used the same strategies, with a switch to index-linked bonds within five years of retirement. The cost of government guarantees for retirement income is also calculated.

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<sup>8</sup> Equity returns were calculated using the composite equity index and average dividend yield of stocks in the Istanbul Stock Exchange. Returns on Turkish government bonds were calculated using the one year term domestic borrowing interest rate series.

Teksoz and Sayan (2002) account for gender differences by changing the actuarial present value of a whole life annuity based on a decreased mortality rate for females but they do not take into account critical factors like wage discrimination or interruptions of employment for child-rearing based on gender. Both of these generate disparity in pensions based on a “gender gap” and a “family gap,” where the “family gap” appears between women with and without children (Bertranou 2000).

Here, we look at the effects of wage and other disparities between males and females during working years and project the impact of these differences upon Turkey’s individual pension system. Our model is based on the type of projection model that has been used for other countries, for example in Jefferson and Preston’s (2005) analysis of continuing gender wage gaps in Australia.

Our projection takes into account women’s lower wage rate, higher life expectancy and shorter working history. We also show the difference in annual pension benefits when unisex tables are used in annuity calculations, which is a way of redistributing income from men to women. We assume that the contribution rate is the same for both sexes.

Therefore, what we show for Turkey is that the capital accumulation<sup>9</sup>,  $C$ , of women through their working life is lower than that of men due to fewer years of contribution,  $t$ , and a lower gross wage,  $w$ . Capital accumulation, which is the lifetime contribution made by the individual can be formulated as:

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<sup>9</sup> Although Net Present Value is commonly used in calculation of  $C$ , we do not consider NPV here because we focus on the relative values of the capital accumulation rather than the absolute value in the lump-sum calculation. However, we take the NPV into account when we are calculating the annual annuities since it makes a difference. NPV is included in the annuity calculation since it accounts for the discount factor over years of distribution.

$$C_i = a * t_i * w_i$$

Where

i is sex;

a is the contribution rate;

t is the number of contribution years; and

w is the gross wage.

Secondly, the annual annuity, A, based on capital accumulation, C, will be lower for women due to their higher life expectancy. This is formulated as:

$$A = \frac{C}{[1 - (1+r)^{-n}]/r}$$

Where

r is the real rate of interest; and

n is the number of payments calculated based on the life expectancy at retirement age.

In this model, we use wage data from the 2004 Household Budget Survey<sup>10</sup> conducted by the Turkish Statistical Institute ([www.tuik.gov.tr](http://www.tuik.gov.tr)).

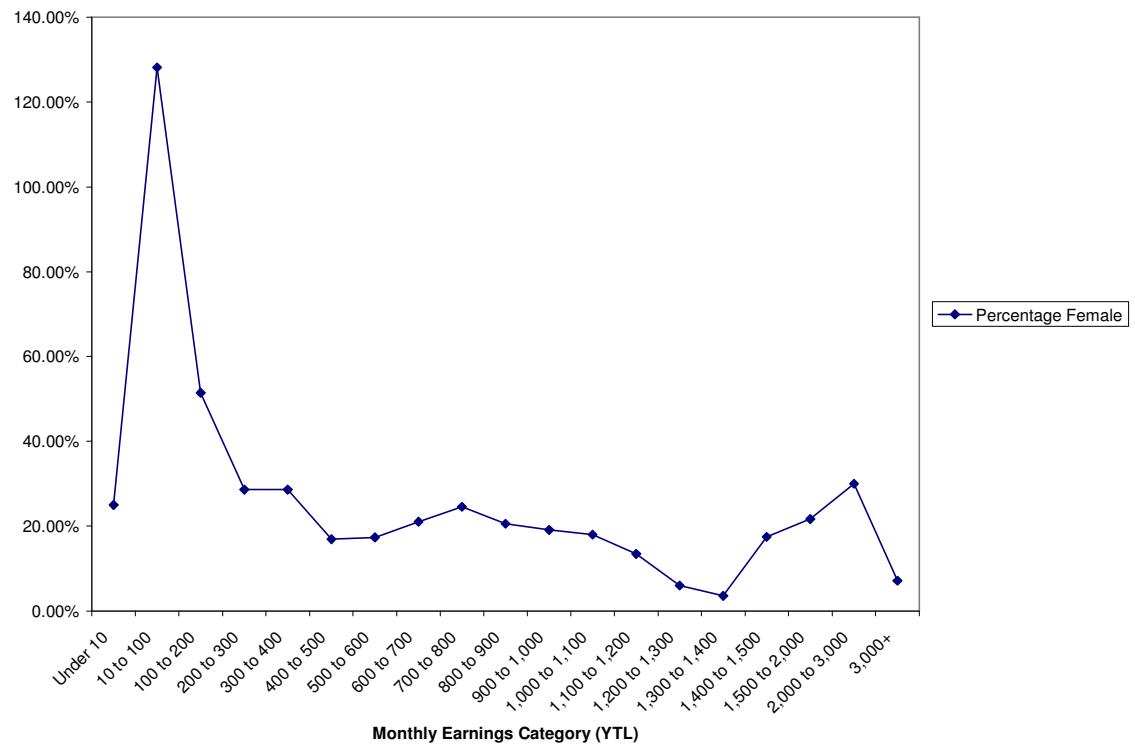
Wage data for part-time workers were not available, so we calculated wages of part-time workers based on the hourly earnings of full-time workers<sup>11</sup>. Average full-time

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<sup>10</sup> Household Budget Survey is a widely used national survey that aims to give basic characteristics of the labor force with urban-rural distinction.

female wages were 77% those of male workers<sup>12</sup>. Females earned about 428 YTL (\$295 USD<sup>13</sup>), while males earned about 559 YTL (\$385 USD) per month. In hourly terms, earnings are 2.52 YTL (about \$1.74 USD) per hour for women and 3.29 YTL (about \$2.27 USD) per hour for men, based on an average 170-hour working month. See Figure 1 for gender differences in monthly earnings.

**Figure 1. Female to Male Ratio in Monthly Earnings (YTL)**



**Source:** Calculated from 2004 Household Budget Survey

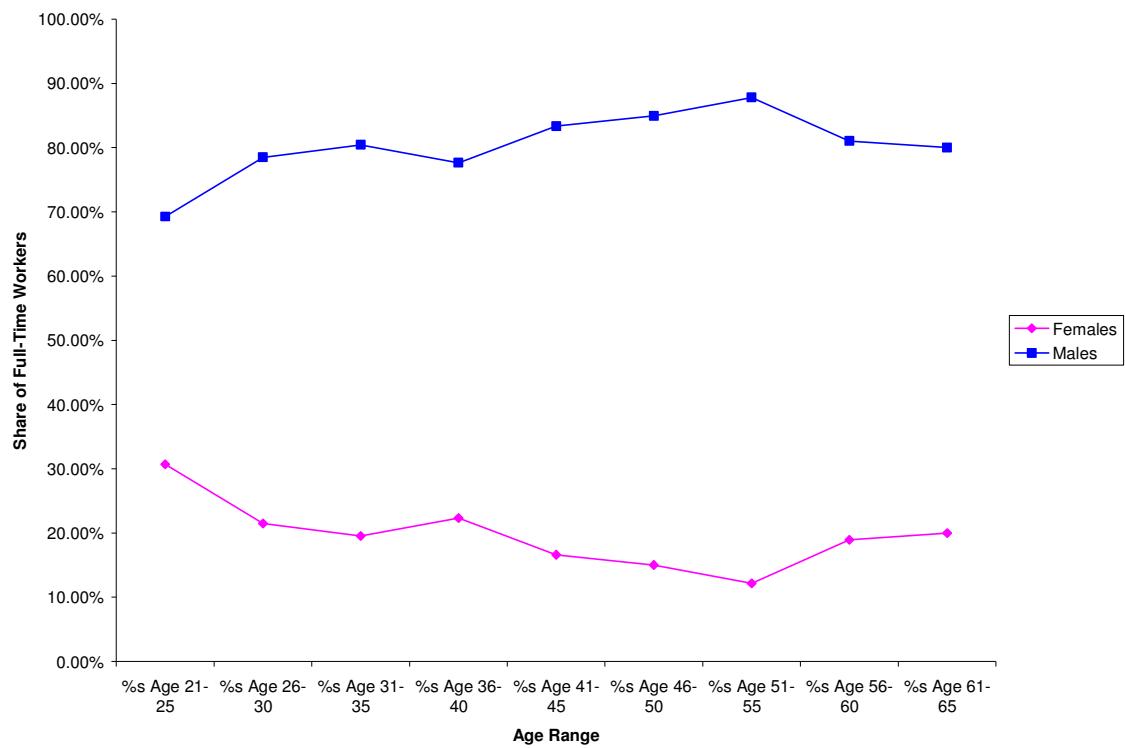
<sup>11</sup> Wages of part-time workers are considered to be the same as those of full-time workers. However, part-time workers work 20 hours per week rather than 40.

<sup>12</sup> Selim and Ilkkaracan (2002) use 1994 data from the Labor Force Participation and Wage Structure Survey by the State Institute of Statistics (SIS) to find that women in Turkey earn 70.6% of what men earn, unadjusted for external factors. The authors note that TUSİAD's (2000) survey found that women earn 78% of what men earn, based on 1998 and 1999 data, and that Kasnakoglu and Dayıoglu (1997) use data from 1987 to find that women earn on average 47.5% of what men earn, unadjusted for external factors.

<sup>13</sup> This conversion is based on the exchange rate on November 6, 2006, of 0.689 USD per 1 YTL.

*Working hours, work type.* Women workers comprised an average of 22% of full time workers. In Figure 2 below, one can see that female full-time workers comprise a greater share of the full-time labor force between the ages of 21 and 25, and the lowest share among women was between ages 51 and 55.

**Figure 2. Gender Difference in Full-Time Labor Force Participation by Age**



**Source:** Calculated from 2004 Household Budget Survey

We attempt to model our projections on the assumptions that women earn less than men, and tend to work more part-time. In Projections 1 and 3, both women and men work 20 years. In Projections 2 and 4, however, we assumed that women work 10 years full-time and then 10 years part-time, while men work full-time for the entire 20 years.

This is for the basis of comparison. Since most female workers in Turkey do not work full-time throughout their working lives, we expect Projections 2 and 4 to give a more approximate of actual experiences for women. Data from the 2004 Household Budget Survey show that most part-time workers, or 68%, are female, since females remain in the workforce but work part-time throughout their working years.

*Life expectancy.* There are a couple projections of demographic transitions for Turkey, showing life expectancies at birth and at retirement age (SSI 2004). What is important in annuity calculations is life expectancy at retirement age. Women have a 3 to 5 year longer life expectancy at retirement age than men. For instance, in Turkey it is expected that in 2075, women who retire at the age of 68 will have a three year higher life expectancy than men retired at the same age. As mentioned, this longer life expectancy decreases women's annuities if gender-specific mortality tables are used. Since Turkey does not have a mortality table, we use data from the 1983 GAM<sup>14</sup> tables to find life expectancy at retirement. These tables are commonly used in actuarial calculations in Turkey.

*Risk aversion.* Data from EGM (the Pension Monitoring Center) in Table 2 show the portfolio preferences of men and women. On average, women and men are found to be equally risk averse, which may be influenced by fund managers. Although pension funds are mostly invested in stock funds in other countries, the main reason that both men and women prefer government bonds and bill funds in Turkey is likely because of the high real return of the fund, relative to other countries. Therefore, this model will not

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<sup>14</sup> Group Annuity Mortality Table is recognized as the mortality table for annuities in 1983 by the National Association of Insurance Commissioners. It is a gender-specific mortality table.

include this gender risk aversion differentiation which may be observed in other countries.

**Table 2. Portfolio Preferences**

<b>Fund Type</b>	<b>Fund Type by Gender</b>		<b>Daily Past Returns</b>	<b>Daily Standard Deviation</b>
	<b>Male</b>	<b>Female</b>		
Balanced Fund	3%	2%	0.094%	0.726%
Flexible Fund	20%	19%	0.081%	0.560%
Stock Fund	7%	6%	0.125%	1.461%
Government Bonds and Bills Funds (YTL)	50%	54%	0.076%	0.571%
Government Bonds And Bills (FX) Income PMF	10%	8%	0.035%	0.675%
Liquid Funds	9%	10%	0.058%	0.047%
International FX Indexed Funds	<1%	<1%	0.023%	0.695%
<b>Total</b>	<b>100%</b>	<b>100%</b>		

**Source:** Adapted from EGM data ([www.egm.org.tr](http://www.egm.org.tr))

We assume no real growth rate for the earnings of either men or women, since actual growth trends are difficult to establish based on the lack of time-series wage data for Turkey<sup>15</sup>. It is likely that those who remain in the workforce without taking time off for childbearing or childcare (i.e., men) experience a consistent increase in earnings over time, and those who must leave the work force and return later (i.e., women) experience a drop in wages upon their return. Part time workers, who are mainly women, are also

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<sup>15</sup> The rate of return in DB systems is determined by changes in labor force and productivity, i.e. real wage growth. Therefore, it is worthwhile to note that with similar real wage growth and interest rates, DC and DB systems give similar outcomes. However, this is not our focus so we omit wage growth over time.

likely to experience lower wage growth. We note this additional disadvantage for women but do not include it in the wage assumptions.

The equation for finding the pension value is as follows:

$$P = a * w * \sum_{1}^{n} (1 + r)^n$$

Where P = Pension Value;

a\*w = Monthly Contribution Amount;

r = Monthly Interest Rate; and

n = Number of Months.

In the first projection, we assume that women and men pay into the system for twenty working years<sup>16</sup>, investing at an interest rate of 6%.

The second projection assumes that women and men both pay into the system for twenty working years, but women spend ten of those years working full-time and ten of those years working part-time, investing at an interest rate of 6%. Part-time wages are assumed to be the same per hour as full-time wages, working at a rate of half the time.

The third projection assumes again that women and men pay into the system for twenty working years, but that the interest rate is higher, at 10%.

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<sup>16</sup> We assumed that both men and women work 20 years mostly due to two main reasons. First, it is a fact that women were able to become retired by working 20 years from SII before the reform, and second, average working life for women is short. However, it is obvious that the retirement income gap will be higher when we assume longer working time period, i.e. 30 years or more.

The fourth projection assumes that women and men both pay into the system for twenty working years, but women spend ten of those years working full-time and ten of those years working part-time, investing at an interest rate of 10%.

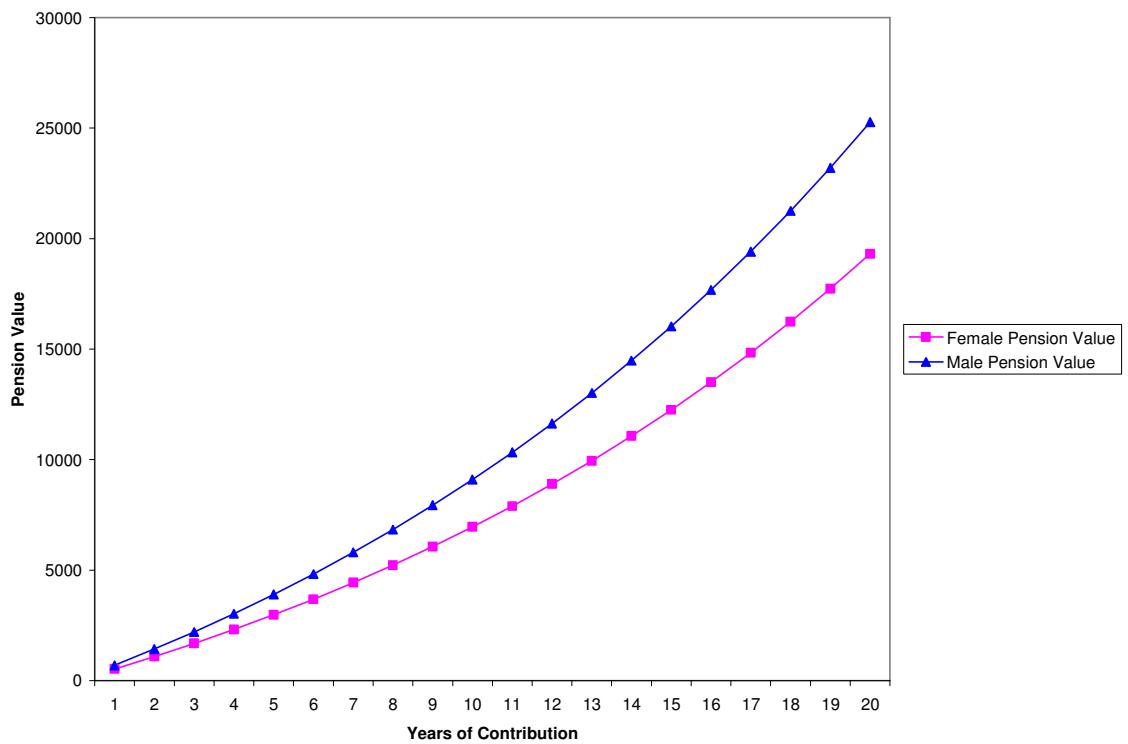
In all projections, we first assume that at retirement the payment is made in the form of a lump sum. Later, we analyze the case in which participants take their capital accumulation as an annual annuity. We use interest rates of 6% and 10% to denote slightly more conservative returns, such as returns on bonds and bond funds, and somewhat more aggressive returns, such as those on equity funds in line with high average returns in Turkey.

The actual average premium payment is 120 YTL by the end of August of 2006. This is due to the fact that most contributors are currently from middle and higher income levels. However, in our projections we assume a broader contribution base from all classes of the population and therefore use a percentage of the average wage. We will assume that men and women invest 10% of their salaries in the private pension funds, since there is a tax incentive for investing only up to this amount. On average, then, men invest 56 YTL per month and women invest 42.8 YTL per month or 76% of what men invest. We also assume that men and women invest in the same type of plan, in which dividends are reinvested daily.

In Projection 1, after twenty years of full-time employment and at the investment return rate of 6% per annum, women have a pension fund of 19,316 YTL, while men have a pension fund of 25,274 YTL. Women have a pension fund that is 76% the size of men's pension fund. Figure 3 portrays results from Projection 1. One can see that, despite the equal number of full-time working years, there is a gap in the pension value,

based on the differences in contributions, which grows wider in level terms over time. The gap wholly reflects the differences in wages between men and women.

**Figure 3. Projection 1 Results**

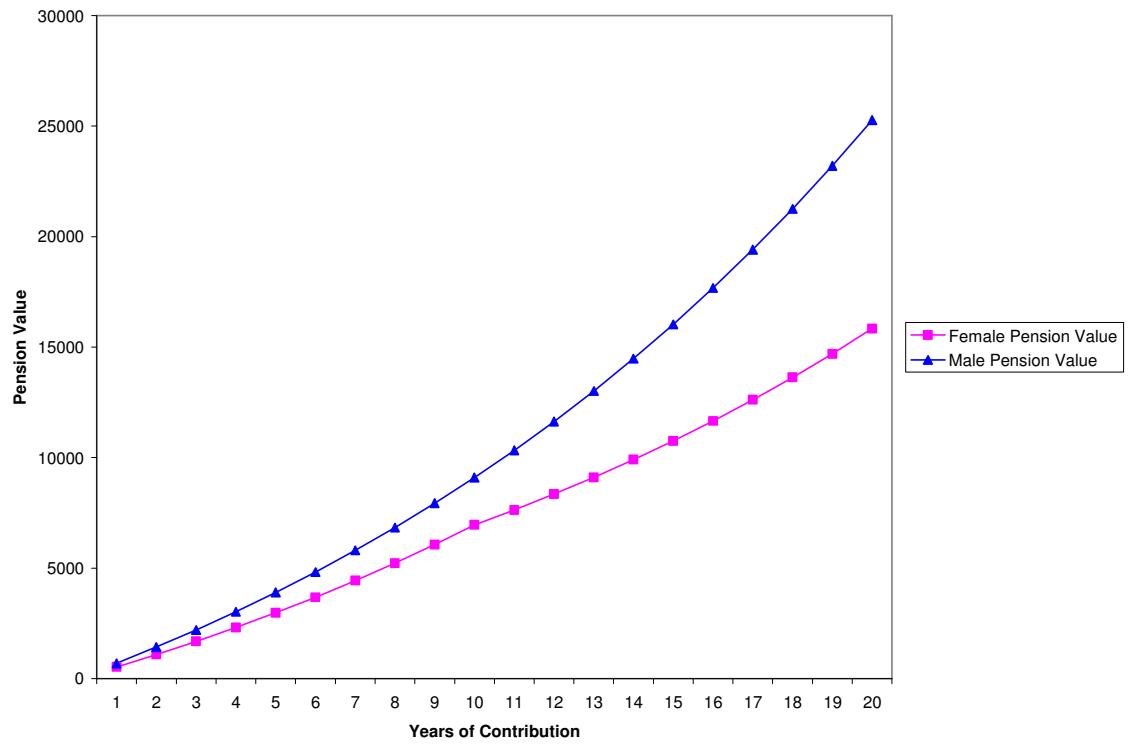


**Source:** Authors' calculation

In the second projection, also at 6% returns, and in which women and men both pay into the system for twenty working years, but women spend the first ten of those years working full-time and the remaining ten years working part-time, while men work full-time the entire twenty years, we arrive at different results. At the end of twenty years, men have a lump sum pension of 25,274 YTL, while women have a lump sum

pension of 15,838 YTL. The size of women's pension fund is 63% the size of men's pension fund. Figure 4 shows the results of Projection 2. This gap remains at 76% until the eleventh year, at the beginning of which women shift into part-time work, after which the gap widens substantially.

**Figure 4. Projection 2 Results**



**Source:** Authors' calculation

Table 4 contains a summary of the pension projection values for women and men, at a 6% rate of return, broken down by year. One can see that in the second projection for females, the shift to part-time labor during the eleventh year begins to decrease their pension value relative to females who work full-time. Therefore, in addition to

discrepancy based on the wage gap, females face further earning discrepancy in pension values based on the fact that most shift to part-time work following their early twenties.

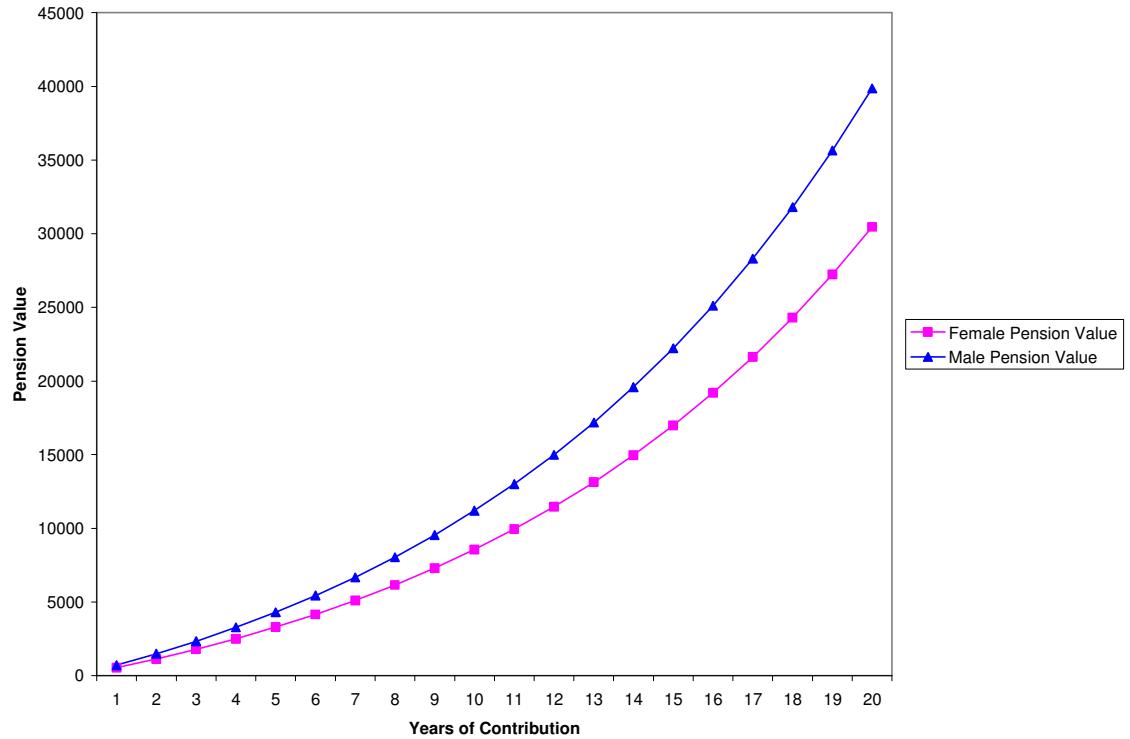
**Table 4. Summary of Pension Projection Values at 6% Return (in YTL)**

Year	Projection 1 Female	Projection 1 Male	Projection 2 Female	Projection 2 Male
1	529.9122	693.3431	529.9122	693.3431
2	1091.171	1427.7	1091.171	1427.7
3	1685.631	2205.498	1685.631	2205.498
4	2315.255	3029.306	2315.255	3029.306
5	2982.124	3901.845	2982.124	3901.845
6	3688.442	4825.999	3688.442	4825.999
7	4436.541	5804.82	4436.541	5804.82
8	5228.894	6841.543	5228.894	6841.543
9	6068.117	7939.592	6068.117	7939.592
10	6956.984	9102.596	6956.984	9102.596
11	7898.431	10334.4	7633.475	10334.4
12	8895.569	11639.06	8349.984	11639.06
13	9951.692	13020.91	9108.877	13020.91
14	11070.29	14484.49	9912.662	14484.49
15	12255.06	16034.65	10763.99	16034.65
16	13509.91	17676.51	11665.69	17676.51
17	14838.99	19415.5	12620.72	19415.5
18	16246.69	21257.35	13632.24	21257.35
19	17737.66	23208.16	14703.6	23208.16
20	19316.83	25274.36	15838.34	25274.36

**Source:** Authors' calculations

In Projection 3, which assumes a return of 10% per annum, after twenty years of full-time employment, women have a pension fund of 30,464 YTL, while men have a pension fund of 39,860 YTL. Figure 5 portrays results from Projection 3. Again, we see the same gap in pension funds as we saw in Projection 1; women have a pension value 76% that of men. In level terms, the difference is almost 10,000 YTL.

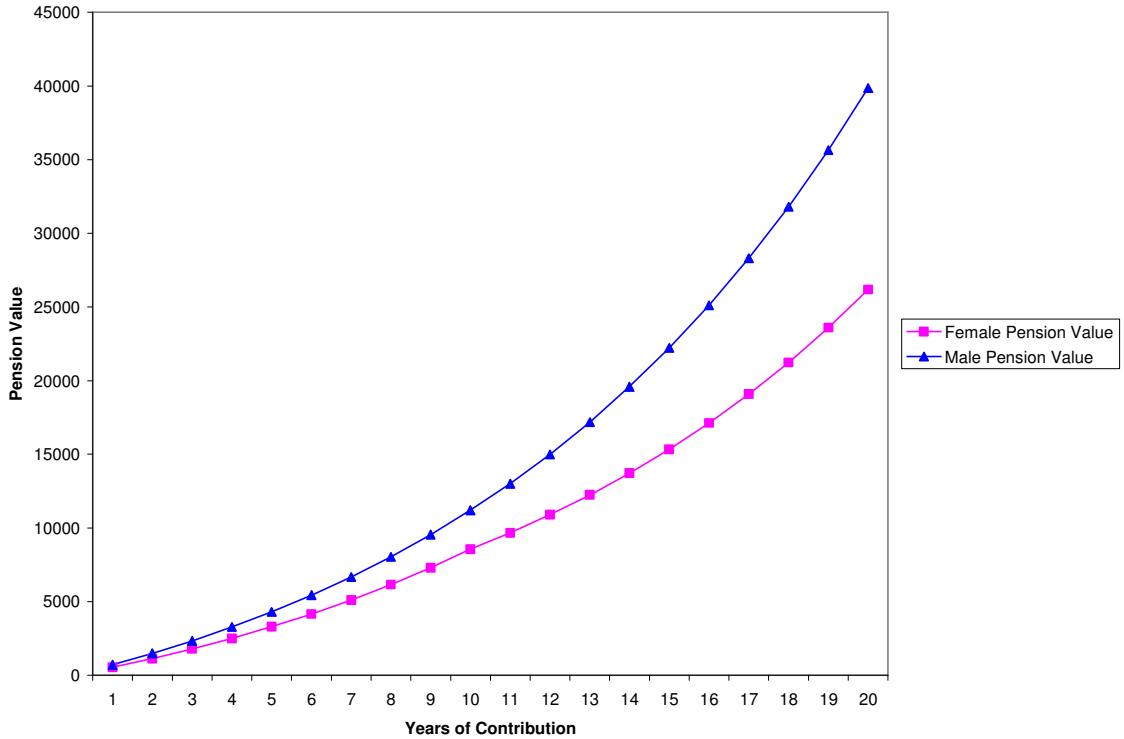
**Figure 5. Model 3 Results**



**Source:** Authors' calculations

In the fourth projection, with a return of 10% on investments per year, we arrive at different results. As in Projection 2, women and men both pay into the system for twenty working years, but women spend the first ten of those years working full-time and ten of those years working part-time, while men work full-time the entire twenty years. At the end of twenty years, men have a lump sum pension of 39,860 YTL, while women have a lump sum pension of 26,186 YTL. Women's pension fund is 66% of men's pension fund. Figure 6 shows the results of Projection 4.

**Figure 6. Projection 4 Results**



**Source:** Authors' Calculations

With a larger return, the gap in pension value between men and women in the fourth scenario is slightly smaller. Projection 2 found that women's pension funds were valued at only 63% of men's with the return of 6% per year, while Projection 4 finds that women hold a pension valued at 66% of that of men when the return is 10% per year. Thus the shift to part-time work after several years of full-time work does not have as large of an impact in gender pension disparities when returns are higher as it does when returns are lower.

Table 5 summarizes the pension projection values in the final two projections.

**Table 5. Summary of Pension Projection Values at 10% Return (in YTL)**

Year	Projection 3 Female	Projection 3 Male	Projection 4 Female	Projection 4 Male
1	540.627	707.3624	540.627	707.3624
2	1134.541	1484.446	1134.541	1484.446
3	1786.993	2338.122	1786.993	2338.122
4	2503.755	3275.941	2503.755	3275.941
5	3291.164	4306.196	3291.164	4306.196
6	4156.184	5437.997	4156.184	5437.997
7	5106.464	6681.354	5106.464	6681.354
8	6150.408	8047.263	6150.408	8047.263
9	7297.249	9547.802	7297.249	9547.802
10	8557.127	11196.24	8557.127	11196.24
11	9941.185	13007.16	9670.872	13007.16
12	11461.66	14996.57	10894.39	14996.57
13	13132.01	17182.06	12238.51	17182.06
14	14966.99	19582.97	13715.11	19582.97
15	16982.83	22220.52	15337.25	22220.52
16	19197.37	25118.05	17119.27	25118.05
17	21630.18	28301.16	19076.94	28301.16
18	24302.78	31798.02	21227.57	31798.02
19	27238.8	35639.55	23590.18	35639.55
20	30464.21	39859.72	26185.65	39859.72

**Source:** Authors' Calculations

If an annuity is chosen instead of a lump sum, without indexing to inflation, retirement funds spread over the course of retirement until death are much lower for women than for men due to women's longer life expectancy. In order to determine the annual retirement income we use the annuity table from the 1983 US GAM<sup>17</sup>. In this table, the annuity factor for retirement at the age of 56 is 16.95080 for females and 14.88852 for males.

Based on Projection 1, suppose that after 20 years of contribution to the retirement account women receive 19,316 YTL, while men receive 25,274 YTL (Table

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<sup>17</sup>A =  $\frac{C}{[1-(1+r)^{-n}]/r}$  The annuity factor is the value of the denominator of the right hand side. The discount factor, r, is 4%, and the number of payments calculated based on the life expectancy at retirement age, n, therefore is given by the annuity table.

2). If both men and women retire at the minimum retirement age of 56, the yearly pension received by women would be 1,140 YTL annually, while the yearly pension for men would be 1,698 YTL. Women receive yearly 67% of what men receive. Here we see the combined effects of gender discrimination. Men receive a much larger annual pension than women.

By contrast, the yearly pension calculated using a unisex annuity table<sup>18</sup>, assuming the same life expectancy for both women and men, would bring the yearly pension for women to 1,196 YTL and that for men to 1,565 YTL, a much narrower gap. In this case women receive 76% of what men earn. This illustrates the benefits of using unisex tables for women. It is a way of reducing the gender gap by redistributing income from men to women.

From Projection 2, under the same assumptions, and given that women receive a pension of 15,838 YTL and men receive a pension of 25,274 YTL in 20 years of contribution, the yearly pension for women would be 934 YTL and 1,698 YTL for men. Women receive only 55% of what men receive. Calculating the annuities for women and men using a unisex annuity table, women would receive 981 YTL, and men would receive 1,565 YTL; that is, the annuity ratio is raised to 63%.

From Projection 3, given that women receive a pension of 30,464 YTL and men receive a pension of 39,860 YTL, the yearly pension for women would be 1,797 YTL and 2,677 for men. Women receive only 67% of what men receive.

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<sup>18</sup> Here we use the unisex number for the retirement age of 56 from the 1983 Unisex Group Annuity Mortality Table (GATT), of 16.15202. It is an unisex mortality table.

And from Projection 4, given that women receive a pension of 26,186 YTL and men receive a pension of 39,859 YTL, the yearly pension for women would be 1,545 YTL and 2,677 for men. Women receive only 58% of what men receive.

Thus, when gender-specific annuity tables are used, spreading the value of the pension fund over the remaining life of the individual puts women at a disadvantage, since women live longer than men, and can expect to receive a lower amount per annum when life expectancy at retirement age is taken into account. In addition to the wage differential and more part-time hours, the percentage value of the pension fund drops even more when associated with relative life expectancies of men and women.

#### **4. Discussion and Conclusion**

Gender inequality is perpetuated and deepened in the private pension scheme with overall gender-biased regulations in social security. Our results show that women are disadvantaged from the outset, receiving a lower wage than men, and therefore contributing less to their private pension scheme than men, on the whole. This discrimination is worsened when we account for the fact that women work fewer full-time years than men. When the pension is annualized, the yearly pension for women, adjusted based on the different longevities of men and women, is between about half and two-thirds that of men.

Therefore, private pension schemes continue the cycle of gender discrimination that the welfare state should eliminate. Although the deficits encountered in the public pension system before reform posed a threat to all citizens, transferring individuals, particularly women, to the private pension scheme does not appear to be the answer.

Women should not be encouraged to participate fully in the private pillar unless they make higher-than-average wages and work full-time as long as men do. Women who work part-time and take time off from working to bear and raise children do not benefit directly from the private system.

The policymakers' current focus is on the application of the 2006 reform, which seeks to combine the three social security institutions and implement all other administrative changes. Although increasing female labor force participation is recognized as a goal in the middle run for employment purposes, improving the retirement conditions for women is not the primary focus.

We recommend that the public pension system continue to be the primary provider of social security, particularly for women. Calls for outright privatization of the system should not be followed. As government officials also acknowledge, the private pension schemes provide additional income only for middle and higher income-level classes in their retirement (Elveren 2003). In addition, maintaining the traditional public social security without reform to correct for biases against women, along with transition to private pension schemes, will deepen inequality between women and men. Therefore, in addition to reform in the public scheme, in which policymakers should recognize that there is inequality not between households but within households as well, there may be some regulations in the private scheme as well, which favor women by taking into account their shorter working life, lower wage and higher life expectancy.

Since annuities obtained are based on mortality tables by age and sex, women who have a higher life expectancy would have an unfair outcome, although the system is

considered “actuarially fair.”<sup>19</sup> However, Bertranou (2006) indicates that mortality tables differentiated by gender have been rejected for their gender bias in developed countries like the United States. From a social perspective, it is unfair to ignore women’s disadvantageous position in the labor market and worsen the situation by calculating annuities based on mortality tables by sex in which women’s higher life expectancy leads to an increased gender gap. In this sense, it is argued that intra-household transfers through joint annuities can play a role in equalizing gender ratios and reducing the gender gap to some extent (James et al 2003).

Wage inequality in the labor market is perpetuated in the pension system. This is an area that continues to demand attention. Since women earn less than men for a number of reasons, they are automatically at a disadvantage when it comes to contributing to a private pension system. Reducing wage disparity would put women less at risk for poverty during both their working lives and their old-age.

Inequalities within the private pension scheme must continue to be examined as changes are implemented, in order to ensure that social policy is not tilted toward a particular social group, at the expense of another in order to maintain equity in outcomes.

A good pension policy will recognize differences in working characteristics and life attributes of men and women, rather than assume that men and women are on equal footing. Turkey’s reforms have not moved toward outright privatization, but neither the public nor the private pension schemes fully recognizes the particular disadvantages that women face.

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<sup>19</sup> Actuarial fairness simply means that contributions should be equal to benefits.

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