WPS 2546

Gender Dimensions of Pension Reform in the Former Soviet Union

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Under pension reforms in the former Soviet Union, unisex annuities benefit women more than men because of a major redistribution toward women. But they also penalize women more for shifting toward unpaid household work and may cause increased poverty among lone elderly women— especially in Kazakhstan, which has a high service requirement for the minimum pension and provides no compensation for time out to have children.

Summary findings

Castel and Fox analyze the gender implications of pension reform in Kazakhstan, the Kyrgyz Republic, Latvia, and Moldova. The new systems deliberately penalize early retirement and reward longer careers, so that with no change in behavior or policy, women's pensions will be lower than men's on average.

Still, the implicit financial returns for women remain higher on average than returns for men, because of women's longer life expectancy and because of redistributory minimum pensions.

Overall, however, the net change in wealth resulting from the reforms will be larger on average for men than for women, because they will work longer and get a larger pension.

Women's longer life expectancy means that women can expect to spend the last years of their lives alone. If their pensions are too low because of their work histories, poverty among elderly women may increase.

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I.   Introduction

1.1   Economically and socially, the transition from communism has been extremely traumatic in the former Soviet Union (FSU). Poverty has increased, as incomes and levels of living have sharply fallen (Milanovic 1996). Fiscal systems have also collapsed, provoking major cuts in the cradle-to-grave cash transfers system. Consequently, pensions, the most important cash transfer system in both the Soviet and post-Soviet period, have had to bear a share of the cuts (Fox 1997).

1.2   In fact, pensions have historically been very important in preventing old age poverty among women (World Bank 1994). The FSU was no exception. As in Western Europe, pension systems were important in maintaining living levels of war widows in the post World War II era. Even as the Soviet Union became wealthier, formal asset holding was uncommon, and this was true even in the rural sector, since agriculture was collectivized. Pension systems provided the main income source for the last 15 years of women's lives (Fox 1994).

1.3   The Soviet pension system was particularly generous toward women. Women were allowed to retire at age 55 (5 years earlier than the normal retirement age for men) with 20 years of service; 55-85 % of previous wages were replaced; credit was given for years out of the labor force to have children, and women with more than 5 children were allowed to retire at 50. While parts of the FSU were aging (such as the Baltics and the Ukraine) as a whole, the country was relatively young, and as such, pension transfers were only about 6 percent of GDP in 1998.

1.4   Pension systems continued to be important in preventing the spread of poverty among the elderly during the transition in the FSU. Nonetheless, in most countries, as GDP and tax revenue fell, pension systems rapidly became unaffordable. In addition, transferring a large and increasing share of income through the public sector proved inconsistent with the market economy structures that countries were trying to put into place. Other important public

expenditures were being crowded out. As a consequence, throughout the FSU, painful pension reforms were implemented. While there are significant variations among countries, most followed the same basic model:

- Retirement ages were increased (reducing the real value of future obligations); and
- New formulas tied pension rights more closely to contributions.

1.5 Pension reforms have important gender dimensions because the working history of men and women tend to be different. Women tend to have shorter and more disrupted working careers and are more likely to be low-income earners. Thus, changes in benefit formulas and eligibility rules designed to reduce future obligations can have different effects on the old-age security of men and women, which would not be seen if other measures were taken to reduce future expenditures (for example, across the board cuts through reductions in indexation provisions).

1.6 In the FSU countries, the legacy of apparent gender equality meant that little attention has been given to the impact of the new reforms on women. This situation is being challenged by the newly emerging feminization of poverty in the region (Larzeg 1999). As a result of high male mortality, women over 60 significantly outnumber men of this age. In addition, divorce and female-headed households are on the rise, implying an even greater dependence by women on pensions in their old age.

1.7 How will women fare compared to men under the new pension systems? This paper considers that question by analyzing the differential impact of the pension reform between men and women in four FSU countries that have introduced four different types of pension systems: Kazakhstan, the Kyrgyz Republic, Latvia and Moldova. In considering this question, the paper is organized as follows. Part I presents each country and reviews the characteristics of the new pension systems that are being implemented. Part II explains the methodology used to compare the impact of the reforms on men and women. Part III presents and comments upon the results in women and men level of benefits, the implicit

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financial returns obtained from the systems, and the net wealth changes resulting from the reforms. Part IV discuses the policy implications.

II.   Four Pension Reforms in the Former Soviet Union

2.1   Ten years ago, the four countries in this study were all part of the same nation-state. Despite differences in income levels and economic structure, they all had well developed social service sectors, resulting in universal and high rates of educational attainment, low rates of infant mortality, declining fertility, and well developed cash transfers systems (Fox 1994). Labor force participation was high, especially among women (given the income levels); wages and cash transfers were the main source of household income, even in rural areas, owing to the collectivization of agriculture. Nonetheless, despite Soviet efforts to homogenize the country, even before the transition, these four areas were quite different. Today, they have very different economic characteristics.

2.2   *Latvia* (per capita income: $2430) is a small industrial country on the Baltic Sea, with strong links to Germany and the Nordic countries. Less than 10 percent of its population works in agriculture. After a burst of hyperinflation and a large income drop, it has recovered and accordingly has realized positive wage growth for the past 6 years. Not only is privatization nearly complete, but an open trading regime is in place. With few natural resources, growth has come primarily from an expanding service sector (financial and high-tech services as well as more traditional re-export and port services) centered on Riga, the capital. It is the demographically most mature of the four countries, with the lowest fertility rate and nearly 14 percent of its population over age 65 in 1997.

2.3   *Moldova* (per capita income: $540) is a much poorer and less developed country on the border between Romania and Russia. It is rural, with agriculture and agro-processing remaining very important in GDP. Hurt by conflict along the Russian border in the early years (which caused a loss of about one-quarter of the population in the break-away Dnister region), it has struggled to achieve positive growth rates. The recent Russia crisis (Russia is

the main purchaser of Moldova's exports) has further damaged growth prospects. With nearly 10 percent of its population over 65, it is a surprisingly mature country given its income level.

2.4   The *Kyrgyz Republic* (per capita income: $440) is a mountainous country in Central Asia, the poorest in the group. It is very rural, with 45 percent of GDP coming from agricultural production and 60 percent of its population living outside urban areas. Since independence in 1992, the country has successfully (albeit painfully) stabilized and privatized most economic activity. The Kyrgyz Republic realized an average of 8% GDP growth in 1996-1997, (closely related to the opening of a gold mine in the north), but growth has subsequently stalled on account of the Russia crisis. Moreover, it is the youngest country demographically, with the highest fertility rate and 5.6 percent of its population over 65.

2.5   *Kazakhstan* (per capita income: $1340) is a large, mineral-rich country in Central Asia, that is very sparsely populated, but that also has a diverse economy. Sixty percent of the population is urban, and only 13 percent of the GDP comes from agriculture, while 30 percent of GDP comes from industry. At the time of independence, Kazakhstan inherited an economy deeply dependent on Soviet supply and trade networks, and therefore suffered a large decline in output. Growth resumed in 1996, as privatization policies paid off, but declining commodity prices and the Russia crisis have caused growth to slow again. It is a young country, with 7% of the population over 65.

Pension Reforms

2.6   In addition to being expensive, the inherited Soviet pension system was complex, combining elements of a European 1960's pay-as-you-go system with peculiar communist features. It was a system suited to a demographically young country, as retirement ages were low (55 for women, 60 for men). Pension benefits depended on final wage and years of service, not the amount of contributions (actually the difference did not matter since everyone worked for the State and there was full employment). Only 20 years of service

were required for women, and 25 for men to qualify for a full pension. In addition, the pension system was used to reward politically favored groups and to compensate for weaknesses of the Soviet system. For example, a poor occupational health and safety system was compensated for by offering early retirement (up to 10 years earlier) for those who worked in heavy industry, including miners, and railway workers. Offering early pensions to ballet dancers, and wind instrument players, as well as the blind compensated for the rigid labor markets and lack of occupational mobility. Finally, the overall income replacement was high. At the earliest retirement age, the rate was 55 percent of final wage, rising to 75-85 percent for more years of service or special service. These levels were much more generous than those found in Western European countries at a much higher level of income per capita (Fox 1997).

2.7   In addition to early retirement, there were several features quite favorable to women. First, women received pension credit for time spent out of the labor force raising children. Second, women who had raised 5 children or a disabled child up to at least the age of 8 had the right to retire earlier. Finally, the wage structure was fairly compressed and the informal sector was small, so women's lower earnings on average did not result in pensions that were considerably lower than men's.

2.8   Pension reform has taken a different turn in each country. *Latvia* implemented pension reform in several stages. The first stage took place in 1992, when the Soviet pension system was scaled back. Latvia adopted a simple formula basing pensions on years of service and economy-wide average wage. Accrual rates were lowered as well. However, the low retirement age and all the special groups continued. By 1994, it was clear that even this system was too expensive, the retirement age would have to be increased, especially for women and special groups.

2.9   In 1995, a new law was submitted to Parliament, which introduced a Notional Defined Contribution scheme (NDC, see box on next page) which bases pensions entirely on

individual contributions and life expectancy at retirement. Acquired rights under the old system were immediately converted in 1996 into notional capital in the new system. Special groups were abolished and retirement ages for men and women are gradually being equalized. The state budget pays a contribution for up to 1.5 years for women on maternity leave. Pensions are no longer indexed to economy-wide average wage but to changes in the nominal price level. A second, funded tier will be introduced in July 2001 (Fox and Palmer 1999).

What is Notional Defined Contribution Pay-as-you-go Scheme?

The scheme mimics a defined contribution funded scheme. Contributions are recorded in notional accounts that return notional interest until retirement. There are three main differences with a fully funded scheme. First, worker's contributions are not invested, but only recorded as they are used to pay current pensioner benefits. Second, the "return" on contributions is not directly linked to the results on the financial market but set exogenously. The "interest rate" is most often related to the growth of the contributions. Third, at retirement, benefits are, calculated by dividing the amount accumulated in the notional account by the average number of months that workers (with no gender differentiation) are expected to live at each specific age of retirement. Capital does not continue to earn notional interest during the pay-out phase. Indexation provisions are used to link the growth of benefits in payment to the performance of the economy.

2.10   *Kazakhstan* was the next to undertake a pension reform. Pension reform began slowly in 1996, with a gradual increase in the retirement age to 58 for women and 63 for men and the elimination of many early retirement provisions. The more extensive reform in Kazakhstan was inspired by the Chilean example and took place in 1998. Since then, fully

funded individual accounts managed both privately and publicly are being developed while the previous system is being gradually phased out.

2.11   Contributions are now split in two: 10 percent of gross wage is paid to a pension fund of contributor's choice, whereas another 15 percent is paid to the old State Pension Fund. The old State Pension Fund continues to pay existing benefits and provides new benefits based on the number of years worked under the old system. Contribution rates to this fund are expected to decline as the expenditures related to the old system decrease. This decline will occur gradually, as the reform did not reduce acquired rights. Disability and survivor's benefits have been converted to flat allowances unrelated to service or wage history, and are financed by general revenues (Andrews 1999).

2.12   The government guarantees a minimum old-age pension for those workers who complete 25 years of service if their combined pay-as-you-go and funded pension falls below such minimum. The minimum pension was equivalent to 25 percent of the nation-wide average wage when the reform began, and was expected to be price indexed. Those who do not qualify for the minimum will receive an old-age allowance close to the social assistance level that is approximately 7 percent of the nation-wide average wage.

2.13   *The Kyrgyz Republic* took the first step toward pension reform in 1996, with the implementation of individual contribution record keeping and the elimination of many early retirement provisions. Then, in 1997, The Kyrgyz Republic introduced a NDC system (see box above). The reform was accompanied by a generous recalculation of all existing pensions and no increase in the retirement age. The system, however, was not sustainable in the short-term, and the retirement age was finally gradually increased to 58 for women and 63 for men. There are no plans for a funded system.

2.14   Acquired rights in the old system were redefined and scaled down. Years of service accrued before 1996 give right to a replacement rate of 1 percent of worker's average wage. The later is calculated on workers 5 best consecutive years before 1996 although at 1997

prices. Workers contributions in the new system earn an interest equivalent to 75 percent of the average wage growth rate. A particularity of the system is that there is no minimum pension but a flat base pension per year of service added to all workers' earning-related benefits. A minimum of 5 years of service is required to qualify for the base, and the full amount is paid to women and men who have completed 20 and 25 years of service. The total amount of the base cannot currently exceed 200 *Som*, which represented 25 percent of the average wage in 1998. The base will not be adjusted until it reaches 12 percent of the average wage (Castel 1998).

2.15 *Moldova* finally reformed its Soviet–era pension system in 1998 after an extremely difficult process. The old system clearly needed reform. Pensions were often paid months late, and sometimes in apples or onions that the Government would accept in lieu of contributions. Nevertheless, the Parliament constantly rejected amendments to raise the retirement age or to scale back privileges. Finally, in 1998, Parliament accepted a package, that increased the retirement age, eliminated most of the early retirement provisions, and introduced a new defined benefit formula. As in the Kyrgyz Republic, there are no plans to introduce a fully funded system.

2.16 Of the four countries, Moldova's new system is the closest to the old Soviet system. A minimum of 20 years of service is required to qualify for an old-age pension. The first 35 years of service provide a replacement rate of 1.2% per year, any additional years beyond this, as well as years worked after legal retirement age, provide 2%. The retirement age has been gradually increased until it has reached 60 for women, and 65 for men. Periods of taking care of a child that is less than 2 years old or a disabled child or an elderly person (over 75 years) [1]still count as years of service. The reform introduced a minimum old-age pension of 25 percent of the average wage (21.85 percent in the case of farmers). As with old-age benefits, the latter is increased as per 2% for each additional year of service worked beyond 35 years or after the legal retirement age. Similarly, the minimum is proportionally reduced for those who do not have 35 years of service.

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[1] This also includes period of study as a full-time student.

2.17   Years of service accrued before the reform give right to a replacement rate of 0.4 percent of worker's average wage and a flat amount of 57 *Lei* (approximately 16 percent of the average wage). Total benefits are a weighted average of the two components described above, according to the number of years of service realized in each system. Younger workers, who will work for 20 years or more after the reform, will lose all their acquired rights (Thompson and Yu 1997).

Main Changes for Women

2.18   The key variables affecting women in the pension reforms are summarized in Table 1. The trend has been to harmonize provisions across genders. All countries raised the minimum pension age for women (with a transition period). Only in Latvia, will this age be equal to the men's minimum, albeit the lowest for men among the four countries. Two countries eliminated the right to pension credit for time spent on maternity leave. In Latvia, this provision was maintained, but the entitlement was scaled back and it is financed out of general revenues, not earmarked revenues.

Table 1. Features of the New Pension System Affecting Women				
	Latvia	**Kazakhstan**	**Kyrgyz Republic**	**Moldova**
Retirement Age for Women				
Old	55	55	55	55
New	60	58	58	60
Transition Rate	6 months per year	6 months per year	4 months per year	6 months per year
Credit for Time Raising Children	1.5 years for each child; max. 2 children	--	--	2 years of service for each child
Memorandum: **Retirement Age for Men**				
Old	60	60	60	60
New	65	63	63	65

Source: Country legislation.

2.19   Do these new systems reflect greater gender equality? On paper, they do, for the underlying philosophy of the reforms is to reduce intra-generational redistribution, and improve labor market incentives. The pension system was reformed to approximate more closely market outcomes, with the role of the state to ensure intergenerational redistribution and efficient risk pooling. This implies that individuals bear direct responsibility for their choices about participation and labor force exit.

2.20   The social context in which these choices are made does, however, matter, in particular when it refers to women's traditional responsibility for raising children and grand-children, and the social value of this unpaid work. The Soviet system tried to compensate women directly for this time by: (a) providing pension credit for time spent raising children, and (b) allowing women to retire 5 years earlier. The later provision seems a rather inefficient approach. Although daughters frequently rely on their mothers to look after the children so they could go to work, by the time they are 55 most women are much healthier, on average, than men. Carrying this tradition forward into a market based, more individualistic system is problematic. As we will see in the next sections, disrupted careers and early retirements greatly affect women's old-age security in the new systems.

2.21   Finally, in this paper we do not consider survivor pensions in our analysis of gender dimensions of pension systems. The main reason is that female labor force participation rates are so high in the FSU that survivor pensions are not a significant factor in women's old-age security. Most women are already covered under the pension system based on their own participation. As these systems do not permit two public pensions to be taken, women usually receive survivor pensions in the period leading up to retirement if their spouse died before they retire. As a result, survivor pensions may be relevant primarily for pre-retirement income security for women.[2] It is worth noting that Latvia eliminated survivor pensions for spouses, as these were considered an unnecessary expense at a time of cutbacks. The other three countries maintained them for spouses and for families with underage children (the latter is also maintained in Latvia), with a minimum equal to up to 100% of the minimum

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old-age pension (in the Kyrgyz Republic). In Kazakhstan, they have been transferred to general revenue financing.

III. Methodology

3.1 *Definition of variables*. In this paper, we are only concerned about the gender implications of the reforms, as other features have been evaluated elsewhere. To do this we construct several variables to quantifying gender differences in pension outcomes for women and men, and follow well established techniques of identifying the gender gap by comparing expected flows of income over time for the average woman and man in the country (Burkhauser and Warlick 1981). Three variables are constructed: the individual replacement rates, the implicit financial return on contributions and the change in individual net wealth.

3.2 *Replacement rates* are calculated as the ratio in percent between a person's benefit and his/her average wage at retirement, as formula (1) shows.

$$(1) \quad RR_{i,a} = \frac{B_{i,a}}{W_i} . 100$$

where $RR_{i,a}$ is the replacement rate of the worker i retiring at the age a, $B_{i,a}$ the level of his/her old age pension when she/he retires and W_i, his/her average wage. Worker's average wage is assumed to be constant over his/her working period.

3.3 This measure ignores the time dimensions, both on the contribution side and the benefit side. A pension is a promise to pay a stream of benefits at a certain age or event (such as retirement) until death. It is usually paid for over time, through contributions. An easy way to compare these both streams of cash is to calculate the implicit rate of return that would equalize these two streams. (Formulas (2) and (2a))

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[2] The high coverage of women in the formal pension system, even in low income countries of the FSU, is one of the most striking features of the social protection system inherited from the Soviet period.

$$(2) \quad B_{i,a}. = PMT(r, K_{i,a}, -C_{i,a})$$

$$(2a) \quad C_{i,a} = \sum_{t=0}^{t=a-1} \tau.W_i.(1+r)^t$$

in which r is the implicit rate of return, PMT is the financial function which provides the level of benefits (equal to $B_{i,a}$) that will exhaust a certain amount of accumulated contributions, $C_{i,a}$, over the expected number of retirement periods $K_{i,a}$. The level of benefits $B_{i,a}$, is given by the expression (1). The amount of accumulated contributions, $C_{i,a}$, is equal to the sum of worker's wage multiplied by the contribution rate, τ, and the compounding interest earned over the working life on the contributions as if the latter had been invested at the interest rate or implicit rate of return r.

3.4   The implicit rate of return is normally calculated in nominal terms. To avoid the difficulty of making assumptions about price and wage growth in each economy, we express this rate in relation to the wage growth. An implicit rate of return equal to zero is an implicit rate of return equal to wage growth.

3.5   If people work longer, they should realize a longer stream of wage income before retirement. This addition to income is not considered in the implicit rate of return analysis. This income stream should be higher than under the previous system, since the reforms reduce benefits, and thus leave room for a cut in payroll taxes. These changes can be valued by computing the net present value - at the time the reform is implemented - of the flow of wages and pension incomes and compare it to the present value of such incomes in a no reform case. We call this expression the change in lifetime net wealth, and we use it to give a measure of the global result of these changes from the individual's perspective, as the set of formula 3a to 3c shows:

(3a) $NZ = Z_{new} - Z_{old}$

$$(3b)\quad Z_{old} = \left\{ \sum_{t=0}^{t=a-1} \frac{1-\tau}{(1-\beta)^t} . W_i + \frac{1}{(1-\beta)^a} B_{i,a}^{old} . \sum_{t=a}^{t=T} \frac{1}{(1-\beta)^t} \right\} . \frac{100}{W_i}$$

(3c)

$$Z_{new} = \left\{ \sum_{t=0}^{t=b-1} \frac{1-\tau}{(1-\beta)^t} . W_i + \frac{1}{(1-\beta)^b} \sum_{t=b}^{t=c-1} \frac{1-\mu}{(1-\beta)^t} W_i + \frac{1}{(1-\beta)^c} B_{i,a}^{new} . \sum_{t=c}^{t=T} \frac{1}{(1-\beta)^t} \right\} . \frac{100}{W_i}$$

where NZ is the lifetime wealth net change. Z_{old} and Z_{new} are the flows of income under the old and new system. They are expressed in percentage of worker's wage. Contribution rate is assumed to be changed at the period b, and τ and μ are the contribution rates before and after this period. $B_{i,a}^{old}$ and $B_{i,a}^{new}$ are worker's old-age benefits before and after the reform. The starting period, 0, is the time the reform is implemented.

3.6   In the calculation presented below, a discount rate β of 5 percent is applied to the flow of future income. This rate should reflect households' discount rate. Unfortunately, there is no available estimation of this parameter for any country in the ECA region. The discount rate used in the World Bank economic evaluation of investment operations in the ECA region is currently set at about 10 to 12% in the case of industrial projects. Our estimate seems quite conservative if we consider that, evaluated as the opportunity cost for financial resources, the discount rate should be higher than the real interest rate because households often face borrowing constraints, especially at lower income levels.

3.7.   *Profiles of women.* Neither men nor women are homogeneous groups. We can, however, generalize about certain labor market characteristics, which tend to affect pension outcomes. First of all, women tend to have interrupted labor force participation. They take time out of the labor force to bear and raise children. They also have more periods of unemployment. Second, women tend to have lower incomes than men for various reasons,

including differences in education and experience, hours worked, occupational segregation, and gender discrimination. As transition economies move towards contribution-based systems, these tendencies should result in lower pensions for women, on average, as their total lifetime income will be lower than men's. Finally, women have higher life expectancy at retirement age than men, so they receive old-age income in average over a longer period.

3.8   Table 2 shows the current differences in labor market characteristics in the countries in our study. While male and female labor force participation rates were high and very close during the previous regime, women's rates have fallen in most of the ex-communist countries of East-Europe and Central Asia since the beginning of the transition. In general, female rates fell even more than men did, and the fall has been heavily concentrated in the younger and older categories. (Barry and Reilly 1999). Recorded unemployment, however, is not significantly higher for women, which may reflect the lower participation rates at the ages most likely to suffer unemployment.

Table 2. Labor Market Characteristics				
	Kazakhstan	**Kyrgyz Republic**	**Latvia**	**Moldova**
Labor force participation (formal sector) *% of working-age population*				
Female	42.8	38.2	50.2	45.3
Male	52.5	45.6	59.0	52.6
Unemployment rates *% of labor force*				
Female	6.4	7.5	16.3	...
Male	5.7	7.0	15.4	...
Wage gap *% of male wage*				
Female	72.3	81.6	79.9	...

Source: ILO; 1996 Kyrgyz LSMS; OECD-CEET 1997 database; E. Barry and M. Reilly, 1999; World Bank data.

3.9   Comprehensive information is not available on how these differences translate in total years of contribution for men and women. For the purposes of our analysis, we generated average lengths of service based on each country's labor force participation by age and

gender. Table 3 presents the results. As a reference, the table also reports figures in the case of Bulgaria and Poland, for which estimates are available. These numbers take into account that, in the pre-reform system, women were allowed to retire 5 years earlier. When we use them in the analysis, we make the assumption that women will not change their behavior. Thus far, this seems to be correct.

Table 3. Average Length of Service (before pension)				
Country	Year	Men	Women	Gender Gap
Kazakhstan	1996	40	35	5.0
Kyrgyz Republic	1997	38.5	30.2	6.7
Latvia	1997	39.3	32.3	7.0
Moldova	1997	44	36.9	7.1
Bulgaria	1995	34.8	28.7	6.1
Poland	1998	36.9	32.0	4.9

Source: Country data (Bulgaria and Poland) and authors' calculations

3.10 Women live significantly longer than men do in the FSU. Life expectancy and the expected length of the retirement period are central in valuing the pension. When unisex annuities are used (as they are in a PAYGO system, and in most defined contribution systems), women get a higher rate of return on contributions than men. Table 4 shows the gender gap difference in life expectancy in the four countries under consideration. The largest gap is observed in Kazakhstan.

Table 4. Life Expectancy				
Country	Kazakhstan	Kyrgyz Republic	Latvia	Moldova
Year	1996	1997	1998	1997
At Birth				
Female	70.4	71.4	74.9	70.3
Male	59.7	62.6	63.8	62.9
Age 60				
Female	20.4	19.1	19.9	18.8
Male	13.7	14.9	15.5	15.8
Age 65				
Female	17.4	15.6	16.0	15.3
Male	11.5	12.2	12.5	13.3

Source: World Bank data and Kyrgyz Republic estimates.

3.11 *Assumptions.* Modeling the new pension system requires a series of assumptions. Many of the parameters are not known ex-ante, and some regulations still needs to be issued. In our calculations, we made the following general assumptions:

- *Characteristics of women and men:* The calculation of the level of benefits for men and women retiring under the new system requires projecting all the key values into the future: life expectancy, labor force participation, wage gap, unemployment gap, etc. This task is quite difficult in an OECD country. In a transition economy -- uncharted territory in economic history – this would be beyond heroic. Although, the pension reform should also modify behavior, our analysis below simply assumes that the gender specific characteristics reported will remain constant in the future.

- *Fully-funded pillars*: The rate of return on contributions invested in the fully funded pillar created in Kazakhstan and Latvia is assumed to be 3 percentage points higher than the growth rate of the average wage in the economy, net of administrative costs. In Kazakhstan, 10 percent of worker's gross wage is invested in the funded pillar after the introduction of the reform. In Latvia, the second pillar starts functioning in 2002 with 2 percent of worker's gross wage invested, increasing by 1.25 percent every two years until it reaches 7 percent of worker's gross wage in 2010.[3]

- *Overall contribution rates:* Our methodology requires an estimate of the contributions designated for future pensions. The official contribution rate assigned to the national pension fund (when a separate fund exists) or the second tier usually does not reflect the real cost of the public pension system. First, it does not take into account the long-term financial sustainability. The Kazakhstan reform, for example, implies an additional expenditure of about 1.7 percent of GDP over 20 years. Serving the additional public debt will imply additional taxes. Second, the contribution rate paid to the pension fund gives rights to other benefits: disability and survivors benefits as well as family

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[3] Legislation passed in January, 2000, (after our analysis was complete) raised the upper limit on the second tier to 10 percentage points by 2010 in Latvia. We did not re-calculate our figures, however, as the effect that far out in the future would be very small.

allowance. The inter-temporal cost of these benefits is impossible to evaluate at this point. Third, there are administrative costs in running a system, which may not be financed by contributions. If we ignored these issues, our comparisons across countries would be biased. Consequently, we decided that the best method of comparison would be to use the current cost of the old-age system, and calculate what payroll tax would be required to cover these current expenditures. Table 5 presents those rates.

Table 5. Contribution Rate Estimates (in percent of gross wage*)				
	Kazakhstan	Kyrgyz Republic	Latvia	Moldova
Pre-reform situation Payroll tax earmarked for pensions Payroll required to finance old-age current benefits	25.5 33.2	32.0 37.5	34.0 27.5	32.0 29.7
Post-reform situation Projected payroll tax after 25 years	15	25	20	25

Source: Country legislation and Authors' calculations.
* after payroll tax but before income tax

3.12 *Problems with the methodology.* There are many weaknesses in the methodology presented above, the most outstanding being the use of the old system as contrafactual. As discussed above, it is unlikely that the benefits promised in the old system would have been delivered to future generations, as these systems were not affordable. The analysis, however, does not focus on the absolute size of the changes but only on the differential impact of the ₁eforms between men and women. The use of the old systems' legal benefits as a baseline clearly leads to overestimating the replacement rates and implicit financial returns in the old system, and to underestimating the changes in net wealth after the reform. It should not, however, affect the differential impact between men and women.

3.13 Finally, the calculation above does not include any estimation of the loss of welfare from the reduction of leisure (or time at home for unpaid work). The reason is that the value of leisure is difficult to estimate. If it is valued at the individual's wage rate, the increases in welfare related to work are just offset by the loss of leisure. Retirement age increase would

thus imply a welfare loss equal to the benefits not received due to later retirement. Under this assumption, if men receive higher wages, they suffer a greater loss of welfare, on average. The contrary might in fact be closer to the truth. A study in Ecuador (Rama and MacIsaac 1999) on the impact of downsizing on workers earnings and welfare show that women suffer higher income loss than men, but these difference did not show up when the questions is about welfare loss. In other words, women did not mind withdrawing from the labor force, as they valued their time highly. A retirement age increase is just the opposite. As a result, our calculation of the net wealth changes, which does not take into account women's valuation of leisure, probably underestimates the overall negative impact of the pension reform on women.

IV.   Results

4.1   In this section, the three variables constructed above are first used to estimate the gender differences nestled within the systems in each country. We follow a sequential approach to isolate the three gender relevant aspects of the pension reforms. First, we look at how the ratio of women's benefits to men's benefits would change with the reform, assuming both have a full work history and both earn the average wage. In this case, any observed gender difference in replacement rates highlights the pure gender differences in benefit rules. 4.2   Next, we compute the gap in the implicit rate of return on contributions. Here the systems' subsidy to women based on longer life expectancy emerges. In a second stage, we look at what happens to women if they continue to experience the labor market outcomes historically observed in these countries – lower wages and interrupted work histories. Again we first isolate the benefit gender gap, and then we use the implicit rate of return on contributions to see the combined impact of behavior, benefit rules, and life expectancy. We do a final analysis of the full relative impact of the reform using the net wealth variable.

4.3   Lastly, we check the sensitivity of the analysis to assumptions on the financial rate of return of the fully-funded pillar. We look at how our results change for poorer workers, picking up the effect of the minimum benefit, which lowers the gender gap. We also analyze

how the benefit gender gap changes through the transition by computing the ratio of replacement rates for several cohorts, and we look at the incentives for women to retire early.

Design Features: How does the Design of the System affect Gender Differences in Pension Outcomes?
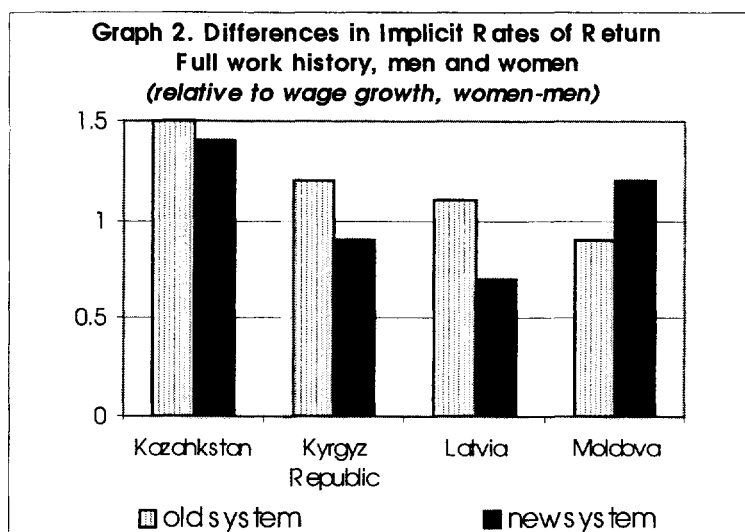
4.4   Starting with replacement rates, Graph 1 shows the replacement rates for women as a ratio in percentage of those for men, using 60 and 65 as the retirement age in the old and new system, respectively, for both genders[4]. This ratio reflects the gender differentiation nestled within the system. In Latvia the old system had no gender gap in benefits. Accrual rates were the same for men and women. In the three other countries, however, women started accruing higher replacement rates at lower years of service under the old system. In Kazakhstan, these gender differences disappeared with a full working life under the old system as the maximum pension was reached. As a result, Kazakhstan looks just like Latvia in Graph 1. Only Moldova kept this feature within its new system, and it is the only one to show a benefit gender gap in the new system. Moldova even enlarged the gap because they doubled the benefit accrual rate for years of service completed after retirement age while maintaining a lower retirement age for women.

Graph 1. Ratios of Replacement Rates
Full work history, men and women
(in percent of men benefit)
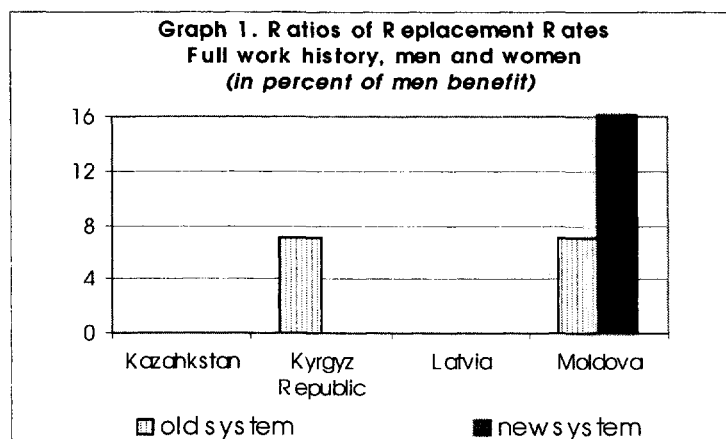
Source: Author's calculations.

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[4] This assumption is necessary to ensure comparability across countries, but actually obscures gender differences in early retirement under the old system. To see these differences for Latvia, see Fox and Palmer (1999).

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4.5 *Implicit rate of return on contributions.* All countries show a gender gap in favor of women in rates of return under the old system. This gap decreases in all countries except Moldova in the reformed system (Graph 2). It remains positive, however, as women at age 65 still have much higher life expectancy than men do, so women's contributions still buy more benefits than men. The highest gap is overall observed in Kazakhstan because this country shows the largest gender gap in life expectancy. [5]
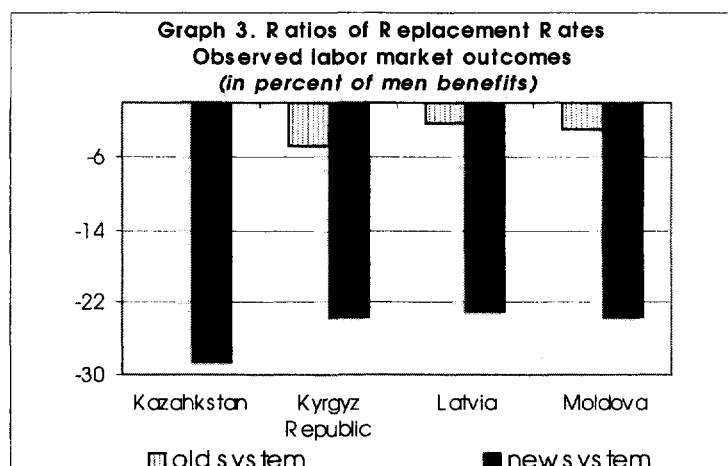

Graph 2. Differences in Implicit Rates of Return
Full work history, men and women
(relative to wage growth, women-men)

Source: Author's calculations.

How does incorporating Behavioral Differences and Labor Market Structures change the Gender Gap?

4.6 This section analyses the gender gap once labor market outcomes for men and women are taken into account. As noted above, on average women earn less and have overall shorter working periods than men (Tables 2-3). They also retire earlier. When we apply these characteristics (based on our country-specific profiles), women receive on average lower pension benefits than men in the new, as in the old, systems (Graph 3). The benefit gap widens (becomes more negative) after the reform because the new systems reward long service and early contributions and penalize early retirement.

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[5] Note that we assume that, in Latvia and Kazakhstan, annuity suppliers will not be able to discriminate by gender. If this was not the case, the gender gap on the implicit rate of return would shrink.
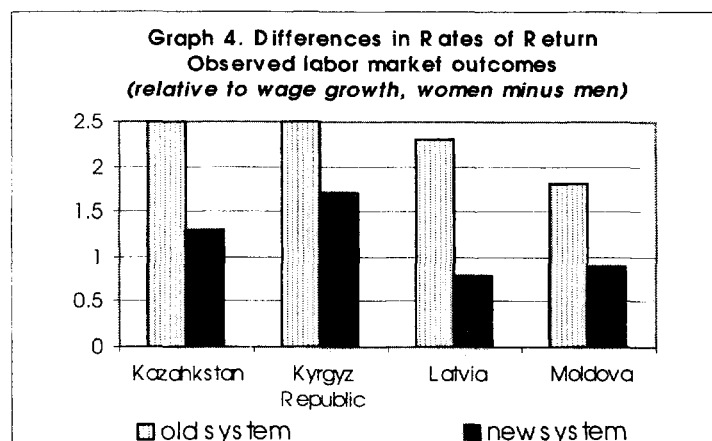
Graph 3. Ratios of Replacement Rates
Observed labor market outcomes
(in percent of men benefits)

Source: Author's calculations.

4.7 What factors drive the gender gap in each country under the new system? In Kazakhstan, the Kyrgyz Republic and Latvia the gender gap widens because compound interest rates in defined contribution and notional account systems provide higher increment for the first years spent in the system (instead of the constant rate in the previous systems). In Kyrgyz republic, this effect is moderated by the base pension, which is not earnings-related but linked to the number of years of service and is capped at 20 years for women. In Moldova the system strongly rewards length of service over 35 years. As average length of service for women is only 37 years, the slight gender difference in accrual rates seen in Graph 1 is swamped by the shorter length of service (behavior effect). Finally, Kazakhstan, and the Kyrgyz Republic permit but penalize retirement at younger ages since benefits are based upon life expectancy at retirement, a key feature of defined contributions systems.

4.8 *Role of maternity leave provisions.* Not shown in Graph 3 is the mitigating role of maternity leave provisions on the gender gap in Latvia and Moldova. In a defined contributions system, absences from the labor force have a larger effect on benefits if they occur early in the working career because of compounding effects. In Latvia, the state budget pays contributions to the pension system during periods of maternity leave, (1.5 years per child). This subsidy reduces the projected gender gap by as much as 23 percent. In

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Moldova, maternity leave provisions reduce the benefit gender gap by half. These provisions are funded by a cross subsidy from other contributors.

4.9 *Implicit rate of return on contributions.* Women's longer life expectancy again generates higher rates of return on contributions than for men, but less in the new than in the old system (Graph 4). The largest gap in the new systems is found in the Kyrgyz Republic because of the base pension. The base, added to the notional account component, represents a better financial return on contribution for women because they earn, on average, 25 percent less than men do.
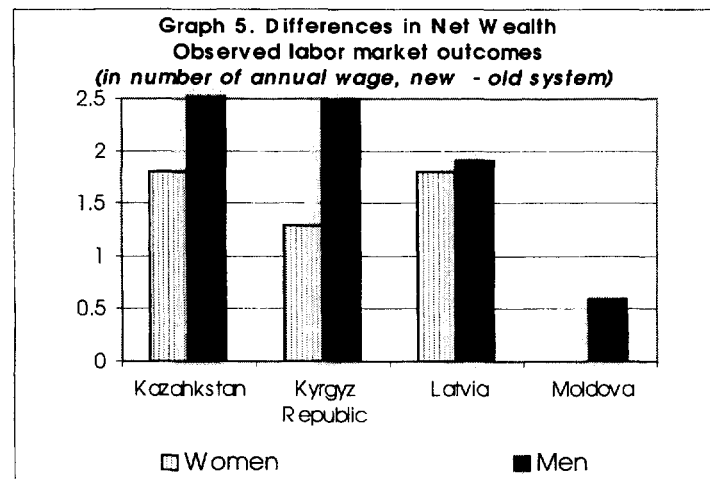

Graph 4. Differences in Rates of Return
Observed labor market outcomes
(relative to wage growth, women minus men)

Source: Author's calculations.

4.10 *Full impact of the reform: changes in net wealth.* The decrease in pension obligations associated with reducing entitlements should bring about a surplus at current tax rates. This surplus could be saved, consumed by other branches of the government, or given back to the taxpayer in the form of reduced contributions. We assume that all of the decrease in contributions is passed on to the contributor in the form of higher wages. Table 5 shows our estimate of how much this reduction in contribution should be, based on fiscal projections of the systems.[6]

See citations in bibliography for our sources for projections. In Kazakhstan, the reduction in the contribution rate is assumed to be very gradual because the transition period should be very long since acquired rights were not scaled back. In Latvia, the rate falls steadily until 2015. In the Kyrgyz Republic and Moldova, contribution rate is decreased between 2005 and 2010.

4.11 Under our financing assumptions, the present value of the expected flow of wages and benefits for new entrants is higher both for men and women after the reform, even if women continue to behave the same and the labor market generates the same outcomes (Graph 5). Men earn more than women do over more years, so the present value of their projected income stream is always higher than the value for women, and the change is more positive for them also. But women do well, especially in Kazakhstan and Latvia. Three factors cause this result. First, the reduction of the contribution rate reduces the tax burden of the system, increasing take-home pay. This effect is projected to be high in Kazakhstan (even though it takes some time) and very low in Moldova. Second, the increase in the retirement age leads to increases in income during the working years. Third, our method calculates the present value of an expected stream of income (wages and pension benefits) at the beginning of working life, so benefit reductions are heavily discounted (another factor favoring Kazakhstan). In Moldova, since the benefit cut was large and the tax cut small, the change in net wealth for women is near zero.

Graph 5. Differences in Net Wealth
Observed labor market outcomes
(in number of annual wage, new - old system)

Source: Author's calculations.

4.12 These effects are uncertain. The success of the reform in decreasing the tax burden will depend not only on the reform of the pension system, but also on the general economic environment and the capacity to collect the necessary level of contributions. Similarly, a retirement age increase will lead to an increase in working income only if there are jobs, and

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only if workers who must postpone retirement would not have become working pensioners under the previous regime. In Latvia and Kazakhstan the results also depend on how well the fully funded pillar functions.

Sensitivity Analysis

4.13   *Lower rate of return on funding.* The results presented in the above sections assume that in Latvia, as well as in Kazakhstan, workers saving invested in the financial market show a rate of return 3 percent higher than wage growth. Actually, the rate could be higher or lower. Variations in the return on the financial market affect men more than women (Table 6) because men accumulate over longer periods. The fall in benefits in both countries is limited by the minimum wage. On average, men's benefits fall relatively more than women's in a downturn because women's expected benefit starts out lower, and therefore the fall is broken by the minimum earlier. Pensioners in Kazakhstan are more vulnerable to a downturn, because the total old-age income is financed through the fully funded pillar.

Table 6. Effects of Variations in Financial Rate of Return* Observed Labor Market Outcomes (in percent of replacement rates obtained in baseline scenario)						
Country	**R=0**		**R=3**		**R=6**	
	Women	Men	Women	Men	Women	Men
Kazakhstan	80	43	100	100	229	248
Latvia	75	70	100	100	156	177

*Expressed as the differential between the return of the financial market and wage growth.
Source: Authors' calculations.

4.14   *Lower income.* All four countries under study have introduced new provisions regarding old-age minimum benefits. Table 7 summarizes their main characteristics. The minimum benefit in Kazakhstan plays two roles. As in the other countries, it serves to push up the level of benefit that low-income earners would earn if benefits were only earning related, but it also provides a guaranteed floor to all workers in case the financial market provides low returns. Indeed, without a minimum benefit, average women in Kazakhstan

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could receive old-age income as low as 14 percent of the average wage if the returns in the financial market were not higher than the average wage growth.

Table 7. Old-age Pension Minimum Benefits Provisions				
Country	Required service	Level when the new Pension Law was adopted	Added to benefits?	Indexing rules
Kazakhstan	25	25 percent of the average wage	No	Prices
Kyrgyz Republic	5	0.6 percent per year of service for women 0.5 percent per year of service for men up to a maximum of 12 percent of average wage	Yes	Wages
Latvia	10	28 percent of average wage	No	Ad hoc
Moldova	20	0.45 percent per year of service, up to a maximum of 16 percent of average wage, increased by 2% when service beyond 35 years and/or retirement age.	No	Wages

Source: Country legislation.

4.15   In the four countries, low-income earners who contribute for many years will receive the minimum old-age benefit. However, workers who are in agriculture or the informal sector for long periods of time may not qualify for the minimum in Kazakhstan or Moldova. The Kyrgyz Republic is the country that offers the broadest coverage and the only country that still makes some gender differentiation when calculating the minimum old-age benefit, so it is most beneficial to women.

Women in Transition: What is the Impact of the Reform on Different Age Cohorts of Women?

4.16   Since the new pension systems are introduced gradually, two types of transition issues must be considered. The first one, which usually attracts a great deal of attention, appears when funding is added. Some of workers contributions are directed to the new scheme, thereby producing a shortfall in income in the Public system. This transition cost associated with the creation of private pension funds has fiscal but not gender implications, and therefore it follows that this paper does not focus on it. The second type of transition issue, which does have a large gender dimension, is related to the gradual changes in eligibility criteria and pension formulas and their implication on different cohorts. In the

above sections, we have compared the old and new systems, as if workers have always been in one or another system. In reality, the new systems are introduced gradually. For at least the next 20 years, most pensioners will receive benefits that are a mix of rights acquired under the old and new systems. As a result, average replacement rates at retirement age will vary depending on the age a worker had when the reform was implemented and the rate at which rights in the old system are phased out. This transition rate varies across the four countries depending on how the new systems recognize the old system acquired rights, and as a result, the evolution of the gender gap varies (Graphs 6 to 9).

4.17   Most existing rights are fully recognized in Kazakhstan, so the old system will survive for many years (Graph 6). As a result, the transition period is long. The old formula was eliminated in the three other countries. In the Kyrgyz Republic and Moldova, acquired rights were reduced. In the Kyrgyz Republic, replacement rates started decreasing just after the reform but only gradually because of the introduction of the relatively high base pension of 30 percent of the average wage (Graph 7).[7] This base will be allowed to fall gradually in real terms until it reaches the level of 12 percent of the average wage. The transition in Moldova (Graph 8) is similar; the level of the base is, however, much smaller and contrary to the Kyrgyz reform, it will be eliminated at the end of the transition period.[8] Finally, in Latvia, (Graph 9) the reform shifted everyone into the new scheme, as if workers had always contributed 20 percent of their gross wage to their notional accounts.[9] The adjustment to the new system was thus almost immediate, and the calculation of all the benefit components began to be a function of life expectancy at retirement. As a result, women, who retire earlier than men under the transition rules, will initially experience a decrease in their replacement rate.

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[7] In the Kyrgyz system, each year of service completed before the reform earns approximately one percent replacement rate.

[8] In Moldova, each year of service realized in the previous system provides 0.4 percent of replacement rate, and a flat amount of 16 % percent of the average wage.
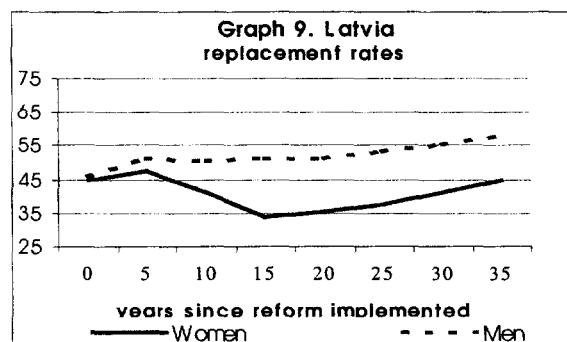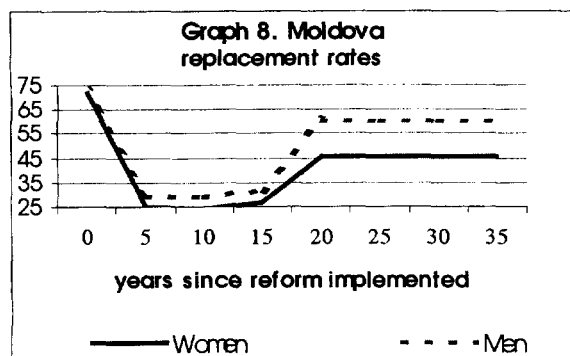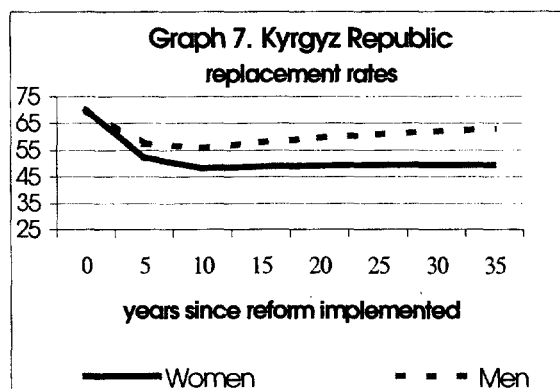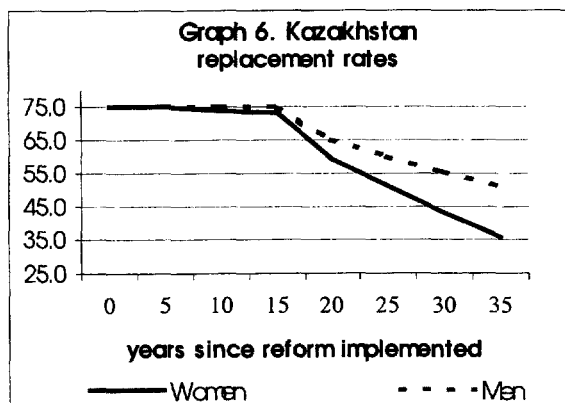
[9] For the workers retiring immediately, the calculation of the notional capital was based on the average wage recorded in the two years preceding the implementation of the reform. The number of years which enters in the calculation of the average wage will increase up to 4 for the workers retiring in 2000 and the years after.

Graphs 6 – 9

Replacement Rates by Cohort

Observed :Labor Market Outcomes

(In percent of individual gross wage)

Graph 6. Kazakhstan replacement rates
years since reform implemented
———Women   - - - -Men

Graph 7. Kyrgyz Republic replacement rates
years since reform implemented
———Women   - - - Men

Graph 8. Moldova replacement rates
years since reform implemented
———Women   - - - -Men

Graph 9. Latvia replacement rates
years since reform implemented
———Women   - - - -Men

Source: For graphs 6-9, author's calculations.

4.18   *Incentives to work longer.* Except for Kazakhstan, the adjustment in the pension system introduced by the reform have been swift for today's retiring women and will also be tough for future retiring women. Unless the begin to work longer than the minimum retirement age, their benefits will be cut by 30-50 percent. The minimum pension provides a floor on benefits, but this is quite low.

4.19   On of the main arguments in favor of DC systems is that they can be structured to encourage longer working years. Will women respond to these incentives, change their

behavior and retire later? Certainly the incentives to work longer under DC systems are strong, as Disney and Whitehouse (1999) show. However, experience in OECD countries suggests that other factors may be more important. (Gruber and Wise, 1999). In OECD countries, the combined weight of other taxes and incentives discourage labor supply above pension age despite overall good health, and as a result, workers exit from the labor force as soon as possible. It should be noted that this evidence comes from countries with weaker incentives to work longer, and is mostly based on males. The working life for women in OECD countries is still increasing on average. However, in transition economies, the same factors encourage women to avail themselves of the early retirement provisions, as income tax rates are high, and total payroll taxes (including those needed to finance existing pensioners) remain steep. The pure defined contribution systems yield about the same rate of return on contributions for early or later retirement, while those with a base pension (Kyrgyz) or the defined benefit system (Moldova) encourage earlier retirement. If women have other income in the household or can work in the informal sector, the low pension may seem enough income. If pensions represent the only income in cash in the household (such as in the agricultural sector), taking a pension seems obvious. The brief evidence to date shows that despite reforms designed to reward increased contributions and a longer working life, most women in the FSU countries still take their pensions as early as possible, and end up with a lower pension on average than men.

V. Conclusions

5.1 The transition from the Soviet period in the FSU involved a great deal of adjustment for almost everyone. Pension systems were not immune. Reforms in the FSU were necessitated by the economic and ensuing fiscal collapse. The transition goal of reducing the public sector was also an important element in the reforms. This element drove reforms towards reducing redistributions, and basing pensions on actual contributions. Since women received relatively better treatment than men did in the Soviet system, it is not surprising that when reforms were introduced these redistributions were cut back.

5.2   Considering that most benefits are not taxed but that wages are, in pure replacement rate terms, post-reform benefits will still be relatively high for women, if they participate almost all their working life. Time taken out to have children or a large portion of time spent in the informal sector will reduce this. Both Latvia and Moldova have tempered their systems with pension credit for women during the period after childbirth–1.5 years after the four months of maternity leave in Latvia and two years after maternity leave in Moldova. This helps to reduce the gender gap. It costs very little–less than 0.3 percent of GDP per year in Latvia. Note that in Latvia, the cost is kept under control by having it financed by a budget transfer to the pension fund. The Kyrgyz Republic and Moldova have reduced the gender gap by providing flat benefits per year of service. These flat benefits make these two systems more redistributive towards women than the pure defined contribution systems.

5.3   The principal issue in the four countries is the category of women who are 40 and above. They can take an early pension, and most will. But their pension will be low, especially if their wages were low. Will they be able to live on that pension at age 65, when they should have another 16 years to live? At age 70, when their spouse has died and their children have moved away? This is a major social policy question, and a strong argument for raising minimum retirement ages.

5.4   Are women well served by these changes? Returning to our previous question, is this a step towards gender equality? On the whole, yes, as women and men face the same incentives in the labor market. Actually, women still benefit significantly more than men do, as the unisex annuities are a major redistribution towards women. At the same time, the new systems penalize women more for shifting their time and their human capital investments toward unpaid household work, despite both the private and social benefits of this work. And they may breed an increased poverty among lone elderly women, especially in Kazakhstan, where there is a high service requirement for the minimum pension, and no compensation for time out of the labor force having children. Below we consider a few policy changes that could reduce this risk.

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5.5   First, reforming countries which do not offer some pension compensation for time spent having children should consider adding this feature. Second, defined contribution systems may wish to consider offer joint annuities. Higher levels of unpaid household work are usually found in middle- and upper-income households, as low-income households tend to need all the healthy earners working. In these households, there is usually a male earner who brings home the majority of the income. Public pay-as-you-go pension systems do a poor job of redistributing this lifetime household income over the pension period. The Soviet approach did not seem very appropriate, since it discouraged work and participation. Yet the individual annuities introduced in the new systems can leave women at their end of their lives with lower pensions, since they retire earlier and live longer. In the defined contribution schemes, a joint annuity purchase (as is required, for example, in Chile) could improve women's living standard after their husband dies. This will, of course, be controversial, since minimum vesting periods to avoid moral hazard necessarily involves some government intrusion into private relationship decisions such as marriage.

5.6   Third, FSU countries should move toward to equal retirement ages for women and men at a higher age level. This would go a long way towards preventing old-age poverty, since it would prevent women from making what could be in the long run a poor decision. Although women in the FSU have strongly opposed retirement age increases, the low pensions they will receive instead surely cannot be considered a victory.

5.7   Finally, countries should embark on a public information campaign to explain these changes to women, and illuminate their choices and the costs of these choices in the new system. While we do not think the current incentives alone would be enough to get the majority of women to work longer, at least the choices could be made easier to understand. Given the importance attached in most pension reforms in the FSU to incentives and behavioral change, beginning this dialogue with this very large group of stakeholders is clearly important.

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