Keeping older workers in the labor market in Europe and Japan

Survey of comparative literature

1st version

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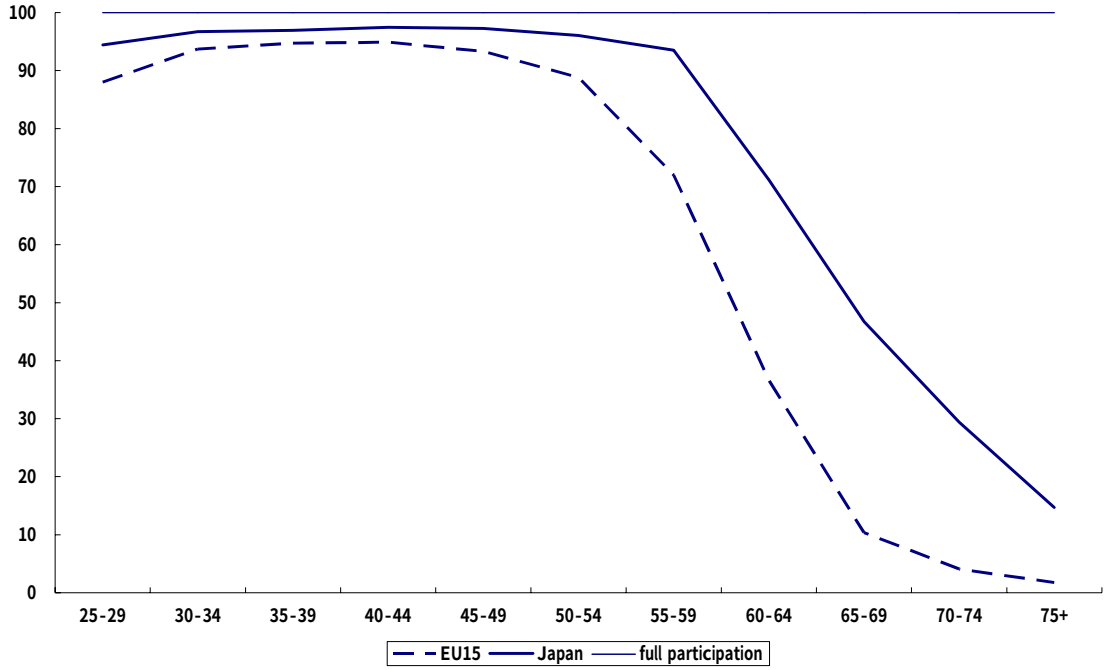
Abstract

The older worker is old in Japan but middle-aged in Europe. In this paper retirement patterns and average actual retirement ages are contrasted for the two regions and the comparative literature is surveyed in order to find the relevant explanations for this difference. Due to a number of disparities in replacement rates and patterns in social security wealth reduction by postponed retirement the composition is also different of the efficient passive and active labor market policies designed so as to keep the older work force in the labor market. Whereas Europe is championing active policies with questionable efficiency, Japan focuses more on passive policies such as raising the age of eligibility to retirement and on phased-in retirement by combining pension and work.

1. Introduction: The problem

The labor force participation rates of European (EU15) males are lower in every cohort than in Japan (see Chart 1).[1] Among the 55-59 year-old Europeans less than three-quarters are employed or seek for employment. The corresponding figure in Japan is 94 percent. In the 60-64 year-old cohort the Japanese participation rate is almost double of the European figure. The area above the respective participation curves and the horizontal line, at 100 percent, of full participation give a rough measure of unused productive capacity. This is nearly 60 percent larger for Europe than for Japan.

Chart 1: Labor force participation rates of males in Japan and Europe (EU15) by cohort, 2003 (%)



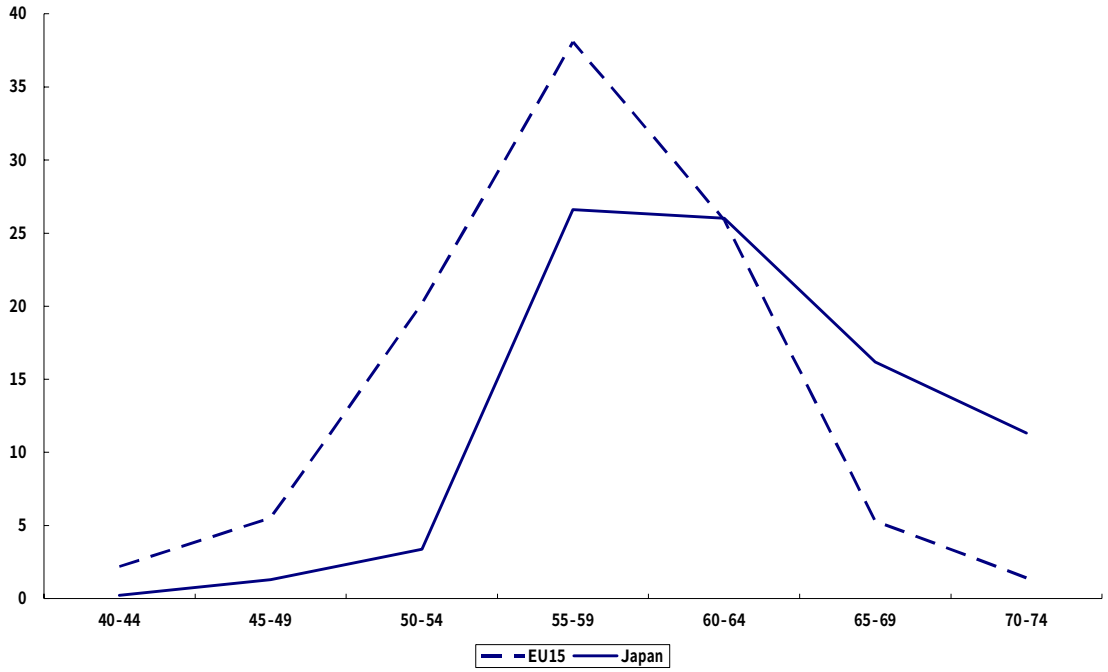
Author's calculations from OECD Labor Statistics.

Further derivative measures shed light on the incident from different angles. Latulippe (1996) presents a method for calculating comparable ages of retirement from

[1] I am indebted to the Japan Institute for Labor Policy and Training for providing me an inspiring environment for this research. I am grateful for comments and other valuable contributions to Shunichi Uemura, Hideo Higuchi, Ciro Baldi, Atsuhiro Yamada, Kim Myoung Jung and Masumi Seto.

the labor market from 5-year cohort data of the Organization for Economic Cooperation and Development (OECD). Applying the method for national European data weighted by the relevant population figures gives an average male retirement age of 60.4 in 2003 for the EU15 countries, against Japan's 67.3.[2]

Chart 2: Composition of male retirement from the labor market by age in Europe and Japan, 2003 (%)



Author's calculations from OECD Labor Statistics.

[2] The formula by Latulippe (1996) defines the average retirement age as:

$$\overline{RA} = \frac{\sum_{x=40,45}^{75} {}_5R^z_{x,x+4} \cdot (x+5)}{\sum_{x=40,45}^{70} {}_5R^z_{x,x+4}}.$$

The function ${}_5R^z_{x,x+4}$ represents the number of people in a particular age group, x to x+4, expected to retire within the next five years in year z. ${}_5R^z_{x,x+4} = (A^z_{x,x+4} - A^z_{x+5,x+9}) \cdot P^z_{x,x+4}$, where

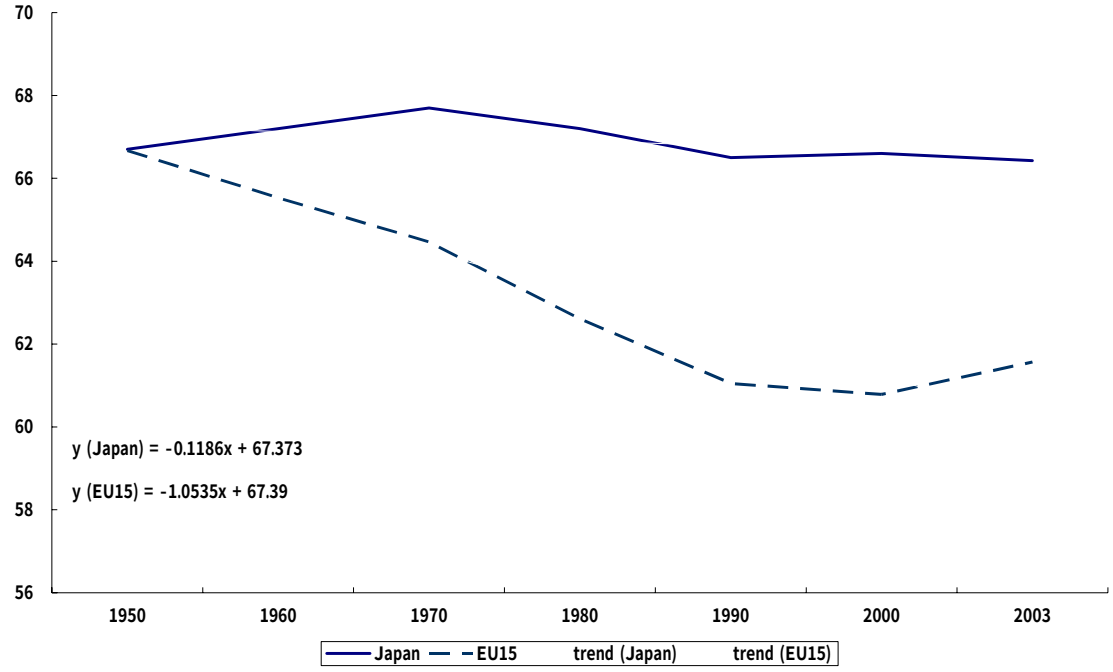
$P^z_{x,x+4}$ = number of individuals of cohort x to x+4 alive in calendar year z

$A^z_{x,x+4}$ = average participation rate in cohort x to x+4 in calendar year z. Latulippe (1996) applies a weigh for the 40 to 44 cohort not used here. Here the calculation goes from the 40 to 44 cohort to the 75+ cohorts. Blondal and Scarpetta (1999) has data only up to the 65+ cohort. Their results, consequently, slightly differ from the above.

A by-product of calculating actual retirement age is an estimation of the composition of new retirements by age, that is, an age-pattern of retirement.[3] Chart 2 reveals important differences between the two regions.

Retirement of the European male labor force is much more peaked. Nearly 40 percent of males leave the labor market between the ages of 55 and 59. By the age of 64, the retirement process is almost complete. In contrast, the Japanese pattern of retirement is much smoother. Cohorts between 55 and 59 and between 60 and 64 represent about the same percentage among the new retirees. In addition, more than 40 percent of retirements occur above the age of 64.

Chart 3: Average age of retirement from the labor market in Japan and Europe (EU15), 1950-2003



Source: Author's calculations from Blondal and Scarpetta (1999, 53) and the OECD Labor Statistics.. European data are weighted averages.

[3] These are not conditional probabilities or hazard rates of retirement in that they do not show the retirement probabilities in a given age among those who have not retired until that age but simply the age composition of total retirement estimated from cohort-wise participation rates and population figures.

The regional difference is a result of a long development. In 1950 the average age of retiring from the labor market was the same in Europe and Japan (Chart 3). By 1970 the difference grew to more than 3 years and between 1970 and 2000 the divergence accelerated and by 2000 it reached almost 6 years. [4] We displayed the equation of the linear trends in the Chart in order to demonstrate that the decrease of male labor force participation in older cohorts was nearly ten times faster in Europe than in Japan. Since the participation rate is significantly higher in the cohort of age 65 to 74 in Japan the fact that, due to lack of data, these time series could have been built on less detailed data (see footnote 3) than the above calculation for 2003, probably disguises some of the recent distance between the two curves. It is likely that should participation rates be available for the cohorts of 65 to 69 and 70 to 74 through the entire period, the distance would have proved even larger between Japan and Europe.

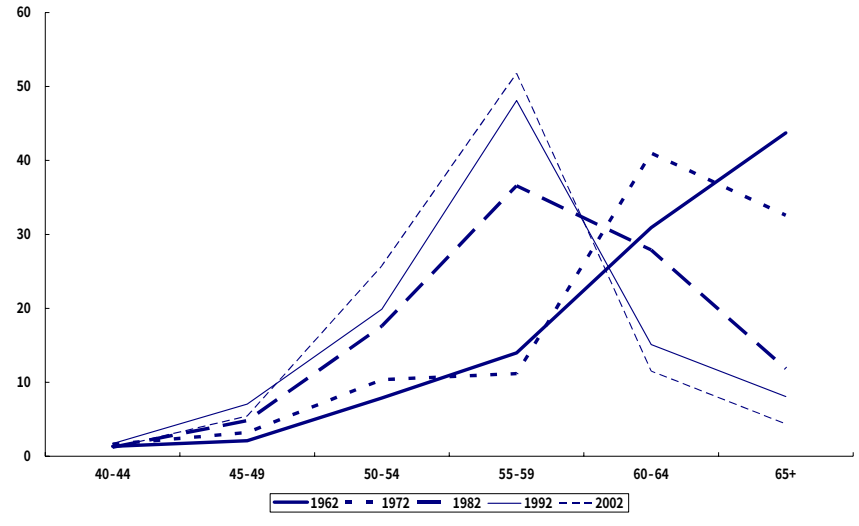
In the two panels of Chart 4 we show in the example of France and Japan how this difference evolved. We chose France to represent Europe here, because it had the longest time series among the major economies of Europe.[5] The Japanese curves show, despite some slow erosion, the same pattern for all five points in time. The largest share of new retirements is in the age of 65 or later. In contrast, the French figures reveal a major shift in retirement patterns. The shape of the curve in 1962 is still similar to the Japanese. By 1972, however, the 60 to 64 years old cohort gets the largest among the new retirees and by 1982 the crest falls back to the 55 to 59 years old cohorts. Since then it is ever more skewed in that age group with some further shift to the left. More detailed data would obviously give a sharper and more reliable picture but the difference between the two patterns is obvious.

All in all, the problem of keeping the labor force longer in the labor market has different significance in Europe than in Japan. The Stockholm extension of the labor force participation targets of the Lisbon agenda, which aimed at forming Europe "the most competitive and dynamic knowledge–driven economy by 2010", set the target participation rate at 50 percent in the cohorts between 55 and 64 (the two genders combined). Nevertheless, in the light of population aging, which is expected to be faster

[4] Due to lack of data the oldest age group in the calculation underlying Chart 3 is that of the 65 years old or older, not the 75 years old or older. That is, the two calculations cover the same people but with more or less detail. Consequently, the results in Chart 3 slightly differ from those derived from better specified figures above in the text. This is unfavorable for Japan in particular, where the participation rate in the cohort of 65 to 74 is higher. European figures are weighted averages with some caveat: the length of national time series are not the same so the composition of the group of countries changes over time.

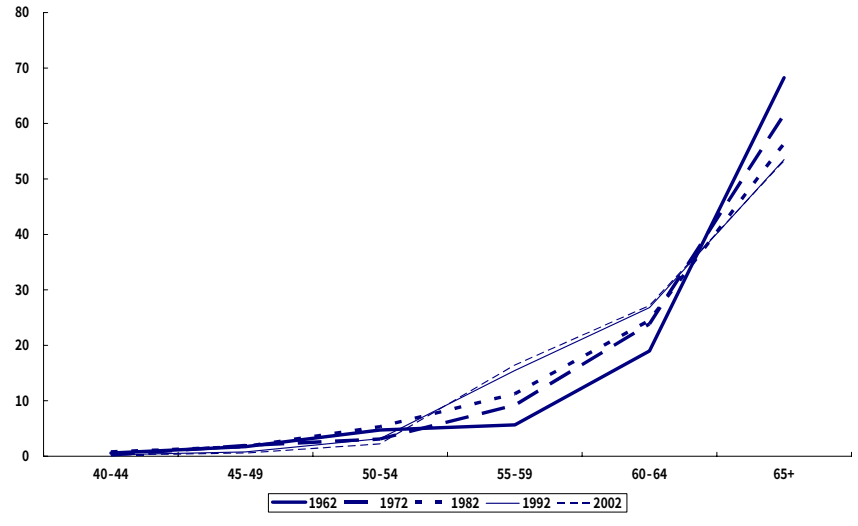
[5] We face a similar comparability problem here as above: in order to gain time series we had to give up details on cohorts between 65 to 69 and 70 to 74, which distort the data in particular for the cohort between the age of 60 and 64 (as they are compared to the cohort of 65 to 69 by Latulippe's formula). That is particularly explicit in case of Japan.

Chart 4b: Composition of male retirement from the labor market by age, 1962-2002, France



Author's calculations from OECD Labor Statistics.

Chart 4b: Composition of male retirement from the labor market by age, 1962-2002, Japan



Author's calculations from OECD Labor Statistics.

and sharper in Japan than elsewhere in the industrialized world (see the UN population forecasts), the explanations and lessons are applicable for Japan as well.

In Section 2, we will outline briefly the relevant retirement models (that is, models of the supply side choice) as well as models of demand for the older work force. In Section 3, we present the trends of the explanatory factors in a comparative context, and show the results of comparative studies, most notably those of the OECD and the American National Bureau of Economic Research (NBER). These models focus on explanatory factors that can be policy-relevant as passive measures, such as raising the retirement age or cutting in the generosity of alternative income sources. In Section 4, we summarize the results of research on the efficiency other, active labor market devices, such as job subsidies, public employment services and training programs.

2. Models of retirement

The brief outline below of the most frequently applied models of supply of and demand for older labor is based on the surveys by Lazear (1986) and Lumsdaine and Mitchell (1999).

The *dynamic lifecycle model* of retirement derives the individual choice to retire from a lifetime utility function, which is composed of and maximized with respect to consumption and leisure and subject to a lifetime budget constraint that limits lifetime consumption by the initial stock of endowments and compensation for leisure given up and devoted to labor. In order to gain a structural form model of utility the utility function has to be further specified such as e.g. a constant elasticity of substitution (CES) function. The advantage of the dynamic lifecycle model compared to the simpler one-period work-leisure choice models is that it allows gradual retirement in the form of switch from full-time employment to part-time employment of older workers. This may prove to be particularly important for analyzing developments in the Japanese labor market where re-contracting older workers by the same employer for lower wages and less responsibility (Rebick 1993). The Blondal-Scarpetta model of the OECD, discussed more in details below, is a reduced form model of this kind in that, besides a number of one-period variables, such as average replacement rates, it contains the increase in the replacement rate by working more years as explanatory variable.

The *option-value theory* (Stock and Wise 1990) is based on the comparison of the expected present value of immediate retirement and the expected present value of retirement at later ages. The maximum of the difference of these two is called the option

value of postponing retirement. If the option value is positive (there exists at least one such age higher than the current age that offers a higher present value of revenues, be them social security pensions, other forms of pensions or labor income, for the remaining lifetime than the immediate retirement) the individual will choose to continue to work. The empirical tests of the option-value theory use pension wealth accrual and social security wealth accrual (changes in pension and social security wealth, respectively) as a key explanatory variable. Blondal and Scarpetta (1999) tests such models, nevertheless the main comparative results of this line are presented by a series of publications by Gruber and Wise (1999, 2004, 2005) and an international team of the NBER. We will return to the main results of this project.

New developments on the supply side try to model multiple choices on retirement, such as a joint decision on retirement and consumption, the joint labor supply decision of spouses or joint labor/savings decision on retirement.

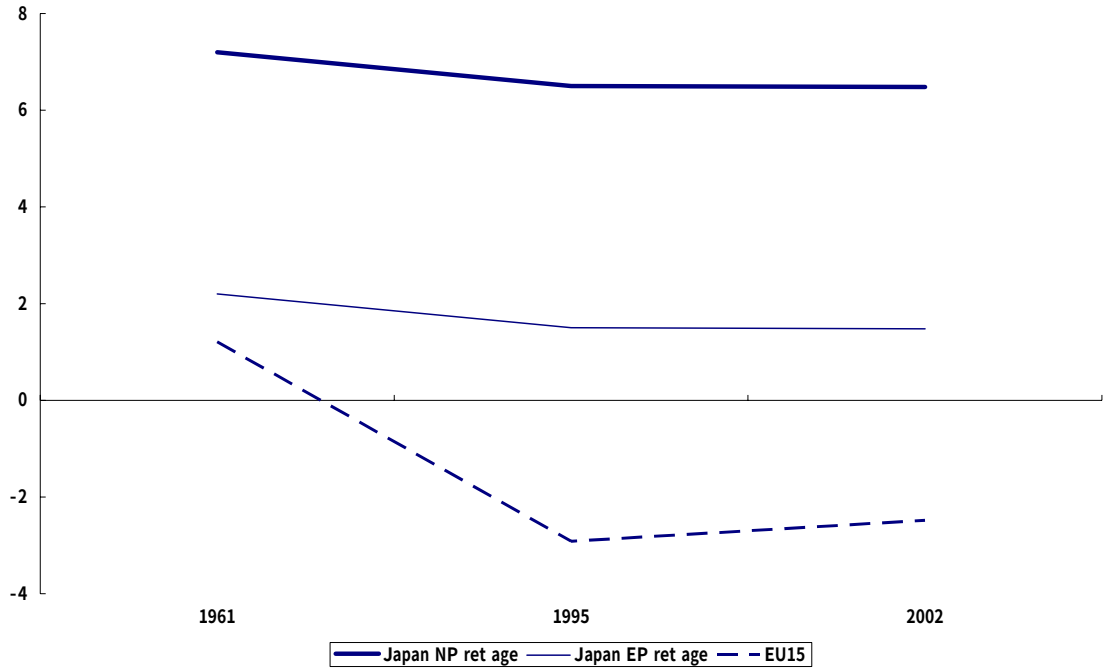
Models of demand for older labor are derived from the *mandatory retirement model* presented by Lazear (1979). The idea is that, for jobs that are difficult to properly define in labor contracts, potentially require firm-specific investments from the worker and costly to monitor, firms sign long-term contracts with young employees. In order to build in the incentives to reveal true capacities, avoid shirking and make the required investments at low monitoring costs the firm offers a promotion system that rewards workers below their productivity when young but above productivity when older. The wage-earnings profile is made steeper than the age-productivity profile (which is frequently non-linear and stagnates or declines in older age). This would keep the worker in the firm and induce her to avoid shirking but it works only if the firm can terminate the contract at a certain age. If for some reason the firm cannot make older workers retire it would cost too much to pay relatively high wages for relatively low productivity. So mandatory retirement is part of the incentive structure. This model is tested for the labor force participation of older workers in Japan by Higuchi and Yamamoto (2002).

3. Variables influencing retirement choice

A number of institutional features set the decision framework for older workers and influence their choices indirectly. The most important such institutional constraints are the age of eligibility, replacement rate, taxes, and bonuses on or reduction of benefits in case of, respectively, retiring earlier or postponing retirement. The effects of institutional constraints are difficult to compare directly since the national systems are

usually very complex and vary greatly. Retirement is frequently multi-channeled in that older workers can choose among alternative routes of leaving the labor market such as special early retirement schemes or disability schemes that aim at handling labor market tensions. In this section we show some of the often used measures and we take a stock of the comparative literature for a picture drawn by these measures.

Chart 5: Changes in the difference between the standard eligibility to old age pension and the actual age of retirement in Japan and Europe, 1961-2002, years



Source: Author's calculations from Blondal and Scarpetta (1999) and OECD. European data are weighted averages.

Note: The 1961 retirement ages are weighted with 1960 population figures; the 2002 retirement ages are weighted with 2000 population figures and contrasted with 2003 actual retirement behavior.

The first obvious institutional feature influencing retirement choice is the standard age of entitlement for old-age pension. Even this seemingly simple component of the institutional structure is difficult to compare across countries, however. Many national pension systems consist of separate schemes for various groups of workers. For instance, Spain preserves separate schemes for workers in trade and industry (RGSS), farmers (RETA) and the self-employed (REA); France applies rather different rules to

civil servants than to the private sector; Japan has a mandatory universal flat-rate basic pension (the National Pension, NP) and a mandatory earnings-related pension for private-sector employees (the Employment Pension, EP); these two defined benefit tiers apply different standards for the age of eligibility.[6] In addition, the standard age of entitlement to old-age pensions frequently does not give a good hint to the actual age of retirement.

In Chart 5 we show how the difference between the standard official and the actual age of retirement evolved between 1961 and 2002. The European figures are weighted averages. We calculated with two official retirement ages for Japan, 65 years, which applies in the NP and 60 years, which was the retirement age in the EP through the period examined. The chart clearly reveals that official eligibility is not a reliable predictor of the actual retirement. In Japan it underestimates it; in contrast, in Europe the official retirement age in the standard old age pension scheme is significantly higher in the last decades than the actual retirement age. Nevertheless, the legal regulation of the age of eligibility is still an important factor in that its *changes* can have an impact on the retirement behavior.

The retirement choice can also be influenced by the generosity of the benefit system. It is reasonable to assume that the higher the replacement rate the more attractive it is for older workers to retire. Replacement rates can be defined in various ways. It can be given as a rate of the average benefit to the average wage. However, average replacement rates disguise the difference between various life-cycle patterns that are influenced by wage level and household composition. The OECD study by Blondall and Scarpetta, referred to above, construct synthetic replacement rates for 55 year-old males by calculating separate replacement rates for the combination of two different earnings levels (average and two-thirds of average) and two household types (single worker and worker with dependent spouse). The calculations are based on legal rules and some assumptions regarding labor market career and earnings profile. This method of reconstructing replacement rates from legislation and synthesize them allow for a retrospective computation, too, so that the evolution of the replacement rate can be followed over time. Their findings are summarized in the upper panel of Table 1.

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[6] Until FY2000 the official retirement age in the National Pension (NP) was 65 years and in both the fixed and the earnings related part of the Employment Pension (EP) it was 60 years. The 1994 pension reform introduced a gradual raise of the retirement age for the fixed part of the EP, which is being phased in between FY2000 and FY2013. The 2000 pension reform extended the increase of the retirement age to the earnings related part of the EP as well. This change will be phased in from FY2013 to FY 2025 (information from the Japan Social Security Administration). I am indebted to Shunichi Uemura for explaining these complex changes.

Table 1: Changes in generosity of various non-employment benefits

	1961	1975	1995
Gross replacement rate of old age pensions (%)			
Japan	25	54	52
EU15	53	57	62
Generosity of disability schemes			
Japan	0.058	0.194	0.251
EU15	0.415	0.502	0.445
Generosity of unemployment schemes			
Japan	0.035	0.040	0.030
EU15	0.229	0.329	0.402

Source: Author's calculations from Blondal and Scarpetta (1999). European figures are weighted averages.

Excluding Greece, Luxemburg and Spain.

The trends are rather different in the two regions. European replacement rates start on a much higher level in 1961 and grow slowly from 53 percent in 1961 to 62 percent in 1995. The Japanese replacement rate starts at a mere 25 percent in 1961 and jumps rapidly to 54 percent by 1975 and slowly decreases thereafter. This may be due to differential maturation of pension systems in the two regions. The replacement rate of old-age pensions, as against that of other benefits, mirrors not only generosity but also the slow process of filling up of the pensioners pool with those who spend ever longer parts of their active life as contributors. As the pension formula usually reflect the length of the contributory period those who enter the system with ever longer service years will get higher entry pensions so the average replacement rate grows over time even if rules did not change and the system did not get more generous.

This maturation process applies less to other non-employment benefit schemes. The formula used by unemployment or disability schemes is usually based on the length of the labor market career and less on a contributory period. In addition, disability benefits and unemployment benefits in particular are frequently paid for limited periods. Disability can be revised, workers can be rehabilitated. Unemployment is often short term and even if someone is unemployed for a long time she may lose the unemployment benefit and become eligible to other types of social assistance. This

requires a time adjustment to the replacement rate. If the replacement rate of such benefits is high but they are available only for a short period the overall generosity is lower. So in the middle and the lower panel of Table 1 the replacement rates are adjusted to the periods people actually take them up.

The trends in generosity of disability schemes are similar to what we found for old age pensions. European schemes are and were always more generous than their Japanese counterparts. Although the difference is slowly decreasing even at the end of the period examined it is still significant. This may be due to higher replacement rates, longer eligibility periods, looser practice in health control, or a stronger demand by workers to retire early.[7] The difference in the generosity of unemployment schemes is even more obvious. The European values of the index are much higher for all periods and grow over time, whereas the Japanese values are very low and stagnate.[8] A final check of generosity, that of early retirement schemes (Table 2), corroborate the above picture: European non-employment benefit schemes create remarkably stronger incentives to retire by their generosity.

Table 2: Generosity of special early retirement schemes, 1995

	special early retirement schemes
Japan	0.000
EU15	0.217

Source: Blondal and Scarpetta (1999). European figures are weighted averages.

Excluding Greece, Luxemburg and Spain.

We could not replicate the synthetic replacement rates and generosity indices for a follow-up but the latest OECD (2004) comparisons reveal similar differences in replacement rates in 2002. Although the method of calculating the rate is different[9] and the results cannot be put in line with the above figures, the 10 percentage point

[7] Health-related and employment-related components of the disability schemes are separated and only the latter are taken into account.

[8] The problem with these two generosity indices is that, in contrast with the replacement rate of the old-age benefit, they are slightly endogenous. The definition of generosity contains the take-up periods, which is strongly correlated with the dependent variable, participation rate.

[9] In OECD (2004) replacement rate is the ratio of total public expenditures on old-age pension and other early retirement benefits to the old-age dependency ratio.

difference between Japan and Europe reappears again.[10] Burgess (2004) collects the results of four other comparative replacement rates, net or gross, for various countries. The results are recalculated for the purposes of the Japan-Europe comparison in Table 3. The figures are not directly comparable as they reflect replacement rates for different cohorts, they are based on different sets of assumptions as for their process of synthesizing various retirement-patterns and also they cover different groups of the European countries. Nevertheless, the message is the same in all approaches: European old-age pensions create stronger incentives to retire than the Japanese pension system.

Table 3: Various recent calculations for male replacement rates in the old-age pension system, Japan and Europe

	Gross replacement rate between ages 65-69 (Duval 2003)	Net replacement rate at standard retirement age (Casey et al. 2003)	Gross replacement rate at standard retirement age (Whitehouse 2002)	Net replacement rate at standard retirement age (Keenay and Whitehouse 2002)
Japan	46	62	50	60
EU15	66	76	60	69

Source: Burgess (2004 Table 3). European figures are weighted averages.

Note: Duval (2003): Denmark, Greece and Luxemburg excluded; Casey et al (2003): Austria, Belgium, Denmark, Greece, Ireland, Luxemburg and Portugal excluded. Whitehouse (2002) and Keenay and Whitehouse (2002): Austria, Belgium, Denmark, Greece, Ireland, Luxemburg, the Netherlands and Portugal excluded.

Nevertheless, it is not only replacement rates but also *changes* in replacement rates due to working shorter or longer years that can influence retirement choice. If working beyond the retirement age increases the replacement rate faster than the actuarially neutral pace older workers may be more easily convinced to stay in the labor market. The argument does not work so well in the opposite way due to downward rigidity of low incomes. Since old-age poverty is frequently mitigated by other social assistance programs, not just pensions, deductions on early retirement higher than dictated by actuarial neutrality do not necessarily keep the older labor force in the labor

[10] I am indebted to Atsushiro Yamada for his explanation and for giving me the original figures for recalculation.

market for they can expect income supplements from other public sources. This applies particularly to workers with lower education and flatter or downright falling age-earnings profile.

We have comparative evidence for changes in the replacement rate of old-age pensions from the OECD-study by Blondal and Scarpetta already mentioned. This study compares percentage point changes in replacement rates of old-age pensions rewarding 10 more years of work for 55 year-old males (see Table 4). The data reflect to a counterbalancing effort of European governments to relatively high replacement rates. Although European men face attractive replacement rates already at the age of 55 their replacement rate could grow much higher if they work for ten more years. In 1995 this increase would elevate the synthetic replacement rate from 62 percent to 81 percent. The corresponding figures for Japan are 52 percent and 55 percent, respectively.

Table 4: Percentage point increase in the synthetic replacement rate of old-age pensions for 55 year-old males working 10 more years in Japan and Europe, 1967-1995

	1967	1995
Japan	5	3
EU15	27	19

Source: Blondal and Scarpetta (1999). European figures are weighted averages.

Excluding Greece and Luxemburg.

The OECD comparative study is based on 1995 data. The 2000 pension reform in Japan changed the reduction/increase rates applying to all three components of the mandatory pension, the National Pension, the fixed part of the Employment Pension and the earnings-related part of the Employment Pension.[11] Incentives to work beyond

[11] Rate of reduction / increase when pension claims are brought forward / deferred in Japan

Age at the time of claiming benefit	Current reduction / increase rates	New reduction / increase rates*
60	42	30
61	35	24
62	28	18
63	20	12
64	11	6
65	0	0
66	12	8.4
67	26	16.8
68	43	25.2
69	64	33.6
70	88	42

retirement age as well as deterrence of early retirement were reduced. The aim of the government was to cut back its social assistance expenses on people, usually less trained blue-collars, who retired too early with heavily reduced pensions and fell into poverty in later ages.[12]

As mentioned in Section 2, more sophisticated models of retirement choice calculate with accumulated future benefits or social security wealth (or pension wealth) as well. These are present values of future income streams based on eligibility to social security pensions.[13] It is reasonable to assume that the retirement choice depends not only on replacement rates or expected future replacement rates but the entire accumulated benefit stream. An additional year of working may increase the replacement rate but cut the social security wealth and in this way discourage older workers to remain in the labor market.

An easy way of measuring the disincentive effect is to compare changes in the rate of social security wealth accrual to annual wages. This comparison defines an implicit tax rate on labor. There exist several comparative results for such implicit tax rates. The first set of calculations was published in the various country studies of the NBER volume (Gruber and Wise 2004), introduced in Section 2.[14] The NBER project did not conclude in a unified dataset and an analysis of a panel, and therefore the various results are more difficult to compare. On the other hand the standard followed by the various country studies allows for an analysis of 1-year pension wealth accruals for different ages. The main purpose of the NBER-project is to quantify the effects of different institutional changes in the pension system on labor force participation

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* *Applicable to those born on or after April 2, 1941.*
Source: Information from the Japan Social Security Administration.

[12] I am grateful for Hideo Higuchi for his explanation on this question.

[13] Social security wealth is defined as

$$SSW_h = \sum_{s=h+1}^{S} \rho_s B_s(h)$$

where

h = retirement age

S = age of certain death

ρ_s = discount factor depending on the time discount and the conditional survival probability at age s

$B(h)$ = pension benefit expected at age s in case of retirement at age h.

[14] The volume contains country studies for 9 European countries (Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden and the United Kingdom), Japan and the US and Canada. The Japan chapter was written by Oshio and Oishi (2004).

Table 5: Implicit tax on working 1 additional year in different ages, males, 1995

	Belgium	Denmark	France A	France B	Germany	Italy, pre-Dini	Italy, post-Dini	Spain	Sweden	Japan
55	41	-12	-54	-21	36	10	0	27	-23	-24
56	40	-12	-31	-12	29	12	0	19	-22	-33
57	47	-13	-21	-19	30	29	-3	-11	-7	-23
58	49	-13	-9	-13	30	30	-11	-24	-25	-30
59	13	-14	-15	-14	32	40	6	-36	-25	-42
60	50	-15	73	66	29	163	15	-47	-33	60
61	56	30	35	59	31	53	12	-50	-39	55
62	52	26	45	50	32	59	1	-42	-46	67
63	53	24	46	67	38	63	-1	-34	-52	67
64	50	15	50	56	40	49	-2	-26	-48	92
65	59	14	75	61	42	92	26	62	-18	n.a.

Source: Various country studies of Gruber and Wise (2004).

Note: France A and France B: private sectors and civil servants in France, respectively; Italy: pre-Dini and post-Dini: before and after the 1995 pension reform..

through changes in the option value. This approach requires more refined calculations separately for each year-group at the cost of limited comparability

The NBER project calculated the implicit tax for males on working one more year in different ages. We collected the comparable relevant figures from the country studies for the cohort of 55 to 65 (see Table 5). The results show that countries with lower participation rates tend to tax additional years of labor more heavily and they start it at a lower age than countries with higher participation rates. Belgium or Germany as well as Italy before the 1995 Dini-reform tax labor for every year-group of the cohort. Denmark, Japan and Sweden start it only at a higher age. The numbers also reveal an important difference between public and private sector employees in France. The Spanish results, however, are difficult to fit in the labor force participation pattern.

Table 6: Changes in the average implicit tax rate on working 10 or 15 additional years for a 55 years old single male in Japan and Europe, 1967-1995

	10 additional years		15 additional years	
	1967	1995	1967	1995
Austria	31	34	43	47
Belgium	–2	23	15	33
Denmark	0	0	4	5
Finland	0	22	9	33
France	2	14	8	25
Germany	4	14	19	23
Greece	n.a.	n.a.	n.a.	n.a.
Ireland	5	14	4	17
Italy	30	79	30	79
Luxemburg	n.a.	n.a.	n.a.	n.a.
Netherlands	9	13	15	19
Portugal	5	4	25	25
Spain	n.a.	14	n.a.	39
Sweden	–9	18	n.a.	22
UK	6	5	9	10
Japan	10	28	14	26

Source: Author's calculations from Blondal and Scarpetta (1999)

Note: Changes in pension wealth in percentage of annual earnings divided by the number of years.

The OECD study quantified the implicit tax rate for the average 55 year old single male for two years, 1967 and 1995, for two scenarios, working 10 or 15 additional years, respectively. In Table 6 we present the findings recalculated as average annual tax rates for 13 European countries and Japan.[15] European averages were not calculated here for the weighting procedure would have been too ambiguous. The results reveal large variation across countries. Working until the age of 65 does not cut pension wealth in Denmark at all (in 1995) and levy just small implicit tax in Portugal (4 percent) and the United Kingdom (5 percent). In contrast, the implicit tax rate is as high as 34 percent in Austria and 79 percent in Italy. The Japanese implicit tax rate is relatively high in 1995 for working 10 more years but it is around average for working 15 additional years.

A general pattern in the number is charging higher annual average implicit taxes on extra labor if someone works between the ages of 55 and 70 than if she does it for only 10 additional years, between 55 and 65. This may be traced back to labor market policies as well as declining life-expectancies in higher ages. A further general feature is a growing tendency of the implicit taxes. In Belgium and Sweden working 10 years longer actually increased the pension wealth in 1967 by an annual rate of 2 and 9 percent, respectively; but these two countries, and Italy and Finland, witnessed the fastest growth in the implicit taxes between 1967 and 1995.

As mentioned in Section 2, the option-value theory is also based on the concept of social security wealth or pension wealth. The individual is assumed to compare her social security wealth available at immediate retirement and at retirements in later years. If at least one of these differences (the maximum of the series) is positive (the social security wealth would be higher at least in one of the later years) the individual chooses to work more years. The option-value theory takes all expected future benefits and labor income into account (but neglects potential smoothing out of accumulated savings). The country studies of the project also calculated with a simplified version of the concept, the peak value. The peak value disregards the expected labor income flows and counts only with expected benefit streams. This helps international

[15] Duval (2003) uses implicit tax rates of 22 OECD countries for the period of 1969 to 1999. He lists countries by their implicit tax rates for males at the age of 55, 60 and 65, respectively. Below we will return to his regression results.

Table 7: Median peak value for males in different ages, 1995

	Belgium	Denmark	France A	France B	Germany	Netherlands	Spain	Sweden	UK	Japan
55	–4,761	75,675	12,792	10,817	–10,493	111,062	18,384	111,968	0	34,527
56	–4,017	71,605	6,962	9,344	–8,326	94,440	18,228	102,906	15,936	29,025
57	–3,890	68,729	4,819	10,143	–8,728	79,704	19,871	99,200	12,766	21,129
58	–4,204	65,953	3,339	6,280	–8,986	66,113	15,379	34,187	12,764	14,951
59	–646	62,820	2,958	3,510	–9,320	50,606	13,827	20,638	10,916	11,548
60	–9,633	55,800	–11,734	–19,292	–8,531	35,431	13,384	–727	8,824	–13,351
61	–8,995	51,582	–11,335	–22,290	–8,904	20,383	12,949	–10,308	7,234	–10,839
62	–8,348	46,136	–11,634	–21,885	–9,064	7,518	9,800	–19,595	5,118	–11,504
63	–7,660	40,393	–11,956	–28,092	–10,997	9	6,511	–28,504	2,993	–11,021
64	–8,051	34,651	–10,654	–25,848	–11,643	–8,659	2,806	–23,711	3,269	–16,400
65	–12,376	28,972	–10,810	–33,517	–12,149	0	–5,388	–23,624	–6,038	0

Source: Various country studies of Gruber and Wise (2004).

Notes: France A and France B: private sectors and civil servants in France, respectively
Amounts in euro for France, Germany and the Netherlands, US$ for Belgium, Denmark, Spain, UK (1998US$) and Japan, Krone for Sweden.

comparability for benefit flows are more regulated by legislation and therefore easier to standardize its calculations. Variation in cross-country option values is partly caused by methodological differences in national labor force surveys in particular in calculating income labor. [16]

In Table 7 we collected the median peak values for males between the ages 55 and 65 from the country studies. The figures are not always easy to compare in particular that they are based sometimes on idiosyncratic assumptions of the country studies and they are given in different currencies. Trends and signs are, however, unproblematic to compare. The peak value correlates with labor force participation rates in that they predict low actual retirement age for Belgium and Germany in contrast to Denmark's high actual retirement age. However, the trends in Table 7 do not fit in well with higher participation rates in Sweden and Japan than in the Netherlands, Spain and the United Kingdom.

4. Passive and active labor market policies

In Section 3 we presented the comparative research results on potential factors that can effect individual retirement decisions. In the following section we will present evidence, also in a comparative context, of how the above conclusions go down to potential policy options such as passive labor market policies (conditions of getting eligibility to income replacing benefits, such as raising the retirement age and changing other components of the institutional setting) or active labor market policies. The consequences are derived in an indirect way. Potential efficiency of passive policies is approached by using explanations for retirement. This literature focuses on older workers but do not directly test, in a comparative context, the efficiency of such measures. In contrast, the comparative literature on active labor market policies focuses on testing the impact of new policies but it rarely focuses on older workers. In addition, most of the comparative literature on active labor market policies merely collects separate, non-standardized evaluations.

Conclusions on the potential efficiency of changing the benefit system for the old, that is raising retirement age, altering replacement rates or reforming other parts

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[16] With notations, the peak value is:

$$Peak_t = \max_{s \geq t+1} \left[SSW_{t,s} \right] - SSW_{t,t}$$

where
SSW = social security wealth,
t = current age,
s = future age

of the retirement system can be derived from several comparative OECD studies, such as Blondal and Scarpetta (1999), Casey et al. (2003), Duval (2003) and the country studies of the *Aging and Employment Policies* series as well as the three reform simulations of the comparative NBER-project, referred above.

Blondal and Scarpetta decompose the deviation of country-specific labor force participation rates of 55 to 64 years old male workers averaged for the period of 25 years between 1971 and 1995 from the overall such average for 15 OECD countries. The components considered are prime-age male unemployment rate (UR), replacement rates of unemployment–related benefits for older workers (U_{repl}), of special early retirement (ER_{repl}), and also of old-age pensions (OA_{repl}), the increase, in percentage points, of the replacement rate of old-age pensions for a 55 year old male worker by working additional ten years (RR_{inc}) and the standard age of entitlement for old age pensions.

The study in question tests several regression models. The decomposition exercise is based on a model that contains, as explanatory variables, the variables listed above and two other variables. One of them is the union density index, which is used here to capture cross-country differences in labor market institutions such as employment protection regulations, wage setting procedures and the like. The other one is the replacement rate of those parts of disability benefits programs that are paid for labor market purposes. Dependent variable is the labor force participation rate of older male workers (aged 55 to 65).

The regression model underlying the decomposition finds a strong relationship between unemployment rate among prime-age male workers and participation rate of older workers. This result, however, is partly due to an endogenity problem. Unemployment rate is included in the model in order to capture labor market imbalances that may discourage workers. Since unemployment and participation are jointly determined, the relevant rate of prime-aged, and not older, workers enters the model. This decreases but does not eliminate endogenity. The model also establishes significant and positive relationships between participation rate and union density, the increase of the replacement rate and the official retirement age, respectively. A potential explanation for the former is union density increasing the level of employment protection leading, in turn, to higher participation rate of older workers (potentially at the cost of younger workers). The expectations regarding the connection between participation rate and the increase in the replacement rate and the official retirement age, respectively, were spelled out in the previous section. The model also finds a significant negative relationship between the dependent variable and the replacement

rate of unemployment benefits.

There appeared no connection, however, between the participation rate and the replacement rates of either the other non-employment benefits, disability pensions and early retirement benefits, or old-age pensions.

Table 8: Decomposition of country-specific deviations of participation rates of older workers from the overall average, 1971-1995

	Particip. rate	Country deviation	UR	U_{repl}	ER_{repl}	OA_{repl}	RR_{inc}	Standard ret. age
Finland	54.51	-14.33	-0.66	-2.98	-0.47	-0.05	0.50	0.62
France	57.35	-11.50	0.26	-0.89	-0.63	0.18	2.92	-2.47
W. Germany	64.37	-4.47	0.67	-1.84	0.14	-0.02	1.12	0.62
Ireland	75.82	6.98	-3.91	1.41	0.47	0.72	-1.41	2.69
Italy	54.80	-14.04	1.15	-0.83	-2.59	-0.53	0.40	-4.80
Netherlands	57.21	-11.64	-0.17	-1.93	-0.59	0.48	1.57	0.62
Portugal	71.02	2.18	1.34	-1.76	0.47	-0.74	-0.66	0.62
Spain	70.79	1.95	-2.41	-2.55	-0.88	-1.40	-1.41	0.62
Sweden	77.30	8.45	1.56	-2.33	0.47	-0.60	-0.73	1.06
UK	75.75	6.91	-0.87	1.48	0.34	0.49	1.07	0.62
Japan	84.78	15.94	2.08	3.89	0.47	0.13	-0.92	-4.89

Source: Blondal and Scarpetta (1999), Table V.4. The model was tested for 15 OECD countries, those in the table as well as Australia, Canada, Norway and the US.

Notes: Country deviation: difference of country's average participation rate through 1971-1995 from the overall average participation rate. See the other variables in text.

The results of the decomposition, which is based on the above regression model, are displayed in Table 8.[17] Japan's average participation rate in the 1971-1995 period

[17] The Blondal and Scarpetta paper does not specify the decomposition method. An effort was made to reconstruct the model, which lead to the following procedure. We start from the model:

$$y_{it} = x_{it}\beta + e_{it},$$

which can be rearranged in order to get deviations from the average:

$$y_i - \bar{y} = x_i\beta - \bar{x}_i\beta + e_i,$$

which, in turn is rearranged as:

$$y_i - \bar{y} = \beta(x_i - \bar{x}) + e_i$$

I am indebted to Ciro Baldi for helping me reconstruct the decomposition procedure. However, any potential error or misunderstanding is mine.

deviates from the overall average the most, nearly 16 percentage point. Participation rates are higher than the average in the Anglo-Saxon countries (except for Australia, not shown in the table), the Nordic countries (except for Finland) and the Iberian countries. In contrast, they are below the average in Continental Europe and Finland.

There appears no general European pattern of the relative importance of the various components in explaining country deviations. In case of Japan, two components are particularly important. The first is that the relatively low replacement rate of unemployment benefits does not create such a strong disincentive to work as much higher replacement rates do in other countries. The second, to the contrary, is that higher official retirement age would move away the Japanese participation rate even further from the overall average. Since the comparison stops in 1995 and the official retirement ages of Japan are being raised in two steps in a transitional period between 2000 and 2025, this passive labor market tools is likely to keep the Japanese participation rate of older workers in high levels.

Table 9: Estimates of the labor force participation of older workers

	(PRM2 – PRM1) / PRM1 in %	(PRM3 – PRM2) / PRM2 in %	(PRM4 – PRM3) / PRM3 in %
Implicit tax on continued work	-0.11**	-0.17**	-0.15**
Unemployment rate	-0.12	-0.90**	-0.53**
Standard retirement age	-	1.63**	1.17**

Source: Duval (2003, Table 2 Model B).

*Cell values: regression coefficients; * significant at 5% level; ** significant at 1% level.*

Notes: PRM1, PRM2, PRM3 and PRM4: male labor force participations in the cohorts aged 50-54, 55-59, 60-64 and 65-69, respectively.

Duval (2003) tests his models on panel data of 22 OECD countries over the period of 1969 to 1999. His dependent variable is not participation rate *per se* but the difference between participation rates of consecutive 5-year cohorts. His explanatory variables are the implicit tax rate on work, the standard retirement age and the unemployment rate of prime-age workers. The results of the preferred model are displayed in Table 9. [18]

[18] The precise form of the Duval-model is:

Duval's conclusion is that a 10 percentage points decrease in the rate of implicit tax on continued labor reduces the drop of participation rates between two consecutive cohorts by about 1.5 percentage point. However, due to difficulties of separating short-term and long-term effects and the fact that measurement of historical changes in the implicit tax rates is less reliable than current implicit tax levels cross-country regressions may better capture the long-run effects of implicit tax rates on participation rate.

Active labor market programs (ALMPs) are policies such as training, public employment services, job subsidies (tax deductions), special youth measures or disability rehabilitation programs. Table 10 compares Japan and Europe with respect to their spending, relative to their GDP, on ALMPs. The difference between the two regions is significant. Whereas EU15 members spent nearly 1 percent of their GDP on ALMPs between 1985 and 1999, Japan devoted only 0.3 percent on the same purposes over this period. The composition of this spending is also rather different. Whereas Japan targeted more than half of the amount on financing an extensive public employment service, European countries, with significant internal variation, focused more on training and subsidized jobs.

Table 10:

Public expenditures on categories of active labor market programs; averages 1985-1999; as percentage of GDP

	training	public employment services	subsidized jobs	other
Japan	0.03	0.18	0.07	0.01
EU15	0.26	0.17	0.25	0.27

Source: Author's calculations from Boone and van Ours (2004) Table 2. European figures are weighted averages.

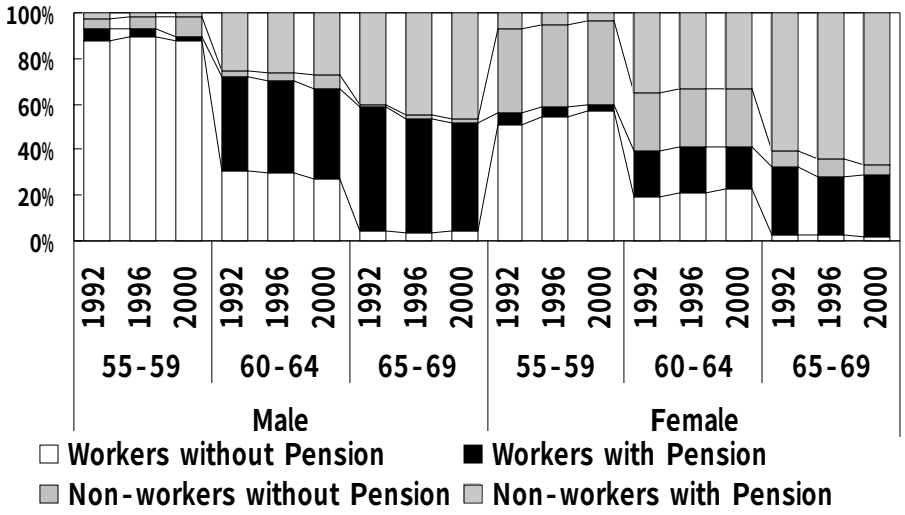
$$\Delta(PRM)_{it} / PRM_{it} * 100 = \beta_1 TAX_{it} + \beta_2 (STANDARD\_AGE)_{it} + \beta_3 UR + a_i + \gamma_t + \varepsilon_{it}$$

where

PRM	: male participation rate,
i	: country index
t	: time index
TAX	: implicit tax on continued work
STANDARD AGE	: standard official retirement age
UR	: unemployment rate among prime-age workers
a, γ, ε	: disturbance terms

Whereas the OECD recommended to its members to increase the weight of ALMPs in their fight against unemployment in the early 1990s, in the last years many evaluations were published, which were more skeptical.[19] Heckman, Lalonde and Smith (1999) give a major survey of such evaluations. Swedish evaluations are summarized by Calmfors, Forslund and Hemstrom (2001). The OECD also published comparative evaluations (Martin 2001). These studies find that the efficiency of these programs is usually low. In particular, job subsidies seem to be usually insufficient in keeping the unemployed in a permanent job. Training programs, which improve labor supply by increasing work abilities, also cut back job search efforts. In addition, such programs affect various social groups very differently. They usually do not work efficiently for prime-age male workers but may help for female re-integration to the labor market. Moreover, what may prove to be efficient in the micro level, by helping an unemployed person get a job, may be counterbalanced on the macro level by a competitor not having the same job.

Chart 6: Combining work and pensions in Japan, 1992-2002



Source: OECD (2004, Figure 3.6).[20]

[19] The recent summary of the ILO, however, is still optimistic about active labor market policies. See Auer, Efendioglu and Leschke (2005).

[20] I am indebted to Atsuhiro Yamada for providing me the relevant data for the reconstruction of the Chart.

Active labor market programs are rarely discussed in the context of participation of older workers. They usually focus on reemployment of the unemployed in general. Special social groups in the focus of the empirical research, if at all, are women reentering a labor market after childbirth, young unemployed and the disabled.

A more promising research prospect in the field of active labor market policies for the old is phased-in retirement. There is a growing interest in the literature of a continuous process of retirement (see e.g. the studies on the issue of the collection by Clark and Mitchell, 2005). In this respect, as it was demonstrated by the OECD (2004) country study on aging and employment policies in Japan, the combination of work and retirement is a frequent and successful practice in Japan in particular among males.

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