

How Have the Retirement Patterns Changed in Industrialised Countries and What can we Learn From Them?

Tapen Sinha and Dipendra Sinha

ABSTRACT

We establish some facts about early retirement in the Organisation of Economic Development (OECD) countries: falling male participation rate for all age groups (55 and above) but not for females. We observe a negative correlation between male and female participation rates for a number of countries. But, this does not imply any 'substitution' between men and women in the labour force.

INTRODUCTION

During the last two decades, there has been an increasing trend towards early retirement in the OECD countries. What constitutes early retirement varies from nation to nation and from individual to individual. Most operational definitions are chronological. For example, the Australian Bureau of Statistics (ABS) defines early retirement as follows: 'Persons aged 45 and over who retire before the age of 60 years if female or 65 years if male' (ABS Catalogue Number 6238.0). But to many people, retirement (and not just early retirement) is a state of mind!

Before 1980, the difference among industrialised countries in terms of the transition into retirement was quite stark. For example, in the US pension acceptance and work cessation were practically synonymous whereas in Sweden retirees often still worked part-time after accepting public pension (Fields and Mitchell 1984). This pattern is changing in the US. More than one quarter of the wage earners aged 58-73 in the US continue to participate in the labour force in some way when they leave full-time jobs that they have had for ten or more years (Lawson, 1990).

In the labour markets, there are many different kinds of labour. There are two ways a worker leaves the workforce early: a reduction in demand for labour or a reduction in supply of labour. If firms are trying to reduce cost (per unit of output) by flattening the organisational structure, they typically reduce the middle management. Workers in their forties and fifties will be the most likely targets. This is an example of a reduction in demand. In the literature, this has been called the 'push' hypothesis. The 'push' hypothesis posits that though people genuinely want to remain employed longer, they are forced to quit because of structural shifts in labour demand, mandatory retirement and discrimination and poor health and declining productivity.

A fall in the equilibrium quantity of labour in the labour market may arise out of a reduction in labour supply. This is called the 'pull' hypothesis. The 'pull' hypothesis says that older workers leave the labour force because they value leisure and quality time at home. Attractive early retirement packages may also lure workers towards early retirement. There are other facets of the pull hypothesis as well. Failing health is also included as a part of the pull hypothesis. The evidence in the US shows that about four-fifths of the variation in retirement age is accounted for by economic factors and another one-fifth is due to health related factors (Fields and Mitchell (1984)).

A REVIEW OF RECENT LITERATURE

An excellent summary of earlier literature on early retirement is available in Kohli et al. (1991). Most of the studies in Kohli look at the sociological aspect of the retirement problem. Another set of studies with sociological bias can be found in Szinovacz et al. (1992). Unlike the Kohli volume, this volume focuses on family issues in retirement but these are based (almost) exclusively on American data. The volume edited by Schmahl (1992) offers a somewhat different perspective. The contributors are mainly economists. Therefore, financial aspects of retirement are the prime focus. Here, we review some of the more recent contributions to the literature.

Borsch-Supan (1992) undertakes an interesting study of the social security design, early retirement and dependency rate in a number of OECD countries. Through cross-national evidence and option value analysis, he shows that early retirements have been exacerbated especially in Germany by the actuarially unfair design of the social security system.

Mirkin (1987) analyses the early retirement in the OECD countries and observes that these retirement schemes often mask the macro-economic failings. In many cases, early retirement schemes do not boost the overall employment level. The schemes can still be justified if these reduce the unemployment rate for those groups which suffer a high rate of unemployment. However, if the unemployed people are merely reclassified as early retirees, then such schemes have not served their purpose. Mirkin is not in favour of encouraging early retirement. Premature retirement will further increase the ratio of pensioners to wage earners who contribute to social security. Labour force growth will come to a halt in the face of declining birth rates. He favours a gradual increase in the mandatory age of retirement and the elimination of the incentives to early retirement.

Okba (1994) summarises early retirement in the OECD countries. In most of the OECD countries, rising unemployment and massive job cuts during the early 1970s led the governments to set up lucrative schemes for workers to retire early. However, these schemes have now created a number of problems for these countries:

- (1) it has become almost impossible for older workers to opt for gradual transition to retirement;
- (2) older workers are unwilling to be the first victims of redundancy; and
- (3) an increase in the dependency rate.

Carlson (1995) finds that early temporary withdrawal from workforce due to health reasons leads to permanent withdrawal for most individuals for Sweden. This trend seems to be more prevalent among men than among women. Carlson offers two reasons. The first reason stems from the fact that the risk of further problems with health upon re-entering the labour force can be worsened. The second reason is the anxiety of new 'socialisation' that re-entry into the job will entail.

Health and health insurance is a recurrent theme in a number of studies. Karoly and Rogowski (1994) find that access to health insurance of the employing firm leads to a greater probability of early retirement in the US. This reason is of no relevance to countries that offer universal health care such as Australia and the UK for all residents of all ages.

Altuhaih (1993) studies the results of a study of Kuwaiti nationals who retired from government service from 1979–89. The study reveals that 84 per cent of the sample were aged 50 or younger. Seventy-two per cent of the women and 52 per cent of the men were college graduates. Management-organisational factors and early retirement benefits are found to be the two most important determinants of the decision to retire early. Altuhaih suggests a number of ways to reduce the outflow. These include managerial development, management-organisational factors and counselling.

Cha (1994) considers the case of involuntary termination versus early retirement in South Korea. Korean labour laws are extremely inflexible when it comes to changing the shape and composition of its workforce. This is because the right to work is commonly viewed as sacred. However, as trade barriers are removed and the international environment becomes more competitive, it will be necessary for organisations in South Korea to become more flexible. Since the labour laws are unlikely to change, organisations have to find ways other than involuntary termination. Cha argues that the organisations can introduce voluntary retirement schemes to avoid this impasse.

There are also a number of British studies.

Disney, Costas and Whitehouse (1994) analyse the employment histories in the 1988–89 Office of Population Censuses and Survey's Retirement Survey in the UK to look at the pattern of early retirement. They find that persons with occupational pensions who leave their jobs before reaching the age of 55 are much more likely to find another job. People without occupational pensions leave their jobs earlier and are likely to remain unemployed longer. The study also finds a pronounced trend towards early retirement in the UK. For men between the ages of 60

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and 64, the labour force participation rate fell from over 80 per cent in the mid 1970s to 50 per cent in the mid 1980s.

Disney and Webb (1991) examine the upward trend in the number of people receiving invalidity benefit in Britain. They examine a number of possible explanations such as the rising unemployment rate, changes in the workforce and the heightened link between ill health and early retirement.

Johnson (1988) does a cross sectional analysis of data on age of workforces in 34 industrial sectors drawn from the decennial censuses from 1951 to 1981 in Britain. Early retirement is found to be affected primarily by economic factors, although health is becoming more important.

Jackman and Layard (1987) critically evaluate three policy proposals to reduce the natural rate of unemployment in Britain. These are:

- (1) policies to reduce the duration of long-term unemployment, based on the provision of a job guarantee to long-term unemployed people;
- (2) tax based income policies; and
- (3) shorter working hours and early retirement.

While the analysis offers strong support for the first two proposals, shorter working hours and early retirement are not found to reduce the natural rate of unemployment.

Hong Kong before accession into China provides an interesting case for studying early retirement. Do Rosario (1995) looks at the issue. The number of longtime civil servants opting for early retirement (before the official retirement age of 55) has gone up from 585 in 1993 to 844 in 1994. The civil servants are deeply suspicious of working under a communist regime. The exodus from the police force is likely to be large-scale because China may not treat the colonial police with respect.

Holtmann et al. (1994) look at the factors that influence men and women to retire in the US. Their bivariate probit model relates economic, demographic, and social characteristics to retirement plans for over 7000 women and men between the ages of 40 and 64 years. Their finding is that the personal, economic and household characteristics are more important determinants of retirement plans for women than for men.

The East German labour market after reunification is interesting to study. The total real gross national product dropped severely and total employment fell to about two-thirds of the former level. Lange (1993) looks at the problems of the labour market in the East Germany after reunification. Various strategies have been adopted to tackle the massive problem of unemployment. These have included early retirement and work creation programs. However, these strategies have not produced dramatic results and unemployment remains a serious problem.

A number of people have studied early retirement in Japan. Fukunaga (1994) argues that lifetime employment in Japan is one of the greatest myths. The majority of the Japanese workers do not have any long-term job security. In many cases, early retirement has not really been voluntary. Japanese companies are, in many cases, willing to go to any length to force their employees to take early retirement. Many of these older employees, who have reached management level positions, have been long-time faithful employees of the companies. Since the management level position holders are barred from being members of the union, these people have nowhere to turn. Noriyuki (1990) uses micro level data from the National Survey of Family Income and Expenditure to show that in 1984 the Japanese public pension system induced workers to increase their consumption, thereby reducing the overall savings rate by twelve per cent. The system also tended to encourage early retirement of male salaried workers.

Pesando and Gunderson (1991) study an aspect of early retirement in Canada. In particular, they explore the implicit pension tax: the tax in the form of forgone pension payments if an employee continues to work after she/he has qualified for early retirement. They find that pension wealth generally does not peak at the date of the first eligibility for early retirement. They find no general relationship between pension wealth and age of retirement for employees who have qualified for early retirement.

Mitchell (1993) provides an overview of the retirement systems in developed and developing countries and draws some lessons and research needs. Obviously time series data are scarce for the developing countries, including the transitional economies of Eastern Europe and former Soviet Republics. Labour force participation rate is not clearly defined in the developing countries partly because many workers in these countries are engaged in subsistence farming. Clearly, availability of more data – especially in the developing countries – will facilitate research. For example, we need to know how the older workers respond to the incentives in the retirement systems. Labour demand models need to take into account retirement options and payroll taxes.

A SIMPLE ANALYSIS OF OECD DATA

Summary statistics are reported in Table 1 and Table 2 for OECD countries. Table 1 shows the age at which men and women are eligible for private and public pension schemes. In many countries eligibility for public pension does not require work history, whereas private pension obviously does.

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Table 1. Normal versus early retirement eligibility for men and women in the private sector and public pension schemes

Country	public normal		public early men		public early women		private normal		private early	
	men	women	low	high	low	high	men	women	men	women
Australia	65	60								
Austria	65	60	55	60	50	55	65	60		
Belgium	65	60	55	64	55	55	65	60	60	55
Canada	65	65	60	60	64	60	64			
Denmark	67	67	60	66	60	66	67	62	60	60
Finland	65	65	60	64	60	64	65	65	55	55
France	60	60	55	60	55	60	60	60	55	55
Germany	65	65	58	63	58	63	65	65		
Greece	65	65	62	65	55	56	65	60	55	50
Iceland	67	67								
Ireland	66	66								
Italy	60	55	55	56	55	56	65	65	50	50
Japan	65	65	60	64	60	64	60	60		
Luxembourg	65	65	60	60	60	60	65	60		
Netherlands	65	65	60	62	60	62	65	65		
NZ	60	60								
Norway	67	67								
Portugal	65	62	55	60	55	60	67	67		
Spain	65	65	64	64	64	64	65	65		
Sweden	65	65	60	64	60	64	65	65	55	55
Switzerland	65	62					65	62		
Turkey	55	50								
UK	65	60	60	64	59	64	65	60	50	50
US	65	65	62	62	62	62	65	65	55	55
Mean	64.25	62.75	58.88	62.24	58.35	60.88	64.61	62.71	55	53.89
sd	2.75	4.09	2.87	2.56	3.71	3.55	1.82	2.59	3.54	3.33

Source: Mitchell (1993).

The most striking features of Table 1 are:

- (1) women attain pensionable age universally earlier than men in all countries; and
- (2) on average, in OECD the pensionable age for private companies is higher than the pensionable age for the eligibility of government pension.

Table 1 also demonstrates that pensionable ages for private companies shows a lower variation across countries than governments' pensionable ages. The early retirement provision for private companies has a lower mean but a larger variation across countries compared with government determined pensionable age. These facts hold for both men and women.

Table 2 shows the phenomenon discussed earlier: there has been a dramatic fall in participation rate among older men for all OECD countries except Japan. Among women, the participation rate does not fall for most OECD countries. In the 55-64 age group, there is a drop in participation rate among women in Austria, France and Germany. For Australia, Canada, Sweden and the US, there is a rise in participation rate. For all other countries, there is no discernible trend.

We pursue this line of investigation further for five countries: France, Germany, Sweden, the UK and the US. We had a breakdown of data for these countries from Kohli (1991) for up to 1988. We augmented the dataset by adding the following 6 years. Table 3 reports the correlation between participation rates of men and women for various age groups for these five countries. For 4 out of the 5 countries there is a strong negative correlation for the age group 55–59. For the age group 60–64, Sweden shows a strong negative correlation. The US shows a weak positive correlation. All other countries show a strong positive correlation. For the age group 65+, there is uniform strong positive correlation. We can see in Charts 1-5 that there are some nonlinearities in the relationships that simple correlation does not capture for some of these countries.

Does this negative correlation carry the message that in some ways women are 'substituting' for men in the workforce in these age groups? Unfortunately simple correlation does not provide a simple answer. Simple correlation loses a lot of information contained in the temporal form of the underlying data. Therefore, a correct way of posing the proper question is to ask: are the time series of participation rates of men and women linked in some intrinsic way? This question can be formalised by asking the following question: Are these series cointegrated? We investigate this further by formal testing of the underlying time series of participation rates for men and women for these five countries.

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Table 2. Participation rates of men and women in OECD countries

	year	Men		Women	
		55-64	65+	55-64	65+
Australia	1970	85.1	22.1	23.3	3.7
	1975	78.8	16.7	23.7	3.9
	1980	68.8	11.1	22	2.9
	1985	60.4	8.9	19.3	2
	1990	63.3	8.5	25	2.3
Austria	1970	47.2	9.7	14.9	3.4
	1975	36.8	7	13	2.8
	1980	34.5	4.4	14.5	3
	1985	19.1	3.7	8.7	1.6
	1990	N/A	N/A	N/A	N/A
Canada	1970	84.2	22.6	29.8	5
	1975	79.4	18.5	30.8	5
	1980	76.2	14.7	33.7	3.3
	1985	70.2	12.3	33.8	4.2
	1990	64.9	11.4	35.7	3.9
Finland	1970	71.1	19	46.3	4.4
	1975	62.3	10.3	44.4	2.8
	1980	57.3	17	43	6
	1985	57.8	10.6	46.2	4.8
	1990	45.4	7.9	39.7	2.9
France	1970	75.4	19.5	40	8.6
	1975	68.9	13.9	35.9	5.8
	1980	68.5	7.5	39.7	3.3
	1985	50.1	5.3	31	2.2
	1990	45.8	3.7	31.3	1.5
Germany	1970	82.2	19.9	29.9	6.5
	1975	68.1	10.8	24.8	4.5
	1980	65.5	7	27.2	3.1
	1985	57.5	5.2	23.9	2.5
	1990	N/A	N/A	N/A	N/A
Ireland	1970	91	44	21.3	11.3
	1975	83.8	28.2	20.9	7.2
	1980	79.1	23.7	19.5	4.8
	1985	77.7	19	18.3	3.6
	1990	N/A	N/A	N/A	N/A
Italy	1970	48.2	12.9	10.6	2.6
	1975	42.4	10.4	8.5	2.1
	1980	39.6	12.6	11	3.5
	1985	38.2	8.9	10.5	2.1
	1990	35.9	8	10.1	2.2

Table 2 (contd). Participation rates of men and women in
OECD countries

Japan	1970	86.6	49.4	44.4	17.9
	1975	86	44.4	43.7	15.3
	1980	85.4	41	45.3	15.5
	1985	83	37	45.3	15.5
	1990	83.3	36.5	47.2	16.2
Netherlands	1970	80.8	11.4	14.9	2.3
	1975	73	8	14.3	1.8
	1980	63.6	4.8	14.3	0.9
	1985	56.5	4.2	15.8	1
	1990	45.7	N/A	16.7	N/A
Norway	1970	N/A	58.7	N/A	24.9
	1975	N/A	55.6	N/A	23
	1980	N/A	53.3	N/A	24.7
	1985	N/A	44.3	N/A	25.2
	1990	N/A	N/A	N/A	N/A
Portugal	1970	N/A	N/A	N/A	N/A
	1975	78.3	36.3	32.3	11.1
	1980	75	27.8	32	8.6
	1985	68.6	23	33.2	8.2
	1990	66.9	20	32.5	7
Spain	1970	84.2	25.9	22	7.7
	1975	79.8	18.6	23	6.3
	1980	75.7	12.3	21.2	3
	1985	66.3	5.9	20	2.1
	1990	62.4	3.8	19.5	1.7
Sweden	1970	85.4	28.9	44.5	8.7
	1975	82	19.9	49.1	6.1
	1980	78.7	14.2	55.3	3.7
	1985	76	11	59.9	3.2
	1990	75.4	12.3	66.3	5.1
United Kingdom	1970	91.3	20.2	39.3	6.4
	1975	87.8	15.8	40.3	4.9
	1980	81.8	10.5	39.2	3.7
	1985	66.4	7.6	34.1	3.2
	1990	68.1	8.6	38.9	3.3
United States	1970	80.7	25.7	42.2	9
	1975	74.6	20.7	40.7	7.6
	1980	71.2	18.3	41	7.6
	1985	67.3	15.2	41.7	6.8
	1990	67.1	15.8	45	8.1

Source: OECD Labor Statistics (various years).

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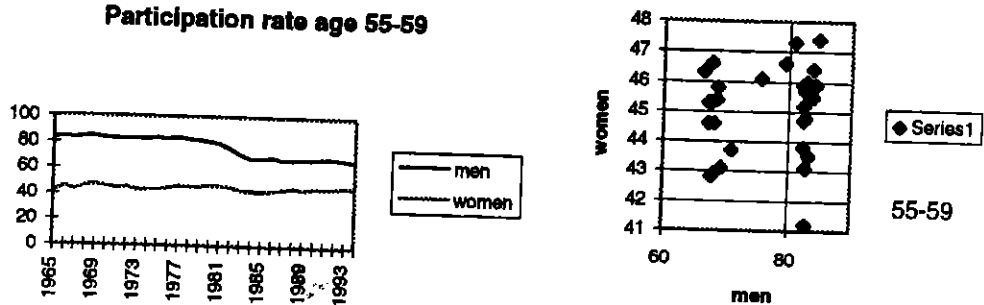
Table 3. Correlation coefficient of participation rates among men and women using time series data for various age groups (1965-1994)

Country	55-59	60-64	65+
France	0.080	0.998	0.998
Germany	-0.422	0.977	0.995
Sweden	-0.947	-0.877	0.958
UK	-0.429	0.929	0.991
US	-0.700	0.247	0.689

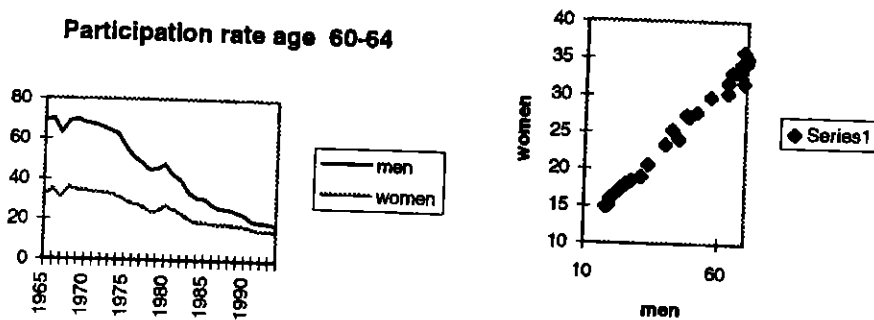
Note: Data for Germany is for the period 1965 to 1988. Data for the UK is for the period 1965-1993. The calculated correlation is Pearson product moment correlation coefficient. The basic nature of the correlation does not change when we use rank correlation or logarithms of the original variable.

Chart 1. Time series plots of participation rate and scatterplots of participation rates in France for various age groups

Participation rate age 55-59



Participation rate age 60-64



Participation rate age 65+

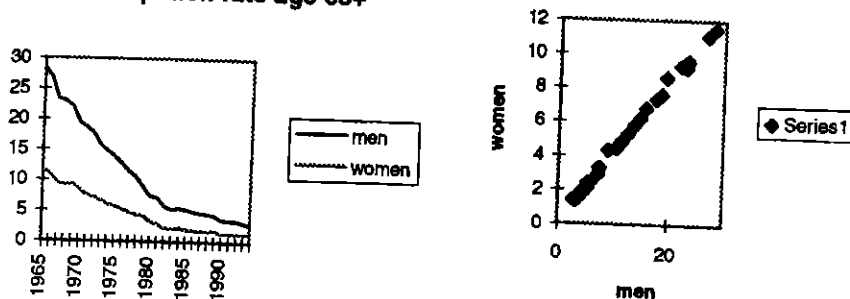
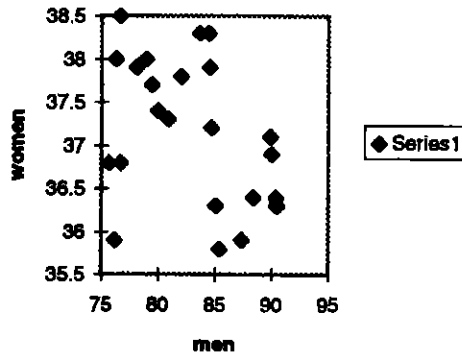
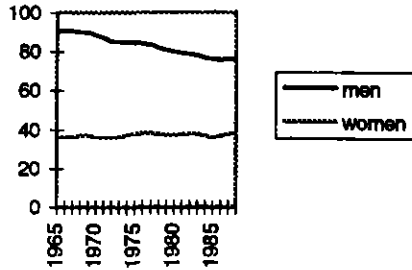
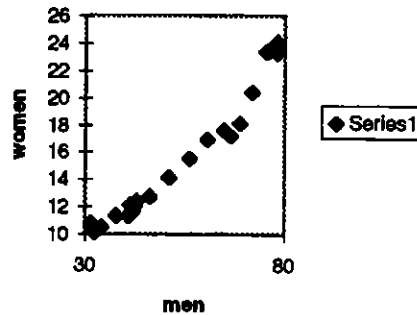
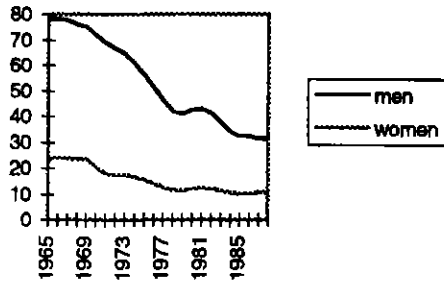


Chart 2. Time series plots of participation rate and scatterplots of participation rates in Germany for various age groups

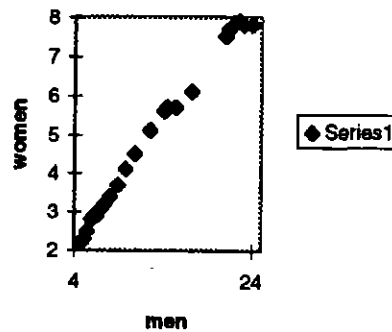
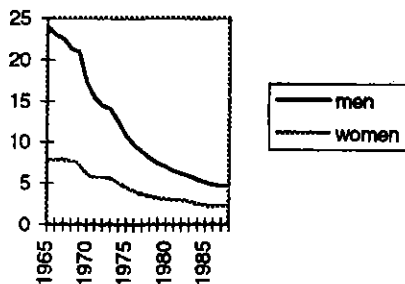
Participation rate age 55-59



Participation rate age 60-64



Participation rate age 65+

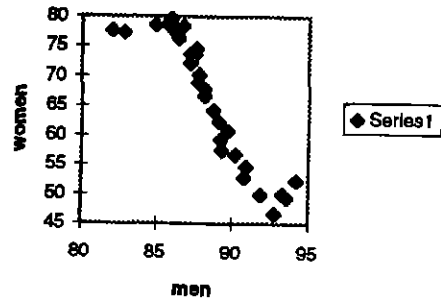
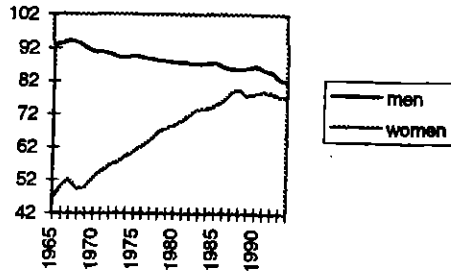


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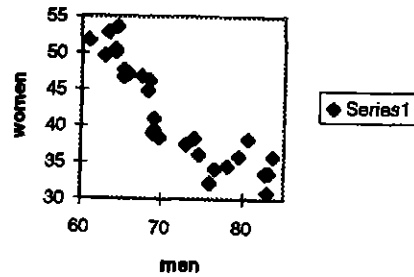
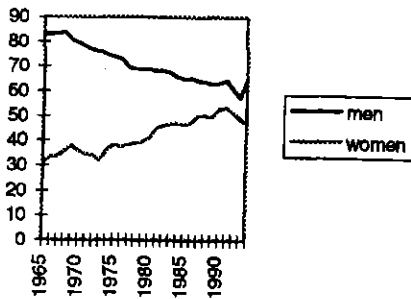
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Chart 3. Time series plots of participation rate and scatterplots of participation rates in Sweden for various age groups

Participation rate age 55-59



Participation rate age 60-64



Participation rate age 65+

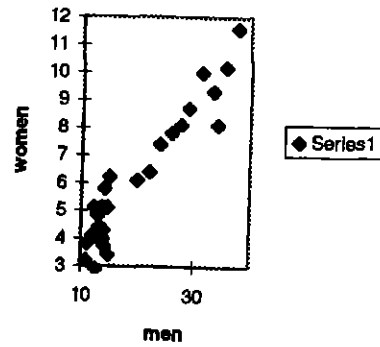
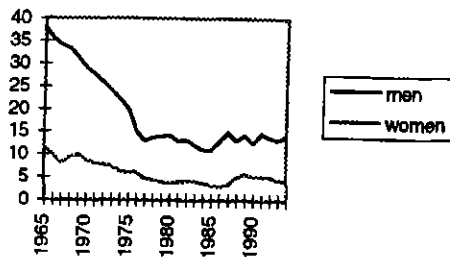
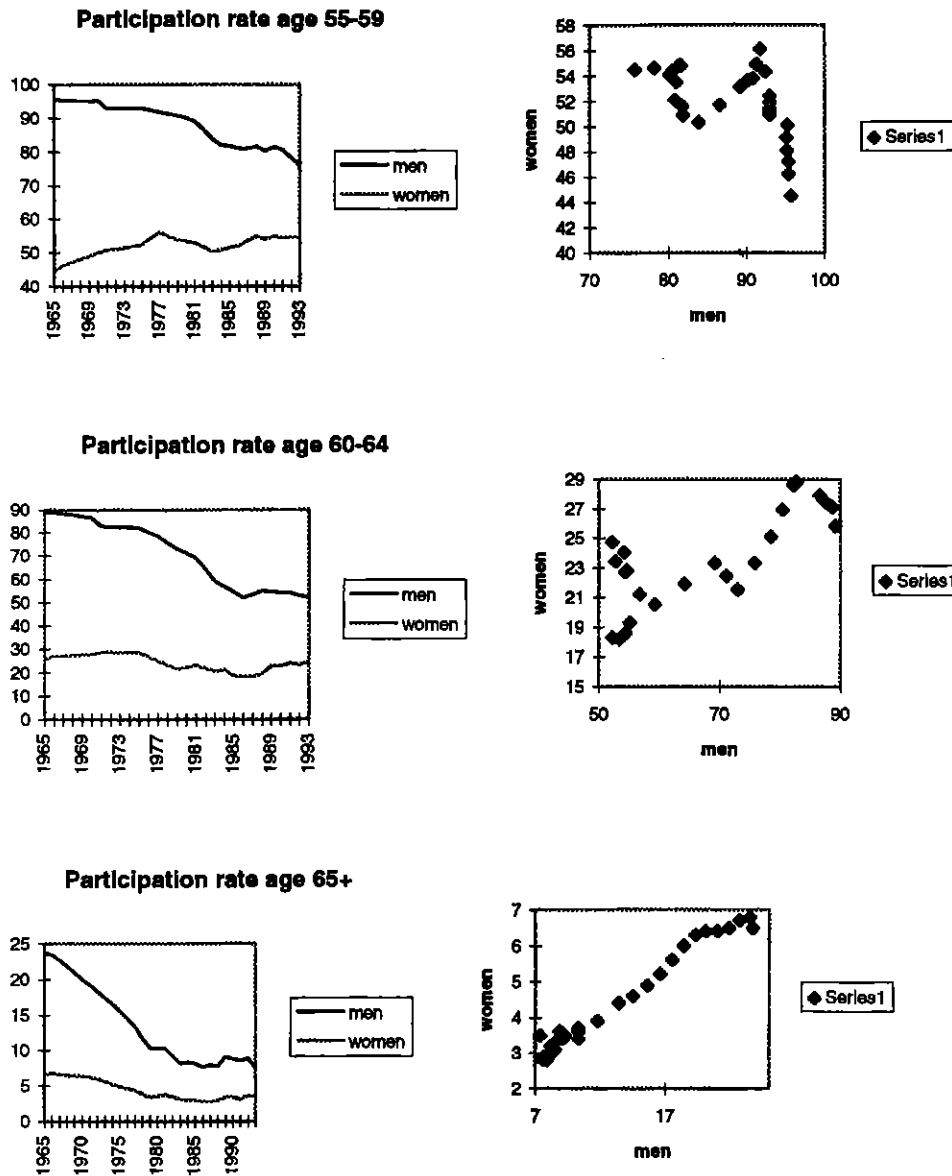


Chart 4. Time series plots of participation rate and scatterplots of participation rates in the United Kingdom for various age groups

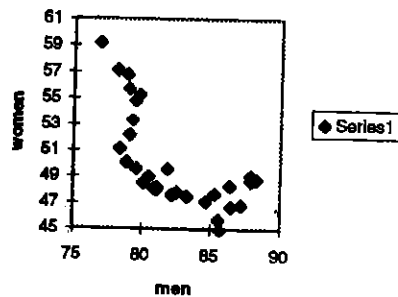
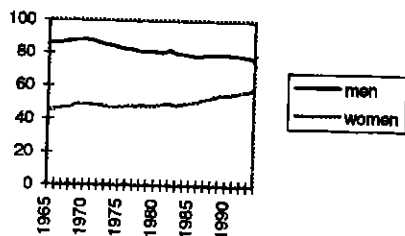


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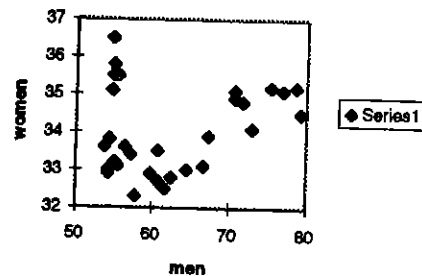
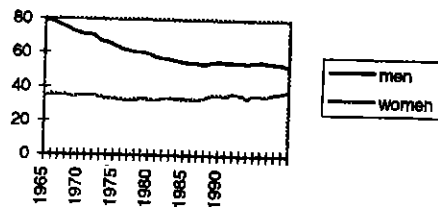
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Chart 5. Time series plots of participation rate and scatterplots of participation rates in the United States for various age groups

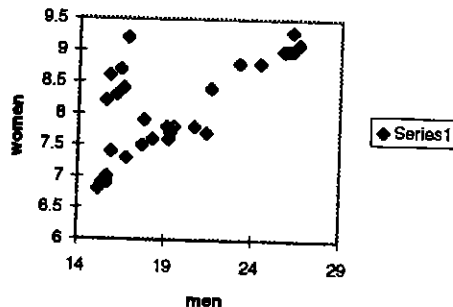
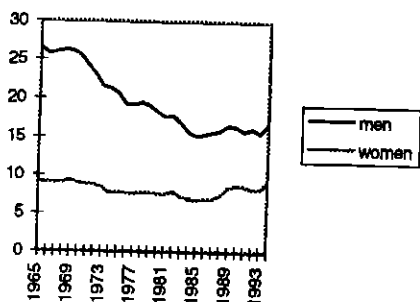
Participation rate age 55-59



Participation rate age 60-64



Participation rates age 65+



TIME SERIES ANALYSIS OF PARTICIPATION RATES

We analyse the time series of the variables for stationarity. The test is an augmented Dickey-Fuller (ADF) test (see Dickey and Fuller, 1979 and 1981). The ADF test entails estimating the following regression equation (with an autoregressive process):

Equation (1)

$$\Delta y_t = c_1 + \omega y_{t-1} + c_2 t + \sum_{i=1}^p d_i \Delta y_{t-1} + v_t$$

In Equation (1), y is the relevant time series, (Δ is a first-difference operator, t is a linear trend and v_t is the error term. The above equation can also be estimated without including a trend term (by deleting the term $c_2 t$ in the above equation). If $\omega = 0$, then there is no unit root. The results of unit root tests are shown in Table 4.

Table 4. Unit Root Tests for Five OECD Countries

Age group ->	55-59	60-64	65+
Country	men/women	men/women	men/women
France	yes/yes	yes/yes	no/no
Germany	yes/no	no/yes	yes/yes
Sweden	yes/yes	yes/yes	yes/yes
UK	yes/yes	yes/yes	no/no
US	yes/yes	yes/yes	yes/no

Note: 'yes' in a cell means there is a unit root and the first difference does not remain nonstationary whereas 'no' in a cell means that there is no unit root for the level variables. We also tested for unit roots for the differenced variables. None of them have unit roots in differenced form.

If each variable is stationary or achieves stationarity after first-differencing, we will proceed with the multivariate cointegration tests. These tests tell us if there is an intrinsic relation between the two time series. These tests were pioneered by Johansen (1988) and Johansen and Juselius (1990).

Dickey, Jansen and Thornton (1991) provide a step-by-step method of applying the Johansen procedure which we closely follow. Consider the vector autoregressive model:

Equation (2)

$$y_t = c_1 y_{t-1} + c_2 y_{t-2} + \dots + c_p y_{t-p} + v_t$$

Steps:

- (I) Choose an autoregressive order p .
- (II) Regress Δy_t on $\Delta y_{t-1}, \Delta y_{t-2}, \dots, \Delta y_{t-p+1}$, and output the residuals, D_t . For each t , D_t has n elements.
- (III) Regress y_{t-p} on $\Delta y_{t-1}, \Delta y_{t-2}, \dots, \Delta y_{t-p+1}$, and output the residuals, L_t . For each t , L_t has n elements.
- (IV) Compute squares of the canonical correlations between D_t and L_t . Call these $\rho_1^2 > \rho_2^2 > \dots > \rho_n^2$

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(V) Let N denote the number of time periods available in the data

Equation (3)

$$\text{Trace test statistic} = -N \sum_{i=k+1}^n \ln(1 - \rho_1^2)$$

Equation (4)

$$\text{Maximal eigenvalue test statistic} = -N \ln(1 - \rho_{k+1}^2)$$

We used the test statistics generated by the formulae in Equations (3) and (4) to find cointegrating relationships. For brevity, we have not reported the test statistics. Using the cointegrating relationships we generated the link between the two variables. In our case, the link will be of the form $am + bf$ where m is the male participation rate and f is the female participation rate with a and b constants. Johansen procedure also produces the 'link' that connects the two time series which makes the resulting time series stationary (the values of a and b). We list them in Table 5.

Table 5. Links between male and female participation rates using Johansen procedure

Country	55-59	60-64	65+
France	0.0043m+0.2363f	-0.297m+0.786f	not integrated
Germany	not integrated	not integrated	-0.601m+2.371f
Sweden	0.087m+0.042f	0.129m+0.123f	-0.143m+0.524f
UK	-0.092m+0.392f	not cointegrated	not integrated
US	0.018m+0.110f	not cointegrated	not integrated

How do we then interpret these figures? Take the numbers for France. In Table 3, we found that there does not seem to be any correlation between the participation rates for men and women. However, tests for unit roots (Table 4) show that indeed the underlying series have unit roots for both males and females. Therefore, the lack of correlation does not imply no underlying relationship between the variables. In fact, the time series of participation rates for men and women are cointegrated and there is an underlying relationship (given by $0.0043m+0.2363f$) that makes it stationary. Since both of these coefficients are positive, it shows that there is a negative association between the underlying time series. The correlation coefficient was not capable of picking up this relationship. Table 3 also shows that there is only one country (France) that did not exhibit a negative correlation for the age group 55-59. Therefore, by looking at the correlation table, we get the misleading impression that there is an underlying relationship between the labour force participation rates of men and women. Table 5 shows that such a substitution is an illusion. There does exist a 'common trend' between the variables. But this relation is not negative for most countries except the UK.

CONCLUSION

Early retirement trends are nonlinear across OECD countries. There is an asymmetry between male and female participation rates in the older age groups over time. For all countries, male participation rates seem to be falling uniformly. But no such trend is universal for females. In fact, Australia is one of the few countries where the female labour force participation rate has risen over the past two decades.

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