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THE ASYMMETRIC RESPONSE OF OLDER MALE LABOUR FORCE PARTICIPATION RATES TO PENSION REFORM AND LABOUR MARKET VARIABLES

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Abstract: *Increasing the labour force participation rates of older workers is a fundamental component of most OECD countries' response to the fiscal pressures associated with ageing populations. Both pension reform and employment policies are key elements to achieving such increases in participation and reversing the early retirement trends of recent decades. Econometric modelling results from a panel of 12 OECD countries indicate that labour market variables have a greater influence than social security pension value or the standard age of retirement on the labour force participation rates of males aged 55-64 years. Further results from modelling the potential asymmetric response of participation rates to unemployment rates indicates that a decrease in unemployment rates has a greater impact upon increasing the labour force participation rates of older workers compared to the effect of an increase on unemployment rates has on discouraging participation. We found mixed results for the asymmetric response of participation to an increase or decrease in pension value. Findings thus emphasise the importance of labour market oriented policies to reduce unemployment rates in the developed economies in coming years to address ageing population concerns.*

Keywords: *Older Workers, Labour Force Participation, Discouraged Workers*

JEL: *J21, J26*

INTRODUCTION

The average age of most western countries' populations are increasing as a result of declining fertility rates and increased life expectancy (OECD 2009). While the latter is a positive reflection on better health and standards of living, this demographic phenomenon has been identified as placing increasing strain on government budgets due to their traditional financing of healthcare and pensions. As such, a number of governments have introduced pension reforms aimed at increasing retirement age and reducing the financial incentives for early retirement, with such policies being supported by influential international institutions such as the World Bank and the OECD. Further policy reforms

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recommended by the OECD are generally supply side in nature, being aimed at improving older workers' job search skills or 'employability'. The ILO stands apart from the OECD and World Bank by recommending a policy of full employment to increase the participation of older workers in the labour market.

In this paper a panel model of older male labour force participation rates for those aged 55-64 is estimated as a function of variables capturing both supply and demand influences. Namely, pension value, standard age of retirement, cyclical discouraged worker effects and other long term crowding out of older workers from the labour market. In addition, the potential asymmetric influence of pension value and unemployment rate variables upon labour force participation are incorporated into the models. That is, does an increase in pension value or unemployment rate have the same impact upon labour force participation as a decrease? The findings have important implications for alternative policies to increase older worker labour force participation in the context of ageing populations.

The paper is organised as follows. The policy background to addressing ageing populations is presented in Section 2. An examination of the trends evident in labour force participation rates of males aged 55-69 years in OECD countries over time is provided in Section 3 followed by an exploration of competing theories in Section 4. The methodology employed in this research is presented in Section 5 followed by empirical results in Section 6. Section 7 concludes with a summary of findings and policy implications.

POLICY BACKGROUND

Three international institutions have recognised the policy challenges associated with ageing populations and have recommended policy platforms to address such. First, The World Bank recommends pension reforms aimed at reducing unfunded publically managed pay-as-you-go pension schemes. Instead, they advocate a multiple pillar retirement income system, consisting of a mandatory publicly managed unfunded scheme supported by a privately managed funded scheme, and supplemented by voluntary savings schemes (World Bank 1994, Holzmann 1998).

Similarly, the OECD policy reform research focuses predominantly on supply side issues associated with the availability and value of pensions for older workers and its evolution could originally be described as a three part process. First, the identification of the future budget exposure posed by an ageing society, especially from publicly funded pensions was established (Leibfritz *et al.* 1995, Rosevare *et al.* 1996). Second, the quantitative role of the availability and financial value of pensions available to those aged 55-64 for explaining the decline in older labour force participation was presented (OECD 1995, Blöndal and Scarpetta 1997, 1998, Duval 2003). Finally, this research was used to justify the primary role of pension reform for reversing early retirement trends via restrictions to eligibility and lower social security pension value, thereby justifying a diminishing role for public pension financing. Specifically, the OECD pension reforms consist of: (i) removal of pensions that allow early retirement; (ii) a move toward

actuarial neutrality of pension systems; (iii) convergence of retirement ages from a current standard of 65 for most countries to 67 years. These three reforms were adopted by most OECD countries in the 1990's and early 2000's (Burniaux *et al.* 2004).

More recently, the OECD declared that pension reform alone was not sufficient to address the policy challenges associated with ageing populations and established a policy review of the barriers to the employment of older workers in various countries called the Ageing and Employment Policies Project (OECD 2006). The chair of this review, Bruno Tobback (Belgium Minister for Pensions) insisted that "Improving the employment prospects of older people aged 50-64 is the key to meeting this (ageing population) challenge" (Tobback 2005, p1). The intent of the OECD's Ageing and Employment Policies Project was thus to broaden the ageing population reform agenda to include hiring and firing procedures for older workers in firms, employment services for older jobseekers, working conditions and wage and training practices.

A summary of country specific policy recommendations from this project is contained in Table 1. The OECD's reform agenda was ambitious and out of character with previous policy, but the final recommendations have been somewhat lacking in substance. The proposed policies for improving employment prospects of older workers, such as providing employment services and training, remain focused only on the supply side of the labour market. Such policies also imply that both employment and job search skills of older workers are relatively deficient. They also convey the message that older workers are incapable or unwilling to work. Wage 'reform' of older workers was only identified in the recommendations of two countries only, and merely consisted of policy to reduce tax paid by employers. Hiring and firing practices consist of awareness campaigns of the benefits of retaining older workers within a diversified workforce and promotion of best practice firms. The issue of age discrimination legislation was avoided by most countries. Therefore, the apparent change in policy stance toward employment policies is largely rhetoric, with later retirement age and the removal of early exit avenues remaining at the forefront of recommended strategies. The notion of employment creation remains absent from OECD policy.

The ILO has had a longer association with older worker interests than the other international institutions, being instrumental in improving invalid pensions for older workers in the 1930's, promoting policies for early retirement, training and placement of older workers in the 1960's, and supporting job protection for older workers in the 1970's. The ILO Older Worker Policy Recommendations established in 1980 included older workers being placed within a strategy of full employment and ensuring unemployment is not shifted from one group to another; anti age discrimination legislation and access to employment that takes into account their skills, experience and qualifications; measures to enable older workers to continue in employment under satisfactory conditions; and a gradual transition to retirement and flexible age of old age pension receipt (ILO 1995, 2003, Auer and Fortuny 2000).

Therefore, it is clear that the ILO policies stand apart from the other international institutions, with a greater focus on the role of job availability, unemployment prevention

and government responsibility for older worker participation. In contrast, the World Bank and OECD place greater responsibility on the individual and only indirectly encourage participation in the labour force by addressing the financial incentives for retirement, and more recently, job search and employment skills. However, it is apparent that governments have thus far mostly adhered to OECD recommendations, with aggregate demand stimulus policies to prevent unemployment only utilised by many governments after 2008 to combat the global financial crisis, not to address older worker labour force participation and ageing populations.

Table 1
Recommended Further Reforms from the OECD Ageing and Employment Policies Project

	Later Retirement	*Remove or restrict Early Retirement/ Disability Pension*	*Awareness campaigns / promote best practice*	*Increase Training, Employability or Employment Services*	*Employer tax cut / wage subsidy*	*Combine pension and income*
Australia	✓	✓		✓		
Austria	✓	✓		✓	✓	
Canada			✓	✓		✓
Denmark		✓	✓	✓		
Finland		✓	✓			✓
France	✓	✓	✓	✓		
Germany	✓			✓		
Netherlands	✓	✓	✓	✓		
UK	✓	✓	✓	✓		
US	✓			✓	✓	

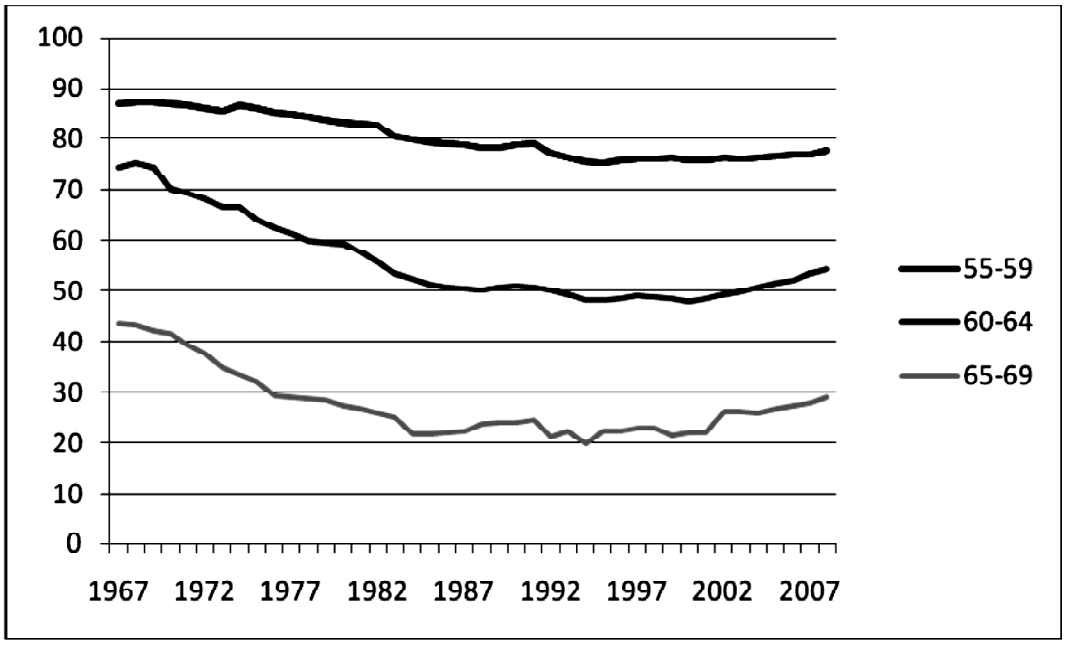
OECD (2006)

OLDER WORKER LABOUR FORCE PARTICIPATION RATES

Average labour force participation rates over time for older males aged 55-59, 60-64 and 65-69 for the OECD are displayed in Figure 1. As expected, the labour force participation rates for older males decline with age group. A trend decline in participation rates existed up until around the year 2000, associated with the so called early retirement phenomenon. However, this decline in participation was also prominent for those at or over the standard age of retirement of 65 years. An increase in participation is notable in more recent years.

An obvious major challenge for the proposed policy to increase retirement age to 67 years is that currently less than 30% of males work past the age of 65 years, and only around a half of older males aged 60-64 participate in the labour market. The remainder of this paper will focus on early retirement issues associated the 55-59 and 60-64 age groups only.

Figure 1: Average OECD Labour Force Participation Rates for Males Aged 55-69–1967 to 2008



Source: OECD (2010)

4. COMPETING EXPLANATORY THEORIES

Both labour supply and demand forces can potentially explain labour force participation trends of older workers. Financial incentives for labour force exit or disincentives for continued labour force participation within various pension schemes have been used by the majority of economists to explain the early retirement phenomenon (Eg. Boskin 1977, Parsons 1980, Fields and Mitchell 1984, Hausman and Wise 1985, to name just a few). More recently, Gruber and Wise (1998, 2004), along with the OECD research of Blöndal and Scarpetta (1997) and Duval (2003), argue that there is an implicit tax on continued work at older ages as the additional pension contributions outweigh expected future benefits in early and standard age retirement schemes. Gruber and Wise (1998) showed that differences in this implicit tax rate explained the majority of the differences between the developed economies' older worker participation rates. They also pointed to evidence that changes in social security provision preceded changes to labour force participation. This in turn implied that early retirement trends could be reversed by changes to social security programs that had induced these early retirement trends. Subsequent research using microsimulation showed how much labour force participation rates in a number of countries would increase with changes to reduce this tax (Gruber and Wise 2004). Similar research using panel econometric models published by OECD researchers Blöndal and Scarpetta (1997) and Duval (2003) was used to

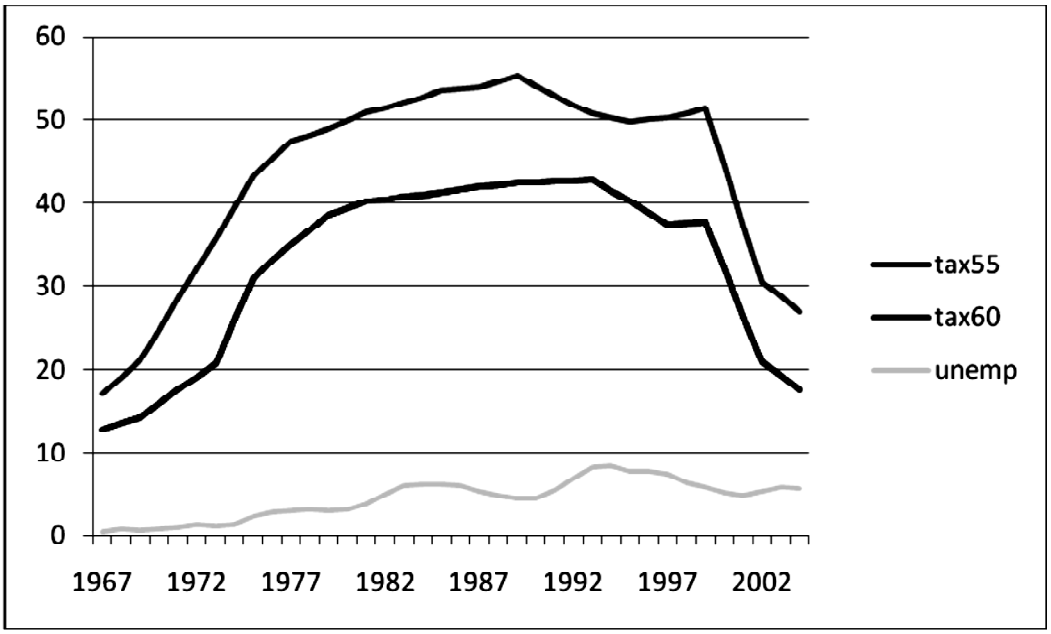
justify their policy stance to reduce implicit taxes and thereby the availability and value of social security pensions. In particular, Duval (2003) estimated that around a third of the trend decline in older worker labour force participation could be attributed to increases in the implicit taxes on continued work.

Other researchers have argued that elements left exogenous to the labour supply choice model are fundamental to explaining older male labour force participation patterns. That is, labour market conditions and government policy intervention. Older workers tend to be particularly vulnerable to employment separation and structural changes to industry employment, as well as changes to employer labour use strategies within industries (Eg. Standing 1986, 1997, O'Brien 2005). Once separated from employment, older workers tend to experience greater difficulties obtaining employment and are particularly vulnerable to long term unemployment and becoming discouraged workers. Hidden unemployment and a statistical relationship between older worker labour force participation rates and unemployment rates in the aggregate labour market has also been established in the literature (Eg. Bowen and Finegan 1969, Rones 1983, Beatty *et al.* 2000, O'Brien 2001).

Laczko and Phillpson's (1991) findings also challenge the orthodox labour supply of work and leisure. Instead, they describe the prevalence for 'early exit', representing an indeterminate status between the traditional two states of work and leisure, during the intermediate period between employment and the traditional retirement age of 65. Early exit was distinguished from early retirement, being associated with unemployment, especially for the low skilled and low educated in declining employment industries. Ultimate reliance on unemployment and disability pensions, as well as occupational pensions, was a common outcome. However, this was the outcome from pressure from governments and employers to remove older workers from the labour force particularly in periods of mass unemployment, rather than a reaction to generous financial incentives. As such they suggested that the governments manipulate the older worker labour force as a 'reserve army of labour' in the face of aggregate labour market conditions, a phrase originally coined by Marx.

In summary, the implicit tax on continued work inherent in pension schemes and aggregate labour market conditions appears to be the main influences on older worker labour force participation identified in the literature. The implicit tax on 5 years continued work for males aged 55 and 60 years in early retirement pensions is presented in Figure 2, along with prime aged (25-54 years) male unemployment rates. Implicit taxes on continued work are greater for those aged 60 compared to 55, with both increasing up until the mid 1990's. The dramatic decline in implicit taxes after this point was the result of aforementioned pension reforms encouraged by the OECD aimed at actuarial neutrality and removal of pensions allowing early exit from the labour market. Similarly, prime age male unemployment unemployment rates tended to increase up until the mid 1990's before falling, albeit with cyclical fluctuations. Therefore, an inverse relationship between both major influences on labour force participation is apparent.

Figure 2: Average OECD Implicit Taxes on Continued Work and Prime Age Male Unemployment Rates – 1967 to 2004*



Source: OECD (2010) and Duval (2003)

* Implicit taxes data only available up until 2004

METHODOLOGY

Fixed effects panel econometric models of labour force participation rates for older males aged 55-59 and 60-64 are be specified as a function of variables capturing social security value and labour market influences as in O'Brien (2010). This specification is intended to capture the main variables of interest suggested by the literature as well as the policy variables of the OECD and ILO. Equation 1 shows the basic specification:

$$LFPR_{kit} = f\,(ITAX_{kit}, RETAGE_{it}, UNEMP_{it}, PRIME_{it}) \qquad (1)$$

where *LFPR* represents labour force participation rates for the age groups 55-59 and 60-64, *ITAX* is the implicit tax on 5 years continued work for males aged 55 and 60 years, *RETAGE* is a country's normal or standard retirement age, *UNEMP* is the prime aged male unemployment rate, and *PRIME* is the percentage of prime aged males within the labour force aged (15-64 years) population.

The implicit tax (*ITAX*) on continued work is calculated as the percentage change in net pension wealth (contributions minus benefits) from an additional 5 years work in each country's 'typical early retirement' routes such as early retirement pensions, disability pensions, and unemployment related pensions. It is calculated for males aged 55 and 60

for inclusion in their respective models. We would expect a negative relationship if additional contributions outweigh additional benefits and therefore impose an implicit tax on continued work. The country's standard retirement age (*RETAGE*) is also included to capture any effect from the age of receipt of the retirement pension, as opposed to early retirement related pensions. We would expect lower participation rates for the 60-64 age group if standard retirement age is below 65 years in particular countries and time periods. Furthermore, we may be able to simulate an increase in standard retirement age from 65 to 67 years as prescribed by OECD policy. Both variables were obtained directly from Duval (2003).

Discouraged worker effects and the cyclical relationship between older worker labour force participation and labour market conditions is captured with the prime age male unemployment rate (*UNEMP*). We can simulate the effects of unemployment rate reductions associated with the ILO's recommended policy of full employment using the coefficient from this variable. Note that we cannot use the older age unemployment rate as it is codetermined with their labour force participation rate. Furthermore, as established in earlier research, the older age unemployment rates conceal relatively high levels of hidden unemployment, making this measure misleading for capturing the state of the labour market for older males.

As first proposed in Blöndal and Scarpetta (1998), the percentage of prime aged males within the working age male population (*PRIME*) is also included in this specification as an additional aggregate labour market constraint. This influence is similar to the long-run rather than cyclical labour force discouragement concept proposed by Standing (1978), the BLMR (1983) and Peck (1996). The hypothesis that any increase in the proportion of prime aged males in the labour force will crowd out older workers from participation implies a negative coefficient.

All data is first checked for stationarity with a range of unit root tests at both the panel and individual country level. As is standard practice in stationarity testing all variables are first tested in their level form. If a unit root is present the test is then repeated on the first differenced data. If the first differenced data is stationary then it is deemed integrated of order 1, I(1). This nonstationary data may only be modelled in level format if a linear combination of the variables, as found in the residual term, is stationary (Engle and Granger 1987).

The novel feature of the present research is to test for possible asymmetry in the relationship between labour force participation rates and implicit taxes and unemployment rates. The basic model is re-estimated using the following specifications for the implicit tax and unemployment in equations 2 to 5:

$$ITAX^{+ve}_{kit} = \begin{cases} ITAX^{+ve}_{kit} = ITAX_{kit} \text{ if } (ITAX_{kit} - ITAX_{kit-1}) > 0 \\ \text{and} \\ ITAX^{+ve}_{kit} = 0 \text{ if } (ITAX_{kit} - ITAX_{kit-1}) \leq 0 \end{cases} \quad (2)$$

$$ITAX_{kit}^{-ve} = \begin{cases} ITAX_{kit}^{-ve} = ITAX_{kit} \text{ if } (ITAX_{kit} - ITAX_{kit-1}) < 0 \\ \text{and} \\ ITAX_{kit}^{-ve} = 0 \text{ if } (ITAX_{kit} - ITAX_{kit-1}) \geq 0 \end{cases} \quad (3)$$

$$UNEMP_{it}^{+ve} = \begin{cases} UNEMP_{it}^{+ve} = UNEMP_{it} \text{ if } (UNEMP_{it} - UNEMP_{it-1}) > 0 \\ \text{and} \\ UNEMP_{it}^{+ve} = 0 \text{ if } (UNEMP_{it} - UNEMP_{it-1}) \leq 0 \end{cases} \quad (4)$$

$$UNEMP_{it}^{-ve} = \begin{cases} UNEMP_{it}^{-ve} = UNEMP_{it} \text{ if } (UNEMP_{it} - UNEMP_{it-1}) < 0 \\ \text{and} \\ UNEMP_{it}^{-ve} = 0 \text{ if } (UNEMP_{it} - UNEMP_{it-1}) \geq 0 \end{cases} \quad (5)$$

The rationale for the inclusion of variables to capture possible asymmetry in the effects of implicit taxes and unemployment rates is to test whether the quantitative effect of an increase in implicit taxes or unemployment rates on labour force participation is the same as a decrease in such. This can be achieved by testing whether the coefficients attached to $ITAX_{ikt}^{+ve}$ and $ITAX_{ikt}^{-ve}$, or $UNEMP_{it}^{+ve}$ and $UNEMP_{it}^{-ve}$, are statistically different using an F test. The results will have implications for the relative efficacy of recommended policies to address ageing populations and older workers, with the OECD specifically recommending decreases in implicit taxes and the ILO decreases in unemployment rates.

6. ESTIMATION RESULTS

Annual data was obtained for 12 OECD countries covering a maximum time period 1967 to 2004 from OECD (2010) and Duval (2003). Countries were chosen on the basis of data availability with only those with at least 25 years of observations of all variables chosen for modelling. This left us with the 12 countries of Australia, Canada, Finland, France, Germany, Italy, The Netherlands, Norway, Portugal, Spain, Sweden and the US. Unit root tests showed that all variables were I(1), however, residuals from the regressions are stationary thus indicating that the variables are indeed cointegrated.

Estimation results from Table 2 show that a ten percentage point decrease in implicit taxes would increase labour force participation by only 0.8 percentage points for males aged 55-59 and 1.8 percentage points for those aged 60-64. There is only a marginal difference in the and coefficients which is significant only at the 10% level. Surprisingly, an increase in implicit taxes has a larger impact on decreasing labour force participation than a decrease has on increasing participation for those 55-59, but the opposite is true for those aged 60-64. Findings imply that pension reform has a relatively small role to play for those aged 55-59. In another blow for the effectiveness of pension reforms on

Table 2
Labour Force Participation Rate Model Results

	55-59		*60-64*	
Intercept	147.045	142.637	217.429	196.416
	[0.000]	[0.000]	[0.000]	[0.000]
$ITAX_{it}$	-.081		-0.177	
	[0.000]		[0.000]	
$ITAX_{it}^{+ve}$		-0.082		-0.164
		[0.000]		[0.000]
$ITAX_{it}^{-ve}$		-0.068		-0.188
		[0.000]		[0.000]
$RETAGE_{it}$	0.007	0.039	-0.683	-0.462
	[0.971]	[0.842]	[0.189]	[0.366]
$UNEMP_{it}$	-0.879		-2.163	
	[0.000]		[0.000]	
$UNEMP_{it}^{+ve}$		-0.848		-1.923
		[0.000]		[0.000]
$UNEMP_{it}^{-ve}$		-0.984		-2.306
		[0.000]		[0.000]
$PRIME_{it}$	-1.011	-0.975	-1.636	-1.538
	[0.000]	[0.000]	[0.000]	[0.000]
No. of obs	406	402	382	378
R^2	0.857	0.860	0.838	0.844
$\bar{R}^2$	0.852	0.854	0.832	0.837
F statistic	156.874	139.232	135.851	121.955
	[0.000]	[0.000]	[0.000]	[0.000]
LLC	-5.343	-5.627	-7.359	-8.639
	[0.000]	[0.000]	[0.000]	[0.000]
ADF	56.834	59.677	91.723	105.183
	[0.000]	[0.000]	[0.000]	[0.000]
PP	59.141	59.225	67.639	102.059
	[0.000]	[0.000]	[0.000]	[0.000]
$ITAX_{it}^{+ve} - ITAX_{it}^{-ve} = 0$		3.113		2.971
		[0.078]		[0.086]
$UNEMP_{it}^{+ve} - UNEMP_{it}^{-ve} = 0$		5.864		11.551
		[0.016]		[0.001]

Source: Authors calculations.

p values in square brackets

older worker labour force participation, the coefficient attached to standard retirement age is insignificant in all specifications. We are therefore unable to simulate the effect of an increase in retirement age to 67 years.

In contrast, strong results are shown for the labour market variables *UNEMP* and *PRIME*. Findings indicate that a one percentage point decrease in prime age unemployment will increase labour force participation of males aged 55-59 by nearly one percentage point and over two percentage points for those 60-64. Therefore, a labour market policy to decrease unemployment by one percentage point would have a larger impact on increasing labour force participation rates than pension reform consisting of a ten percentage point decrease in implicit taxes. Magnifying this result is the finding from the model incorporating asymmetric effects which shows that a decrease in unemployment rates has a greater impact on labour force participation that an increase. The coefficient is greater than by approximately 16% and 20% for males aged 55-59 and 60-64 respectively. Testing indicates that this difference is statistically significant at the 1% level. This indicates that ILO inspired policy of full employment or at least unemployment reduction would be a very effective tool to increase labour force participation in ageing societies. Further aiding this policy is the effect from the *PRIME* variable which will continue to gradually decrease in value over time as populations age and reduce crowding out pressures on older workers.

CONCLUSIONS

Model results demonstrate the dominance of labour market related variables over pension reform for explaining older male labour force participation rates. In addition, an important finding from this research is the asymmetry in the relationship between unemployment rates and labour force participation. A decrease in unemployment rates has a significantly larger impact on increasing older male labour force participation than an increase in unemployment rates has on discouraging participation. Findings are therefore supportive of policy to improve aggregate labour market conditions and target unemployment rates.

Even though the OECD has recently signalled a change in policy stance toward addressing employment barriers faced by older workers, their recommended policies do not contain any initiatives to directly increase older worker employment or to reduce unemployment rates. This research thus supports ILO policy to stimulate employment and target unemployment as the most effective policy to increase older worker labour force participation to address ageing population policy concerns.

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