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**Pension systems and
labour supply – review of
the recent economic
literature**

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Pension systems and labour supply – review of the recent economic literature

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Abstract: This paper reviews recent literature on the impact on labour supply of pension systems reforms and characteristics, with focus on people in their 50s and above, and including studies of interaction with other social insurance programmes. The review includes a selection of recent studies of good quality and some previous studies of particular importance.

Keywords: Pensions, labour supply, literature

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1. Introduction

In many countries population ageing has prompted reforms in the public, mostly pay-as-you-go, pension systems. Reforms have included increases in the retirement age, changes in rules for accrual and take up, and removal of earnings tests.

In the private sector most pensions are fully funded and in principle secure against population ageing. However, increasing longevity requires revisions of mortality tables and has caused funding shortfalls of previously accrued entitlements. Combined with volatile financial markets and generally lower returns of funds, this has led to a move from defined benefits programmes (DB) to defined contribution programmes (DC).

These changes in the pension systems have both direct financial effects and indirect effects via labour supply behaviour. Concurrent with reforms, enacted and discussed, a large literature has grown on labour market effects of pension systems design in general and the reforms in particular. This paper reviews recent literature on the impact on labour supply of pension systems reforms and characteristics, with a focus on people in their 50s or older. While pension systems may influence labour supply of younger cohorts as well, empirical evidence is very hard to come by.

Most of the empirical studies of retirement focus on the behaviour of the workers. However, pension system characteristics may also influence the behaviour of firms, and some of this literature is also reviewed. While focussing on the early and old age pension systems, studies of interaction with other social insurance programmes are included.

There are a vast number of studies on the topic of pensions and labour supply, and I have focussed on the economics literature. To cover the state of the art, I have included a selection of recent studies of good quality and some previous studies of particular importance. Further references can be found in the studies referred to.

A sketch of the theoretical framework for the paper is set up in section 2. Section 3 reviews studies based on international comparison of broad economic incentives to retirement, Section 4 looks at studies based on

variation in incentives within countries, while section 5 look closer at topics of special importance. Section 6 concludes.

2. Important topics in the analysis of pensions and labour supply

The traditional function of pensions is to provide an income when people have stopped working. A historical overview of the development of retirement in the US is provided by Costa (1998) and a recent survey of theoretical issues by Lazear (2011). From being a last resort when it is no longer possible to work, modern pension systems generally include elements of choice between work and leisure. Still, there are many restrictions, among them eligibility age, *i.e.* the age at which pensions first are available. In modern economies there are often other safety nets, such as disability pensions. Although these are in principle based on verifiable impairment of health, in practice there is an element of choice. Therefore, pensions cannot be seen in isolation and a pension eligibility age is not an absolute barrier against leaving work at an earlier age and not returning to work before receiving old age pension.

After reaching the first eligibility age, pensions are often tested against earnings, thus reducing the economic rewards from work. This implicit tax on work depends on the strength of the testing and the age at which the full pension is received unconditional on earnings.

If a pension is not tested against earnings, it is usually actuarially adjusted by the take up time. There is then no implicit tax on earnings and the decisions on when to stop working and when to take out pension are formally delinked. In practice, there are often liquidity constraints that tend to connect pension and earnings, sometimes giving rise to phased retirement with a period of overlapping part time work and pension take up. Retirement can then be defined in a number of ways, based on earnings and pensions.

Many retirees draw pensions both from public and private pension systems, and job moves cause many to receive separate occupational pensions from different spells of employment. There may also be coordination between some of the pension benefits and between benefits of husband and wife, and shared leisure of husband and wife may give rise to retirement dependence. Both accrual and actuarial adjustment may be difficult to understand even without

interactions and pension coordination. In addition, length of life is uncertain. This poses the question of how people respond to the incentives we can calculate. One possibility is that default options are disproportionately chosen when people face choices, *e.g.* on participation in voluntary pension programmes. Another is that mere reference points, *e.g.* retirement age in examples of actual adjustment, are interpreted as implicit advice.

In several ways, employers also play a role in determining the timing of retirement. Many firms operate pensions that add on to the public pensions and may also offer early retirement packages to older workers. This may be motivated by market conditions and tailored with a view to public unemployment and old age benefits. Several studies model labour market supply and demand in a search and productivity framework, and assess impact of pension reforms in market equilibrium.

3. Cross-country variation in incentives and retirement

While international comparisons imply large variation in pension structures, there are challenges both in obtaining comparable data and controlling for variations in other factors that influence retirement behaviour. In an NBER-organized project, a major effort was made to conduct comparable analyses of a number of developed economies. The first set of analyses was based on macro data for eleven industrialized countries (Gruber and Wise, eds., 1999). The degree of labour market participation was measured by the fraction of men aged 50-69 who were not working, called unused capacity. The retirement incentive was based on calculations of the present value of the expected public pensions, called social security wealth, SSW. The increase in SSW (SSW accrual) from working one more year minus the tax on earnings, divided by the earnings was called the tax force. Often the SSW accrual would be negative, since the pensions foregone were not compensated by higher pension in the future. Comparisons of the eleven countries showed a striking correspondence between high tax force and high unused capacity, confirmed by looking at within country responses to changes in the programme provisions.

The authors concluded that the results firmly established the link between the incentives to retire early and the extent of work among elderly, and that the design of the public pension system clearly reduced the elderly labour force.

This study was followed by a set of comparable micro data based studies of twelve countries (Denmark was added), which confirmed the link between incentives and actual retirement (Gruber and Wise, eds., 2004). This study included simulations of changes in eligibility ages and benefit generosity. As an illustration of the results, delaying the eligibility age by three years would "move" around one quarter of the male population aged 56 to 65 into the labour force.

4. Within country variation in pension incentives

Within country studies do not require internationally comparable data, but in a single country identifying variation is often harder to come by. Variation in incentives, for instance potential benefits, is often correlated with unobserved factors that influence the retirement decision. In order to identify the causal effects of pension system traits, a large number of studies look at the impact on the retirement decision from changes in pension systems.

A much cited early study by Krueger and Pischke (1992) used a change in the US Social Security which created an abrupt reduction in the benefits for persons born 1917 – 1921, the so-called Notch generation. However, the estimated effect of benefits, applied in simulations of later changes in the Social Security did not explain much of the observed trend towards early retirement.

Attempts to explain the development of labour force participation by changes in Social Security were done in a number of studies. A recent contribution is provided by Liebman *et al.* (2009) who exploit a number of discontinuities in the Social Security, stemming from a cap on the number of years included in the formulae, the number of earnings observations, kink points, the link between spouses and the rules for survivors. They found significant effects of the potential pension on labour force participation, but less clear results for hours worked. Blau and Goodstein (2010) found that the changes in the provisions of the Social Security can explain less than a quarter of the previous decline in labour force participation in the US. Of the subsequent increase in labour force participation, between a quarter and one half can be explained.

Social security is only a part of the retirement income, and provisions in occupational pension programmes are also important for work activity of the

elderly. Blau and Goodstein (2010) only included an indicator of coverage by other pension and medical programmes and explicitly stated that they did not profess to capture the effect of such programmes. French (2005) included DB pensions and used a dynamic programming model. Also estimating a dynamic model and including DB and DC pensions, specifying the incentives they imply, Heiland and Li (2012) found that the retirement incentives inherent in DB pensions clearly induced earlier retirement once accrual stopped. In contrast, the incentive structure of DC pensions had no such effect. Using their estimates to simulate the impact of the recent trend from DB to DC, they found that in the absence of DC pension (all occupational pensions were set to be DB) labour force participation among 60-64 year olds in 2010 would have been four percentage points lower than observed in the US.

Dynamic programming models have been used by a number of authors, for the Netherlands by Bernal and Vermeulen (2013), for Sweden by Palme *et al.* (2002) and for Norway by Iskhakov (2010) and Hernæs and Iskhakov (2009). While appearing theoretically sound in that forward planning is explicitly included, out of sample predictions tend to be sensitive to specifications. As noted by Palme *et al. ibid.* this may imply that important institutional factors are not accounted for. In a recent study of Sweden, Laun and Wallenius (2012) use a calibrated general equilibrium model of the choice between work and retirement. In particular, persons are able to influence health by investing and health determines the availability of disability. This model predicts an increase of more than 2 years in the average retirement age following the Swedish pension reform. There are two main causes for this result, both stemming mainly from the new accrual rules (see Sunden, 2006 for an overview of the reform and the new pension system). In the new system, all years count, whereas in the old system, only 30 years counted and the earnings related pension was determined by the 15 best years. Also other rules of accrual and calculation of benefits were changed. This implies that, given a certain age of stopping work and a typical life time wage profile, the new pension system gives a lower pension. Secondly, return from work among the elderly increases. Hence, there is both an income and a substitution effect, both increasing the length of the working life.

Structural models such as in Hernæs *et al.* (2000) utilize individual variation in economic returns to work. This requires that economic returns, such as potential pension, are uncorrelated with unobserved factors influencing retirement. Røed and Haugen (2003) estimated a competing risk hazard model for transition from work into early retirement, disability pension or unemployment. Both studies found strong effects of economic incentives, with higher probability of retirement with higher net pension relative to potential earnings. The former study also found stronger responses among lower income potential retirees, indicating that consumption is higher valued relative to leisure when income is low.

In order to identify the causal effects of pension system traits, a large number of studies look at the impact on the retirement decision from changes in pensions systems. Hallberg and Ekløf (2010) studied retirement in Sweden. They found that many firms in Sweden offered individual, additional retirement packages. Taking this into the analysis reduces the estimated impact of financial incentives. Still there is a significant effect of economic incentives. Palme and Svensson (2002) give a detailed description of exit routes among elderly in Sweden.

While some studies attempt to explain the changes in labour force participation over time, other look at the age pattern. Typically, there are spikes in the retirement hazard at the age(s) at which retirement benefits become available and many studies have struggled to explain this satisfactorily. According to Gruber and Wise (1999 and 2004) additional explanations are called for.

Behaghel and Blau (2012) utilize a stepwise increase in the age at which full retirement first becomes available (FRA). While the increase in the full retirement age is equivalent to a cut in benefits, it does not here change the optimal retirement age. Still, they find that pension claiming and, to a lesser extent, labour market exit, move when the full retirement age moves, even though the timing incentives do not. They provide two explanations, without being able to satisfactorily distinguish between them. One is that the full retirement age is seen as implicit advice (“endorsement effect”), the other that the full retirement age is starting point and that people often do not “risk” moving away from this.

Several studies show that the decision making is sensitive to the framing of the choice. In an experiment, Brown *et al.* (2011) found that for example the reference age used when presenting alternative claiming dates for social security influenced the expected date of retirement. This was an experiment and one can question the relation to actual claiming.

Beshears *et al.* (2009) found that actual behaviour was influenced by the way the choice is presented. Using savings choices in employer-sponsored retirement saving plans, they show that the default option is chosen “too often”.

Retirement at early and at full retirement age may also be influenced by (lack of) liquidity. Colombino *et al.* (2011) estimated a structural model of consumption and leisure, and simulated the effect of delinking earnings from public pension take up, and introducing actuarial adjustment of the public pension. These are important parts of the Norwegian pension reform. With perfect credit markets, the percentage retired between ages 60 and 67 decreased by three percentage points with perfect credit markets and only 0.75 percentage points without consumption smoothing.

Taking a more political science based starting point, Lefebvre (2013) notes the crucial role of early retirement systems in inducing early retirement, and that there is a significant degree of public financing. He suggests that firms have an interest in laying off older workers whose productivity are below their compensation and that governments have viewed early retirement programmes as a tool in reducing youth unemployment. In a recent Norwegian study (Vestad, 2013b) preliminary results indicate such an effect, although magnitude is still uncertain.

5. Special topics

Gradual retirement

Many studies treat retirement as a well defined concept, assuming (explicitly or implicitly) that people stop working completely and start drawing their full pension at one point in time. Although the two decisions are not unconnected in that almost all start drawing pension on stopping work or before, in many cases there is a transition phase.

An early paper by Ruhm (1990) described "bridge" jobs in the US, spanning the end of "career" jobs and start of full retirement, that appeared to be quite widespread. Recently, Larsen and Pedersen (2012) gave an overview of retirement and work among elderly in a number of OECD countries, including Denmark and Sweden. They hypothesize that the recent trend in a number of countries towards increased employment among older people is not accompanied by a corresponding delay in pension take up, suggesting that part time pension and part time work have increased.

In a recent doctoral dissertation, Kantarci (2012) gives an overview of literature and recent trends, as well as comparing retirement income in full and part time retirement. He distinguishes between phased retirement (reducing hours in the same job) and partial retirement (changing to another job, usually with fewer hours). Focussing on incentives and opportunities, there is no analysis of actual retirement behaviour. Instead, an analysis of stated preferences suggested that pension designs may hinder preferred exits routes via gradual retirement.

Both he and Brunello and Langella (2012) noted that gradual retirement is much more common in the US than in Europe. Brunello and Langella analysed the determinants of taking bridge jobs and of retiring and found significant differences between countries of Northern and Southern Europe. In Northern Europe, minimum retirement age is higher and that may be a reason why workers here more often move into bridge jobs in order to have more leisure, while Southern Europeans at the same age are to large degree able to take out (early) retirement. Variation in the minimum retirement age mainly influence the transition into bridge jobs in the North and into retirement in the South. Employment protection was not found to have any influence on retirement or transition to bridge jobs.

They speculate that the reason for the cross country differences might be the availability of bridge jobs. They cite studies that indicate a lower percentage of part-time jobs in Italy and Spain than in the Netherlands (in particular), Austria and Sweden. Also, an employer survey shows a lower percentage willing to employ older workers in Southern countries.

In line with these results, Klevmarken (2010) found that in Sweden, few workers return to the labour market after initial retirement. On the other

hand, many work after age 65, compared to *e.g.* countries in Southern Europe and that fraction has increased over a number of years. Both an increasing level of education and the pension reform may have contributed to this development.

Maestas (2010) adds to the picture of multistage retirement transitions by studying re-entry into the labour force after (initial) retirement, a phenomenon that is more common in the US than in Europe. She finds that this appears to be planned, in that it is well explained by information available prior to (initial) retirement and appear not to be caused by unexpected events or poor planning.

Among the provisions of the social security system that have been analysed as possible factors behind the retirement behaviour are earnings tests. After reaching the pension eligibility age, these imply that earnings above a threshold lead to a reduction of the pension, usually by a certain percentage of earnings. This can be combined with pension deferral, so that the pension is delayed but not foregone. The interest rate implied by the deferral may, however, not match the subjective discount rate of potential retirees.

In the Norwegian pension system there was no deferral and the earnings test may be viewed as a pure tax. An increase of the threshold as well as the subsequent gradual abolishment of the earnings test, were both found to substantially increase work after full retirement age (Hernaes and Jia, 2013 and Brinch *et al.*, 2012). The impact was on hours worked, while participation did not increase.

Between 1976 and 2000, a large part of workers (self-employed included, but not blue collar private sector workers) in Sweden could take out a partial pension from age 60. The part of the earnings reductions that was replaced by the pension was 65% from 1976 until 1981 when it was reduced to 50% before it was raised back to 65% from 1987. In 2000 the whole system was abolished. Utilizing variation in the replacement rate, both Wadensjoe (2006) and Glans (2009) found significant responses to the changes. Glans also found a significant increase in take up before the reduction. Wadensjoe also concluded that while a part time pension may induce some to reduce their work hours, others may work part time instead or retiring, and that the net effect was an increase in hours worked.

Programme substitution

Even before the age when a retirement option becomes available, there are alternative and numerically important exit routes from the labour market in the form of unemployment, sick leave and disability, often as a sequence. From a policy point of view, the interaction between programmes can be viewed in two ways. First, labour market exit may take place also via other social programmes. Numerically, this is very important. Secondly, when designing or evaluating “pure” pension programmes, in particular early retirement programmes, one must bear in mind that the impact may be mitigated by other programmes. This has been found in many studies.

For Norway, several studies have looked at interaction between disability pension and the early retirement programme (AFP). Bratberg *et al.* (2004) found that more than half of the AFP retirees would have stayed (longer) in the labour market without the AFP. Hence, the AFP substantially reduced work among elderly. Røed and Haugen (2003) also found that AFP reduced work. While the risk of disability did not appear to change much, the reduction of “the risk group” by the AFP implies that the number of persons on disability pension would have been higher in the absence of AFP. These findings were confirmed in recent study by Vestad (2013a). All studies conclude that the AFP substantially reduced employment among those in the eligible age groups.

The study on data from Sweden by Karlstrom *et al.* (2008) may be noted as an example of programme substitution, although retirement programmes are not included. Tightening of the eligibility rules for disability insurance for persons age 60 – 64 resulted in fewer disability insurance claims, but these effects were fully off-set by increases in unemployment and sick leave. There were no increase in employment, although the authors note that some effect may appear in the long run.

In a study on US data, Duggan *et al.* (2007) found that the increased full retirement age in the US from 65 to 67 that made it more costly to retire early, increased the percentage on disability between ages 45 and 64 by 0.6 percentage points among men and 0.9 among women.

Based on Austrian data, Staubli and Zweimuller (2011) found substantial increases in unemployment from an increased early retirement age.

Utilizing an extension of the unemployment benefit period from one to four years, for a (regionally defined) part of the Austrian labour force aged 50 plus, Inderbitzin *et al.* (2013) looked at causation “in the other direction”. They found a substantial increase in early retirement from the extended unemployment programme. Among men aged 50-54 who entered unemployment with a four year possible benefit period, the percentage who retire early is more than 15 percentage points higher than when the benefit period is only one year.

Euwals and van Vuuren (2011) studied policy reforms in the Netherlands that increased both the work incentives and the cost to the employer from sick leave, in addition to restricting access to disability. The combination of policies appears to have increased employment of older people, and avoided spillover from reduced early retirement into other social programmes.

Family interaction

Much of the modelling of the retirement decision focuses on individuals. This is due to both availability of data and complexity of the analyses. Still, a number of studies have found significant correlation between the retirement decisions of husband and wife. Klevmarken (2010) found that after age 50, having a spouse in employment reduced the retirement probability by 10 percentage points.

In a model where households could belong to one of two types, either cooperating or not, Jia (2003) studied retirement behaviour of married couples in Norway and found that around half fell into each group. The more highly educated households more often cooperated, resulting in a better outcome. He also found a positive effect of joint leisure. With detailed time use data, Stancanelli and van Soest (2012) studied joint leisure after retirement and found an asymmetry in that the wife’s retirement increased joint leisure, whereas the husband’s did not.

A problem in the analysis of joint retirement is the correlation in unobserved factors influencing both spouses’ retirement behaviour. In a recent study Selin (2012) used a reform in the Swedish pension system that changed the retirement incentives of public employees, who to a large degree were women. He found a substantial reduction in the retirement probability from the reform. In contrast to many previous studies, he found no effect on the

retirement behaviour of the husband. It may be that previous studies suffer from identification problems, but more results seem to be called for.

Knowledge and transparency

Pension rules are often quite complicated and several studies indicate that knowledge is incomplete among large groups. This may have an impact on retirement behaviour. In an experiment in the US, information about the workings of the US Social Security was sent to group of potential retirees, while a control group did not receive this information. The information that was sent increased perceived returns to working longer. It also increased labour force participation by 4 percentage points, relative to the control group mean of 74 per cent (Liebman and Luttmer, 2011). The effect was mainly on women.

Looking at actual retirement behaviour, Chan and Stevens (2008) present an apparent paradox: “while most people do not know the details of the own pension plans, retirement behaviour is strongly influenced by pension incentives.” They find that the average response may be misleading. Ill-informed persons do not respond to incentives, while well-informed respond much more than previously thought.

Lusardi and Mitchell (2011) report from surveys of financial literacy in seven countries, showing that financial literacy is correlated with the decision to save for retirement.

Although information may play a role in supporting optimal retirement choices, policy makers also need to bear in mind that there may be fundamental differences between people. Ameriks *et al.* (2003) used a variety of psychological question to construct a measure of the “propensity to plan” and showed that this had significant and substantial impact on retirement wealth, even after controlling for a number of factors, including life time income.

Evaluation of future benefits

A key question is how potential retirees respond to incentives that influence future benefits. This is crucial for the impact of deferral and longevity adjustment, both of which are important policy measures in a number of countries (OECD, 2011).

In many countries pension take up can start over an age range, subject to actuarial adjustment for early take up. The inherent discount rate (“fairness”) in these arrangements may vary, as may also the rate of preference and therefore the behaviour of potential claimants.

Brown *et al.* (2013) investigate determinants of retirees’ discount rate, based on observations of behaviour following a court decision in Croatia in 2005. This gave retirees a substantial compensation for having received too small pensions during the war, and, of large analytical interest, the choice between a lump sum and pension stream, with an implied rate of return of 27 per cent. Still, many chose the lump sum; in particular individuals who were credit constrained, had low income, had children and had low faith in the government. The experience may be valuable for assessing impacts of reforms that introduce choice between income streams.

In a recent study Gustman and Steinmeier (2012) compare the traditional exponential model for assessing a stream of utilities over a period, with a model with hyperbolic preferences. This means that the discount rate between two successive periods may change as the period approaches. Such models can lead to time inconsistent behaviour and have been applied in various settings in which apparently inconsistent behaviour had been observed. One example cited is that some have credit card debt and savings at the same time, although interest rates are very different.

A recent study by Brinch *et al.* (2012) based on Norwegian data used two events in the Norwegian Insurance System that influenced short term and long term benefits, respectively. The short term effect created by the abolishment of the earnings test substantially increased labour supply. In contrast, there was no reduction in the labour supply among those who could no longer increase their pension over their remaining life time. In present value terms for an average person, the two events were of comparable size.

These findings tie in with the debate, originating from tax research, on salience and responses to complex incentives.

Firms’ influence

Policies to encourage older people to work longer can also be directed towards employers. However, such policies appear to have played a much

smaller role than those directed towards the incentives of employees, and the literature is scarce. A study on Norwegian data by Ellingsen and Røed (2006) (in Norwegian only) showed no effect of a reduced payroll tax for persons above age 62, on hiring probabilities. The transition to disability was reduced, but this may (also) have been caused by a simultaneous change in the rules for disability benefit eligibility.

Bellmann and Janik (2007) model firms' behaviour with a matching model. Although their data do not distinguish between voluntary retirement and actual dismissals, they do find an association between early retirement and firm characteristics, among them indicators of demand and technological shocks.

Hallberg (2011) found that higher labour cost to the firm in the form of collective fees increased retirement. At the same time, large firms that were likely to have generous retirement policies were found to be spending more on compensation to older workers. He suggests that firms' behaviour is important and that policies could be aimed at changing the incentives of firms to retain older workers.

A study based on Finnish data (Hakola and Uusitalo, 2005) uses a policy change in 2000 that reduced the unemployment benefits for some of the older age groups and changed the cost to the firms of dismissing older workers. The latter change varied by employee age and firm size and allowed identification of firm cost effects. The results showed a clear reduction in unemployment when the cost to the firm increased. While this unemployment risk may differ from a retirement risk via a pension, disability is still the most common route out of the labour market, at least in the Nordic countries, and a spell of unemployment is often the start of such an exit route.

Both hiring of older workers, and probably more importantly, separation, whether laying off or retiring, happen by interaction of employers and employees. Using a calibrated model of search, hiring and productivity shocks, Messe (2011) finds that raising the mandatory retirement age may lower employment among older workers. An exogenous shock to the productivity of employees may cause the productivity of some of the workers to fall beyond a critical value and therefore generate a loss for the firm. This loss is higher the longer time before ordinary retirement. Increasing the

retirement age will then raise the expected loss and increase layoff, generating an “impatience effect”. Other studies have focussed on the counteracting “horizon effect”, that recuperating hiring costs is less likely the shorter the expected employment spell. This study is based on a calibrated search model and is not directly comparable to *e.g.* econometric differences-in-differences models.

Blau and Shvydko (2007) also found that labour market rigidities influenced labour market participation of older people. They had no direct information on rigidities, but used the share of each firm’s workers age 65 – 69 as an indicator.

Occupational pensions were found to have an impact of retirement and the shift from DB to DC to be important. In Norway, there are mandatory occupational pensions, but the minimum level will give a quite modest addition to the public pension. Traditionally, many firms have far more generous pensions. This decision rests solely with the firm, and Hernæs *et al.* (2011) analysed motivating factors for the firm. They found that pensions reduced turnover and that this was used by firms in which turnover was costly. Also, pensions were more often found in firms where the tax benefit of pension contribution compared to cash wage was larger.

Human capital formation

In the long run, macroeconomic responses to an ageing population may modify the development of the labour supply. With a shrinking work force, the capital-labour ratio will increase, increasing the return to labour and the incentives to invest in human capital. Using an overlapping generation’s model, Vogel *et al.* (2013) find that this, in combination with an increased retirement age, substantially reduces the impact of ageing.

5 Conclusion

Pension systems operate within in a broad cultural setting and it may well be that a policy implemented in one country would give a different result were it to be implemented elsewhere. Also, what appear to be results of certain features of pension systems may well stem from other institutional or cultural features of that country. Still, a vast number of studies, including the NBER-organized projects and the seminal work of Stock and Wise (1990), give very

strong indications of the importance of economic incentives, in the form of returns to work and pension replacement for labour supply.

While this main conclusion has been standing over a number of years, additional insight has been gained. The decisions of potential retirees have been shown to depend also on apparently “irrelevant” factors, like the default option when a person is faced with potentially important decisions on pension programme participation. This has spurred a literature on the nature of decision making, on the level of and means to improve “financial literacy” and on the impact of “hard to grasp” characteristics of pension systems. Examples are actuarial adjustment and rules of accrual.

The impact of “objective” incentives of pension systems will probably depend on such factors. More research on these topics has the potential of improving the design of pension systems, both the public pension and private sector pensions.

A second important topic is the interaction between pension programmes and social programmes like the disability. Changes in one programme are likely to impact behaviour in relation also to other programmes. Knowledge of the type and strength of the interaction continues to be valuable.

The incentives inherent in occupational pensions have received attention. In particular, the shift in occupational pension from DB to DC appears to have delayed retirement. Although occupational pension are decided by the firms, more knowledge of the impact on firms’ behaviour of the regulatory framework would be valuable.

Finally, multi stage retirement has recently received attention and appears to be well suited to flexible pension systems. More knowledge on behaviour in such programmes would be valuable.

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