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An evaluation of the labour market response of eliminating the retirement earnings test rule

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Abstract: In this analysis, we evaluate the labour force activity effect of abolishing the retirement earnings test for the age group 67-69. The report starts with an empirical overview of labour force participation and earnings for the age group 67-70. We then predict the impact of abolishing the earnings test by using both a transition model and a structural model. Both models predict that abolishing the earnings test would have increased labour force participation of persons aged 67 to 69, by 0.5 to 1 percentage points. The structural model indicates that about two thirds of the extra cost to the National Insurances System would have been offset by increased tax, half from tax rules and half from increased labour supply.

Keywords:

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An evaluation of the labour market response of eliminating the retirement earnings test rule[1]

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Introduction and summary

The current Norwegian old age pension rules state that for persons who take out old age pension but maintain earnings exceeding 2G in the period between age 67 and age 69, the pension is reduced by 40 per cent of the exceeding income. This earnings test rule has been considered to be a major disincentive for post-retirement employment (e.g. OECD, 2004).

As part of the new pension reform to come into effect in 2010, the earnings test is likely to be abolished, and the government budget for 2008 proposes to abolish it for persons aged 67 years. In this analysis, we will evaluate the labour force activity effect of abolishing the retirement earnings test for the age group 67-69.

The report starts with an empirical overview of labour force participation and earnings for the age group 67-70 before and after the 2002 reform in which the threshold was raised from 1G to 2G. We then predict the impact of abolishing the earnings test by using two different models. Drawing on the past observations of labour market activity of elderly people, both models imply strong, but different assumptions to arrive at predictions of the reform's effect. One is a transition model. The key assumption underlying the predictions in that model is that the impact of the earnings test can be identified by comparing the change in labour force participation from 69 to 70, when they are no longer subject to the test, to changes between 67 and 68 and between 68 and 69. The other model is structural and the key assumption is the assumed form of the utility function, which allows us to estimate

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the preference for income and hence predict the impact of abolishing the earnings test. In principle, abolishing the retirement earnings test will have two effects. One is a substitution effect between income and leisure, by increasing the net return to work. The other is an income effect by increasing the amount on NIS pension (National insurance system; Folketrygd) received for those with earnings above the threshold. The models incorporate both effects via different types of assumptions. In addition, eliminating the earnings test may also have effects on younger workers' retirement plan. They may also adjust their labour supply accordingly. However, evaluation of the long-run impact requires a dynamic life cycle model of both labour supply and consumption behaviour, which is far beyond the scope of this analysis.

Both models predict that the proposed reform will induce elderly aged 67 to 69 to increase their labor supply, implying that the substitution effect dominates. The transition model predicts that in 2002, the share of people aged 67-69 with earnings over 2G would have been 0.5 percentage points (around 550 persons) higher without an earnings test, whereas the structural model predicts around the double effect. This illustrates well the uncertainty of the predictions. The increased labour supply in turn will lead to higher total non-pension earnings, and generate more tax payments that partially offset the initial fiscal cost of the reform. Unfortunately, unlike the structural model, the transition model is not able to provide predictions on these financial variables. For 2003 the structural model predicts that people aged 67-70 would have had total earnings 273 million NOK higher, have received an extra 313 million in NIS and paid an extra 226 million in taxes. Disposable income would have increased by around 338 millions, which is a little less than increased earnings plus increased NIS minus increased taxes. The difference is reduced occupational pensions net of tax.

The increase in tax revenue would be the net result of increased tax on earnings and on NIS pensions, and reduced tax on occupational pensions, which would have been reduced following increased earnings. Deducting increased tax revenue from increased NIS expenditure, we obtain a net fiscal cost of around 87 million for 2003.

The Ministry of Finance (2006) calculated that abolishing the earnings test for 2007 would increase NIS pensions by 300 millions, of which 100 millions would be offset by increased tax revenue, which leads to a net cost of the reform of around 200

millions. This estimate is overstated since it ignores any possible labor supply response, which as we see from our predictions are quite large. Looking at relative figures since our data base is from a few years back, the figures from the Ministry imply a relative offset of around 33 % of increased NIS payments. Our calculations with the structural model give a relative offset which is much larger, around 75 % (76 % for 2002 and 72 % for 2003). If we assume that the difference between our offsetting and that of the Ministry of Finance is due to labour supply response, the structural model gives a response offset of 42 %. On the other hand, the transition model gives only about half the labor supply response of what the structural model predicts. If we assume that the transition model implies half of the financial response in the structural model, the average between the two models is a response of 32 %. Adding that to the offset due to tax rules alone, 33 %, gives a total offsetting of increased NIS expenditure of 65 %. This suggests that response could roughly double the offsetting which followed from tax rules alone.

Data used in the analysis, related problems and possible solutions

The analysis draws on data at Frisch Centre, which are merged administrative registers that are received from Statistics Norway, with permission from the Norwegian Data Inspectorate.

Data source	Information
Demographic files:	Year of birth, education level, gender. Age is defined as observation year minus birth year
Old age pension files	Date of old age pension take out
Income tax files:	Annual summary income data such as: pension income, wage income, income from agriculture, and other pension giving income. The sum of all pension giving income is referred to as earnings in the following.

These files are held at the Frisch Centre with permission from the Data Inspectorate and linked together by a unique personal identification number. This

number is encrypted version of the official personal identification number and is only used for internal linking of files at the Frisch Centre. The key to the encryption resides in Statistics Norway. The files cover the whole Norwegian population.

There is one very important limitation of the data. Although the data provide exact dates of old age pension take up and reliable annual earnings for each person, the information on periods *within* each year is not reliable. For the year of retirement taking up, earnings generated before retirement cannot reliably be distinguished from earnings generated afterwards. This makes it difficult to identify the labour market behaviour of the retirees at the year they retire.

To cope with this problem, we use a very crude method to identify the earnings generated before retirement. As noted in several studies on Norwegian data, the labour earnings of elderly are typically quite stable (given that they are still work full time). We assume that if the retiree had not taken out retirement, he would have received the same amount of earnings during the year of retirement as during the year just before that. Then we have:

The earnings generated after retirement
= WI(t)-WI(t-1)*(Number of months he was not on old age pension)/12,

where WI(t) is the earnings at the year of retirement and WI(t-1) is the earnings at year just before retirement.

By doing this, we are able to describe the labour market behaviour for retirees at the year of their retirement. However, we need to be very careful when we interpret the results.

The labour market behaviour of those aged from 66 to 71: some observations

We start our analysis by looking at the pattern of the elderly labor supply behavior. We find that the majority of people (around 96%) are registered as receiving old age pension as soon as they reach the eligibility age (age 67). At the same time, labour market participation and non-pension income (including wage income, self employed income and other pension giving income) drop sharply with age (Figure 1-2).

Figure 1. Labour market behaviour, 66-71 year old, 1932 cohort, whole population

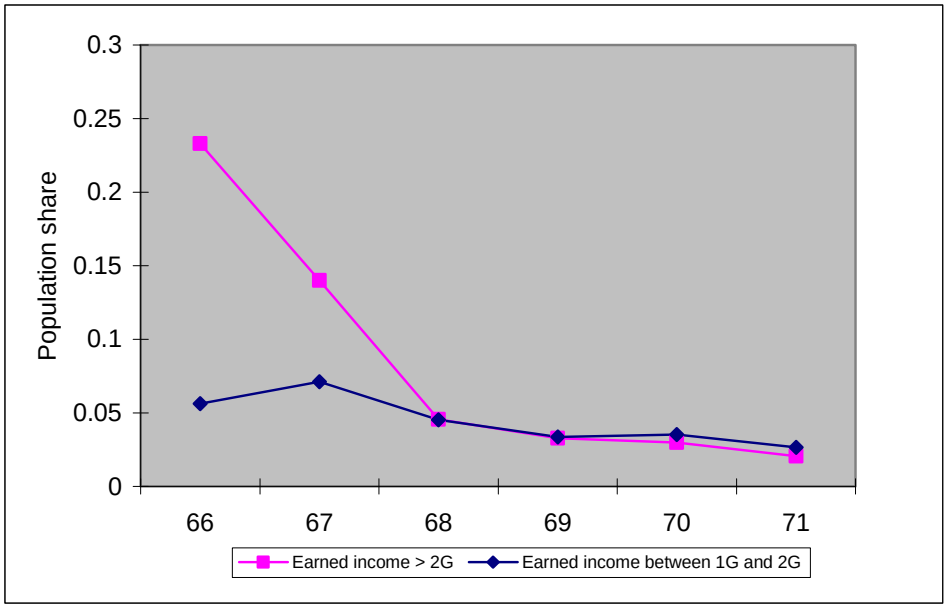

Figure 2. Average earnings, 66-71 year old, 1932 cohort, whole population

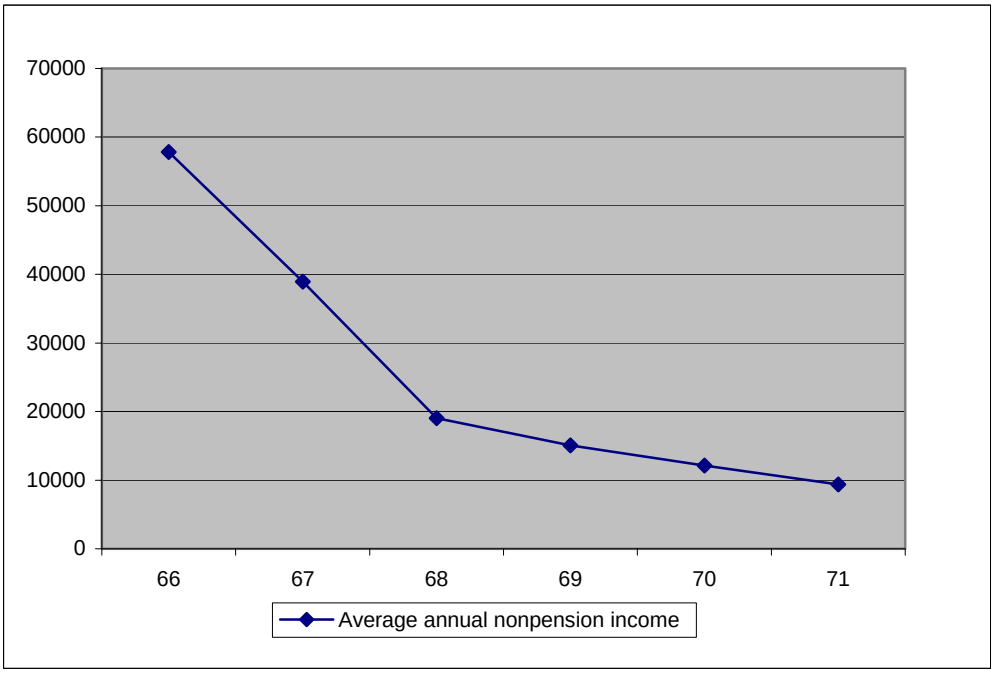

Table 1. Share of individuals with earnings over 1G by age, 1930 - 1932 cohorts, whole population.

Age	1930 cohort	1931 cohort	1932 cohort
67	21.13%	21.72%	23.14%
68	9.08%	8.29%	8.55%
69	6.65%	6.30%	6.00%
70	6.53%	5.78%	5.79%
71	4.71%	4.26%	4.64%

A couple of points we need to note from Table 1. First, the numbers across different cohorts are quite similar. Secondly, despite large decreases of the shares with earnings over 1 G from 68 to 69 and from 70 to 71, the change from 69 to 70 are relatively small.

Figure 3. Distribution of earnings by age, 1932 cohort.

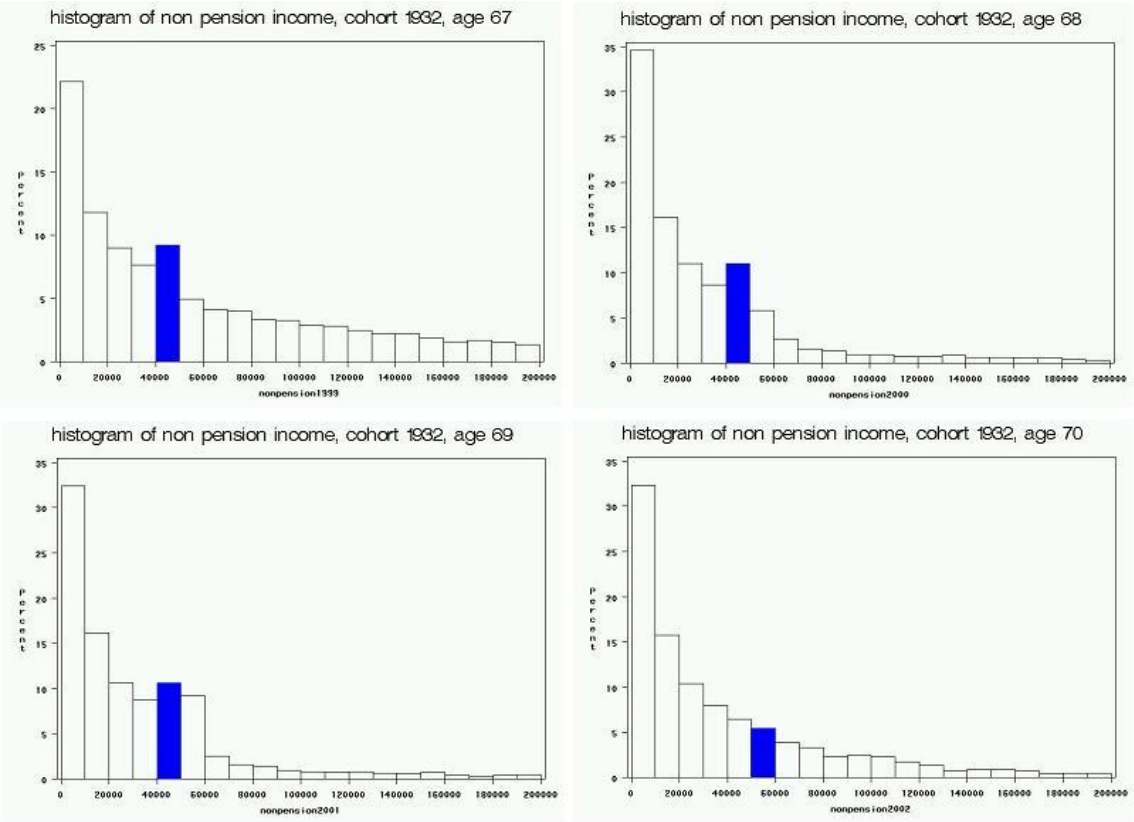

Figure 3 shows the percentage distribution of positive earnings in 10,000 NOK intervals over different ages for 1932 cohort. For age 67 to 69, there are peaks around

the threshold (the solid columns). This peak can be explained by the kinks in the budget constraints created by the earnings test. The peak disappears when individuals reach age 70, when there is a clear tendency for many to increase their earnings. Hence, individuals react to the earnings test by holding down their labour supply when the earnings test is present. Otherwise, we would expect a smooth decline instead of a clear "clustering" near the threshold. But this peak does not necessarily imply that the proposed reform will increase the aggregate labor supply. We should expect that it will increase the labor supply of individuals with earnings around the threshold (substitution effect dominates), but may reduce the labor supply of those with relatively high earnings so that all the benefits are taxed away (income effects only). In the following, we will try to determine how the aggregate labor supply will change if we eliminate the earnings test completely.

Impact of the 2002 Reform

The regulations regarding the earnings test for retirees aged 67-69 were changed from 1 January 2002 when the threshold for pension curtailment was increased from 1G to 2G. We will look briefly at the impact of the 2002 reform and hope it will shed some lights on the possible effects of eliminating the earnings test rule completely.

Table 2 shows the shares of retirees (those who are registered to receive NIS old age pension) with earnings above 2G, between 1G and 2G, and above 1G for year 2003, 2002 and year 2000. For the two years after the reform, year 2002 and 2003, the differences between the shares are rather small. The slightly higher participation in 2003 can partly be explained by the fact that the system is still "phasing in". As we expected, we found sizable increases in labour participation for all age groups between 67 and 70 after the reform. By raising the threshold from 1G to 2G, the labour participation rate among the retirees aged 68 to 69 increases by around 2.4 % It is not very interesting to compare the number for those aged 67, since we are not able to identify reliably the earnings generated before the retirement and after retirement at the year of retirement, and the majority of people start to receive old age pension at 67. Note also that we should not expect the difference for the group of 70 years old to be zero between year 2000 and 2002, since those who become 70 years old in 2002 are affected in part of the year.

Table 2. Share of retirees in percentages by different earnings, grouped by age, before and after reform

		67	68	69	70
2003	>2G	9.55	4.78	3.48	3.04
	1G-2G	6.50	6.51	4.69	3.63
	Total (>1G)	16.05	11.29	8.17	6.67
2002	>2G	11.59	4.51	3.13	2.93
	1G-2G	6.51	5.91	4.75	3.54
	Total (>1G)	18.10	10.43	7.88	6.47
2000	>2G	10.96	3.46	2.35	2.65
	1G-2G	6.77	4.55	3.30	3.10
	Total (>1G)	17.73	8.01	5.65	5.76
Difference between 2002 and 2000	>2G	0.63	1.06	0.78	0.27
	1G-2G	-0.26	1.36	1.44	0.44
	Total (>1G)	0.37	2.42	2.22	0.72
Difference between 2003 and 2000	>2G	-1.41	1.32	1.13	0.39
	1G-2G	-0.27	1.96	1.39	0.53
	Total (>1G)	-1.68	3.28	2.52	0.91

Figure 4 shows the distribution of earnings for age group 67 to 70 before and after the 2002 reform. They show an increase of earnings for all the ages. As we expected the clusters around 1G disappears after reform (year 2002), but we instead observe a new cluster at the new threshold 2G. As we expected, the new peaks are less prominent than the old ones, since few individuals will be affected by the proposed reform than the 2002 reform.

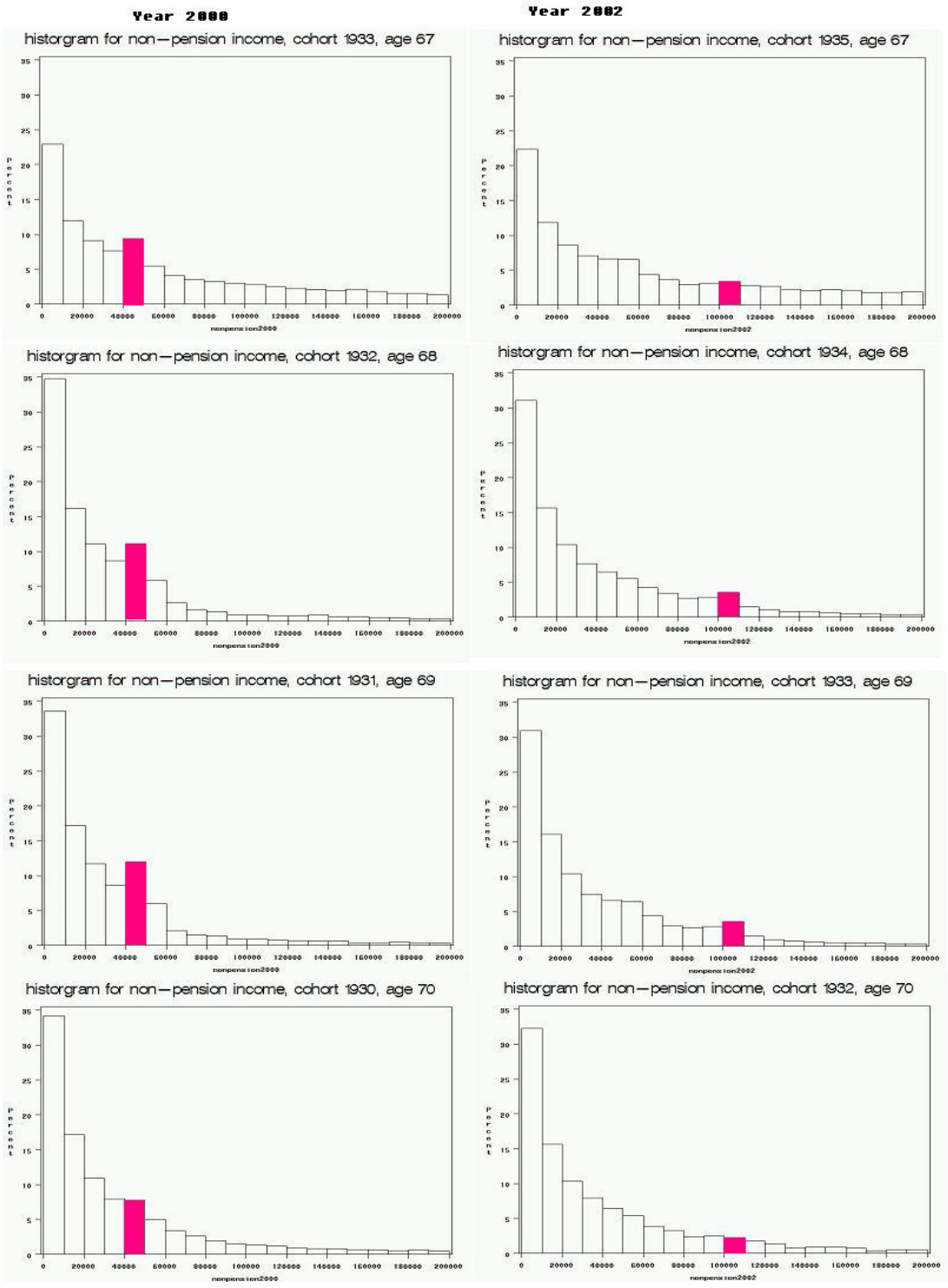

Figure 4. Distribution of positive pension giving income, before and after 2002 reform

It is certain from the empirical evidence that the 2002 reform has encouraged some individuals to increase their labor supply and earnings. It indicates that the substitution effect dominates the income effect. Although it is not certain, we think it

is most likely that the proposed reform will also increase the aggregate labour supply and earnings. As we can see below, both our models support such a claim.

For policy makers, it will be also important to know who react most strongly to the reform. To look into this, we look at different income groups. We classify people into three groups by their earnings histories and use the average pension point of 20 years (age 41 to age 60) as the criterion. Those individuals with average pension point less than 2 are categorized as low income. Middle income individuals have average pension point between 2 and 5. The remaining individuals belong to high income group.

Table 3. Mean earnings and labour market activity for individuals aged 67-70 by different income groups, Year 2000, 2002 and 2003.

		Mean of earnings			Share of those who maintain earnings over 1G		
Age	Income group	2000	2002	2003	2000	2002	2003
67							
	Low income	17585	18100	18063	11.17%	10.44%	10.33 %
	Mid income	39851	45188	46612	21.17%	22.13%	24.22 %
	High income	103108	99913	104529	35.60%	32.16%	33.92 %
68							
	Low income	8704	9808	10482	4.85%	5.63%	6.50 %
	Mid income	16919	21658	23061	9.26%	12.66%	13.06 %
	High income	48490	51272	54935	19.12%	20.31%	21.92 %
69							
	Low income	5893	7569	8309	3.15%	4.28%	4.66 %
	Mid income	11550	15677	17006	6.40%	9.35%	9.78 %
	High income	37665	39278	40750	14.47%	16.29%	15.55 %
70							
	Low income	4940	6121	6299	2.98%	3.55%	3.45 %
	Mid income	9715	11600	12814	6.25%	6.91%	7.35 %
	High income	28418	27981	31504	12.79%	13.09%	13.46 %

Table 3 shows the mean of income and labour market activities of those aged 67 to 70 in different income groups for year 2000 (before the reform) and for 2002 and 2003 (after the reform). From the table we see that the strongest reaction is in the middle-income group. We also observe increased labour participation and earnings for the other two groups but of much smaller magnitude.

A reduced form transition model for labour supply

At age 67, all can apply for old age pension. As they do this, they report expected earnings, and the earnings test is applied. As long as one expects that some pension will remain after the earnings test, there is no reason not to apply for old age pension. The amount of work offered is, however, influenced by an earning test. In this section, we will only look at what determines the number of persons who decides to have earnings above 2 G.

Model and estimation

For all the retirees, we look at two possibilities, either to work and earn more than 2G or not, and denote them state A (earnings > 2G) and B (otherwise).

After they retire, we assume that they make their decisions every year. Individual characteristics are ignored. When they retire, there is a probability *P* that they prefer state A over B if there is no earnings test. However, only a fraction of people who prefer A will actually choose state A (maintain an earnings over 2G) due to the earnings test. We write this fraction Q, and assume it is constant over time (age).

Once they actually choose a state, they may change the behaviour the next year. However, due to the labour market rigidity, the probabilities of choosing one state over the other will depend on the state they occupied already.

For those who are in state A, it is assumed that there is a probability S_t that they will switch to state B. This could be a result of issues from the supply side such as aging, health condition changes etc, or because of labour market conditions on the demand side or both. We allow this probability to change over time.

For those who are in state B, there is a probability $\overline{R}_t$ that they will change their behaviour if there is no earnings test. The existence of the earnings test will lower the actual switching probability to $\overline{R}_t Q$.

It is clear that $\overline{R}_t$ should be allowed to change over time. But without a structure on R's path over time, some of the parameters will not be identifiable. So we assume that $\overline{R}_t$ can be written as

$$\overline{R}_t = R \cdot (1 - S_t),$$

where R is a constant over age and S_t is the probabilities that the individuals leave state A at age t.

In plain words, we assume that there is a constant fraction R of people in state B who are willing to change their decisions. But due to the fact that they are getting old, there will be only $(1-S_t)R$ of them will try to put it into action. S_t can then be interpreted as the fraction becoming too old to work each year. In addition, only a fraction $Q(1-S_t)R$ does actually return due to the earnings test.

Identification is obtained by two key assumptions. One is that the propensity to return to work without an earnings test $(1-S_t)R$ is proportional to the propensity to stay in work $(1-S_t)$ at each age. We can use the transitions out from work to estimate S_t. The other key assumption is that the effect of the earnings test Q is the same on the decision to work at age 67 and on all potential later transitions back to work, but not present from 69 to 70, when there is no earnings test. Technicalities are set out below.

The whole setup is best summarized using the following transition matrix.

	State A	State B
State A	$1-S_t$	S_t
State B	$R\cdot Q\cdot(1-S_t)$	1- $R\cdot Q\cdot(1-S_t)$

where the rows denote the states they are in now, and the columns denote the states in next year.

For every age between 67 and 69, S_t can be estimated directly as

$$S_t = \frac{\text{Number of individuals who switch from A to B at age t+1}}{\text{Number of individuals observed in state A at age t}}$$

R can be estimated using the transition between 69 and 70, since the earnings test is not effective at year 70 (Q=1). With R and $S_t, t = 67, 68, 69$ estimated, Q will be straightforward.

$$Q = \frac{\text{Share of retirees switch from B to A at age 69}}{\text{Share of retirees switch from B to A at age 70}} \cdot \frac{1-S_{69}}{1-S_{68}}.$$

Once we have estimated Q, it is straightforward to work out the labour supply response of the proposed policy change.

Using data for year 2002 and 2003, we have estimated that $Q = 0.91$. It means that around 10% of individuals who prefer to maintain earnings over 2G did not do so due to the earnings test.

Prediction of the effect of abolishing the earnings effect

Based on this estimate, we can predict the share of retirees with earnings over 2G for age 67 to 70 after the earnings test is abolished completely. Table 4 shows the results for the year 2002 as an illustration.

Table 4. Predicted share of retirees (67-70 year old) in percentages with earnings over 2G, grouped by age, before and after planned reform, year 2002

		67	68	69	70
Before reform					
	>2G	11.59	4.51	3.13	2.93
After reform					
	>2G	12.67	4.94	3.42	2.93
Difference					
	>2G	1.08	0.42	0.29	0.00

Our estimation suggest that for the aged 67 to 69, there is around 0.5 percentage point more who will choose to work with income more than 2G. Once they made their decisions that they will not work with income 2G at the first year of retirement, few (less than 0.1% of them) will change their decisions even if the earnings test is abolished.

However, it is difficult to use this method to predict the effects of the proposed reform on earnings.

A structural model for labour supply

We also apply a simple discrete choice framework to model the labour supply behaviour of the elderly who aged 67 to 70. See e.g. von Soest (1995) for a review of discrete choice labor supply models. In this framework, the individual are assumed to maximize utility by selecting from a number of alternatives.

We assume that there are five different possible choices, which are categorized by earnings. They are:

maintain earnings above 4G

maintain earnings between 2G and 4G

maintain earnings between 1G and 2G

maintain earnings between 0.2G and 1G

maintain earnings less than 0.2G

Utility is determined by the amount of leisure and disposable income and is assumed to be increasing in both the arguments. Let U denote the utility, we assume that

$$U(C,\ L) = a_1 \frac{C^{\alpha} - 1}{\alpha} + a_2 L + \varepsilon$$

where C is disposable income and L denotes leisure, a_2 is a linear function of age, year of education, wealth, gender, year dummy and a dummy which indicates whether the person was active in labour market last period. The term ε arises from factors such as unobserved preference characteristics.

To use the discrete choice model, we need to know the disposable income and leisure for all these five alternatives. However, individuals are only observed to be in one of the states. We have to find some ways to impute these values.

We have very limited data for this task. We do not directly observe hours of work, wage rate and have only little information on potential available choices. Some simplifications and rules of thumb are applied to achieve our goal.

We begin with discussions on how we construct some key variables.

Potential total pension income, (P)

Potential total pension income is defined as the maximum pension income a certain individual are entitled to. It includes both the public old age pension (NIS) and occupational pension (OP) entitlement.

At 67-69, due to the existence of earnings test rule on both public old age pension (NIS) and Occupational pension (OP), we will not be able to observe the value of P directly. So we assume that we can use the maximum value of the observed annual pension incomes at age 67-71 to approximate this value.

Potential public old age pension income, (NIS)

We have detailed information on old age pension payout for those who have been observed to receive old age pension before 2004. For those who were not registered to receive the old age pension, we can use pension rules and observed pension points to simulate the potential old age pension.

Potential Occupational pension income, (O*P*)

It is much more difficult to get information on entitlements of the occupational pension. What we did is to use the following fomula:

$$OP = (P - NIS)$$

Potential maximum earnings (MWI)

MWI is defined as the maximum earnings that the individual can achieve after year 67. We have annual income data file back to year 1992. We take advantage of these income history data and use the maximum of the earnings over the last 10 years (1992-2002) to approximate this variable. If these variables are missing, we will use the final pension point from the pension income dataset. If all of above data are missing, we impose a constant value of 3.5G.

Construction of the characteristics for all alternatives

With the help of these key variables, we will impute the disposable income and leisure for each alternative.

The disposable income C is defined as

$$C = WI + PI - Tax(WI, PI)$$

where WI denotes the earnings associated with the alternative, PI is the pension income and Tax(.,.) is the actual tax function for 2003 or 2002 depending on the year of observations.

PI is calculated using the following formula:

$$PI = NIS - \min(NIS, \max(WI - 2G, 0) * 0.4) + OP \bullet (1 - \frac{WI}{MWI})$$

We see that $\min(NIS, \max(WI - 2G, 0) * 0.4)$ represents the deduction of old age pension due to the earnings test, while $OP \bullet (\frac{WI}{MWI})$ is assumed to capture the earnings test imposed by the occupational pension. As a general rule, when combining pension and earnings, the pension (OP) is reduced proportionally with the reduction in the worker's earnings. This is a very crude way, since some important exemptions from this rule are ignored. For example, if the OP is from SPK, earnings from private sector will not have any influence on the amount of pension received. However, we are not able to model these exemptions in this analysis.

Table 5 shows how the earnings are imputed depending on observed labour supply behaviour. Note that if FWI is too low, some of the alternatives will be flagged as infeasible. For example, if for an individual FWI is less than 4G, state 1 (maintaining earnings which are more than 4G) will not be included in this individual's choice set.

Table 5. The imputation of WI for different alternatives

	Observed State				
Potential State	1	2	3	4	5
1	Observed earnings	MWI	MWI	MWI	MWI
2	3G	Observed earnings	3G	3G	3G
3	1.5G	1.5G	Observed earnings	1.5G	1.5G
4	0.6G	0.6G	0.6G	Observed earnings	0.6G
5	0	0	0	0	Observed earnings

Leisure is to be within the interval [0,1]. It equals 1 for state 5 (not working). For the other four states, it defined as

$$L = 1 - \frac{WI}{MWI}$$

The model is estimated on all individuals aged 67 to 70 at the year 2002 and 2003 (after the reform where the threshold was raised to 2G from 1G). Table 6

presents the parameter estimates for our model. They are quite reasonable. The general fit of the model is quite good with McFadden R-square around 0.66.

Based on our estimated parameters, we simulated the effects of abolishing the earnings test completely by changing the pension rules. Our simulation results suggest that if the earnings test is removed, around 1000 more individuals age 67 to 70 will maintain earnings over 2G . Detailed results can be found in tables 7-8 below.

Table 6. Estimates for the logit model

	Estimate	Standard error
Consumption		
Constant	4.493	0.058
box-cox parameter	-0.452	0.018
Leisure term		
Const	4.467	1.229
Age/10	3.191	0.179
Edu/10	-1.647	0.058
Dummy for working last year	-20.795	0.056
Log(fwealth/100,000)	-0.229	0.009
Female dummy	-0.813	0.041
2003 dummy	0.614	0.038
MacFadden R square	0.66	

Table 7. Simulation based on data from year 2002

	Predicted		Observed
	After reform	Before reform	before reform
>2G	8643	7517	7515
<2G	120538	121664	121666
Share of over 2G	6.69 %	5.82 %	5.82 %

Table 8. Simulation based on data from year 2003

	Predicted		Observed
	After reform	Before reform	Before reform
>2G	8763	7738	7662
<2G	118839	119864	119940
Share of over 2G	6.87 %	6.06 %	6.00 %

An important issue in the discussion of the policy reform is how costly the reform will be. The Ministry of Finance (cited above) calculated that abolishing the earnings test for 2007 would increase NIS pensions by 300 millions, of which 100 millions would be offset by increased tax revenue. This was due only to changes in tax rules, without any labour market response included.

One important advantage of this structural model is that we are able to predict changes on both the labor supply behaviour and the expected income for any given individual. Thus, we will be able to calculate the revenue effects of the proposed reform when labor supply responses are accounted for. Tables 9 and 10 present the expected income effect of the reform for individuals of age from 67-70 and individuals of age 68-69 respectively. The model predicts that total earnings will increase by 8-9%. This number is comparable to the observed effects (4-10%) on earnings when a particular earnings test (30% reduction for earnings over 15 500 USD) was eliminated in United States in 2000 (Song and Manchester, 2007).

Tax revenues are calculated by applying the actual tax rules of year 2002 and 2003 to the all individuals' simulated pensions and earnings. For simplicity, capital incomes have not been considered in the calculations.

Table 9. Expected income effect of the reform, all individuals 67-70. Estimates based on year 2002 and 2003 (Million NKr)

	Observed	Model predictions		
	before reform	Before reform	after reform	changes
	Year 2002			
Disposable income	19619	19735	20084	349
Tax revenue	4245	4368	4616	247
Earnings	3075	3319	3634	315
NIS pension	15881	15844	16167	323
	Year 2003			
Disposable income	20300	20338	20676	338
Tax revenue	4315	4374	4600	226
Earnings	3328	3488	3762	273
NIS pension	16385	16335	16648	313

Note: Occupational pensions are included in disposable income, and these are also reduced by increased earnings

Table 10. Expected income effect of the reform, all individuals 68-69. Estimates based on year 2002 and 2003 (Million NKr)

	Observed	Model predictions		
	Before reform	Before reform	After reform	Changes
	Year 2002			
Disposable income	9525	9593	9755	162
Tax revenue	1991	2047	2162	115
Earnings	1232	1377	1531	154
NIS pension	7807	7780	7925	146
	Year 2003			
Disposable income	9963	10006	10156	150
Tax revenue	2057	2099	2200	101
Earnings	1321	1443	1575	133
NIS pension	8242	8217	8351	134

Note: Occupational pensions are included in disposable income, and these are also reduced by increased earnings

Conclusion

The report starts with an empirical overview of labour force participation and earnings for the age group 67-70, in particular showing the changes following the increase in the earnings threshold from 1 to 2 G in 2002. These data clearly shows earnings "humps" below thresholds and suggest that the earnings test has an impact of earnings of persons aged 67-70.

We then predict the impact of abolishing the earnings test by using two different models. Drawing on past observations of labour market activity of elderly people, both models apply strong, but different assumptions to arrive at predictions of the effect of the reform. One is a transition model between single age groups after age 67, linked with a model of work participation at age 67. The key assumptions underlying the predictions from that model is first that the impact of abolishing the earnings test can be identified by comparing the change in labour force participation from 69 to 70, when they are no longer subject to the test, to changes between 67 and 68 and between 68 and 69. Secondly, it is assumed the propensity at each age to increase earnings to more than 2 G is proportional to the propensity to maintain earnings above 2 G. These assumptions allow us to combine observations of transitions in both directions across the 2 G threshold and identify a parameter reflecting the impact of the earnings test.

The other model is structural and the key assumption is the assumed form of the utility function, which allows us to estimate the preference for income and hence predict the impact of increasing the return to work.

Our predictions suggest that after the reform, we will observe an increase in the share of people aged 67-69 with earnings over 2G. The transition model predicts that in 2002, the share would have been 0.5 percentage point higher, around 550 persons, whereas the structural model predicts around the double effect. The structural model also gives predictions (for 2002 and 2003) of the increase in earnings, in payment from the NIS and in taxes. For 2003 we predict that people aged 67-70 would have had total earnings 273 million NOK higher, have received an extra 313 million in NIS and paid an extra 226 million in taxes. They would also have received less OP, due to increased earnings. Hence the increase in disposable income

is a little less than the increase in earnings plus the increase in NIS pension minus the increase in taxes. The increase in tax revenue would be the net result of increased tax on earnings and NIS pensions, and reduced tax on the reduced occupational pensions.

The net increase in fiscal expenditure for 2003 would have been 87 million. The Ministry of Finance (Spørsmål nr. 265, fra Finanskomiteen/Høyres fraksjon, av 16.10.2006, vedrørende Statsbudsjettet 2007) calculated that abolishing the earnings test for 2007 would increase NIS pensions by 300 mill, of which 100 millions or about one third would be offset by increased tax revenue. This was due only to changes in tax rules, without any response included. Our calculations with the structural model include responses and give an offsetting which is much larger, around 75 % (76 % for 2002 and 72 % for 2003). On the other hand, the transition model gives only about half the response (in number of persons with earnings above 2 G) of the structural model. This illustrates well the uncertainty of the calculations.

It should further be noted that we assume in the structural model that individuals are free to choose their combination of work and leisure within their budget, which is influenced by the earnings test and their earnings history. Any restrictions on their choice set, for example mandatory retirement in certain occupations, are assumed to be captured by constant terms. These do not vary between individuals and therefore capture only average effects. Any such restrictions will continue to influence the results of the simulations. The simulation results are determined mostly by the estimated coefficients for earnings.

In particular, we assume that work giving earnings above 2 G is equally accessible as work giving earnings below 2 G. It may be the case that more extensive work is not equally accessible. In that case, we overestimate the impact. On the other hand, it may be the case that continuation in the old job is regarded as a qualitatively new and attractive option, if there is no longer an earnings test. This may cause us to underestimate the impact, although this may not be open to all.

Summing up, if we were to assume that difference between our offsetting and that of the Ministry of finance were due to labor supply response, and further reduced this impact by one quarter (to a response midway between the two models) we get an offset of 33 + (75-33) * 0,75 = 65 %. This could suggest that response could

double the offsetting through tax revenue of increased NIS pension expenditure, compared that which followed from tax rules alone.

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