



**Linnæus University**

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Bachelor essay

# Labor supply effects of increases in non-labor income

*- A study about older working individuals labor  
force participation*



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## Abstract

The ageing of the Swedish population entails an increase of public and pension expenditure. A solution to keep the compensation level constant is to make individuals retire later from the labor force. In order to understand what actions need to be implemented, there is a need of more knowledge about the characteristics of individuals who chose to remain in the labor force after the normal age of retirement. This essay investigates how senior workers' that are above the normal retirement age responds to an increase of non-labor income and how it affects labor supply. The results show that around 66 % of individuals will continue to work to the same extent, around 15 % will choose to reduce hours of work, and near 19 % will chose to retire. Also the results show that a person that will not change anything in hours of work after an increase in non-labor income will most likely be a male that is self-employed, who really likes his job and has a postgraduate degree. One conclusion in this essay is that to only focus on compensation levels in different social insurance systems to increase senior workers' labor force participation will not be as effective as if also focus would be on social norms and cultural beliefs to increase engagement towards work.

## Keywords

- Non-labor income
- Labor supply
- Retirement age

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# 1. Introduction

In recent years the average retirement age in the labor market in Sweden has increased. According to Försäkringskassan (2009) there has been an increasing retirement age for both men and women, and SCB (2009) observes an increase of the amount of men and women who are employed in the ages 65-74. In Klevmarken (2010) the author argues that these changes could be due to several things, for instance a result of an improvement in health or successful political reforms to stimulate labor supply.

Klevmarken explains that it is important to understand why individuals decide to work after the normal retirement age. The people in Sweden tend to live longer and this makes the cost higher for health and social care. He states that those who are currently working in Sweden are the ones that supply welfare. Meaning that the overall work effort, not only contributes to the private consumption, but also to the shared consumption of public services and the payment of pensions. This implies that people's retirement age needs to increase in order to keep the compensation level the same. If it would be a trend in society to retire earlier from the labor force, this could lead to pressures on the economy. Klevmarken therefore suggests that to be able to solve this problem it is important to investigate who the people are that already works after 65, and then assess what actions are needed to get more people to stay on the labor market.

Klevmarken (2010) also declares that only a few years ago the employers in Sweden had the right to lay off a worker when this person became 65 years old. As a result of this, and that most of the pension systems was design as if 65 were the normal retirement age, very few persons decided to work after becoming 65 years old. Today this age limit, until the employers are allowed to lay off the older workers, has been increased to 67. Klevmarken shows in his report there are still very few that work after becoming 65. It can be discussed if individuals act according to an optimal behavior, or if it has become a social norm to retire at age 65 since many years.

The driving forces behind people's employment is a question that is often up for debate and has been widely researched, for instance in Berglund (2009). Berglund shows that there exist different views between social sciences of how to measure the causality of people's desire to work. Economists traditionally assume that individuals desire to work can be explained by a rational calculation, whereas sociologists and psychologists assume that other social and psychological factors matters.

This study will examine what happens to individual's desire to work if they were to receive an increase in their income that is not related to their performance on the labor

market. This increase in income is usually called an increase in non-labor income. To get reliable estimates of what actually causing how individual's act can be difficult. As mentioned in Brown et al. (2010), many unobservable characteristics can be correlated with wealth, which will affect labor supply. In earlier research different events has been used as the income shock, to investigate the changes in labor supply, for instance unexpected inheritances, booms on the stock market, and lottery winnings.

In this study, data from a survey is used to observe the effect of an increase in non-labor income on labor supply. The survey contain answers from individuals between the ages 65-74, besides questions about their background, current working life, and motives to continue to work after 65, they were asked how they would act if they won 5 million SEK.

In section 2, a review of the earlier literature will be presented. In section 3 the theoretical framework is described, followed by a presentation of the dataset in section 4. In section 5 the methodological framework is explained, and the results of the analysis if presented in section 6. The essay ends with a discussion and conclusion.

## 1.1 Purpose

Numerous of earlier studies have had the intention to show the relationship between a non-labor income shock and hours of work and which factors that are important. However, very little has so far been written about how an individual over 65, which still works, react to an increase in non-labor income. An interesting aspect to investigate this group of individuals is to distinguish if they chose to work voluntarily or if they were forced due to economic constraints. The purpose of this study is to examine what the outcome of these individuals will be after an income shock and what motivations they have for continuing to work.

## 1.2 Research question

- How do changes in non-labor income affect labor supply among older working individuals that are above the normal retirement age?

## 2. Literature Review

In this section some of the earlier literature will be presented that is relevant to the chosen research question.

How changes in wages affects preferences for hours of work has been studied earlier to a large extent in the empirical literature on labor supply. But when estimating the effects you need to take into account that you will have to solve a number of problems first, and in Keane (2011) these problems are presented. Keane explains that some of the main problems are related to endogeneity of non-labor income and wages due to simultaneity or correlation with preferences for work, measurement errors of non-labor income and wages, and that wages are not observed for people who choose not to work. Furthermore individuals with low preference for work and high preference for leisure may not accumulate so much in assets and in that way have less non-labor income. Keane concludes that econometrician's face many difficult problems in estimating labor supply elasticity.

### 2.1 Psychology literature

In the psychology literature there exists a number of papers that studies lottery winners and these indicates that there is a reduction in labor supply due to the lottery winnings but only for some individuals, not for the vast majority among the winners. In Kaplan (1987) they study a survey of 576 US lottery winners and a total of 139 won over 1 million dollars. Their result shows that the majority of the winners didn't change the way of how they work, but when they look at the million dollar winners, 25 % of them stopped working. The authors explain that there clearly is a relationship between the amount people wins and how it affects the work behavior. Furthermore they see that when the jobs of individuals are considered as psychologically and financially rewarding, the individuals never stopped working regardless of how much they won. And in the same way they find that, persons who work in jobs, which don't require high skills and with low wages, are more likely to quit the labor force.

The results mentioned above are in line with those in Arvey et al. (2004). The authors survey 117 US lottery winners and find that only some of the individuals start working part time or quit their jobs, and the majority continues working. They investigate how important work was in the winner's lives, the degree of work centrality, and predicts that whether lottery winners would continue to work would be related to the amount of

the winnings and the level of how important the work was for the lottery winner. An individual who won a large amount on the lottery would be much more likely to quit work if this individual's degree of work centrality was relatively low.

A couple of studies, that also get similar results as the examples above, have all been constructed by using the same survey from 2005, this consist of 420 Swedish lottery winners. Hedenus (2012) examines how the work conditions of the lottery winners have an impact on the decisions to reduce the working hours, take periods of leave, or leave the job. Hedenus get to the conclusion that most of the winners did not change anything in their working life. Of those who did change their working life, some stopped working, took unpaid full time leave several times, or reduced their working hours. What was found to be central for the decision to change the working life, to reduce time spent at work, were job perceptions. If a person had positive job perceptions, good working environment, good possibilities for further training, and good colleagues, this person would not be inclined to reduce time spent on work.

Furaker and Hedenus (2009) also focus on what the winners do with their jobs after winning the lottery. They get similar results, that most of the winners are inclined to keep working as usual. But they explain that such decision, to keep work or not, is a mixture of motives and attitudes a person has towards working, and that this includes both non-financial and financial considerations. The authors mean that the non-financial considerations can tie an individual to his or her job and that this can be an explanation to why many of the winners of a lottery choses to continue to work the same as before.

In Hedenus (2009) the author predicts that those who are parents, women, live in couples, or feels like their work is not easily reconciled with family life, are the ones that are more eager to reduce their workweeks or take unpaid leave after winning. In her results she finds that the female winners have a higher probability to reduce their working hours, but besides that she don't get any other results that can confirm her initial hypotheses. Instead Hedenus concludes that it is the younger winners living alone that most frequently take periods of unpaid leave, and the ones that reduce their working hours are females and especially those that has no children. Hedenus ends up with pointing out that her findings shows that it is on the attitudinal level that one has to be most focus on in order to find explanations about how individuals act after winning on the lottery.

Berglund (2009) also uses the survey of the 420 Swedish lottery winners in his study. In his article he wants to examine people's desire to work after a lottery win and investigates the importance of economic, social and psychological factors. Berglund constructs four hypotheses about how the consumption of leisure will change after winning the lottery. He begins with describing both the theories and relevant empirics about the desire to work from an economic point of view and come up with his first hypothesis: the probability of consumption of leisure increases with the size of lottery winnings. The three other hypotheses describe willingness to work out of psychological and sociological perspectives. The focus will be on three factors, intrinsic value of work, the surrounding social expectations, and social acknowledgment of the work. The second hypothesis is: the probability of consumption of leisure decreases, the stronger work is seen as a value in itself. The third hypothesis: the probability of consumption of leisure increases, the stronger the expectations are from the social environment to consume leisure. The fourth hypothesis: the probability of consumption of leisure decreases, in a social confirmatory work. By studying the results Berglund gets one can conclude that he finds support for his four hypotheses. He finds that there is a relationship between the size of the lottery winnings and the amount of consumed leisure. But Berglund also explains that it requires rather big increases in income for the changes in the consumption of leisure to be substantial. He also finds that if you see an intrinsic value of work and if the work environment is encouraging this will keep the lottery winner in the labor force, this is in line with his second and fourth hypothesis. If the family and friends of a lottery winner has certain expectations about leisure, this will lead to a decrease in hours of work, which is in line with the third hypothesis. Berglund makes the conclusion that the size of the non-labor income is a very important factor, but it is not the only factor that is important to understand individuals' decisions about leisure consumption. Therefore he argues that out of a policy point of view one can not only focus on the compensation levels in social security systems, but also need to change the cultural and social norms towards work.

## 2.2 Economics literature

In the economics literature there also exists a number of studies that use data and information from lotteries to estimate the effects on labor supply. In Imbens et al. (2001) they estimate labor supply effects by using data from the Megabucks lottery in Massachusetts in the mid-1980s. The lottery winners get their prizes paid out on one-year bases over a twenty-year period, the authors want to analyse the effects of the

magnitude of the lottery prizes on economic behaviour. In their results they see significant income effects, and that the marginal propensity to consume leisure is around 0,11. This means that if a lottery winner receives 100 dollars, the earnings will be reduced by 11 dollars. According to the authors they find it surprising that the results are close to identical for males and females. They find that the effects are stronger on individuals closer to the normal retirement age, 55 to 65 years of age.

Cesarini et al. (2015) use a large sample of Swedish lottery players to study the effect of wealth on labor supply. They find that immediately after winning on the lottery the winner will reduce pre-tax labor earnings, by about 1 % of the wealth shock, permanently for more than 10 years. The lifetime marginal propensity to consume leisure, they calculate to be around 0,10. In their results they don't see any significant difference in outcome between males and females or disparities in age. In the study the authors also compares the winners with their spouses, and finds that the earnings response is larger for the winners of the lottery.

Another study that analyses winners of lotteries is Picchio et al. (2015). They investigate how labor supply gets affected when winning substantial lottery prizes. In the study they match administrative data, on household and individual-level, with data on winners in the Dutch State Lottery. They find that a substantial lottery prize affect the intensive margin, this means that a winner of a lottery will reduce their hours of work. They do not find any effect on the extensive margin; in other words, the probability that a lottery winner will withdraw from the labor force is not very likely. Another thing that are being concluded in the article is that not all groups of individuals are changing their labor market position when they win a lottery prize. The group of individuals that respond most to winning the lottery is younger individuals that are single and don't have any children.

By studying an unexpected income shock Kuhn et al. (2011) look at the own and social effects. They do their survey by using data from the Dutch Postcode Lottery. In the lottery, a winner can either win money or a car. In their study they are able to draw different conclusions, but when it comes to the effect on earnings they don't find any significant results. According to a statement in Picchio et al. (2015) this result is a consequence of the magnitude of the lottery winnings, the winning size of a lottery ticket is equal to about eight months of income or a car, it isn't large enough to make an

impact on labor market behaviour.

## 2.3 Alternative methods

Until now lottery winnings has been used as the exogenous non-labor income shock to study how it affect labor supply. There exist alternative methods that researchers have used to study these effects on labor supply, for example unanticipated inheritances. Jeffrey R. Brown et al. (2010) test for whether the receipt of an inheritance increases the probability of retirement. They use data from Health and Retirement Study (HRS) which provides richly detailed data about individuals labor supply, health, and finances. The data is collected from 1992 to 2002. The data consists of people who were between ages 51 to 61 and their spouses were also included. Every two years from 1992 the individuals were interviewed and a total number of approximately 20,000 observations. HRS provides new information about the individuals every two year, like whether any inheritances were received since the previous interview, the value of the received inheritance, the probability the individual thinks of receiving an inheritance over the next ten years, and the value of the expected inheritance. The authors finds that inheritance receipt is associated with a significant increase in the probability of retirement and when the size of the inheritance gets bigger the probability of retirement increases as well. Besides unanticipated inheritances, booms and busts in the stock market has been used to study changes in labor supply. In Hurd et al. (2009) they want to investigate what the effects are on retirement when there are large capital gains or losses. In their study they collect data from the HRS, and using the boom in the stock market that occurred in the mid-1990s until 2000, as their unexpected wealth increase. What they wanted to see was if households used this wealth gain to retire earlier than anticipated from the labor force. The authors find no such behavior of households, according to their estimates. In their conclusion they point out that the reason for getting this result is because the assumption, that the stockholders wealth gain being totally unanticipated, doesn't hold in reality. Most likely some of the gains were anticipated and they conclude that they don't have a method to separate the unanticipated from the anticipated gains.

## 2.4 The individuals

All the literature described so far has had the purpose of describing the relationship between the behavior of individuals on the labor market and different kinds of income shocks. Now turning to the literature that describes which the actual individuals are that will be investigated later. The Social council in Sweden took the initiative to make the

report Klevmarken (2010), and the writer of this report is Anders Klevmarken. The purpose of this report was mainly to analyze data about the individuals who work in Sweden after 65 years of age (normal retirement age), and do comparisons with other European countries. The Social council in Sweden explains that they wanted to make this study because the Swedish population increases in age. The fact that the people in Sweden tend to live longer implies that those who are currently working needs to supply welfare to more individuals, and in the same time the cost for health and social care for the older individuals increase. This implies that the age people are when retiring needs to increase in order to keep the compensation level the same. It has been shown that in recent years the number of employed has increased in Sweden, and especially in the older workforce. Klevmarken explains that it could exist several reasons for why older individuals chose to work after the normal retirement age and some could be, the increase in the education level, better health, and a better understanding of the new pension system. In his report Klevmarken makes the simplified association that the typical individual who works after 65 years of age is a man that is, highly educated, single, good health, self-employed, and has the luck to be on a labor market with low unemployment. A new thing that was found in this report was that having a high education level will strongly increase the probability to remain longer in the workforce, this is explained by the assumption that this group of people having other motives than only work to receive earnings. Klevmarken concludes that individuals that choses to work after the normal retirement age has certain preferences, that they have strong incentives to work regardless what their abilities are. It has also been shown that the economic conditions in the economy will have a large impact on the probability if this group will continue to work.

### 3. Theoretical framework

When reviewing the earlier research it is clear that there exists an overall accepted economic theory about the relationship between labor supply and income shocks. But also some of the previous literature argues that social and psychological factors will influence the behaviour of individuals on the labor market. In this section these theories will be interpreted and applied in relation to individuals who have not retired from the labor force after becoming 65 years old.

#### 3.1 The Worker's Preferences

In Borjas (2013) economic theory about labor supply has been explained. The general starting point in the theory is based on believes that an individuals preferences are deciding how to act on a market. As a consequence of limited resources individuals are forced to weight the preferences of different goods against each other to find the optimal outcome, where the utility is maximized. In our case the market of interest is the labor market and the individuals receives satisfaction from consuming leisure, which we denote by (L) and goods (C). This can be shown in a utility function:

$$U = f(C, L)$$

The utility function convert an individuals consumption of goods and leisure into an index, U, which shows the individuals level of satisfaction or happiness. Combinations of C and L can generate the same level of utility. The shape of an indifference curve depends on what preferences an individual have for C and L. Borjas states that economic models will for the most part exclude differences in tastes of individuals because it's hard to measure and observe. But in earlier research, like in Klevmarken (2010), it has been shown that individuals that have decided to continue to work after becoming 65 years old has certain weaker preferences towards leisure. These preferences, strong incentives to work, can be interpreted as these individuals have high intrinsic value in their work, in Berglund (2009) it were concluded that such characteristics could tie the individuals to the labor market.

#### 3.2 The Budget Constraint

As have been stated earlier individuals has limited resources and it means that the consumption of goods and leisure is constrained by time and income. A term that has

been used earlier is non-labor income (which we denote by  $V$ ) and this is a part of an individual's income that is independent of hours of work, for example a lottery prize. The time that a person spends on the labor market we denote by  $h$  and  $w$  for the hourly wage. We now have our budget constraint:

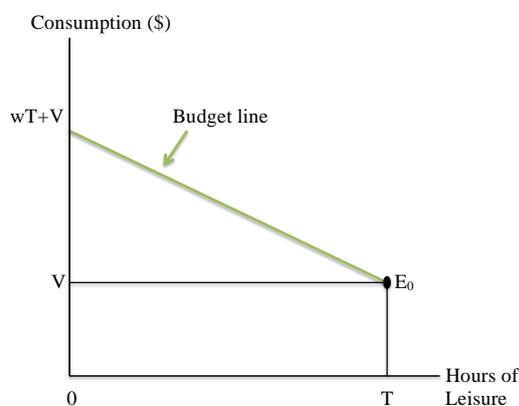
$$C = wh + V$$

The budget equation can be interpreted as; our labor earnings ( $wh$ ) plus non-labor income needs to be equal to the expenditure on goods. In the model the wage rate is assumed to be constant for a particular person. An individual has two options to use time, either to work or not. We denote  $T$  as the total time of the period that we look at, thus hours on the labor market and leisure, we can write this as  $T = h + L$ . Then we put this in our budget constraint:

$$C = (wT + V) - wL$$

This equation is our budget line and is illustrated in the graph below.

**Graph 1.** The budget line<sup>1</sup>.



This line represents all combinations of the consumption of goods and leisure an individual can afford. The point  $E_0$  in the figure can be interpreted as if the person decides to not work at all and consume  $T$  hours of leisure, but still receives an amount of non-labor income  $V$  to use for consumption.

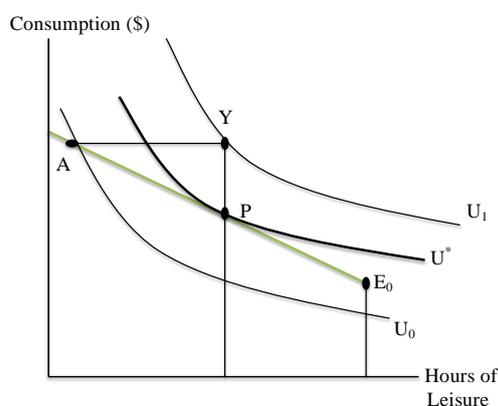
### 3.3 The Hours of Work Decision

Earlier it has been said that an individual wants to maximize utility, this means that the individual will choose the level of goods and leisure that leads to the highest possible

<sup>1</sup> Source: Borjas (2013) and own calculations.

level of the utility index  $U$ , with respect to the budget constraint. In graph 2 we can see how this looks.

**Graph 2.** Optimal bundle of goods<sup>2</sup>.



The optimal consumption of goods and leisure is in point P, which gives the individual  $U^*$  units of utility. Because of the budget constraint the individual cannot afford to consume on the  $U_1$  indifference curve at point Y, and will not choose to consume at point A because this is on a lower indifference curve. The utility maximizing individual will therefore always choose to consume on the point where the budget line is tangent to the indifference curve. This can also be explained by using this equation below (see derivation in appendix A).

$$\frac{MU_L}{MU_C} = w$$

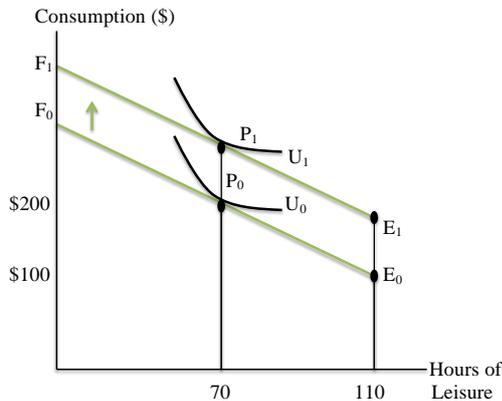
This means that the marginal utility of leisure ( $MU_L$ ) divided by the marginal utility of consumption ( $MU_C$ ) should be equal to the wage rate ( $w$ ). In other words, the slope of the indifference curve should be equal to the slope of the budget line.

Now I will assume that there is an increase in non-labor income and see what happens to hours of leisure, an increase in non-labor income will shift the budget line outwards. In Borjas (2013) it has been shown that leisure is a normal good, meaning that when the income increase for an individual, this will result in an increase in hours of leisure. But as have been described in Berglund (2009), the preferences towards consumption and leisure will decide how an individual will act after an increase in non-labor income. Three hypothetical outcomes will be constructed of how an individual can be assumed to act after an increase in non-labor income. In the examples below it has been assumed that the individual sleeps around 8 hours per day, and thus has 110 hours of non-

<sup>2</sup> Source: Borjas (2013) and own calculations.

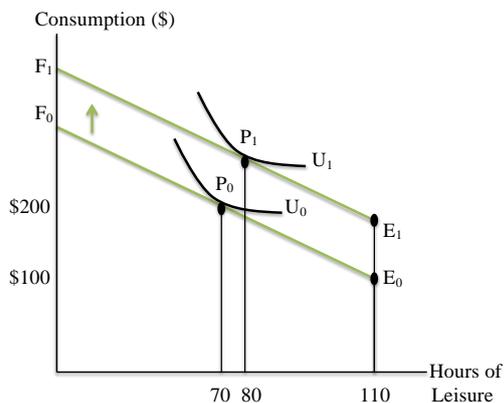
sleeping time per week to distribute between leisure and work. The first outcome is shown in graph 3 and it shows that the individual will continue to work the same amount of hours, not change anything in the consumption of leisure. This individual will only increase consumption, this behaviour can be described as quasilinear preferences and this is explained in Hal R. Varian (2010).

**Graph 3.** Increase in non-labor income and zero income effect<sup>3</sup>.



The second case is shown in graph 4 and it shows that the individual will increase both hours of leisure and consumption. How much the individual decides to increase hours of leisure and consumption depends on the preferences and budget constraint, but as explained earlier, the assumption is that the individual never will decrease hours of leisure due to an increase of income.

**Graph 4.** Increase in non-labor income and small income effect<sup>4</sup>.

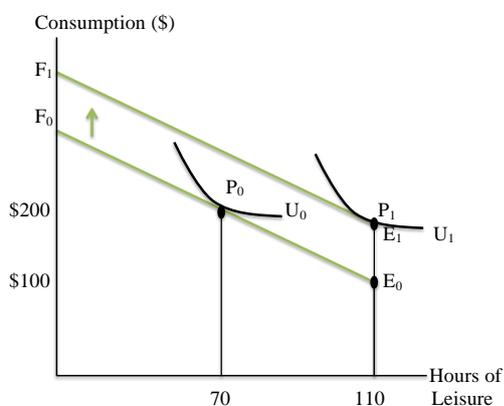


<sup>3</sup> Source: Borjas (2013) and own calculations.

<sup>4</sup> Source: Borjas (2013) and own calculations.

The third and last outcome is shown in graph 5, in this case the individual chose to retire and completely leave the labor force. This individual will increase hours of leisure as much as possible.

**Graph 5.** Increase in non-labor income and large income effect<sup>5</sup>.



The standard result after an increase in non-labor income is that leisure also will increase, according to Borjas (2013), but when it comes to these specific older individuals it can be argued that they will react in a different way to a non-labor income increase. As have been described earlier, Klevmarken (2010) argued that individuals that have decided to continue to work after becoming 65 years old has certain weaker preferences towards leisure. It can therefore be suggested that the income effect for these older individuals can be lower or even close to zero. The three hypothetical outcomes above will now be applied with respect to the older working individuals. Starting with the outcome in graph 3, this will be assumed to be the most common result after an income shock. This is because of what is assumed to be the most shared characteristic among the older working persons; they decided to continue to work because they like their job, not because they need the additional income. The outcome in graph 4 can be interpreted as the individual like the job, as in graph 3. However due to current health the individual sees an opportunity to decrease hours of work somewhat after the increase in income, but still remains in the labor force because of the strong preferences towards work. The decrease can also be as a consequence that the person sees an opportunity to adapt the working hours to spend more time with the family. The last case in graph 5, where the person drops out of the labor market after the income increase. This will be assumed to occur due to the fact that this person were forced to continue to work, after the normal retirement age, because of economic conditions. In other words, this individual only worked because the need of income, not because of any strong preferences towards work.

<sup>5</sup> Source: Borjas (2013) and own calculations.

## 4. Data

In this section the data that is used in the essay will be described. Beginning with explaining where the data is taken from and after that describing the data that will be used.

### 4.1 The survey

The data that will be used in this essay is obtained from a survey. The survey was conducted during the period November 2014 – January 2015 by the Statistics Sweden, commissioned by the Linnaeus University. The purpose of the survey was to get more information about why some individuals decides to stay on the labor market, while others decides to retire at the normal retirement age or even before that. The individuals in the survey answered different questions, for instance about their background, their work experience, current life situation, motives for working after becoming 65 years old, and other personality characteristics (SCB, 2015).

The population in the survey was 1 million individuals, and the sample consisted of 20 000 people and there were 12 145 who answered the questionnaire. The population was retrieved from the employment register from 2012 and consists of individuals in the ages 63-74. In more detail the population consists of two groups “stayers” and “leavers”. The stayers were individuals that were employed in 2012 and had an income of at least one income base amount or they were self-employed, from this group a stratified sample of 15 000 individuals was taken. The leavers were individuals that were not employed or they had no declaration for business activity, from this group a stratified sample of 5 000 individual was taken.

In the survey two different questionnaires was constructed, each containing 90 questions, and sent out to the 20 000 individuals, questionnaire A and questionnaire B. Questionnaire A was filled in by the individuals that still worked and the individuals that didn't work filled in questionnaire B. Using data from a survey has both advantages and disadvantages according to Snap Surveys (2012). There are many advantages, like the cost effectiveness and the capability to collect data from large numbers of respondents. A disadvantage can be that the received answers don't reflect how an individual actually would act in reality. This person maybe didn't understand the question, or didn't feel like providing accurate and honest answers. In this essay these

drawbacks will be considered, but the assumption will be that the respondents in the survey has answered the questions accurately and honestly.

The sample was stratified on leavers and stayers and a total of 24 stratum were constructed. A stratified random sample was made; this means that all objects within a stratum have the same probability of being included in the sample. To get a better perception of the stratified random sample, it is shown in Appendix B.

A selection of the sample will be made for the analysis in this essay. As has been described in the research question the aim is to find how individuals decide between time spent at work and leisure. Therefore the individuals that will be included in the analysis are the ones that were employed when the survey was done. This is because these individuals are the ones that are engaged with a situation that they have to make a choice of the degree of how much time to spend on the labor market. Another selection among the individuals that has been made is that only those who work more than 15 hours each week will be included in the analysis. Of the 12 145 individuals that answered the questionnaire there will therefore be a loss in sample size, because of the observations in the variables that will be presented in the next section. The final number of observations will be 2 140 persons, where 1 344 are males and 796 females. The dependent variable will be presented in the next section, and it is based on a question from the survey. The response rate to this question among the stayers was close to 98 % and nonresponse bias is therefore not considered to be a problem. A nonresponse bias occurs when the persons that not respond differ in a meaningful way from the respondents according to Stats OECD (2013).

## 5. Methodological framework

In this section the method that is used in the essay will be explained. Starting of by describing why this statistical test is suitable for this thesis and then show how the test is performed.

### 5.1 Statistical test

The model that will be used as the analysis strategy will be a multinomial logistic regression analysis, using the data analysis and statistical software Stata. This test is often just called multinomial regression and is used to predict a nominal dependent variable. This model can be seen as an addition to the binominal logistic regression, as it allow for a dependent variable with more than two categories. Furthermore the dependent variable should be based on one or more nominal or continuous independent variables. A nominal independent variable is a variable that consists of two or more groups, for example profession that consists of the three groups police, fireman, and doctor. By a continuous independent variable, or quantitative independent variable, means that it is possible for the variable to take the form of any value, for example temperature (Laerd statistics, 2013).

### 5.2 The variables

The dependent variable is constructed by a question about what the individual would do if winning on the lottery: “*Suppose you win 5 million SEK on the lottery, what would you do?*” The answer options were “Stop work completely”, “Continue to work as before”, “Increase time spent on work”, “Reduce time spent on work”, and “I don’t know”. This is shown in the table below.

**Table 1.** The dependent variable. Suppose you win 5000000 SEK on the lottery. What would you do<sup>6</sup>?

	Female	Male	Total
Stop working	313	352	665
Same time	630	1,240	1,870
Increase time	0	9	9
Less time	158	279	437
Don’t know	158	251	409
Total	1,259	2,131	3,390

<sup>6</sup> Source: The survey “*Mot ett hållbart åldrande*” and own calculations.

In the dependent variable, “Increase time” and “Same time” has been merged together as the same answer, this is because very few has answered that they will increase time spent at work. The answer “I don’t know” is considered as internal loss. The dependent variable that will be used in the analysis is shown in the table below.

**Table 2.** The dichotomised dependent variable. Suppose you win 5000000 SEK on the lottery. What would you do<sup>7</sup>?

	Female	Male	Total
Same time	630	1,249	1,879
Less time	158	279	437
Stop working	313	352	665
Total	1,101	1880	2,981

In Berglund (2009) it has been shown that besides from the economical point of view, the size of the lottery winnings, there also exist other social and psychological factors that will affect the decisions of individuals. Therefore a number of similar factors as shown by Berglund will be included in this analysis. Below some of the independent variables will be described.

The first variable “Personal commitment to the job” is about how much intrinsic value individuals has in their work and this is given by the statement: *“I feel a great personal commitment towards my work”* The answer options were “Totally agree”, “Partly agree”, “Disagree”, and “No opinion”. “Totally agree” and “Partly agree” has been merged together and can be interpreted as “Agree” and has been given the value 1, if “Disagree” the value is 0. “No opinion” is treated as internal loss and is not included in the analysis.

Next variable “Hard to combine work and family” describes how the individuals are able to combine their work with the social life, the family, the statement is: *“It is difficult to combine my work with my family situation”* The answer options were “Not correct at all”, “Partially correct”, and “Totally correct”. As in the example above “Partially agree”, and “Agree completely” has been merged together and given the 1, and “not correct at all” the value 0.

Another variable “Financial considerations” explains the motives the individual had to continue to work, the statement is: *“My decision to continue working after 65 was*

<sup>7</sup> Source: The survey *“Mot ett hållbart åldrande”* and own calculations.

*settled largely by economic considerations*” The answer options were “Totally agree”, “Partly agree”, “Disagree”, and “No opinion”. “Totally agree” and “Partly agree” has been given the value 1, if “Disagree” the value is 0. “No opinion” is treated as internal loss and is not included in the analysis.

Besides these independent variables described above a number of other variables will be included, that is thought to be of importance, and has shown to be of importance in earlier studies for instance in, Berglund (2009). These variables are shown in the table below and can be interpreted as the examples above, has been given the value 1 if the individual thinks its true or agrees, and given value 0 if not, see Appendix C for more details.

**Table 3:** Descriptive statistics of independent variables. Three categories: Mean (1), Standard errors (2)<sup>8</sup>.

VARIABLES	(1) Mean	(2) Std. Err.
Married or cohabiting	.752	.009
Bad health	.033	.004
Self-employed	.362	.010
Male	.628	.010
Cohort 1938-1941	.070	.006
Cohort 1942-1945	.229	.009
Cohort 1946-1949	.701	.010
Education, compulsory or less	.142	.008
Education, high school	.350	.010
Education, college or university	.450	.011
Education, post graduate	.057	.005
Hard to combine work and family	.153	.008
Physically demanding job	.253	.009
Psychologically demanding job	.485	.011
Monotonous job	.159	.008
Good atmosphere at work	.940	.005
Socializing with workmates	.577	.011
Financial considerations	.563	.011
External expectations to retire	.105	.007
Personal commitment to the job	.977	.003
Number of observations	2,140	

<sup>8</sup> Source: The survey “*Mot ett hållbart åldrande*” and own calculations.

## 6. Results

In this section the results from the multinomial logistic regression will be presented. Starting off by showing the results when both males and females are included in the analysis, and after that presenting the results when males and females are analysed separately.

In the tables that will be presented in this section the predicted probabilities will be used, in hope to in a clearer way illustrate the estimates. Starting with table 4 below.

**Table 4:** Time preferences among active stayers. Multinomial Logit. Three categories: Continue to work the same time (1), less time (2), and to stop working (3). Marginal effects estimated at sample means. **All stayers**<sup>9</sup>.

VARIABLES	(1) Same time	(2) Less time	(3) Stop working
Married or cohabiting	-.002	-.031*	.033*
Bad health	-.003	-.008	.011
Self-employed	.095***	.018	-.113***
Male	.053**	.017	-.069***
Cohort 1942-1945	-.026	.001	.025
Cohort 1946-1949	-.184***	.077**	.107***
Education, compulsory or less	-.051	.001	.050**
Education, college or university	.108***	-.015	-.093***
Education, postgraduate	.223***	-.037	-.187***
Hard to combine work and family	-.107***	.089***	.018
Physically demanding job	-.037	.018	.019
Psychologically demanding job	-.022	.001	.021
Monotonous job	-.013	-.051**	.064***
Good atmosphere at work	.030	-.014	-.016
Socializing with workmates	.007	.029*	-.037**
Financial considerations	-.313***	.090***	.223***
External expectations to retire	.028	-.026	-.002
Personal commitment to the job	.184**	-.043	-.142***
Predicted value	.662	.153	.186
Pseudo R <sup>2</sup>	0.127		
Observations	2,140		

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>9</sup> Source: The survey “*Mot ett hållbart åldrande*” and own calculations.

In table 4 all active stayers, both males and females, are included and a total of 2,140 observations. The predicted probability for the dependent variable three outcomes: same time, less time, and stop working, has been calculated. The probability to work the same time after an increase in non-labor income is around 66,2 %, the probability to stop working (18,6 %) is larger than the probability to only reduce time spent on the labor market (15,3 %).

To have a personal commitment towards the job has in the theory chapter been argued to tie individuals to the labor market. In the table above the probability to continue to work the same time increases with 18,4 percentage points if the individual feels personal commitment towards the job, significant estimate on the 5 % level, and decreases the probability to stop working with 14,2 percentage points, significant on the 1 % level. Other factors that appears to make individuals stay on the labor market is if the individual is self-employed, has higher education, and to be a male. If the individual is self-employed increases the probability to continue to work the same time with 9,5 percentage points and decreases the probability to stop working with 11,3 percentage points, both estimates at the 1 % significance level. Having a college or university degree increases the probability to continue working the same with 10,8 percentage points and having a postgraduate degree increases the probability with 22,3 percentage points, and both decreases the probability to stop working, with 9,3 respectively 18,7 percentage points, both at the 1 % significance level. To be a male shows an increase in probability to work the same with 5,3 percentage points and a decrease in the probability of retirement of 6,9 percentage points, the estimates at 5 % and 1 % significance level respectively.

In the theory chapter, factors that were considered to make the individual work less or stop working after an income increase are if the person had bad health, if it's hard to combine work and the family situation, and if the individual chose not to retire because of financial reasons. According to table 4 above, there are not any significant effects that indicate how the health affects the three dependent variable outcomes. On the other hand, if a individual find it hard to combine work and family situation there is a 10,7 percentage points decrease in probability to continue to work the same time and a 8,9 percentage points increase in probability to work less, the estimates are on the 1 % significance level. What seems to be important is if a individual chose to work because of financial reasons, it will decrease the probability to continue to work the same with 31,3 percentage points and increase the probability to work less with 9 percentage

points and to retire by 22,3 percentage points, all estimates at the 1 % level. Also the results indicates that the younger individuals, the cohort 1946-1949, probability to work the same time will decrease with 18,4 percentage points, thereby increased probability to work less with 7,7 percentage points, and to stop working with 10,7 percentage points, all estimates at least significant at the 5 % level.

In table 5 below only females are included in the multinomial logistic regression, the total number of observations are 769 females.

**Table 5:** Time preferences among active female stayers. Multinomial Logit. Three categories: Continue to work the same time (1), less time (2), and to stop working (3). Marginal effects estimated at sample means. **Female stayers**<sup>10</sup>.

VARIABLES	(1) Same time	(2) Less time	(3) Stop working
Married or cohabiting	.054	-.071***	.017
Bad health	-.019	.002	.017
Self-employed	.083*	.032	-.115**
Cohort 1942-1945	-.022	.080	-.058
Cohort 1946-1949	-.237**	.170*	.067
Education, compulsory or less	.078	-.112*	.033
Education, college or university	.145***	-.036	-.109***
Education, postgraduate	.080	.078	-.157
Hard to combine work and family	-.165**	.106***	.059
Physically demanding job	.016	-.007	-.009
Psychologically demanding job	-.002	-.001	.002
Monotonous job	-.018	-.065	.083*
Good atmosphere at work	.044	-.009	-.035
Socializing with workmates	.027	.021	-.048
Financial considerations	-.391***	.045	.346***
External expectations to retire	-.064	.035	.029
Personal commitment to the job	.205	-.069	-.136
Predicted value	.608	.140	.253
Pseudo R <sup>2</sup>	0.137		
Observations	796		

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>10</sup> Source: The survey “*Mot ett hållbart åldrande*” and own calculations.

According to the results in table 5 the predicted value for a female to continue to work the same as before a non-labor income shock is 60,8 %, to work less 14 %, and to stop working 25,3 %. Compared to table 6, which shows the results of the multinomial logistic regression when only males are included in the analysis, the total number of observations is 1,344 males. The predicted value for a male to continue to work the same after a non-labor income increase is 69,8 %, reduce hours of work is 14,8 %, and completely drop out of the labor market is 15,3 %.

**Table 6:** Time preferences among active male stayers. Multinomial Logit. Three categories: Continue to work the same time (1), less time (2), and to stop working (3). Marginal effects estimated at sample means. **Male stayers**<sup>11</sup>.

VARIABLES	(1) Same time	(2) Less time	(3) Stop working
Married or cohabiting	-.074**	.0178	.056**
Bad health	.008	-.009	.002
Self-employed	.099***	.008	-.107***
Cohort 1942-1945	-.036	-.022	.057
Cohort 1946-1949	-.164***	.045	.119**
Education, compulsory or less	-.088**	.038	.049*
Education, college or university	.081***	.005	-.087***
Education, postgraduate	.345***	-.158**	-.187***
Hard to combine work and family	-.082**	.075***	.007
Physically demanding job	-.062*	.029	.033
Psychologically demanding job	-.0382	.004	.034
Monotonous job	-.004	-.048*	.052**
Good atmosphere at work	.0180	-.008	-.010
Socializing with workmates	-.010	.038*	-.029
Financial considerations	-.283***	.116***	.167***
External expectations to retire	.075*	-.058*	-.017
Personal commitment to the job	.201**	-.055	-.146***
Predicted value	.698	.148	.153
Pseudo R <sup>2</sup>	0.129		
Observations	1,344		

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>11</sup> Source: The survey “*Mot ett hållbart åldrande*” and own calculations.

The factors that according to table 5 make the females remain on the labor market is if they are self-employed, and having a college or university degree. This is also true for the males according to table 6 but in contrast to the females, having personal commitment to the job, and a postgraduate degree will also increase the probability for the males to work the same. Having personal commitment will increase the probability for a male to work the same as before with 20,1 percentage points, at 5 % significance level, and lower the probability to retire with 14,6 percentage points, at 1 % significance level. Having personal commitment doesn't seem to be of importance for the females, because there are no significant results. If a male has a postgraduate degree the probability to work the same will increase with 34,5 percentage points, at 1 % significance level. It will lower the probability to reduce time of work by 15,8 percentage points, at 5 % significance level. And reduce the probability to stop working by 18,7 percentage points, at 1 % significance level. In table 5 there are no significant results for the females when it comes to having a postgraduate degree.

If a female find it hard to combine work and her family situation, chose to work for financial reasons, or belonging to the cohort 1946-1949, she will be more inclined to reduce her time on the labor market after a increase in non-labor income according to the results in table 5. And according to table 6 a male will be less likely to continue to work the same amount of time after an income shock if he finds it hard to combine work with his family situation, chose to work of financial reasons, is married or cohabiting, belong to the cohort 1946-1949, or having a compulsory diploma or less.

The results in table 5 indicates that on at least the 5 % significance level, the probability will decrease with 16,5 percentage points that a female will continue to work the same time if she find it hard to combine her work and family situation, compared to only a 8,2 percentage points decrease in table 6 for a male. If a female chose to continue to work after the normal retirement age due to financial reasons the probability that she will continue to work the same will decrease with 39,1 percentage points, this is higher compared to a 28,3 percentage points decrease for a male, both estimates on the 1 % significance level. This financial motive for continuing to work will largely increase the probability for females to retire, with 34,6 percentage points, compared to the males where both the probability to reduce time and to stop working increase. If a female is married or cohabiting it is very unlikely that she will reduce her time spent on work, but it is not possible to determine if this will increase the probability to work the same or to stop working, because the results in table 5 is not significant. But in table 6 the results

show that the probability for a male decreases with 7,4 percentage points that he will continue to work the same, and the probability increases with 5,6 percentage points that he will stop to work, both estimates on the 5 % significance level. Belonging to the cohort 1946-1949 shows for both females and males that it will reduce the probability to work the same. But it will increase the probability for females to reduce time spent on work with 17 percentage points, on the 10 % significance level, while it will increase the probability for males to stop working with around 12 percentage points, on the 5 % significance level. Having only a compulsory diploma or less will decrease the probability that a male will continue to work with 8,8 %, significance level 5 %. The only significant result, on the 10 % level, for the females that has a compulsory diploma or less shows that the probability to reduce time spent on work will decrease with 11,2 percentage points, but it is not possible to say if this will make a female more likely to stop working or to continue to work the same.

## 7. Discussion

In this section the research question will be answered, by using the results from the multinomial logistic regressions and the earlier literature. And the results presented in the previous section will be discussed and interpreted.

The research question presented in the introduction chapter was *“How do changes in non-labor income affect labor supply among older working individuals that are above the normal retirement age?”* The answer is shown in table 4, where the predicted values for the three different outcomes of the dependent variable are presented. More than half of the individuals will continue to work the same as before the non-labor income increase, around 66 %. Around 15 % will choose to reduce hours of work but still continue to work, and near 19 % would chose to retire. The predicted values also have the same proportions when the males and females are analysed separately. That the majority of the individuals don't change anything in their working lives is in line what has been found in many earlier studies, for instance Hedenus (2012). In the theory section, these three possible outcomes were presented, depending on the characteristics and preferences of the individuals. By examining the results obtained in the regressions, and applying them to the three outcomes it will be possible to debate which characteristics and factors that has the most influence on the individuals.

Graph 3 in the theory section described individuals that would not change anything after an increase in non-labor income, and this was considered to be because of that the individuals felt high intrinsic value in their work. This has proven to be accurate, according to the results in table 4, but this certainly isn't the only factor that makes the individuals want to keep working the same amount of hours. It has also been shown that being a male and self-employed also will make the probability larger that the individual will continue to work the same. But what has been recognized to be the characteristic that makes the probability highest to work the same is if the individual has a high education, a postgraduate degree. To summarize, a person that will not change anything in hours of work after an increase in non-labor income will most likely be a male that is self-employed, who really likes his job and has a postgraduate degree. This is in line with what was concluded in Klevmarken (2010), where the typical individual who works after 65 years of age was a man that is, highly educated, single, good health, and self-employed. In the regressions, there were not any significant results that indicated that having bad health would have an effect on the probabilities, but when looking at the

answers of the individuals almost everyone said that they had good health. Being married or cohabiting shows a small increase in probability to stop working when both men and women are analyzed. When only the men are analyzed there is a bigger increase in probability to stop working and on a higher significance level, which indicates that, as concluded by Klevmarken, being single make a individual having higher probability to remain on the labor market.

Graph 4 in the theory section explained the outcome when the individual will increase both consumption and hours of leisure. The hypothesis was that individuals who due to their health, and that they thought their work was hard to combine with their family situation, wanted to reduce hours of work but not entirely quit their jobs. As explained above, health haven't given any significant results, it can be argued that those that has decided to work after 65 has overall good health, and therefore bad health isn't a significant reason to why individuals want to reduce hours of work. But if the individuals find it hard to combine work with their family situation, this will increase the probability that they will reduce hours of work after a non-labor income increase. Summarizing this, according to the regression results it is true for both men and females that if they find it hard to combine their work and family situations they will be more likely to reduce hours of work after an increase in non-labor income. This is in line with one of the predictions in Hedenus (2009) that if individuals feel like work is not easily reconciled with their family life they would be more inclined to reduce hours of work after winning on the lottery, although Hedenus do not find support for this prediction in her report, the regression results in this essay are highly significant.

The last outcome was when the individual decides to entirely drop out from the labor force, which is illustrated in graph 5. The driving factor was believed to be whether the individual chose to continue to work due to economical considerations or not. In the introduction section it was stated that it would be interesting to investigate if the individuals chose to work voluntarily or if they were forced, due to economic constraints. By examining the data in table 3, quite many answered that the motives for working was because of financial considerations. In table 4 there are highly significant results that shows that by having these motives it will largely reduce the probability to continue to work the same and mostly increase the probability to retire. It can therefore on a strong basis be argued that some individuals were forced to continue to work, but that the majority can be said to work voluntarily, on their own terms.

In some earlier studies, for instance Cesarini et al. (2015), the results showed that there were not any significant differences in the outcomes between males and females. And in Imbens et al. (2001) they even found it surprising to find almost identical results between the genders. In this essay, on the contrary, the results in the previous section showed some clear disparities in the outcomes between the males and females. To begin with, comparing the predicted values of the three outcomes of the dependent variable in table 5 and 6, the males are more likely than the females to work the same after an increase in non-labor income and the females are more likely than the males to stop working. The magnitude and significance level for some of the independent variables that affect the males and females decisions also differ. If a female find it hard to combine her work and family situation this will decrease the probability that she will work the same almost twice as much compared to a male. And if working because of financial considerations it will largely decrease the probability to work the same for both males and females, but the decrease is much higher for the females compared to the males. These larger reactions by the females compared to the males can be an explanation to why the females have a lower probability to work the same after an increase in non-labor income. Another variable that decreases the probability to work the same for both the males and the females is if belonging to the cohort 1946-1949. This cohort contains the younger individuals and it can be argued that these individuals have more financial incentives to work because they are in the age group 65-68. This can be motivated by the reasoning that the older the individuals are and still working, the more they work because of other motives than financial incentivises, like personal commitment to the job. If a male have personal commitment to his job it will largely increase the probability that he will work the same, compared to the females that don't show any significant results. And having a postgraduate degree also makes a male remain on the labor market, while this doesn't seem to be true for the females. An explanation to this can be because that more males have a postgraduate degree than the females in the sample. These larger reactions by the males compared to the females can be an explanation to why males have a higher probability to work the same after an increase in non-labor income.

## 8. Conclusion

In this chapter the essay will be concluded, some suggestions for future research will be explained, and some policy implications.

The purpose of this essay was to examine the outcome of senior workers' after an income shock and their motives for continuing to work. The results in this essay shows that the majority of the individuals will continue to work. And their motives or reasons to do so were because of a personal commitment to the job, being self-employed, and because of having a high education.

In the literature review chapter a number of articles was presented which has an economical point of view. From these articles, for instance Picchio et al. (2015), the conclusion can be drawn that the magnitude of the non-labor income increase is important, if in this case the lottery winnings are too small there will be no effect on labor supply. In this essay the winning size was 5 million SEK, which has been considered as large enough to be able to get an effect on labor supply. But an interesting aspect in future research would have been to investigate and compare if the individuals would have answered in a different way about how they would distribute their working hours if the winning size was 3, 5, or 10 million SEK. Another noteworthy prospect to future research is if the individuals that are investigated actually would have won on the lottery, not just filled in a survey. As have been discussed earlier, an obvious drawback to the data used in the essay is if the individuals would have acted in a different way if they were to actually win on the lottery, not just answering a survey question. The reason to why it is important to understand how these older individuals react to changes in non-labor income has been described in the introduction, in Klevmarken (2010) it was shown that to understand what actions are necessary to get more people to remain longer on the labor market it was important to know which the individuals are that already works after becoming 65 years old. Just like the conclusion in Berglund (2009) the results of this essay indicates that from a policy perspective more than the size of the lottery winning is important to have in mind. Therefore to only focus on compensation levels in different social insurance systems to increase senior workers' labor force participation will not be as effective as if also focus would be on social norms and cultural beliefs to increase individuals engagement towards work and creating a sense of intrinsic value.

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# Appendices

## Appendix A. The neoclassical labor-leisure model<sup>12</sup>

The utility function is equal to  $U(C, L)$ , where  $C$  is consumption of goods and  $L$  is hours of leisure. The partial derivatives of the utility function are  $U_C = \partial U / \partial C > 0$  and  $U_L = \partial U / \partial L > 0$ . The budget constraint is:

$$C = w(T - L) + V$$

Where  $w$  is the wage rate,  $T$  is the total hours available in the time period that is analyzed, and  $V$  is non-labor income.

Set up the Lagrangian to solve the maximization problem:

$$\text{Max } \Omega = U(C, L) + \lambda (wT + V - C - wL)$$

Here the  $\lambda$  is the Lagrange multiplier. The first-order conditions are shown below:

$$\frac{\partial \Omega}{\partial C} = U_C - \lambda = 0$$

$$\frac{\partial \Omega}{\partial L} = U_L - \lambda w = 0$$

$$\frac{\partial \Omega}{\partial \lambda} = wT + V - C - wL = 0$$

According to this, the optimal choice of  $C$  and  $L$  must lie on the budget line. The ratio of the two first equations above gives the following condition:

$$\frac{\frac{\partial \Omega}{\partial L}}{\frac{\partial \Omega}{\partial C}} = \frac{U_L}{U_C} = w$$

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<sup>12</sup> Source: Borjas (2013)

## Appendix B. Stratified random sample

**Table 7:** Stratified random sample<sup>13</sup>.

Stratum	Description (age)	Population	Sample
L_01	Leavers, 65	26 047	189
L_02	Leavers, 66	38 439	278
L_03	Leavers, 67	47 157	342
L_04	Leavers, 68	63 688	461
L_05	Leavers, 69	69 256	502
L_06	Leavers, 70	73 542	533
L_07	Leavers, 71	70 959	514
L_08	Leavers, 72	66 617	482
L_09	Leavers, 73	60 600	439
L_10	Leavers, 74	58 865	426
L_11	Leavers, 75	58 893	426
L_12	Leavers, 76	56 400	408
S_01	Stayers, 65	59 139	3007
S_02	Stayers, 66	59 454	3023
S_03	Stayers, 67	39 772	2022
S_04	Stayers, 68	27 489	1397
S_05	Stayers, 69	20 802	1058
S_06	Stayers, 70	21 283	1082
S_07	Stayers, 71	17 731	901
S_08	Stayers, 72	14 389	731
S_09	Stayers, 73	10 908	554
S_10	Stayers, 74	8 982	457
S_11	Stayers, 75	8 157	415
S_12	Stayers, 76	6 935	353
<b>Total</b>		<b>985 504</b>	<b>20 000</b>

<sup>13</sup> Source: SCB (2015)

## Appendix C. List and definitions of independent variables

**Table 8:** List and definitions of all independent variables<sup>14</sup>.

VARIABLES	Question/statement	Answer if 1	Answer if 0
Married or cohabiting	Are you currently	Married/cohabitant	Single, Divorced/Separated, Widow/widower
Bad health	How would you rate your overall health condition?	Excellent, Very good, Good	Pretty bad, very bad
Self-employed	Are you employed or self-employed?	Self-employed	Employed
Male	Are you male or female?	Male	Female
Cohort 1938-1941	Respondent born between 1938-1941	Yes	No
Cohort 1942-1945	Respondent born between 1942-1945	Yes	No
Cohort 1946-1949	Respondent born between 1946-1949	Yes	No
Education, compulsory or less	Respondent having compulsory diploma or less	Yes	No
Education, high school	Respondent having high school diploma	Yes	No
Education, college or university	Respondent having college or university degree	Yes	No
Education, postgraduate	Respondent having postgraduate degree	Yes	No
Hard to combine work and family	It is difficult to combine my work with my family situation	Totally correct, partially correct	Not correct at all
Physically demanding job	My work is physically demanding with heavy lifting or repetitive body movements	Totally correct, partially correct	Not correct at all
Psychologically demanding job	My work is physically tiring	Totally correct, partially correct	Not correct at all
Monotonous job	My work is monotonous	Totally correct, partially correct	Not correct at all
Good atmosphere at work	Cohesion and atmosphere is good in my workplace	Totally correct, partially correct	Not correct at all
Socializing with workmates	I usually hang out with my colleagues outside of work	Totally correct, partially correct	Not correct at all
Financial considerations	My decision to continue working after 65 was settled largely by economic considerations	Totally agree, partially agree	Disagree
External expectations to retire	My colleagues look askance at me because I do not retire	Totally agree, partially agree	Disagree
Personal commitment to the job	I feel a great personal commitment towards my work	Totally agree, partially agree	Disagree

<sup>14</sup> Source: The survey “*Mot ett hållbart åldrande*” and own calculations.