

A basic income for Belgium

A microsimulation of the effects on government expenditures, inequality, poverty and work incentives

MASTER OF ECONOMICS

Justine Soete

R0588000

Thesis submitted to obtain
the degree of

Major General Economics

Promoter: Prof. Dr. André Decoster

Tutor: Toon Vanheukelom

Academic year 2017-2018



A basic income for Belgium

A microsimulation of the effects on government expenditures, inequality, poverty and work incentives

The concept of basic income has been discussed by many economists, philosophers and politicians, leading to a wide variety of proposals which are expected to solve problems like the lack of real freedom, large bureaucratic governments and environmental problems. This paper investigates whether a basic income would be feasible for Belgium using the microsimulation model EUROMOD based on the data of EU-SILC 2015. I present seven basic income proposals and evaluate them on budgetary effects, inequality, poverty and work incentives. Five proposals might be reasonable to implement based on the budgetary evaluation, however three of these proposals lead to large increases in inequality and poverty, especially for pensioners and disabled people. The two expensive proposals would need an additional flat tax of 48 percent on top of the existing tax system to make the proposals budget neutral but have attractive effects on poverty and reduce inequality. None of the basic income proposals have an effect on work incentives at the intensive margin, except for the proposals with a flat tax which have a small negative effect. However, at the extensive margin all the proposals have a strong positive effect on work incentives.

MASTER OF ECONOMICS

Justine Soete

Major General Economics

Promoter: Prof. Dr. André Decoster

Tutor: Toon Vanheukelom

Academic year 2017-2018



Acknowledgements

In the first place, I would like to thank my promoter Prof. Dr. André Decoster for giving me the opportunity to work on this topic. I would also like to thank my tutor Toon Vanheukelom for his assistance and advice during this academic year. His door was always open whenever I had questions. Finally I am very grateful to my family, my friends and my boyfriend for supporting and encouraging me during my years of study. Especially, I would like to thank my sister Sophie for her advice throughout my years of study and during my thesis.

Table of Contents

Acknowledgements	I
General Introduction.....	1
1 Literature review	3
1.1 <i>What is basic income</i>	3
1.2 <i>Different proposals from different angles</i>	5
1.2.1 Liberal-egalitarians: basic income as a way to ‘freedom for all’	5
1.2.2 Neoliberals: government-scepticism	6
1.2.3 Ecologists and green parties.....	8
1.3 <i>Basic income experiments</i>	9
1.4 <i>Effects on labour supply</i>	11
2 Microsimulation	15
2.1 <i>Microsimulation with EUROMOD</i>	15
2.2 <i>The reference scenario</i>	16
2.3 <i>Basic income proposals</i>	18
2.4 <i>Results</i>	20
2.4.1 Budgetary effects	20
2.4.2 Effects on inequality	21
2.4.3 Effects on poverty.....	23
2.4.4 Effects on work incentives.....	25
2.5 <i>Discussion of the results</i>	30
3 General Conclusion	32
References	34
Appendices	38
List of figures	47
List of tables	48

General Introduction

The concept of a basic income is no new idea. Since the end of the eighteenth century, new proposals have been released. But it has never been just one idea: the conditions, the monetary specifications and the ethical framework have changed over time in search of solutions for the relevant problems of that period. The specific proposals come in many shapes, but most consist of a periodic transfer of money at the level of the individual that comes with no strings attached (Van Parijs & Vanderborght, 2017). Since the first proposal on basic income, made by Thomas Paine in his book 'The Agrarian Justice' from 1797, the two concepts of 'starting life with equal opportunities' and 'the earth is for everyone' are the main arguments to introduce a basic income (Van Parijs & Vanderborght, 2017). The former of these two concepts has grown out to the liberal-egalitarian framework, with Van Parijs and Vanderborght (2017) as the main proponents, striving for real freedom and equal opportunities for all. The latter concept evolved into the ecological framework. A third reason to implement basic income are the large bureaucratic governments. They are created to monitor the extensive targeted social security in many countries but are problematic according to some proponents of basic income (Jessop, 2002). Additional to these three reasons for basic income, some smaller issues have led to basic income proposals. One example are the voices in favour of basic income in Silicon Valley, trying to solve problems occurring due to digitisation and automation (Freedman, 2016). Some of the issues appear in several proposals like the aim to solve unemployment, so that putting the proposals into a clear division is not always straightforward.

To investigate what the effects of basic income are on society, researchers have used several techniques. Experiments have been or are still being conducted in many countries, like The Netherlands, Finland, Spain, the USA and Canada (McFarland, 2017). Other researchers use microsimulation, like Colombino (2015) does for Italy and Sommer (2016) does for Germany. The OECD (2017) has presented a report on basic income, based on microsimulation for Finland, France, Italy and the United Kingdom. However, a country that is still lacking in this list of Western countries is Belgium. Therefore this paper will conduct a microsimulation for several basic income proposals for Belgium.

I test seven proposals with the microsimulation model EUROMOD based on the EU-SILC of 2015, each representing different views on how basic income should look like. The first two proposals represent the 'neoliberal view', which implies that they are simple and low. Next, I test two proposals within the liberal-egalitarian framework, providing a high basic income at the poverty level for Belgium of 1115 euro per month. The last three proposals combine several aspects. All three keep some existing benefits, where it might be needed to protect vulnerable groups. One of the proposals is still set at the low level of the neoliberal proposals, the other two assign the low level to adults but provide a higher level for pensioners, who are also seen as a vulnerable group. Some of the proposals assign lower basic income to children, some do not.

The seven proposals are tested on budgetary effects, inequality, poverty and work incentives. We can already partially predict the budgetary effects before calculating them, as some of the proposals explicitly use the sum of the existing benefits as basic income. However, the height of the flat tax to make the proposals budget neutral, is found through trial and error. For the highest basic income of 1115 euro for everyone a flat tax is needed of 48 percent on top of the existing tax system. The two last proposals explained in the

previous paragraph need a flat tax of 12.20 percent to be budget neutral. The effects on poverty and inequality are correlated with the budgetary effects. The expensive proposals lead to lower poverty rates than in the baseline and less inequality, whereas the low basic incomes cause high increases in poverty rates and inequality. The three proposals where some of the existing benefits are kept, succeed in protecting disabled people, but pensioners still have higher poverty rates. The effects on work incentives are the same for all basic income proposals without flat tax. The monetary work incentives for people out of labour, measured by the participation tax rate, increase substantially, suggesting that labour supply might increase at the extensive margin. However, the monetary work incentives at the intensive margin, measured by the marginal effective tax rate, do not change, implying that basic income might not have an influence on how many hours people work. The flat tax reduces the effect of basic income on the extensive margin and increases the marginal effective tax rates at the intensive margin.

The evidence for the labour supply at the extensive margin is coherent with the conclusion of the theoretical discussion in this paper, but further research might be interesting on this topic. The microsimulation model EUROMOD does not capture behavioural changes, which might have an influence on the results as introducing a basic income would be a large change for many people. Moreover the effects on work incentives are simulated based on a reference person, a 30-year-old, male, fulltime working single without children. It might be good to use the whole population or use a behavioural microsimulation model. Also, basic income might have effects on individual decisions of people as decisions on their career and household composition, or general equilibrium effects as changes in wages. These effects are not taken into account in this paper, but can be captured with microsimulation models extended with life cycle models, macroeconomic models or behavioural changes. Further research might also pay extra attention to the protection of pensioners by including higher basic incomes for pensioners or people could be motivated to save more during their life for their old days.

This paper consists of three main parts. A first part discusses the relevant literature about the theory and empirical findings of basic income. In a second part the effects of a basic income for Belgium are analysed through microsimulation. Finally, I conclude with a short overview of the effects of the different basic income proposals and give some possibilities for further research.

1 Literature review

This literature review starts with a definition of basic income and discusses its main aspects as universality and unconditionality. Next, I give an overview of the different types of basic income proposals given in the literature. The proposals are divided into three groups, based on the problem that basic income tries to solve: providing freedom for all, the government-scepticism of neoliberalism, as well as Silicon Valley proposals, and ecological challenges. Third, I summarize experiments from all over the world into the main conclusions we can learn from them. To conclude, I discuss the effects of basic income on labour supply.

1.1 What is basic income

A basic income, as stated by Van Parijs and Vanderborght (2017), is 'a regular income paid in cash to every individual member of a society, irrespective of income from other sources and with no strings attached' (p.4). Although this is only one possible definition, it gives most of the common aspects of a basic income. In what follows, we dig a little deeper into each aspect.

First, a basic income is a periodic amount of money, hence excluding benefits in kind. The main reason to excluding benefits in kind is that they require more complicated systems to distribute basic income than cash payments. Moreover, Van Parijs and Vanderborght (2017) and Bregman (2014) argue that they are too paternalistic, as people are smart enough to decide themselves what to do with their money. However, some paternalism comes in when Van Parijs and Vanderborght (2017) argue to pay the basic income monthly instead of as a single grant, for example paid at the age of 21, in order to give people full freedom, even to make mistakes.

Second, a basic income is paid to every member of society, irrespective of gender or marital status. Some proposals explicitly mention children to also receive a basic income, making basic income irrespective to age (Fitzpatrick, 1999), while others exclude children to keep it financeable (Ackerman & Alstott, 2006). Another option is to only give the money once when people reach adulthood and additionally some sort of basic income only to elderly people, as a basic pension (Ackerman & Alstott, 2006). Because every member of society gets a basic income, the unit of payment is not the household but the individual. Hence, housewives and housemen get more financial freedom to decide on their life and marriage (Van Parijs & Vanderborght, 2017). Pateman (2004) shows that a basic income can possibly solve the unbalanced division of unpaid work in the household between husband and wife. However, unless we opt for a globally implemented basic income, one restriction remains: country borders. 'Members of society' is defined as fiscal residents as Van Parijs and Vanderborght (2017) suggest, not as citizens or permanent residents.

Third, a basic income is paid to every member of society, regardless of what (s)he earns. Van Parijs and Vanderborght (2017) advocate in favour of such a 'floor to stand on', giving people the power to choose jobs they really want, to quit their job and do volunteering, or to take care of children. A first consequence is that the ocean of burn-outs and bore-outs we face as a society today might be brought to an end. As Jiranek, Brauchli and Wehner (2014) argue, one of the causes of burnouts is the lack of meaningfulness in people's jobs. Similarly, Dur and van Lent (2018) find a negative relation between the perception people

have of usefulness of their job and job satisfaction. People might find back the meaningfulness of work and avoid a burnout by turning more to volunteering, but further research would be needed on this topic. A second consequence of the unconditionality of income is that the unemployment trap, a big drawback in the existing social security systems, disappears (Van Parijs & Vanderborght, 2017). When unemployed people start working today, they face high marginal tax rates by losing their unemployment benefits. If these benefits are replaced by basic income, marginal tax rates will drop as people keep their basic income when they start working. Some proponents argue to keep several existing benefits, but these do not include income replacement benefits like unemployment benefits. I discuss the possible effect on labour supply in section 1.4.

The fourth aspect of a basic income states that there is no condition on willingness to work, which implies that people receive the income even if they are voluntarily or involuntarily unemployed. This is often seen as the most controversial aspect of a basic income because people do not accept easily that others 'who are doing nothing', get money from hard working people (Van Parijs & Vanderborght, 2017). Even in his participation income proposal, similar to a basic income, Atkinson (2014) imposes a conditionality of participation in society, which is broader than labour market participation and for example also includes voluntary work. However, unconditionality on willingness to work is a key aspect of basic income because it solves the employment trap. Employees get more bargaining power, based on their basic income, making them free to refuse bad job offers. Hence, they might obtain better working conditions and higher wages (Van Parijs & Vanderborght, 2017). At the other hand, lower wages can occur due to the unconditionality of income, mentioned before. Additionally, the unconditionality of willingness to work simplifies the existing social security systems and might cut down expenses, because the government no longer needs to control the efforts of people to find a job (Van Parijs & Vanderborght, 2017).

An additional advantage to the unconditionality of income and willingness to work together is that they assure that the benefits reach the right people. For example the goal of the Belgian social assistance is to support the poor. Ravallion (2017) argues that existing benefits often do not reach the poor but go to non-poor people. Bardhan (2011) draws the same conclusion from his study in India and describes that as one of the main problems of the social security in India. In the case of India, he partially attributes this problem to the high corruption, a more relevant problem than possible idleness of people if they would get a basic income.

Finally, a basic income is paid by the state (Barry, 1996). Although it is mostly not explicitly mentioned, it is worth noting. Barry (1996) argues that the fact that the state pays the basic income has nothing to do with how it is financed. Whether it is paid with higher personal income taxes or with a carbon tax does not have an influence on the main idea of basic income. However in the next paragraph we will see that sometimes different specifications of taxes are included in the proposals, depending on the ideological background of advocates of basic income.

1.2 Different proposals from different angles

Basic income proposals today come from diverse groups in society. We can see a difference in the reason why people want a basic income, based on who launches the idea. This also has an impact on how the proposals look. In the following section, I give an overview of the different angles from which basic income is seen. Each angle consists of four parts: the problems in society for which the proponents see basic income as a solution, the main characteristics of the proposals, if specified in the literature the financing of basic income and some criticism on the three previous aspects. I distinguish three main angles: liberal-egalitarian, government-scepticism and ecologists and green parties.

1.2.1 Liberal-egalitarians: basic income as a way to ‘freedom for all’

The main advocates of the liberal-egalitarian approach today are Van Parijs and Vanderborght (2017). Clark and Kavanagh (1996) share this opinion and call it the liberal case. Both cover the aspects on giving people real choices and opportunities with the support they need. The ‘freedom for all’ concept of Van Parijs and Vanderborght (2017) is the starting point, indicating that it is not an approach only for the rich and not just about giving people the legal freedom. They want people, rich or poor, to be able to make the same decisions about leisure time, time to work and family time. Legal freedom already exists but it is not real freedom if there are still strong financial limitations. One example is the unemployment benefit, where people lose the benefit if they do not show some willingness to work. Another example is a single mom, who has the possibility to quit her job to spend more time with her children, but this might not be a real freedom due to her financial limitations.

A basic income that gives people the so called ‘floor to stand on’ can solve the current lack of real freedom (Van Parijs & Vanderborght, 2017). Clark and Kavanagh (1996) mention this ‘floor’ in their liberal case and argue that no person should slip through the net that our social security is today. In the same line, we find the approach of Mitchell and Watts (2005) who find the income insecurity many people face today a big problem. They see basic income as a good solution because all people would have a certain financial security in their life that they can rely on. An important difference in the proposal of Mitchell and Watts (2005) is that they prefer a model of Job Guarantee to solve income insecurity and see basic income only as a second best option.

Van Parijs and Vanderborght (2017) and Clark and Kavanagh (1996) mention the change in power relations basic income can cause, which in turn would lead to more freedom for vulnerable groups. Women would get more financial power in marriage and in society, giving them more power to decide about their relational status, especially those who are out of the labour market. People at the lower part of the income distribution gain more bargaining power on the labour market, allowing them to refuse bad job offers and giving them more freedom to find the right job with a worthy wage.

These aspects of increasing freedom and freedom for all imply specific characteristics for the basic income proposals made by liberal-egalitarians. A main characteristic Van Parijs and Vanderborght (2017) always repeat, is that a basic income does not mean that all the other aspects of the existing social security should be abandoned. Keeping some benefits like extra support for mentally and physically disabled people might be necessary to assure their life quality. Although it makes it more costly than only redistributing the existing

benefits, it represents the argument of giving real freedom to all, while assuring that no one has to worry about falling into poverty. This is an answer to one of the criticisms from the OECD (2017) that a too low basic income would push many people into poverty.

Finally, Van Parijs and Vanderborght (2017) make some argumentation about the financing of basic income. They argue that the heritage of the past, for which none of us had to do anything, has to be redistributed through a high inheritance tax. Hence everyone can start from the same point today and has the same chances, the same freedom. Although an inheritance tax seems desirable when speaking of inequality, Thomas Nagel (2009) argues that the accumulation of wealth over generations might be an important economic incentive.

1.2.2 Neoliberals: government-scepticism

The scepticism some authors have towards governments makes basic income proposals more attractive for them than means-tested benefits because they give a smaller role to the government (Jessop, 2002). Basic income according to neoliberals would lead to a reduction in taxes and interference of the government in the daily life of individuals and therefore undermine the supportive role of the state (Kleinknecht, 2018).

Moreover, Jessop (2002) argues that large targeted benefits and taxes installed by the government create inefficiencies which lead to for example an unemployment trap. Removing these benefits can solve these labour market imperfections and will give more work incentives to the poor, such that they can solve their problems themselves (Clark & Kavanagh, 1996). This government-scepticism and the attractiveness of basic income is shared in Silicon Valley (Freedman, 2016). Basic income proposals designed to solve the described market imperfections and based on government scepticism can be called conservative, referring to the division made by Clark and Kavanagh (1996). These proposals are also referred to as neoliberal. The reason is that the critique of basic income proponents on Keynesian government intervention resembles Hayek's neoliberal critique on Keynes (Pateman, 2004).

This has two implications for the basic income proposals made. First, these basic income proposals will be simpler than those of the liberal-egalitarians who want to keep parts of existing social security (Van Parijs & Vanderborght, 2017). If some means-tested benefits stay in place, the bureaucratic government cannot be reduced as much as in the case of only a simple basic income.

The second implication is that these proposals use basic income to push people back to work. Milton Friedman wanted a basic income but lower than the poverty line (Widerquist, Noguera, Vanderborght & De Wispelaere, 2013). This gives people some support while keeping a strong work incentive to complement the low basic income up to a sufficient income and does not require a large bureaucratic government. Just as a low basic income alone is not enough to live from, the low wage employees get from bad jobs they might have to accept, is not enough without basic income (Widerquist et al., 2013). For the lowest income groups both sources of income support each other.

The literature does not explicitly discuss how a neoliberal basic income should be financed, but it is interesting to think about one comment on the financing. Proposals need a tax increase if the basic income consists of a considerable level, namely higher than the sum of all existing benefits. For government-sceptic people higher taxes are not an option,

leading us to lower basic income proposals where for example we sum all existing benefits and redistribute this equally to all citizens. The OECD (2017) warns that large rises in poverty may occur if such policies are implemented.

Clark and Kavanagh (1996) mention that what they call the 'conservative case' is sometimes criticized by 'conservatives' based on the argument that basic income can diminish labour supply. Proponents of the 'conservative' basic income state that basic income tackles market imperfections and solves the unemployment trap, which increases labour supply (Gilroy, Heimann & Schopf, 2013). In section 1.4 of this paper I discuss all arguments about the effects on labour supply more extensively.

Silicon Valley has a second reason to support basic income, additional to the government-sceptic argumentation of the neoliberals: digitisation and automation. The argumentation on digitisation and automation is sometimes also used in the other angles, but I discuss it here as it is a hot topic in Silicon Valley.

According to the World Inequality Report of 2018 (Alvaredo, Chancel, Piketty, Saez & Zucman, 2017) income inequality has risen in almost all countries in the last decades, although not all at the same speed. Important to note is that especially in the OECD countries the wage shares in the national income of countries decreased since the 1980s (Stockhammer, 2013). One explanation is that digitisation and automation diminish in the first place the number of low skilled jobs in high income countries which leads to a more unequal distribution (Achten, Bouckaert & Schokkaert, 2016). In Silicon Valley inequality is taking such measures that it could lead to social unrest (Freedman, 2016). Basic income is often seen as a solution in Silicon Valley when pointing to digitisation and automation as the causes of the growing inequality, because it creates a decoupling between labour and income (Freedman, 2016). Start-up incubator Y Combinator has even put up its own basic income experiment (Freedman, 2016).

However, Colombino (2015) argues that automation, digitisation and globalisation create gains on a global scale, but that we need a solution for the unequal distribution of those gains. Basic income would offer that solution not only because of the universality of the payment itself but also by the way it is financed. Due to the decrease of wage shares only a tax on labour income to pay social security is not sustainable. At the other hand, putting a tax on technology, like the 'robot tax', sounds attractive but would hinder technological progress (Straubhaar, 2017). Therefore, Straubhaar (2017) argues to put a tax on what is created and not on the process how it is created, implying that the financing of the basic income will be done by all people, including capital owners and shareholders.

The opinion digitisation will lead to significant job destruction is not limited to Silicon Valley. In their book Achten, Bouckaert and Schokkaert (2016) describe how the world may look in 2050: robots and computers have taken over lots of high and low skilled jobs and governments introduced a basic income, giving people the opportunity to reorganize their lives. However not all economists believe that digitisation and automation will lead to a job decrease. Two different argumentations are found in the literature. The first is made by Paul De Grauwe (2017), who argues that often the creative aspect in Schumpeter's theory is forgotten, because the destructive part is much more visible in daily life. As the World Economic Forum published in their Global Information Technology Report of 2013 digitisation leads to job creation although with differences between countries, with the emerging countries benefiting most (Sabbagh, Friedrich, El-Darwiche, Singh & Koster, 2013). Second, some authors doubt that productivity is growing as fast as many think. Kleinknecht (2016) cites the developing countries as one of the reasons for the low

productivity growth of the last decade, namely that labour in these countries is still cheaper than many automation possibilities. Moreover, he argues that structural reforms of the labour market keep productivity low. As these reforms create more flexible labour markets, job turnover is a lot higher. Therefore, companies find it harder to build up the company specific knowledge of their employees, which lowers productivity and keeps the impact of automation on labour demand small (Kleinknecht, 2016). Gordon (2016) shares this doubt and sees the large productivity growth between 1870 and 1970 as something that will not happen again, implying that job destruction through technological progress should not be such a big worry.

1.2.3 Ecologists and green parties

The starting point for many ecologists is the problem of economic growth as they argue that we cannot morally defend the economic growth of an ecologically unsustainable society (Andersson, 2010). Moreover, Andersson (2010) argues that in the world today we no longer need economic growth to foresee in all the material needs of people. Ecologists see a solution in basic income because being supported by it, people can still mean something in society without necessarily all being fully employed (Andersson, 2010). As the price of non-labour time decreases thanks to a basic income, people can take more non-labour time and spend this in a useful way (Bregman, 2014). This will lower both economic growth and pressure on the environment. In addition, a basic income can lead to a solution for the unemployment problem many green parties try to solve. Part of the jobs that become available can be taken by people who were before involuntarily unemployed (Van Parijs & Vanderborght, 2017). If we compare this setting with the 'neoliberal' proposals discussed in the previous section, we see that both want to solve unemployment but in a different way. The neoliberal proposals want everyone to work and reduce the benefits of unemployed people so that they are implicitly forced to work (Widerquist et al., 2013), whereas the 'green' proposals want to share work and let people be voluntarily unemployed (Van Parijs & Vanderborght, 2017).

The argumentation for a basic income has an influence on how ecologists see a 'green' basic income proposal. Although not mentioned by Andersson (2010), a basic income has to be high enough to have a significant impact on growth. If the basic income is too low, people might still need a fulltime job. Moreover, some groups in society are vulnerable to impoverishment if the low basic income goes hand in hand with the removal of most or all current benefits (OECD, 2017).

Such a high basic income resembles the proposals from the liberal-egalitarian angle. Both need higher taxes to keep the proposals budget neutral, but the way they are financed differ. From the ecological point of view, the taxes should have an ecological basis such that the true cost of goods for society is reflected in the price (Arrow, 2004). The problem with eco-taxes is their regressive aspect. Levying taxes on the emissions of greenhouse-gases per family for example, may seem intuitively fair as the polluter pays. However, these taxes are regressive due to the lack of investment capacity of the poor. Therefore, Andersson (2010) argues to redistribute the income from the ecological taxes as a compensating basic income to balance the regressiveness of the taxes.

Another range of proposals made by ecologists are based on the concept of the earth being the property of everyone, which was historically the first argumentation made for a basic income (Van Parijs & Vanderborght, 2017). A basic income is paid to all people by redistributing the rent people pay for the use of natural resources like land (Paine, 2017) or

in a broader interpretation even carbon captive capacity or fresh air (Andersson, 2010). An example of a basic income from natural resources is the Alaska Permanent Fund, which is discussed in section 1.3 (Goldsmith, 2002).

Two comments have to be mentioned regarding the ecological basic income proposals. First, the literature refers to the argumentation that there is only a fixed amount of work to share between citizens, as the 'lump of labour fallacy' (Saint-Paul, 2004). Börsch-Supan (2013) have shown that the low employment rate of older people coming from early retirement policies is positively correlated with the employment rate of young citizens, meaning that work-sharing is not good for overall employment. In the case of the ecological argumentation for a basic income, the lump of labour fallacy is not a problem as lowering economic growth is one of the aims, as long as GDP stays high enough to provide a decent basic income.

Second, there might be more efficient ways to reduce economic growth, for example through the introduction of a working week of 15 hours. Booth and Schiantarelli (1987) argue that a shorter working week probably has negative effects on employment, if there is no complementary policy to lower labour costs. This means that a reduction in growth through lower employment, is cheaper to reach through a shorter working week than by the introduction of a basic income. However, a shorter working week probably also has a lot of other effects that are different from basic income.

In conclusion, we see that all proponents have the main idea of basic income in common but large differences exist. In any case, the proposals from all three angles need empirical evidence to know what the real effect of implementation will be. This can be done either by investigating hypothetical basic income proposals through microsimulation or by conducting experiments in real life. The results from the last technique are discussed in the following section.

1.3 Basic income experiments

Implementing a basic income would be a large change in the social security system of countries. Therefore, it is necessary to know what the effects will be on poverty, inequality and labour supply. One way researchers try to get an idea of these effects is by conducting experiments. In the following part I present some of the experiments and discuss their results, advantages and disadvantages.

One of the older experiments conducted are the negative income tax experiments in North America in the 1970s (Van Parijs & Vanderborght, 2017). Although close to a basic income, a negative income tax has some differences. It can be seen as the net of the benefits and taxes that apply to an individual. Instead of paying a basic income to everyone and also taxing everyone, the government calculates the net of it. This leads to the same effective marginal tax rates and the same distribution of post-tax-and-transfer incomes as with a basic income but will have a different effect on the idea of 'freedom for all' (Van Parijs & Vanderborght, 2017). A big difference between basic income and negative income tax is that the former is paid monthly, as defined in the beginning of this paper, whereas the latter is transferred at the end of the fiscal year. This can be solved by including the negative income tax in the withholding tax. Especially for the lower income part of society this can make a major difference. Important to note also that the researchers of the negative income

tax experiments choose the household as beneficiary of the negative income tax and not the individual as in the definition of basic income (Van Parijs & Vanderborght, 2017). Burtless and Hausman (1978) did research based on the negative income tax experiments in Indiana but found no effect on labour supply.

Start-up incubator Y Combinator is already designing its second basic income experiment, inspired by the growing interest of Silicon Valley in basic income (Freedman, 2016). The first experiment was too small scaled to draw any conclusion. The new experiment will be a five year lasting randomized controlled trial with 3000 people from two states, that are not known yet. The people will be divided into two groups: 1000 people will receive 1000 dollar per month and 2000 people, the control group, will receive 50 dollar per month (Brown, 2017). This experiment fits better to test the effects of basic income than the negative income tax experiments but still has some restrictions. The sample is too small to measure general equilibrium effects and the people who can participate, have to have an income lower than the average income and are between 21 and 40 years old (Brown, 2017).

Although not meant as an experiment, the Alaska Permanent Fund should be mentioned. Since 1982, all people residing in Alaska for at least one year receive a yearly cash dividend from this fund (Van Parijs & Vanderborght, 2017). The height of the dividend differs every year as it is calculated as '10 percent of the average returns during the last 5 years, spread out evenly among the current year's applicants' (Jones & Marinescu, 2018, p.6). In recent years, every recipient got approximately 2000 dollar. Jones and Marinescu (2018) find no effect on labour supply on the extensive margin after an implementation of a basic income, but they do find an increase in the share of part-time workers, which they explain by a negative income effect. One of the big advantages of the Alaska Permanent Fund is that it enables researchers to investigate the effect of the implementation of a basic income on the *whole* society, i.e. general equilibrium effects, as all Alaskan residents get the dividend (Jones & Marinescu, 2018). Jones and Marinescu (2018) use the general equilibrium effects to explain the absence of an effect on the extensive margin of labour supply. They argue that the dividend increases consumption which leads to a higher labour demand. This is not a straight forward explanation as in the general equilibrium it would not matter whether the citizens, the government or the oil companies spend the money. By separating the tradable and the non-tradable sector, Jones and Marinescu (2018) find that a positive general equilibrium effect in the non-tradable sector cancels out the negative income effect on labour supply, whereas in the tradable sector they see a decrease in employment and an increase in part-time work. The use of these general equilibrium effects answers the comment of Widerquist (2006) who states that basic income experiments cannot show effects on wages and labour equilibrium because only a part of society gets the basic income.

As a basic income stays a popular topic in the literature, more experiments are conducted recently. Initiatives like those in India in 2011 (Standing, 2013) and those in Kenya (Blackwell, 2017) give an insight on what the effects of a basic income will be in developing countries. The relevance for Belgium however is small because these experiments are not conducted against a framework of a generous social security system as is the case in developed countries like Belgium.

More relevant for Belgium are the experiments in Finland and the Netherlands. In Finland the experimental group consists of 2000 people originally receiving an unemployment benefit, which is replaced in the experiment by a basic income of 560 euro per month

(McFarland, 2017). The amounts of the unemployment benefit and of the basic income are approximately the same. The Finnish experiment will last until the end of 2018 and will first be evaluated before extending it (Reynolds, 2018). The Dutch experiments focus on incentivizing unemployed people to return to the labour market. Depending on which city and treatment group, participants see reintegration requirements disappear, they can apply on a reintegration service or they can keep their income they earn on top of welfare benefits until a certain maximum (McFarland, 2017). Similar experiments have been conducted in Barcelona and Ontario. The Barcelona experiment divides the 2000 participating households into an equal control and treatment group. All treatment group households get a cash transfer of minimum 100 euro up to 1676 euro, depending on their financial status and the size of the household (McFarland, 2017). A part of the households has to participate in social programs, while for the other part of the treatment group the cash transfer seems more like a basic income, as it is not dependent on willingness to work or willingness to participate in some kind of program. The experiment in Ontario does not satisfy all characteristics of a basic income because it is paid to the household and dependent on other income (McFarland, 2017). Moreover, only the lower income part of the population can participate to the experiment.

Unfortunately, results for the experiments in Finland, the Netherlands, Barcelona and Ontario are not yet available as they only started in 2017 (McFarland, 2017). This makes it impossible to analyse or draw any conclusions on the effects of a basic income on labour supply for Belgium based on experiments. On top of that, most experiments, for example the Finnish experiment, have a limited duration so that long term effects cannot be investigated. An exception is the Alaska Permanent Fund, which is a permanent program. Moreover, all experiments are small scaled and mostly have a few thousand participants. Often some conditionalities remain, making it not really a basic income: only low-income participants in the Ontario experiments and in the Y Combinator experiment, the height of the basic income depends on the financial status of participants in the Barcelona experiments and people already receiving an unemployment benefit as participants in the Finnish experiments. All these restrictions limit the possibilities to draw conclusions and make other ways of evaluating basic income proposals, like microsimulation, necessary.

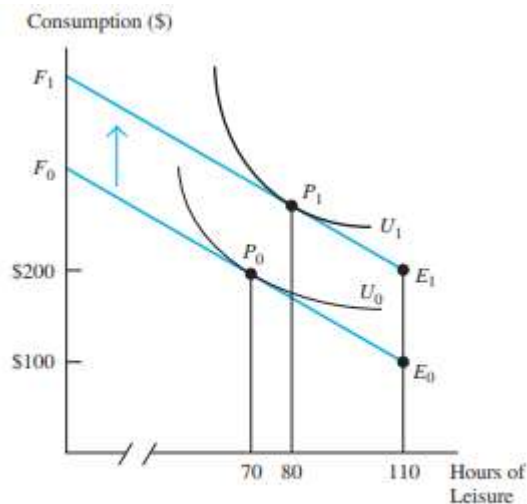
1.4 Effects on labour supply

The effects basic income might have on labour supply during and after implementation are an important part of the debate on basic income. Opponents argue that basic income will lead to a drop in labour supply and therefore will be unsustainable, whereas proponents show that the unconditionality makes basic income the less distortive benefit (Ravallion, 2017). After summarizing the theoretical arguments, I give an overview of the different effects found based on microsimulation and experiments. To conclude I list a number of reservations on whether or not it is possible to measure the labour supply effects before actually implementing a basic income.

From a theoretical point of view, Ravallion (2017) states that the only effect of a basic income would be a negative income effect. I analyse this statement with the 'neoclassical model of labour-leisure choice' as described by Borjas (2016, p.27), assuming that leisure is a normal good. In figure 1 we see the indifference curves and the budget lines of an individual for the two 'goods' consumption and leisure. Utility increases if indifference curves move to the upper right. The original equilibrium is P_0 where the slope of the budget

line E_0-F_0 , i.e. the wage rate, equals the slope of the indifference curve U_0 , i.e. the marginal rate of substitution. We now consider the introduction of a basic income as an increase in non-labour income. The increase in non-labour income from E_0 to E_1 , or a basic income of $E_1 - E_0$ euro, shifts the budget line E_0-F_0 upwards to the new budget line E_1-F_1 , without changing the wage rate. The indifference curve U_1 is tangent to the new budget line E_1-F_1 in the new equilibrium P_1 . The hours worked in the new equilibrium P_1 are lower than in the original equilibrium P_0 due to a negative income effect. If leisure is not a normal good, the hours worked can also be higher than in the original equilibrium.

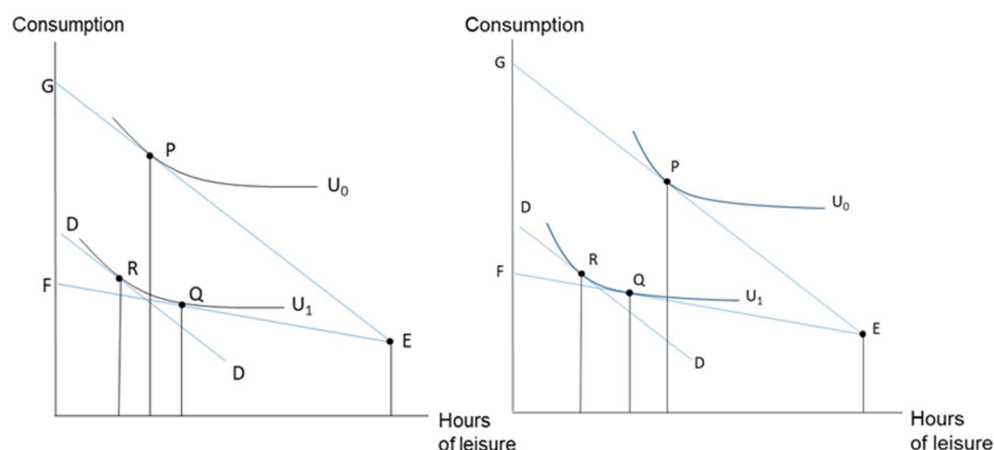
Figure 1: Effect of an increase in non-labour income (Borjas, 2010)



(a) Leisure Is a Normal Good

Basic income has another impact on labour supply, be it an indirect one and dependent on how it is financed. Both substitution and income effect will have an influence on labour supply, if a basic income is introduced that needs additional funds and these are retrieved from an increase in personal income tax. In figure 2 an increase in personal income tax is seen as a decrease in wage rate. In both panels the budget line shifts from EG to EF because leisure becomes relatively less expensive. The DD curve decomposes the total effect on labour supply into an income and a substitution effect. As leisure becomes less expensive the substitution effect QR has a negative impact on labour supply. On the other hand, workers earn less, so that the income effect PQ increases labour supply. The total effect on labour supply depends on the shape of the utility function of the worker, which determines whether the substitution or the income effect dominates. In the left panel of figure 2 the substitution effect dominates and labour supply decreases, while in the right panel the income effect dominates so labour supply increases. The OECD (2017) argues that a basic income scheme would need a rise in progressive taxes and would therefore create disincentives to work. In case of a progressive tax system the budget line has kinks where workers jump to a higher tax bracket when their income increases.

Figure 2: Effect of an increase in personal income tax (Borjas, 2010)



Note: own figure based on Borjas, 2010

As mentioned in paragraph 1.1, two important aspects of basic income are unconditionality of willingness to work and unconditionality of income. Both have an impact on labour supply. First, unconditionality of willingness to work eliminates the employment trap because it makes employees able to strive for a job they really like, with better working conditions and higher wages (Van Parijs & Vanderborght, 2017). The elimination of the employment trap reduces labour supply. Second, unconditionality of income eliminates the unemployment trap, as the high marginal tax rates at the extensive margin decrease. When unemployed people start working they lose their unemployment benefit, leading to high implicit tax rates on the first euro that they earn. Eliminating the unemployment trap increases labour supply. The height of the total effect on labour supply depends on how important both traps are before the implementation of a basic income.

Some additional effects on labour supply and even on labour demand should be mentioned. Colombino (2015) notices that the introduction of a basic income leads to more investment in training, making employees more flexible to switch jobs. This might have an influence on labour demand because in a changing labour market due to globalisation flexibility is an important aspect for employers in order to stay competitive (Colombino, 2015). On top of that, the 'floor to stand on' as called by Van Parijs and Vanderborght (2017) might create an extra motivation for entrepreneurship, which increases self-employment.

Based on theory, it is hard to know the total effect on labour supply. Some authors, like Colombino (2015) try to estimate the behavioural effects empirically by using a microeconomic model of household labour supply. As Van Parijs and Vanderborght (2017) notice the tax elasticity of labour supply is the crucial element to know, defined as what the effect is of a change of one percent in marginal tax rate on the amount of hours worked. On top of this intensive marginal tax rate, the marginal tax rate at the extensive margin is important, because, as mentioned before, this influences labour supply through the unemployment trap. Moreover, Widerquist (2006) links a decrease in labour supply due to basic income with a possible increase in wages. Hence, the government can decrease the tax rate if basic income is paid by a personal income tax. Therefore, data on labour demand elasticity should be added to a microsimulation model.

Starting from the data of the negative income tax experiments in Indiana, Burtless and Hausman (1978) find no effect on labour supply when the guaranteed income and the tax

rate are set high enough. Colombino (2015) finds no difference in labour supply, whereas other papers do find an effect of basic income. In the Indian pilot experiments for example labour supply goes up, although partially due to an increased importance of own-account labour relative to wage labour (Standing, 2013). In the Netherlands negative effects on labour supply occur in a study with a basic income of 687 euros (Van Parijs & Vanderborght, 2017).

However, Van Parijs and Vanderborght (2017) are clear that there are too many restrictions on the negative income tax experiments to draw any conclusions about the effects of a basic income on labour supply. For instance, a basic income might have a positive effect on labour supply thanks to the removal of the poverty trap which might not be the case with a negative income tax. Both benefit designs remove high extensive marginal tax rates but according to Van Parijs and Vanderborght (2017) the stigmatisation and complexity of means-tested benefits are also present in a negative income tax scheme as payments are only made at the end of the fiscal year. Moreover, in the negative income tax experiments unemployed people and people receiving social security were not included (Widerquist, 2006).

A general criticism for all experiments is that they are small scaled and therefore not able to capture the effect that the introduction of a basic income in the whole society would have on wages and labour supply (Widerquist, 2006). The time span of most experiments is too short and mostly only a part of the population is included (Van Parijs & Vanderborght, 2017). Markets and especially labour markets might be slow to adapt, so it can take a while before wage and labour supply changes appear in research results. An experiment answering these concerns is the Alaska Permanent Fund, because the whole community receives a basic income. As mentioned above, no effects on labour supply were found (Jones & Marinescu, 2018). An additional disadvantage of some experiments is that funding comes from 'outside', implying that there is no increase in taxes.

Two additional notes should be made here. The first is made by Colombino (2015) who highlights that labour supply effects can be different depending on the tax system used to finance basic income. A progressive tax might have some specific advantages but has higher negative effects on labour supply than a flat tax.

The second note is whether we should care about labour supply effects in the first place. Some proponents of basic income, for example ecologists, explicitly hope to see a decrease in labour supply as this would relax the pressure on the environment (Andersson, 2010). While Colombino (2015) finds no effect on labour supply, he finds a decrease in poverty and an increase in social welfare of unconditional basic income compared to a conditional basic income. Therefore he emphasises that calculations on labour supply should be complemented with a measure of social welfare because effects on labour supply can be negative due to an income effect, without being bad for society. This is because leisure is a normal good, so an increase in leisure is positive for social welfare.

2 Microsimulation

The second large part of this paper investigates basic income specifically for Belgium in an empirical way. First, I explain the use of the microsimulation model EUROMOD, the advantages and disadvantages and how it is used in the analysis. Next, I summarize the current tax benefit system, as this is used as reference scenario for the basic income proposals. Thereafter, I investigate the Belgian scenario more closely. I explain the characteristics of the seven proposals that I test. In the last two parts I discuss and describe the results of the microsimulation. I analyse the results on budgetary effects, inequality and poverty measures, including the analysis of some vulnerable subgroups as pensioners, women, singles with children and disabled people. Finally, I calculate the marginal effective tax rate and the participation tax rate for a reference individual to investigate the effects on labour supply.

2.1 Microsimulation with EUROMOD

Experiments are not easy to conduct and it is not always possible to derive good conclusions on the implementation of basic income based on experiments. In my analysis of the effects of the implementation of a basic income in Belgium, I use the microsimulation model EUROMOD. This tax-benefit microsimulation model contains the current rules of the tax and benefit systems from all 28 European member states including rules at the European level (Immervoll & O'Donoghue, 2001). Starting from the existing regulation, I implement different basic income proposals and analyse the effects.

Microsimulation has some general advantages and disadvantages. The first advantage is the quick and relatively easy accomplishment of microsimulation (Sommer, 2016). The results of microsimulation are known 'on the spot', whereas researchers first have to design and implement experiments before they can even start to collect and analyse data. The second advantage is that we can capture the heterogeneity and the real structure of the population (Scutella, 2004). The EU-SILC, the dataset used in EUROMOD, captures the real structure of the population by the weights assigned to the demographic characteristics (Arora et al., 2015). Finally, we can examine the effects of real or hypothetical policy changes while we hold everything else constant, meaning that microsimulation does not have to rely on the actual implementation of a tax or benefit change (Immervoll & O'Donoghue, 2001). Especially in the case of basic income testing, where actual implementation is controversial and expensive for academics, using hypothetical policies is an important advantage. Moreover, comparing different changes in taxes and benefits makes it possible to conduct sensitivity analysis (Immervoll & O'Donoghue, 2001).

A drawback of EUROMOD is that it does not capture effects on labour supply, because it is an arithmetic model. These models make the assumption that no individual behavioural changes occur (Bourguignon & Spadaro, 2006). Bourguignon and Spadaro (2006) argue that this is a valid assumption if some conditions are met, namely only marginal changes in the individual budget constraint occur, we have perfect markets and all individuals optimize their budget constraint. A basic income can possibly have more than 'marginal changes' in the budget constraint of agents so the results of this microsimulation should be interpreted carefully. Especially for the budgetary analysis, not taking into account behavioural changes can have an influence, as the argumentation of Bourguignon and

Spadaro for evaluating individual welfare does not hold for budgetary evaluation (Bourguignon & Spadaro, 2006).

Sommer (2016) states that effects on labour supply can be captured if additional information on the changes in individual behaviour is added. Such models are called behavioural microsimulation models by Bourguignon and Spadaro (2006). For the estimation of basic income effects, this is an interesting aspect as opponents and proponents of basic income do not agree on the effects on labour supply (Van Parijs & Vanderborght, 2017). Even with information on individual behaviour Immervoll and O'Donoghue (2001) argue that a lot of uncertainty on labour supply effects remains, for example on the wage unemployed people would get if they start working.

Mainly three changes are made in the current benefits and taxes in the microsimulation of this paper. To start, I introduce a basic income, which I do not tax so the basic income amounts are net benefits. Therefore I add and subtract all other benefits and taxes from gross income before distributing basic income. Second, I put some or all existing benefits to zero, depending on the proposal. Finally, some proposals have a flat tax on top of the existing taxes and social insurance contributions. I calculate the flat tax on taxable income, after the calculation of the personal income tax and capital income tax. I do not change or eliminate any of the existing taxes.

2.2 The reference scenario

Before we look at the different basic income proposals and test their effect on poverty, inequality and government expenditures, we look at the reference scenario. Merz (1994) indicates the importance of the right reference scenario or baseline because the evaluation of a policy can be totally different when using another baseline. The reference scenario for this paper is the current tax and benefit system in Belgium as implemented in EUROMOD. For Belgium, EUROMOD uses the dataset from the Belgian contribution to the European Union Statistics on Income and Living Conditions (EU-SILC), a survey conducted in the 28 European countries plus Iceland, Norway and Switzerland (Arora et al., 2015). In each country a sample is taken from persons aged older than 16 years which gives information on living conditions, income and social exclusion (Arora et al., 2015). EUROMOD uses the EU-SILC conducted in the second half of 2015, examining the fiscal year 2014. The Belgian sample consists of 6006 households or 14145 individuals (Decoster, Perelman, Vandelannoote, Vanheukelom & Verbist, 2018).

When we look at the following numbers, there might be some difference with the actual expenditures, as they are based on the EU-SILC sample and some are simulated data by EUROMOD. The total amount of benefits for the income year 2014 is 66.5 billion euro. The largest part (76.5 percent) goes to pensions and healthcare benefits, costing each year nearly 51 billion euro, including early retirement benefits and disability benefits. Other benefits are split into means-tested and non-means-tested benefits. Means-tested benefits represent 11.1 percent of the total benefits budget, with the largest shares going to child benefits and income support, respectively 6.0 and 1.1 billion euro per year. The rest of the budget goes to educational benefits, consisting of grants and scholarship (199.3 million euro per year) and to housing benefits (67.6 million euro per year). Non-means-tested benefits count for 12.44 percent of the yearly budget of all benefits, mainly spent on unemployment benefits (7.5 billion euro per year). Smaller shares are parental leave of

620.3 million per year, birth allowances of 113.8 million euro per year and benefits for home owners and people living in Brussels of 25.9 million euro per year.

In table 1 the percentage of individuals per decile who receive benefits are shown for the main non-means-tested benefit, namely unemployment benefits, the main means-tested benefit, namely child benefits, and public pensions including disability benefits. Column four shows the percentage of children in each decile. The deciles are calculated based on the disposable household income, which is defined as the sum of all income in the household without applying an equivalence scale. Each decile represents ten percent of the individuals. As we would expect, the percentage of individuals receiving unemployment benefits is higher in the lowest deciles of household income. For the child benefits we see a different distribution. The percentage of individuals who get child benefits is higher for individuals with high household income than for individuals with low household income, except for the tenth decile. The proportion of children per decile causes this pattern: higher deciles have higher shares of children, except for the tenth decile. For public pension beneficiaries the same trend occurs as for the unemployment benefits, in the lowest deciles of household income, higher shares of individuals receive public pensions.

The total amount of taxes paid for the income year 2014 is 107.2 billion euro for the taxes implemented in EUROMOD. This includes standard taxes as the capital income tax, the national income tax and the advanced levy on immovable property, together with the social insurance contributions for employees, employers and self-employed. Social contributions make up 58.75 percent of all taxes or almost 63 billion euro.

I use the Gini-coefficient as inequality measure, which is 0.2273 for 2014 with the existing tax-benefit system and based on the simulated equivalised disposable household income. Therefore, the OECD modified equivalence scale is used, assigning a weight of one to the head of the household, 0.3 to children younger than 14 and 0.5 to all other people in the household older than or equal to 14 years old (Chanfreau & Burchardt, 2008).

The simulated headcount poverty rate in Belgium is 14.50 percent, which is the percentage of people below the poverty line. The poverty line used is the one from the EU-SILC 2015, namely 1115 euro and represents 60 percent of the median income, based on the equivalised disposable household income (Belgische Federale Overheidsdiensten, 2017). Another way to define the poverty line is to calculate 60 percent of median income from the sample in EUROMOD. This gives us a slightly different threshold of 1022.81 euro per month and a poverty rate of 10.84 percent.

Table 1: People receiving unemployment benefits, child benefits and public pensions per decile, in % of the population (EU-SILC 2015)

Decile	% receiving unemployment benefits	% receiving child benefits	% of children	% receiving public pensions
1	18.05	6.16	6.68	49.03
2	10.19	9.66	11.38	40.63
3	7.17	11.31	16.52	35.09
4	7.10	12.61	19.48	32.72
5	7.95	13.42	19.24	29.00
6	6.28	15.14	23.20	19.36
7	4.83	17.67	27.34	11.85
8	3.87	18.22	29.11	9.81
9	4.96	19.19	29.94	7.18
10	5.08	16.57	24.15	6.76
Total	7.55	13.99	20.70	24.15

Note 1: The deciles are based on the disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

2.3 Basic income proposals

Table 2 gives an overview of the basic income proposals I test in EUROMOD. I divide the proposals into three groups. The first group, proposal 1a and 1b, consists of the neoliberal proposals, described in section 1.2.2 of the literature review. They have in common that the level of the basic income equals the sum of all current benefits equally divided over the total population, making an exception for children and elderly in the second proposal. 'All current benefits' includes unemployment benefits, public pensions, disability benefits, early retirement benefits, housing benefits, income support, parental leave, maternity leave, scholarships, child benefits and birth allowances. I exclude benefits in kind like company cars and meal vouchers as the OECD (2017) does in its microsimulation, which means that benefits in kind are given on top of basic income. Based on the data from EU-SILC 2015, this proposal can provide a basic income of 502.38 euro to each citizen, financed by current taxes as there is no change in expenditures. EUROMOD does not calculate the possible savings due to the elimination of complex administrative bureaucracy.

Whereas proposal 1a treats all citizens equal, proposal 1b distinguishes between minors, adults and pensioners. Minors only receive 50 percent of the basic income level of adults while pensioners get 1.25 times the basic income of adults. Therefore, proposal 1b can have an effect on the government deficit as the proposal implies no tax increase. As the only conditionality is set on age, the proposal is not more reactive because one cannot change its age.

The second group of proposals, proposal 2a and 2b, has a basic income level of 1115 euro, representing the official 2016 poverty line in Belgium (Belgische Federale Overheidsdiensten, 2017). With this higher amount the proposal comes closer to the liberal-egalitarian framework with 'full' basic income schemes that give people a lot of freedom to make their own choices (Van Parijs & Vanderborght, 2017). However, proposal 2a and 2b still erase all existing benefits. The differentiation of basic income between adults, minors and elderly resembles proposal 1b but gives only 30 percent of the amount to children and gives the same amount to adults as to elderly. The 30 percent refers to the modified equivalence scale of the OECD (Chanfreau & Burchardt, 2008) which states that children only need 30 percent of the income of an adult, where they define children as minus 14 years old. I define children in this proposal as minus 18. By omitting the higher basic income for elderly people, a higher importance is put on saving for a private pension. Proposal 2a allows the government budget to go into deficit, showing the total amount needed from the flat tax introduced in proposal 2b to make the proposal budget neutral. The current Belgian personal income tax is progressive, because of a tax exemption and increasing marginal tax rates (EUROMOD). The flat tax introduced in the basic income proposals, does not have a tax exemption. However, in combination with a basic income the tax system still has increasing average tax rates, which shows the progressivity of the tax system.

The third group of proposals, proposal 3a, 3b and 3c, combines the first and the second one, again creating proposals that fit into the liberal-egalitarian framework in the sense that they provide a partial but meaningful basic income together with some current benefits that stay in place to support vulnerable groups (Van Parijs & Vanderborght, 2017). The height of the basic income is set on 502.38 euro per month, the same as in the first group of proposals. In proposal 3a all citizens get the same amount, whereas in proposal 3b and 3c I make a differentiation between minors, adults and pensioners. Minors get 50 percent of the amount of adults and pensioners get 222.94 percent, bringing them up to an amount of 1115 euro. The benefits that stay in place are benefits to compensate people with a permanent disability, whether caused by a work-related accident or not, temporarily or long-lasting. I also keep grants, scholarships and other educational help to pupils and students and benefits for homeowners and people living in Brussels. Most of the benefits dropped are income support policies (Colombino, 2015).

Proposal 3a and 3b allow the government to go into deficit, whereas proposal 3c creates a budget neutral variant of proposal 3b using a flat tax. Similar to proposal 2b, I find the height of the flat tax through trial and error.

I do not test green proposals as discussed in the literature review in the sense that ecologists want a high basic income paid by green taxes. Proposal 2a and 2b fit into the green framework in terms of the height of basic income but green taxes are not simulated because of lack of information in the dataset. Moreover, green proposals hope to solve the unemployment problem by sharing work, which implies a change in labour supply and this is not captured in the microsimulation by EUROMOD.

Table 2: Basic income proposals (own proposals)

	Prop 1a	Prop 1b	Prop 2a	Prop 2b	Prop 3a	Prop 3b	Prop 3c
Level of BI for:	€502.38	€502.38	€1115	€1115	€502.38	€502.38	€502.38
X =							
Minors	X	0.50X	0.30X	0.30X	X	0.50X	0.50X
Adults	X	X	X	X	X	X	X
Pensioners	X	1.25X	X	X	X	2.22X	2.22X
Current benefits	Disappear	Disappear	Disappear	Disappear	Partially disappear	Partially disappear	Partially disappear
Change in taxes	No	No	No	Flat tax	No	No	Flat tax
Effect on government deficit	No	Yes	Yes	No	Yes	Yes	No

2.4 Results

2.4.1 Budgetary effects

I divide the evaluation of the basic income proposals into four parts: budgetary effects, inequality, poverty and work incentives. The budgetary effects are the simplest to evaluate as they are largely predictable before even simulating the proposals. Table 3 shows the budgetary effects for all the proposals in thousands of euros, except for the last column which is expressed in percentage of Belgian gross domestic product of 2014, which is 400 billion euro in current prices (NBB, 2018). Proposal 1a, 2b and 3b are by definition budget neutral but small deficits and surpluses occur due to rounding errors. The differentiation between minors, adults and elderly causes a surplus of 3.6 billion euro in proposal 1b, which leads to a lower total budget for basic income than in the parallel proposal without differentiation, proposal 1a. Proposal 2a needs 60 billion euro in surplus of the 66 billion euro from the current benefits to be budget neutral, which equals a flat tax of 48 percent in proposal 2b on taxable income, on top of the current taxation system. The deficit of proposal 3a equals the expenditures on the benefits that are not eliminated, as the basic income uses the budget of all current benefits. Proposal 3b creates a deficit of 16 billion euro, which implies a flat tax of 12.2 percent in proposal 3c on the taxable income, on top of the current taxation system, to make the proposal budget neutral.

In the current system benefits are more than 16 percent of Belgian GDP of 2014 in current prices and this stays quite the same for proposal 1a, 1b and 3a. The sum of benefits in proposal 3b and 3c equal 21 percent of GDP in current prices, due to their higher amount of basic income and the benefits that stay in place. The share of benefits in Belgian GDP of proposal 2a and 2b is raising to almost 32 percent.

Table 3: Budgetary effects, in millions of euros (EU-SILC, 2015)

	Sum of basic income	Sum of other benefits	Sum of flat tax	Budget surplus(+)/ deficit(-)	Expenditures as % of Belgian GDP of 2014 (in current prices)
Baseline	0	66,487.44	0		16.62
Prop 1a	66,487.67	0	0	-0.23	16.62
Prop 1b	62,888.63	0	0	3,598.80	15.72
Prop 2a	126,179.96	0	0	-59,692.53	31.54
Prop 2b	126,179.96	0	59,698.76	6.24	31.54
Prop 3a	66,487.67	6,806.70	0	-6,806.93	18.32
Prop 3b	75,620.12	6,806.70	0	-15,939.39	20.60
Prop 3c	75,620.12	6,806.70	15,971.66	32.28	20.60

Note: The results are own calculations using EUROMOD.

2.4.2 Effects on inequality

The second criterion on which I evaluate the proposals, are several measures of inequality. A first way to look at inequality is to calculate the Gini coefficient, which is a summary statistic for inequality commonly used (Atkinson, 1970). The Gini coefficient is calculated as two times the covariance between the equivalised disposable household income and its cumulative distribution function, divided by the mean equivalised disposable household income and is higher when an income distribution is more unequal (Scutella, 2004). Table 4 shows the Gini coefficient for the baseline and the basic income schemes and the increase in the Gini coefficient proportional to the baseline. Proposal 1a, 1b and 3a lead to a substantial increase in the Gini coefficient, respectively an increase of 33, 29 and 25 percent. Proposal 2a, 3b and 3c do not change a lot compared to the baseline scenario. Only proposal 2b creates a significant decrease in the Gini coefficient of 38 percent.

Table 4: Gini coefficients (EU-SILC 2015)

	Baseline	Prop 1a	Prop 1b	Prop 2a	Prop 2b	Prop 3a	Prop 3b	Prop 3c
Gini	0.2273	0.3015	0.2940	0.2281	0.1410	0.2834	0.2339	0.2123
% increase relative to the baseline		32.64	29.34	0.35	-37.97	24.68	2.90	-6.60

Note: The results are own calculations using EUROMOD.

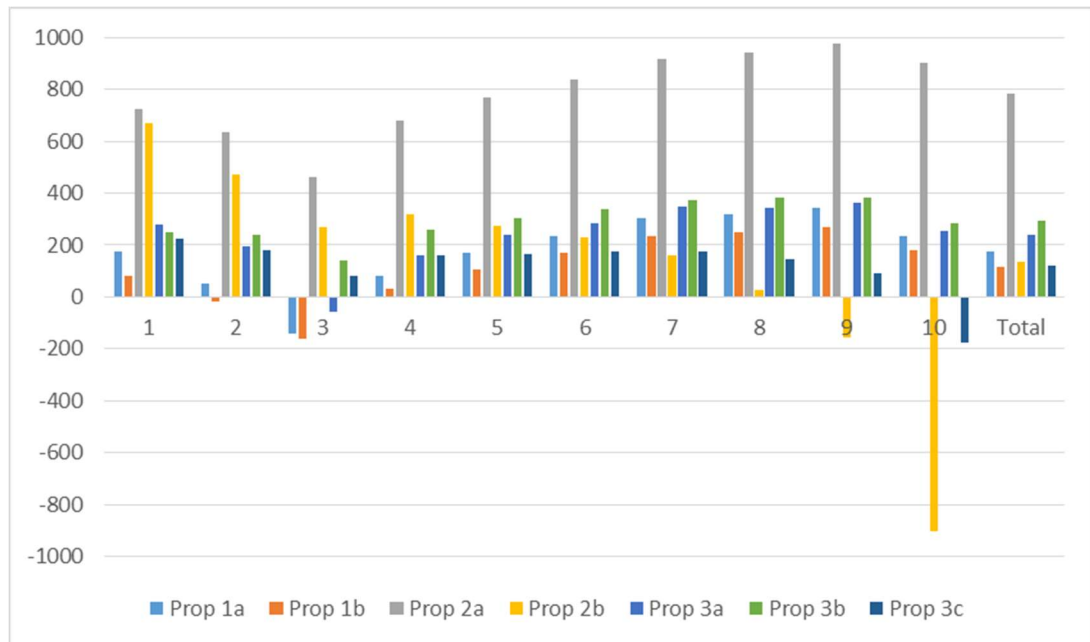
A second way to look at inequality is drawing the kernel density estimation of the income distributions and cumulative distribution functions. Table 9 in appendix 1 shows the income distribution per decile for the equivalised disposable household income for each proposal. Figure 10 to 16 in appendix 2 show the kernel density estimation of the income distributions for the seven proposals with an Epanechnikov kernel, relative to the kernel density estimation of the reference scenario. The bandwidth is 22.64, which is the optimal bandwidth estimated by Stata. Figure 17 shows the cumulative distribution function of the population

for the equivalised disposable household income and figure 18 zooms in on the bottom part of the income distribution of figure 17.

The kernel density estimation of the reference scenario resembles the typical bell-shape of an income distribution with the top at 1500 euro, while the basic income disturbs the bell-shaped income distribution. The kernel density estimation of proposal 1a, 1b and 3a have almost the same shape: a high density from 500 until 1000 euro, a lot lower density from 1000 until 1500 euro and the top of what is left of the bell-shape between 2000 and 2500 euro. The high density from 500 until 1000 euro is also visible in figure 18 where proposal 1a, 1b and 3a have higher cumulative distribution for that part of the income distribution than the other proposals. Proposal 3b and 3c have a density that is closer to the bell-shape of the reference scenario but with two large spikes around 1000 and 1500 euro and the top that lies just over 2000 euro. Proposal 2a and 2b have a combination of the previous described shapes. Figure 17 shows that the cumulative distribution function of proposal 2b is earlier close to 100 percent than the cumulative distribution functions of the other proposals. This gives an indication that the income distribution of proposal 2b is more equal, as its cumulative distribution function starts increasing later than most proposals and reaches the upper bound earlier. Figure 17 also tells something on welfare: there is no first-degree stochastic dominance as the cumulative distribution functions of income cross between the lowest income and the income where all cumulative distribution functions have reached 100 percent (Atkinson, 1992).

A last way to compare the proposals based on their income distribution and inequality is calculate the gains and losses for the equivalised disposable household income. Table 10 in appendix 3 and figure 3 below show the mean gains and losses for one month per decile of equivalised disposable household income. In general, the gains are highest around the seventh, eighth and ninth decile. Especially proposal 2a has large gains and a total average gain of almost 800 euro. Proposal 2b is the only proposal with a decreasing trend, distributing gains to the lowest deciles and losses to the richest deciles. Remarkably, for all proposals the third decile has the lowest gains or highest losses, except for proposal 2b.

Figure 3: Mean gain/loss equivalent disposable income per decile, in euro (EU-SILC, 2015)



Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Table 11 till 17 in appendix 4 contain the distribution of the gains and losses per proposal, divided into deciles of the mean gains and losses. The second and third column are respectively the mean equivalised and the mean non-equivalised disposable household income per month per decile. In proposal 1a, 1b, 2a, 3a and 3b the lowest gains go to the lowest mean equivalised disposable household income groups, whereas the higher gains go to the higher income groups. In proposal 2b and 3c, we do not see this trend. The fourth column of table 11 is the mean gain or loss per decile. The fifth and the last column contain respectively the percentage of pensioners and women per decile. Pensioners are mainly present in the lowest three deciles, except for proposal 2b where they have quite high shares up to the fifth decile. For women, we do not see much difference across the deciles. Proposal 1a, 1b, 3b and 3c have slightly higher proportions of women in the second decile, but overall gains and losses are quite equally distributed between men and women.

2.4.3 Effects on poverty

Basic income changes the social security system from a targeted to a uniform system. The OECD (2017) argues that this probably changes poverty. The effect on poverty is measured by the headcount poverty rate, defined as the percentage of individuals below the poverty line, and is compared with the headcount poverty rate in the current system (table 5). The poverty line is defined as 60 percent of the median equivalised disposable household income, leading to two possible interpretations. The first option is to use the threshold of 1115 euro as presented by the EU-SILC for 2016 (Belgische Federale Overheidsdiensten, 2017). The second option is to calculate the 60% of the median equivalised disposable household income for each proposal and use this as threshold, as I do in the third row of table 5. We see substantial higher poverty rates with the second definition of the poverty

line compared to the first definition, except for the baseline where we see a decrease of 3.66 percentage points. The difference between the two poverty rates in the baseline is because the first definition uses the EU-SILC on the income year 2016 while the second definition uses the EU-SILC on the income year 2014. The difference in the two poverty rates for the basic income proposals is due to the increase of the median income, which directly affects the relative poverty line.

We now focus on the poverty rates calculated with the poverty line of 1115 euro. Proposal 2a and 2b are the only basic income proposals that significantly reduce poverty compared to the reference scenario, with respectively 59 and 83 percent. Proposal 3b and 3c keep the poverty rate almost constant, while proposal 1a, 1b and 3a increase the poverty rate substantially.

Opponents of basic income often argue that a basic income would push people into poverty, especially some vulnerable groups like elder people and single parents with children (OECD, 2017). Therefore table 6 analyses the poverty rate of men and women and three possibly vulnerable groups: singles with children, pensioners and sick or disabled people. A first group consists of all single parents with children. The poverty rate of this group is 35.31 percent in the baseline, which is more than twice the average poverty rate. The relation between the poverty rates in proposal 1a and 1b on the one hand and proposal 3a, 3b and 3c on the other hand is remarkable. Proposal 1b is almost the same as proposal 1a except for the lower basic income given to children. The same holds for proposal 3b/3c compared to proposal 3a. This seems to have an impact on single parents with children, as poverty rates for this group are higher for proposal 1b, 3b and 3c compared to the parallel proposal 1a and 3a. Proposal 2a and 2b lead to a large decrease in poverty rate, which is in line with the effect of these proposals on the average poverty rate.

A second group of vulnerable people are pensioners. I expect poverty rates to increase significantly if basic income is not set high enough, because all proposals eliminate old age pensions and early retirement benefits. The poverty rates in table 6 prove that proposal 1a, 1b and 3a do not sufficiently compensate elderly for the loss of their pension, leading to poverty rates up to 79.48 percent. Proposal 3b and 3c assign a higher basic income to pensioners, but still push the poverty rate up to respectively 26.77 and 25.70 percent, which is more than 2.5 times higher than the baseline poverty rate for pensioners.

In the literature review I mentioned that basic income can have emancipatory effects for women and can give them more freedom in choosing what to do with their lives. Therefore it is important to know what the effects are on female poverty rates and whether women are worse or better off than men in the different proposals. In the baseline female poverty rate is 1.23 percentage points higher than male poverty rate, which is a difference of almost 17 percent in terms of the male poverty rate. Proposal 2b is the only proposal that does not increase the gap in poverty rate between men and women and even leads to a slightly higher poverty rate for men. For all other proposals the gap between male and female poverty rate increases to more than 17 percent and even 31 percent for proposal 2a, which we should nuance as the poverty rate for that proposal is still much lower than for the other proposals.

Finally, disabled people are investigated, because people in this group have already a considerably higher risk to end up in poverty in the current system (34.18 percent). Proposal 3a, 3b and 3c are the only proposals that keep the benefits for sick and disabled people. Hence poverty rates for these proposals lie about three times lower than in the

baseline. Even proposal 2a and 2b have substantially lower poverty rates than in the baseline. Proposal 1a and 1b cause problems for disabled people as poverty rates jump up to 70 percent, due to the low basic income without any other compensation.

Table 5: Poverty rate for different poverty lines, in % of the population (EU-SILC, 2015)

Poverty line:	Baseline	Prop 1a	Prop 1b	Prop 2a	Prop 2b	Prop 3a	Prop 3b	Prop 3c
€1115	14.50	27.88	29.13	6.00	2.53	23.23	13.98	14.15
60% of median income	10.84	30.30	30.14	25.19	10.43	25.87	17.67	16.24
Poverty line in €	1022.8	1240.5	1179.6	1583.4	1188.8	1275.7	1242.4	1142.3

Note: The results are own calculations using EUROMOD.

Table 6: Poverty rate for singles with children, pensioners, women, men and disabled, in % of the subpopulation (EU-SILC, 2015)

	Baseline	Prop 1a	Prop 1b	Prop 2a	Prop 2b	Prop 3a	Prop 3b	Prop 3c
Singles with children	35.31	32.89	44.55	6.34	7.43	25.83	37.08	37.08
Pensioners	9.73	79.48	76.66	20.69	5.65	76.99	26.77	25.70
Women	15.10	30.06	31.38	6.78	2.51	25.13	15.21	15.31
Men	13.87	25.63	26.80	5.19	2.55	21.27	12.71	12.96
Disabled	34.18	71.49	74.23	14.70	10.41	10.63	9.47	11.56

Note: The results are own calculations using EUROMOD.

2.4.4 Effects on work incentives

As explained in section 2.1, EUROMOD is an arithmetic microsimulation model, which implies that behavioural changes are not modelled. However, we can evaluate the effects on labour supply through marginal tax rates. This does not measure the true changes in labour supply but gives an indication of the changes in monetary incentives at the extensive and intensive margin, such that we get an indication in which direction the behavioural responses will probably go (Bourguignon & Spadaro, 2006). As in the paper of Decoster et al. (2018), I use the participation tax rate and the marginal effective tax rate.

The participation tax rate (PTR) is an indicator for the work incentives at the extensive margin and is calculated as follows in the paper of Decoster et al. (2018, p.9):

$$PTR_i = \frac{T(y_i) - T(0)}{y_i} \text{ or } PTR_i = 1 - \frac{c^{IW}(y_i) - c^{OW}(y_i)}{y_i}$$

with y_i gross income of individual i , $T(y_i)$ the taxes and benefits paid by individual i on gross income and $c^{IW}(y_i)$ and $c^{OW}(y_i)$ respectively the in-work and out-of-work disposable income of individual i . The first equation interprets the PTR as the change in taxes and benefits when an individual enters the labour market, as proportion of gross income. The second equation writes the PTR in terms of the disposable income. More specifically, it describes the difference in disposable income between an employed and an unemployed individual as a proportion of gross income.

The marginal effective tax rate (METR) is a measurement for the work incentives at the intensive margin. Decoster et al. (2018, p.10) calculate this as follows:

$$METR_i = \frac{\partial T(y_i)}{\partial y_i} \text{ or } METR_i = 1 - \frac{c(y_i + \Delta y_i) - c(y_i)}{\Delta y_i}$$

with $\frac{\partial T(y_i)}{\partial y_i}$ the derivative of taxes and benefits to gross income and Δy_i a small change in gross income. In the first equation the METR is interpreted as the change in taxes and benefits when gross income changes with a small amount. The second equation writes the METR in terms of disposable income, namely one minus the increase in disposable income when gross income increases with a small amount as proportion of gross income.

For this paper, I use a reference individual to calculate the marginal tax rates. The individual is a single man, 30 years old, working full time with a gross income varying from 0 to 10745 euro per month, increasing with 5 euro per datapoint. The gross income comes exclusively from labour and the only benefit that is taken into account in the baseline is income support for low incomes. The out of labour income used in the baseline scenario is the income support of 867.4 euro per month. In the basic income proposals income support is always eliminated and basic income serves as the out of labour income. I use the equations in terms of disposable income to calculate the PTRs and METRs and I use a change of 5 percent in gross income for Δy_i .

Table 7 and figure 4 to 6 present the results for the PTR, while table 8 and figure 7 to 9 present the results for the METR. Table 7 contains the participation tax rates for some important income values: the income support level, the poverty line, the monthly minimum wage and two times the income support level. Figures 4, 5 and 6 compare the PTRs of the different basic income proposals with the PTR of the reference scenario. The practical interpretation of the PTRs is as follows: a PTR of 66.31 percent (baseline PTR for gross income of 1500 euro) means that the disposable income of an employed individual is 33.69 percent higher than the disposable income of that same individual if he is unemployed. It is important to note that the calculations are based on a reference person who works fulltime. This means that the PTRs might be slightly different in reality from the ones presented here for incomes below the fulltime monthly minimum wage of 1501.32 euro (Eurostat, 2018). The same holds for the calculation of the METRs.

Both in table 7 and in figure 4 to 6 we see a totally different pattern in the baseline compared to the basic income proposals. The baseline follows the typical pattern with high participation tax rates for low incomes and a decrease when income increases. In the basic income proposals the PTRs are low and negative for low incomes, they start rising just before 1000 euro and then slow down after 2500 euro. The negative participation tax rates for low incomes imply that an unemployed individual pays more net taxes, defined as taxes minus benefits, than an employed individual. Proposal 2b and 3c have higher PTRs than the other proposals because of the flat tax. For an income level at the full time minimum wage (1500 euro), this implies a participation tax rate of 46.77 percent in proposal 2b and 18.22 percent in proposal 3c, compared to 8.48 percent in the other proposals and 66.31 percent in the baseline. The PTRs in proposal 2b are even higher than those in the baseline for incomes higher than 2500 euro.

Table 8 contains the marginal effective tax rates for the same levels of income as table 7 and figures 7, 8 and 9 show the marginal effective tax rates for the basic income proposals compared to the baseline. The METRs in the basic income proposals do not differ from the baseline METRs, except in two cases. First, employed people still receive income support

when their gross income is less than 840 euro a month. For those people the METRs are lower and in most cases even negative. Second, proposal 2b and 3c have higher METRs than the baseline. The difference is substantially smaller in proposal 3c than in proposal 2b and is in both cases caused by the flat tax, included in these proposals.

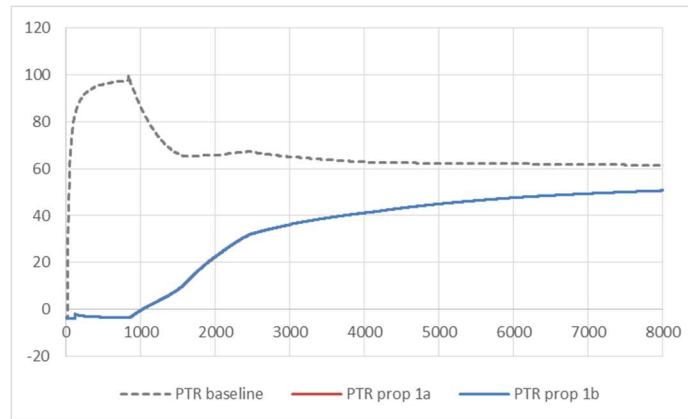
Table 7: Participation tax rates per proposal for the income support level, poverty line and minimum wage, in % (own calculations)

	Baseline	Prop 1a	Prop 1b	Prop 2a	Prop 2b	Prop 3a	Prop 3b	Prop 3c
Income support (€870)	96.50	-3.20	-3.20	-3.20	31.99	-3.20	-3.20	5.74
Poverty line (€1115)	79.48	1.69	1.69	1.69	38.53	1.69	1.69	11.05
Minimum wage (€1500)	66.31	8.48	8.48	8.48	46.77	8.48	8.48	18.22
2 x income support (€1740)	65.42	15.57	15.57	15.57	52.83	15.57	15.57	25.04

Table 8: Marginal effective tax rates per proposal for the income support level, poverty line and minimum wage, in % (own calculations)

	Baseline	Prop 1a	Prop 1b	Prop 2a	Prop 2b	Prop 3a	Prop 3b	Prop 3c
Income support (€870)	18.57	18.57	18.57	18.57	61.31	18.57	18.57	29.45
Poverty line (€1115)	19.93	19.93	19.93	19.93	62.65	19.93	19.93	30.78
Minimum wage (€1500)	46.24	46.24	46.24	46.24	83.39	46.24	46.24	55.69
2 x income support (€1740)	67.61	67.61	67.61	67.61	96.72	67.61	67.61	75.02

Figure 4: Participation tax rates for proposal 1a and 1b, in % (own calculations)



Note: The PTR of proposal 1a is the same line as the PTR of proposal 1b.

Figure 5: Participation tax rates for proposal 2a and 2b, in % (own calculations)

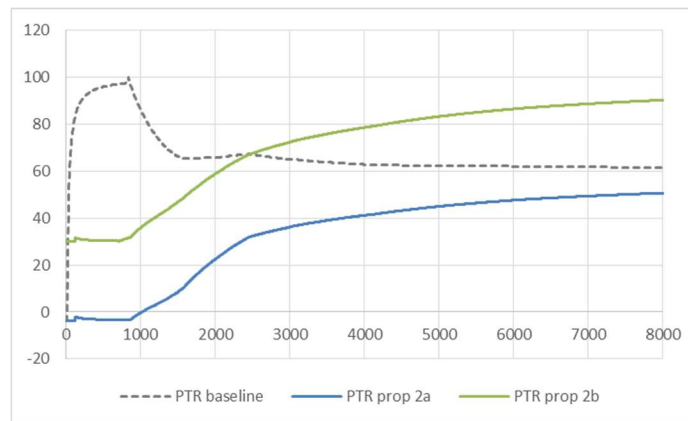
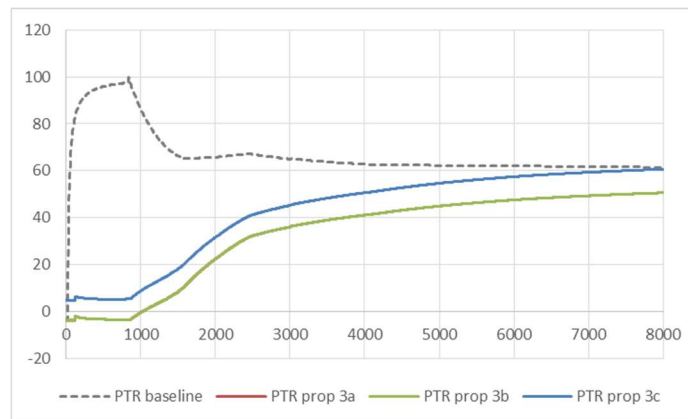
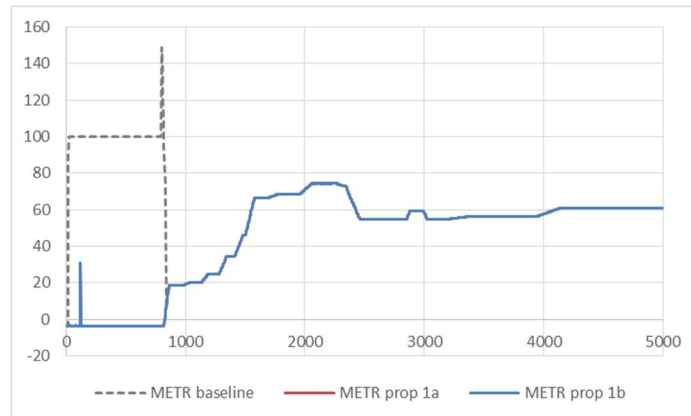


Figure 6: Participation tax rates for proposal 3a, 3b and 3c, in % (own calculations)



Note: The PTR of proposal 3a is the same line as the PTR of proposal 3b.

Figure 7: Marginal effective tax rates for proposal 1a and 1b, in % (own calculations)



Note: The METR of proposal 1a is the same line as the METR of proposal 1b.

Figure 8: Marginal effective tax rates for proposal 2a and 2b, in % (own calculations)

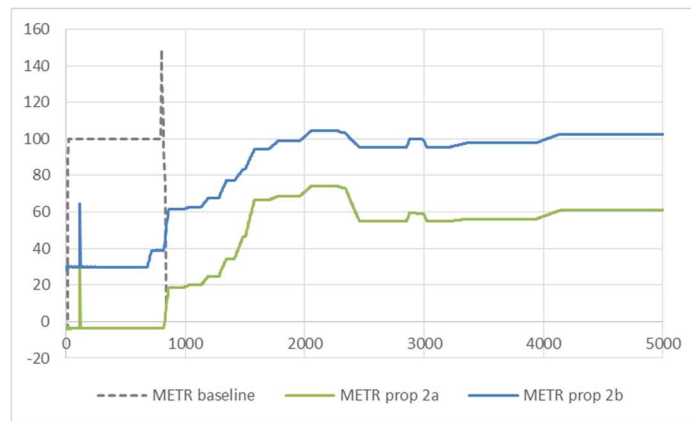
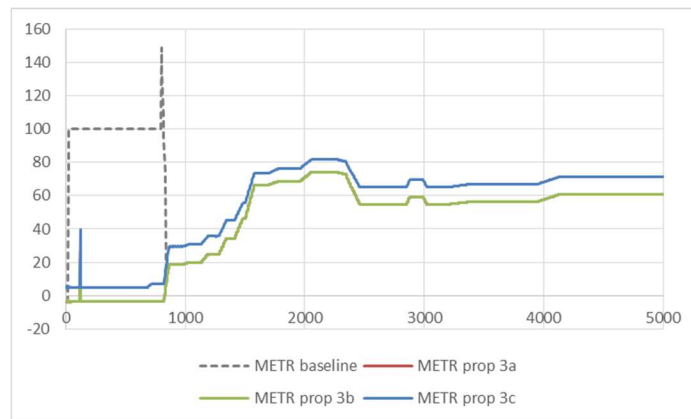


Figure 9: Marginal effective tax rates for proposal 3a, 3b and 3c, in % (own calculations)



Note: The METR of proposal 3a is the same line as the METR of proposal 3b.

2.5 Discussion of the results

In this section, I discuss the results from the microsimulation and I link the effects on budget, inequality and poverty. First, we can roughly divide the basic income proposals of this paper into two groups based on the budgetary analysis. The first group does not increase, or only slightly increases, the government expenditures on social security, whereas the second group substantially raises government expenditures. I introduce a flat tax in the microsimulation to finance the gap created by the expensive proposals. This is only one possible way of financing basic income but this choice is made on the simplicity of interpretation. Moreover, a flat tax in combination with a basic income still contains some kind of progressivity, as I explained in section 2.3. The height of the flat tax for proposal 2b (48 percent on taxable income) makes the proposal probably politically impossible. However, Van Parijs and Vanderborght (2017) argue that a basic income would partially be self-financing, for example by eliminating large bureaucratic administrations. EUROMOD does not simulate these savings but this would have an influence on the budgetary analysis. Kleinknecht (2018) opposes the influence of these savings, partially because it would only be a small share of the total budget needed. Moreover, we still need administrations if some existing benefits stay in place after the introduction of basic income.

Second, there is a clear link between the budgetary effects and the effects on poverty and inequality. Proposal 1a and 1b are the easiest to defend budgetary as nothing changes compared to the current tax system. However, the Gini coefficients increase with 33 and 29 percent respectively, and average poverty rates double with poverty rates above 70 percent for pensioners and disabled people. Moreover, single parents with children have a 26 percent higher risk of poverty in proposal 1b, because of the differentiation in basic income between adults and children. Although proposal 1a and 1b might be attractive on budgetary grounds, the fact that vulnerable groups are left behind might not be acceptable for modern welfare states.

On the other hand, proposal 2a and 2b show that low poverty rates and lower inequality are possible with a basic income if taxes increase largely. Proposal 2a does not significantly change the Gini coefficient but implies high gains for all income deciles. Moreover, based on the poverty line of 1115 euro, poverty rates drop on average as well as for singles with children and disabled people. Only pensioners still see a doubling of the risk to end up in poverty. Proposal 2b has similar but more extreme effects on poverty rates, it reduces the poverty rate of pensioners below the baseline rate and it decreases the Gini coefficient with 38 percent. The flat tax in proposal 2b explains the differences in the results between proposal 2a and 2b, as nothing else changes. The combination of the basic income and the flat tax leads to progressivity which causes the effects on inequality and poverty.

Proposal 3a, 3b and 3c form a medium between the first two groups of basic income. The budgetary effects are more acceptable than in proposal 2a and 2b as the flat tax is lower, namely 12.20 percent instead of 48 percent. The aim of these proposals is to create a basic income with extra protection for vulnerable groups. All three proposals have extra protection for disabled people and keep scholarships and educational grants, which leads indeed to lower poverty rates for disabled people compared to the baseline. Moreover, proposal 3b and 3c give extra protection to pensioners through a higher level of basic income. Despite this effort to protect pensioners, their poverty rate is still respectively 1.75 and 1.64 times higher than in the reference scenario. However, inequality and average poverty rates do not differ significantly from the baseline. Notice that the flat tax in proposal 3c has an extra redistributive effect compared to proposal 3b, similar as in proposal 2b.

Two remarks should be made on the effect of basic income on poverty, one about pensioners and one about women. First, poverty rates for pensioners rise to more than 75

percent in the low proposals with the implementation of basic income. Some proposals give a higher basic income of 1115 euro to all or differentiate and give a higher basic income to pensioners, in order to solve this high poverty risk. But even then poverty rates more than double, except in proposal 2b where basic income is combined with a flat tax. If we want to avoid impoverishment of pensioners, we should give extra means to pensioners or people should be encouraged to save more during their life for their own old age pension. Second, the gains and losses of the seven proposals are divided relatively equal between men and women. Nevertheless, all proposals except proposal 2b slightly increase the gap in poverty rate between men and women. Further research could investigate more closely if basic income has meaningful influence on the relation between men and women, both in society as a whole and within private relations, such as marriage.

Finally, we see that the basic income proposals have large effects on the participation tax rates but do not change the marginal effective tax rates for gross incomes higher than 840 euro per month, except for proposal 2b and 3c. The PTRs drop substantially because basic income is unconditional of income. Individuals do not lose basic income when they enter the labour market, whereas in the reference scenario they lose their out of labour income, the income support. In reality, individuals also lose unemployment benefits, possibly pay more taxes and might lose parts of other benefits conditional on income, but these benefits are not taken into account for the reference individual. Proposal 2b and 3c have smaller drops in PTRs as individuals have to pay the flat tax on labour income when they start working. These changes in participation tax rate do not give a direct answer on the question whether labour supply will increase or decrease, but indicate that basic income creates strong monetary incentives to individuals at the extensive margin to increase labour supply. Moreover, the PTRs show that basic income can eliminate the unemployment trap, as discussed in section 1.4.

The marginal effective tax rates only increase in proposal 2b and 3c as a direct consequence of the flat tax. Basic income has no effect on the other marginal effective tax rates as basic income is unconditional of income and no changes in the current tax system are made except for the flat tax. This implies that when an individual increases its labour income with five percent, basic income will stay the same and the effect on taxes is the same for the reference scenario as for the basic income proposals without the flat tax. However, changes may occur in the reference scenario for benefits conditional on income. This explains the difference in METRs in the microsimulation between the reference scenario and the basic income proposals for gross incomes below 840 euro, as income support lowers gradually with increasing gross income. I explain in section 2.4.4 why marginal tax rates for gross income below 1500 euro might deviate from the true marginal tax rates, so these results should be used carefully. The marginal effective tax rates do not give an exact results of how labour supply will react on a basic income, but show that there is no change in monetary incentives to change labour supply at the intensive margin if there is no change in taxes. However, a meaningful basic income, like proposal 2a and 3b, needs an increase in taxes to be budget neutral, which implies that a basic income might have negative monetary incentives on labour supply at the intensive margin. As mentioned in section 1.4, a decrease in labour supply is not necessarily bad for social welfare. Consequentially, I do not find evidence for the elimination of the employment trap when I investigate basic income without a flat tax. The elimination of the employment trap would lead to a decrease in labour supply as discussed in section 1.4. Similar to what I concluded in the theoretical discussion on labour supply, the total effect on labour supply depends on how strong the effects are on both the intensive and the extensive margin. It is important to take into account a last comment when interpreting the results of the microsimulation of the marginal tax rates. I use a man of 30 years old to compute the marginal tax rates, which means that proposal 1a, 1b, 3a and 3b are the same. Based on this reference person we cannot draw unambiguous conclusions on what will happen to labour supply.

3 General Conclusion

Basic income has been discussed since the eighteenth century and is today often debated among philosophers, politicians and economists. The effects of a basic income have been investigated, whether through experiments or microsimulation, for many countries but not for Belgium. This paper tried to estimate the effects of an implementation of a basic income for Belgium. It is important to keep in mind the definition I used for basic income, as many concepts have been used over time. A basic income is a monthly payment made by the state to every fiscal resident of that state, regardless of what they earn, whether they are married or single, whether they are looking for a job, working or retired (Van Parijs & Vanderborght, 2017).

This paper uses the microsimulation model EUROMOD, based on the EU-SILC 2015 data, to test seven basic income proposals. I compare the proposals to the current Belgian system based on the effects on government spending, inequality, poverty and work incentives. The proposals tested differ in the height of the basic income, whether or not existing benefits are eliminated, whether or not a flat tax is introduced and whether or not different amounts are given to adults, minors and pensioners.

Although this paper only makes a first estimation of basic income for Belgium, some major lines become clear. First, the effects on poverty and inequality can be very different, depending on what the political possibilities are for tax increases. The low proposals which only give 502.38 euro per month and eliminate all other benefits lead to large increases in poverty rates, especially for pensioners and disabled people. These proposals fit into the neoliberal framework discussed in the literature review and might be hard to defend in a modern welfare state. On the opposite, proposals handing out 1115 euro per month and eliminating all other benefits, lead to substantial decreases in poverty rates and inequality. The effect on inequality is even stronger if a basic income comes together with a flat tax. These proposals fit into the green and the liberal-egalitarian framework because of the height of the basic income. However, these proposals might be difficult to implement in a country with a government debt of more than 100 percent and a government revenue of more than 50 percent of gross domestic product, like Belgium (Eurostat, 2018). I found intermediate effects for proposals of 502.38 euro per month with additional support for disabled people, a lower basic income of 251.19 euro per month for children and a higher basic income of 1115 euro per month for pensioners. These proposals do not have large effects on inequality and on average poverty rates, compared to the current system. However, pensioners have an increased poverty risk, while disabled people are better off than in the current Belgian system, based on the headcount poverty rate. These proposals fit into the liberal-egalitarian framework as they provide a decent basic income and they keep some benefits to protect vulnerable groups. These proposals would still involve a large change compared to the current system, but they might be more reasonable to implement than the other proposals.

Second, pensioners need extra protection if public pensions disappear with the introduction of a basic income, in order to protect them from falling into poverty. We can do this by giving everyone a higher basic income or by including a division between ages such that pensioners get a higher basic income than adults and minors. Differentiating on age is not distortive as people cannot change their age to receive more basic income.

Third, although some theoretical arguments were made for a flat tax, this is only one way to finance basic income and further research can investigate other ways. Barry (1996) states that we should see the channel through which we finance basic income separate

from basic income itself. On the other hand, a flat tax is probably a good financing instrument for proponents of basic income caring about inequality, given that the two proposals with a flat tax have lower Gini coefficients than the parallel proposals without a flat tax.

Last, the microsimulation of the marginal tax rates gives an indication of the monetary incentives that basic income creates for individuals to change their labour supply. The participation tax rate drops for all basic income proposals, but more extremely for the basic income proposals without flat tax. Therefore, labour supply might increase at the extensive margin when a basic income is introduced, meaning that more people start working. This would imply the elimination of the unemployment trap. Marginal effective tax rates do not change compared to the current Belgian system in the basic income proposals without a flat tax for incomes above 840 euro. Proposals with a flat tax see an increase in marginal effective tax rates. This implies that labour supply might decrease at the intensive margin if basic income needs an increase in taxes. Therefore, basic income proposals without a flat tax might not eliminate the employment trap.

I conclude with some caveats. This paper tried to estimate the economic consequences of the introduction of a basic income based on the assumption that this does not cause behavioural changes. However, a basic income would probably be an important change for many people, which makes it interesting to investigate the effects of a basic income with behavioural microsimulation models or with a combination of microsimulation models and macroeconomic models. Moreover, some of the effects that proponents of basic income hope to achieve only become clear after some time, for example the lower growth ecologists want to obtain or the impact of basic income on people's decisions on investment in education. Therefore, dynamic microsimulation models can be used. Also, I simulate the effects on work incentives based on a reference person. It might be interesting to use the whole population or to test some other reference individuals or households. Finally, this paper shows that we should pay attention to vulnerable groups, especially pensioners, when designing basic income schemes. Even the most generous scheme in this paper still leads to more than a doubling of the poverty rates of pensioners, except for the most generous proposal with a flat tax. Protecting these groups might be a challenge for basic income proponents.

References

- Achten, V., Bouckaert, G., & Schokkaert, E. (2016). *'A Truly Golden Handbook': The Scholarly Quest for Utopia*. Leuven: Leuven University Press.
- Ackerman, B., & Alstott, A. (2006). Why Stakeholding?. In E. O. Wright, *Redesigning Distribution* (40-59). London: Verso publishers .
- Alvaredo, F., Chancel, L., Piketty, T., Saez, E., & Zucman, G. (2017). World Inequality Report 2018. The World Inequality Lab, <http://wir2018.wid.world>.
- Andersson, J. O. (2010). Basic Income From an Ecological Perspective. *Basic Income Studies*, 4(2).
- Arora, V. S., Karanikolos, M., Clair, A., Reeves, A., Stuckler, D., & McKee, M. (2015). Data resource profile: the European Union statistics on income and living conditions (EU-SILC). *International journal of epidemiology*, 44(2), 451-461.
- Arrow, K., Dasgupta, P., Goulder, L., Daily, G., Ehrlich, P., Heal, G., ... & Walker, B. (2004). Are we consuming too much?. *Journal of Economic Perspectives*, 18(3), 147-172.
- Atkinson, A. B. (1970). On the measurement of inequality. *Journal of economic theory*, 2(3), 244-263.
- Atkinson, A. B. (1992). Measuring inequality and differing social judgements. *Research on Economic Inequality*, 3, 29-56.
- Atkinson, A. B. (2014). After Piketty?. *The British Journal of Sociology*, 65(4), 619-638.
- Bardhan, P. (2011). Challenges for a minimum social democracy in India. *Economic and Political Weekly*, 46(10), 39-43.
- Barry, B. (1996). Real freedom and basic income. *Journal of Political Philosophy*, 4(3), 242-276.
- Belgische Federale Overheidsdiensten. (2017, May 19). Armoederisico. Retrieved April 12, 2018, from <https://statbel.fgov.be/nl/themas/huishoudens/armoede-en-levensomstandigheden/armoederisico>
- Blackwell, A. (2017, September 10). KENYA: GiveDirectly's Guaranteed Monthly Income Expands to 200 Villages Fall 2017. Retrieved April 15, 2018, from <http://basicincome.org/news/2017/09/kenya-givedirectlys-guaranteed-monthly-income-expands-200-villages-fall-2017/>
- Booth, A., & Schiantarelli, F. (1987). The employment effects of a shorter working week. *Economica*, 54(214), 237-248.
- Borjas, G. J. (2010). Labor Supply: Sixth edition. In G. J. Borjas (Ed.), *Labor Economics* (21-83). New York, NY: Mc Graw-Hill.

- Borjas, G. J. (2016). Labor Supply: Seventh edition. In G. J. Borjas (Ed.), *Labor Economics* (21-83). New York, NY: Mc Graw-Hill Education.
- Börsch-Supan, A. (2013). Myths, scientific evidence and economic policy in an aging world. *The Journal of the Economics of Ageing*, 1-2(3), 3-15.
- Bourguignon, F. & Spadaro, A. (2006). Microsimulation as a tool for evaluating redistribution policies. *The Journal of Economic Inequality*, 4(1), 77-106.
- Bregman, R. (2014). *Gratis geld voor iedereen: over het basisinkomen, de 15-urige werkweek en een wereld zonder grenzen*. Amsterdam: De Correspondent.
- Brown, M. (2017, September 21). A Five-Year Basic Income Experiment Is Happening in the U.S. Retrieved April 30, 2018, from <https://www.inverse.com/article/36650-y-combinator-basic-income-experiment>
- Burtless, G., & Hausman, J. A. (1978). The effect of taxation on labor supply: Evaluating the Gary negative income tax experiment. *Journal of political Economy*, 86(6), 1103-1130.
- Chanfreau, J., & Burchardt, T. (2008). Equivalence scales: rationales, uses and assumptions. *Scottish Government, Edinburgh*. Retrieved May 6, 2018, from <http://www.gov.scot/Resource/Doc/933/0079961.pdf>
- Clark, C. M., & Kavanagh, C. (1996). Basic income, inequality, and unemployment: rethinking the linkage between work and welfare. *Journal of Economic Issues*, 30(2), 399-406.
- Colombino, U. (2015). Five crossroads on the way to basic income. An Italian tour. *Italian Economic Journal*, 1(3), 353-389.
- Decoster, A., Perelman, S., Vandellannoote, D., Vanheukelom, T., & Verbist, G. (2018) Which way the pendulum swings? Equity and efficiency of 26 years of tax-benefit reforms in Belgium. FEB Discussion paper. (forthcoming)
- De Grauwe, P. (2017, April 22). Paul De Grauwe: 'Basisinkomen een oplossing? Sprookjeseconomie!'. Retrieved April 16, 2018, from <http://www.veto.be/artikel/paul-de-grauwe-basisinkomen-een-oplossing-sprookjeseconomie>
- Dur, R., & van Lent, M. (2018). Socially Useless Jobs. Retrieved May 6, 2018, from <https://sites.google.com/site/maxvlent/research>
- Eurostat. (2018). Monthly minimum wages – bi-annual data. Retrieved May 11, 2018, from <http://ec.europa.eu/eurostat/data/database>
- Fitzpatrick, T. (1999). *Freedom and security: An introduction to the basic income debate*. Hampshire: MacMillan Press Ltd.
- Freedman, D. H. (2016). Basic income: a sellout of the American dream. *Technology Review*, 119(4), 48-53.

Gilroy, B. M., Heimann, A., & Schopf, M. (2013). Basic income and labour supply: The German case. *Basic Income Studies*, 8(1), 43-70.

Goldsmith, S. (2002, September). The Alaska Permanent Fund Dividend: an experiment in wealth distribution. In *9th International Congress, BIEN, Geneva*. Retrieved May 6, 2018, from <http://www.basicincome.org/bien/pdf/2002Goldsmith.pdf>

Gordon, R. J. (2016). Perspectives on the rise and fall of American growth. *American Economic Review*, 106(5), 72-76.

Hufkens, T., Maes, S., Van Cant, L., Vanhille, J. & Vanheukelom, T. (2016). EUROMOD Country report Belgium BE) 2014-2017. Retrieved May 6, 2018 from https://www.euromod.ac.uk/sites/default/files/country-reports/year8/Y8_CR_BE_Final.pdf

Immervoll, H., & O'Donoghue, C. (2001). Welfare benefits and work incentives: An analysis of the distribution of net replacement rates in Europe using EUROMOD, a multi-country microsimulation model. EUROMOD Working Paper Series No. EM4/01.

Jessop, B. (2002). Liberalism, neoliberalism, and urban governance: A state-theoretical perspective. *Antipode*, 34(3), 452-472.

Jones, D., & Marinescu, I. (2018). The Labor Market Impacts of Universal and Permanent Cash Transfers: Evidence from the Alaska Permanent Fund. *National Bureau of Economic Research Working Papers* 24312.

Kleinknecht, A. (2016, October 13). Weinig innovatie, veel banen!. *ESB*, 101(4742), 662.

Kleinknecht, A. (2018, April 4). Negatieve inkomstenbelasting is inefficiënt instrument. Retrieved April 17, 2018, from <https://esb.nu/esb/20038794/negatieve-inkomstenbelasting-is-inefficient-instrument>

McFarland, K. (2017, October 19). Overview of Current Basic Income Related Experiments (October 2017). Retrieved April 16, 2018, from <http://basicincome.org/news/2017/10/overview-of-current-basic-income-related-experiments-october-2017/>

Merz, J. (1994). Microsimulation-A survey of methods and applications for analyzing economic and social policy. *FFB Discussion Paper No. 9*.

Mitchell, W., & Watts, M. (2005). A comparison of the macroeconomic consequences of basic income and job guarantee schemes. *Rutgers JL & Urb. Pol'y*, 2, 64.

Nagel, T. (2009). Liberal democracy and hereditary inequality. *Tax L. Rev.*, 63(1), 113-122.

NBB. (2018). Quarterly and annual aggregates: Expenditure of GDP. Retrieved April 15, 2018, from <http://stat.nbb.be/Index.aspx?lang=en&SubSessionId=83b8035b-53b3-4c41-99e2-1a7d4ad22d8f&themetreeid=2>

OECD (2017), "Basic income as a policy option: Can it add up?", Policy Brief on The Future of Work, OECD Publishing, Paris.

Paine, T. (2017). *Agrarian justice*. Lulu Press.

Pateman, C. (2004). Democratizing citizenship: some advantages of a basic income. *Politics & society*, 32(1), 89-105. DOI:

Ravallion, M. (2017, May 05). Arguments against basic income are straw men. Retrieved April 13, 2018, from <https://voxeu.org/article/arguments-against-basic-income-are-straw-men>

Reynolds, M. (2018, April 26). No, Finland isn't scrapping its universal basic income experiment. Retrieved April 30, 2018, from <http://www.wired.co.uk/article/finland-universal-basic-income-results-trial-cancelled>

Sabbagh, K., Friedrich, R., El-Darwiche, B., Singh, M., & Koster, A. (2013). Digitization for economic growth and job creation: Regional and industry perspective. *The global information technology report*, 35-42.

Saint-Paul, G. (2004). Why are European countries diverging in their unemployment experience?. *Journal of Economic Perspectives*, 18(4), 49-68.

Scutella, R. (2004). Moves to a basic income-flat tax system in Australia: implications for the distribution of income and supply of labour. *Melbourne Institute Working Papers* 5(4).

Sommer, M. (2016). *A Feasible Basic Income Scheme for Germany*. Heidelberg: Springer International Publishing Switzerland.

Standing, G. (2013). India's experiment in basic income grants. *Global dialogue*, 3(5), 24-26.

Stockhammer, E. (2013). Why have wage shares fallen? An analysis of the determinants of functional income distribution. M. Lavoie & E. Stockhammer (Ed.), *Wage-led Growth* (40-70). London: Palgrave Macmillan.

Straubhaar, T. (2017). On the Economics of a Universal Basic Income. *Intereconomics*, 52(2), 74-80.

Van Parijs, P., & Vanderborght, Y. (2017). *Basic Income: A Radical Proposal for a Free Society and a Sane Economy*. Harvard University Press.

Widerquist, K. (2006). The bottom line in a basic income experiment. *Basic Income Studies*, 1(2).

Widerquist, K., Noguera, J. A., Vanderborght, Y., & De Wispelaere, J. (2013). *Basic income: an anthology of contemporary research*. Wiley-Blackwell

Appendices

Appendix 1: Mean equivalised disposable household income per decile (table 9)

Table 9: Mean equivalised disposable household income per decile, in euro (EU-SILC 2015)

Decile	Baseline	Prop 1a	Prop 1b	Prop 2a	Prop 2b	Prop 3a	Prop 3b	Prop 3c
1	742.4	920.0	822.0	1467.9	1414.8	1022.6	992.3	966.8
2	1119.3	1171.5	1102.3	1753.0	1591.8	1315.2	1358.9	1300.8
3	1307.2	1163.8	1146.2	1767.9	1574.9	1252.2	1448.8	1389.1
4	1471.0	1552.8	1502.5	2152.6	1791.3	1629.7	1732.7	1631.3
5	1632.3	1802.3	1739.7	2399.0	1904.2	1870.1	1933.8	1799.0
6	1787.6	2023.7	1958.2	2626.2	2015.6	2069.6	2126.2	1964.3
7	1970.2	2275.5	2203.6	2889.4	2128.5	2316.6	2345.7	2146.7
8	2178.1	2495.3	2428.4	3122.0	2205.2	2523.7	2560.1	2322.9
9	2466.5	2808.8	2736.3	3442.2	2308.7	2828.0	2848.4	2557.4
10	3395.9	3631.1	3574.1	4299.5	2494.3	3650.3	3679.4	3217.5

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Appendix 2: Kernel densities and cumulative distribution functions for equivalised disposable household income relative to the baseline (figure 10-18)

Figure 10: Kernel density for proposal 1a of equivalised disposable household income relative to the baseline (EU-SILC 2015)

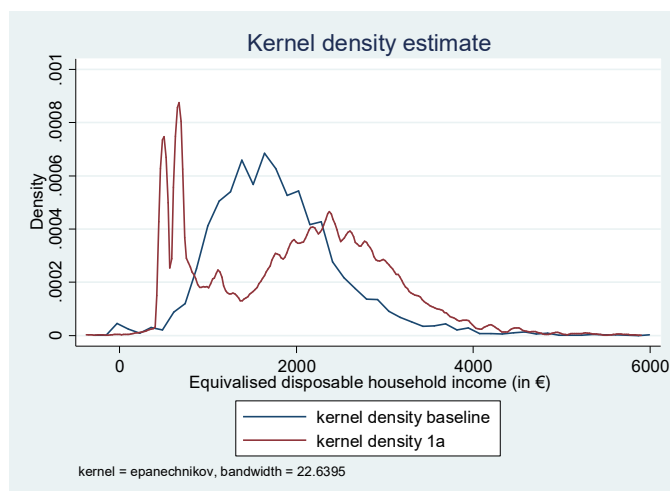


Figure 11: Kernel density for proposal 1b of equivalised disposable household income relative to the baseline (EU-SILC 2015)

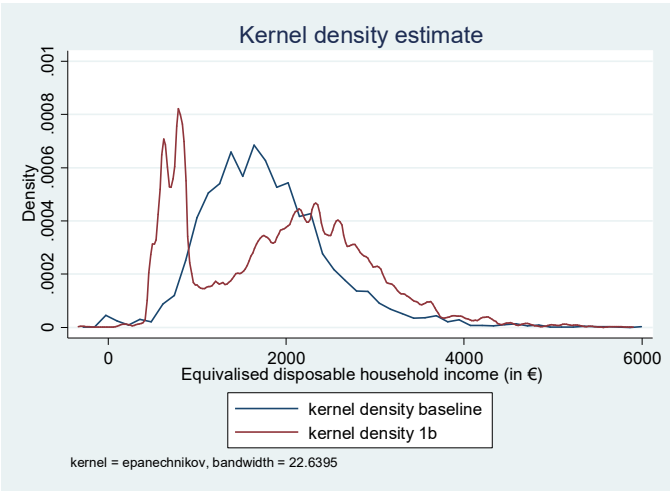


Figure 12: Kernel density for proposal 2a of equivalised disposable household income relative to the baseline (EU-SILC 2015)

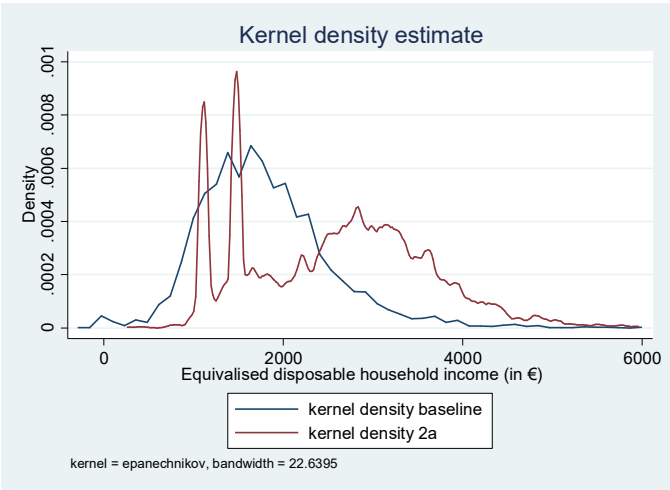


Figure 13: Kernel density for proposal 2b of equivalised disposable household income relative to the baseline (EU-SILC 2015)

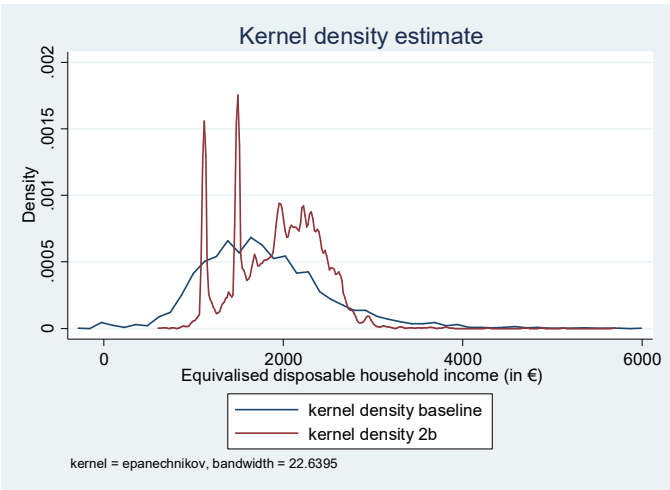


Figure 14: Kernel density for proposal 3a of equivalised disposable household income relative to the baseline (EU-SILC 2015)

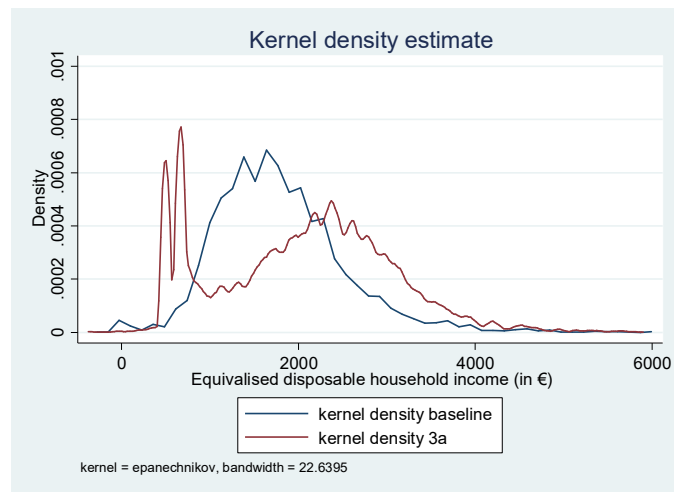


Figure 15: Kernel density for proposal 3b of equivalised disposable household income relative to the baseline (EU-SILC 2015)

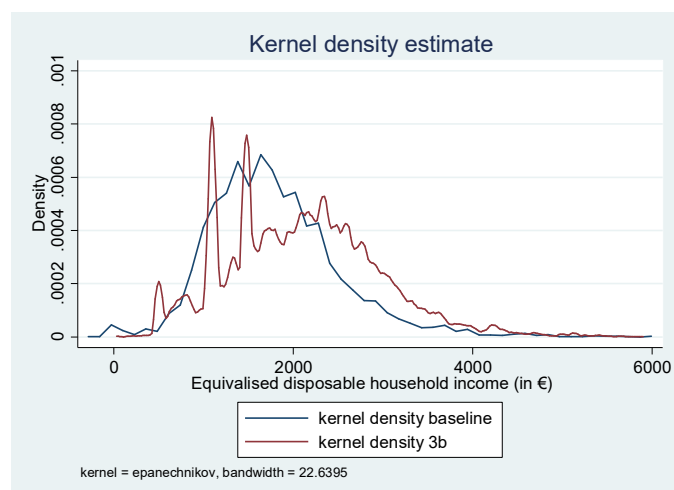
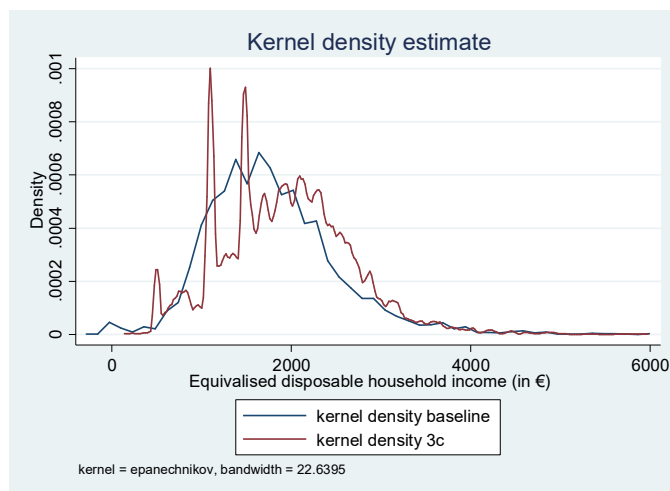


Figure 16: Kernel density for proposal 3c of equivalised disposable household income relative to the baseline (EU-SILC 2015)

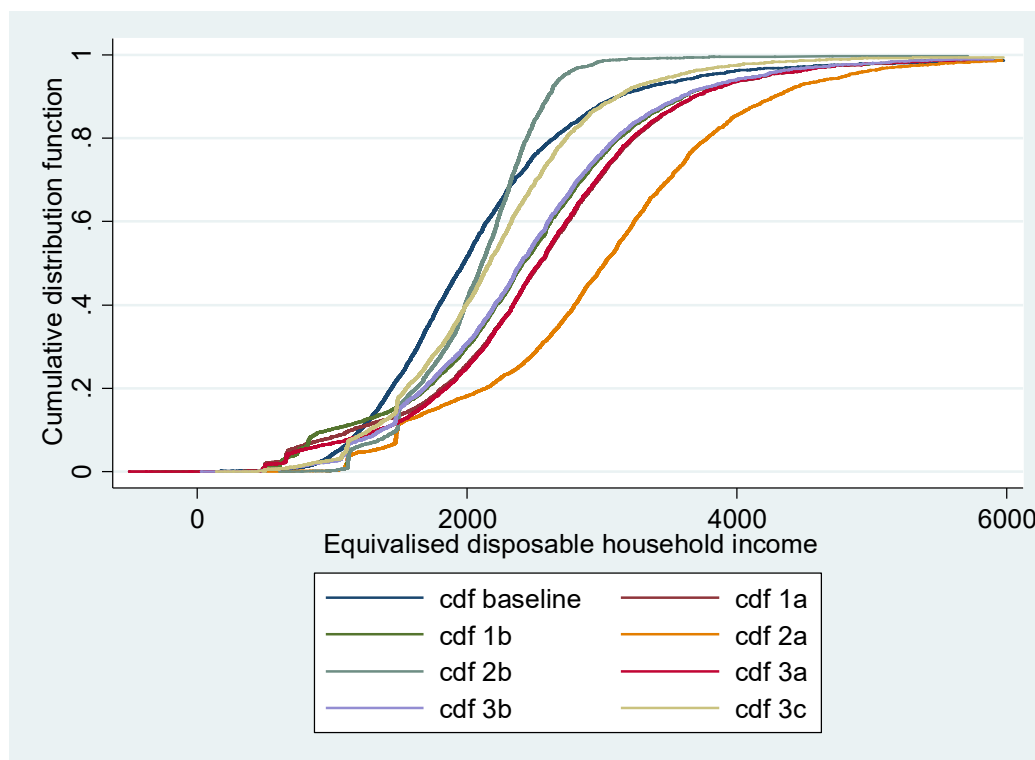


Note 1: Figure 10 to 16 are own figures using Stata and EUROMOD.

Note 2: The scale on the x-axis of figure 10 to 16 goes from -500 to 6000 euro, but there are some observations lying after 6000 euro.

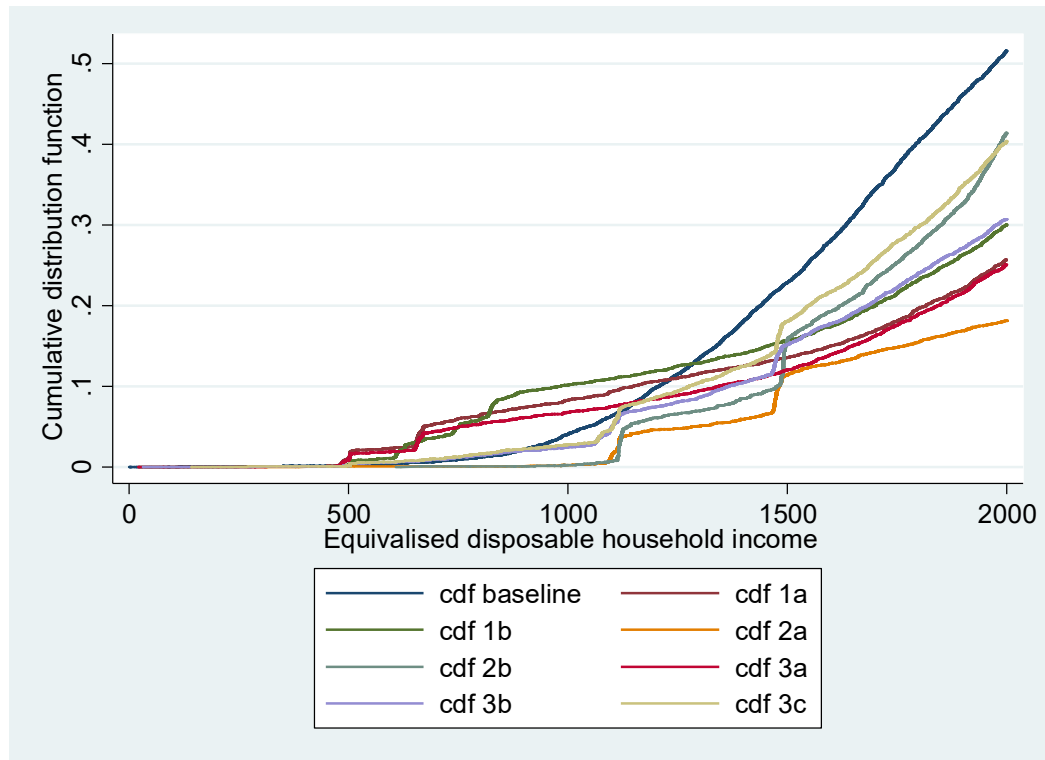
Note 3: The scale on the y-axis of figure 10 to 16 goes from 0 to 0.001, except for figure 13 where the y-axis goes up to 0.002.

Figure 17: Cumulative distribution function of the population for equivalised disposable household income (EU-SILC 2015)



Note: The results are own calculations using EUROMOD.

Figure 18: Cumulative distribution function of the population for equivalised disposable household income below 2000 euro (EU-SILC 2015)



Note: The figure is an own figure using Stata and EUROMOD.

Appendix 3: Gains and losses in mean equivalised disposable household income per decile (table 10)

Table 10: Gain/loss in mean equivalised disposable income per decile, in euro (EU-SILC 2015)

Decile	Prop 1a	Prop 1b	Prop 2a	Prop 2b	Prop 3a	Prop 3b	Prop 3c
1	177.6	79.6	725.6	672.4	280.3	249.9	224.4
2	52.3	-17.0	633.8	472.6	195.9	239.6	181.6
3	-143.4	-161.0	460.7	267.7	-55.0	141.6	81.9
4	81.8	31.4	681.5	320.3	158.7	261.6	160.2
5	170.0	107.4	766.7	271.9	237.8	301.5	166.8
6	236.1	170.6	838.6	228.0	282.0	338.6	176.7
7	305.3	233.4	919.2	158.3	346.4	375.5	176.5
8	317.1	250.2	943.8	27.1	345.6	382.0	144.8
9	342.3	269.8	975.7	-157.8	361.4	381.9	90.9
10	235.2	178.3	903.6	-901.5	254.5	283.5	-178.4
Total	177.4	114.3	784.9	136.1	240.7	295.6	122.6

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Appendix 4: Gains and losses in mean equivalised disposable household income per decile with population characteristics (table 11-17)

Table 11: Gain/loss for proposal 1a per decile, in euro (EU-SILC 2015)

Decile	Equivalised disposable income	Disposable household income	Mean gain/loss	% of pensioners	% of women
1	748.78	1096.42	-1299.29	85.76	0.52
2	751.06	1119.15	-682.68	65.34	0.57
3	1210.97	2233.12	-258.08	33.67	0.51
4	1630.07	3649.04	184.73	8.64	0.53
5	2180.08	4086.26	470.57	1.32	0.45
6	2366.15	5262.92	536.48	1.00	0.49
7	2416.23	6049.97	622.17	0.34	0.52
8	2835.04	5485.50	670.01	0.97	0.50
9	2778.77	5957.67	738.87	0.27	0.50
10	2953.74	6212.10	803.56	0.08	0.50
Total	1984.19	4099.39	177.42	19.75	0.51

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Table 12: Gain/loss for proposal 1b, in euro (EU-SILC 2015)

Decile	Equivalised disposable income	Disposable household income	Mean gain/loss	% of pensioners	% of women
1	875.64	1274.56	-1174.40	82.19	0.53
2	837.05	1271.49	-595.86	61.10	0.57
3	1098.18	2055.45	-263.30	34.58	0.52
4	1583.98	3559.97	91.94	12.47	0.52
5	1949.64	4767.42	336.49	3.14	0.50
6	2224.56	5254.85	451.70	0.24	0.53
7	2438.43	4076.12	499.45	0.18	0.43
8	2519.29	5938.70	536.74	0.44	0.50
9	2709.46	5923.17	594.02	1.27	0.49
10	2986.14	5315.74	671.90	1.83	0.49
Total	1921.04	3926.38	114.27	19.75	0.51

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Table 13: Gain/loss for proposal 2a, in euro (EU-SILC, 2015)

Decile	Equivalised disposable income	Disposable household income	Mean gain/loss	% of pensioners	% of women
1	1430.82	1985.97	-571.48	86.04	0.55
2	1438.83	2188.63	16.02	55.63	0.55
3	1745.64	3314.98	391.88	34.08	0.53
4	2290.32	5173.98	747.30	13.54	0.51
5	2594.40	6071.84	955.27	3.34	0.53
6	2990.50	5556.31	1093.76	0.79	0.47
7	2901.66	6960.28	1145.68	1.71	0.46
8	3336.84	7553.56	1232.73	0.33	0.49
9	3392.57	7400.16	1346.19	0.85	0.49
10	3752.63	7265.61	1521.71	1.57	0.50
Total	2591.67	5273.11	784.90	19.75	0.51

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Table 14: Gain/loss for proposal 2b, in euro (EU-SILC 2015)

Decile	Equivalised disposable income	Disposable household income	Mean gain/loss	% of pensioners	% of women
1	2027.99	3476.18	-1081.10	39.41	0.48
2	1805.58	3110.78	-331.78	45.09	0.50
3	1838.79	3276.50	-128.89	37.49	0.53
4	1916.23	3882.24	26.23	20.23	0.51
5	1872.55	3653.10	149.99	19.13	0.50
6	2001.43	4117.87	267.42	10.77	0.49
7	1994.40	4278.52	379.20	9.89	0.49
8	1973.56	4489.44	495.14	7.18	0.54
9	2033.72	4650.48	645.53	4.29	0.51
10	3752.63	7265.61	1521.71	1.57	0.50
Total	1942.83	3931.77	136.05	19.75	0.51

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Table 15: Gain/loss for proposal 3a, in euro (EU-SILC, 2015)

Decile	Equivalised disposable income	Disposable household income	Mean gain/loss	% of pensioners	% of women
1	756.99	1096.04	-1268.82	91.49	0.54
2	822.81	1261.43	-608.93	65.67	0.55
3	1477.70	2863.91	-76.19	31.95	0.52
4	2065.45	4113.39	407.97	3.77	0.48
5	2132.69	3571.60	506.86	1.23	0.46
6	2304.42	5915.91	582.76	1.15	0.51
7	2622.66	6017.05	652.50	0.55	0.52
8	2656.90	5046.82	680.89	0.92	0.49
9	2729.61	5834.80	752.12	0.10	0.50
10	2935.16	6274.85	806.28	0.08	0.50
Total	2047.50	4216.59	240.73	19.75	0.51

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Table 16: Gain/loss for proposal 3b, in euro (EU-SILC 2015)

Decile	Equivalised disposable income	Disposable household income	Mean gain/loss	% of pensioners	% of women
1	1266.68	1873.75	-676.12	63.23	0.51
2	1302.10	2057.56	-160.87	65.25	0.57
3	1560.02	3115.99	135.81	34.82	0.53
4	1876.58	4430.86	330.24	13.67	0.51
5	2141.35	4984.14	435.57	4.85	0.53
6	2280.78	4342.50	494.22	1.55	0.47
7	2413.40	4753.23	512.33	2.02	0.46
8	2636.46	6057.47	561.72	1.67	0.50
9	2663.24	5593.79	619.21	1.95	0.50
10	2931.54	5143.99	712.12	8.67	0.49
Total	2102.33	4221.92	295.56	19.75	0.51

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

Table 17: Gain/loss for proposal 3c, in euro (EU-SILC 2015)

Decile	Equivalised disposable income	Disposable household income	Mean gain/loss	% of pensioners	% of women
1	1452.05	2186.21	-710.28	59.92	0.51
2	1577.26	2604.10	-210.06	58.47	0.55
3	1990.48	3848.17	2.93	26.57	0.51
4	2080.14	4281.51	126.02	15.56	0.51
5	2125.73	4538.71	197.88	7.41	0.49
6	2146.01	4688.02	250.88	5.65	0.48
7	2062.70	4365.42	297.31	2.85	0.51
8	2056.54	4379.50	344.18	4.08	0.51
9	2001.88	4254.45	396.52	3.70	0.51
10	1800.73	3516.31	531.07	13.27	0.51
Total	1929.34	3866.16	122.57	19.75	0.51

Note 1: The deciles are based on the equivalised disposable household income, each containing 10% of the individuals.

Note 2: The results are own calculations using EUROMOD.

List of figures

Figure 1: Effect of an increase in non-labour income (Borjas, 2010)	12
Figure 2: Effect of an increase in personal income tax (Borjas, 2010)	13
Figure 3: Mean gain/loss equivalent disposable income per decile, in euro (EU-SILC, 2015)	23
Figure 4: Participation tax rates for proposal 1a and 1b, in % (own calculations)	28
Figure 5: Participation tax rates for proposal 2a and 2b, in % (own calculations)	28
Figure 6: Participation tax rates for proposal 3a, 3b and 3c, in % (own calculations)	28
Figure 7: Marginal effective tax rates for proposal 1a and 1b, in % (own calculations)....	29
Figure 8: Marginal effective tax rates for proposal 2a and 2b, in % (own calculations)....	29
Figure 9: Marginal effective tax rates for proposal 3a, 3b and 3c, in % (own calculations)	29
Figure 10: Kernel density for proposal 1a of equivalised disposable household income relative to the baseline (EU-SILC 2015)	38
Figure 11: Kernel density for proposal 1b of equivalised disposable household income relative to the baseline (EU-SILC 2015)	39
Figure 12: Kernel density for proposal 2a of equivalised disposable household income relative to the baseline (EU-SILC 2015)	39
Figure 13: Kernel density for proposal 2b of equivalised disposable household income relative to the baseline (EU-SILC 2015)	39
Figure 14: Kernel density for proposal 3a of equivalised disposable household income relative to the baseline (EU-SILC 2015)	40
Figure 15: Kernel density for proposal 3b of equivalised disposable household income relative to the baseline (EU-SILC 2015)	40
Figure 16: Kernel density for proposal 3c of equivalised disposable household income relative to the baseline (EU-SILC 2015)	41
Figure 17: Cumulative distribution function of the population for equivalised disposable household income (EU-SILC 2015)	41
Figure 18: Cumulative distribution function of the population for equivalised disposable household income below 2000 euro (EU-SILC 2015)	42

List of tables

Table 1: People receiving unemployment benefits, child benefits and public pensions per decile, in % of the population (EU-SILC 2015)	18
Table 2: Basic income proposals (own proposals)	20
Table 3: Budgetary effects, in millions of euros (EU-SILC, 2015)	21
Table 4: Gini coefficients (EU-SILC 2015)	21
Table 5: Poverty rate for different poverty lines, in % of the population (EU-SILC, 2015)	25
Table 6: Poverty rate for singles with children, pensioners, women, men and disabled, in % of the subpopulation (EU-SILC, 2015).....	25
Table 7: Participation tax rates per proposal for the income support level, poverty line and minimum wage, in % (own calculations).....	27
Table 8: Marginal effective tax rates per proposal for the income support level, poverty line and minimum wage, in % (own calculations).....	27
Table 9: Mean equivalised disposable household income per decile, in euro (EU-SILC 2015)	38
Table 10: Gain/loss in mean equivalised disposable income per decile, in euro (EU-SILC 2015)	42
Table 11: Gain/loss for proposal 1a per decile, in euro (EU-SILC 2015)	43
Table 12: Gain/loss for proposal 1b, in euro (EU-SILC 2015)	43
Table 13: Gain/loss for proposal 2a, in euro (EU-SILC, 2015)	44
Table 14: Gain/loss for proposal 2b, in euro (EU-SILC 2015)	44
Table 15: Gain/loss for proposal 3a, in euro (EU-SILC, 2015)	45
Table 16: Gain/loss for proposal 3b, in euro (EU-SILC 2015)	45
Table 17: Gain/loss for proposal 3c, in euro (EU-SILC 2015)	46

FACULTY OF BUSINESS AND ECONOMICS

Naamsestraat 69 bus 3500

3000 LEUVEN, België

tel. + 32 16 32 66 12

fax + 32 16 32 67 91

info@econ.kuleuven.be

www.econ.kuleuven.be

