# The Effects of a Hybrid Negative Income Tax on Poverty and Inequality: a Microsimulation on the UK and Italy

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## Abstract

This paper aims to propose a social protection system that "decommodifies" labour and fulfills the properties of a Social Protection Floor satisfying revenue-neutrality. To this end, firstly, a Universal Basic Income (UBI) scheme is explored. Secondly, the UBI is transformed into a Negative Income Tax (NIT) scheme, providing universal protection instead of universal benefits. Finally, the NIT is modified into a Hybrid NIT (HNIT), being a mixture of NIT and a classic social assistance scheme. It features a 100% withdrawal rate, consequently allowing for a higher guaranteed minimum income level than would be possible with either an NIT or UBI. A static microsimulation, using the EUROMOD model, is conducted on the HNIT scheme, implementing two scenarios. One scenario establishes what the maximum levels of entitlements could be, assuming revenue-neutrality and current marginal tax levels. The other scenario assumes more generous entitlements and computes which tax rates would be necessary to pay for such a scheme. The models are applied to both Italy and the United Kingdom. The results are interpreted in terms of poverty and inequality statistics while closely looking into the assumptions of the microsimulation models. In the first scenario a modest level of guaranteed minimum income is feasible, decreasing both poverty and inequality decidedly compared to current levels. This effect is even stronger in the second scenario, however, it results in unrealistically high tax rates, especially for Italy. The impact on poverty and inequality of the HNIT scheme is markedly higher for Italy in both scenarios suggesting that the United Kingdom has currently a social protection system in place that redistributes more efficiently than Italy.

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## 1.1 A definition

### 1.1.1 Rising inequality and the need for redistribution

Within-country income inequality in general has been increasing after the Second World War. However, this has not been considered as a detrimental development up until recently. The new wave of laissez-faire policy, which popular creed was "a rising tide lifts all boats", commonly called neoliberalism or trickle-down economics, has viewed inequality as a natural phenomenon that is necessary for growth and will eventually go away by itself. Its economic philosophy was pioneered by academics as Friedrich Hayek and Milton Friedman and was adopted into policy by politicians as Thatcher and Reagan.

Although there is much to say for the general notion that economic growth is a good and likely the best way to reduce absolute poverty (Rodrik, 2007), economic growth could increase inequality – and therefore relative poverty too – when growth policy is not inclusive (World Economic Forum, 2017). The other way around, whether more equality and less poverty influence economic growth has been a growing academic topic in recent years. Economists from the IMF and OECD have shifted from viewing inequality as a necessity for economic growth to a viewpoint where inequality actually damages economic growth (OECD, 2015; Ostry, Berg, & Tsangarides, 2014). Nonetheless, unequivocally concluding from this that redistribution would stimulate economic growth is too assumptive. However, efficient and well-designed redistributive policies could be pro-growth and empirical evidence confirms that this is indeed the case for medium and long-term economic growth, except for a few extreme cases of redistributive policy (Ostry et al., 2014). This means that the famous equity-efficiency trade-off (Okun, 1975) – in other words: redistributive policies hurt economic growth – is not as big as was previously assumed. However, it is also quite conceivable that extremely equal societies are not conducive to growth either. So, there is a limit as to how much equality is desired and it is unclear what this limit is at this point, moreover, this limit will most likely differ between

countries.

What should be kept in mind is that economic growth is just one element of welfare of a country, it is obvious that quality of healthcare, education and many other aspects are also important for the wellbeing of people. Therefore, a simple statistic of GDP-growth should just be one aspect of judging whether a redistributive policy is beneficial. Interestingly, next to economic growth, inequality also has a detrimental effect on welfare aspects such as health outcomes and life expectancy: the more unequal the society the more unhappy, unhealthy and shorter people's lives become (Wilkinson & Pickett, 2009). Note it is inequality itself that hurts welfare, meaning that the whole population suffers as a consequence of inequality and not just people at lower levels of the income distribution. Poverty is therefore a separate driver of unhappier, unhealthier and shorter lives (Mullainathan & Shafir, 2013), restricted in this case only to people below the poverty line. It follows that poverty and inequality are a double-edged sword for people living in poverty, they are suffering from the effects of inequality and poverty simultaneously, while people at higher income levels are suffering only from the negative consequences of inequality.

It is important to note that inequality also could distort the political playing field, where the rich have more political power than the poor. A robust democratic society is the basis for making fair choices in how equal it decides to be. Consequently, society needs to have some extent of equality for the political power to have a fair distribution. This paradox between economic and political equality further complicates the policy field. Looking at the evidence about poverty, inequality, economic growth and general welfare it can be concluded that a reduction of poverty and inequality are actual drivers of economic growth and general welfare of the population, two goals which are supposed to be very high on the political agenda. Hence, it is in both the politicians' and society's interest to pursue pro-poor economic growth policies. This is true regardless of the political colour of the politicians, because both poor and rich are benefiting from these types of policies. Conversely, this logic could also be applied to the constituents themselves. A vote in favour of redistributive policies would improve their own welfare, regardless whether someone is high or low on the income ladder. This might sound counterintuitive from the perspective of someone in the higher echelons of society, but the research suggests otherwise.

Given this recent development in the knowledge about the relationship between economic growth and inequality, redistributive policy should play a role in any macroeconomic policy designed to foster economic growth. The acceptance by mainstream economists that efficient and well-designed redistributive policies lead to an increase of the size of the cake instead of making it smaller provides public policy academics with the task of analyzing and proposing

improved redistributive policies.

### 1.1.2  Towards unconditional universal benefits

What is an efficient pro-growth redistributive policy? Have we discovered a redistributive policy yet which can make the tide rise for all the poorest boats in society without lowering the tide significantly for the well-off boats? A myriad of social protection policies have been applied to combat inequality and poverty, some more effective and efficient than others.

**Decommodification of labour**

After World War II the modern welfare state emerged to protect the people at the margins of society from monetary poverty. Differing political preferences between countries led to different types of welfare states (Esping-Andersen, 1990). One of the ways welfare states can be classified is the extent to which society "decommodifies" labour.

Citizens will no longer be commodities subject to market forces when social rights are strong. Decommodification is the degree to which social protection policies permit people to shape their living standards independent of pure market forces. At one edge of the scale very strict punitive eligibility criteria are asked of potential receivers of benefits, i.e. survival for these workers generally depends on their supply of labour in the labour market. In this sense people are still dependent on market forces, because if a last-resort safety net is repressive in nature this will only be used by the most desperate among the poor and jobless, leaving the majority of the needy people still at the mercy of market forces. An extreme example of this are the English Poor Laws where the safety net was composed of "work houses" where poor people were treated miserably to discourage them from making use of them. On the other side of the scale, there are proposals to make benefits universally available. These benefits are more or less freely available, hence people are "decommodified". These universal benefits will enable people to disentangle themselves from the market and they will be provided with at least basic welfare; their survival or dignity does not depend on market forces. This paper aims to theorize about a feasible and efficient social protection system that results in full decommodification of labour. The starting point of a social protection scheme that entails full decommodification is the concept of a Universal Basic Income.

**A Universal Basic Income**

The idea of a Universal Basic Income (UBI) has been around for a long time. Thomas More had the idea of a guaranteed minimum income resembling a UBI in his Utopia, published in

the sixteenth century (More, 1516). It is also termed Citizen's Income (CI) or a Guaranteed Annual Income (GAI), Demogrant, Basic Income Guarantee (BIG) and possibly even more names. As for this paper the term UBI is used, but it is to be kept in mind that these other terms can be used interchangeably and essentially refer to the same phenomenon.

The main characteristic of a UBI is that every citizen receives a fixed amount of money paid out by the state in a regular interval, for instance per week or per month. These cash transfers are independent of any actions of the recipient and the recipient is allowed to spend this benefit in any way he or she likes. This means that every person receives cash from the state and nothing is expected in return, hence it is unconditional. Moreover, this system is meant as a replacement for almost all current benefits, except for a separate grant covering people with invalidity which impairs them to participate in the regular labour market. The amount of benefit programmes which are not replaced by a UBI could be argued about, depending on political affiliation. Libertarians would prefer a complete abolishment of all benefit programmes outside a UBI, while a leftist approach would include more benefits that are retained beside the UBI.

A UBI would also save administrative work on part of the government. This is because means-tested policies in which social protection benefits are in theory only paid out to poor people who are most in need require resources from the government to identify these needy individuals. The recipient of a benefit has to dedicate significant amounts of time too to actually obtain the benefit, she has to do the appropriate paperwork and usually has to prove that she applied to several jobs; the current way of providing welfare is therefore conditional. A UBI provides security, people never have to worry about an income to provide a roof over their heads and food on the table. But, if people desire more than this entitlement to basic subsistence they would have to supply their labour in the labour market.

A UBI introduces a partial separation of income and work: from a view that income has to come from work and work alone, a UBI would provide a modest income as a universal and unconditional right in the form of a basic income grant.

**A Negative Income Tax**

The before-mentioned economist Milton Friedman was the one who proposed a Negative Income Tax (NIT) (Friedman, 1962). Essentially, the difference between UBI is that people will receive their entitlements only after their income has been considered. It still provides people with a minimum income floor, but for people earning above an earning threshold the basic income grant is no longer paid out. However, people above this threshold are still entitled to the same grant but they receive the basic income grant in the form of a tax exemption. Because

cash transfers depend on income as opposed to a UBI which is universal, critics regard NIT as a simpler form of means-tested social assistance. In the next chapter the difference between UBI and NIT is reviewed in more depth. But first we would like to review the case for universalism in social protection and ultimately decommodification of labour.

## 1.2 The case for universalism and decommodification

### 1.2.1 A legal perspective

The legal obligation for countries to ensure social protection for its citizens has been spearheaded by legal instruments from the United Nations and the International Labour Organization (ILO) in particular. Foremost, social protection can be considered a human right since it was included in The Universal Declaration of Human Rights (UN General Assembly, 1948). The document features three articles touching upon social protection:

> *Article 22*
>
> "Everyone, as a member of society, has the right to social security and is entitled to realization, through national effort and international co-operation and in accordance with the organization and resources of each State, of the economic, social and cultural rights indispensable for his dignity and the free development of his personality."
>
> *Article 23*
>
> (1) "Everyone has the right to work, to free choice of employment, to just and favourable conditions of work and to protection against unemployment."
>
> (3) "Everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity, and supplemented, if necessary, by other means of social protection."
>
> *Article 25*
>
> (1) "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control."

Next to social protection as a human right the International Labour Organization (ILO) has devised International labour standards which set out basic principles regarding work and

social protection. Consisting of these standards are legally binding instruments (which are called conventions) and non-binding guidelines (which are called recommendations) and give the legal right to social protection for citizens of the countries who ratified these legal instruments. The Convention concerning Minimum Standards of Social Security, 1952 (No. 102) is an important piece of legislation which 55 countries ratified to date. The Social Protection Floors Recommendation, 2012 (No. 202) adopted by the 101st Session of the ILC in 2012 by all member states is a more recent element of international law. While the Convention No. 102 has the goal of progressively ensuring higher levels of protection, the Social Protection Floors Recommendation establishes a fundamental floor of basic income security for all. The former involves the vertical dimension (increased levels of entitlements) while the latter is the horizontal dimension (more people are entitled and therefore protected). The ILO leaves it to the member states for the precise form of their social protection policies (Kulke & Guilbault, 2013).

It should be noted that a Social Protection Floor (SPF) is not synonymous for a UBI. An SPF includes healthcare as part of social protection, while a UBI is only concerned with social security in monetary terms. Also, a UBI can be seen as one of multiple potential social protection policy options that could be employed for member states to fulfill their legal obligation to secure a minimum income level for all; it is clearly not the only option and member states remain in control as to the degree of universalism of their social protection policies.

### 1.2.2 Investments in human capital

Providing a universal income makes people less desperate to supply their labour in the labour market. This leads to the effect that people stay longer in school, as we will later discuss in Chapter 4 is one of the major takeaways from guaranteed minimum income experiments. Also, with a guaranteed minimum income it is also much more feasible to take classes or obtain another degree at a later age.

Related to changes in human capital, research has shown that as a result of being poor people's IQ drop 13 points on average (Mani, Mullainathan, Shafir, & Zhao, 2013). This means that the productivity of the entire population can be improved drastically when people are guaranteed an unconditional safety net; people's intelligence will improve and people are more willing to invest in themselves because a guaranteed minimum income removes people's fears and stress over losing their livelihoods, thus permitting them to focus on the future and achieving their full potential.

### 1.2.3 Technological advancement and automation

Lack of a social safety net can result in fear and opposition to innovation, something which the Luddites clearly demonstrated (Krugman, 2013). When in the eighteenth century the Industrial Revolution emerged in England and modern methods for production succeeded each other rapidly it rendered the skills of artisans obsolete. In the mechanized wool industry skilled workers – they called themselves the Luddites – revolted against the automation of their jobs: out of desperation of losing their livelihood they destroyed the machines that would replace them. It is therefore important to organize society in a way so that innovation benefits everyone and does not result in the risk of poverty for some people.

Up until now innovation has always created more new jobs than it destroyed. However, with the dawn of robots in mind, experts are doubting as to whether this trend will always be true (Smith, Anderson, & Rainee, 2014; Frey & Osborne, 2013). Some of the experts predict a post-work post-scarcity era where work itself will be obsolete, the need for an income other than from work is apparent in such a society. However, from the literature we cannot conclude that the emergence of robots or artificial intelligence will with certainty result in a net decrease of jobs; but, what we do know is that there will be winners and losers of innovation. Overall, technological innovation is assumed to improve living standards, but this is not true for the people who's jobs disappeared as a result of innovation. The people who lost their livelihood should be given the opportunity to adapt their skill-set to the needs of modern society. A universal social protection system can protect these workers against the volatile and rough elements of innovation and provide them with an opportunity for retraining.

Closely related to this is that a "decommodifying" social protection system like UBI encourages grassroots innovation. This is why Silicon Valley views the UBI as an excellent way to boost tech entrepreneurship (Sadowski, 2016). The basic income permits people to experiment as a self-employed technology worker, in this way the universal income can be seen a subsidy for start-ups. If a safety net would force people to find a salaried job these innovators would not be able to devote their time to exploring new businesses and technologies.

### 1.2.4 No penalization and stigmatization

In the current situation receivers of benefits face stigmatization. There is a strict separation between receivers of cash benefits and people not on benefits and paying taxes. Making this distinction leads to the categorization of people as "deserving" or "undeserving" poor which is detrimental to people's self-worth. A highly apparent separation of rights and duties of the participants in a welfare state could lead to erosion of the solidarity from the contributors –

the tax payers – with the receivers of benefits (Ulriksen & Plagerson, 2014). Universalism attempts to remove this separation between benefit receivers and non-receivers by making everyone effectively a receiver. A universal benefit gives freedom to people to shape their activities that are best suited for them. This self-deterministic way of approaching people is the opposite of the paternalistic approach, it promotes autonomy and assumes people know what is best for themselves.

### 1.2.5  Removal of the poverty trap

Instead of the negative incentives of punishment and stigmatization a universal benefit could lead to a positive incentive if it is designed in a way so that the gross earning of an extra euro will also result in a higher net income. If a person is jobless and a receiver of benefits he or she is in a poverty trap – specifically an unemployment trap in this case – when the incentives to accept a job is very low, i.e. the net income will hardly change when this person starts a job, it remains more attractive to stay on benefits than accepting a job offer. The poverty trap can also apply to people having a job, when there is a threshold for receiving benefits, for example child benefits or rental subsidies, it might be more attractive to work exactly the amount of hours so that the salary will stay below the earning threshold in order to remain eligible for these cash transfers. A system of guaranteed minimum income brings the opportunity to design a tax-benefit system that makes sure that higher gross wage will always lead to higher net wage and hence removing the poverty trap.

### 1.2.6  Decrease in non-take-up, fraud and administrative costs

If a social protection is designed in a way that actively discourages people to make use of it – stigmatization is one of the ways to do that – only the most desperate among the population are expected to apply for benefits and thus saving costs from the perspective of the government. This leads to a situation where people are entitled to benefits because they live in poverty but are reluctant to apply because they would rather live in poverty than going through a demeaning eligibility process. A full universal approach would lead to a situation where everyone who is entitled to benefits receives them without any stigmatization, thus removing the non-take-up.

Fraud could be decreased as a result of universal benefits. If everyone is on benefits there is less room to cheat the system. If the system is not universal and there are clear eligibility criteria it is possible for someone who is not entitled to fake these eligibility criteria. If government would choose for a system like UBI fraud would only be possible in the case of identity theft

when a criminal cashes in a benefit from his victim.

A reduction in administrative costs can be expected, because a much smaller amount of civil servants is required to execute a universal benefit programme. The targeting of people, the checking of eligibility criteria and subsequent monitoring costs a lot of work hours for the government. A universal benefit does not require the labour-intensive selection of eligible people, but it requires the distribution over the whole population which is a much easier administrative process.

## 1.3  Opposition to universalism

### 1.3.1  Affordability

The major counterargument of universalism is that it is not affordable. For a UBI the "free money" should come from somewhere. This is why we are assuming revenue-neutrality in this paper to counteract this argument: the government's budgetary position is not going to change as a result of the proposal we will introduce later in this paper. However, what is intuitively true is that a universal benefit cannot be paid for when the universal income comes on top of all the existing benefit programmes. It is therefore expected that universal benefits can only be affordable when it replaces at least some of these benefit programmes.

### 1.3.2  Inefficient way of combating poverty

If a UBI is a system of social protection and is judged on its ability to combat poverty it will be lacking greatly in efficiency, precisely because the top 1% receives the same amount as the poorest 1%. For every euro spent on social protection only a small portion will reach people living in poverty, therefore, targeted benefit programmes demonstrate much more efficient outcomes for each euro of tax payer's money. We will elaborate on this in the next chapter and explain why an NIT beats a UBI in this regard.

### 1.3.3  Incentives to work

The most common objection to a UBI is that people will not work when they have basic income security. Income taxes discourage people to work and in general the higher the income tax rate the less people are inclined to supply their labour in the labour market. Therefore, if a proposal for a system with universal benefits would be accompanied by increases in tax rates this would lead to lower labour supply. This argument touches an economic as well as an

ethical aspect. We discuss the behavioural aspect in Chapter 4 where we look at experiments involving a guaranteed minimum income. Furthermore, some people also tend to have ethical difficulties with a cash benefit where nothing is required in return. The expression "you have to work for your food" demonstrates this line of thinking: if one is not willing to work or make an effort to work the penalty of starvation is regarded as fair. We will discuss the ethical aspect further in Chapter 3.

### 1.3.4  An excuse to dismantle the welfare state

Current benefit programmes are tailored to the needs of individuals. The government makes a labour-intensive effort to identify those individuals who need benefits the most. Universal benefits to all people regardless of ability to work does not do justice to individual characteristics like labour handicaps or level of intelligence. If we abolish all current benefit programmes as a result of introducing a UBI or other social protection system with a universal component we risk that there will be poor people who will be worse off with only a basic income than they were before with targeted benefits. It is also on this subject that political ideologies clash, for instance, one of the major reasons some conservatives favour UBI is that it encourages either the abolishment or privatization of all other welfare programs except a UBI and decreases the role of the state in society. A more leftist viewpoint favours the existence of other benefit programmes next to a universal one, the leftists fears that UBI is a way to dupe them into abolishing a carefully and slowly implemented welfare state in favour of a single meager benefit for all.

### 1.3.5  Differences between regions

One single benefit for all also means that no distinction will be made between the needs of people in different regions. For instance, in the United Kingdom London is a very expensive city to live in. The UBI would pay the same basic amount to someone in London as someone in a cheaper rural area. The sober basic income amount would conceivably make it impossible for people to live in London on only a basic income grant, while living quite comfortably in the cheaper area. Because a universal benefit would not take into account regional differences undesired consequences, for instance the geographic segregation of people on the basis of income, could emerge.

### 1.3.6 Subject to political pressures

It is easy to lower the benefit level of the UBI under pressure of interest groups or the economic climate. This is much harder for current benefits, especially programmes that are funded out of payroll taxes. Because of this a UBI is much easier to undermine than for example a universal pension. The level of entitlements could become quite volatile because they remain a topic of constant political debate.

## 1.4 The purpose of this paper

After this account of arguments in support of universalism in social protection and its objections, we move on to the core of this paper. In essence, the purpose of this paper is to explore whether UBI – or some watered-down variation of it – is financially and fiscally feasible. The research question we seek to answer is as follows: given revenue-neutrality, what concessions should be made to a UBI so that it becomes feasible in terms of a high enough guaranteed minimum income? We provide numerical evidence through a static microsimulation model.

Firstly, this paper theoretically develops a Universal Basic Income scheme into a Negative Income Tax (NIT) scheme, which is considered to be a more feasible system than a UBI, but it relinquishes the provision of universal benefits. That chapter further develops the NIT scheme into a Hybrid Negative Income Tax (HNIT) scheme. A mixture of an NIT and classic social assistance is proposed with a 100% withdrawal rate of benefits. Secondly, the ethical reasoning behind a UBI and NIT is examined. Thirdly, we look at the relevant experiments conducted so far on the topic of guaranteed minimum income and what we have learned from them with a specific focus on behavioural effects. Then, we model an HNIT in the United Kingdom and Italy using microsimulation techniques making use of the EUROMOD tool. We justify assumptions and parameters used in this tax-benefit model and then interpret its outcomes in terms of poverty and inequality estimates and affordability. In the ensuing discussion we take another critical look at the outcomes of our microsimulation model and the HNIT model in general. Lastly, this paper presents policy-relevant recommendations about the Hybrid Negative Income Tax in its conclusion.

# 2 | A Hybrid Negative Income Tax

## 2.1 UBI schematically

In this chapter we will carefully analyze the differences between UBI and NIT, the implications arising from this and ultimately introduce a system based on NIT: the Hybrid Negative Income Tax (HNIT). The HNIT scheme is the subject of quantitative analysis in this paper.

A UBI can be represented as:

$$NI(GI, B, t) = (1 - t) \cdot GI + B = GI - t \cdot GI + B \tag{2.1}$$

Where *NI* is the net income of a person as a function of *t*, *B* and *GI*. *t* is the average tax rate which is here equal to a simplified constant marginal tax rate; it is a simplified representation assuming the tax rate is constant across all incomes. Later we will apply different tax rates to different tax brackets, but to provide clarity now a constant *t* is chosen. *GI* is the gross income; *B* is a constant which represents the UBI grant amount. As can be inferred from the equation, *t* is only applied to the market income *GI* not the total income *GI* + *B*.

Equation 2.1 is represented in Figure 2.1 graphically, it shows how gross income translates to net income in a UBI scheme. First, the black lines show the situation when no taxes are levied. At the 45 degree line *NI* = *GI* the gross market income is also net income. *TGI* = *GI* + *B* is the gross market income adding a basic income grant *B* resulting in total gross income, hence the acronym *TGI* which is represented by the other black line. The blue line *QR* shows net income for each level of total gross income under a UBI regime. The green area or rectangle *OB'BGI* is the total amount of basic income grants paid out, whereas the yellow triangular area *BRN* is the total amount of income taxes collected. *M* is the point where amount of taxes paid over gross market income equals the UBI amount, so this is the break-even point: people earning more than this threshold are net tax payers while people earning less are net receivers. Note that at every level an increase in gross income also leads to an increase in net income, this is because the marginal tax rate never exceeds 100% and therefore it visually proves that
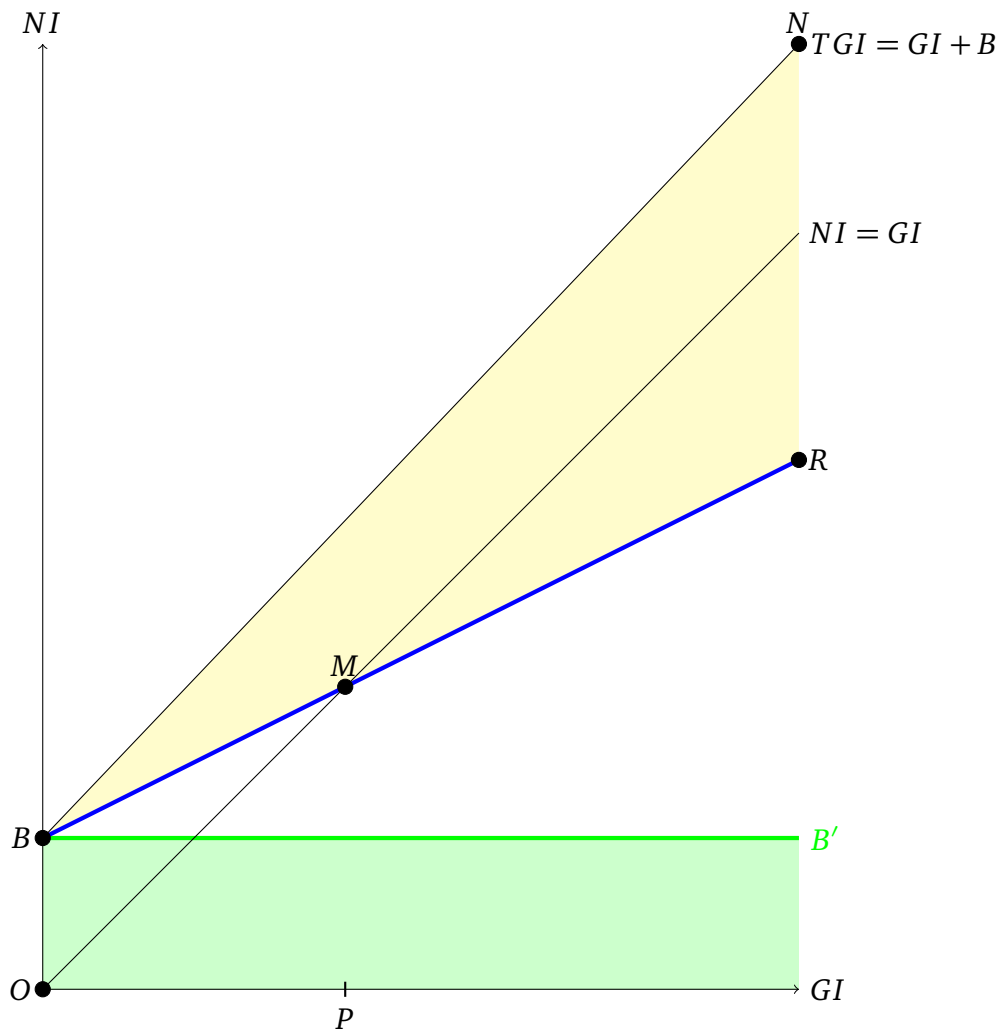
Figure 2.1: Gross-to-net income scheme of UBI

a UBI has no poverty trap.

The problem with a UBI is its lack of efficiency: because it is generic in nature – everyone receives it – its redistributive properties are limited and although its poverty-reducing aspect is very large, it is also very inefficient. Put differently, only a small portion of all the basic income grants disbursed reaches poor people. Nonetheless, given a sufficiently high basic income amount, poverty would be eradicated overnight. However, this would come at a very high cost for the government thus rendering it inefficient in combating poverty. In other words, a targeted benefit towards the poor is much more cost-effective than a UBI.

## 2.2 The difference between a UBI and an NIT

The main difference between a Universal Basic Income and a Negative Income Tax can be explained by the timing of the benefit disbursements to the recipients: it is ex-ante under UBI and ex-post under NIT. This means that a UBI is paid out in advance, regardless of earnings of the recipient while NIT first takes a person's earnings into account and then either disburses cash benefits or provides a tax exemption to the recipient depending on this person's income. The result is that UBI provides universal benefits while NIT provides universal protection. Note that every person – either rich or poor – still is entitled to the same amount as under a UBI, only now the people with high income receive their entitlement in the form of a tax exemption while people with sufficiently low income receive the entitlement as a cash transfer.

The fact that on the basis of gross income it is decided whether a person gets a tax exemption or a benefit it follows that the government saves the effort of disbursing the basic income grant to people who would be paying this grant back in the form of taxation anyway. This paying out and taxing back renders it unnecessarily inefficient, not in the last place because it also carries a risk of leaking away of the basic income grant: disbursing of benefits is easy; on the other hand, taxing is not because people will always find ways to not pay taxes by either not working or earning their income abroad. Because of these efficiency considerations NIT is our first iteration of adjusting a UBI into devising a feasible system of universal social protection.

So, what can an NIT change about a UBI that broadly retains UBI's properties while improving on efficiency? Firstly, an NIT can implement an integrated system of taxes and benefits, commonly named a tax-benefit system. Introducing multiple tax-brackets within this system gives a government the tools to optimize marginal tax rates at every income level employing progressive tax rates. On the other hand, it would require a tax declaration from everybody (infants, disabled, elderly) at the end of a fiscal year to consolidate incomes and benefit payments. Then, on the basis of the reported income people will either receive their entitlements automatically, either in the form of a cash transfer or as a tax exemption. Secondly, an NIT is much friendlier for the budget. Instead of paying every citizen every month the full basic income amount now only the people with a taxable income below the threshold receive a benefit amount, while people with a high enough salary automatically claim this amount as lump-sum tax exemption when doing the tax filing. This improves efficiency, especially for the case in which the recipient's salary is sufficiently high so that this person should pay the whole basic income amount back as income taxes, eliminating the need of paying back and forth this amount. Thirdly, given that NIT is a less radical change of the system than the UBI, an NIT could be considered politically more feasible than a UBI, also because the amount of funds

flowing out of the government's coffers is considerably smaller in an NIT scheme.

**No more incentives through tax deductions**

In the current system government has the ability to influence people's behavior through certain tax deductions, e.g. the deduction of certain medical and educational expenses. A consequence of the NIT system is that tax exemptions are now a fixed lump-sum: much like the abolishment of all separate benefit programmes to form one universal benefit all different tax deductions are merged into one universal tax exemption. Therefore, the government loses its ability to steer people's behaviour, because only one universal exemption is permitted. This is a trade-off that is part of the NIT-scheme: similar to the universality of benefits paid out to recipients carry no conditionality, the level of tax exemption is fixed and behavior from the taxpayer has no influence on this amount. This is also the major factor which adds to the simplicity of the tax system and why the tax authorities are expected to save on administrative costs in the long term. So, an NIT scheme basically trades in a complicated tax system where people's behavior can be influenced by government to a simpler tax system where it is no longer possible to influence people by incentives as a consequence of tax exemptions.

## 2.3  NIT schematically

An NIT can be represented as:

$$NI(GI, P, t) = (1 - t) \cdot GI + (t \cdot P) = GI - t \cdot GI + t \cdot P \tag{2.2}$$

The NIT equation maintains all elements from the UBI equation, but introduces a constant $P$, where $(0, P)$ is the break-even point: the level where gross income equals net income – or the point up to which people will pay no tax and receive a payment called the "negative tax" instead. Note that constant $P$ also denotes the effective amount of tax exemption someone receives when earning above this threshold. This constant is a policy parameter that can be set according to design preferences. As can be seen, the difference between Equation 2.1 and 2.2 is that the basic income grant $B$ is replaced by the expression $tP$. If $tP$ is equal to $B$ this results in exactly the same line $QR$ as shown in Figure 2.2, which demonstrates the micro-financial equivalence of an NIT scheme to a UBI scheme provided the slope $t$ is identical in both equations. Except, now the green and yellow areas are much smaller, equating to less tax income and less benefit expenses. The total of benefits paid out is now only the triangle of *OQM* in Figure 2.2 instead of the rectangle *OB'BGI* in Figure 2.1; the taxes received is now

merely the triangle of *MRN* in Figure 2.2 instead of the larger triangle of *QRN* in Figure 2.1. This visualizes the previously mentioned advantage of the NIT scheme that decreases the back and forth transferring of tax money.
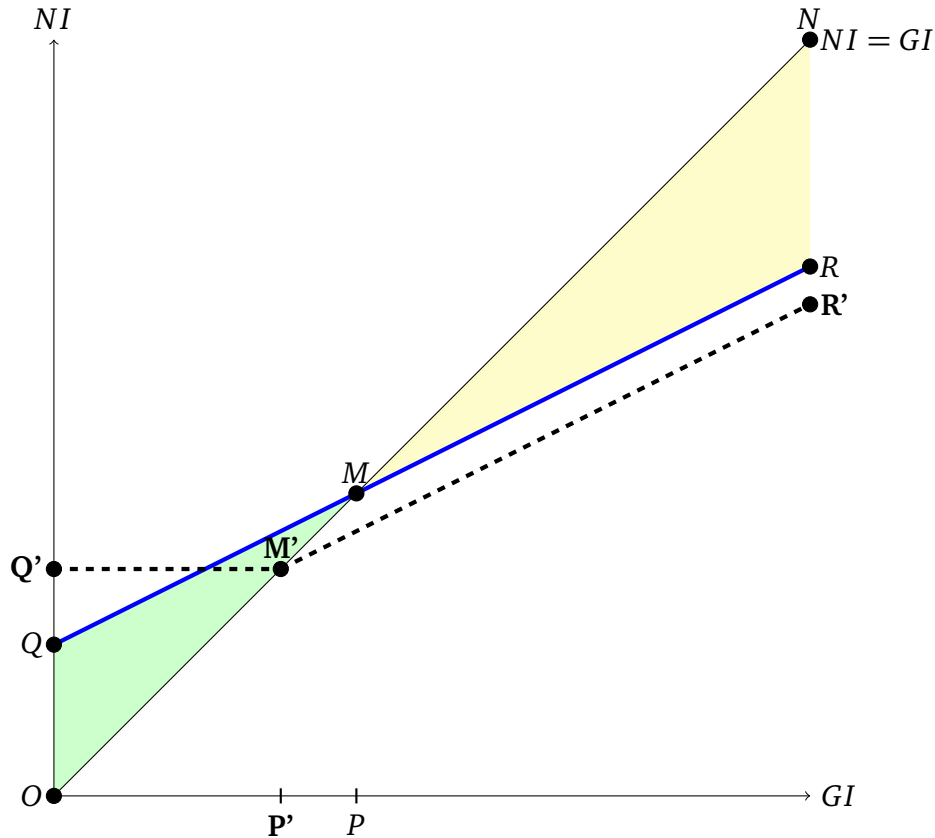


Figure 2.2: Gross-to-net income scheme of NIT (blue line) and HNIT (dashed line)

## 2.4 Hybrid Negative Income Tax

### 2.4.1 The dynamics of *tP*

The expression *tP* in Equation 2.2 multiplies tax rate *t* with the break-even point of gross to net income *P* (or the level of *GI* where the *QR* line intersects with the *NI = GI* line in Figure 2.2). A numerical example should shed some more light on the dynamics of the multiplication of variable *t* and constant *P*. Assume tax rate $t = 0.5$ and the break-even amount where paid tax equals received benefits $P = €\,1,000$. *tP* is in this case €500 and is also the net income amount if gross income level is €0 (i.e $NI = 0 - 0.5 * 0 + 0.5 * 1000 = 500$). A gross income

of € 600 would result in an € 800 net income (i.e $NI = 600 - 0.5 * 600 + 0.5 * 1000 = 800$), the government tops up gross income by € 200 in this case. Conversely, in the UBI scheme government would first pay out € 500 as basic income grant and then later recover € 300 in taxes in this example. This is also where the term "negative tax" originates from, it is not a "positive" tax paid to the government, but a "negative" tax received. Above the threshold of gross income $P$ this tax turns from negative to positive: a gross income of € 2,000 leads to a net income of € 1,500 (i.e $NI = 2000 - 0.5 * 2000 + 0.5 * 1000 = 1500$), so the tax is a positive € 500. Under a UBI regime the government would disburse € 500 first and then collect € 1000 in taxes in this case. This example also provides insight into the exemption amount set at P = € 1000: of gross earnings of € 2000 this person is exempted over € 1000 of gross earnings, resulting in a tax that has to be paid over the remaining € 1000 at 50% resulting in the positive tax amount of € 500.

### 2.4.2 The big trade-off

Instead of $tP$ in the NIT scheme, we have an amount $B$ in the UBI scheme which is added to gross income to obtain net income; in the NIT scheme we have the ability to construct the same $B$ using slope $(1-t)$ and the point M $(P,0)$ by changing $t$ and $P$ in the equation. A basic income amount (UBI) of € 500 can, for instance, also be attained with a $P$ of € 2,000 and a $t$ of 0.25 in the NIT scheme, this corresponds to $(0,Q)$ in Figure 2.2: the net income when a person has no gross income. Varying both $t$ and $P$ has major implications for the design and affordability of the NIT scheme. We would like to minimize both $t$ and $P$ and – paradoxically – maximize the product $tP$, because $tP$ is equivalent to the basic income amount $B$. It follows that a trade-off has to be made, because not every parameter can be optimized in this regard. The consequences of a higher $t$ would mean less work incentives because of increased taxation for the income level up until $P$. On the other hand, if $P$ increases it means that up to gross income level $P$ people receive a negative income tax (i.e. more government expenditure) and no taxes are paid at all. Because gross incomes are effectively exempted up until this amount this decreases tax revenue and a higher $P$ means more negative income taxes are disbursed, consequently endangering the affordability of the tax scheme.

### 2.4.3 Introducing a Hybrid Negative Income Tax

A possible solution to the trade-off is to maximize the guaranteed income amount at $(0,Q)$ in Figure 2.2 and minimize the tax exemption amount $P$. This can be accomplished by setting $t$ at 1, which is equivalent to a tax rate of 100%, i.e. up to $P$ all earned $GI$ is taxed "away" and

replaced by a flat rate benefit of *tP*. Naturally, this special tax rate should not be set across the whole income range, but only until *P*, after that point a new tax bracket should commence with a much lower tax rate than 100%. This marginal tax rate at the lowest income level is synonymous for the withdrawal rate of benefits, because tax is not levied in the form of actual taxes but in the form of benefits that are withdrawn; we will use these terms interchangeably.

If a tax scheme is to be designed which both has a sufficient minimum income guarantee and is revenue-neutral, the price to pay is to sacrifice work incentives at the very bottom of the income range. This modified scheme is displayed in Figure 2.2 as *Q'* and *P'* resulting in the dashed black line. Now, *Q'* equals *P'* (*P' = Q'*) with *Q'* higher than the original *Q* and *P'* lower than the original *P*. The new gross-to-net income line is *Q'M'R'*. The horizontal segment *Q'M'* depicts the fact that regardless of the level of gross income the net income equals *Q'* as is the case with a 100% marginal tax rate. The new break-even point of taxes and benefits is *M'*. The triangular area of disbursed benefits is now *OQ'M'* and the triangular area of received taxes is now *M'R'N*.

Because of this newly introduced 100% marginal tax rate for the bottom income levels, this new scheme resembles the classic social assistance scheme. Therefore, it is named the Hybrid Negative Income Tax as it is a mixture between NIT and classic social assistance. Technically, it is simply an NIT where *P'* equals *Q'* and *t* is 1 at the lowest tax bracket. However, if this high tax rate would lead to a large decrease in labour supply and hence lower tax revenue, it would compromise the important assumption of revenue-neutrality which we wish to uphold in designing this social protection system. Therefore we devote Chapter 4 to exploring the current academic literature as to discover the consequences of a guaranteed minimum income on labour supply decisions.

## 2.5  The choice for a Hybrid Negative Income Tax

How an HNIT scheme is constructed with a UBI scheme as starting point now becomes clear. When switching from a UBI to NIT we surrendered the property of a universal benefit in favour of universal protection. Additionally, all citizens (or their employers) should declare income tax to be able to claim the negative income tax. What we gained in return as a result of this compromise is improved affordability. Then, within the NIT scheme, we sacrificed work incentives at the lowest income tax bracket, i.e. a 100% withdrawal rate of benefits. This sacrifice enables the new HNIT scheme to decrease tax exemptions and increase the guaranteed minimum income amount, improving again affordability and also improving effectiveness in combating poverty.

Now, why do we propose an HNIT scheme instead of simply choosing a classic social assistance scheme; what are the advantages of an HNIT over classic social assistance? Firstly, compared to classic social assistance all citizens are entitled automatically to the same guaranteed minimum income, they do not have to go through a demeaning eligibility procedure. Secondly, the distinction between social assistance receivers and tax payers is blurred, leading to less stigmatization. The guaranteed minimum income is equal to the tax exemption, therefore all citizens are entitled to the exact same amount, only they receive it either in the form of a cash transfer or in the form of a tax exemption, hence strengthening the social contract between net tax receivers and net tax payers (Ulriksen & Plagerson, 2014). Thirdly, instead of the current patchwork of social assistance and a myriad of other benefit programmes, under HNIT the whole social protection system is administered by the tax authorities in one tax-benefit system. This will provide administrative savings on part of the government and it should provide more transparency to citizens improving their insight into work incentives.

Overall, in terms of designing a tax-benefit scheme that "decommodifies" workers, provides a Social Protection Floor as well as exhibits financial feasibility the HNIT scheme seems to be very promising. The HNIT scheme is a theoretical model that we built and will be the focus of our quantitative analysis to explore more of its properties.

# 3 | The ethical reasoning behind a universal income

Is it morally right for people to live in poverty when they do not earn money for a living? In other words, should we punish people with becoming poor when they do not have a salaried job? And, is the refusal of paid work a valid reason to fall into severe poverty? To not live in poverty is a right in its own instead of a privilege as demonstrated by international law in Chapter 1. But, on the other hand, it is also in the interests of society to make sure that parasitic behaviour is discouraged. Steering people's behaviour can be accomplished by the carrot and by the stick, but, when we ban the stick, i.e. punishing people with poverty, do we still have effective means at our disposal to discourage parasitic behaviour?

Let us compare three persons in a thinking experiment. One person refuses to work while he is perfectly capable and desired by employers, but prefers to sit on his couch watching television all day long. This is his prime and only daily activity, we call him Donald. The next person also refuses to work in the traditional sense in that she does not find her passion in the jobs available to her, although her abilities are desired by employers. Instead, her passion is to help disadvantaged orphans, therefore she gives all her time to cooking for them and improving their lives in any way she can, we call her Angel. A third person is a strong manual labourer who just was fired from his job, because his work activities are now being done by a robot. Additionally, this person applies tirelessly to new jobs, but is unable to find an employer who is looking for his type of skills, we call him Rocky. Assume that all three of them are without savings or other income.

Now, in this thinking experiment society has to decide who is deserving or undeserving of receiving a benefit. It is obvious to think that society wants to cut Donald's benefits to push him into getting a job. Angel, despite refusing to get a job, is providing the community with a valuable service, so it is less obvious to withhold benefits from her. Rocky is doing everything he can to get a job, but is unable to; common sense and current unemployment benefit programmes in general grant a benefit to him too. A question we could raise is: how

can we effectively distinguish between Donald, Angel and Rocky? How do we target benefits to Angel but not to Donald? Intuitively Angel is deserving and Donald undeserving, but they both refuse to apply for jobs so it is impossible to make any distinction based on the proof of applying for jobs that people have to provide which is used to determine benefit eligibility. However, this would only work in distinguishing between Rocky versus Donald, because Rocky is applying to jobs and therefore playing by the rules while Donald is not.

The thought experiment becomes even more complicated when children come into play. What if Donald is a single parent and has children? Admittedly, a single parent who only watches television is not an ideal role-model for his children, but punishing him into poverty inevitably also has consequences for his children who will not only grow up with a bad parent but also in bitter poverty. Does Donald still count as undeserving? Surely society would classify his children as deserving. However, making benefits conditional on having children introduces a new issue: it provides an incentive for having children. Although child benefits are widespread in the Western world, it is a problem if as a result of benefit incentives getting children is the best way out of poverty.

The thought experiment shows how difficult it is for society to determine who is deserving and who is undeserving and the problem to differentiate between them. If this distinction can be made at all, it is difficult to implement. It also follows that society prefers to have a certain amount of public funds devoted to implementing this distinction between deserving and undeserving. From a general welfare perspective it is not desirable to devise policy on the basis of a few lazy persons in society. Designing a system prioritizing to prevent a small minority from not doing anything productive with their lives could hurt the rest of the population quite badly – vulnerable people in specific. As we discussed in the previous chapter an advantage of handing out money to everyone is that the distinction between benefit receivers and non-receivers disappears. At most, people differ in the amount of tax contribution, but almost all of them do pay some amount. This also entails that the distribution of duties within a population changes. In the situation of conditional welfare the duties are allocated to the people who do not receive welfare, they are the ones paying for people receiving the welfare. This leads to an "us versus them" situation that can frustrate the solidarity between the middle class (who effectively pay for social protection expenditure) and the recipients on the other side. In this case it is dependent on the good will of the middle class to provide for the people who cannot provide for themselves.

An interesting approach to the reason why people are so unsettled by the parasitic behaviour of a few individuals can be explained by an evolutionary psychological perspective (Petersen, Slothuus, Stubager, & Togeby, 2011; Petersen, Sznycer, Cosmides, & Tooby, 2012).

Petersen et al. (2012) hypothesize that the compassion to share resources with people outside the family circle could only have existed when mechanisms evolved that would protect their compassion from parasitic behaviour. This results in a "deservingness-heuristic" that can influence people's opinions on welfare policy. In experiments the appearance of intentional avoidance of productive behaviour induces anger to the participants and subsequently decreases support for social assistance policies. This emotion and consequent change of opinion is independent of how involved the participant is in politics and what political ideology he or she is leaning towards. The appearance of intentional avoidance of productive behaviour is compared with "neutral" squandering of money on a random project by the government like the funding of an art project that genuinely no one appreciates, and it turns out that the appearance of deliberate parasitic behaviour elicits a much stronger emotional response. People would prefer money to be squandered than to give it to people who are intentionally avoiding productive behaviour, despite that in this case at least some people would benefit from it while in the case of squandering no one would benefit from it. This evidence shows that people are conditioned to avoid parasitic behaviour in an irrational way: we would rather throw money away than give it to someone "undeserving". We can either accept this human psychological feature and shape our policies to prevent parasitic behaviour at all costs as our innate emotions compel us to, but we could also attempt to be conscious of our biological drive and accept non-punitive social protection policies that are more rational and would benefit the general and economic welfare of society more. Overcoming this aspect would permit us to design a social protection system that is devoid of all stigmatizing aspects.

# 4 | Guaranteed minimum income experiments

There have been many experiments concerning a guaranteed minimum income. Because the labour supply response of a guaranteed minimum income is of importance for the feasibility of our proposed HNIT system it is worth exploring further. There are roughly three categories of experiments that are relevant to our topic. Firstly, there are examples of funds that distribute revenue from natural resources to the entire population, just like a UBI would do. In Alaska and Iran they have implemented such a system (Goldsmith, 2010; Tabatabai, 2011). However, the level of guaranteed income is relatively low and there are no analyses done on labour supply effects. Secondly, there have been experiments of a UBI in developing countries. Namibia, Uganda and India (Colombino, 2015) have seen notable pilot projects based on UBI schemes. However, since these experiments are specifically conducted in developing countries it is doubtful as to whether any results on labour supply can be generalized to industrialized countries. Thirdly, experiments have been conducted in Canada and the USA, these experiments used UBI and NIT. We will focus on these experiments because we can be more confident that these experimental results are applicable to our analysis. The following five experiments have been conducted in North America: the New Jersey Graduated Work Incentive Experiment (NJ) in New Jersey and Pennsylvania, the Rural Income-Maintenance Experiment (RIME) in Iowa and North Carolina, the Seattle-Denver Income-Maintenance Experiments (SIME/DIME) in Seattle and Denver, the Gary, Indiana Experiment (Gary) in Gary, Indiana and the Manitoba Basic Annual Income Experiment (Mincome) in Manitoba, Canada (Widerquist, 2005).

The research conducted on these five experiments involving labour supply effects have been excellently summarized by Hum and Simpson (1993). Keeley, Robins, Spiegelman, and West (1978), Robins (1985) and Burtless (1987) conducted data analysis on annual changes in hours worked which Hum and Simpson (1993) compiled; this summary can be found in Table 4.1. All experiments estimate that the labour supply effects for husbands is between a 1 percent and 9 percent decrease in annual hours worked. Wives are estimated to change their

| | Husbands | | Wives | | Single female heads | |
|---|---|---|---|---|---|---|
| | Estimates | % | Estimates | % | Estimates | % |
| **NJ** | | | | | | |
| Keeley(1978) | -116 | -7 | -75 | -33 | ... | ... |
| Robins(1985) | -34 | -2 | -56 | -25 | ... | ... |
| Burtless1987) | -21 | -1 | -56 | -25 | ... | ... |
| **RIME** | | | | | | |
| Keeley(1978) | ... | -9 | ... | -29 | ... | ... |
| Robins(1985) | -56 | -3 | -178 | -28 | ... | ... |
| Burtless1987) | -56 | -3 | -178 | -28 | ... | ... |
| **SIME/DIME** | | | | | | |
| Keeley(1978) | -147 | -8 | -139 | -21 | -155 | -15 |
| Robins(1985) | -113 | -7 | -141 | -21 | -163 | -16 |
| Burtless1987) | -144 | -8 | -107 | -17 | -85 | -9 |
| **Gary** | | | | | | |
| Keeley(1978) | -80 | -5 | -9 | -3 | -102 | -28 |
| Robins(1985) | -35 | -2 | -58 | -20 | -37 | -10 |
| Burtless1987) | -114 | -7 | +14 | +5 | -112 | -30 |
| **Mincome** | | | | | | |
| Hum and Simpson (1993) | -17 | -1 | -15 | -3 | -79 | -7 |

Table 4.1: Compilation of labour supply estimates (as annual hours worked) of different researchers on five guaranteed minimum income experiments in North America (adapted from Hum and Simpson (1993))

work hours between a 5 percent *increase* and a 33 percent decrease. Single female head of households are calculated to decrease their labour between 7 percent and 30 percent.

Because the NIT and UBI experiments have been conducted between 1968 and 1978 it can be expected that traditional gender roles, where the husband is the main earner, were more pervasive than is now the case. In the light of diffused gender roles in 2017 it is more likely that the results for husbands should be interpreted as the effects for main earners while the results for wives should be interpreted as the effects for second earners, regardless of their sex. Another caution regarding these experiments is that most of the experiments are specifically targeted, there is no universal aspect. RIME is only conducted in rural areas and Gary is only administered to black people; moreover, all experiments have been targeted to poor or near-poor people. The withdrawal rates differed between 30% and 80% in the NIT experiments (Widerquist, 2005). This is less relevant for the Mincome experiment, which resembles more a UBI scheme (Forget, 2011) while the rest are NIT experiments.

We believe that the results of the SIME/DIME experiment is most comparable to our situation. Also, it is not targeted to specific population groups besides near-poor households, it is the best choice in terms of longest duration (6 years, for some households even 10 years), it is the most generous scheme and it has the most participants. The withdrawal rate ranged progressively between 50% and 80% and therefore also has one of the highest withdrawal rates. Because of these reasons we would specifically like to point out the importance of the SIME/DIME experiment. The results indicate a 7 to 8 percent decrease in annual hours worked for main earners, while second earners will decrease their annual labour supply by 17 to 21 percent, single parents will decrease their hours worked by 9 to 16 percent.

Our meta analysis shows a clear picture regarding labour supply estimates as an effect of introducing a guaranteed minimum income. The main earner shows a limited decrease in his or her hours worked, while the second earner shows a notably larger decrease in hours worked. However, these effects are not as large as we would have initially feared. Moreover, people tend to not squander the income on "immoral goods" like drugs or expensive TVs, frequent the hospital less often and stay longer in school (Munnell, 1987; Forget, 2011). Nonetheless, what we do not know is how people with higher incomes will react to a guaranteed minimum income since all of the relevant experiments are targeted to people with low income only. It is conceivable that the labour supply response is negligible, because intuitively it is not rational to exchange a well paying job for a very modest guaranteed minimum income. Therefore, when looking at labour supply responses over the whole population – not just the poor – the reduction in labour supply as a result of guaranteeing a minimum income could be even smaller than was found in the experiments.

# 5 | Methodology

## 5.1 Microsimulation

As a method for analyzing an HNIT scheme microsimulation will be used. It is an excellent way for gauging the distributional and poverty alleviating effects of a proposed tax-benefit system on an ex-ante basis. Because a pure HNIT scheme has never been implemented on a large scale beside the experimental NIT versions mentioned earlier, the effects of a full-scale HNIT scheme will be forecasted using the technique of microsimulation. Microsimulation is also very helpful in the costing of an HNIT scheme to determine the fiscal burden, because it is relatively straightforward to generalize the monetary results on microlevel to the whole surveyed population. This static microsimulation will provide the evidence to make inferences about the feasibility of an HNIT scheme.

### 5.1.1 EUROMOD

The European Commission has funded a tax-benefit microsimulation tool for countries of the European Union (Sutherland & Figari, 2013). It has been developed by the University of Essex in cooperation with many local research centers throughout Europe which provide the country-specific adaptations for the model. The model consists of a policy database that provides the capability of simulating taxes and benefits that are not directly recorded by European Union Statistics on Income and Living Conditions (EU-SILC) surveys. This is essential information for the realization of a proper analysis of an HNIT scheme. In this way it is possible to establish taxes paid and benefits received on a micro-level, therefore the EUROMOD model can greatly enhance the power of EU-SILC in the context of microsimulation. EUROMOD is a static microsimulation model.

EUROMOD has policy switches with which it is possible to either implement or remove current taxes and benefits within the model. Hence, it is possible to add back employees' and employers' social insurance contributions and personal income taxes to the net salary reported

| Type of income | Source |
| --- | --- |
| Gross wage income | Provided by EU-SILC |
| Employee's SIC | Simulated by EUROMOD |
| Employer's SIC | Simulated by EUROMOD |
| Personal income tax | Simulated by EUROMOD |
| **Gross pre-SIC wage** | Aggregated by EUROMOD |

$+$

Table 5.1: Overview of the source of the gross wage variable using EUROMOD simulations

in the survey data. This process of reconstructing a gross pre-social insurance contributions wage variable is illustrated in Table 5.1. Analogously, benefits that the government paid out can be made undone in the dataset. A new tax system can be built using this original gross personal income with benefit payouts rolled back.

In Figure 5.1 the process of microsimulation is schematically displayed. First, countries themselves collect survey data on personal and household income, this is the standard EU-SILC survey. This data is adapted by EUROMOD researchers for use within the EUROMOD model. EUROMOD country teams translate respective countries' social policies into EUROMOD's tax-benefit routines for different tax years. At the time of writing EUROMOD celebrated its 20-year anniversary and available policy routines already date back for some countries to 2005; additionally, all countries are updated until 2016. With both tax-benefit routines and adapted data-sets in place it is possible to simulate policy reforms. EUROMOD features an own language to programme tax-benefit reforms. A noteworthy and helpful feature for simulating an HNIT scheme is the ability to programme loops in order to equalize disposable income before and after a tax reform so that disposable income stays equal. The EUROMOD programming language is also conducive to specifying a tax scheme that features different tax brackets.

The process of conducting the microsimulation is entirely done in EUROMOD, this is visualized by the green area in the scheme of Figure 5.1. EUROMOD produces a micro-data set with microsimulated variables as output. After the microsimulation Stata is utilized for poverty and inequality analysis: poverty and inequality indices are produced and are accompanied by graphs to visualize the results.

## 5.1.2 Italy and the United Kingdom

For sensitivity analysis and to be able to see an HNIT scheme in action in two different countries with a developed economy but with differing characteristics the microsimulation model
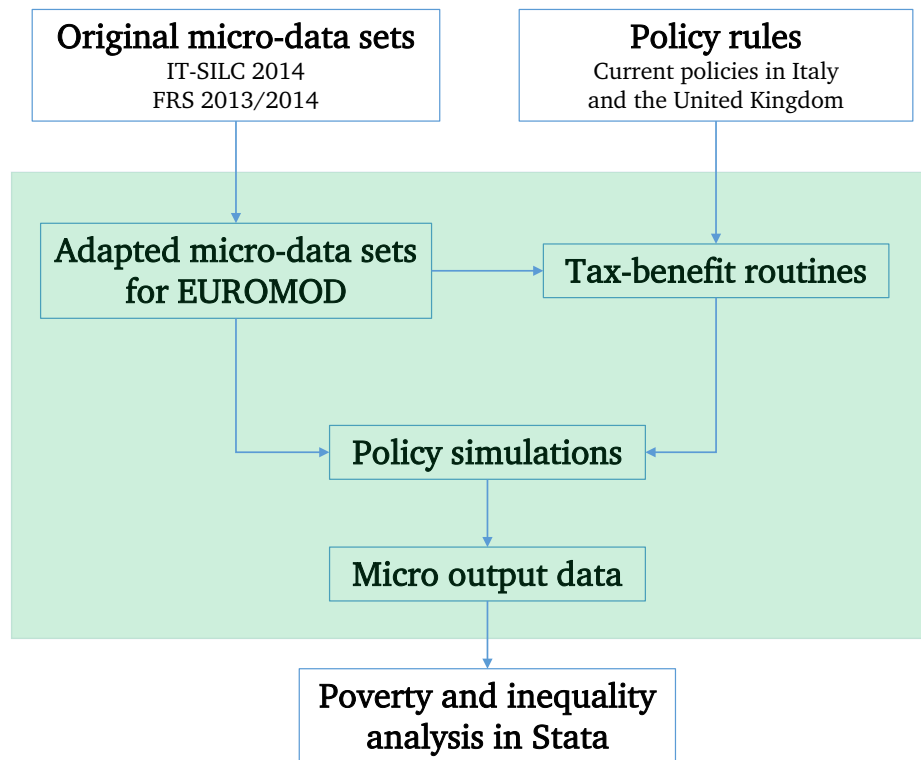
Figure 5.1: Schematic view of the microsimulation process, the green area represents analysis done in EUROMOD

is applied to two individual countries: Italy and the United Kingdom. The choice for these countries is not the author's direct choice, but it is the consequence of limited data access approvals of the EU-SILC survey for all other EU countries except the United Kingdom and Italy. Notwithstanding the limitation of countries, Italy and the United Kingdom are two different countries which vary on economic power, poverty and average tax wedge. Table 5.2 shows relevant statistics for both Italy and the United Kingdom. The United Kingdom has a higher GDP, a lower average tax wedge, and lower headcount and depth of poverty. These are important differences that could lead to interesting results in the microsimulation outcomes. Especially the difference in tax wedge – the difference between the labour costs for an employer and what an employee net receives – is very interesting. It shows that the tax pressure on labour is much higher in Italy than in the United Kingdom. Because the two countries vary on these aspects it turns out that these countries are good candidates to microsimulate separately after all.

Note that incomes are reported in national currencies within their respective surveys. This

|                                                   | Italy    | United Kingdom |
| ------------------------------------------------- | -------- | -------------- |
| GDP per capita in 2016 PPP $                      | $37,964  | $42,898        |
| Social expenditure as % of GDP (for 2013)         | 25.2%    | 25.0%          |
| Average annual wage                               | € 28 890 | £33 102        |
| Average tax wedge                                 | 47.8%    | 30.8%          |
| Tax revenue compared to GDP                       | 23.7%    | 25.4%          |
| Gini coefficient                                  | 0.30     | 0.30           |
| Poverty headcount                                 | 18%      | 15%            |
| Poverty gap ratio                                 | 7%       | 4%             |

Table 5.2: A comparison of statistics of interest for Italy and the United Kingdom. Data for 2016, unless stated otherwise. Source: OECD (OECD, 2017)

means that the United Kingdom reports its income in British pounds while Italy uses euros. Hence, directly comparing the incomes between the countries is not straightforward. However, since relative poverty thresholds are typically employed for developed economies these relative statistics will be the main point of focus in comparing outcomes between the two countries. We use the 60% of median equivalized income poverty threshold in Table 5.2 and in the rest of the paper.

### 5.1.3 Survey data

For the United Kingdom the Family Resources Survey 2013/2014 by the Department for Work and Pensions is used (De Agostini, 2016). Its response rate is 60% and it has 46,166 individual observations. EUROMOD updated its policy database to 2016, this includes the indexation of the income variables within the latest available survey (2013/2014) to 2016 levels. For Italy the case is similar, the national SILC is used: IT-SILC by ISTAT (Ceriani, Figari, & Fiorio, 2016) and indexed to 2016 levels. The Italian survey has 47,038 individual observations with a response rate of 85.5%. Because EUROMOD adapted the datasets for 2016 including the policy routines, the microsimulation will be done for the year 2016. This means that the analysis is up-to-date and therefore improves the relevancy of the model.

### 5.1.4 Two scenarios

The microsimulation model features two different scenarios. The first scenario, which includes two sub scenarios, is revenue-neutral with the additional assumption of keeping work incen-

tives equal as far as possible in comparison with the current situation. The second scenario aims to provide generous benefits by increasing income taxes and therefore letting go of the assumption of keeping work incentives constant.

## 5.2  Revenue-neutral benefits (scenario 1a)

**Marginal tax rates**

The assumption for the microsimulation model is that work incentives are caused by income taxes, specified by marginal income tax rates. The aim for this scenario is to keep these incentives equal, this means that the old tax system will be completely replaced by a new one which mimics the old marginal taxes for as much as possible. The OECD tax division publishes for all its member states the marginal tax rates (OECD, 2017) which will be the marginal tax rates that will feature for the different tax brackets in this HNIT microsimulation scenario. The reason why the old tax system is entirely replaced instead of adjusting the current system is because the tax deductions and allowances of the old system will be abolished entirely in favour of one fixed tax exemption equal to the minimum income guarantee. Additionally, the tax bracket thresholds – besides the tax rates – will be replaced by the thresholds used by the OECD; they are set at 67%, 100%, 133% and 167% of average wage.

   The starting point of this simulation is the OECD-provided marginal tax rates in combination with corresponding calculated income thresholds as can be seen in Table 5.3 where the tax brackets are shown. The annual average wages on which the tax brackets are based are published in Table 5.2.

   All social insurance contributions will be abolished in this new tax scheme and they are replaced by only one single tax that is levied on wages. This includes both employees' and employers' contributions along with state pension contributions. Because most benefits which are associated with these social insurance contributions will be abolished as well, it is sensible to abolish also these payroll taxes by which they are financed. This leaves us with a single and simple new tax system that aims to resemble as closely as possible the fiscal pressure on wages of the current situation, both on average and marginally. The new tax system is simple in the sense that there are no tax deductions anymore which are present under the old tax regime, they have all been replaced by a single fixed exemption amount the same way almost all benefits are replaced by one fixed benefit amount which is being paid out to all citizens earning zero income. As mentioned above the amount of the exemption ($P$) is equal to the guaranteed minimum income amount ($tP$) in our model.

| % of average wage | Annual threshold | Marginal tax rate |
|---|---|---|
| **Italy** | | |
| 67% | € 19,260 | 54.8% |
| 100% | € 28,890 | 54.8% |
| 133% | € 38,520 | 62.8% |
| 167% | € 48,150 | 63.2% |
| **United Kingdom** | | |
| 67% | £22,068 | 40.2% |
| 100% | £33,102 | 40.2% |
| 133% | £44,136 | 49.0% |
| 167% | £55,170 | 49.0% |

Table 5.3: Simulated tax brackets for the HNIT scheme in scenario 1a and 1b, source: OECD Tax Database (OECD, 2017)

As we have seen, the effects of work incentives on labour supply are heavily debated, therefore holding marginal tax rates equal compared to the current tax system has the advantage of demonstrating the effects of an HNIT scheme in an environment that features the same incentives as the old tax system. However, work incentives do not leave the equation entirely of course, because a guaranteed minimum income in itself could potentially discourage work effort. And, in our HNIT scheme the marginal tax rate is 100% up until the income level of $P$ because of the tapered withdrawal of the guaranteed minimum income level $tP$; it is not well understood how these factors influence work effort. Every earned euro or pound above the benefit/exemption threshold is being taxed at transparent marginal tax rates as to avoid the poverty trap. But, below this threshold people are guaranteed an income and microsimulation cannot give a satisfying answer as to how people will react to this guaranteed income level, unless we incorporate explicit assumptions on people's behaviour which we have refrained from throughout our analysis.

**Age groups**

Because financial needs differ across the life-cycle the benefits are categorized into four different age groups: children younger than 16, young adults between ages 16 and 22, working age adults between 23 and 64 years old and elderly of 65 years and older. The group that is by far the most important in financial terms is the group of working age adults. This is not only

because this is the largest group, but more importantly because each euro or British pound increase in benefit level also increases the fixed tax exemption at exactly the same rate, meaning less tax revenue and more expenditure on benefits for the government simultaneously. In other words, an increase in the grant to children or elderly does not decrease tax revenue, an increase for working adults does. The division of age groups and allocation of entitlements can be viewed in Table 5.4. Note that the benefit levels for young adults, children and elderly are already established and fixed in the model. The method by which these amounts came about is through trial and error. The benefit levels for young adults, children and elderly were adapted to keep post-HNIT poverty indices for their categories at reasonable proportions, i.e. it was made sure that these vulnerable age groups did not exceed poverty numbers of the working age adults and, moreover, the amounts are higher than their pre-HNIT entitlements. Anchoring the benefit levels for these groups also implicates that the welfare of these groups is prioritized over that of the working age adults in the model.

|  | Monthly amount | Annual amount | % of poverty line |
|---|---|---|---|
| **Italy** | | | |
| Adults | **To be determined by the microsimulation model** | | |
| Young adults | € 400 | € 4,800 | 50.9% |
| Elderly | € 950 | € 11,400 | 120.9% |
| Children | € 250 | € 3,000 | 31.8% |
| **United Kingdom** | | | |
| Adults | **To be determined by the microsimulation model** | | |
| Young adults | £450 | £5,400 | 56.6% |
| Elderly | £900 | £10,800 | 113.3% |
| Children | £350 | £4,200 | 44.1% |

Table 5.4: Benefit level inputs for the revenue-neutral microsimulation scenario (scenario 1a)

**Abolishment of current benefit programmes**

In addition to allocating benefit and tax exemption levels it needs to be determined which benefit programmes will be abolished. For one thing, the more current benefit programmes are discontinued the more fiscal space will be freed up for the guaranteed minimum income level to be increased. Yet, it is important to provide assurance that benefits for vulnerable groups

are maintained, hence they will not be worse off under the HNIT regime. In Chapter 1 this aspect has been discussed: on the one hand the advantage of a universal income means a simplification of the social protection system by abolishing specific benefit programmes, on the other hand it means that by abolishing these programmes it could lead to vulnerable people losing their entitlements that are specifically tailored for them. However, this does not mean that everyone will ultimately be better off under an HNIT reform. It may involve a considerable amount of people becoming better off at the expense of other people becoming worse off. This is a consequence of such an ambitious reform, which is difficult to mitigate. However, the goal of our proposed reform is to acquire better overall welfare outcomes; individual cases becoming worse off could be the price to pay.

For Italy and the United Kingdom the choice has been made to retain all current social benefits programmes that involve any degree of invalidity on part of the recipient. We assume that these benefit programmes are able to efficiently target people that are not able to work. People who are severely disabled do not have a choice in deciding whether to supply their labour in the labour market, therefore they do not have an outlook to receive any income above the absolute minimum which is the level the HNIT scheme guarantees to pay them.

**EUROMOD computations**

When all current benefits eligible for replacement are subtracted and the new tax system is in place the remaining fiscal space is allocated to the benefits and tax exemptions of the working age category of people. Additionally, we assume that present government deficit remains constant. Using EUROMOD the possible benefit levels of the HNIT scheme are determined while keeping disposable income constant to fulfill the requirement of revenue-neutrality. The before-mentioned possibility of programming a loop in EUROMOD was employed to determine the highest possible benefit level within these constraints. This loop keeps on increasing the benefit level in each iteration until the sum of disposable income before the HNIT scheme equals the total sum of disposable income in the new HNIT tax system. The computed achievable benefit/exemption amount is the most important feature of this microsimulation.

## 5.3  Revenue-neutral variations in withdrawal rate (scenario 1b)

**Empirical analysis if *t* is not 1**

Because we stressed the importance of the trade-off between *t* and *P* in Figure 2.2 in the NIT scheme – we proposed the HNIT because of this – it is beneficial to show this relationship empirically. We therefore want to vary the tax rate in the first tax bracket, i.e. the tax bracket at income levels between zero and *P*. When *t* is 1 in an NIT system we name it an HNIT system as is simulated in scenario 1a. We keep intact the assumptions from scenario 1a about revenue-neutrality and the tax brackets and tax rates other than the one between 0 and *P*, hence the suffix "b" instead of naming it a new scenario. We vary *t* between 0 and 1 and compute which maximum levels of *P* are feasible for every *t* given revenue-neutrality. Scenario 1b essentially microsimulates a classic NIT, instead of the previously proposed HNIT scheme.

We look at the situation where the levels of guaranteed minimum income for the young adults age category do not diverge from the adults category, these amounts are now equal in this scenario. We do this because it would be unrealistic and unfair to lower the marginal tax rate for adults while keeping it 100% for young adults. The same guaranteed minimum income levels for children and elderly we retain from scenario 1a.

## 5.4  Desired benefits (scenario 2)

Because fiscal resources are limited it is foreseeable that the amount of benefits that is viable in the first scenario will not be sufficient for an average person to be able to live moderately off. Therefore, in a second scenario the case is reviewed where reasonably generous benefits to the population is the starting point of the analysis. Departing from this position the required marginal tax rates to finance the benefits are computed. This reform is revenue-neutral too in the sense that it is self-funded like scenario 1 without the need of any external funds. However, to accomplish this the tax rates are expected to be considerably higher compared with the first scenario. Additionally, to keep comparability high between scenario 1 and scenario 2 the same tax bracket thresholds at 67%, 100%, 133% and 167% from Table 5.3 for all policy simulations are used. Again, this simulation is applied to the HNIT model of scenario 1a, meaning the tax rate between 0 and *P* is 100%.

Because of the sharp increase in tax rates there could be a substantial erosion of the tax base leading to a much lower yield of the new tax rates than expected. This is because it

is very likely that these high tax rates are on the wrong side of the Laffer curve (Atkinson, 2015, p.267) leading to reduced revenue for the government. This is generally explained by two principles: firstly, people are more inclined to avoid the high tax, for instance by working abroad or working in the shadow economy. Secondly, people are less inclined to supply their labour on the labour market because the high marginal tax rates disincentivize them to work. In economic terms: leisure has higher utility than supplying labour in the labour market when income taxes are high.

Because of the expected increase in tax pressure on labour income in this scenario it will encumber political and economic feasibility. The relevance of this scenario is therefore to demonstrate the extent to which level the income tax rates should be raised to be able to afford a generous and aspired HNIT scheme. The subsequent poverty and distributional analysis will shed some light on what these generous benefits could achieve in the area of poverty and equality changes.

In Table 5.5 the desired amounts for input to the microsimulation model are displayed. Note that these benefit levels are much higher than in Table 5.4, for adults the amount is slightly above the poverty line. These benefit levels in this scenario could in theory result in a virtually complete abolishment of poverty. The benefit levels or the level of guaranteed minimum income for the other age groups are increased considerably too. In concordance with scenario 1 the same benefit programmes for invalidity will be retained, so there is no change in level of benefits abolished.

The computed marginal tax rates together with poverty and inequality outcomes are the most important feature of this scenario. Like the original tax scheme these rates will be progressive too, so the flat-tax rate that is usually associated with basic income proposals (Atkinson, 1995) will be abandoned in favour of a progressive system. For determining the progressive marginal tax rates, first, the highest bracket is fixed at a percentage of 79% for both Italy and the United Kingdom. This percentage is deemed to be the maximum rate for the 167% average wage tax bracket for the United Kingdom (Jacobs, 2013). Pegging the highest marginal rate has the additional benefit of relieving the lowest tax brackets as much as possible. This is the main reason for the progressive tax system: the marginal tax rates around the median income are kept at the lowest rate possible to minimize work disincentives. Next to the amounts as specified in Table 5.5 the other inputs of tax brackets and marginal tax rates for scenario 2 are displayed in Table 5.6.

|            | Monthly amount | Annual amount | % of poverty line |
|------------|---------------:|--------------:|------------------:|
| **Italy**  |                |               |                   |
| Adults     | € 800          | € 9,600       | 101.8%            |
| Young adults | € 600        | € 7,200       | 76.3%             |
| Elderly    | € 1,050        | € 12,600      | 133.6%            |
| Children   | € 300          | € 3,600       | 38.2%             |
| **United Kingdom** |        |               |                   |
| Adults     | £800           | £9,600        | 100.7%            |
| Young adults | £650         | £7,800        | 81.8%             |
| Elderly    | £1,050         | £12,600       | 132.2%            |
| Children   | £400           | £4,800        | 50.4%             |

Table 5.5: Microsimulated benefit levels for the desired benefits microsimulation scenario (scenario 2)

## 5.5  Computed outputs

There will be three kind of outputs from the microsimulation model for each scenario, except for scenario 1b which features 10 separate microsimulations and therefore the choice has been made to only provide primary outputs (including basic poverty and inequality indices) for this scenario.

### 5.5.1  Primary outputs

The primary outputs are the direct computations of the level of benefits/exemptions in scenario 1 and the level of marginal tax rates in scenario 2. Note that both scenarios are complementary: the first scenario starts with a fixed set of marginal tax rates to reach a possible set of benefit amounts that are feasible given the assumption that disposable income remains equal. The second scenario starts out with a fixed set of considerably higher benefit amounts for the model to establish corresponding marginal tax rates which satisfy the assumption that the reform pays for itself, i.e. no external fiscal funds are needed to pay for this tax-benefit system.

Computed marginal tax rates can be directly compared between both countries. The level of benefits in absolute terms will be more difficult to compare directly, therefore it is more appropriate to analyze the computed level of benefits relative to the poverty line of both countries respectively, which is equal to 60% of median equivalized income.

| % of average wage | Annual threshold | Marginal tax rate |
|---|---|---|
| **Italy** | | |
| 67% | € 19,260 | **Model calculations** |
| 100% | € 28,890 | **Model calculations** |
| 133% | € 38,520 | **Model calculations** |
| 167% | € 48,150 | 79% |
| **United Kingdom** | | |
| 67% | £22,068 | **Model calculations** |
| 100% | £33,102 | **Model calculations** |
| 133% | £44,136 | **Model calculations** |
| 167% | £55,170 | 79% |

Table 5.6: Simulated tax brackets and marginal tax rates for the second scenario

### 5.5.2 Secondary outputs

For each scenario in both countries the poverty and distributional outcomes need to be assessed to be able to analyse the impact of the HNIT scheme. Therefore, poverty and distributional indices shall be reported to be able to make an assessment of the poverty and inequality alleviating power of an HNIT scheme. For scenario 1b, featuring the classic NIT scheme, we shall only include basic poverty and inequality indicators.

### 5.5.3 Macro outputs

Because of the relatively uncomplicated way of generalizing microsimulation results to statistics for the whole country it is worthwhile to publish income levels on a macro level. Also, the average tax wedge can be determined and will give a good overview of how the tax burden on labour income changes between the scenarios and between the countries. These numbers will help to determine the political and economic feasibility of an HNIT scheme.

# 6 | Results

## 6.1 Primary outcomes

### 6.1.1 Scenario 1a

After replacing the old tax regime with the new HNIT scheme the amount of the exemption/benefit that is feasible has been computed using the static microsimulation model. For Italy this amount for adults is € 570 and for the United Kingdom this amount is £584 as can be seen in Table 6.1.

|  | Monthly amount | % of old poverty line | % of updated poverty line |
|---|---|---|---|
| **Italy** |  |  |  |
| Adults | **€ 570** | 72.5% | 70.2% |
| Young adults | € 400 | 50.9% | 49.3% |
| Elderly | € 950 | 120.9% | 117.0% |
| Children | € 250 | 31.8% | 30.8% |
| **United Kingdom** |  |  |  |
| Adults | **£584** | 73.5% | 71.9% |
| Young adults | £450 | 56.6% | 55.4% |
| Elderly | £900 | 113.3% | 110.8% |
| Children | £350 | 44.1% | 43.1% |

Table 6.1: Microsimulated benefit levels for the revenue-neutral microsimulation scenario (scenario 1a)

Useful for interpreting the outcomes is to express the level of entitlements as percentage of the poverty line. The poverty line, which is 60% of the equivalized median income, is for the United Kingdom £794 while the poverty line of Italy is € 786. Relative to the poverty line

the entitlement amount for adults in the United Kingdom is 73.5% while in Italy this is 72.5% which is roughly equal. Note that because of the redistributive properties of the HNIT scheme the median income shifted upward in comparison with the original situation, this movement can be seen in Figure 6.4 and 6.5 as part of Section 6.2.2, where the income distribution moves to the right as a consequence of redistribution. For the United Kingdom the monthly median income increased from £1,324 to £1,354, therefore the updated poverty line is now £813. This means that an individual who was living at the level of the poverty line in the old situation would need to have a higher disposable income of about £19 in the United Kingdom or €26 in Italy to be considered not poor in the new situation. In Italy median income went up from €1,310 to €1,354, which translates into an updated poverty line of €812.

Since relative poverty lines are the standard for use in developed economies and they are constantly changing in light of fluctuations in the median income it is interesting to note that because of the shifting median income the benefit/exemption amounts are becoming less adequate in terms of closing the poverty gap. However, this is only a first step in the poverty assessment, further analysis on poverty alleviating properties of the HNIT scheme is done in section 6.2.1.

### 6.1.2 Scenario 1b

As discussed in Chapter 2 we expect that under revenue-neutrality a tax rate lower than 100% in the lowest tax bracket will lead to a rapidly decreasing guaranteed minimum income level $tP$, compromising its effectiveness in combating poverty and consequently worsen welfare outcomes. In Table 6.2 it is shown exactly how much the guaranteed minimum income drops as a result of lowering $t$ (and consequently improving work incentives) as is predicted by our static microsimulation model.

The first outcome to notice is that removing the distinction between the age groups of adults and young adults leads for the adults to a drop of €19 in Italy and £19 in the United Kingdom and to an increase of €151 and £115 for young adults in the level of guaranteed minimum income, while the poverty and inequality indicators remain the same. We also expected that the guaranteed minimum income level $tP$ decreases rapidly with a lower tax rate and this is indeed the case: at a tax rate $t$ of 10% the guaranteed minimum income level decreases to €108 in Italy and £114 in the United Kingdom. Furthermore, the lower the tax rate becomes the faster $tP$ decreases. Between 100% and 90% tax rate the decrease is €30 and £29 in $tP$, while this becomes €82 and £86 between 20% and 10% tax rate in Italy and the United Kingdom respectively. We can conclude from this accelerated decrease that the decrease is not linear in nature, this is illustrated in the Figure 6.1.

Compared to the poverty and inequality baseline levels, as will be shown in detail in Section 6.2, Italy provides better outcomes for all levels of $t$; even at a tax rate of 10% poverty and inequality indicators show better results than in the current situation. For the United Kingdom this is not necessarily the case, at $t = 0.5$ and lower the situation in the United Kingdom is worse in terms of poverty and inequality outcomes, meaning that within the range of 60% and 100% tax rate poverty and inequality will improve compared to the baseline situation. Nonetheless, comparisons with the baseline situation should be made with caution for scenario 1b, because we also provide children and elderly with a more generous guaranteed minimum income than in the baseline situation. This suggests that the positive result in terms of poverty and inequality for Italy at $t = 0.1$ could be attributed to increases in entitlements for children and the elderly instead of the level of guaranteed minimum income for adults.

| | | | | | **Italy** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $t$ | $1^*$ | 1 | 0.9 | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 |
| $P$ | €570 | €551 | €579 | €611 | €647 | €688 | €737 | €795 | €866 | €957 | €1077 |
| $tP$ | €570 | €551 | €521 | €489 | €453 | €413 | €369 | €318 | €260 | €191 | €108 |
| $FGT_0$ | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 | 0.09 | 0.10 | 0.12 | 0.13 | 0.15 |
| $FGT_1$ | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 |
| $FGT_2$ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.03 |
| Gini | 0.22 | 0.22 | 0.22 | 0.22 | 0.23 | 0.23 | 0.24 | 0.24 | 0.25 | 0.26 | 0.28 |
| | | | | | **United Kingdom** | | | | | | |
| $t$ | $1^*$ | 1 | 0.9 | 0.8 | 0.7 | 0.6 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 |
| $P$ | £584 | £565 | £595 | £628 | £666 | £710 | £762 | £825 | £902 | £1000 | £1141 |
| $tP$ | £584 | £565 | £536 | £502 | £466 | £426 | £381 | £330 | £271 | £200 | £114 |
| $FGT_0$ | 0.11 | 0.11 | 0.12 | 0.13 | 0.14 | 0.15 | 0.16 | 0.17 | 0.18 | 0.20 | 0.22 |
| $FGT_1$ | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.05 | 0.07 | 0.08 |
| $FGT_2$ | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.03 | 0.03 | 0.05 |
| Gini | 0.27 | 0.27 | 0.27 | 0.28 | 0.28 | 0.29 | 0.29 | 0.30 | 0.31 | 0.32 | 0.33 |

Table 6.2: Microsimulated maximum levels of $P$ for different levels of $t$ showing poverty and inequality levels assuming revenue-neutrality (scenario 1b) – * = result from scenario 1a, detailed poverty and inequality assessment on scenario 1a is conducted in Section 6.2
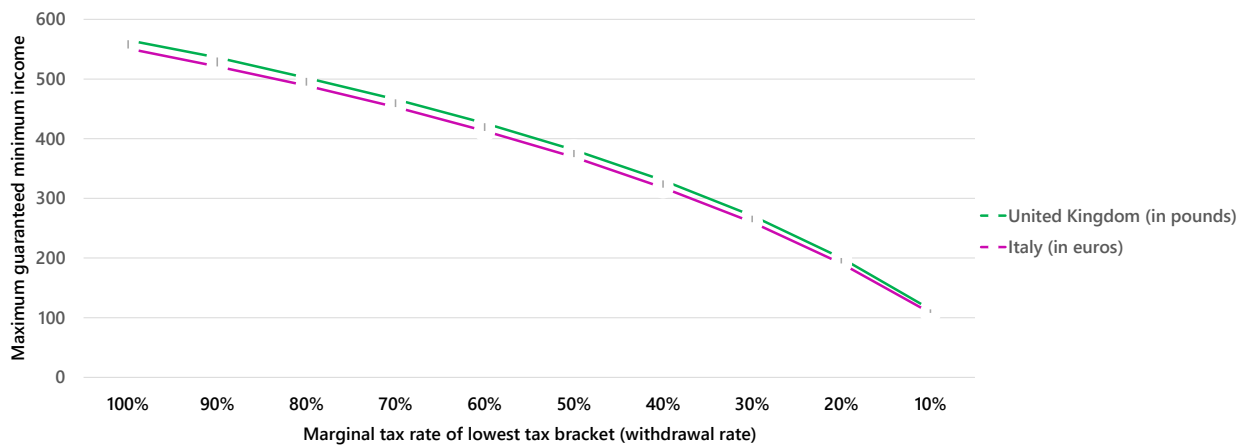
Figure 6.1: Empirical relationship between withdrawal rate and maximum guaranteed minimum income

### 6.1.3  Scenario 2

The computation of a progressive system of marginal tax rates given a set of more generous benefits/exemptions is displayed in Table 6.3 and 6.4. As can be seen, the marginal tax rates increased considerably for Italy and the United Kingdom. These are the tax rates for these countries to be able to finance these more generous benefits/exemptions without external funds. In the case of Italy it can hardly even be called a progressive system anymore since the lowest and highest bracket only differ 5%. For the United Kingdom the results are different where the first tax bracket is 51%. Compared with the old situation this is still considerably higher, but compared with Italy it is much lower than Italy's lowest tax bracket of 74%.

As was the case in scenario 1 the median income shifts because of the high amount of transfers made to individuals with the lowest incomes. In this scenario this effect is even stronger, because of the increased entitlement levels. For Italy the median income increased from € 1,310 to € 1,423, which translates into an updated poverty line of € 854. For the United Kingdom the monthly median income increased from £1,324 to £1,469, therefore the updated poverty line is now £881. This means that by introducing the more generous benefits the poverty threshold went up by € 68 and £87 on a monthly basis compared to the pre-HNIT situation. Consequently, a benefit to adults which is slightly higher than the poverty line turns out to be lower than the poverty line when the shift in median income has been taken into account as can be seen in Table 6.4.

| % of average wage | Annual threshold | Marginal tax rate | Baseline marginal tax rate |
|---|---|---|---|
| **Italy** | | | |
| 67% | € 19,260 | **74%** | 54.8% |
| 100% | € 28,890 | **75%** | 54.8% |
| 133% | € 38,520 | **76%** | 62.8% |
| 167% | € 48,150 | 79% | 63.2% |
| **United Kingdom** | | | |
| 67% | £22,068 | **51%** | 40.2% |
| 100% | £33,102 | **64%** | 40.2% |
| 133% | £44,136 | **71%** | 49.0% |
| 167% | £55,170 | 79% | 49.0% |

Table 6.3: Simulated tax brackets and marginal tax rates for the second scenario

## 6.2 Secondary outcomes

### 6.2.1 Poverty analysis

**Scenario 1a**

The impact of the introduction of an HNIT scheme on poverty is assessed by looking at Foster-Greer-Thorbecke (FGT) indices (Foster, Greer, & Thorbecke, 1984). The FGT with subscript zero simply depicts a poverty headcount, that means for instance that in Table 6.5 the overall poverty headcount is 18% for Italy. An FGT with subscript 1 is the poverty gap ratio, i.e. how far the population of a country on average falls short from the poverty line. FGT with subscript 2 also measures the distance from the poverty line, but squares these distances. In this way the further someone is below the poverty line the more weight is allocated to this person, resulting in an index which better captures the severity of poverty than the poverty gap ratio. All three FGT indices combined would give a proper overview of size and severity of poverty in a country.

As can be discerned from the results of FGT indices of scenario 1a in Tables 6.5 and 6.6 poverty has been reduced in both countries for all categories. Note that poverty lines are again displayed as old poverty lines and updated poverty lines taking into account the shifting median income. In Italy 18% of the people currently live in poverty, while a revenue-neutral reform could reduce that number to 6% using the old poverty threshold or 7% with the new

|  | Monthly amount | % of old poverty line | % of updated poverty line |
|---|---|---|---|
| **Italy** | | | |
| Adults | € 800 | 101.8% | 93.7% |
| Young adults | € 600 | 76.3% | 70.3% |
| Elderly | € 1,050 | 133.6% | 123.0% |
| Children | € 300 | 38.2% | 35.1% |
| **United Kingdom** | | | |
| Adults | £800 | 100.7% | 90.8% |
| Young adults | £650 | 81.8% | 73.8% |
| Elderly | £1,050 | 132.2% | 119.2% |
| Children | £400 | 50.4% | 45.4% |

Table 6.4: Microsimulated benefit levels for the revenue-neutral microsimulation scenario (scenario 2)

poverty line, which is a decrease of 11 percentage points or 61%. For the United Kingdom the poverty headcount decreased from 15% to 11%, so a decrease in poverty of 4 percentage points or 27%.

Looking at the average distance of people from the poverty line a similar outcome can be observed. In Italy the current situation is that people are on average 7% away from the poverty line, while after the HNIT reform of scenario 1a this is reduced to 1%, a reduction of 6 percentage points. In the United Kingdom this statistic is 4% in the baseline and 2% after the reform and taking into account the updated poverty line. The severity of poverty as captured by $FGT_2$ decreases to 0.00 after the scenario 1a reform in both countries, while in the baseline it is 0.04 in Italy and 0.02 in the United Kingdom. Note that $FGT_2$ cannot be interpreted in terms of percentages but only as a coefficient, while the coefficients from $FGT_0$ and $FGT_1$ can be interpreted as a percentage.

The Tables 6.5 and 6.6 can be graphically summarized using the Three I's of Poverty (TIP) curves (Jenkins & Lambert, 1997). In Figure 6.2 these TIP curves are displayed. With cumulative population proportion on the x-axis and cumulative normalized poverty gap (equivalent to $FGT_1$) on the y-axis the curve rises quickly until it becomes flat. The point where it becomes flat is the point on the y-axis that corresponds to the $FGT_1$ coefficient. The horizontal distance between the beginning of the curve and where the curve flattens shows the headcount ($FGT_0$) on the x-axis. The shape of the curve until it flattens out visualizes how income is distributed

| | Italy | | |
|---|---|---|---|
| | Baseline | Scenario 1a | |
| | Standard poverty line | Old poverty line | Updated poverty line |
| **Poverty overall** | | | |
| $FGT_0$ | 0.18 | 0.06 | 0.07 |
| $FGT_1$ | 0.07 | 0.01 | 0.01 |
| $FGT_2$ | 0.04 | 0.00 | 0.00 |
| **Child poverty** | | | |
| $FGT_0$ | 0.24 | 0.06 | 0.07 |
| $FGT_1$ | 0.10 | 0.01 | 0.01 |
| $FGT_2$ | 0.06 | 0.00 | 0.00 |
| **Old age poverty** | | | |
| $FGT_0$ | 0.12 | 0.05 | 0.06 |
| $FGT_1$ | 0.02 | 0.01 | 0.01 |
| $FGT_2$ | 0.01 | 0.00 | 0.00 |
| **Working age poverty** | | | |
| $FGT_0$ | 0.19 | 0.07 | 0.07 |
| $FGT_1$ | 0.07 | 0.01 | 0.01 |
| $FGT_2$ | 0.05 | 0.00 | 0.00 |

Table 6.5: Foster-Greer-Thorbecke poverty indices for Italy in the revenue-neutral microsimulation scenario (scenario 1a)

| | United Kingdom | | |
| --- | --- | --- | --- |
| | Baseline | Scenario 1a | |
| | Standard poverty line | Old poverty line | Updated poverty line |
| **Poverty overall** | | | |
| $FGT_0$ | 0.15 | 0.09 | 0.11 |
| $FGT_1$ | 0.04 | 0.01 | 0.02 |
| $FGT_2$ | 0.02 | 0.00 | 0.00 |
| **Child poverty** | | | |
| $FGT_0$ | 0.16 | 0.10 | 0.12 |
| $FGT_1$ | 0.04 | 0.01 | 0.01 |
| $FGT_2$ | 0.02 | 0.00 | 0.00 |
| **Old age poverty** | | | |
| $FGT_0$ | 0.14 | 0.06 | 0.09 |
| $FGT_1$ | 0.02 | 0.00 | 0.01 |
| $FGT_2$ | 0.01 | 0.00 | 0.00 |
| **Working age poverty** | | | |
| $FGT_0$ | 0.15 | 0.10 | 0.11 |
| $FGT_1$ | 0.05 | 0.02 | 0.02 |
| $FGT_2$ | 0.03 | 0.01 | 0.01 |

Table 6.6: Foster-Greer-Thorbecke poverty indices for the United Kingdom in the revenue-neutral microsimulation scenario (scenario 1a)

| | Italy | | |
|---|---|---|---|
| | Baseline | Scenario 2 | |
| | Standard poverty line | Old poverty line | Updated poverty line |
| **Poverty overall** | | | |
| $FGT_0$ | 0.18 | 0.01 | 0.03 |
| $FGT_1$ | 0.07 | 0.00 | 0.00 |
| $FGT_2$ | 0.04 | 0.00 | 0.00 |
| **Child poverty** | | | |
| $FGT_0$ | 0.24 | 0.00 | 0.01 |
| $FGT_1$ | 0.10 | 0.00 | 0.00 |
| $FGT_2$ | 0.06 | 0.00 | 0.00 |
| **Old age poverty** | | | |
| $FGT_0$ | 0.12 | 0.02 | 0.03 |
| $FGT_1$ | 0.02 | 0.00 | 0.01 |
| $FGT_2$ | 0.01 | 0.00 | 0.00 |
| **Working age poverty** | | | |
| $FGT_0$ | 0.19 | 0.01 | 0.03 |
| $FGT_1$ | 0.07 | 0.00 | 0.00 |
| $FGT_2$ | 0.05 | 0.00 | 0.00 |

Table 6.7: Foster-Greer-Thorbecke poverty indices for Italy in the desired benefits microsimulation scenario (scenario 2)

| | United Kingdom | | |
| --- | --- | --- | --- |
| | Baseline | Scenario 2 | |
| | Standard poverty line | Old poverty line | Updated poverty line |
| **Poverty overall** | | | |
| $FGT_0$ | 0.15 | 0.02 | 0.04 |
| $FGT_1$ | 0.04 | 0.00 | 0.00 |
| $FGT_2$ | 0.02 | 0.00 | 0.00 |
| **Child poverty** | | | |
| $FGT_0$ | 0.16 | 0.01 | 0.03 |
| $FGT_1$ | 0.04 | 0.00 | 0.00 |
| $FGT_2$ | 0.02 | 0.00 | 0.00 |
| **Old age poverty** | | | |
| $FGT_0$ | 0.14 | 0.00 | 0.02 |
| $FGT_1$ | 0.02 | 0.00 | 0.00 |
| $FGT_2$ | 0.01 | 0.00 | 0.00 |
| **Working age poverty** | | | |
| $FGT_0$ | 0.15 | 0.03 | 0.05 |
| $FGT_1$ | 0.05 | 0.00 | 0.01 |
| $FGT_2$ | 0.03 | 0.00 | 0.00 |

Table 6.8: Foster-Greer-Thorbecke poverty indices for the United Kingdom in the desired benefits microsimulation scenario (scenario 2)

(a) Overall TIP curve for Italy

(b) Overall TIP curve for the UK
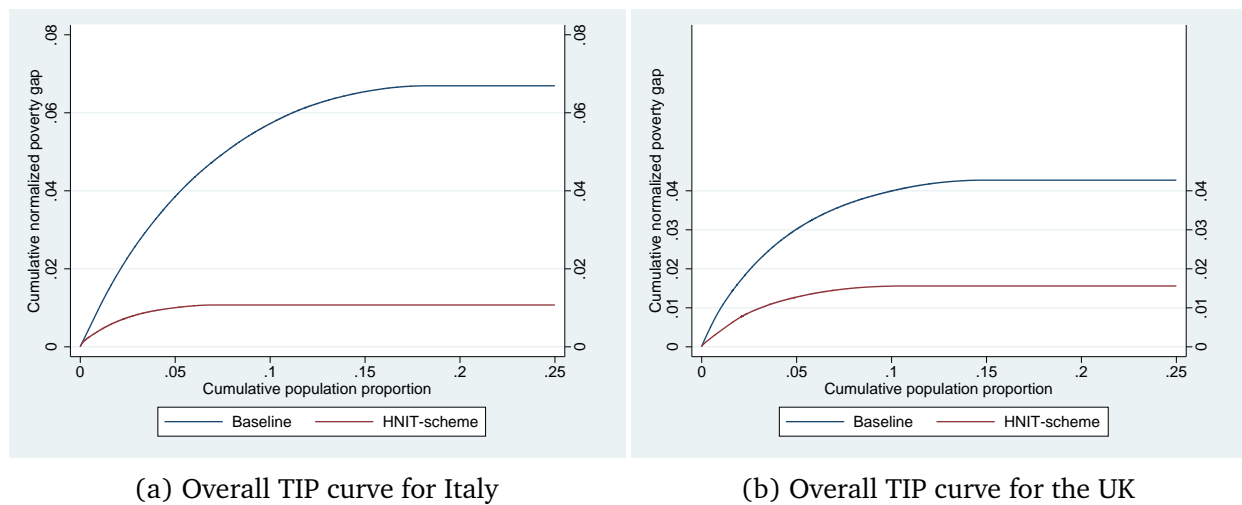
Figure 6.2: TIP curves for scenario 1a

among the poor; the more steeply it rises the more severe poverty there is. Figure 6.2 shows what the FGT indices were already telling: the curve for the HNIT-reform is vertically lower, horizontally it reaches the flat part earlier and the curve is less steep in the beginning. These effects are more pronounced for Italy than for the United Kingdom as the poverty numbers also reveal. Note that we did not display the full range from 0 to 1 on the x-axis but zoomed in on the 0 to 0.25 range, this is because the remainder of the curve stays flat and by zooming in the shape of the ascending curve is better visible.

**Scenario 2**

In scenario 2 the more generous HNIT scheme reduces poverty too, although more strongly as can be seen in Tables 6.7 and 6.8. In Italy poverty is reduced to 3% of the population, while on average people are 0% away from the poverty line and the severity of poverty as depicted by $FGT_2$ is coefficient 0.00. For the United Kingdom a similar image emerges: poverty headcount is reduced to 4% of the population, the average distance from the poverty line is 0% and the severity of poverty is estimated at a coefficient of 0.00. This means that also in scenario 2 with more generous benefits the effect is stronger for Italy than for the United Kingdom in alleviating poverty.

Looking at Figure 6.3 the poverty alleviating effects are made more clearly in the graphical representation of a TIP curve. The effects are strong in all three dimension of the curve: the horizontal distance, vertical distance and the steepness of the curve. This confirms the expectation that this scenario eliminates poverty almost entirely.

(a) Overall TIP curve for Italy          (b) Overall TIP curve for the UK
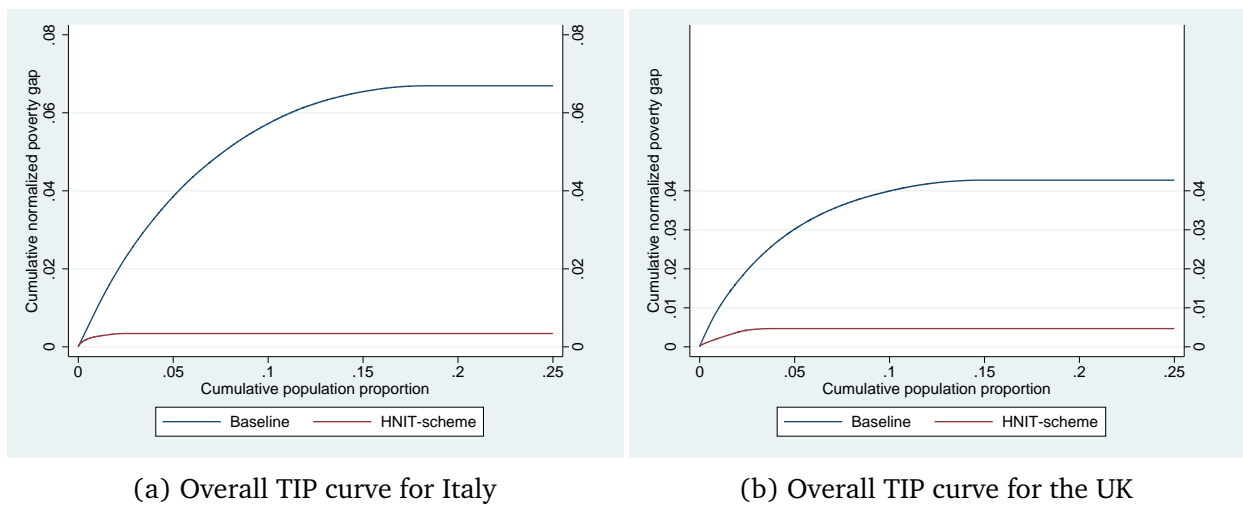
Figure 6.3: TIP curves for scenario 2

### 6.2.2 Inequality analysis

**Visual inspection**

Next to the poverty alleviating effects of the proposed reforms it is also important to gauge the effects of the reforms on the income distribution. To provide a global view on how the incomes are dispersed it is helpful to look at density functions first in Figures 6.4 and 6.5. From the baseline density function the distribution shifts to the right and it becomes less skewed, this effect is again more pronounced in the second scenario as can be expected, because of the more generous benefits. This effect of a shifting distribution also became apparent in the previous section where median incomes and consequently the poverty thresholds increased, only now this process is visualized. Note that for the income distribution equivalized incomes are used as was the case with the poverty assessment.

**Decile groups**

In Tables 6.9 and 6.10 the equivalized income distribution is divided into deciles. Compared with the baseline the redistributive effect becomes clear when interpreting these tables. What stands out is the change in the lowest decile; in Italy the poorest 10% had to live on an amount between zero and €585 representing 2.3% of total share of income in the population. Note that perfect equality would mean that every decile would be earning 10% of total income. In scenario 1a the cutoff point for the first decile increases to €871, the lowest decile earns now 4.9% of the total income. When the benefits are more generous as in scenario 2 the cutoff point for the lowest decile is €1,042 which is 6.1% of income in the total population. The second until

Figure 6.4: Density functions for Italy in scenario 1a and 2
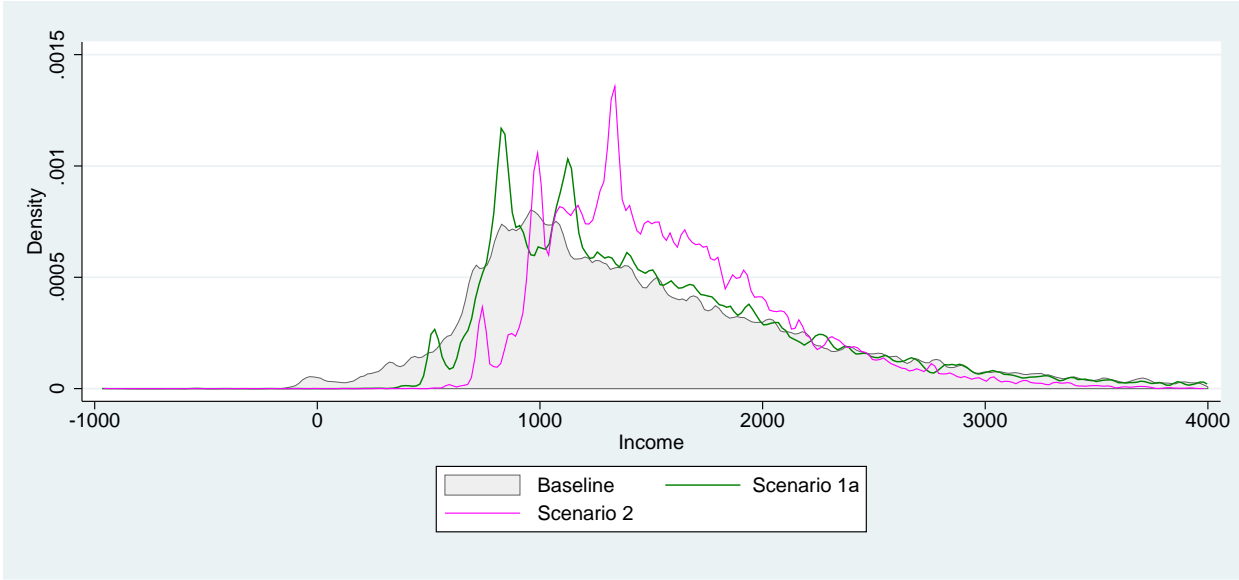


Figure 6.5: Density functions for the United Kingdom in scenario 1a and 2

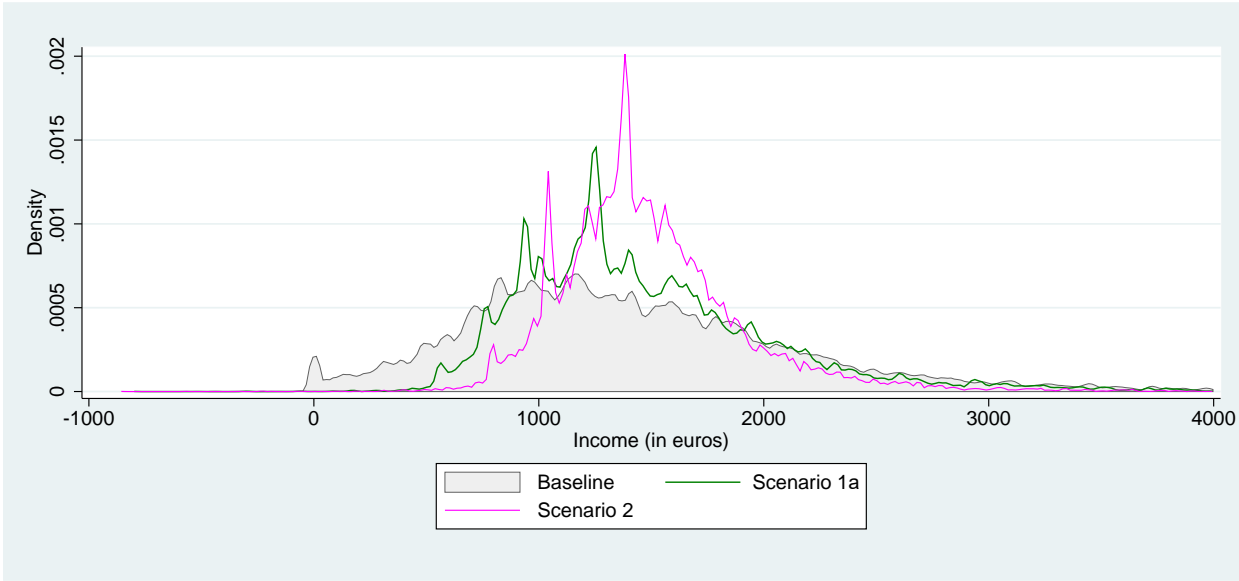| | Italy | | | | | |
|---|---|---|---|---|---|---|
| | Baseline | | Scenario 1a | | Scenario 2 | |
| Decile group | Decile | Share | Decile | Share | Decile | Share |
| 1 | € 585 | 2.3% | € 871 | 4.9% | € 1,042 | 6.1% |
| 2 | € 814 | 4.9% | € 1,004 | 6.3% | € 1,180 | 7.4% |
| 3 | € 977 | 6.1% | € 1,149 | 7.2% | € 1,279 | 8.2% |
| 4 | € 1,145 | 7.2% | € 1,247 | 8.0% | € 1,363 | 8.8% |
| 5 | € 1,310 | 8.3% | € 1,354 | 8.6% | € 1,423 | 9.3% |
| 6 | € 1,501 | 9.5% | € 1,495 | 9.5% | € 1,512 | 9.8% |
| 7 | € 1,707 | 10.9% | € 1,659 | 10.6% | € 1,615 | 10.4% |
| 8 | € 1,967 | 12.5% | € 1,874 | 11.7% | € 1,744 | 11.2% |
| 9 | € 2,422 | 14.8% | € 2,205 | 13.5% | € 1,987 | 12.3% |
| 10 | | 23.5% | | 19.6% | | 16.4% |

Table 6.9: Decile groups for Italy in scenario 1a and 2

the fifth decile show comparable results, the sixth decile stays more or less equal, and the four highest deciles show an opposite result. Especially the highest decile shows that in the baseline the richest 10% are earning 23.5% of total earnings; this share decreases to 19.6% in scenario 1a and 16.4% in scenario 2. Additionally, the cutoff point also decreases, in the baseline at least € 2,422 is needed to be categorized as part of the 10% highest earning population group, while in scenario 1a this amount decreases to € 2,205. This amount decreases even more in the second scenario where a person would be part of the top 10% earners if he or she has an income of € 1,987 or more. The people with very high income are therefore becoming much less rich in Italy under an HNIT scheme. These results show that a majority of people would have their incomes uplifted by the introduction of an HNIT scheme since incomes start to drop gradually only starting from the seventh highest decile and higher.

In the United Kingdom the results are very similar. The lowest decile earns between zero and £703 representing 3.1% of the total income. This increases to £804 in the first scenario to £992 in the seconds scenario. In the United Kingdom up until the sixth decile cutoff points and income shares continue to increase, suggesting that the bottom 60% of the population are improving their situation because of the new tax-benefit scheme. The highest decile starts at £2,667 in the current situation and decreases to £2,585 in scenario 1a and £2,286 in scenario 2. Therefore also the people with very high income in the United Kingdom are becoming much

less rich because of the HNIT scheme.

**Lorenz curves and Gini coefficients**

Another way of inspecting the distributional outcomes is through Lorenz curves and Gini coefficients. The Gini coefficients are published in Table 6.11. First, the Gini is computed for the pre-transfer situation of income inequality, i.e. the Gini coefficient as a result of market incomes, this is 0.53 for Italy and 0.50 for the United Kingdom. In the current situation both countries have the same after-tax Gini coefficient: 0.30. When an HNIT scheme is microsimulated the effects for both countries start to differ: Italy has a Gini of 0.22 in scenario 1a while the United Kingdom has a Gini of 0.27. In scenario 2 the Gini coefficient decreases further to 0.15 and 0.19 for Italy and the United Kingdom respectively. In comparison, the lowest Gini coefficients around the world are Ukraine with 0.24 and Czech Republic, Norway, Slovak Republic and Slovenia at 0.26 (World Bank, 2017). This means that in scenario 1a it is estimated that Italy would become the most egalitarian country in the world in terms of the Gini coefficient, while the United Kingdom would be on par with countries like Iceland, Finland and Sweden (World Bank, 2017). Scenario 2 takes this even further: both countries would become by far the most egalitarian societies in the world in terms of the Gini coefficient.

Gini coefficients can be visualized using Lorenz curves. The Lorenz curves for Italy in both scenario 1a and 2 are depicted in Figure 6.6; the Lorenz curves for the United Kingdom in Figure 6.7. The horizontal axis shows the cumulative population share, while the vertical axis shows the cumulative share of income, this implies that the 45-degree line is the line of perfect equality where each portion of the population earns an equal share of income, it is where every decile earns 10% of total income. On the other hand, the further the Lorenz curve stretches into the lower right corner the more unequal the society is. The Gini coefficient is determined from the Lorenz curve as the ratio of the area between the Lorenz curve and the 45-degree line, to the whole area of the triangle of the 45-degree line, the x-axis and the y-axis. When the Lorenz curve overlaps the 45-degree line the Gini coefficient is zero, while when the Lorenz curve follows the x-axis and then goes vertically up, the ratio is 1.00. As the Gini coefficients already reveal the Lorenz curves are closer to the line of perfect equality for the microsimulations of scenario 1a and 2 than for the baseline. This is more strongly the case in Italy than the United Kingdom and, for obvious reasons, also more strongly in scenario 2 than for scenario 1a.

| | **United Kingdom** | | | | | |
| | Baseline | | Scenario 1a | | Scenario 2 | |
| Decile group | Decile | Share | Decile | Share | Decile | Share |
|---|---|---|---|---|---|---|
| 1 | £703 | 3.1% | £804 | 4.4% | £992 | 5.6% |
| 2 | £866 | 5.1% | £912 | 5.4% | £1,123 | 6.7% |
| 3 | £1,001 | 6.1% | £1,069 | 6.3% | £1,252 | 7.5% |
| 4 | £1,146 | 6.9% | £1,183 | 7.1% | £1,344 | 8.3% |
| 5 | £1,324 | 8.0% | £1,354 | 8.0% | £1,469 | 8.9% |
| 6 | £1,523 | 9.2% | £1,539 | 9.2% | £1,608 | 9.8% |
| 7 | £1,774 | 10.6% | £1,764 | 10.5% | £1,759 | 10.7% |
| 8 | £2,100 | 12.5% | £2,060 | 12.1% | £1,955 | 11.8% |
| 9 | £2,667 | 15.2% | £2,585 | 14.6% | £2,286 | 13.3% |
| 10 | | 23.4% | | 22.4% | | 17.4% |

Table 6.10: Decile groups for the United Kingdom in scenario 1a and 2

| | Gini coefficient | | | |
| Country | Pre-transfer | Baseline | Scenario 1a | Scenario 2 |
|---|---|---|---|---|
| Italy | 0.53 | 0.30 | 0.22 | 0.15 |
| United Kingdom | 0.51 | 0.30 | 0.27 | 0.19 |

Table 6.11: Gini coefficients for Italy and the United Kingdom in scenario 1a and 2
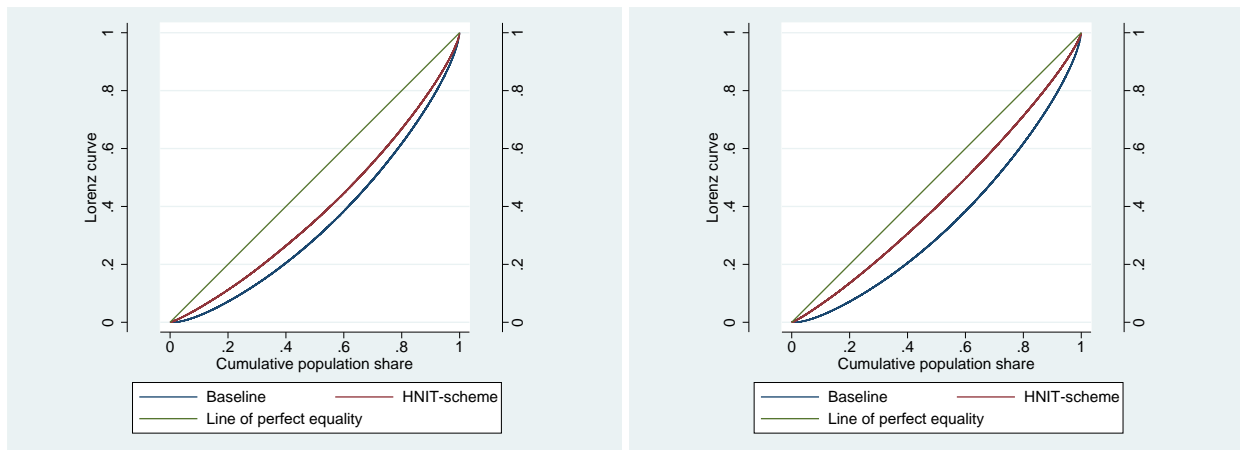
(a) Scenario 1a compared to baseline          (b) Scenario 2 compared to baseline

Figure 6.6: Lorenz curves for Italy
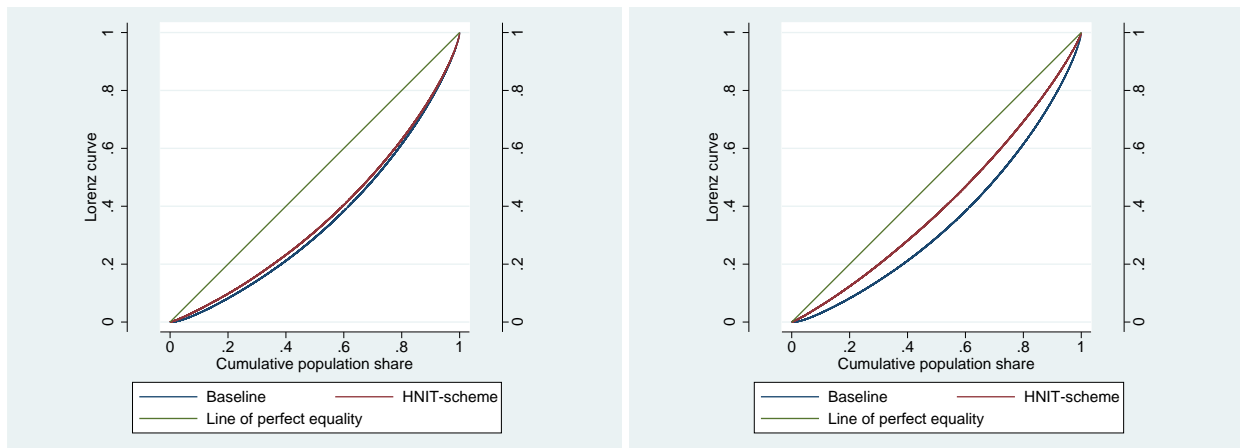


(a) Scenario 1a compared to baseline          (b) Scenario 2 compared to baseline

Figure 6.7: Lorenz curves for the United Kingdom

**Distributive effects defined by losing and gaining on household level**

To provide a good assessment of the magnitude of the redistributive effort produced by the HNIT scheme it is beneficial to inspect how many households lose and gain. In Table 6.12 the amount of households that improve on their disposable income are shown for scenario 1a. Note that these incomes are an aggregate per household, they are not equivalised incomes. In Italy € 513 is being transferred on average from 53.9% of all households to the remaining 46.1% of the households, resulting in a gain of € 601 on average. In the United Kingdom this is less: £432 on average is being distributed from 43.7% of the households to the other 56.3% of households, resulting in a net increase of £336 on average for these households.

|                  | No. households | % households | Average amount |
|------------------|----------------|--------------|----------------|
| **Italy**        |                |              |                |
| Gaining          | 11.89 million  | 46.1%        | € 601          |
| Losing           | 13.89 million  | 53.9%        | € −513         |
| **United Kingdom** |              |              |                |
| Gaining          | 15.24 million  | 56.3%        | £336           |
| Losing           | 11.82 million  | 43.7%        | £−432          |

Table 6.12: Distributive effects defined by losing and gaining in scenario 1a

|                  | No. households | % households | Average amount |
|------------------|----------------|--------------|----------------|
| **Italy**        |                |              |                |
| Gaining          | 12.44 million  | 48.2%        | € 796          |
| Losing           | 13.34 million  | 51.8%        | € −738         |
| **United Kingdom** |              |              |                |
| Gaining          | 13.50 million  | 49.9%        | £568           |
| Losing           | 13.56 million  | 50.1%        | £−564          |

Table 6.13: Distributive effects defined by losing and gaining in scenario 2

In the second scenario in Italy the disposable income deteriorates on average € 738 for 51.8% of the households, while 48.2% of the households are gaining on average € 796 as can be seen in Table 6.13. In the United Kingdom 50.1% of the households lose on average £564 and 49.9% of the households gain an amount of £568 on average.

## 6.3 Macro outcomes

**Scenario 1a**

In this last section of the results the aggregates are computed that could help to determine the feasibility and affordability of the proposed HNIT schemes. Table 6.14 shows the output for both countries in their own currencies for scenario 1a. Starting from the top it can be seen that the amount of benefits paid out is more than 1 billion euros lower after the HNIT reform in Italy; for the United Kingdom it is the opposite and 3.5 billion pounds more is being expended.

| (amounts in millions, monthly) | Baseline | Simulation 1a | Ratio to baseline |
|---|---|---|---|
| **Italy** | | | |
| Total benefits | € 25,831 | € 24,362 | 0.94 |
| Total retained benefits | n/a | € 6,086 | 0.24 |
| Total taxable income | € 82,328 | € 69,578 | 0.85 |
| Total tax revenue | € 33,243 | € 31,795 | 0.96 |
| Mean tax wedge | 40.4% | 45.7% | 1.13 |
| Total disposable income | € 61,474 | € 61,453 | 1.00 |
| **United Kingdom** | | | |
| Total benefits | £14,631 | £18,106 | 1.24 |
| Total retained benefits | n/a | £1,771 | 0.12 |
| Total taxable income | £76,896 | £73,294 | 0.95 |
| Total tax revenue | £21,769 | £25,264 | 1.16 |
| Mean tax wedge | 28.3% | 34.5% | 1.22 |
| Total disposable income | £66,708 | £66,687 | 1.00 |

Table 6.14: Macro outcomes of the microsimulation in scenario 1a

These amounts are totals and include both the guaranteed minimum income as part of the HNIT scheme and the benefits from the original scheme which are retained. The HNIT scheme retained 6.1 billion euros of benefits per month in Italy, which is 24% of all current benefits paid out. In the United Kingdom 1.7 billion pounds in benefit payments from the current system has been kept, which translates to 12% of all benefits paid. Recall that in Chapter 5 it was mentioned that benefits were retained if they were paid out on grounds of invalidity on part of the recipient of the benefits; all other types of benefits were abolished in favour of one universal benefit.

The total taxable income decreases for both the United Kingdom and Italy post-HNIT. This can be explained by the fact that in the baseline situation the majority of current benefits are added to a person's taxable income. But, because most benefits were abolished, taxable income shrank accordingly. The total tax revenue in absolute terms decreased for Italy but increased for the United Kingdom. Looking at relative tax revenue, the percentage that has been raised from this total amount of taxable income is 40.4% in Italy and 28.3% in the United Kingdom and represents the average tax wedge. Note the discrepancy with Table 5.2 where average tax wedges of 47.8% and 25.4% were reported for Italy and United Kingdom respectively. However,

these OECD-numbers refer to the category of "a household of a single person with no children", while the calculations in Table 6.14 are computed directly from the EUROMOD dataset from total taxable income and total tax revenue and constitutes the average tax wedge overall. It can be observed that after introducing the HNIT scheme the average tax wedge increases in both countries: in Italy by 5.3 percentage points (13%) and in the United Kingdom by 6.2 percentage points (22%). This means that despite aiming to keep the marginal tax rates equal in the model, the average tax wedge increased nonetheless.

The intention of the microsimulation model was to keep the disposable income equal after the reform. This is published in the table as a measure of verification that this is indeed the case as disposable income remains 66.7 billion pounds per month for the United Kingdom and 61.5 billion euros for Italy. Additionally, the expenses of the system if it would have been a UBI scheme instead of an HNIT scheme is a monthly 41.9 billion euros compared to 25.8 billion euros monthly and including retained benefits in Italy. Note that this 17.5 billion euros difference is only saved in terms of cash flow, because this amount is what taxpayers receive in the form of a lump-sum tax exemption. For the United Kingdom a UBI system would cost a monthly 38.4 billion pounds, compared to the 18.1 billion pounds in benefits under the HNIT scheme. This is a 20.3 billion pounds monthly difference.

**Scenario 2**

In Table 6.15 the macro outcomes for the second scenario are published. Because the benefits are more generous total benefits are higher than in scenario 1. The benefits retained and taxable income remain the same in scenario 2. Because scenario 2 is aimed to be revenue-neutral also, the tax revenue increases accordingly for the increased benefits to be covered. This leads to an increase in the average tax wedge for both countries: in Italy for every gross euro earned 54 cents is being taxed and for the United Kingdom every gross pound earned 42 pence is being levied in taxes. These numbers mean that the average tax wedge increased by 13.4 percentage points (33%) and 13.5 percentage points (48%) for Italy and the United Kingdom respectively. In the second simulation model the average tax wedge of the United Kingdom (41.8%) is very close to the average tax wedge in the baseline situation of Italy (40.4%), this illustrates the clear-cut difference between the tax wedges in Italy and the United Kingdom.

As in scenario 1 the total disposable income after the reform matches the disposable income before the HNIT reform. Comparing the costs of a UBI to the HNIT it is estimated that for Italy this is 52.4 billion euros while this is 49.3 billion pounds in the United Kingdom on a monthly basis. The differences with the HNIT can be derived from Table 6.15: it is 24.0 billion pounds more expensive for the United Kingdom, while this number is 22.4 billion euros for

Italy. Again, this is not an amount that is strictly saved, it is money that does not have to be spent and then taxed back by the government.

| (amounts in millions, monthly) | Baseline | Simulation 2 | Ratio to baseline |
|---|---|---|---|
| **Italy** | | | |
| Total benefits | € 25,831 | € 29,953 | 1.16 |
| Total retained benefits | n/a | € 6,086 | 0.24 |
| Total taxable income | € 82,328 | € 69,578 | 0.85 |
| Total tax revenue | € 33,243 | € 37,421 | 1.13 |
| Mean tax wedge | 40.4% | 53.8% | 1.33 |
| Total disposable income | € 61,474 | € 61,418 | 1.00 |
| **United Kingdom** | | | |
| Total benefits | £14,631 | £23,472 | 1.60 |
| Total retained benefits | n/a | £1,771 | 0.12 |
| Total taxable income | £76,896 | £73,294 | 0.95 |
| Total tax revenue | £21,769 | £30,618 | 1.41 |
| Mean tax wedge | 28.3% | 41.8% | 1.48 |
| Total disposable income | £66,708 | £66,700 | 1.00 |

Table 6.15: Macro outcomes of the microsimulation in scenario 2

# 7 | Discussion

## 7.1 Shortcomings

**Sufficiency of the guaranteed minimum income**

The HNIT modification of the NIT scheme, i.e. setting the tax rate at the lowest bracket at 100%, and subsequently making the distinction between age groups of young adults (age 16-22) and adults (age 23-64) had the goal of increasing the guaranteed minimum income level. The forecast that the resulting benefit/exemption amount of € 570 or £584 is feasible given a revenue-neutral reform begs the question: are these entitlements enough? It seems to be enough looking at the poverty and inequality statistics, across the board these statistics show improvement compared to the baseline. However, there is a difference between basic subsistence and relative poverty. It appears the entitlements are enough for basic subsistence, but, these amounts still fall around 30% short of the poverty line (which is 60% of equivalized median income) indicating that a single person who has to rely on solely the guaranteed minimum income amount could experience relative poverty; it is considered doubtful that a person could live with dignity on this income level. An individual who is currently on multiple benefit programmes – excluding invalidity programmes, because these are retained in the HNIT reform – could be considerably worse off under an HNIT scheme if this individual now only has one modest single benefit of € 570/£584 left. One of the core issues in discussions about providing social protection is how high levels of basic protection should be and this paper aims to shed some light on the trade-offs involved.

One should decide between a system which includes a number of benefit programmes tailored to vulnerable people with different needs or, on the other hand, choose for a single system favouring simplicity and universality as is the case with an HNIT. If one were to choose universality over the system with tailored benefits it basically means that the level of universal protection is too low for some people and possibly too high for others. This compromise leads in turn to the advantage of a reduction in stigmatization of people in need of social

assistance as well as savings in administrative costs as a result of simplifying the benefit system. This paper cannot give a definitive answer to the question whether the calculated levels of guaranteed minimum income are enough, but it can show what maximum levels are feasible under revenue-neutrality that can provide the inputs for a fruitful discussion on the provision of social protection.

**Perfect targeting**

One could contest the assumption in our microsimulation of perfect targeting of the HNIT-benefits. However, given that every citizen is registered at birth in a central database by the government and that the tax authorities keep an accurate record of who is paying taxes it follows that all people registered but not paying taxes will automatically receive the benefit. We therefore assume that all citizens are filing their income taxes correctly; additionally, the tax authorities receive income information from employers which can be used to double-check if a tax filing is correct. In the situations when people do not register themselves at birth in the civil registry or when government does not have (correct) bank account details of the recipient it will of course hinder benefit payments. Also, when people work in the informal sector, i.e. they do not pay taxes while working, they will be eligible for a benefit despite earning money in the informal labour market. This could be a potential hazard for the HNIT system, nonetheless, the current situation carries a risk of tax avoidance and benefit fraud as well and it remains ambiguous as to whether this risk is higher or lower under an HNIT scheme.

**An upward shift in median income**

A consequence of the redistributive properties of the HNIT scheme in combination with the generally accepted way to measure poverty in developed economies – that is, through relative poverty – is that the poverty line is shifting upward. It is assumed that people are poor if their income level is far below what the rest of the population earns, therefore the consensus for defining someone as poor lies at a threshold of 60% of median equivalized income level. Note that a relative poverty threshold is always arbitrary, but this threshold is adopted as a general standard. People at this threshold level will not be facing threats in their subsistence contrary to a poverty threshold that is *absolute*, however, they are impaired in fully participating in the society at this level and are therefore considered poor. With the introduction of an HNIT scheme, which redistributes income to the very bottom of the income distribution, it is an obvious consequence that the median income, and thus the poverty line, shifts upward; we visualized this with Figure 6.4 and 6.5. An implication of the definition of a relative poverty line

is that poor people need more money than initially estimated to not be defined as poor when the median income shifts upward. Poverty will only be abolished when there is no one left in the population below 60% of equivalized median income. This means that we would have to transfer more cash to people under the poverty line than we initially had foreseen to lift them out of poverty. Scenario 2 illustrates this principle when we introduce a level of entitlements for adults slightly more than 100% of the poverty line, it turns out the entitlements cover only about 90% of the poverty line when the shift in median income has been taken into account. This is not a shortcoming of the HNIT per se, but rather a shortcoming of the way how we measure poverty.

**Household economies of scale**

A point to take into account is that the benefits are paid out to individuals and not households. There is no marriage penalty, which means married and other cohabiting people enjoy economies of scale which single-person households do not. A consequence is that this encourages people to live together. For example, in the United Kingdom under scenario 1a a jobless couple with two children would receive £1868 in cash transfers, equating to an equivalized per capita income of £890. In contrast, a jobless one-person household would receive £584 in benefits, the equivalized per capita income being also £584 in this case. So, instead of a marriage *penalty*, there is now quite a marriage *subsidy*. The resulting per person equivalized income is dependent upon the equivalence scales used of course. However, the HNIT does treat every individual the same way independent of the household composition he or she lives in. We could opt to change benefit levels of the HNIT scheme taking into account household composition and ultimately economies of scales, the reasoning above makes a convincing case for this. But, this would in turn affect the simplicity of the HNIT scheme and as a consequence make the whole system more complicated. It also compromises the universal element of the HNIT: people would be treated differently depending on in what type of household they live.

We did make a compromise on differentiating between people on the attribute of age. The distinction between young adults (age 16-22) and adults (age 23-64) was made with the goal of raising the level of entitlements for adults. The justification for the distinction (at the expense of young adults) is made on the basis of different financial needs between the two groups. Young adults are expected to be supported by their parents and most of them are also expected to still live at their parents' home, therefore enjoying the economy of scale of sharing fixed expenses within a family. In Table 6.2 it was shown that at the expense of €151 or £115 for young adults the entitlements of the adult age group could be increased by €19 or £19. This is a choice that can be contested; if one values universality above the increase in

minimum income guarantee for adults then the distinction between adults and young adults is undesirable. However, we have chosen the policy parameters with the goal of increasing the guaranteed minimum income level as high as we possibly can for the adult population.

**The abolishment of social insurance**

A cause for concern in our model is that there is only one single type of tax in our proposed HNIT scheme. In the original situation there are different social insurance contributions paid by both the employer and employee that all have their own designated fiscal purpose. In this way these social insurance expenditures are tied up so that their spending purpose cannot be altered as a result of political pressures. The proposition to employ one single type of tax of which its revenues all flow into the general treasury – where politicians run the show – could potentially be troubling. If parliament decides for austerity it means that the level of guaranteed minimum income will be up for debate. This goes against the basic principle of an HNIT, which is reassuring people that their basic security is always guaranteed under an HNIT regime.

To solve this issue the revenues required for HNIT benefits should be anchored in some way into the law (or possibly even the constitution) so that people can be reassured that no cuts in benefits will occur. Another potential solution is to collect all revenues necessary for social expenditure in one large HNIT fund with its own budget, much like the way social insurance is managed now, but now there is only one social insurance fund designated solely to providing HNIT cash transfers. In this way our proposed single type of tax would be split into one HNIT social insurance type of tax and one general tax of which the revenues would flow to the general treasury.

**Annual data on income**

Because we only have annual data on income instead of monthly data this might affect our evaluation of the effectiveness of an HNIT scheme. Income in a year does not necessarily mean that it is evenly distributed over each month; we nonetheless assume the smoothing of income over one year because of this obvious data restriction. This assumption probably does not hold in reality and people may be falling short in smoothing their income, not managing well the surplus income in one month and shortage in another month.

Because HNIT only reacts to income changes on a yearly interval this means that HNIT will not improve income smoothing within the span of a year. Therefore, HNIT will not be very suitable in addressing acute financial problems of people. For instance, with unlucky

timing, workers who are laid-off might have to wait an entire year for their first negative tax transfer, pushing them into poverty in the first months after being let go. A well-designed social protection system is expected to protect people from these types of contingencies. Possible ways to mitigate this problem is to decrease the tax filing intervals from the standard year to shorter periods, for instance quarterly intervals. Another option is an emergency cash fund, which could be used to give people an advance on their negative income tax cash transfers under special circumstances. Nonetheless, these proposed solutions are not ideal, since they entail an increase in administrative costs by the government. This counteracts one of the hallmark advantages of savings on administrative costs by the government.

**The impact of work incentives**

Arguably the most contested aspect of discussions involving schemes such as UBI and NIT is the affordability of such a system. We have dealt with this issue by designing our social protection reform as revenue-neutral. However, there still remains one aspect of affordability, which is the change in incentives to work. As a consequence of our aim to keep marginal tax rates equal in our microsimulation model of scenario 1 we assumed that work incentives remain equal as well. We justify this assumption by keeping the marginal taxes equal to baseline levels of marginal taxes, except in the bottom tax bracket between zero and the level of guaranteed minimum income. Therefore, effects on labour force participation are expected to be quite small in scenario 1, because of the minor changes in marginal tax rates. The bottom tax bracket is between 0 euro and 570 euro in Italy and 0 pounds until 584 pounds in the United Kingdom. Because of the withdrawal of benefits within these intervals this could possibly cause considerable deviations from the baseline work supply outcomes in the HNIT scheme.

Under an HNIT, part-time workers would be affected most by a tax of 100% on the lowest tax bracket, because minimum part-time incomes would be within these ranges of salary. Therefore, when a person makes the decision to either stay at home or accept a part-time job he or she would have less incentive to do so, because the difference of working or not working is small in terms of net income. For instance, when a jobless person in Italy has the opportunity to start a part-time job with a salary of € 800 he or she has a choice between making use of a cash transfer of € 570 (the guaranteed minimum income) or accept the part-time job for € 800, resulting in a net income of € 674. The incentive to take this job is only a monthly € 104 (the difference between the guaranteed minimum income and net income from the hypothetical job offer), because he or she loses 100% of the cash transfer of € 570 when accepting the job. On the other hand, when this person has the opportunity to start a full-time job for € 2000 a month this would result in a net income of € 1216. Compared to a cash transfer of € 570

this difference of € 646 is a much higher incentive. Therefore, the choice to start a full-time job from the situation of unemployment has much higher incentives than choosing to accept a part-time job when coming from unemployment. This results in second-earners and students working side jobs being discouraged to take up work. In a standard family the two partners are discouraged to take up a part-time job, it is much more beneficial to have either both parents work full-time and make use of childcare or have one parent work full-time while the other one stays at home. A consequence of this is that jobs which are traditionally part-time, for example in the catering and retail industry, will likely suffer the most from a reduction in labour supply as a result of the HNIT reform. Also, the empirical data from guaranteed minimum income experiments support this conclusion as we have seen in Chapter 4. The category of wives saw a much higher decrease in annual work hours than the category of husbands; because wives were rarely the main earner in a household in the time these experiments were conducted we can generalize the findings for wives to second earners and conclude that these second earners potentially could lower their labour supply by as high as 33%. And, because we assume an even higher withdrawal rate than was used in these experiments this percentage could turn out to be even higher.

Just as we did not assume work effort changes, we did not take into account in our model the main beneficial financial aspects of introducing an HNIT which are lower administrative costs by the government and reduction in health care costs. An additional element which might positively impact work incentives as well is that the tax system is much more transparent in our proposed system. At every level of gross income the level of net income is easily determined from the viewpoint of an employee. With the current patchwork of benefit programmes, income taxes at different government levels and social insurance contributions it is an opaque system in which it is difficult to figure out the exact level of taxes, social insurance contributions and benefits at any given level of gross income. However, it is difficult to quantify these positive effects in a model, therefore we assume that all benefits combined offset the possible negative impact of labour supply reduction. We believe this is a reasonable estimate since the negative labour supply effects are expected to be small; nonetheless, this is an important aspect to take into account since we do not quantitatively back up these claims. We base this assumption on previous research on guaranteed minimum income experiments as discussed in Chapter 4 which demonstrates the limited effects on labour supply estimates.

The second scenario uses non-linear marginal taxes, as is researched to be dominant over a flat-tax scheme (Jacobs, 2013; Saez, 2001). This is not used in the first scenario where the marginal tax rates of the current system are applied. Despite non-linear tax to be optimal, we cannot assume that the second scenario does not impose any consequences for work incen-

tives. Because the income taxes are much higher compared to the baseline situation the work incentives will be lower and also the tax revenue will be affected as a consequence of less labour supply. Therefore, it is likely that the tax rates we computed to be necessary for the funding of the more generous benefits turn out to be insufficient in the end. Because of this, we could expect this issue to violate our assumption of revenue-neutrality. Therefore, the macro outcomes regarding tax revenue are to be interpreted in light of this shortcoming in scenario 2. Notwithstanding, the violation of the assumption of revenue-neutrality has a negligible effect on our computed poverty and inequality outcomes, therefore these outcomes are not affected as a result of changes in work incentives.

In scenario 1, where we aimed to keep work incentives equal to the baseline situation, we wanted to leave work incentives out of the equation altogether. However, we only partly succeeded in this, and this is a consequence of the following two reasons. Firstly, the presence of a guaranteed minimum income which is awarded to people automatically, i.e. only registration in the civil register in combination with tax filing is required, introduces a new aspect of work incentivation which has not been extensively researched yet. Chapter 4 on previously conducted experiments on guaranteed minimum incomes tried to shed some light on this. Put differently, the full "decommodification" of people as a result of this universal social protection scheme could possibly lead to adverse effects on work incentives. Secondly, even if we would replicate *marginal* tax rates very accurately, the *average* tax rate might still deviate. As can be seen in the results the average tax rates did increase relative to the baseline situation. This increase of average taxes could have unanticipated consequences for work incentives.

For both scenarios the average tax wedge turned out to be higher than in the baseline situation despite replicating the marginal tax rates. In scenario 1 we have a discrepancy in the average taxes in Italy as an increase from 40.4% to 45.7% (a 13% increase), while the United Kingdom has initially a mean tax wedge of 28.3% which increases to 34.5% (a 22% increase). A hallmark property of the HNIT scheme is the specification of a fixed tax exemption amount which replaces all benefits and deductions pre-HNIT. Marginal taxes could well be equal, but if this fixed exemption is different than the average amount of exemptions in the pre-HNIT system, then changes in average tax rates are still likely to occur after the HNIT reform. When the fixed exemption amount is higher under the HNIT regime than in the baseline situation this results in a lower average tax wedge, because this is essentially a tax bracket on which the tax rate is zero percent and the larger this tax bracket the more it will reduce the average tax rate. Because we observed a higher average tax wedge after the HNIT reform this suggests that the fixed exemption amount is lower under an HNIT regime than in the baseline situation. In other words, a viable explanation for the difference in average tax rate is that currently

people enjoy on average higher tax exemptions than is the case after the HNIT reform leading to a higher average tax rate under the HNIT scheme.

The other possible cause of deviation between average tax rates in the current situation and the simulation is that we might not have replicated the marginal tax rates as accurately as we thought. This is because we only use marginal taxes the OECD specifies at four levels: 67%, 100%, 133% and 167% of average annual wage. Therefore, there is a range of incomes where the marginal tax rates are unspecified: incomes below 67% and above 167% do not have corresponding marginal tax rates specified by the OECD and we assume in our model that the marginal tax of 67% is also applied to all income levels below this level and, similarly, that the marginal tax rate of 167% extends to income levels higher than 167% of average wage. This means that there is room for deviation from the OECD-specified marginal tax rates to the real marginal tax rates within these income regions. Another possibility for inaccuracy of the marginal taxes is that we applied only the "single person with no children" category of marginal taxes of the OECD and not one of the other categories. The other categories, "one-earner married couple with no children", "single parent with two children", "one-earner married couple with two children" are not the same as "single person with no children". However, since we can only choose one tax rate and we cannot differentiate tax rates between these different categories in our model we chose to apply only the marginal tax rates from the "single person with no children" category. Despite these potential sources of inaccuracy we expect only small deviations as a result.

## 7.2  Further research

In our microsimulation model we made use of microdata from Italy and the United Kingdom. It might be interesting to apply the same model to other EU countries – or even non-EU countries if we disregard the requirement of EUROMOD. Preferably, we would like to apply the model to countries which differ as widely as possible to be better able to gauge the effects of an HNIT on welfare outcomes. As can be discerned from the Joint Employment Report 2017 (European Commission, 2017), which classifies countries in the European Union as to their social performance among others, Italy and the United Kingdom are both in different categories for inequality and poverty, which emphasizes the need for applying our microsimulation model to both countries. For poverty, Italy is in a "critical situation" (the worst classification), while the United Kingdom is categorized as "average". For inequality, Italy remains "to watch" (one level above the worst classification) and the United Kingdom is again classified as "average".

What is missing in our analysis is whether an HNIT scheme would also be a beneficial model

for nations which already have good social outcomes. It would be interesting to apply our model to a country like the Czech Republic or Slovakia which are both classified as "best performers" in the area of both poverty and inequality. It remains to be seen what the outcomes would be; the effects could have a similar effect as in the United Kingdom which entails a modest impact on poverty and inequality. It could even worsen poverty and inequality compared with the current situation. The effectiveness of an HNIT depends on how efficient the current social protection systems are and it might be the case that the Czech Republic and Slovakia have designed social protection systems that have better welfare outcomes than the HNIT would be able to achieve. Additionally, it would be good to apply our microsimulation model to a country that performs as poorly on poverty and inequality outcomes as Italy, for example Spain and Romania which both fall in the worst categories of poverty and inequality in the above-mentioned Joint Employment Report 2017. In this way, this further analysis has the potential to show that the high level of reduction on poverty and inequality in Italy was not a lucky break.

We have seen some experiments on a guaranteed minimum income in Chapter 4 and its effects on behaviour. However, no experiment in the past was conducted long-term. This is needed to obtain data on how people behave when their livelihood is guaranteed not only today or the next few years, but over their lifetime. This would enable us to gauge psychological effects and consequences in decision-making which arise when people never have to worry about their basic subsistence during their lives. Ideally, we would want to forecast for a wide variety of categories of people on how their labour decisions would change as a result of a guaranteed minimum income. We could then implement these behavioural preferences in our microsimulation models to accurately take into account the changes in labour supply as a result of our proposed reforms.

We have concerned ourselves until now with the question whether our proposed system does not hurt work incentives. But, we could also turn this issue around. What if low tax rates were applied, just as the ones which were simulated in scenario 1b? Would an HNIT scheme have the power to actually *increase* labour supply when the marginal tax rates are sufficiently low? Of course, this probably requires additional resources because of the trade-off between work incentives and the level of guaranteed minimum income. However, the hypothesis remains interesting because in the same way as we were suspicious of reduced tax revenue as a result of lower labour supply as a consequence of higher tax rates, we might expect higher tax revenue as a result of higher labour supply as a consequence of lower tax rates. Thus, the exact mechanism of work incentives under a guaranteed minimum income system remains largely uncharted and could benefit from more research.

# 8 | Conclusion

## 8.1 Review of findings

This thesis started out with the question: given revenue-neutrality, what concessions should be made to a UBI so that it becomes feasible in terms of a high enough guaranteed minimum income? A Universal Basic Income is considered "free money for all", while Negative Income Tax is a guaranteed minimum income scheme which provides universal social protection. The redistributive effects are the same, yet the design is different. Through microsimulation we forecasted that a Hybrid Negative Income Tax system could support a guaranteed minimum income of € 570 in Italy and £584 in the United Kingdom. This leads to large improvements in poverty and inequality in comparison with the current situation in Italy, while the United Kingdom shows moderate improvements on these outcomes. We were able to obtain a higher guaranteed minimum income than would be possible under a UBI as a result of introducing a 100% tax rate on the bottom tax bracket or, in other words, a 100% withdrawal rate. We conducted additional analysis on the withdrawal rate by varying its rate and microsimulating the maximum feasible amounts of guaranteed minimum income. The maximum feasible guaranteed minimum income decreased, while, interestingly, the poverty and inequality outcomes remained quite robust to the lowering of the guaranteed minimum income. The robustness on poverty and inequality outcomes could be explained by the fact that we kept cash transfers for children and elderly equal, while only lowering the guaranteed minimum income for adults. As we already saw in the results, the decrease of the guaranteed minimum income level accelerates the lower the tax rate becomes, rendering the smallest decrease between 100% and 90% and the largest decrease between 20% and 10%.

When we increased the guaranteed minimum income to levels which are more desirable than what is possible under revenue-neutrality we found that the poverty and inequality outcomes greatly improved. The forecasted outcomes in poverty and inequality are unprecedented for both Italy and the United Kingdom, because (relative) poverty will be virtually eradicated while both countries would become by far the most egalitarian societies in the world. But, this

outcome can only be reached if extra financial resources are mobilized. If these extra resources are being financed solely by increasing income taxes then this would lead to very high taxes. In Italy the tax rate at 67% of average wage (the lowest tax-bracket) should become at least 74%, while this percentage is 51 in the United Kingdom.

The results permit us to unequivocally conclude that the HNIT scheme is preferred over both a UBI scheme and a classic NIT scheme in terms of a higher guaranteed minimum income, given revenue-neutrality. Because of a higher guaranteed minimum income we can also conclude that poverty and inequality outcomes are improved in an HNIT scheme. These claims we can safely make; however, it is much more difficult to claim that *overall* an HNIT scheme is preferred over a UBI or NIT scheme or even the baseline situation. The reason why we cannot equivocally draw conclusions about the dominance of one system over the other is the lack of definitive answers on work incentives, i.e. the effects of marginal taxes on labour supply. We have seen in Chapter 4 that implementing a guaranteed minimum income only has minor negative effects on annual work hours. And, as we have already explained in the discussion in Chapter 7, despite efforts to remove work incentives from the equation entirely, remnants of alterations in work incentives are inevitably still present in our microsimulation model. This entails the vital trade-off between work incentives and level of guaranteed minimum income that has been a common thread throughout this paper and that we will examine once more in the next and final section of this thesis.

## 8.2  Policy implications

The choice has been made in this paper to sacrifice work incentives at the very bottom income level in favour of an increase in the guaranteed minimum income level. This is just one option to deal with this trade-off, but the debate remains open to other answers. Nonetheless, this paper aims to shed some light on the parameters that are associated with an HNIT and how these affect the properties of this tax-benefit system. While a 100% withdrawal rate of cash transfers was chosen, its effects should be looked into further before implementing it. Nonetheless, in the current situation the marginal tax rates at the lowest incomes are at high levels too. Adding to this is the advantage that an HNIT ensures that the marginal tax rate never exceeds 100%, which still remains a possibility in the current system.

By doing a microsimulation on different tax rates of the lowest tax bracket, i.e. varying the withdrawal rate from 100% to 90%, 80%, etc. as we did in scenario 1b, we provided some insight into what happens when we adjust these policy parameters. The level of guaranteed minimum income that is feasible decreases quickly for adults making it hard for people to sur-

vive just on this type of benefit. However, since we are dealing with a decrease that accelerates, i.e. it is non-linear, it might be feasible to look at tax levels of 70% to 80%; in other words, tax levels at which the level of guaranteed minimum income decreases relatively slowly. For instance, one could look at the situation of the United Kingdom in scenario 1b where the tax rate of the lowest tax bracket is 70% and there is no distinction between adults and young adults. It is possible to support a guaranteed minimum of £466 for all adults between 16 and 64, instead of the £584 when we raise the withdrawal rate to 100% and make a distinction between adults and young adults. It is difficult to make an assessment as to what exact withdrawal rate to pick and from the analysis we conducted in this paper it is impossible to conclude on an optimal withdrawal rate. From a policymaker's perspective it would be absolutely necessary to have more information on behavioural effects before this policy can be made into legislation. What we do know is that the guaranteed minimum income level decreases quite substantially when we decrease the tax rate below 70%. Looking at it from a financial feasibility perspective it appears an impossibility to avoid high withdrawal rates given revenue-neutrality.

Another aspect is that the proposed tax-benefit system should be designed to be affordable even during economic downturns. Before implementing an HNIT scheme it is important to evaluate different what-if scenarios; the stress-testing of the system is important work for the future. Possibly, the parameters of the HNIT scheme could be made relative to, for instance, the median income. If median income rises, the universal benefit would rise equally; on the other hand, if median income drops due to an economic downturn the guaranteed minimum income levels should decrease accordingly to keep the system affordable. Moreover, whenever an economic crisis does happen, an HNIT could possibly save a large amount of people from falling below a certain standard of living, hence providing resilience from economic shocks to people and the economy in general. In this way the HNIT scheme could also protect the economy from falling into a deeper recession, making it a sound macro-economic policy. Implementing this automatic policy response could protect people from austerity measures during times of economic hardship, precisely when a stable social protection system is needed most.

Conducting our analysis on both Italy and the United Kingdom provides us with a valuable lesson about an HNIT scheme. It was established that Italy initially features a higher tax wedge on labour income, a slightly higher pre-transfer Gini coefficient and higher poverty indices than the United Kingdom. From the microsimulation in scenario 1 it becomes clear that poverty and inequality decrease much more in Italy than in the United Kingdom as an effect of the HNIT. The most obvious explanation is that the United Kingdom has a much more efficient social protection system already in place than Italy has. If Italy would transfer the revenue of their high tax wedge more to lower income deciles their poverty and inequality statistics

would decrease. This is exactly what the HNIT aims to do: an efficient and simple way of making sure no one falls below a certain income threshold. This means that the impact of implementing an HNIT relies on how efficient the current social protection system is designed. Nonetheless, this is not the whole story; a reservation should be made here that efficient social protection expenditure is not synonymous for how efficiently financial resources are being transferred from tax payers to people under the poverty threshold. During their working lives people set aside a part of their salary to provide themselves with an income when they retire; the smoothing of income over the life-cycle is another objective of social protection. Thus, it could mean that Italy simply allocates more social expenditure to inter-temporal redistribution of income, instead of redistributing to people living under the poverty line. Part of our large improvements in poverty and inequality outcomes potentially could be explained by the redirecting of all social expenditure, including the smoothing over the life-cycle, to combating poverty.

Regarding this inter-temporal element of social expenditure, we are asking a dispropor-tional sacrifice from pensioners in our policy proposal. Usually, a pension consists of a universal income (much like UBI) and an additional personal pension plan which consists of deferred salary over which the recipient pays taxes at the moment when she receives her pension after retirement. We propose to transform this universal pension income into a guaranteed minimum income; as a consequence, everyone who accumulated a personal pension plan during their career equal or higher than the guaranteed minimum income will forgo all of their universal pension income. Moreover, they will still be required to pay taxes over their personal pension plan, the same tax rates working age adults are subject to. But, because in our proposal the guaranteed minimum income is higher for elderly than for working age adults – it is substan-tially above the poverty line – this means that the pensioners do enjoy a larger tax exemption over their personal pension plan. And from the fact this guaranteed minimum income level is substantially above the poverty line it ensures that people in pensionable age never fall into poverty.

This paper acknowledges that a full abolishment of current benefits would not be fair to people who have no capability to earn. This means that a certain extent of means-testing will remain, i.e. our HNIT proposal is universal but is supplemented by a disability cash transfer which includes an eligibility test. Therefore, the advantage of a decrease in administrative costs will be forgone to some degree because a significant portion of current civil servants determining disability benefit eligibility will need to stay on. In our microsimulation model we retained all current disability grants for both Italy and the United Kingdom, making no changes to these programmes. It could be beneficial to merge all separate disability programmes into

one, this would give impetus to our proposition to simplify the social protection system.

Note that only labour taxation has been looked at in this paper. However, this tax policy should be closely coordinated with other types of taxes such as capital tax, indirect tax, estate tax and possibly a financial transaction tax. Capital taxation can be a form of labour income in the case of entrepreneurs or self-employed, but in general, capital income mostly applies to the highest income quintiles. However, the Laffer curve also applies here; people could relocate their capital abroad to tax-friendlier countries for instance, that is why this type of taxation has its limitations. Since we know that income tax in general discourages people to work it is recommended to employ other types of tax which constitute less of a burden to work incentives, resulting in more economic prosperity. This builds on the interesting debate around the role of capital and income where Piketty (2014) argues for a larger tax on capital while alleviating taxes on salaried workers.

Our microsimulation model is aimed to propose a change of the social-economic system that protects the vulnerable while simplifying the tax system. Aiming for full decommodification of labour, the HNIT scheme is a viable option. The choice of the degree of decommodification is a political one, but in the event society decides to choose that labour is to be decommodified, the HNIT scheme could be considered as an efficient way of achieving this. Currently, Italy and the United Kingdom belong to different welfare state categories entailing different levels of decommodification. Esping-Andersen (1990) provided an assessment of the degree of de-commodification in Italy and the United Kingdom from which we learn that in a ranking of 18 OECD countries Italy and the United Kingdom end up on the 12th and 13th place in terms of decommodification, thus below the average. Despite the fact that these data stem from 1980 it remains clear that the current level of decommodification displays a large discrepancy with the level of decommodification envisioned by an HNIT. This is another reason to assume that it will hinder political feasibility. Because the shakeup of the status quo is quite severe it would require a great deal of political leadership to implement the HNIT scheme.

There are many ways to provide a social protection floor in a society, Universal Basic Income and Negative Income Tax are among them. This paper aims to provide a thorough overview of the implications of introducing an HNIT scheme. It has its virtues and its vices; it is a precarious task of weighing the trade-offs that entail designing a social protection system that provides a guaranteed minimum income. One has to take into account the work incentives and the total costs of the system. Additionally, as we discussed in Chapter 1 the beneficial effects of an egalitarian society on economic growth is not to be ignored either. Therefore, despite the significant shakeup of the status quo caused by the HNIT scheme, research suggests that the increased equality would lead to an increase of the cake instead of making it smaller.

Nonetheless, we do not want to give the impression that an HNIT scheme is a silver bullet; it has clear shortcomings as we pointed out in this paper. In essence the policy debate revolves around the solidarity of the middle-class with people at the lowest income deciles. This solidarity includes the acceptance that there is no monitoring (or penalization) for people which induces them to work. Although clear (Rawlsian) welfare gains are to be made it depends on the goodwill of these middle-income groups to agree to this decommodification, because they are essentially the ones sacrificing part of their earnings. An HNIT would constitute an ambitious overhaul of the current system, explicitly inciting a debate on the trade-off between work incentives, the level of a guaranteed minimum income and the complexity of our current tax and benefit system. And, it shows decidedly that redirecting financial resources to implementing a social protection system that provides universal protection could give huge benefits in terms of a reduction in poverty and inequality.

**Implementation**

A potential way to implement the HNIT would be to gradually implement an HNIT reform by decreasing existing benefits and increasing the HNIT benefit in a slow pace. Gradual implementation would also improve the political feasibility of the HNIT scheme, because it could provide more time to correct potential anomalies and signal the amount of people that will inevitably lose in such an ambitious redo of the social system. An individual who is currently on multiple benefit programmes – excluding invalidity programmes, because these are retained in the HNIT reform – could experience a great drop in income level if this individual now only has one relatively sober single benefit of €570/£584 left. A potential solution would be to gradually over time implement an HNIT reform by "fading-out" existing benefits and slowly increasing the HNIT benefit simultaneously.

A feasible solution has been proposed to introduce a new tax-benefit scheme of this magnitude cohort by cohort (Torry, 2016). At first only the cohort of sixteen year olds would be subject to the new tax-benefit system, while the rest of the population is still under the old regime. This would include all children under sixteen too, because their benefit resembles child benefit and would be easy to implement. This could prove to be a good strategy to implement an HNIT slowly and, in addition, it would also pose as a pilot study to evaluate whether the tax-benefit system performs as expected. It should be kept in mind that these pilot study results would possess some generalization issues, because it is not evident that results for sixteen year olds are representative for fifty-six year olds, for instance. This proposition has a relatively high level of political feasibility, because vested interests are not fundamentally affected. The downside is that the transition period takes a very long time – until the last 17-year old has

deceased the old system will be partially in place – and that people now aged 17 and older will never benefit from this new social protection system.

**In conclusion**

In conclusion, given revenue-neutrality, we cannot have it all; it is a choice between high work incentives or a high guaranteed minimum income. The most important aspect of this paper and the idea of a Hybrid Negative Income Tax is to stimulate the policy debate regarding accomplishing the goal of decommodification and social protection for all. A famous quote from John Maynard Keynes excellently summarizes the importance of this:

> " ... the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. ... I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas. Not, indeed, immediately, but after a certain interval; for in the field of economic and political philosophy there are not many who are influenced by new theories after they are twenty-five or thirty years of age, so that the ideas which civil servants and politicians and even agitators apply to current events are not likely to be the newest. But, soon or late, it is ideas, not vested interests, which are dangerous for good or evil." (Keynes, 1936, p.383)

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