An unconditional basic income and labor supply: Results from a pilot study of lottery winners[☆]

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Abstract

Proponents of an unconditional basic income see its introduction as the most desirable way to redesign existing labor markets, arguing that its effects on labor supply might engender full employment. Opponents, on the other hand, argue that an unconditional basic income would result in an economic crisis due to a severe reduction in labor supply. So far no empirical data were available to assess these claims. This article proposes an empirical research strategy, i.e. surveying specific types of lottery winners, to investigate the empirical consequences of introducing an unconditional basic income. The results of a pilot survey are presented.
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1. Introduction

Keynes (1973(1935)) stated that the pursuit of 'full employment' was a key goal for governmental policy. For decades this goal has been pursued by governments across the world. However, structural unemployment persists in many countries. Even in periods of high economic growth rates governments seem incapable of achieving full employment, despite the implementation of several innovative labor market policies (Auer et al., 2005; Schmid and Gazier, 2002).

As a result, some renowned academics have proposed more revolutionary changes to the labor market (Meade, 1990; Offe, 1992; Dahrendorf, 1994; Van Parijs, 1995; Beck, 1999; Simon, 2001; Standing, 2002). They suggest the

introduction of an universal basic income (hereafter BI) as the desirable policy measure to achieve full employment. A BI is "an income paid by a government, at a uniform level and at regular intervals, to each adult member of society. The grant is paid, and its level is fixed, irrespective of whether the person is rich or poor, lives alone or with others, is willing to work or not (Van Parijs, 2003, p. 5)".

Proponents argue that a BI would lead to reduced levels of unemployment due to three dynamics. First of all, a redistribution of existing jobs among the active work force will occur. A significant number of people will reduce their labor supply by working less and, hence, opening up opportunities for unemployed people to enter the labor market. Secondly, the introduction of BI, due to its unconditional character, abolishes institutional barriers such as the unemployment trap which provides incentives to accept a job. Under a BI accepting a job will always significantly increase household purchasing power. Thirdly, the introduction of BI will increase the number of jobs for two main reasons. On the one hand, a BI stimulates entrepreneurial activity and provides incentives to set up a business via the mechanism of risk-reduction (Euzéby, 1987). More entrepreneurial activity might lead to economic growth which results in more jobs. On the other hand, the introduction of a BI will reform labor market institutions which momentarily inhibit the development of several types of jobs. The abolishment of one such institution, the minimum wage, might result in the re-emergence of jobs which are momentarily priced out of the market (cf. so-called low productivity jobs). As pointed out by Block (1990, p. 207), "the fact that individuals were guaranteed a minimal level of income would increase the attractiveness of relatively poorly reimbursed service activities to formal employment".

However, the idea that a BI would lead to more available jobs and to a better dispersal of labor supply is not shared by all. Opponents predict quite the opposite. They reason that a "significant BI [. . .] would have labor-supply effects that even its advocates would deem perverse (Galston, 2001, p. 29)" because granting everyone a 'free lunch' would lead to massive shortages on the labor market. Also with regard to labor demand, opponents see negative social results, since they reason that by the facto subsidizing low-wage workers a BI would encourage the growth of low-skill, unattractive jobs (Myles, 1988). Hence, both regarding labor demand and labor supply strong disagreements exist on the consequences of a BI.

Given these unresolved questions, the lack of empirical research into the consequences of a BI is regrettable. Thus far, the only available information is provided by the negative income tax (NIT) experiments. Between 1968 and 1980 in the United States and Canada five experiments were conducted to assess the effect of an unconditional minimum level of income. Even though these experiments were not directed towards testing the effects of a BI, the similarity between a NIT and a BI is striking and the results of these experiments could provide meaningful insights to scholars who are interested in empirically assessing the effects of a BI.[1] However, apart from the fact that no clear consensus is reached about the main results of the experiments (Widerquist, 2005), the experiments have some characteristics that make the generalisability to the current (European) context quite limited, the most important being the differences in institutional, cultural and historical context (see Groot, 2004, pp. 100–101; Hall and Soskice, 2001).

In order to assess the labor market consequences of a BI for the current European context, a logical empirical possibility would be to conduct a European BI-experiment. Such an experiment in which "a limited group of people in a limited area would, during a limited time receive a BI" has recently been proposed by Groot (2004, 2006). While this proposal has some merits, it also has serious shortcomings such as a limited timeframe of the experiment (Peeters and Marx, 2006). Since one of the key features of a BI is that it is a *lifelong* unconditional income a limitation in time might bias results in two directions. On the one hand, the experiment might provide an extreme incentive 'to take a break' and in this way overestimate labor supply reduction effects. On the other hand, the experiment might provide an incentive to stay in a job since it will only last for a limited timeframe and people do not want to risk losing a job and their position on the labor market (Widerquist, 2005).

In this article another strategy is suggested to gain insight into the labor supply effects of a BI. It is argued that specific lottery games generate interesting research populations for BI-research. In fact, some games exist – such as the Belgian *Win for Life* (henceforth W4L)[2] – where winners are granted a periodically unconditional lifelong income.

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[1] Under a BI regime everyone is given a BI and all other income is taxed. Under a NIT scheme the taxes that have to be paid are subtracted from the unconditional grant. Hence, under a NIT scheme, depending on the earned income, some receive a net transfer while others have to pay net taxes. This is just a difference in design, however, because both can achieve the same end result. See Van Parijs (2004) for a discussion.

[2] For a presentation of the Belgian W4L game, see Appendix A.

In this way, they can generate insights into some hypotheses concerning the labor market consequences of introducing a BI.[3] To illustrate the proposed research strategy the results of a pilot survey are presented and discussed.

The article is divided into three paragraphs. In a first paragraph an assessment is made of the comparability of winning W4L and receiving a BI. It is argued that even though the similarities are striking, the differences are just as important and should be taken into account when interpreting the data. In a second paragraph the design and results of the pilot project are discussed. By providing a description of the labor market situation of W4L winners before and after winning, a tentative exploration of the labor supply consequences of introducing a BI is presented. In a third paragraph the major limitations of this research strategy are discussed.

2. What can be learned from the Belgian Win for Life case?

The proposal for BI is not to give everyone a winning lottery ticket. Hence, the question of to what extent W4L is a valid case for investigating the consequences of introducing a BI has to be addressed. The difference between a BI situation and a W4L situation depends among others on the level of the proposed BI. Thus, a distinction is often made between a full BI, which is sufficient to cover basic needs and a partial BI which is not (e.g. Van Parijs et al., 2000). The remainder of the article will focus on a full BI since this is most often put forward by BI proponents. The level of the BI will be set at 613€, i.e. the level of Belgian social assistance for a single person (situation on 1 January 2005).

This part discusses to what extent W4L is a good proxy to analyze possible labor supply effects of introducing a BI.[4] Several issues have to be taken into account in order to assess the similarities and differences between winning W4L and receiving a BI, including changes in inflation and taxes, the constitution of the household (singles and couples[5]) as well as the labor market effect under investigation (stop working, start up a business or reduce working time[6]). Each will be discussed in the following paragraphs. For reasons of clarity the different labor market related options in the context of a comparison between W4L and BI are discussed via a hypothetical example. At the end a summarizing table is presented.

2.1. Tax regimes and inflation

A first difference between a BI and a W4L situation concerns the difference in tax-regime which will influence net income. In Figs. 1–6 the relation between gross and net income of BI recipients and W4L winners is represented. Fig. 1 represents a *BI regime financed with a flat tax* (hereafter UBI). On the *X*-axes gross income is presented, on the *Y*-axes net income. The 45° dotted line represents a situation where everyone receives a BI but no taxes are paid. The difference between the dotted line and the line representing the relation between gross and net income (fGI) points to the amount of taxes that has to be paid. In order to finance a BI a tax rate °BI is needed. Because a BI is sufficient to cover basic needs there is no need for social assistance.

How do these BI regimes compare with the situation of a W4L winner? Fig. 3 represents the case of a *single W4L winner under the conventional guaranteed minimum income scheme* (hereafter GMI/W4L). In order to fully understand this figure, it may be useful to first consider Fig. 2. This figure is a schematic presentation of the existing *guaranteed*

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[3] Apart from the strategy proposed in this article, at least four possible research designs can be thought of to gain insight into the empirical consequences of introducing BI. First of all, one could rely on existing survey material and official statistics to analyze the effect of increases in income on labor supply. Secondly, one could survey people and ask them what their attitude is towards a BI and what they might do under BI conditions (see e.g. Késenne and Van Durne, 1989). A third possibility is to examine existing programs that resemble proposed BI-schemes, the most important being the Alaskan Permanent Fund Dividend. Finally, as has been proposed by Noguera and De Wispelaere (2006) one could use laboratory experiments to study the behavioral responses to the introduction of BI. All four possibilities have severe drawbacks however. For a critical discussion of the first two options see Marx and Peeters (2004). For a discussion of the third proposal, see Goldsmith (2004). The fourth research strategy is discussed by Virjo (2006).

[4] ~~The comparison between a W4L and a BI~~-situation is limited in this article to changes in labor market behavior because that aspect generates most disagreements between BI-opponents and BI-proponents. However, this is not to say that these changes are the most important or that W4L is most useful in investigating these changes.

[5] Children are not included in the analysis. It is assumed that a BI for children and the existing Belgian universal child allowance are equivalent.

[6] A transition from unemployment to employment is not considered in this research project due to a lack of data.
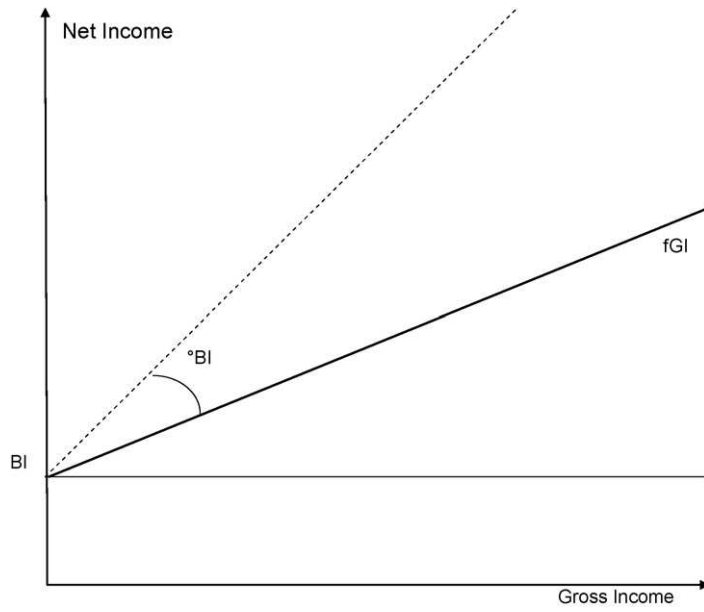
Fig. 1. UBI. Based on Van Parijs (2004, p. 32).
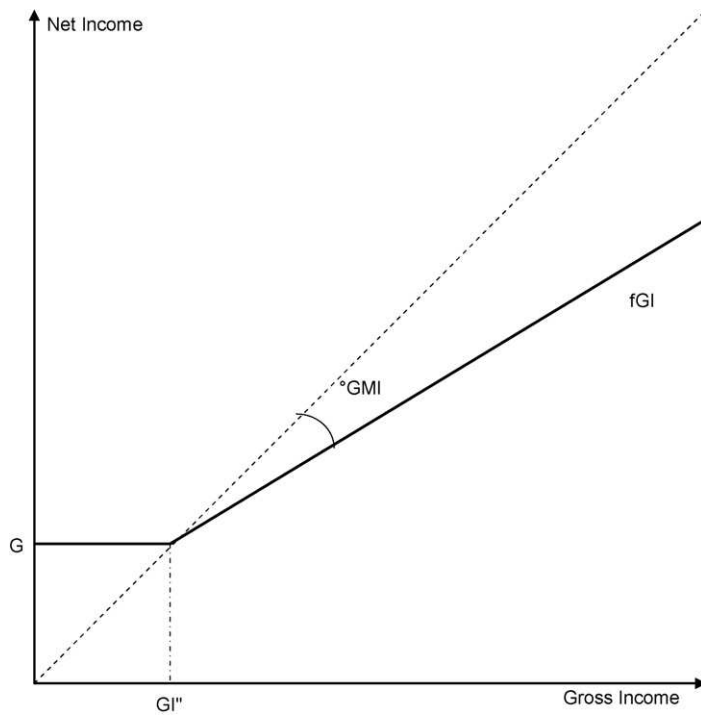
Fig. 2. GMI, single person. Based on Van Parijs (2004, p. 29).
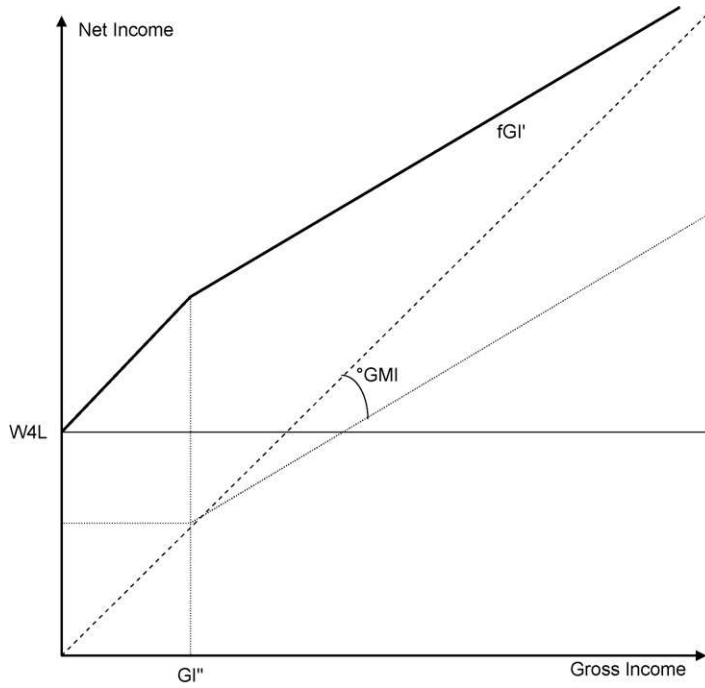
Fig. 3. GMI/W4L, single person.
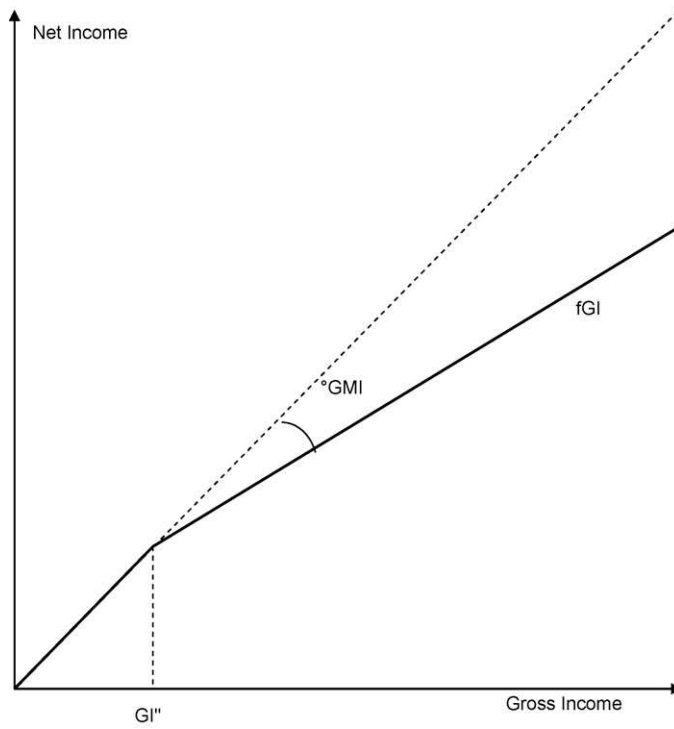
Fig. 4. GMI, one partner of a couple.
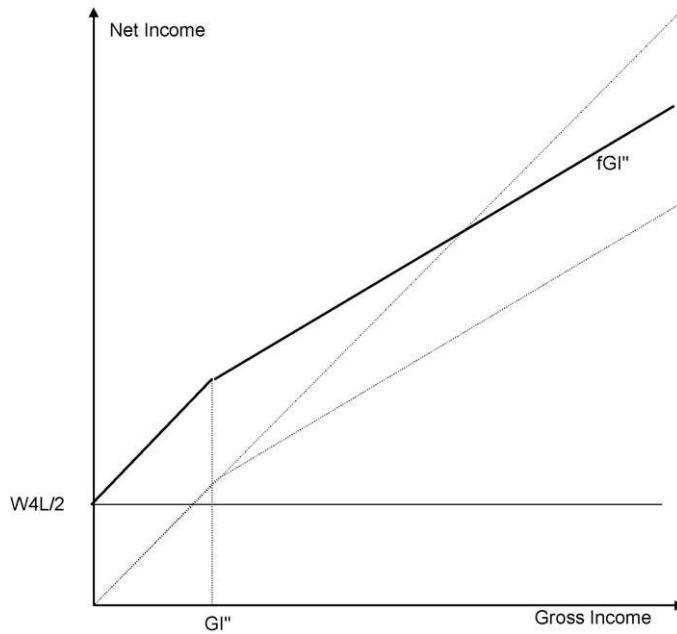
Fig. 5. GMI/W4L, one partner of a couple.
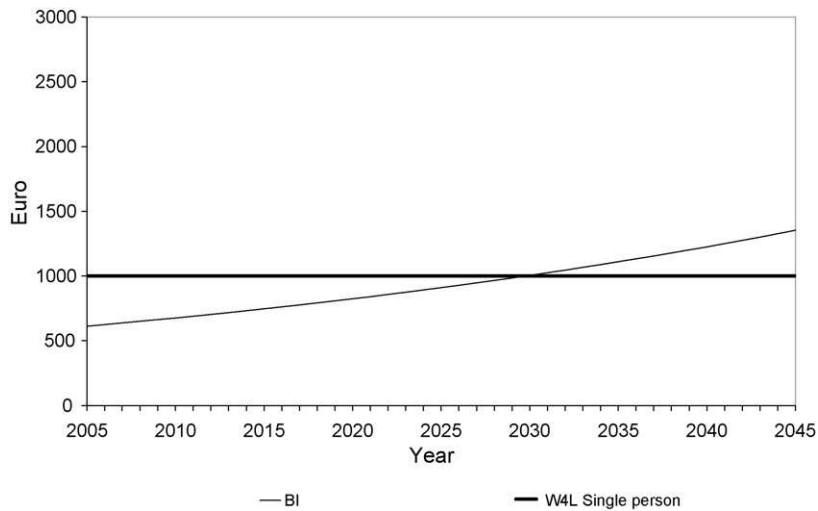
Fig. 6. Evolution W4L vs. BI, single person.

minimal income scheme (hereafter GMI).[7] Under GMI if one earns less than GI″ (under certain conditions specified in social assistance legislation) one's income is topped up until a net income of G (=BI). If one earns more than GI″ one has to pay taxes equal to °GMI. Because under GMI less people are entitled to a transfer, the amount of taxes to be paid (°GMI), is smaller than under UBI. Fig. 3 presents the situation of a single W4L winner. The figure is identical to Fig. 2, be it that because W4L in Belgium is not taxed, at every level of gross income the W4L grant of 1000€ must be added to the net income (see fGI′).

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[7] For the schematic presentation of GMI and GMI/W4L several simplifying assumptions are made. Most important, it is assumed that there is only one flat tax rate, in contrast to the existing progressive tax rate. Furthermore, it is assumed that social assistance is the only existing transfer income. Finally, it is assumed that those earning less than GI″ are exempted from taxation. These simplifying assumptions, however, will have no bearing on the arguments further developed in the empirical part of the article.
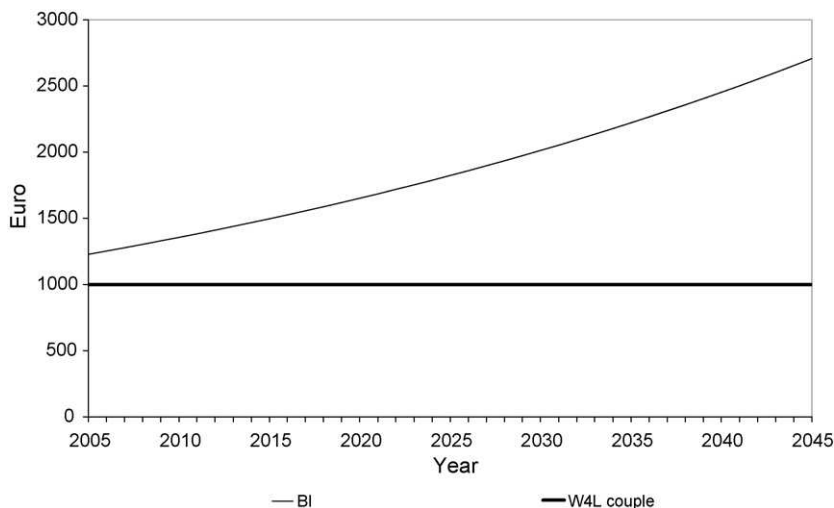
Fig. 7. Evolution W4L vs. BI, couple.

What about the situation of couples winning W4L? The situation of one of the two partners is presented in Fig. 5. For ease of comparison Fig. 4 presents the situation of one partner under GMI. Fig. 4 is an exact replication of Fig. 2, except from the fact that because it is assumed that at least one partner works, no social assistance is received if one earns less than GI″. As becomes clear from comparing Figs. 4 and 5, for one partner of a couple, at any level of gross income, net income is raised by W4L/2€ (under the assumption that the W4L grant is divided equally between the partners).

From comparing Figs. 1 and 3 with Figs. 3 and 5 the first difference between UBI and GMI/W4L becomes clear. Whereas under UBI, the gain from receiving a BI is (at least in part) offset by the increased tax on labor, the W4L grant under GMI/W4L is just added to the previous income situation, without having to pay any taxes. A second difference concerns the fact that W4L is not adjusted for inflation, while a BI, under every serious proposal, would have to be adjusted for inflation. Assuming a yearly inflation of 2% (as in Figs. 6 and 7) this implies that in the year 2030 a BI would equal 1006€ while the W4L winners still receive 1000€.[8]

As becomes clear from Fig. 6 for singles this implies that that the W4L grant will for a significant amount of time be higher than a BI. At some point the two grants will have the same value (in this example after 25 years). After this time period, the BI will be higher than the W4L grant. For couples, different conclusions should be drawn because while the W4L grant remains the same, the BI will be paid out twice. Fig. 7 shows that in this case the BI will be higher than the W4L grant and this difference increases as time goes by.

As will become clear in the next section Figs. 6 and 7 are crucial in interpreting the empirical data. However, notice that not only the level of the grant but also the tax regime will be different under GMI/W4L and UBI (cf. supra). Recall that the tax rate necessary to finance a BI will be higher than the current tax rate. Thus in comparing a BI recipient and a W4L winner one should take into account these different tax regimes. How this influences the difference between the net income situation of W4L winners versus BI recipients will depend on the level of the tax increase and the gross income one earns (see Figs. 1, 3 and 5). Assume however that the tax rate under the existing regime is 50% and that this has to be raised to 60% to finance a BI. In that case Fig. 8 compares the net income situation over time of a single person with a gross income of 2500€. This figure shows that the real difference in income between UBI and GMI/W4L for those employed will be bigger than one would expect on the basis of Fig. 6.

Figs. 9 and 10 present the evolution of net income for couples. In Fig. 9 the situation is presented of a couple with only one partner working, in Fig. 10 both partners work. In contrast to the single case presented above, for both couple situations the income under UBI is almost consistently higher than the income under GMI/W4L. This conclusion is however strongly dependent on the assumptions made (see Appendix C for a graphical presentation).

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[8] The figures are purely illustrative. However, 2% inflation seems to be a realistic estimate. According to the National Bank of Belgium (2007) average inflation (calculations based on consumer prices) in Belgium for 1992–2006 was 2.0%.
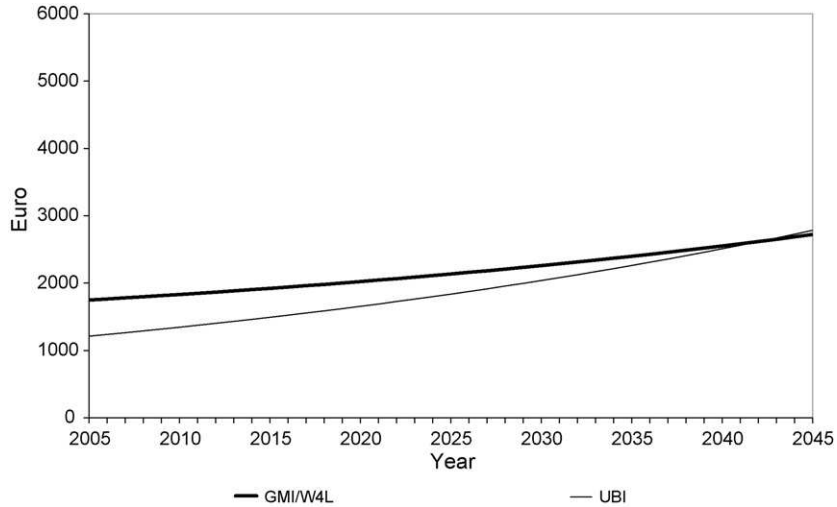
Fig. 8. Evolution net income GMI/W4L vs. UBI, single person.

Finally, it is informative to compare Fig. 9 with Fig. 10. Clearly, since the net income of a couple is significantly higher under both regimes if the two partners work, one should not generalize from those situations to situations where only one partner works. In interpreting the data a clear distinction thus has to be made between both couple situations.

In order to illustrate the theoretical discussion and formulate hypotheses on how W4L compares to UBI, a hypothetical example is used. In the next section we will look at the case of a single who wins W4L. Afterwards, the couple situation will be discussed (cf. Section 2.3).

2.2. Extreme, not absurd: Carla wins W4L

Consider Carla. She works full-time at a university and earns a gross income of 2500€ per month. She pays a 50% tax and hence receives a net income of 1250€ a month. Every once in a while Carla buys a lottery ticket on her way home. She is lucky and wins W4L. A 1000 untaxed euro extra for the rest of her life! She now earns 2250€ per month
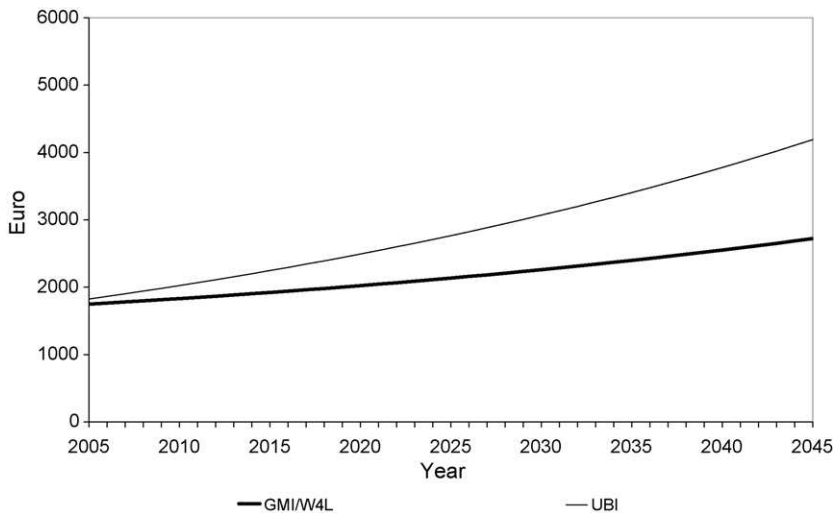
Fig. 9. Evolution Net Income GMI/W4L vs. UBI, couple, one working.
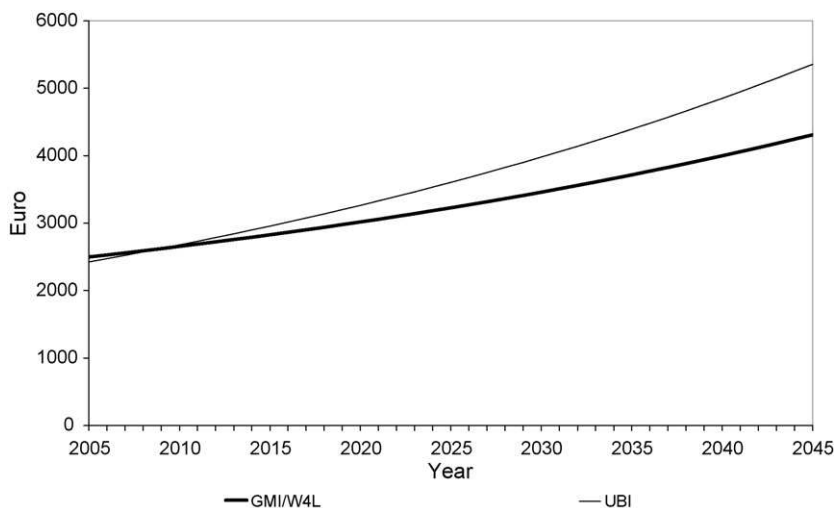
Fig. 10. Evolution Net Income GMI/W4L vs. UBI, couple, two working.

(an 80% increase in income). What will Carla do? With regard to her position on the labor market she has three options: She can decide to start-up her own business, she can stop working or she can decide to work less. The three options are considered one by one.

Suppose Carla has always dreamt of opening her own boutique. She has always been willing to use some of her savings for this purpose but as a shop needs a few years to become profitable and the first few years are very costly, she has never taken the risk. After winning W4L prospects look very different. Even if the shop is not successful in the beginning and hence cannot make enough profit to live off, she always has her unconditional monthly W4L grant as a security. For Carla, W4L makes her dream come true.

Will Carla have started her boutique under UBI? Maybe she would, but not necessarily. It could be that the level of the BI is a sufficient incentive for Carla to start her shop. However it could also be that after she has made all the calculations she decides that the minimum she needs is more than 613€ a month. What seems to be clear then is that if Carla does not decide to open her boutique under GMI/W4L, she is expected not do so under UBI.

The above example makes clear that W4L is an extreme but not absurd case. It is extreme because the granted amount clearly exceeds a BI (1000€ as compared to 613€). As a result, incentives to change behavior are bigger under GMI/W4L than under UBI. Therefore, if singles do not change their behavior under GMI/W4L one can expect that they will not do so under UBI. However, the unconditional income provided by W4L is not absurdly high. Not everyone is willing to substitute a job for the risk of a possible successful boutique. Remember, Carla earned 1250€ before winning W4L. Starting up a shop implies she will loose 250€ a month during the first few years (and more as time goes by, see Fig. 6).

Regarding the stimulation of entrepreneurship W4L research thus allows us to explore two issues. First of all, if singles do not become self-employed under GMI/W4L, it can be expected that they will not do so under UBI (extreme case). Secondly, if they do start up a business, one cannot conclude that they will do so under UBI because of the difference between GMI/W4L and UBI (see Figs. 3 and 6). However, the information that they will start up a business indicates that these singles are willing to set up a business given sufficient – not absurd – financial incentives to do so. In order words, it can inform us on the presence of a preference to become self-employed.

Consider Carla's second option: stop working. Suppose in this case that Carla just works at university out of necessity. Her big passion is surfing and she wants to substitute everything to maximize the possibility to surf. Will she continue to work at university after W4L? After all, W4L provides her with enough income to stay alive and keep on surfing (surfing is not such an expensive sport). Again W4L is an extreme, but not absurd case. It is extreme because the W4L grant exceeds the BI by a significant amount. If one does not stop working under GMI/W4L it is expected that one will not do so under UBI. However, the case is not absurd, as most of us will consider it impossible to live a comfortable life with just a 1000 non-indexed euro per month. By contrast, if singles stop working after winning W4L one is not

able to conclude that they will do so under UBI because of the difference between a BI and a W4L-grant. However, it gives us an indication of the preference to stop working.[9]

Finally, suppose that Carla is neither an enterprising person nor the 'lazy' type we supposed she was in the previous paragraphs. Instead, Carla enjoys working at university. But she has always found it very difficult and stressful to combine her full-time job with her extensive circle of friends and her love for playing the piano. What will she do after winning W4L? If she would work less, she would obviously earn less. Recalculating her income under the assumption of a part-time job of 4 days a week she ends up with the following sum: 2000 (income 4/5) − 1000 (tax rate of 50%) = 1000€ + 1000 (W4L grant) = 2000€ per month. With foregoing 12.5% of her income she buys a day off per week and still earns 750€ more than before W4L. Due to the lottery game Carla faces very strong incentives to reduce work.

Suppose Carla reduces her working time. What does this tell us about Carla's behavior under UBI? In contrast to previous cases (quit working or setting up a business), the conclusions to be drawn depend on the differences in tax structure under GMI and UBI. Thus, if the taxes to be paid would be lower under UBI than under GMI, this could mean that the income left under UBI after diminishing working time would be higher than under GMI/W4L and hence people who remain in the workforce after winning W4L might not do so under UBI. However, this does not seem to be a realistic assumption. In fact, it seems to be an uncontroversial statement that granting everyone a BI would require an increase in tax rate as compared to GMI. Thus, even more pronounced than in the 'boutique' and 'stop working' examples, we can say that if Carla does not reduce working time under GMI/W4L, it can be expected that she will not do so under UBI. If she does, this might indicate the presence of a preference to do so, given sufficient, not absurd, financial incentives.

To conclude, if single persons with a high annual additional tax-free W4L income do not become self-employed, withdraw from the labor market or reduce working time, the expectation is that they will not do so under UBI. Some of the criticism against the introduction of a BI resolves around this specific issue, since some opponents argue that the introduction of a BI will provide significant disincentives to work and hence reduce labor supply. Investigating these claims via an extreme but not absurd case is a valid research strategy which could empirically explore this claim.

2.3. Carla and John

Imagine Carla is married to John when she wins W4L. What will they do? Carla and John could decide that Carla (or John) gets all the money and can do whatever he/she wants with it. In this case we are back to the extreme but not absurd Carla case. However, they could also decide to share the money equally between them. In this case, a distinction should be made between the situation where both Carla and John work and the situation where Carla is the sole breadwinner.

Imagine both Carla and John work at university when Carla wins W4L. For the rest of Carla's life an additional income of 1000€ will be added to the joint income of her and John. What will Carla do? As in the Carla case three options are considered: She can become self-employed, she can quit working or she can reduce working time.[10] Since the discussion of quitting work and becoming self-employed leads to the same result the quit working case is not discussed.

Suppose again that Carla has always dreamt of opening her own boutique. By winning W4L her dream comes true. What can Carla's behavior under GMI/W4L lead us to expect about Carla's behavior under UBI? Consider again the discussion of Fig. 10. It was concluded that the way in which one should generalize to a BI situation was strongly dependent on additional assumptions and hence no clear conclusions can be drawn, except for the detection of preferences.

What if Carla after winning W4L decides to reduce her working time? How does GMI/W4L compare to UBI? The comparison between GMI/W4L and UBI is again harder to make since the lower amount of W4L grant (as compared

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[9] However, in this case the preference to stop working does not necessarily imply a lifelong preference for not working. W4L can provide a strong incentive to maximize surfing over working for a certain amount of time since it is now financially possible. However, this does not necessarily imply that Carla will surf for the rest of her life. After a few years surfing she may return to the labor market. Hence, there might be different behavioral changes as time proceeds (see Section 4).

[10] For reasons of space the cases where both Carla and John change their behavior will not be considered since this would seriously increase the number of possibilities.

Table 1
GMI/W4L vs. UBI, a summary

Labor supply changes under GMI/W4L	Labor supply changes under UBI	
	Singles	Couples
Stop working		
Yes	?	Yes
No	No	?
Become self-employed		
Yes	?	Yes
No	No	?
Reduce working time		
Yes	?	f(assumptions)
No	No	f(assumptions)

'?' indicates that no clear conclusions can be drawn.

to the BI) is offset by the fact that the tax rate under UBI can be expected to be higher than under GMI/W4L. Thus, as shown, what can be learned from reducing working behavior under GMI/W4L for UBI is strongly dependent on additional assumptions.

What if Carla is the only person working when she wins W4L? This situation was depicted in Fig. 9. As could be seen from comparing Figs. 9 and 10 both situations are different and in no circumstance should one generalize from a couple case with one earner to a couple case with two earners. However, the interpretations with regard to how to generalize to UBI situations are mostly comparable with the ones made when both Carla and John were working. The only exceptions concern the comparison between GMI/W4L and UBI regarding becoming self-employed and quitting work. In Fig. 7 the situation of a couple that relies only on the W4L grant or on the BI was depicted. As could be seen in this graph, the BI is higher than the W4L grant. Hence the conclusion that if Carla becomes self-employed or quits working under GMI/W4L, one can expect that she will do so under UBI.

2.4. Summary

Table 1 summarizes the conclusions concerning labor supply that can be drawn from W4L-research. If singles do not start up a business, stop working or diminish their working time under GMI/W4L they are not expected to do so under UBI since in this case the financial incentives to do so are more pronounced under GMI/W4L. If they do change their labor market behavior, no clear expectations can be formulated. For couples, the inverse is true. If they start up a business or stop working under GMI/W4L they are expected to do so under UBI since W4L provides lower financial incentives than a BI. If they do not start up a business or stop working, inferences to UBI are unclear (indicated by?). No expectations can be formulated regarding reducing working time since this is highly dependent on assumptions regarding income from labor, tax rates and future inflation. It should be noted that even for cases where no clear expectations can be formulated W4L-research enables the detection of preferences with regard to specific options.

3. Empirical results

3.1. Design of the survey

The design of the pilot survey had to discount some limitations. A major limitation for any research project that investigates Belgian lottery winners is that winners have the right to remain anonymous. Winners could therefore not be contacted directly. For all communication the Belgian National Lottery was an intermediary. A mail survey was therefore the only possibility for data collection.

The major weakness of mail surveys is its tendency to generate low responses (Mangione, 1995). In addition, low-response rates are also influenced by the length of the survey. Hence, it was decided to draft a very short mail questionnaire (see Appendix B for an extract). Apart from background topics such as age, education and lottery behavior, mostly questions related to labor market position of winner (and spouse) before winning and at the time

Table 2
Employment of singles and couples (working at the time of winning) at the time of the survey

	Working at the time of winning	Working at the time of the survey	
		Yes	No
Singles	14	13	1
Couples, two partners working	41	37	4 (1)
Couples, one partner working	11	11	0

of the survey were asked. In case of a job change, respondents were asked for their motives. The questionnaire was structured using mostly closed answer categories. At the end a general open question invited respondents to share any information they considered relevant in the context of the research project.

In March 2004 questionnaires were sent to all 189 Belgian W4L winners. Of these, initially 55 winners responded. A month later a recall questionnaire was sent, resulting in 29 more responses, in totaling 84 respondents. Nineteen surveys returned due to changes in the address of the winners. As a result, 49% of the winners who received the questionnaire participated in the survey.

3.2. Descriptive analysis

The 'Carla' and 'Carla and John' cases showed that W4L research can lead to some clear expectations regarding labor supply effects of unearned exogenous income. For singles GMI/W4L is an extreme case: If they do not stop working, diminish working time or start up a business they are expected not to do so under UBI. For couples, if one or two of the partners quit working or becomes self-employed under GMI/W4L it can be expected that this will also happen under UBI since W4L provides lower incentives to do so.

Bearing in mind these insights, this paragraph aims to provide a first tentative exploration of the labor supply consequences of UBI. The paragraph is structured as follows. First, an assessment is made of the number of winners, working at the time of winning, who quit working after W4L. Secondly, it is investigated how many winners have become self-employed. Finally, the amounts of people who did not quit but diminished their working time are assessed.[11]

3.2.1. From working to not working

Table 2 presents the working situation at the time of the survey of those working at the time of winning. In the table a distinction is made between singles, couples where both partners work and couples where only one partner works since these categories constitute separate units of analysis (cf. Section 3.1). Furthermore, changes that have occurred between winning W4L and the time of the survey and who are not related to winning W4L are distinguished from those changes (at least partly) caused by winning W4L. The latter changes are represented by numbers in between brackets.

Of the 14 *singles* working at the time of winning, thirteen were still working at the time of the survey. It can be expected that these thirteen would also remain employed under UBI. One single, a 44-year-old mechanic at the time of winning, quit working. There is no information available on the reason for his withdrawal from the labor market.

Forty-one couples were both working at the time of winning. In 37 cases these couples were still both working at the time of winning. In four cases one of the two partners quit working. For one partner this is related to winning W4L. This person is a 45-year-old nurse in an old age home who quit working to spend more time with her children. Of the 11 couples where only one partner worked at the time of winning no one quit working. As indicated before, generalizations to UBI are not straightforward since they are strongly dependent on additional assumptions.

3.2.2. From employee to self-employed

Table 3 indicates how many respondents, not (at least in part) self-employed at the time of winning, were self-employed at the time of the survey. As becomes clear from this table, no respondent became self-employed after W4L. For singles, a similar effect can be expected to occur under UBI.

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[11] From further analyses respondents who are students, not working or above 55 were excluded from the analyses because they do not (yet) participate in the labor market.

Table 3
Employment of singles and couples (not-self-employed) at the time of the survey

	Not self-employed at the time of winning	Self-employed at the time of winning
Singles	13	0
Couples, two partners working	36	0
Couples, one partner working	10	0

Table 4
Employment of singles and couples (not working at the time of winning) at the time of the survey

	Working at the time of winning	Diminished working time at the time of the survey
Singles	14	0
Couples, two partners working	41	4 (3)
Couples, one partner working	11	1 (1)

It could be objected that the extra monthly income could be invested in a business of a friend or relative and that therefore introducing a BI would result in more changes than predicted on the basis of the above analysis. While this is indeed a probability, no actual evidence of such decisions was found in the sample. This question was specifically posed in the survey and no one (either single or couple) has ever invested in the business of a friend or relative.

3.2.3. Diminishing working time

Another possible labor supply change caused by winning W4L consists of reducing working time (apart from quitting work). Table 4 provides information on the number of winners who have reduced the amount of hours worked.

Table 4 shows that no single person reduces the hours worked after W4L. It can be expected that these single persons would also not do so under UBI.[12] Regarding the couples, of those where both partners were working at the time of winning, 3 diminished their working time because of W4L, 37 did not. As argued above, generalizations to UBI are dependent on several assumptions. The analysis does show, however, that a proportion of households does have a preference to reduce labor supply by working less given sufficient financial incentives.

To conclude, another important finding should be stressed. At the end of the survey many respondents voluntarily stressed that the major effect of winning W4L was the reduction of uncertainty about the future. W4L provides security for the future and generates a more relaxed way of living, in which people are able to make balanced choices. This is an important finding which seems to resonate with some arguments made in favor of introducing a BI (Standing, 2002).

4. Discussion

Even though the advantages and drawbacks of introducing a BI have led to a massive literature on the subject, lacking empirical results, the debate on its labor supply consequences remains polarised, with both proponents and opponents providing theoretical argumentation to substantiate their claims. In order to find a way out of this impasse, this article proposes to study lottery winners to gather meaningful empirical information on the labor supply effects of introducing a BI. The results of a pilot study with Belgian Win for Life winners point to no extreme consequences of introducing a BI, with very few changes with regard to quitting work, diminishing working time or becoming self-employed. Given the small research sample, one cannot generalize from these results. However, given the steady pace with which W4L-tickets are bought and won, such results are obtainable in future research. Such research should furthermore address five limitations connected to the pilot project's research design.

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[12] Of course this conclusion only holds if no changes occur in labor demand. This is of course debatable because UBI might lead to more part time jobs. In this respect it might be interesting to investigate W4L winners in other countries with different labor market structures (see also Section 4).

A first limitation concerns a bias related to answering behavior in surveys. In the survey W4L winners were asked for their labor market behavior at the time of winning and at the time of the survey. If a change occurred winners were asked for the reasons of the change. In this way, the impact of W4L could be assessed. Given the specific conditions in which the survey was conducted (only past W4L winners are known and only a limited amount of W4L winners exist) this design seemed to be valuable. However, it could also generate a bias in answering behavior. Sometimes there is a crucial difference between reality and what people think has happened (Smith, 2005). In order to assess whether a change can be attributed to winning, the winner would have to be able to compare the factual situation with the counterfactual situation that would have happened had the winner not won W4L. Since numerous factors (often intertwined in complex ways), influence labor market behavior during the life course, making the assessment whether winning W4L was of causal importance is very difficult. This bias might be strengthened by the fact that the winners had to give an assessment of their labor market situation at the time of winning. Even though one's labor situation is an important dimension of one's life and even though research has shown that people are more able to recall past situations if they can be linked to a significant event, such as winning the lottery (Mangione, 1995, p. 35), the fact remains that some people might have difficulties answering questions about their behavior more than 5 years ago (W4L was introduced in Belgium in 1998). As a result, a longitudinal research design which starts monitoring every lottery winner immediately after winning, is more appropriate in the future.

Secondly, the present study focuses on *changes* in labor supply. However, also non-changes could be the result of winning and might have relevant labor market consequences. Future research should take this into account. To give an example, suppose someone finds herself in an intrinsically rewarding but low paid job and wins the lottery. Winning W4L makes it possible for this person to stay in her job even though it does not pay well. Suppose she did not win the lottery. In that case it could very well be that the person would have quit her job. Thus, besides focusing on changes in labor market behavior, non-changes due to an unearned exogenous income should also be analyzed.

A third limitation concerns the validity of observations made relatively close to an important event (winning the lottery) and its ramifications over a life course. Respondent's labor market behavior was only measured at one moment in time, between 6 months and 6 years after winning. In this way only a limited understanding of the dynamics of introducing an unearned exogenous income is provided. Research in several different areas has shown that the diffusion of an innovation (such as a BI) – and behavioral adaptations to this innovation – is among other things a function of time (Gladwell, 2000). How behavioral effects of introducing a BI will play out over time, remains to be seen. There is no reason to assume that introducing a BI will have some kind of tornado-effect (short causes—short outcomes, i.e. the introduction of a stimulus and immediate behavioral responses) where you can directly observe the behavioral consequences of introducing such a scheme. In fact, introducing a BI could be more akin to an ecological adaptation process. In this case, the time horizon to examine outcomes should be long (Pierson, 2004). Hence a longitudinal design is of crucial importance.

The three previous limitations of the current research design focus all, in essence, on the issue of causality and the question of whether the observed change or non-change in behavior is a consequence of the unearned exogenous income. The research project used a natural experiment without control group design to investigate the issue. The use of a natural experiment research without a control group is defensible for research questions where the effects of an intervention are expected to be immediate and obvious, an assumption often made in the BI-literature (cf. introduction) (Gerring, 2006; Gibson et al., 2002). This design is also referred to as within-subjects research design (Davidson and Costello, 1969; Franklin et al., 1997) or longitudinal comparison research design (Gerring, 2006). The results and the discussion of the limitations of the research design, however, show that the issue of causality in this type of research is more complex and cannot be based on simple cause–effect assumptions. As a result, it is advisable that future research designs using lottery winners incorporate a control group from the beginning. This will also allow researchers to make detailed paired comparisons.

A fourth and fifth limitation are of a different nature. The fourth limitation concerns the scoping conditions of the research project. The observed changes or non-changes do not take place in an institutional vacuum. The current pilot project investigated the impact of introducing a BI by investigating *Belgian* W4L winners. The observed behavior is therefore not independent from the specific Belgian institutional structure of the labor market and thus introducing a BI in other countries might have different consequences. For example, introducing a BI in Belgium with its high minimum wage will have different consequences than in the United States where minimum wages are lower (e.g.

Esping-Andersen, 1999, p. 22). Because introducing a BI will not imply a complete deregulation of the labor market, research into the interaction between a BI and different institutional settings might generate insights regarding which labor markets or economic development policies best complement BI schemes. Therefore, a major challenge for future research is to expand W4L-research to other countries to allow for institutional variation. Especially interesting in this respect is a comparison of Belgium with the United States, where many similar annuity games exist in different forms for some years.

Finally, the current research project is limited in that only an insight is generated into the effects of a *monthly* income. A BI design could, however, vary according to frequency of payments.[13] This choice is potentially not without implications. It might be argued that people will behave differently under different frequencies of payments due to different mental accounting processes which refer to the fact that people develop different preferences when a similar amount of money is offered under different conditions (Langer and Weber, 2001). Making use of natural experiments such as lotteries can be used to analyze the way in which labor supply changes are related to the frequency of payment of an unconditional income. Particularly interesting in this regard is the effect of another proposal for reform, the Stakeholder Grant. The idea of a stakeholder grant is to give 'each (American) [as he/she] reaches maturity, [a] guaranteed. . . stake of eighty thousand dollars. [This would] point the way to a society that is more democratic, more productive, and more free (Ackerman and Alstott, 1999, p. 3)'. Since almost every country has lottery games which grant a one time sum of approximately 80,000€ or dollar, the research population is huge and the potential for research high. The labor supply effects of a one time lump sum could in a next step be compared to that of monthly payments. This comparison could contribute to recent debates on the possible different advantages and disadvantages of a BI versus stakeholder grant (Ackerman et al., 2006).

Appendix A. The Belgian W4L lottery game

The Belgian Win for Life is an instant scratch lottery game with a one in a million chance of winning the first price, a lifetime annuity of 1000€. Other prices range from five to 2500€. Tickets winning the first price as well as those winning 2500€ must be presented for collection at the Head Office of the National Lottery. Winning ticket holders must write their full name, address and date of birth on the back of the ticket. This information is needed by the National Lottery in order to make the necessary arrangements for payment of the annuity prize. Ticket holders must also provide any other information that the National Lottery considers necessary. The value of the annuity is set at 1000€ per month, and is not subject to modification. The annuity comes into effect on the first day of the first month following the month in which the winning ticket was presented for collection. The annuity is non-transferable and will end when the beneficiary passes away. Prizes are exempt from all State taxes.

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[13] Proposals regarding frequency of payment often coincide with different national traditions in organizing social security benefit payments. For instance, most proponents of BI in the UK propose a weekly payment, while in Belgium a monthly payment is mostly proposed (Van Trier, 1995).

Appendix B. The pilot survey (extract)

TRAVAIL

Les premières questions sont liées à votre profession et à celle de votre conjoint(e).

Avant *Win for Life*

1. Est-ce que vous exerciez un métier avant de remporter *Win For Life*? Veuillez indiquer la réponse.

    1. □ Oui
    2. □ Non -> allez à la question 6

2. Quel métier est-ce que vous exerciez avant de remporter *Win for Life*? Donnez une courte description.
……………………………………………………………………………………………………..…
……………………………………………………………………………………………………..…
……………………………………………………………………………………………………….

3. Dans quel secteur exerciez-vous cette profession (éducation, entreprises, fonctionnariat…) ? Veuillez décrire.
……………………………………………………………………………………………………..…
……………………………………………………………………………………………………..…
……………………………………………………………………………………………………….

4. Combien d'heures travailliez-vous avant de remporter *Win for Life* ? Veuillez indiquer.
    1. □ Plus de 5 jours par semaine
    2. □ 5 jours par semaine
    3. □ 4 jours par semaine
    4. □ 3 jours par semaine
    5. □ 2 jours par semaine
    6. □ Une journée par semaine

5. Combien d'heures par semaine travailliez-vous en moyenne ? … heures

6. Votre partenaire exerçait-il ou elle un métier avant de remporter *Win For Life*? Veuillez indiquer.
………………………………………………………………………………………………………....
……
……

8. Dans quel secteur votre partenaire exerçait–il ou elle cette profession (éducation, entreprises, fonctionnariat…) ? Veuillez décrire.
……………………………………………………………………………………………………….…
……
……

9. Combien d'heures votre partenaire travaillait-il ou elle avant de remporter *Win for Life* ? Veuillez indiquer.
    1. □ Plus de 5 jours par semaine
    2. □ 5 jours par semaine
    3. □ 4 jours par semaine
    4. □ 3 jours par semaine
    5. □ 2 jours par semaine
    6. □ Une journée par semaine

10. Combien d'heures par semaine votre partenaire travaillait-il ou elle en moyenne?
… heures

Après *Win For Life*

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11. Exercez-vous une profession après avoir remporté Win for Life? Veuillez indiquer.
      1. □ Oui
      2. □ Non -> allez à la question 17

12. Est-ce la même profession qu'avant avoir gagné Win For Life? Veuillez indiquer.
      1. □ Oui -> allez à la question 18
      2. □ Non

13. Quel métier est-ce que vous exercez maintenant (après avoir remporté *Win for Life*?).
Donnez une courte description.
………………………………………………………………………………………………………
………………………………………………………………………………………………………
………………………………………………………………………………………………………

14. Dans quel secteur est-ce que vous exercez cette profession (éducation, entreprises,
fonctionnariat…) ? Veuillez décrire.
………………………………………………………………………………………………………
………………………………………………………………………………………………………
………………………………………………………………………………………………………

15. Combien d'heures travaillez-vous après avoir remporté *Win for Life* ? Veuillez indiquer.
      1. □ Plus de 5 jours par semaine
      2. □ 5 jours par semaine
      3. □ 4 jours par semaine
      4. □ 3 jours par semaine
      5. □ 2 jours par semaine
      6. □ Une journée par semaine

16. Combien d'heures travaillez-vous en moyen par semaine? …… heures

17. Pourquoi avez-vous changé de travail ou vous êtes vous arrêté ? Veuillez indiquer les
trois raisons principales.
      1. □ Je n'aimais plus ce genre de travail.
      2. □ J'ai trouvé un meilleur travail
      3. □ J'ai été contraint a arrêter mes activités professionnelles (fermeture entreprise,
      retraite…)
      4. □ Fin du contrat de travail
      5. □ Je souhaitais plus de temps pour mes enfants et mon foyer
      6. □ Pour des raisons de santé
      7. □ Je voulais plus de temps pour moi-même
      8. □ Je me le permets financièrement
      9. □ Autres ………………… ……………………………………………………………..……

18. Votre partenaire exerçait-il ou elle un métier après avoir remporté *Win For Life*? Veuillez
indiquer.
      1. □ Oui
      2. □ Non -> allez à la question 24

19. Est-ce la même profession qu'avant avoir remporté *Win For Life*? Veuillez indiquer.
    1. □ Oui -> allez à la question 25
    2. □ Non

20. Quel métier votre partenaire exerce-t-il ou elle après avoir de remporté *Win for Life* ? Donnez une description.
……………………………………………………………………………………………………….…
……………………………………………………………………………………………………….…
……………………………………………………………………………………………………….…

21. Dans quel secteur votre partenaire exerce-t-il ou elle cette profession (éducation, entreprises, fonctionnariat…) ? Veuillez décrire.
……………………………………………………………………………………………………….…
……………………………………………………………………………………………………….…
……………………………………………………………………………………………………….…

22. Combien d'heures votre partenaire travaille-t-il ou elle après avoir remporté *Win for Life* ? Veuillez indiquer.
    1. □ Plus de 5 jours par semaine
    2. □ 5 jours par semaine
    3. □ 4 jours par semaine
    4. □ 3 jours par semaine
    5. □ 2 jours par semaine
    6. □ Une journée par semaine

23. Combien d'heures par semaine votre partenaire travaille-t-il ou elle en moyenne?
… heures

24. Pourquoi votre partenaire a-t-il ou elle arrêté ou changé de travail? Indiquez les trois raisons principales.
    1. □ Mon partenaire n'aimait plus ce genre de travail.
    2. □ Mon partenaire a trouvé un meilleur job
    3. □ Mon partenaire a été contraint(e) d'arrêter son travail (fermeture d'entreprise, retraite…)
    4. □ Fin du contrat de travail
    5. □ Mon partenaire voulait consacrer plus de temps aux enfants ou au foyer
    6. □ Pour des raisons de santé
    7. □ Mon partenaire voulait plus de temps pour lui-même, elle-même
    8. □ Mon partenaire peut se le permettre financièrement
    9. □ Autres………………… ……………………………………………………………..…………

ENTREPRENARIAT

Ces questions estiment l'influence de Win For Life sur votre sens de l'entreprise.

Avant *Win for Life*

31. Avez vous ou votre partenaire jamais commencé une entreprise ou affaire (comme indépendant)? Veuillez indiquer.
    1. □ Oui
    2. □ Non -> allez à la question 34

32. Pouvez vous indiquer combien d'entreprises vous ou votre partenaire avez commencés avant Win For Life? Veuillez indiquer.

    1. □ 1
    2. □ 2
    3. □ plus de 2

33. Quelles étaient les activités les plus importantes de votre entreprise la plus récente ? Donnez une courte description.

....
....
....

Après *Win For Life*

34. Avez vous ou votre partenaire commencé une entreprise après avoir remporté Win For Life? Veuillez indiquer.

    1. □ Oui
    2. □ Non -> allez à la question 36

35. Quelle est l'activité la plus importante de votre entreprise? Veuillez décrire.

....
....
....

36. Est-ce que vous ou votre partenaire considéreriez commencer votre propre affaire? Veuillez indiquer.

    1. □ Oui
    2. □ Non -> allez à la question 38

37. Quel genre d'entreprise vous ou votre partenaire voudriez-vous commencer dans l'avenir? Donnez une courte description.

....
....
....

38. Avez vous ou votre partenaire investi dans l'affaire d'un ami ou d'un membre de la famille? Veuillez indiquer.

    1. □ Oui
    2. □ Non -> allez à la question 40

39. Est-ce que votre investissement était important afin de commencer cette entreprise? Veuillez indiquer.

    1. □ Oui
    2. □ Non

QUESTIONS GENERALES

Pour conclure, nous voudrions vous poser quelques questions plus générales.

56. Quand avez-vous remporté Win For Life? Veuillez indiquer l'année. ....

57. Combien de fois achetiez-vous Win For Life (de façon hebdomadaire, mensuelle, de temps en temps…)? …………………………………………………………………………………....

58. Est-ce que vous achetez toujours Win For Life? Si oui, à quel rythme ?
…………………………………………………………………………………………………....…
……
……

59. A qui avez-vous raconté que vous avez remporté Win For Life?
…………………………………………………………………………………………………....…
……
……

60. En quelle année êtes-vous né(e) ? 19…

61. En quelle année votre partenaire est-il ou elle né(e) ? 19…

62. Quel est le diplôme le plus élevé que vous ayez obtenu? Veuillez indiquer.
    1. □ Ecole primaire
    2. □ Ecole secondaire
    3. □ Ecole supérieure non-Universitaire
    4. □ Université

63. Quel est le diplôme le plus élevé que votre partenaire ait obtenu? Veuillez indiquer.
    1. □ Ecole Primaire
    2. □ Ecole secondaire
    3. □ Ecole supérieure non-Universitaire
    4. □ Université

64. Combien d'enfants avez-vous? ………Enfant(s)

Si vous avez des remarques par rapport au questionnaire, veuillez les écrire ici.
……
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……

Appendix C. Assumptions

In those cases where, first, the amount of the BI is higher than the W4L amount and second the BI or W4L grant is combined with income from work, the comparability between GMI/W4L and UBI is complicated because the higher amount of unconditional income is combined with a higher tax and thus a lower income from work. In those cases GMI/W4L is not an extreme case and the comparability between GMI/W4L and UBI is strongly dependent on additional assumptions.[14] This is illustrated in Figs. 11–16. Figs. 11 and 12 illustrate the importance of level of income

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[14] Of course every comparison is based on assumptions about tax rates and inflation under UBI. However, in the cases not discussed here these assumptions will have to be quite unrealistic for the developed comparisons not to hold.
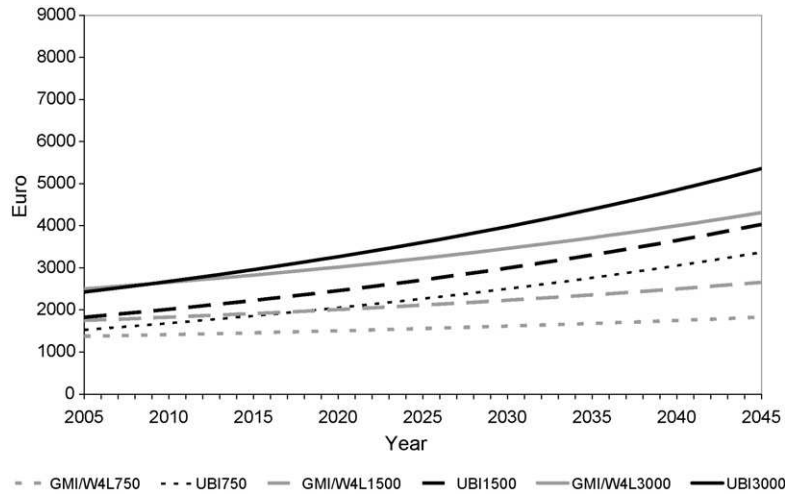
Fig. 11. Evolution net income GMI/W4L vs. UBI, one working, gross income = 750€, 1500€ and 3000€.
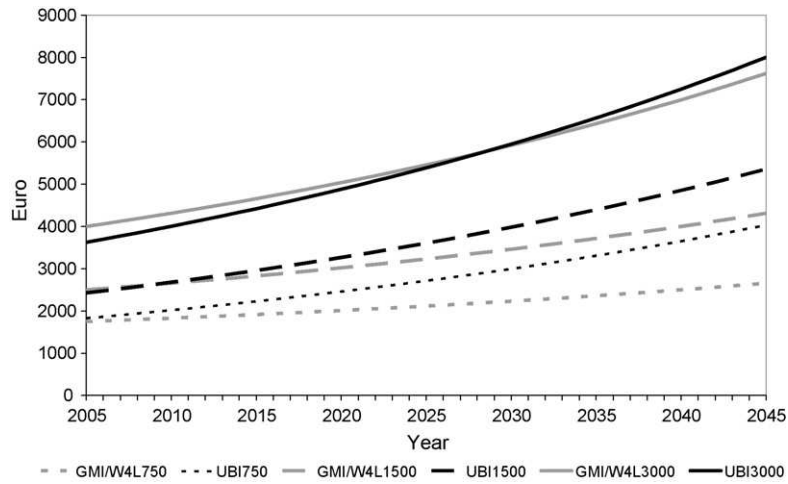

Fig. 12. Evolution net income GMI/W4L vs. UBI, two working, gross income = 750€, 1500€ and 3000€.
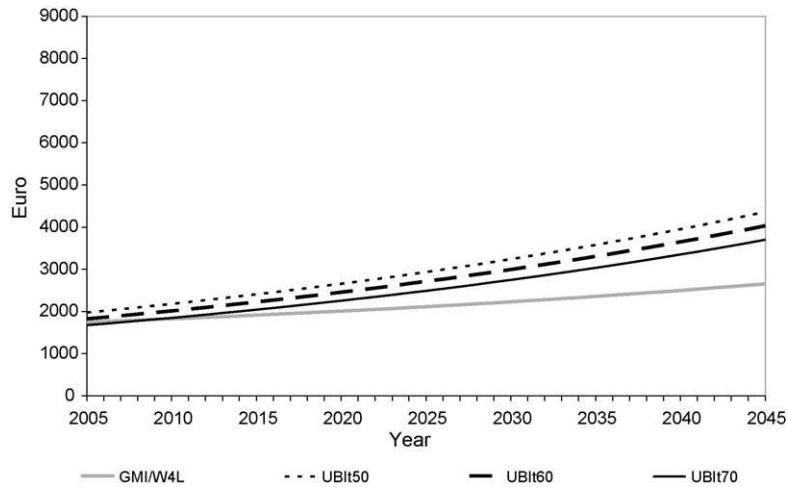

Fig. 13. Evolution net income GMI/W4L vs. UBI, one working, gross income tax rate FUBI = 50%, 60% and 70%.
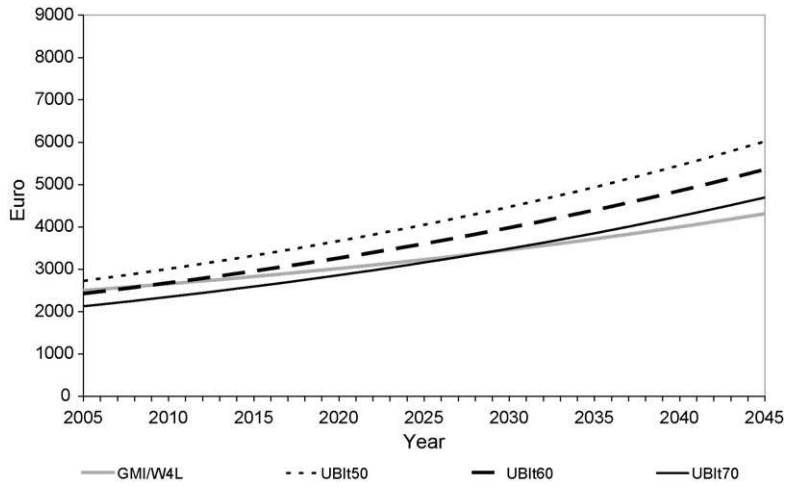
Fig. 14. Evolution net income GMI/W4L vs. UBI, two working, gross income tax rate FUBI = 50%, 60% and 70%.
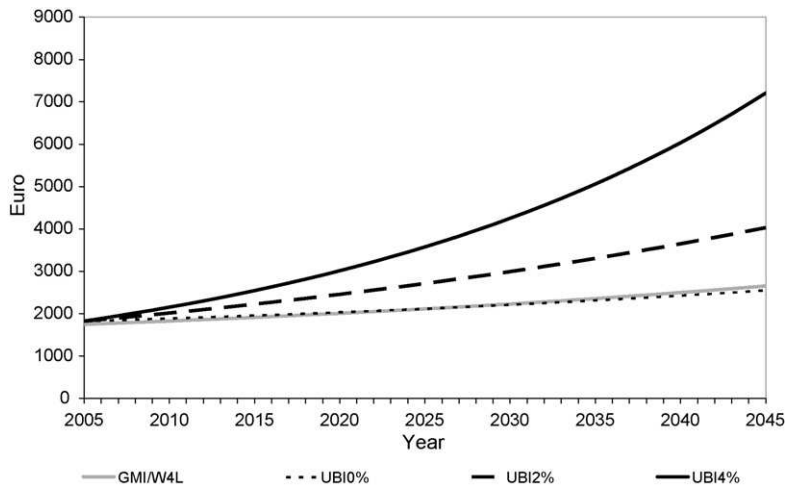

Fig. 15. Evolution net income GMI/W4L vs. UBI, one working, average inflation 0%, 2% and 4%.
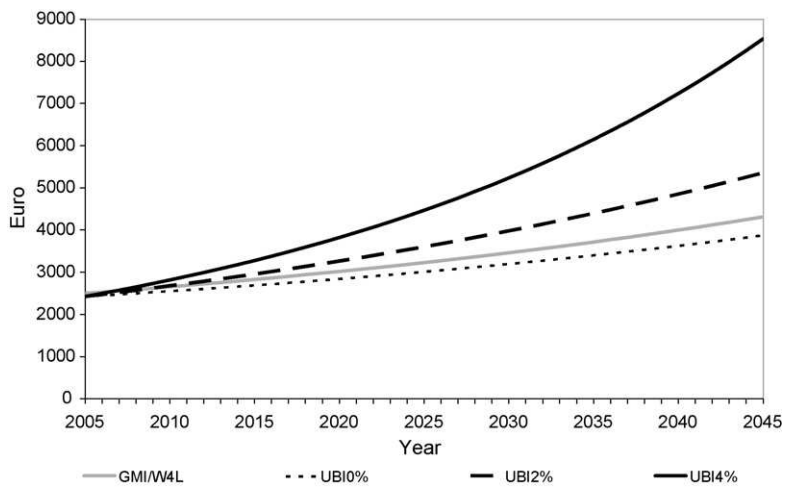

Fig. 16. Evolution net income GMI/W4L vs. UBI, two working, average inflation 0%, 2% and 4%.

when comparing GMI/W4L and UBI, Figs. 13 and 14 the importance of different tax rates and Figs. 15 and 16 the importance of assumptions about inflation.

As becomes clear when interpreting the figures, couples income under UBI will mostly be higher than under GMI/W4L. However, in case of a strong increase in tax rates combined with low inflation after introducing a BI, those with low incomes might have a lower income under UBI. By making use of economic modeling future research could further focus on the plausibility of these assumptions.

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