Analysing Basic Income as a Long-Term Growth Policy[*]

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Abstract

This paper presents an introductory long-term analysis and modelling of the implementation of Universal Basic Income using a modified Solow-Swan growth model with an extension on the labour and capital markets. It concludes that, given the right policy implementation, basic income could induce a long-term rise of the steady state equilibrium for production per capita and wages through an increase in demand and consumption, while also improving the long-term growth rate by supporting entrepreneurship and thus enhancing technological development. However, these positive aspects largely depend on the tax collection method and stickiness of high-incomes and large corporations to the domestic country, making the policy promising but unreliable without further analysis.

Keywords: Basic income, Solow model, Economic growth

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1 Introduction

Universal basic income (UBI) is the idea of a public wage given to all citizens with no conditions whatsoever (Francese and Prady 2018). This idea differentiates itself from current state benefits such as elderly income, child benefits or unemployment benefits by the fact it would be unconditionally available to everyone at a universal amount. Such a benefit would therefore replace all current ones except health insurance, hence greatly simplifying governments' welfare systems.

Globally, an increasing number of citizens are suggesting basic income as a mean to completely reform public welfare (Roosma and van Oorschot 2019) and multiple economists believe it should be on the agenda for any tax or social security reform (Atkinson 1996). Despite this interest, as of 2019, no country ever implemented a nationwide basic income. However, multiple experiments were conducted on a local scale throughout the world, for short periods of time (usually 1 or 2 years). Studies based on these experiments mostly focus on short-term economic consequences, and changes in consumers behaviour, rather than effects on the long-run.

Based on its increasing popularity, it is reasonable to think that governments will be faced with increasing request for universal and unconditional wages, and that it might even become a reality in the near future. However, as all experiments were done on a short-term basis, there is no empirical data on what would be the long-term consequences of UBI on society. Understanding how such policy could shape long-run economics would prove to be an efficient assertion in favour, or in disfavour, of implementation. This paper aims to provide an introductory analysis, based on short-term evidence and studies, to tackle the long-term effects of basic income.

2 Wealth distribution and demand

Studying consumers' patterns in small-scale UBI experiments can undoubtedly give hints about their long-run consumption and demand functions. Such an experiment could be the Alaska Permanent Fund Division, an annual payment of $1000 to $2000 per year to every Alaskan citizen, created in 1976 and still going. Most of the receivers saved more than half of their dividend or used it to reduce their level of debt. The remaining amount was notably used for special large purchase, increasing consumption of household items that wouldn't have been purchased otherwise (such as cars, furniture, personal computers, cellphones...) (Goldsmith 2010). As a result, we can infer that basic income policy would have a similar impact on households: increasing demand and production of many goods that agents would not purchase otherwise. Based on the Keynesian Multiplier, such an increase would indirectly

benefit numerous components of the economy, such as the Alaska dividend which is estimated to have created 10'000 additional jobs, attracted 15'000 to 20'000 residents from other states and added $1.5 billion in additional personal income (Goldsmith and Wanamaker 1989). These macroeconomic results are based on the fact that the fund directly increased purchasing power for many citizens.

However, basic income has a price. No matter the positive impact of an increase in consumption, the program still needs to be funded through various taxes, which would then reduce consumption. Therefore, the total effect of basic income on consumption remains uncertain, but two pieces of evidence point towards an expected increase. Firstly, a short-term modelling of basic income policy on the US economy was conducted by Nikiforos et al. 2017. Using the law of diminishing returns to reflect changes in consumption, they started from the idea that *"an extra dollar in the hands of lower income households leads to higher spending. In other words, the households that pay more in taxes than they receive in cash assistance have a low propensity to consume, and those that receive more in assistance than they pay in taxes have a high propensity to consume."* (Nikiforos et al. 2017), which would point towards an overall increase of consumption. Secondly, the previous conclusion is supported with general research on inequality. As basic income has been suggested as a tool to reduce inequality, multiple researchers found evidence that economies having more egalitarian wealth distribution have better economic growth, according to different endogenous growth models (Corneo and Jeanne 2001). Both of these studies point towards basic income increasing demand on the macroeconomic scale.

As a result, basic income would be a positive demand shock. An attempt to analyse such a shock with the Solow-Swan growth model proves to be interesting, though it is not defined in the original model which focuses on supply-side economics. However, some scholars have theorised that demand shocks can have a productive role and be represented as technology shocks in Solow-Swan model (Bai et al. 2012). Should we follow this technology approach, basic income implementation would be an exogenous shock included in A in the following Hicks-neutral production function:

$$Y_t = F(K_t, A_t L_t) = K_t^\alpha (A_t L_t)^{1-\alpha}$$

This function would subsequently show a long-term increase of production (Y) as basic income is implemented (A grows). However, one step further is required. Under this form, technology grows at a rate of g, but there is no evidence of a basic income component growing over time. Indeed, we could infer that the implementation of basic income would suddenly increase wealth distribution, immediately increasing demand, but this should be a unique effect. As a result, we must separate technology (A) into two components: one that grows at a rate of g (called $\tilde{A}$) and one that doesn't grow, and that has a fixed value added to technology when basic income is implemented (called $\overline{B}$ as

it is exogenous):

$$A_t^{1-\alpha} = \tilde{A}_t^{1-\alpha}\overline{B}$$

$$Y_t = F(\overline{B}, K_t, \tilde{A}_t L_t) = \overline{B}K_t^{\alpha}(\tilde{A}_t L_t)^{1-\alpha}$$

Following this model, both production (Y) and production per capita (y) depend positively on our exogenous $\overline{B}$ factor:

$$Y_t = \overline{B}K_t^{\alpha}(\tilde{A}_t L_t)^{1-\alpha} \longrightarrow \frac{\partial Y_t}{\partial \overline{B}} = K_t^{\alpha}(\tilde{A}_t L_t)^{1-\alpha} \ (positive)$$

$$y_t = \overline{B}k_t^{\alpha} \longrightarrow \frac{\partial y_t}{\partial \overline{B}} = k_t^{\alpha} \ (positive)$$

As capital (K) and capital per capita (k) depend positively on production, this result is equally applicable to them. However, on a steady state equilibrium, basic income does not have any effect on growth rate of production per capita. Indeed, as stated before, though $\tilde{A}$ grows at a rate of g, $\overline{B}$ is a fixed multiplier of production. As a result, in the long-run, production per capita grows at a rate of g.
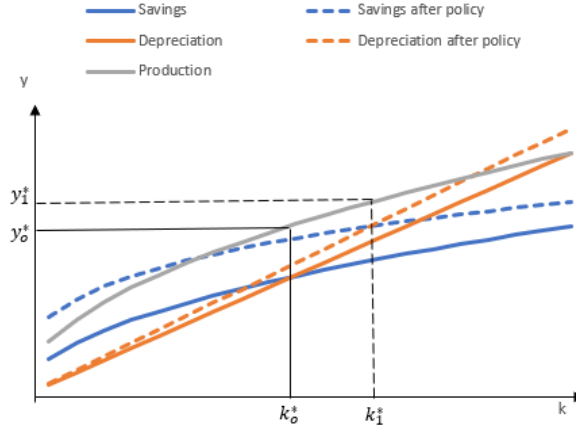

Figure 1: New steady state equilibrium (SSE) after policy

On the capital and labour market side, the increase of capital demand, capital supply, labour demand, and labour supply should have an interesting effect on returns on labour (w) and returns on capital (r). Indeed, based on Kaldor empirical observations, wages should increase while returns on capital should stay stable, even though both capital (K) and labour (L) would increase.
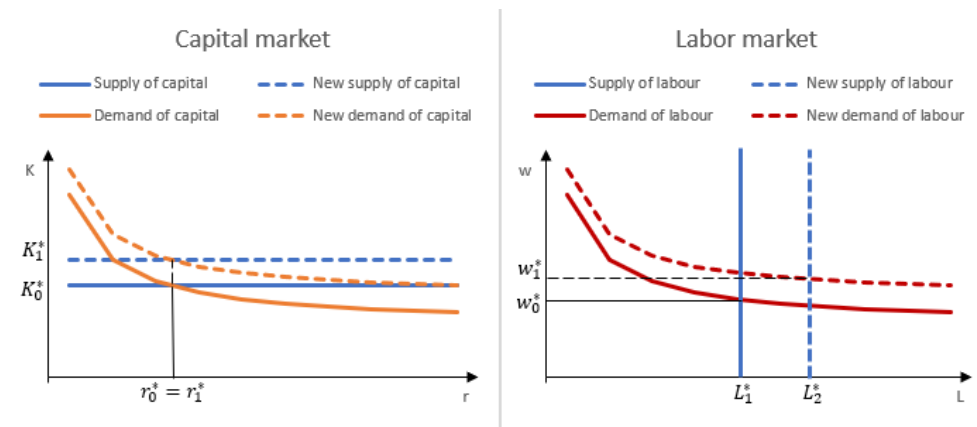
Figure 2: New SSE: Wages increase while capital returns remain steady

The first conclusion of this analysis is a global increase in the steady state equilibrium values of the economy: more capital, higher wages and more production per capita, which indicates a global increase of wealth and economic well-being. However, nothing has changed for the long-term effective growth rate. Indeed, though basic income could increase production, long-term growth is only induced by growing technical progress ($\tilde{A}$).

3 Entrepreneurship and technical progress

The effects of basic income on the labour market are one of the most controversial aspects of this policy, with many officials fearing it would discourage work.

Three studies on the effects of direct transfers on work motivation need to be mentioned. Firstly, an analysis of multiple basic income experiments showed *"no systematic evidence that cash transfer programs discourage work"* (Banerjee et al. 2017). However, one should be thoughtful when extrapolating this result: while it is based on empirical evidence, it should be noted that all controlled trials were done on small scales and small periods, which thus might not be directly applicable to long term and large scale situations. Secondly, some scholars suggest that basic income could actually eliminate the poverty trap induced by classic welfare (Clark and Kavanagh 1996). Indeed, the fixed component of basic income would eliminate the decreasing nature of current benefits, such as unemployment, thus eliminating the trap. Finally, the nature of labour need to be taken into account, with some scholars arguing that basic income would shift workers from low intrinsic motivation jobs to high intrinsic motivation jobs (Pech 2010). By removing the necessity of work, basic income would provide an incentive to focus on more insightful, less-paying jobs.

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This high-motivation aspect of the labour market can be applied to entrepreneurship. Indeed, by providing a long-term safety net, many people could launch their own companies and develop their own technologies, which might not be currently possible due to the risk associated with it. The first evidence of this effect relies on the barriers preventing entrepreneurship, on both the intrinsic and extrinsic levels. Stamboulis and Barlas 2014 studied these barriers by asking students to grade the reasons preventing them from entrepreneurship on a scale of one to five. One of the most prominent barrier regards financial insecurity. Insecure income, fear of loans or lack of safety net all prevent some entrepreneurs to pursue their ideas. Consequently, we can infer that a basic income policy, which would act as a safety net, would provide financial stability and increase entrepreneurship.

In the case of developed countries with high GDP per capita and advantageous conditions for entrepreneurs (which is most likely where basic income policies will be developed first), entrepreneurship increase leads to economic growth by two aspects (Acs 2006). Firstly, they create jobs, pay more taxes and intensify competition, leading to a short-term increase of production. Secondly, and most importantly, entrepreneurship in these countries lead to technological change. As such, basic income could contribute to technical progress, which leads to long-term economic growth, through the reduction of entrepreneurial risks.

4   Assumptions and limits of this analysis

This analysis is based on a number of assumptions, which are partially backed up by the different studies mentioned throughout the analysis.

Firstly, Solow-Swan growth model (and all of its assumptions) is assumed to be applicable in this exact scenario, using short term evidence that are assumed to be consistent on the long-run. Though this should be the case, there is no empirical evidence of long term basic income policies, making such model impossible to prove. Moreover, the analysis provided is only an introductory one (due to the nature of this paper) and does not rely on exact calculations and data but rather on general trends, which gives hints on the direction of the effects but not on their magnitude.

Secondly, the production and wages growth are entirely based on the assumption that basic income implementation would increase global purchasing power, consumption and demand, as outlined by several of the studies mentioned. One key missing element is the risk of wealthy agents fleeing the country after the implementation of basic income, due to the tax costs being higher than their individual benefits. I simplified this risk by assuming the cost of moving out is greater than the cost of basic

income, which could be partially true for countries like the US, Scandinavia, or Switzerland as they provide many benefits to their citizens and corporations (both financially and non-financially) which could efficiently retain them. However, this limits the scope of this paper to the most advanced economies only, and empirical proof of this concept is lacking. Further research on this aspect would be beneficial to evaluating the risks of basic income policies.

Thirdly, a key assumption relies on the fact that basic income policy would not reduce participation rates by acting as an incentive to stop working. Several of the short term studies mentioned in this paper tend to point out that this idea seems to be mostly a stereotype, and that basic income would not reduce supply of labour. A shift of extrinsic to intrinsic motivational jobs seems to be more likely, as workers would be more likely to pursue "better" jobs or entrepreneurial experiences. Should this assumption not be true, supply of labour would diminish while demand of labour increase (due to the increase in production). As a result, wages (w) would drastically increase while labour (L) decreases, putting the economy and the funding of basic income in danger.

Fourthly, the assumption is made that basic income policy would not attract many migrants, or increase birth rates as households earn more production per capita. Indeed, if there were no immigration laws or that birth rates would perfectly react to economic growth, we could infer a steadiness of production per capita. In other words, basic income would first increase production which would attract people from other countries and stimulate birth. As a result, both production (Y) and labour (L) would grow at the same rate, which would result in a steady state equilibrium that would remain stable even with the new basic income policy. The overall result is an increase of production and savings with an increase of capital depreciation, resulting in an overall stable steady state equilibrium for production per capita (y) and capital per capita (k), though capital (K) and production (Y) would increase. The assumption that this would not be the case seems realistic, as most countries have strict immigration rules and that birth is now fairly inelastic to revenue.

Fifthly, the results provided in this analysis greatly depends on how basic income policy is implemented. While not mentioned in this shortened version of the paper, an important part of basic income implementation is to analyse the effects of various funding method, as it is clear that different funding can lead to completely different consequences. As a result, this analysis also relies on the fact that policy-makers chose efficient ways of financing such ambitious project, and that the negative effects (not represented on the Solow-Swan analysis) are not substantial enough to undermine the assumed positive impact of basic income. Inefficient funding could lead to inflation, emigration of rich citizens, or even large corporations leaving the country, all undermining the positive economical impact of the policy. As such, understanding what is the most efficient funding method is an important and

complicated question. Most likely, the best funding would probably be an intelligent mix of replacing current welfare systems, targeted tax and VAT increase. Moreover, the amount of basic income would play an important part on both the funding and results of the policy. This paper was written with the assumption that basic income would be set slightly above a comfortable subsistence level, big enough to allow entrepreneurship risks, but not big enough to discourage work.

Finally, most of the analysis and assumption study the cases of either the United States or Switzerland, and it is mostly applicable to developed countries. In other words, this paper does not indicate any possible effects of basic income policy on emerging markets, as such policy would be completely different in those countries. The choice to exclude developing countries from the scope of this work has been done because it is most likely that the first countries to implement (or suggest) basic income will be developed countries.

Overall, there are many assumptions and limits to the long-term effects outlined in this paper. Basing the long term analysis on short term empirical evidence gives some confidence on the economic effects I mentioned in this paper, but the lack of long-run empirical evidence gives us no way of predicting accurately the long-term effects of basic income as of today. Further country-specific analysis would be needed to make any reasonable policy recommendation.

5 Conclusion

This paper aimed to better understand the long-term economic effects of basic income. Firstly, basic income could increase general production and wages by increasing purchasing power. As a result, median production per capita could increase. Secondly, by providing an unconditional safety net, basic income policies could also enhance entrepreneurship, increasing technical progress rate, which is the only long-term factor of growth according to endogenous growth theory. As a result, both factors could lead to higher economic levels as well as higher growth rate.

These results can be linked to the extensive research done on inequality. Overall, research in this field often has the same conclusion because basic income is, before anything else, a tool to reduce inequality. The evidence presented in this paper suggest that this tool is feasible and that, under some conditions, it can contribute to economic growth by reducing inequality.

Through its modern history, basic income tends to be associated with far-left politics. This led to many conservative parties and liberal economists to instantly reject any form of basic income[1], even

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[1]A recent poll has been conducted in the US where most republicans strongly oppose basic income, while democrats

though it can be considered as an efficient alternative to classic welfare policies by liberal economists such as Friedman, who was one of the first to introduce the concept of a negative income tax (Friedman 1962), which later led to basic income.

Overall, basic income could be one of the most ambitious innovations in welfare policies, and this idea is becoming more and more popular over time. Most probably, many more citizen initiatives or policy makers will attempt to implement basic income on national levels, and some country will likely end up applying this theory on a large scale, thus providing the missing empirical evidence we need to assess the economic effects of basic income. Understanding the long-term feasibility and economic growth impact of such policy is then critical in order to assess whether this policy is required or not, and one could merely hope to see more research on this aspect in the future.

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are much more balanced. Young voters (18-39) strongly favour basic income while retired voters strongly oppose. Low-income households strongly favour while high-income strongly oppose. (Echelon Insights 2019)

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