Some notes on the Secular Stagnation hypothesis

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Abstract

In the aftermath of the Great Recession recovery in United States and the Eurozone has been sluggish and unsatisfying in terms of growth and unemployment reduction. One of the main responses to such a situation from the academic world has come from Larry Summers, who in 2013 retrieved the concept of Secular Stagnation from the epoch of Alvin Hansen, that in the ’30s was the founder of the category. In such an attempt Summers has been backed up by Paul Krugman, who brought up again his contribution about the Japanese stagnation of the 'lost decade'. As this strand of thought contends, the main problem we are going to face in the medium term is that the natural real interest rate allegedly has become negative. In this peculiar case, monetary policy is unable to boost investment since it is constrained by the zero lower bound, that prevents the attainment of the appropriate policy rate. The only way to overcome this uneasy issue is to resort to an active fiscal policy, that is more than favoured by the long lasting permanence of the policy interest rate at zero. The principal causes of this scenario are to be traced back to population slowdown, slow technical progress, worsening income distribution, a strong demand for safe assets due to uncertainty. A weakened demand for investment coupled with a strong supply of savings hence results in a continuously falling natural real interest rate, up to the point in which these interacting forces push it into the negative territory. While the call for an active fiscal policy is good news, the way in which such a prescription is arrived at appears to leave more than one doubt. A negative natural rate in the steady state is a novel feature that requires many hypothesis and peculiar modelling to be set forth. The main claim of these notes is that it can be in many ways criticized, without on the other hand reducing the need for a fiscal intervention aimed at lifting the economy out of its struggles.

1 Introduction

The present work is devoted to the presentation and discussion of the so called Secular Stagnation hypothesis set forth in 2013 by Larry Summers, whose effort has been in recent years to depict the current Western economies’ stagnation in terms of the framework provided in the ‘30s by Alvin Hansen (1939). The latter, indeed, was the original founder of the concept of Secular Stagnation. Anyway, we will be engaged in the analysis of the modern retrieval rather than the discussion of the origins of the theoretical category. After a general
brief presentation of the argument, a critical review of the lately formalized model of Secular Stagnation by Eggertsson and Mehrotra (2014) will be set forward, concluding the digression with an alternative proposal outside the neoclassical realm.

2 Larry Summers retrieval of Hansen’s notion and the ensuing debate

Larry Summers can be granted the merit to have restated the Secular Stagnation hypothesis in modern terms and in a modern age. In Summers (2014a, 2014b) we can find a clear cut summing up of the main concerns and propositions of the former US Treasury Minister. In these contributions the approach of the Harvard economist is quite virulent against received wisdom looking only at the variance of fluctuations in the short run, while the long run prospects of growth are taken as independently given: “To reverse Keynes a bit, if you die in the short run, there is no long run”. Short term fluctuations over the cycle may end up having a lasting effect on longer run trends too. Once the era of Great Moderation has faded, we are left with the apparent impossibility to fruitfully conjugate full employment, growth and financial/price stability by means of an always effective monetary policy. The main targets of Summers are then the zero lower bound, Secular Stagnation and hysteresis. A preliminary discursive presentation focuses on the continuous downward revision of potential output forecasts and the long run trends of several variables, which will be properly sorted out soon below:

Figure 1 - US potential output estimations, from Summers (2014b, p. 28)

1 Even though here and there the discussion is extended to the Eurozone and to Japan, we are going to remain confined to the key points valid for the US economy.
Summers sets forth an all-embracing framework to take into account as many relevant factors as possible as he asks himself whether the decline of the real interest rates can be seen as a manifestation of a decline of the natural rate itself, conceivably to negative values. The factors that can be supposed to shape such a situation are (Summers 2014a, pp. 69 – 71, Summers 2014b, pp. 33 – 36):

- shrinking debt-financed investment demand, caused by the nature of modern firms. The examples of WhatsApp and Facebook exemplify the fact that much less physical capital is nowadays needed to setup a leader sector enterprise;
- decreasing population growth (and weak technological progress), even considering the education-adjusted measures, forecasted to keep on going forward also in the next decades;
- worsening income distribution, that by favouring the capitalist class acts bringing about a rise in the economy’s propensity to save;
- the downward pattern of the relative price of capital goods, with the latter considerably falling in comparison to the consumption goods side;
- stronger demand for safe assets, owing to heightened uncertainty about future economic prospects and boosting in particular the quest for US Treasury bills;
- a last minor point is the need of a lower pre-tax real interest rate to obtain the same required after-tax as before, since disinflation is now to be considered.
All these factors play together to make room for an equilibrium (or full employment) real interest rate that is strongly pushed to ever-low values by the combined effects of a weaker demand for investment going hand in hand with a dramatic increment of the supply of savings; eventually, those tendencies may result in a negative equilibrium real interest rate. The presence of the zero lower bound on nominal interest rates causes thus problems to the appropriate operation of monetary policy; even if it were possible to set the appropriate nominal rate, the strong worries about the likely ensuing financial instability may run against that policy stance.2

What can then be done at the policymakers’ level? Even though Summers assesses a nominal interest aggressive cut3 as a better response than doing nothing, his sheer concerns about financial stability and bubbles make him call forth a public deficit spending4 to be tied to regulatory and tax reforms, policies promoting exports, higher inflation target settings, income inequality reducing programs.

Given the outstanding relevance of the zero lower bound since many several economies have been finding themselves of the edge of zero nominal rates for years and they probably will for the ones to come, Summers recalls the elements forcing the natural interest rate to be negative; he only adds now the increased financial intermediation costs to be linked to the aftermath of the last US crisis. By and large, the most interesting section is the one dealing with some received critique:

- with a near zero interest rate demand for investment ought to dramatically increase.

Summers actually seems to be dodging the question as his answer resorts to imperfect property rights, market imperfections, changing relative prices to check the validity of his reasoning;5

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2 Evaluating in retrospect the domestic performances over the last three decades, Summers comes to concluding that the advent of a stagnation era was indeed perhaps already spottable before, since in the years preceding the Great Recession growth was not spectacular even in presence of loose credit constraints, a gigantic house bubble and sustained public budget deficits. Low interest rates in addition foster risk-taking, myopic lending and the appealing of Ponzi schemes; furthermore, in such an environment wage and price flexibility can hinder the attainment of very low or negative natural rates for any given nominal interest rate. And if such an impossibility to reach the right real rate causes shortfalls of investment, the adjustment may require a fall in the potential output towards the lower actual one, in what Summers calls an “inverse Say’s Law”: a lack of demand generates a closely-linked lack of supply.

3 Also accompanied with a quantitative easing crackdown if needed.

4 Thus boosting demand for any level of the interest rate and possibly even lowering the long run debt/GDP ratio.

5 Let alone the fact that in the same paragraph the negative real interest rates of the Seventies (primarily due to the oil shocks) are cited to give credibility to his case; of course no one questions the plausibility of a negative market real interest rate but rather that of a negative natural real interest rate.
• there would be no need to talk about demand issues when supply side factors can already explain the slack in growth forecasts. The author counter those opinions by remembering that prices went down together with quantities during the crisis, while a pure supply shock would have pushed up prices against falling quantities. Moreover, the demand viewpoint better underscores the relevance of the zero lower bound and the phenomenon of hysteresis;

• with renewed growth in recent periods, Secular Stagnation may already be a distant matter. In response, the attention is then directed towards the general landscape of slower growth and very low interest rates: transient periods of growth may well take place but troubles can easily and suddenly come up anew.

The conclusions are again sceptical about monetary policy and structural reforms while very encouraging about the sustained and likely wide scope for fiscal policy.\(^6\)

Paul Krugman (2014) took part in the discussion as well, providing four reasons why the Summers’ hypothesis may be well founded. Krugman is an author of particular interest for us, since he provided in 1998 the analytical insight upon which most of the clues about the negative natural real interest rate idea have been grounded upon. The first two are closely related and point to warning about the increased likelihood of hitting the zero lower bound in the future, both because monetary policy is currently still stuck there and the real interest rate has been moving markedly down during the last three decades. From the demand side, the end of the debt consumer era on the one hand and the slowing population growth on the other are taken as good predictors of an investment demand destined to be abated. The responses based on setting a higher inflation target, or implementing a temporary deficit spending while the real interest rate reflates, while in past were being proposed by Krugman himself, are now deemed most probably insufficient in a Secular Stagnation. His prominent role in the debate has been due also to his path-breaking contributions about the Japanese stagnation of the ‘90s

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\(^6\) Most of the references are extract from the vital book of Baldwin and Teulings Secular Stagnation: Facts, Causes and Cures in which many first class economists have made comments about the issue; amongst them there are the ones cited in this paper. Among others, there are some noteworthy comments about the issue. The main aspects Eichengreen (2014) discusses are: a saving glut coming from emerging markets, the plunging relative price of investment goods, the slower population growth, the shortage of innovative technology to invest in. Gordon (2014) mostly buttresses those insights but taking a stronger stance about supply side factors; the potential growth rate itself is presumably stagnating in his opinion. It is that the issue, rather than an economy persistently operating below capacity. Setting aside technical progress, Gordon concentrates on: demography, education, skyrocketing private and government debt, inequality. Possible countermeasures are according to him: raising the retirement age, favouring legal immigration, financing higher education and public medical systems, raising taxes to reduce inequality and reforming the whole tax schemata. Gordon (2015) mostly repeats those arguments. Blanchard, Fuceri and Pescatori (2014) give more attention instead to the evolution of the natural real interest rate in the last decades, trying to understand why it has been trending downwards so markedly.
(Krugman 1998) and the US private debt collapse unravelling the Great Recession (Eggertsson and Krugman 2012). The first of the two mentioned papers reopened the door for the conception of a negative natural real interest rate, that later on has been formalized in Eggertsson and Mehrotra (2014), that we are going to discuss in the next section.\footnote{Samuelson in his seminal 1958 seminal work derived a negative equilibrium interest rate in a simplified OLG model. }

### 3.1 A formal model of Secular Stagnation

Eggertsson and Mehrotra (2014) set up the first comprehensive model to analyse Secular Stagnation, and they choose the employ an overlapping generations structure for the sake of avoiding the uneasiness of having a steady state real interest rate always positive due to the representative agent framework. The factors that can make the natural rate negative are: a shift in the agents' discount factor, slower population growth, falling relative price of investment goods, collapsing exogenous debt limit, increasing inequality. While the first three shift down the demand for savings schedule, the last one moves the demand for savings upward. The novel feature of their model is that the equilibrium interest rate can remain negative even in the steady state. The discount factor of the representative agent is now placed side by side with the demand and supply of loanable funds in setting the natural rate of interest.\footnote{The analysis is carried on starting with an endowment economy. No aggregate saving is allowed, as all incomes are spent in the aggregate. }

The overlapping generations (OLG) model encompasses three generations: young, middle-aged, old. The endowment is assumed to be distributed in the following manner: the young do not receive any income and therefore borrow from the middle-aged, who in turn lend in order to get a reward when they become old (at that stage they spend all the income). The young do encounter a limit on the amount they can ask for, which is exogenously given. Formally:

Utility function: $$\max_{c_t^y, c_{t+1}^m, c_{t+2}^o} E_t\{log(C_t^y) + \beta log(C_{t+1}^m) + \beta^2 log(C_{t+2}^o)\}$$

Budget constraints:

$$C_t^y = B_t^y$$

$$C_{t+1}^m = Y_{t+1} - (1 + r_t)B_t^y + B_{t+1}^m$$

$$C_{t+2}^o = Y_{t+2} - (1 + r_t)B_{t+1}^m$$

Exogenous borrowing limit:

$$(1 + r_t)B_t^i \leq D_t$$
Consumption Euler equation: \[ \frac{1}{c_t^m} = \beta E_t \frac{1 + r_t}{c_{t+1}^o} \]

where 'y', 'm', 'o' identify the respective generation, \( Y \) is the endowment, \( C \) consumption, \( B \) a risk-free bond, \( r_t \) the interest rate, \( D_t \) exogenous debt limit, \( \beta \) discount factor. This part of the model delivers the intertemporal equilibrium conditions. The market for savings is characterized by a demand for loans and a supply of savings equations:

\[
L_t^d = \frac{1 + g_t}{1 + r_t} D_t
\]

\[
L_t^s = \frac{\beta}{1 + \beta} \frac{Y_t^m - D_t}{1 + \beta} \frac{1}{1 + r_t} Y_t^{o}^{t+1}
\]

that permits one to arrive at the *equilibrium real interest rate*:

\[
L_t^s = L_t^d \rightarrow 1 + r_t = \frac{1}{\beta} \left( \frac{1 + g_t}{Y_t^m - D_t} \right) + \frac{1}{\beta} Y_t^o^{t+1} \frac{Y_t^m - D_t}{D_t - D_t - 1}
\]

which is related to: endowment distribution, debt limit, population growth, discount factor. Each of these factors play a role in the emergence of a secular stagnation situation.

Here capital is still not present, and no saving is allowed. What we find out are quests for spare amounts of endowments not consumed by a single generation. It is that kind of request which constitutes the market for saving in this simplified version. The interaction between the demand and supply for them determines the equilibrium interest rate.

The reader is thus brought back in a sort of IS world, in which any factor contributing to raising the supply of savings on the one hand, or to depress the demand for loans on the other is liable to affect the determination of such a rate. Three major aspects are illustrated by Eggertsson and Mehrotra on this respect: sudden deleveraging, the slowdown of the population growth, and exacerbating income inequality:

- the debt limit is given, and its collapse forces a spending reduction. Anyway, since no aggregate saving may possibly come into being, the interest rate drops to outweigh the previous effect. This happens since the deleveraging process involves a consistent reduction of the demand for loans in the face of an unchanged supply of savings given by the middle aged;
- a decline in the birth rate of the youngsters has the same influence on the equilibrium interest rate: for a certain supply of savings, a smaller new generation of young

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people, that in the model are the sole responsible for the demand of loans, implies a decrease in such demand and so a diminution of the interest rate;

- for what concerns income inequality instead, its impact on the equilibrium interest rate operates through the supply of saving. An increasing supply coming from the redistribution towards a social class characterized by a lower propensity to spend further depresses the natural rate.

As it has already been mentioned, once the basic engine designed to recreate a sort of Investment – Saving schedule without capital is ready to run, the model can be enriched with many improvements. Right after those passages, capital is formally introduced in the analysis. How is such mission accomplished? Now the middle generation can decide to employ their savings by lending them to the young generation or, now, by acquiring capital that is leased by firms. Capital enters a conventional Cobb – Douglas \( Y_t = K_t^{1-\alpha}L_t^\alpha \). The marginal product of capital simply comes from the first derivative of the function with respect to capital; I shall identify it with \( r_t' \), a step that the authors do not take. Then, ‘marginal product’ and ‘rental rate’ of capital \( r^K_t \) are posed as equal

\[
r_t' = (1 - \alpha) \frac{Y_t}{K_t} \rightarrow r_t' = r^K_t = (1 - \alpha) \frac{Y_t}{K_t}
\]

Given exogenously a relative price of investment goods, that expresses the cost of transforming a consumption good into an investment one (it is thus a two-sector model), optimal choice is now calculated by combining these two equations (to be added to the previous setup)

**Consumption Euler equation:** \( \frac{1}{c^m_t} = \beta E_t \frac{1+r_t}{c^o_{t+1}} \)

**Optimal choice of capital:** \( (p^K_t - r^K_t)c^p_{t+1} = \beta p^K_{t+1} (1 - \delta)c^m_t \)

where \( p^K_t \) is the relative price of the capital good, and \( \delta \) is the depreciation rate of capital. Rental rate of capital and real interest rate do have a relation described by

\[
r^K_t = p^K_t - p^K_{t+1} \frac{1 - \delta}{1+r_t}, r_t' = r^K_t \geq 0
\]

The second condition imposes a non-negative value for the rental rate that stems from the equality of the latter with the marginal product of capital that is always positive. In the steady state prices do not change, so arriving at the steady state real interest rate is rather straightforward:
\[ r_{ss}' = r_{ss}^K = \bar{p} - \bar{p} \frac{1 - \delta}{1 + r_{ss}} \geq 0 \rightarrow \bar{p} \left( 1 - \frac{1 - \delta}{1 + r_{ss}} \right) \geq 0 \rightarrow \frac{1 + r_{ss} - 4 - \delta}{1 + r_{ss}} \geq 0 \rightarrow r_{ss} \geq -\delta \]

It is possible to see how the steady state real interest rate may fall within a range of values even negative, but with a floor fixed by the rate of capital depreciation. The new equation for the equilibrium interest rate is

\[ L_t^s = \frac{\beta}{1 + \beta} (Y_t - D_{t-1}) - \frac{\beta}{1 + \beta} \left( p_t^K + \frac{p_{t+1}^K(1 - \delta)}{\beta(1 + r_t)} \right) K_t \]

the only change intervened is basically that since a portion of savings is directed towards capital investment, the portion available for loans to youngsters is smaller. Relative price of investment goods and depreciation now play a role together with the already mentioned elements.

3.2 Critical considerations on Eggertsson, Mehrotra (2014)

In this section we will try to highlight what we consider the main unsatisfying points that can be raised against the proposal of the two authors to see the ongoing stagnation as the result of a permanent situation in which the natural interest rate has turned negative, hence weakening the monetary policy capability of lifting the economy out of a recession.

- Equalization of the rates of return

When capital is introduced (section 9, p. 29), it enters the picture in a Cobb – Douglas: its rental rate, which then is inserted within the budget constraints, is equal to the marginal productivity of capital. The rental rate, hence the variable that accounts for both the marginal product of the production factor and the capital revaluation between periods, can be negative under some circumstances. In the determination of the equilibrium real interest rate the presence of capital is basically, on the same footing of any other factor analysed, an additional source of demand for/supply of savings. In this case, it reduces the supply of savings that can accrue to the investment in bonds. Yet, the condition holding under stationary prices seems to overlook the fact that now, along with the issuance of bonds, savers can invest in real capital. This means that in a steady state the returns on the two investments must be equal, otherwise the investment yielding less will not be chosen at all. In other words, what seems to be missing is an equation for the uniformity of the rate of returns. The lower bound on the

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10 The upshot of the argument is to provide a rationale for the role of the relative price of capital in reducing the equilibrium real interest rate, in so doing involving in the work another element pinpointed by Summers.
level of the rental rate is zero, because of the equality with the marginal productivity of capital; the lower bound on the real interest rate should be set, in steady state, by the requirement of uniformity across investments of their rate of return. The latter amounts to saying that even the real interest rate will have a lower bound, the same of the rental rate, i.e. zero. It is thus now visible what before was only an alleged ‘shadow’ zero lower bound. Indeed, the fact that the marginal product of capital cannot go negative (as the two economists hypothesise) puts a lower bound to the rental rate, but then the uniformity of the rates of return puts a stationary state floor to the real interest rate.

- **The role of land and alternative assets**

A German economist, Stefan Homburg (1991, 2014), has made a fascinating case against the possibility of overaccumulation (with the attached negative natural real interest rate) in economies where land is available as an alternative asset. The peculiar feature of this other viewpoint is that it is fully placed within the mainstream field. Indeed, as he openly states (2014, pp. 412, 425, 428), since there are scant reasons to believe advanced economies do accumulate excess capital, the way out advanced by the ‘stagnationists’ (i.e. expansive fiscal policy) is not viable. Specifically, the recourse to public budget deficits useful to lift the natural real interest rate into the habitual positive territory would turn out to be useless or even dangerous considering that the negative natural real rate is a red herring. Business as usual, high public deficits resolve in a crowding-out of private investment spending brought about by the surge of the interest rate.

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11 In order to better grasp the relevance of such a condition, one may (among other works) look at Dvoskin and Fratini (2016). The authors engage in a critique of the ‘Master Function’ set forth by Samuelson and Etula; that analytical device was allegedly capable of providing a justification to the marginal productivity theory while dismissing the employment of some definition of capital as an aggregate. The target of Samuelson and Etula (2006) was to arrive, by exploiting the Master Function, at explaining income distribution with the marginal products of factors when there is a discrete (and realistically small) list of technological production possibilities to choose among. The known methods are hypothesised to employ the given endowments of the production factors in different proportions. In so doing, by varying only the quantity of a single factor while keeping constant the full employment of the remaining ones, the marginal product of that factor is calculated. The two authors criticizing the meaningfulness of the Master Function discern between a situation encompassing constant prices in a stationary position, and another not requiring their constancy. In what follows, we will be occupied only with the first position, since it is also the one supposed by Eggertsson and Mehrotra (2014).

12 A further qualification may be constituted by considering that the marginal productivity of capital can actually be negative: given a certain production function such as the Cobb-Douglas of the 2014 article, additional doses of capital for a given amount of fully employed labour will deliver increasing marginal products (at a decreasing rate) up until a point in which an additional unit would yield a zero marginal contribution to production. Additional capital units will generate a negative marginal product, and thus one sees no reason why they ought to be brought in the production sphere. The argument is then that as a purely intellectual experiment, negative marginal productivity (leaving aside for a moment all the troubles carried by such a concept) is not an absurd case, it just lacks economic relevance.
Considering land (supplied in a positive fixed amount) together with productive capital and public debt as non-financial wealth (2014, pp. 416 - 420)\textsuperscript{13}

\[ S_t = K_t + q_tL + D_t \]

immediately singles out to one’s eyes that land is an additional savings’ fund; empirically the order of magnitude of this alternative is displayed to be quite close to the one of capital (2014, sec. 4, p. 420 – 422).\textsuperscript{14} Employing a comprehensive aggregate production function with constant returns to scale it is possible to derive rent as the marginal product of the land factor and the overall rate of return on land investment\textsuperscript{15}

\[ F_t(K_t) = F(N_{t+1}, K_t, L) \rightarrow \frac{\partial F(N_{t+1}, K_t, L)}{\partial L} = \rho_{t+1} \]

\[ R_{t+1} = \frac{q_{t+1} + \rho_{t+1}}{q_t} \]

As it should be easy to recognize, the case against the feasibility of a theoretical negative natural real interest rate does not seem to pertain exclusively to a point of view not belonging to the mainstream. In ‘example 4’ (2014, pp. 417 – 418 and appendix C, pp. 430 – 431) the author let vary the discount factor of the agents vary

![Figure 3 - Stationary state with capital and land, Homburg (2014, p. 417)](image)

Progressively decreasing the discount factor means that more capital is accumulated and the associated interest rate tends to decrease, but land value counterbalances that movement, as “land crowds out inefficient capital formation”. In addition to this Homburg shows how in a steady state the interest rate is surely positive since without time subscripts

\[ 1 + r = \frac{(q + \rho)}{q} \rightarrow r = \frac{\rho}{q} \rightarrow q = \frac{\rho}{r} \]

the interest rate is the ratio of two positive factor, and then a falling interest rate bids up land price. At pp. 418 – 419 the so called land theorem is stated and proved: in an economy with

\textsuperscript{13} The terms in the equation are, in their order, private wealth, capital stock, land price in output units per square meter, public debt.

\textsuperscript{14} Moreover, taking as given S, Homburg points out how a higher public debt level may impair capital accumulation, but also land price values.

\textsuperscript{15} The overall return on land is arrived at by calculating profits as total production minus the amount of factor employed times its marginal remuneration, and differentiating it with respect to used land.
land, every competitive equilibrium is dynamically efficient (the interest rate is higher than the economy’s accumulation rate). Furthermore, Homburg maintains that a higher growth rate of the economy results, among other things, in higher land price and thus land return, calling for a higher interest rate in equilibrium.

The empirical role of land is also shown by Homburg to be of primary relevance, in light of the fact that in many advanced countries the land – output ratios are comparable to the capital – output ratio usually taken into account.

The upshot of the argument laid out by the German economist is in the end conclusively against the attempt of Summers (2014) arguing in favour of a savings glut of an amount sufficient to push the natural interest rate into the negative territory. From our point of view the main takeaway is that even within an overtly orthodox analysis the case for a negative equilibrium real interest rate is contested. Together with this we find also an unpleasant outcome: if the critique is launched from a neoclassical side, the theoretical elegance of Homburg abundantly shows some of the cracks in the Secular Stagnation theories, but the policy proposals are the ones one would expect. Actually, public deficit spending does not help in this peculiar context anymore that in the ‘normal’ cases since there is no extraordinary situation: crowding-out of private expenditure suggests not to employ an active fiscal policy.

**What is up to fiscal policy?**

Public expenditure financed by increasing public debt in the OLG model (section 7, pp. 23 – 27) can raise the equilibrium interest rate (Ricardian equivalence does not hold). Constructing a State policy that leaves untouched the supply of saving and incrementing savings demand through deficit spending can make the real interest rate positive. Fiscal policy is introduced in the discourse by rewriting the budget constraints adding the public sector (the utility function remaining the same):\(^\text{16}\)

\[
\begin{align*}
C_t^y + T_t^y &= B_t^y \\
C_{t+1}^m + (1 + r_t)B_t^m &= Y_{t+1}^m - T_{t+1}^m - B_{t+1}^m \\
C_{t+2}^o &= Y_{t+2}^o + (1 + r_{t+1})B_{t+1}^m - T_{t+2}^o
\end{align*}
\]

plus the asset market-clearing condition

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\(^{16}\) In addition now we have \(T^{,m,o}\) taxes on all generations, \(B^g\) government’s bond demand, \(G\) public spending.
\[-N_{t-1}B_t^m = N_tB_t^v + N_{t-1}B_t^g\]

loan demand

\[L^d = \frac{1 + g}{1 + r}D + B^g\]

supply of loans

\[L^s = -B^m = \frac{\beta}{1 + \beta} (Y^m - D - T^m) - \frac{1}{1 + \beta} \frac{Y^o - T^o}{1 + r}\]

Government’s budget constraint

\[T^m + B^g + \frac{1}{1 + g}T^o + (1 + g)T^y = G + (1 + r)\frac{1}{1 + g}B^g\]

intertemporal tax distribution scheme

\[T^m = \frac{1}{\beta} \frac{1}{1 + r}T^o = T\]

The last equation is added in order to avoid any effect of fiscal policy on the supply of loans. Generally speaking, fiscal policy is constituted by a set of values for both taxation and public expenditure subject to the State budget constraint. According to the authors the most straightforward way to affect the natural interest rate is permanently\(^{17}\) augmenting the stock of public debt.\(^{18}\) It is so since the government now plays the role of borrower, thus shifting the loan demand function for a given supply. As made clear by the proposers, such an additional demand works out regardless of how public expenditure is then utilized. At the zero lower bound, as they show in table 1 public debt increase has a multiplier value above 2, considerably higher than the tax multiplier on whatever generation.

<table>
<thead>
<tr>
<th>Financing</th>
<th>Multiplier</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in public debt</td>
<td>(\frac{\alpha}{\beta - 1 - \alpha p})</td>
<td>&gt; 2</td>
</tr>
<tr>
<td>Tax on the young</td>
<td>(\frac{\alpha}{\beta - 1 - \alpha p})</td>
<td>0</td>
</tr>
<tr>
<td>Tax on the middle-aged</td>
<td>(\frac{\alpha}{\beta - 1 - \alpha p})</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Tax on the old</td>
<td>(\frac{\alpha}{\beta - 1 - \alpha p})</td>
<td>&lt; 0</td>
</tr>
</tbody>
</table>

\(^{17}\) Otherwise Ricardian equivalence would lead agents to expect a corresponding level of future taxation to meet today spending, thus leaving the interest rate basically untouched.

\(^{18}\) The two economists also claim their preference about fiscal rather than monetary policy, since the former can altogether cancel off the secular stagnation equilibrium, and not only moving the economy away from it as the latter could.
Notwithstanding the interesting point in support of the above policy, a preliminary perplexity may arise from the fact that the advanced strategy looks more like a way of raising the demand for loans than a proper public spending policy. Recalling also that the way the proceeds of the increased public debt are employed do not count, the important factor making a difference in the end is how the debt is financed, as shown by the already cited several multipliers. Perhaps the old Keynesian suggestion of wastefully spending for useless jobs would hold up well according to them as long as it boosts savings demand. Moreover, the traditionally long mistreated ‘crowding-out’ effect is now an allied: a pressure against a given amount of available savings lifts the real natural interest in the positive region, where the reliable monetary policy comes effectively back.

Still, a maybe more appealing consideration may be set forth by looking at the other side of the coin: if after all the real concern pertains the sign of the natural interest rate, some different plan can be recommended. Specifically, public policymakers can act through the supply of savings as well, something deliberately prevented by Eggertsson, Mehrotra. Let us rewrite the budget constraints inserting also transfers ($Tr_t$) together with taxes and public debt. They are an instrument usually employed that the authors do not consider at all.¹⁹

\begin{align*}
C_t^Y + T_r^Y &= B_t^Y + Tr_t^Y \\
C_t^{m_1} + (1 + r_t)B_t^Y &= Y_{t+1}^m - B_{t+1}^m + Tr_{t+1}^m \\
C_t^{o_2} &= Y_{t+2}^o + (1 + r_{t+1})B_{t+1}^o - T_{t+2}^o + Tr_{t+2}^o \\
\end{align*}

By equating supply and demand we get

\begin{align*}
\frac{1 + g}{1 + r} D + Tr_y^Y - T_t^Y &= \frac{\beta}{1 + \beta} (Y^m - D - T^m + Tr^m) + \frac{1}{1 + \beta} \frac{(Y^o - T^o + Tr^o)}{1 + r} \\
\end{align*}

and deriving the natural rate

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¹⁹ In the present piece we are going to jump directly to the natural rate formula with the transfers added, which can however be arrived at just repeating all the steps shown above. The intertemporal tax scheme has been dropped for the sake of allowing the supply of savings to be modified (last equation in the previous example). The demand for loans is augmented by the transfers to the young, thus becoming more properly a demand for savings, since the asset market clearing still operates with the young being constrained by the debt limit. Government intervention takes now the form of a pure tax-transfer schemata, without adding any demand for loans from the Government side; accordingly the relative terms are dropped.
\[ 1 + r = \frac{(1 + \beta)(1 + g)D + (Y^o - T^o + Tr^o)}{\beta(Y^m - D - T^m + Tr^m) + (T^y - Tr^y)(1 + \beta)} \]

with the attached government budget constraint

\[ T^m = (1 + g)Tr^y + \frac{1}{1 + g} Tr^o \]

So it is possible to show that for given discount rate, debt limit, endowments and population growth rate a transfer to the middle aged and a tax to old and young reduce the interest rate, while a tax on the middle aged and a transfer to the young and old increase it. We end up with a two equations-three unknowns system, where the unknowns are the tax and transfers to be exogenously set. A simple numerical example tells us that for \( \beta = 0.99, g = 0.005 = 0.5\% \), \( Y^m = 1500, Y^o = 500, D = 150 \) the apt tax-transfers scheme would be, assuming a perfectly even amount of transfers to the old and young, to impose a tax of 215.90€ on the middle aged and to split it in two transfers of 107.95€. In this manner we direct an amount of savings provided by the middle aged to two sets of agents spending all their income: the young because they are not endowed at all and also credit constrained, the old because they are going to exit the model. Under the same parameter setting, but not allowing for a public redistribution intervention (i.e. exogenously restricting the values of taxes and transfers to zero), the entailed value for the natural interest rate would be -40%, hence confirming the fact that the solution via higher public debt is not, in the framework under scrutiny, the only way to solve the zero lower bound issue keeping the same underneath logic. Obviously, our viewpoint on public spending is rather different: it does not look at the State intervention as a way to boost savings demand for the sake of pushing up the natural rate. Rather the contrary, public expenditure can be regarded as a long run sustain for aggregate demand and growth, far from the unsatisfying secondary role attributed to it by the authors. The upshot is therefore: if public debt is only a tool permitting to overcome the troubles caused by a negative natural real interest rate, the same target can be hit by directly affecting the supply of savings. No tortuous way to arrive at suggesting an active fiscal policy appears to be needed in such a reasoning.

4 A possible alternative view on how to depict income distribution trends, private debt and stagnation

Here we will try to present some alternative view about stagnation and how to analyse it. Hein (2016), for instance, confronts the neoclassical stronghold on several aspects. A first complaint is about the almost total dearth of historical and institutional foundations in the
reprise of the debate. Apart from the unavoidable reference to Hansen, the names of renowned authors such as Hobson, Luxemburg, Sweezy, Keynes, Steindl, Kalecki, Baran, Sweezy, let alone the Classical economists, seems to have been forgotten. On the other side no enquiry into political and economic power shifts among different social group is carried out, in particular about the age of progressive financialization that we have been experiencing even prior to the unravelling of the Great Recession. Secondly, the reliance on a concept as the ‘natural interest rate’, that has been now given a new range of values to take up (the negative ones), is according to Hein highly unsatisfying. In his opinion in fact the ‘Cambridge capital controversies’ showed the more than doubtful analytical solidity of that theoretical concept. Whether positive or negative, it is then the very same existence of an interest rate equilibrating full employment savings with desired investment that is not warranted. With this it comes then naturally to question also the logical chain that sees prior savings to be translated into investment, as Keynes did; the way is paved also for a critique highlighting the dependence of the measures of potential output on the realized series.20

The starting point is according to the author the recognition of the chief role played by the dramatically enlarged role for the financial sector in advanced economies, encompassing (among other things) a shift in investors’ preferences towards rapid short term profitability and a reorganization in favour of a more deregulated labour market. Some broad policy proposal to address stagnation: nurturing public autonomous expenditure growth aimed at general purpose infrastructure, education and technological research. Those actions can also create spillover effects on the private sector investment propensity and the labour force bargaining power if they result in a thick labour market. The latter effect can in return increase the wage share and thus aggregate demand, in particular if coupled with a tight regulation of the financial sector and a progressive tax reform. The overall strategy ought then be to sustain a ‘wage led’ growth, instead of the much more problematic ‘debt led’ and ‘export led’ plans.21

Palley (2016a, 2016b) seems to prefer a different strategy: attacking the Secular Stagnation idea by accepting its premises but refuting the conclusions together with some needed postulate, as for example the crucial role of the zero lower bound on the nominal

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20 It has to be said, however, that even if timidly, the issue of hysteresis is coming back in the debate, as one can found in Summers and Fata (2016).

21 The Steindlian approach suggested chiefly looks at the demand side drain related to stagnation, with supply side elements seen as endogenous. Supply side potentiation output growth rate is not at the centre of the stage as in the mainstream Secular Stagnation debate. The distribution of income is on the other hand determined by institutional features of the economy as well as by power relations.
interest rate. In his reconstruction there is a well-defined marginal efficiency of capital schedule running also below zero, so that a negative nominal rate (for a given positive but low inflation rate) would be required to reach full employment. Then the argument goes to question the nature of the constraint on monetary policy: since as in some real world experience the Central Bank can set the nominal interest rate below zero, the problem ought to rest elsewhere. Palley’s contention is that the presence of non-produced stores of values (such as gold, commodities, land etc.), whose rate of return does not fall in negative, prevents firms from being willing to invest in the amount of capital needed to absorb unemployment.\(^2\)

In addition to this, a negative interest rate may make room for a saving pattern that is not consistent with the very existence of a natural real interest rate. It would be so since for a vertical aggregate supply curve, if the aggregate demand one bends the more backward the more the interest rate becomes negative, there could be no intersection at all between them.

Enlarging the field of discussion, what appeared to be particularly artificial in the Eggertsson and Mehrotra model was the setup of the problem: youngsters were by decree denied any access to endowments, and labour income later. It does not seem to satisfactorily deal with the insurgence of the demand for intergenerational loans, which remains the ground on which an equilibrium interest rate can exist and be negative in an economy without capital.\(^3\)

The above argument relies on a specific assumption on lending possibilities of a specific generation aiming at making room for the presence of a negative equilibrium interest rate. Yet, issues such as private sector leverage, income distribution and their wide-ranging effects on the economy are liable to be well assessed without reference to such a framework. Indeed, several studies did confront with those matters without any need to resort to the negative equilibrium real interest rate. We are going to briefly review some of them.

Barba and Pivetti (2009) were preoccupied with the rising private indebtedness of the bottom 80 per cent of the US households (going hand in hand with a plunging saving rate). The cornerstone of the paper is the description of the profound manner in which private debt and worsening income distribution are interwoven; the latter has been also providing a

\(^2\) And that, at the same time, would push the marginal efficiency of capital below zero.

\(^3\) While with simple endowments an assumption of restriction upon one generation consumption possibilities may well be understood as an attempt to provide a metaphor for a world in which some agents are credit constrained, the same seems harder to accept when actual production is introduced. Agents are subject to an intertemporal optimization problem, and they have now also the choice of how much to work, but even this aspect is left aside by assuming an inelastic middle generation labour supply. The latter assumption is less restrictive than the preliminary one: how does one can describe private indebtedness if the young cannot work? Its presence is simply assumed.
considerable portion of the aggregate demand needed to sustain the US economy in the last decades. The cost to be paid is in terms of a growing instability of the entire system.\textsuperscript{24} The part of main interest in light of our discourse is the third section (pp. 117 – 121): in it the neoclassical point of view on the subject is critically reviewed. They aptly oppose the warnings of orthodox economists about falling saving rates, because of the unhealthy effects on capital accumulation, to the welcoming reserved to the rise of private household debt, described as a Pareto improving phenomenon. According to life cycle explanations of the pattern of consumption through a lifetime, the spreading presence of efficient financial markets helped households to smooth their consumption by means of debt, tackling the short run fluctuations of accruing income and therefore engaging in a win-win operation. But such an attitude gives rise to a decrease in the saving propensity of the overall economy that, being in the log-run at potential output, would be encroaching upon its growth capability. If then, for whatever reason, there is a bind on the credit obtainable by a portion of the population (let us notice the analogy with the exogenous debt limit of Eggertsson and Mehrotra (2014)), this would however be beneficial in terms of the long run prospects of the economy, that would reach a higher steady state per capita output. The worries about the overall effect of ‘excessive borrowing’ (which, by the way, can be undertaken only supposing a departure from perfect rationality) appear hence at odds with neoclassical theory itself: if for whatever reason the private sector needs to deleverage, the validity of Say’s Law may appease one’s worries about foreseeable bad outcomes. Less consumption would be substituted by more investment.\textsuperscript{25} In the Eggertsson and Mehrotra paper the choice between the two effects of a deleveraging episode is neatly in favour of highlighting the ‘bad side’ of the story: due to a peculiar indebtedness dynamic which amplified and prolonged through time owing to the overlapping generations structure, a constraint on private sector borrowing forces the economy into a Secular Stagnation equilibrium. In light of the Barba and Pivetti dilemma, now we have another stance in which it is the long term accumulation prospect of the economy that is permanently hindered. The neoclassical authors are then, it would seem, forced to take one route only in this crossroad.\textsuperscript{26}

\textsuperscript{24} Instability that, as the authors maintain (cfr. Section 10, pp. 129 – 131), could have been much better faced resorting to public debt in place of the skyrocketing private debt.

\textsuperscript{25} Barba and Pivetti see in that worry (already arisen before the Secular Stagnation hypothesis restatement) a sort of Keynesian concern about aggregate demand, but concealed in standard neoclassical theory; it is difficult not to see such attitude even in the work of Eggertsson and Mehrotra, in which many valuable insights are forced to converge into a negative natural rate.

\textsuperscript{26} A stimulating alternative, that can be as well read in light of the ‘crossroad’ studied by Barba and Pivetti, is the approach followed by Claudio Borio, an applied economist working at the Bank of International Settlements.
Cynamon and Fazzari (2008, 2015) published some contribution about the same issues, scrutinizing the problem in a similar vein, thereby directing the attention primarily on social customs and habit formation in the society at large. Then, they formulate an interpretation which goes hand in hand with that of Barba and Pivetti (2009), saying that the desire to keep up with high income households consumption patterns in the face of stagnating real incomes drove continuously up the debt/income ratio of the bottom groups up until a ‘Minsky Moment’ got in the way. In the 2008 paper we see an ex ante study, warning on the gloomy short run prospects that the US economy had been meticulously erecting by piling up a huge amount of private debt (and providing the rationale already singled out for that evolution). Ex post instead, they describe the substantial halt to aggregate demand put by forced deleveraging. While for the new – Keynesian authors the compelling deleveraging episode proved to be capable of impairing the growth of US economy because it caused the emergence of a negative natural real interest rate, the very same phenomenon directly slows down economic performances because it creates an aggregate demand shortage, sic et simpliciter.  

One can ascertain how within an alternative approach the issue may be studied without relevant inconsistencies. Worsening income distribution, together with consumption habits grounded on social norms and customary attitudes, can explain why households facing a stagnant real wage have been continuously resorting to more debt. The latter offered a relatively easy way out to the undesired necessity to curtail current expenses, even considering the relative better position enjoyed by upper income classes that contributed to feed the willingness to ‘keep up with the Joneses’. The work’s pars construens developed (BIS) in Switzerland. In terms of our discussion, he can be said to privilege the dismissal of the rational origin of indebtedness thesis. In Borio, McCauley and McGuire (2011), Borio and Zhu (2012), Borio (2013) we can recognize the seeds of a far-reaching framework, that will later adapted to treat also Secular Stagnation more closely, as in Borio and Disyatat (2014), Borio, Disyatat, Drehmann, Juselius (2016). In the first of the ‘pre-Secular Stagnation’ discussion papers, the focus is placed on cross border credit flows, with particular interest in the US and Eurozone economies. In the policy implications section they convey the message that patterns of unusual growth of both internal credit from outside and external credit financed by domestic institutions have to be closely monitored. The second contribution underscores the commonly missing concern about the ‘risk-taking channel’: a strategy of lowering interest rates can endogenously give rise to risk taking behaviours, optimistic intertemporal assessments about investments, balance sheet overconfident restructuring, biased risk premium requirements, and so on. The risk is of amplifying busts when trying to get back to orthodox policies after a downturn, and the instability of the system when setting lower rates to prevent it. The third paper signed by Borio alone offers a comprehensive assessment of the ‘financial cycle’. The most interesting insight provided by the Italian economist is in our opinion the overt statement in favour of conceiving the financial sector as an autonomous entity capable of creating new credit (not only distributing savings), and that can exhibit a somehow independent own long term cycle, with a longer duration with respect to other sectors.  

Demand shortage which is not absent from the other viewpoint, but that therein it is due to the fact that since the negative rate is not attainable, savers are not sufficiently stimulated to cover the hole in demand left by constrained borrowers.
therein reinforces the belief that outside the Secular Stagnation framework the very same factors described by the neoclassical attempts may find a more suitable place to be studied.

A natural way to treat the issue along the lines hitherto explored and within an alternative theory of growth has been recently analysed by Pariboni (2016). His effort has been directed towards a formalization of a so called ‘supermultiplier’ in which the autonomous consumption brought about by consumer credit demand (accommodated by private banks endogenous credit creation) is the principal driver of aggregate demand evolution and capital accumulation. Investment is thus seen as a component of demand permitting firms to be endowed with the adequate level of capacity that enables them to satisfy demand at a normal level of capacity utilization. The sustainability of the process depends on the differentials between consumers’ autonomous demand and the growth of the other components, in particular in that example capitalists’ autonomous demand and public expenditure (Pariboni 2016, section 3, pp. 222 – 228). The analysis furnishes also, though indirectly, a realistic and feasible way out to the issues raised by the negative real natural rate of interest. Accumulation is treated separately from distribution, and a sudden collapse of the private debt obtainable by household results in a slower rate of growth of demand, without any need to resort to peculiar conditions providing the friction that ought to explain the disequilibrium situation.

5 Conclusions
Despite the noteworthy effort of Larry Summers and the ensuing group of economists attempting to formally model the concept of Secular Stagnation, there seems to remain some open issue in this literature. The notion of a negative natural real interest rate appears to give rise to several doubts, that become the more worrying the more the fiscal policy suggestions provided by these economists are related to it. On the other hand, it looks like that the very same conclusions, or even stronger ones for what regards an active fiscal policy, can be offered from outside that strand of theoretical analysis. In particular, dropping the natural interest rate as an unavoidable analytical tool permits to back up the reliance on a massive public intervention that could lift the economy out of the stagnation we are witnessing.

28 The latter is made fully endogenous and dependent on the growth of the autonomous components of aggregate demand; besides consumers’ credit one may model mainly net exports and government expenditure. An empirical work surveying the effects of those components and their associated trends on the development of major Western economies is to be found in Pariboni and Girardi (2016).
6 References


