

Some thoughts on secular stagnation, loanable funds and the ZLB

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Introduction

I have read the various conference papers and am struck by the fact that many use the (omnipresent New-Keynesian) model of an aggregate loanable funds market to diagnose secular stagnation and investigate possible remedies. This is for instance the approach of Rachel & Smith (both of the Bank of England) who try to explain the secular decline in real interest rates; of Lu & Teulings (Cambridge University), who argue that there is a demographic imbalance (a large cohort of people born in the 1950s and 1960s, who are saving much for their retirement; and a smaller cohort of people born during the 1970s and later, the period of the “pill”) which explains a rise in savings which depresses the natural interest rate below the ZLB; and it is also the model of choice of Benigno and Fornarno as well as Eggertson, Mehotra and Robbins.

The premise of the ‘loanable funds model’ is that savings constitute new loanable funds (or LF); banks must first mobilise these savings in order to have the LF to issue new loans or credit. Banks are thus reduced to mere intermediaries between “savers” (who provide LF-supply) and “investors” (who demand LF). Banks, in this approach, do not create money or *pre-finance* investment by new money. We live in a non-monetary (corn) economy. Savings (which is LF-supply) depend positively on the interest rate, while investment (LF-demand) is a negative function of the interest rate. This is textbook stuff, as is illustrated by Greg Mankiw’s (1997, p. 63) exemplary explanation illustrates:

“In fact, saving and investment can be interpreted in terms of supply and demand. In this case, the “good” is loanable funds, and its “price” is the interest rate. Saving is the supply of loans – individuals lend their savings to investors, or they deposit their saving in a bank that makes the loan for them. Investment is the demand for loanable funds – investors borrow from the public directly by selling bonds or indirectly by borrowing from banks. [...] At the equilibrium interest rate, saving equals investment and the supply of loans equals the demand.”

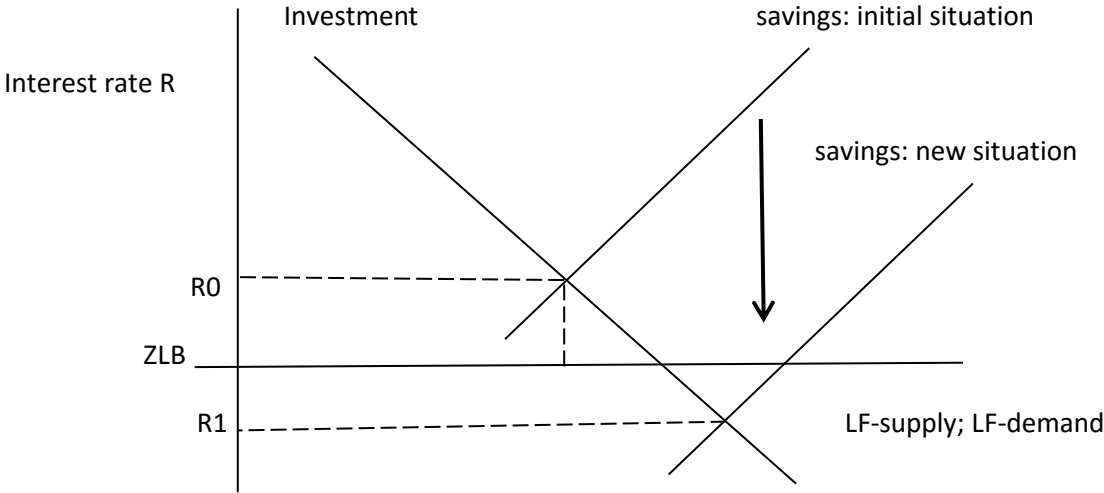
But the loanable funds market is also at the heart of sophisticated DSGE models (as is the case in some of the conference papers). This is what Michael Woodford (2010, p. 26) has to say on the LF-market:

“The loan supply curve LS shows the amount of lending L that ultimate savers are willing to finance (by refraining from expenditure themselves) for each possible value of the interest rate received by savers.”

To see how we can get secular stagnation in a loanable-funds world (as this is the argument of Rachel & Smith; of Lu & Teulings; Benigno & Fornarno; and Eggertson, Mehotra and Robbins), we need to

make a case (plausible or not) that the savings-schedule and the investment-schedule have shifted considerably. Specifically, this is what Rachel & Smith, Lu & Teulings and Eggertson *et al.* claim, they argue that the savings schedule has shifted down – as is illustrated in Figure 1:

Figure 1
The loanable funds market: a savings glut causing secular stagnation



In the initial situation, the LF-market clears at a positive interest rate $R_0 > 0$. Savings equal investment, or LF-supply matches LF-demand, and in this – happy – equilibrium outcome, the economy can grow along some steady-state path. Now, we introduce a shock, say, an ageing population (a demographic imbalance) or an Asian savings glut, due to which the savings schedule shifts down. Equilibrium in the new situation should occur at R_1 which is negative; but it can't happen because of the zero-lower bound (ZLB): the nominal interest cannot decline below zero. Hence R is stuck at the ZLB and savings exceed investment, or $LF\text{-supply} > LF\text{-demand}$. This is a disequilibrium outcome involving excessive savings (relative to investment), which will depress growth. What we have is an over-supply of savings (relative to a shortage of – investment – demand). *Ergo*: we arrive at secular stagnation and we can blame it on demography (*i.e.* the pill), over-saving Asians, or depressed growth expectations (which is always a useful “throw in”).

Loanable funds, the virtue of thrift and the Protestant Ethic

The appeal of the loanable funds analysis lies in the fact that it can be presented in digestible form in a simple diagram (as Figure 1), while its micro-economic logic matches the neoclassical belief in the virtue of thrift and Weber's Protestant Ethic which emphasize austerity, savings (before spending!) and delayed gratification as the path to bliss. The problem with this model is that it is wrong (see: McLeay, Radia and Thomas 2014a, 2014b; Lindner 2015; Jakab and Kumhof 2015; Werner 2014; Taylor 2016; Deutsche Bundesbank 2017). Wrong in its conceptualisation of banks (which are not just

intermediaries pushing around existing money, but which can create new money ex nihilo), wrong in thinking that savings or LF-supply have anything to do with “loans” or “credit”, wrong in its utter neglect of finance, financialization and financial markets, wrong in its assumption that the interest rate is some “market-clearing” price (the interest rate, as all central bankers will acknowledge, is the principal instrument of monetary policy), and wrong in the assumption that the two schedules – the LF-supply curve and the LF-demand curve – are independent of one another (they are not, as Keynes (1936, 1937, 1939) already pointed out). I wish to briefly elaborate these five points. I know that each of these criticisms is known and I do not expect that any of this will make people reconsider their approach, analysis, diagnosis and conclusions. I only think that it is important – for the record – that these criticisms are raised and not shoved under the carpet. The problem of secular stagnation is simply too important to be left mis-diagnosed.

Caution: Five key points to consider before conjuring up the loanable funds market !

Point 1: Loanable funds supply and demand are not independent functions

Let me start with the point that the LF-supply and LF-demand curve are not two independent schedules. Figure 1 presents savings and investment as functions of only the interest rate R. But clearly, both savings and investment are affected by (changes in) income and (changes in) income distribution as well. That is, income and income distribution are “shifter variables” in terms of Figure 1. Let me postulate the following savings function and investment function, which are compatible with the schedules drawn in Figure 1:

$$(1) \quad S = \sigma Y + \alpha R$$

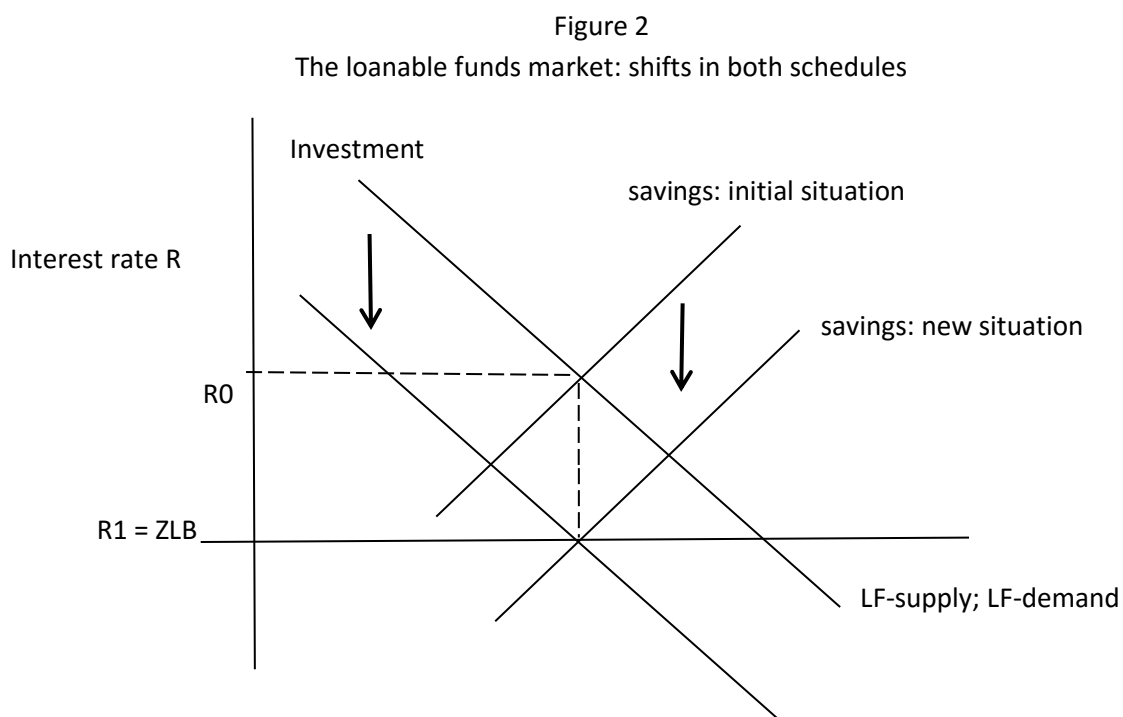
$$(2) \quad I = I_0 + \gamma Y_e - \beta R$$

Savings depend positively on income Y. Investment depends positively on autonomous investment I_0 and on expected income Y_e , for instance because of higher profits or via an accelerator effect. If we observe, as in Figure 1, that the LF-supply curve shifts downwards, this must mean that (for given R_0) people are now saving more. This could be due to a higher income Y, but we know that this is not the case, as Y is not growing much or at all (due to secular stagnation). Hence, the shift of the LF-supply schedule must be due to a higher σ – this is where the demographic imbalance kicks in, for example. But then higher σ (out of stagnant income Y) means that consumption and aggregate demand AD will go down. Rational firms will expect future income (Y_e) to decline, and hence (for given R_0) the LF-demand schedule must shift downwards as well. Autonomous investment (I_0) may fall as well. This point was made by Keynes (1936):

“The classical theory of the rate of interest [the loanable funds theory] seems to suppose that, if the demand curve for capital shifts or if the curve relating the rate of interest to the amounts saved out of a given income shifts or if both these curves shift, the new rate of interest will be given by the point of intersection of the new positions of the two curves. But this is a nonsense

theory. For the assumption that income is constant is inconsistent with the assumption that these two curves can shift independently of one another. If either of them shift, then, in general, income will change; with the result that the whole schematism based on the assumption of a given income breaks down ... In truth, the classical theory has not been alive to the relevance of changes in the level of income or to the possibility of the level of income being actually a function of the rate of the investment.”

Let me try to be specific and illustrate this using Figure 2. Suppose there is an exogenous (unexplained) rise in σ ; hence, savings increase and Y_e gets depressed and both schedules shift down. The outcome is that there is no change in actual savings and actual investment, the only change is that the ‘natural’ interest is $R_1 = ZLB$. Figure 2 is, in fact, consistent with the empirical analysis (and their Figure of global savings and investment) of Rachel & Smith. Let me be clear: Figure 2 is not intended to suggest that the loanable funds market is useful and theoretically correct. The point I am trying to make is that income changes and autonomous demand changes are much bigger drivers of both investment and saving decisions than the interest rate. Market clearing happens here – as Keynes was arguing – because the level of economic activity and income adjust, not because of interest-rate adjustment.



Point 2: Savings do not fund investment, as commercial banks create money

This point concerns the fact that modern banks are not just intermediaries of already-really-existing money, but are money creating institutions. This means that banks can pre-finance investment, as was noted by Schumpeter early on and elaborated by Keynes, Kaldor, Kalecki, Minsky and others, and are

not constrained by the availability of loanable funds (or savings). This in turn means that there is no loanable funds market in which scarce savings “constrain” (through interest rate adjustments) the demand for loans (or investment). This is now recognised by central banks including the Bank of England – and this makes it rather remarkable that Rachel & Smith (both from the BoE) continue to frame their analysis in terms of the non-monetary LF-market.

Their BoE colleagues Zoltan Jakab and Michael Kumhoff (2015) reject the loanable-funds approach in favour of a model with money-creating banks; their comparative analysis shows that banks and bank financing have much bigger macroeconomic impacts when one recognizes that banks are money-creating institutions. The point is that causality is turned upside-down in a monetary economy. Banks pre-finance investment; investment creates incomes; people save out of their incomes; and at the end of the day, ex-post savings equal investment. This is what Jakab and Kumhoff (2015) write:

“Furthermore, if the loan is for physical investment purposes, this new lending and money is what triggers investment and therefore, by the national accounts identity of saving and investment (for closed economies), saving. Saving is therefore a consequence, not a cause, of such lending. Saving does not finance investment, financing does. To argue otherwise confuses the respective macroeconomic roles of resources (saving) and debt-based money (financing).”

We don’t need “savings” (corn) to make possible investment – or, in contrast to the Protestant Ethic, banks allow us to have “gratification” even if we don’t have been austere. All this also implies that we cannot draw a savings-investment cross as in Figure 1, as if the two variables are independent. They are not. We can illustrate this using equations (1) and (2). Combining (1) and (2) gives “equilibrium” income:

$$(3) \quad Y^* = [I_0 + \gamma Y_e - (\alpha + \beta)R] / \sigma$$

Y^* will generally be lower than the full-employment level of income. Equilibrium ex-post savings are:

$$(4) \quad S = [I_0 + \gamma Y_e - \beta R] = I$$

One can see from (4) that investment “determines” savings, since S has to adjust to all autonomous or exogenous variables (including the monetary policy instrument R). Actually, it can be seen from (4) that the interest-rate sensitivity of savings (captured by coefficient α) is immaterial to the equilibrium outcome of S . This is just another way of stating that savings are a *consequence* of credit-financed investment – precisely as Jakab and Kumhoff (2015) write.

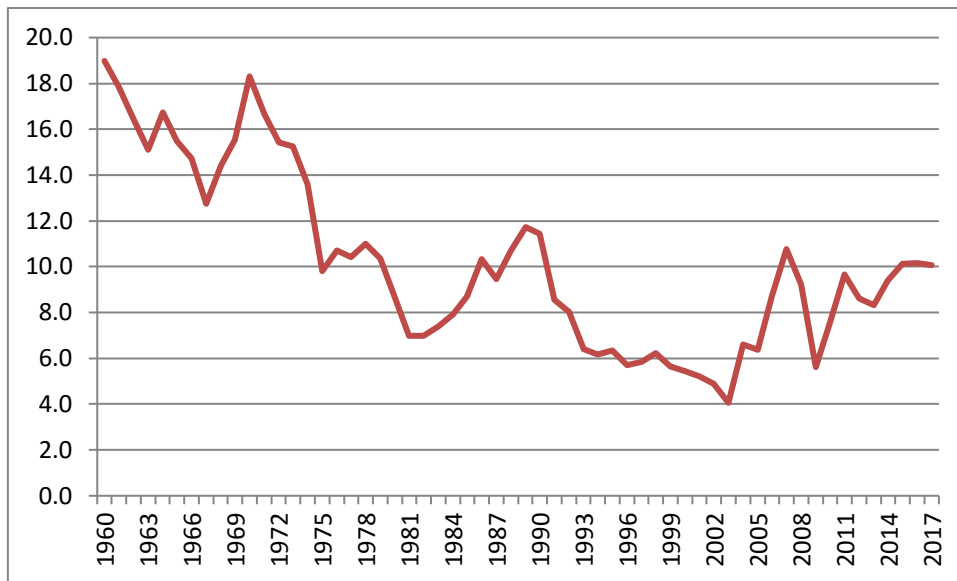
Let me go back to the conference papers which seem to argue that savings increased. This would mean in my simple Keynesian scheme that σ rises. This could indeed be due to an aging population (as *per* Lu & Teulings) or (probably more important) due to higher inequality (as *per* Rachel & Smith). A higher σ reduces the multiplier ($1/\sigma$) in equation (3), and hence reduces equilibrium income Y^* . If I assume

that as a result expected income Y_e falls, then from (4) we can see that ex-post savings must decline. However, this is not what Lu & Teulings and Rachel & Smith observe: Lu & Teulings claim that savings have increased, Rachel & Smith claim that (global) savings stayed more or less unchanged. Let me consider the two papers separately.

If we follow Rachel & Smith and accept that investment and savings did not change much, then (from (4)) this could be understood as follows: the positive impact on investment of the decline in R (down to the ZLB) was offset by a decline in expected income Y_e (caused by higher σ and slower growth). While this is possible, it does not explain secular stagnation – because investment is not declining (as is shown in Figure 2). We have an “explanation” why the interest rate R_1 has fallen to the ZLB, but lack a convincing explanation why there is stagnation, since investment (and hence savings) did not decline.

In contrast, Lu & Teulings argue that a higher σ is depressing both investment, Y^* and *ex-post* savings (compared to much higher *ex-ante* savings which cannot be measured) – although they get the causality wrong. Their argument focuses on Germany (and Japan) as the prototype of an ageing society. Their argument is that savings rise *ex-ante* (which cannot be measured) and then this depresses income and growth, supposedly because the savings glut cannot be transformed into productive investment because the interest rate has gotten stuck at the ZLB (as illustrated in Figure 1). While this is wrong (for reasons given above), their argument could – in principle at least – still work as follows. The increase in *ex-ante* savings means that people have a higher savings propensity: hence σ increases. This reduces Y^* and hence actual *ex-post* saving will be lower than *ex-ante* savings. However, if we consider Figure 3 which presents evidence on σ (defined as the average personal propensity to save), then we can see that σ did not rise in Germany. The personal savings ratio in Germany was around 17% in the 1960s and has come down to 4% in 2003 and then increased somewhat to around 10% in 2015-17. It appears as if Germany must have suffered from a (net) savings glut in the 1960s, but we know that interest rates were high then (and not at the ZLB), while investment was high and Germany was enjoying its *Wirtschaftswunder*. The net national savings propensity came down in a massive way during 1960-2017: so where is the evidence of a large enough increase in σ which could depress Y^* ? And where is plausible evidence of higher *ex-ante* savings? Not in the paper of Lu & Teulings as far as I could make out.

Figure 3
Germany: Net National Savings (% of GDP), 1960-2017



Source: calculated from the AMECO database.

Point 3: the interest rate is a monetary policy instrument (instead of a market-clearing price)

In loanable funds theory, the interest rate is a market price, determined by LF-supply and LF-demand. In reality, central banks use the interest rate as their principal policy instrument. It takes effort and a considerable amount of sophistry to match the loanable funds theory and the usage of the interest rate as a policy instrument. Once one acknowledges the empirical fact that commercial banks create new money *ex nihilo*, which means money supply is endogenous, the model of an interest-rate clearing loanable funds market becomes untenable. Or as BoE economists Jakab and Kumhoff (2015) argue: “modern central banks target interest rates, and are committed to supplying as many reserves (and cash) as banks demand at that rate, in order to safeguard financial stability. The quantity of reserves is therefore a consequence, not a cause, of lending and money creation. This view concerning central bank reserves [...] has been repeatedly described in publications of the world’s leading central banks.”

Other BoE economists have also rejected the loanable funds model as a wrong description of how the financial system works (McLeay *et al.* 2014a, 2014b). Werner (2014) provides empirical evidence of the money creation process by one individual commercial bank. And the Deutsche Bundesbank (2017) leaves no modicum of doubt as to how the banking system works and money is created in actually-existing capitalism:

“Dabei hängt die Fähigkeit der Banken, Kredite zu vergeben und Geld zu schaffen, nicht davon ab, ob sie bereits über freie Zentralbankguthaben oder Einlagen verfügen. Vielmehr wird der Geldschöpfungsprozess durch eine Reihe von ökonomischen und regulatorischen Faktoren begrenzt.”

It is not a secret therefore that the loanable funds approach is fallacious (Lindner 2015; Taylor 2016; Jakab and Kumhof 2015). It appears that academic economists who stick to the loanable-funds approach are behind the curve. Central bankers understand how things actually work, while macroeconomists keep refining their Ptolemaic model of a loanable funds market. Keynes famously wrote that “Practical men who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back.” It appears that in 2017 things happen to be the other way around: academic economists who believe themselves to be free thinkers are caught in the stale theorizing of a century past.

Point 4: the manifest absence of finance and financial markets

The next criticism concerns the absence of finance and financial markets. What the various papers do not acknowledge is that the increase in savings (mostly due to heightened inequality) is not channeled into higher real-economy investment, but is actually channeled into much more lucrative financial (derivative) markets. Big corporations like Alphabet, Facebook and Microsoft are holding enormous amounts of liquidity and IMF and BIS economists have documented the growth of global institutional cash pools, now worth \$5 to 6 trillion and managed by asset or money managers in the shadow banking system (Pozsar 2011; Pozsar and Singh 2011; Pozsar 2015). Today’s global economy is suffering from an unprecedented “liquidity preference” – with the cash safely “parked” in short-term (over-) collateralized lending deals in the repo-market. The liquidity is used to earn a quick buck in all kinds of OTC derivatives trading, including forex swaps, options and interest rate swaps. The global savings glut is the same thing as the global overabundance of liquidity (partying around in financial markets) and also the same thing as the global demand shortage – that is: the lack of investment in real economic activity, R&D and innovation.

The low interest rate is important in this context, because it has lowered the opportunity cost of holding cash – thus encouraging (financial) firms, the rentiers and the super-rich to hold on to their liquidity and make (quick and relatively safe & high) returns in financial markets. Added to this, we have to acknowledge the fact that firms are paying out their profits to shareholders as dividends or using it to buy back shares (Lazonick 2017) – this damages real investment and innovation, and adds further fuel to financialization. If we acknowledge these roles of finance and financial markets, then we can begin to understand why investment is depressed – in terms of both Io and Ye in my model. The outcome is stagnation – simply because (through two decades of financial deregulation) we have created a rentiers’ delight, rather than following Keynes’ advice to go for the euthanasia of the rentiers (*i.e.* design policies to reduce the excess liquidity).

Point 5: confusing savings with “loans”, or stocks with flows

“Economics is the science of confusing stocks with flows,” Michał Kalecki famously wrote. If anything, Kalecki’s comment applies to the loanable funds model. In the loanable fund universe, as Mankiw writes and as most conference papers argue, saving equals investment and the supply of loans equals the demand at the equilibrium interest rate. But savings and investment are *flow* variables, whereas the supply of loans and the demand for loans are *stock* variables. Simply equating these flows to the corresponding stocks is not considered good practice in stock-flow-consistent macro-economic modelling. It is incongruous.

The market for loans (or the credit market) can, in principle, be conceptualized as a market in which the interest rate balances loan supply and loan demand. Doing so, we are assuming ‘perfect competition’ which is not at all realistic in view of the “too-big-to-fail” oligopolistic banks which operate the credit market in reality. But that this is unrealistic is not the main point. The key point is that even if the interest rate clears “the stock of loan supply” and “the stock of loan demand”, there is no reason whatsoever why the same interest rate would *simultaneously* balance savings (*i.e.* the increase in loan supply) and investment (*i.e.* the increase in loan demand). So what is the theoretical rationale of assuming that some interest rate is clearing the loanable funds market (which is defined in terms of *flows*)?

Total U.S. loans are equal to around 350% of U.S. GDP (if we include debts of financial firms). Net savings amount to 3-4% of U.S. GDP. These numbers led James Meade to conclude, already decades ago, that the causal story told to explicate the “investment = savings accounting identity” resembles the picture of “a dog called saving wagged its tail labelled investment.” Lance Taylor (2016) presents the basic macroeconomic flows and stocks for the U.S. economy to show how and why loanable funds macro models do not fit the data – by a big margin.

But the key point remains the fallacy of assuming ‘causality’ from (available) savings → allowing banks to issue loans for investment. Savings and investment adjust because of changes in the levels of economic activity, income and demand – with savings being the consequence of (autonomous) investment as in equations (3) and (4). No interest rate adjustment mechanism is strong enough to bring about this (ex-post) balance in terms of *flows*, because the interest rate determination is overwhelmed by changes in loan supply and demand *stocks*. There is – hence – no natural rate of interest. Highlighting the loanable funds fallacy, Keynes wrote in “The Process of Capital Formation” (1939):

“Increased investment will always be accompanied by increased saving, but it can never be preceded by it. Dishoarding and credit expansion provides not an alternative to increased saving, but a necessary preparation for it. It is the parent, not the twin, of increased saving.”

The puzzle is, as Lance Taylor (2016, p. 15) concludes “why [New Keynesian economists] revert to Wicksell on loanable funds and the natural rate while ignoring Keynes’s innovations. Maybe, as

[Keynes] said in the preface to the General Theory, “The difficulty lies not in the new ideas, but in escaping from the old ones (p. viii)”

Conclusion: an alternative explanation of secular stagnation which does not need the loanable funds market or the ZLB

In my paper “The new normal: demand, secular stagnation and the vanishing middle class” I offer an alternative explanation of secular stagnation. Secular stagnation means that the economy’s potential growth has declined, putting the U.S. on a slow-moving turtle. This, in turn, must mean that the economy’s productivity growth has slowed. The productivity growth slowdown is usually measured in terms of the long-run decline in TFP growth. Using national and growth accounting for the U.S. economy (1948-2016) I show that the decline in aggregate TFP growth has been brought about by a decline in real wage growth and/or a decline in labour productivity growth. When we speak of secular stagnation, we must explain these two symptoms. In my view, the secular stagnation of real wages is the key motor force of aggregate decline in the U.S. Labour market deregulation and the demise of unions, bargaining institutions and social overhead structures has created – what Greenspan called – workers traumatized by job and income insecurity and often burden by debts. The result has been subdued or no wage claims, creating a low-wage-growth mirage known as “The Great Moderation”, which turned out to be not so great. The suppression of wage growth depressed aggregate demand and this slowed down capital accumulation as well as capital deepening (a major concern of the Eggertson, Lancastre and Summers conference paper). Labour productivity growth will or even must come down in an economy in which average (median) real wage growth is permanently suppressed, because firms have less incentive to invest in labour-saving technical progress. Labour productivity growth is endogenous – and significantly influenced by aggregate demand (shortage) and wage pressure.

In addition, I find that the U.S. is turning into a dual economy. Part of the U.S. economy, mostly manufacturing, information and FIRE, features steady non-declining productivity growth; this one-third of the U.S. economy is not suffering from the diseases of secular stagnation. But in one-third of the U.S. economy, consisting of private services (in fast-food; cleaning; guarding; caring), productivity growth has declined; this is where the secular stagnation is happening. The dualism also shows up in rising wage inequality and a polarization in jobs and income, or what Peter Temin (2017) has called “the vanishing of the middle class”. The wage polarization is clearly associated with productivity polarization between “dynamic” (often oligopolistic) industries (manufacturing, information, FIRE) and “stagnant” industries (in private services). The wage polarization means heightened inequality, which creates an aggregate demand shortage (as also *per* Rachel & Smith) and this slows down both output and labour productivity growth.

I set up a Baumol-like model of a dual economy featuring a dynamic and stagnant sector. Using this model, I show that an exogenous (technology-push) increase in labour productivity growth (due to say robotization) in the dynamic sector may lead to a decline in aggregate labour productivity growth in the economy. There are two mechanisms at work here. First, if wages don't increase in line with higher productivity, the robotization will push workers out of dynamic-sector jobs and into stagnant-sector employment; the stagnant sector wage will fall, further depressing aggregate demand. Stagnant-sector productivity growth will decline as well. Second, the demand shortage (which arises) constrains dynamic-sector productivity growth by limiting the possibilities for a further division of labour. The model dynamics suggest that unbalanced growth (and polarization) between stagnant and dynamic sectors is likely and closely associated with premature secular stagnation.

To halt the unbalanced growth and secular stagnation, we need much more than monetary policy. The point is not that the economy is stuck at the ZLB. The point is that there is a structural demand shortage which arises from (i) depressed real wage growth; (ii) technology-driven polarization between stagnant and dynamic industries; and (iii) an absence of adequate macro policies. Reducing the interest rate is not the magic bullet. What is needed instead is much more complex and encompassing: a Kaldor-type incomes policy (in many ways similar to the Meidner/Rehn model), structural fiscal-cum-industrial policy (in addition to fiscal stimulus of aggregate demand), supportive monetary policy, a strengthening of job and income security, and a socialization of investment (by an 'entrepreneurial state') in areas of education, health, transportation and energy—to get away from the current 'private affluence and public squalor'. More specifics can be found in Storm (2017).

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