

Why Negative Interest Rate Policy (NIRP) is Ineffective and Dangerous¹

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Abstract

NIRP is quickly becoming a consensus policy within the economics establishment. This paper argues that consensus is dangerously wrong, resting on flawed theory and flawed policy assessment. Regarding theory, NIRP draws on fallacious pre-Keynesian economic logic that asserts interest rate adjustment can ensure full employment. That fallacious logic has been augmented by ZLB economics which claims times of severe demand shortage may require negative interest rates, which policy must deliver since the market cannot. Regarding policy assessment, NIRP turns a blind eye to the possibility that negative interest rates may reduce AD, cause financial fragility, create a macroeconomics of whiplash owing to contradictions between policy today and tomorrow, promote currency wars that undermine the international economy, and foster a political economy that spawns toxic politics. Worst of all, NIRP maintains and encourages the flawed model of growth, based on debt and asset price inflation, which has already done such harm.

Keywords: Negative interest rate policy, zero lower bound

Revised June 24, 2016

1. Introduction

In the wake of the Great Recession and ensuing Great Stagnation, central banks have increasingly embraced the idea of setting negative interest rates by charging commercial banks for reserves placed on deposit with the central bank. The list of central banks that have already adopted this policy includes the Bank of Japan, the European Central Bank, the Swiss National Bank, the Swedish Riksbank, and the Danish Central Bank.

Negative interest rate policy (NIRP) is now becoming part of consensus

¹ This paper was commissioned by the Private Debt Project and is published on their web site at <http://privatedebtproject.org/view-articles.php?Why-a-Negative-Interest-Rate-Policy-NIRP-is-Ineffective-and-Dangerous-20>. It is based on a longer technical working paper titled “Why ZLB Economics and Negative Interest Rate Policy (NIRP) are Wrong: A Theoretical Critique”. My thanks to Sherle Schwenninger and Jacob Feygin for many helpful comments and editorial suggestions. All errors are my responsibility.

mainstream macroeconomics. In a December 2015 interview, former Federal Reserve Chairman Ben Bernanke said the Federal Reserve was likely to add negative interest rates as a policy tool. In February 2016 testimony before the US House of Representatives, Federal Reserve Chairwoman Janet Yellen stated negatives were still on the policy table. And in April 2016 the IMF jumped on to the negative interest rate bandwagon when Managing Director Lagarde declared they are a net positive to the global economy.

This policy paper explores the new NIRP consensus and argues it is profoundly wrong. The new consensus embodies a double failure. First, negative interest rates are likely to have counter-productive impacts on aggregate demand (AD). Second, NIRP actively encourages the continuation of the debt-led asset price inflation model of economic growth that has already caused so many problems. Not only will NIRP not solve the problems posed by the Great Stagnation, it risks aggravating them. The implication is mainstream economics has it wrong - once again!

2. The “modern” theory behind NIRP

NIRP represents an elaboration of the theoretical thinking that has shaped macroeconomic policy over the past thirty-five years. It continues the dependence of policy makers on interest rates as the critical lever for stabilizing the economy and ensuring full employment. It simply extends this framework to the embrace of negative rates, which central banks must set in times of demand shortage and low inflation as the market cannot due to the zero lower bound (ZLB) to nominal interest rates.

Thus, while NIRP appears revolutionary, its analytical foundation rests on the pre-Keynesian macroeconomic reasoning that regained ascendancy in the 1970s. That line of thinking was celebrated with claims of a “Great Moderation” (1980 – 2007) which

prevailed prior to the financial crisis of 2008. Proponents of this narrative argued that macroeconomic performance, as measured by inflation and the frequency and depth of recessions, had been greatly improved after 1980 owing to improvements in the conduct of monetary policy.

According to Great Moderation boosters, two major changes were responsible for this improvement. First, at the theoretical level, there was a restoration of pre-Keynesian classical macroeconomic ideas which described the economy as stable and self-adjusting, moving relatively quickly back to full employment in the event of economic disturbances. According to classical macroeconomics the real interest rate is the essential macroeconomic price and it adjusts to clear the loanable funds market, ensuring that full employment saving equal full employment investment. Second, at the policy level there was a shift to targeting low rates of inflation, conducted via independent central banks, using clear credible interest rate rules. Policy identified an inflation target and then set a nominal interest rate consistent with the inflation target and the full employment loanable funds real interest rate.

Anytime the economy got into trouble, monetary policy engineered a lower nominal interest rate, which lowered the real interest rate, given an unchanged inflation target. That stimulated investment and lowered saving. Moreover, to the extent that lower interest rates increased asset prices, that was also beneficial since higher asset prices encouraged consumption which lowered saving and encouraged investment.

This policy response was adopted in the recessions of 1991-2 and 2001-2. It also constituted the immediate response to the financial crisis of 2007-8, the hope being that lower rates would quickly reflate asset prices and stimulate demand.

NIRP began to enter the picture when the policy interest rate was pushed to zero – the so-called zero lower bound (ZLB). In the first instance, hitting the ZLB prompted central banks to engage in quantitative easing (QE), which involves purchasing longer-dated bonds. When that failed to adequately stimulate the economy, NIRP became the next policy of choice based on simple extrapolative logic. If lower interest rates stimulate AD, then lowering rates into negative territory should do the same.

3. Economists have forgotten Keynes' message that interest rates may not solve demand shortage

The idea that the ZLB explains stagnation has become mainstream received wisdom and has significantly informed policy thinking about negative interest rates. ZLB economics is a mix of classical and neo-Keynesian (sometimes called bastard Keynesian) economics. The classical dimension concerns its thinking about interest rates and their role in the economy. The neo-Keynesian dimension is the belief that a “rigidity” (i.e. the ZLB) prevents market economies from automatically self-adjusting to full employment. Both aspects of ZLB economics are wrong, showing why mainstream macroeconomics gets it wrong.

Keynes' (1936) *General Theory* fundamentally challenged classical macroeconomics and its theory of interest rates. First, Keynes challenged the classical claim that interest rates are determined by the supply (saving) and demand (investment). Instead, Keynes proposed that interest rates were determined according to his liquidity preference theory. Asset prices and interest rates adjust to ensure asset demands (including the demand for money) equal asset supplies.

Second, Keynes argued output, rather than interest rates, adjusts to equalize

aggregate demand (AD) and aggregate supply (AS). That is Keynes' famous theory of demand-determined output. If AD exceeds AS, output expands until demand equals supply: if AD is less than AS, output contracts until the two are equal. According to Keynes, it is the level output (i.e. income) that adjusts to equilibrate the goods market, not the interest rate. Of course, interest rates may be affected as output adjusts owing to the impact that changed income has on portfolio demands for financial assets, but that interest rate impact is a secondary induced effect.

Third, for Keynesians, it is possible that saving and investment may not respond to lower interest rates. It is here that the “bastard” dimension in ZLB economics creeps in and obfuscates the debate by asserting the problem is a rigidity that blocks lower interest rates, rather than acknowledging the inherent limited effectiveness of lower interest rates. For Keynesians, however, lower interest rates may not increase AD if saving and investment are interest insensitive. Consequently, no matter how low the interest rate, AD does not increase because investment does not increase and saving does not fall. In effect, there is no interest rate that can deliver full employment output.

It is this line of thinking that has gotten lost in contemporary mainstream economics because of the re-embrace of classical “loanable funds” interest rate theory. This has major analytical and policy implications. First, the ZLB does not explain stagnation. Even if interest rates were to fall, stagnation would persist. That means another theory of stagnation is needed. Second, it means the policy of negative interest rates recommended by ZLB economics will be ineffective. In fact, as argued below, it may be worse than ineffective: it can be harmful.

There is a very simple, intuitive reason for why negative interest rates have no

effect on investment. Once a firm's return on investment hits zero, it will prefer to use any additional financing to acquire non-produced assets whose return is still positive. Even if central banks make the cost of finance negative, firms will still refuse to invest more into value added assets and will prefer to acquire non-produced assets - such as land, commodities like gold, patents and copyrights, and technical know-how and organizational capital embodied in existing firms acquired through mergers.

Monetary policy works by decreasing the money market risk free interest rate, lowering the price of credit and the return on money. That induces firms to change the composition of their financing and asset holdings. A negative interest rate will have several effects. First, firms will switch from equity finance to loan finance because loan finance is cheaper. They can do this via debt financed share buybacks and special dividends to shareholders, which is exactly what has been happening since the 2008 recession. The result is increased corporate indebtedness and more leveraged balance sheets.

Second, even though the interest rate is negative, firms will not undertake additional investment once the return to investment falls to zero. That is because firms can do better using credit to purchase existing non-produced assets. Negative interest rates will produce debt-financed merger and acquisition booms that bid up existing asset prices, but they will not increase new investment. The problem is not the ZLB: it is that negative interest rates cannot spur new investment given the presence of other assets with higher returns.

4. Other structural factors limiting investment

This fundamental problem is compounded by other problems overlooked by mainstream

economists. First, economists assume additional capital can always be put to use because they assume smooth substitutability between capital and labor. In their view, it is impossible to have excess capital because excess capital can be put to work by firing labor. However, if production is characterized by fixed proportions of capital and labor, it is possible to have excess capacity and no economic need for additional investment.

Second, capital is long-lived and lumpy. The willingness to use low interest rate loans to finance investment today depends on expectations of future interest rates. Even if today's loan rates are negative, firms may be unwilling to borrow to finance relatively low yielding investment today if they think that those investment projects will be saddled with future high interest costs.

5. Can negative interest rates reduce saving?

The other side of the Keynesian demand shortage problem is saving. That raises the question if negative interest rates cannot increase investment, can they increase demand by reducing saving? Here too, the answer is probably not.

First, according to consumption theory, a lower real interest rate gives rise to both positive substitution and negative income effects. Consequently, the theoretical effect of lower real interest rates on consumption is ambiguous. The conflict between substitution and income effects is easily understood. Negative interest rates provide an incentive to save less and consume now. Balanced against that, negative interest rates lower future income and total lifetime income, which gives an incentive to increase saving to compensate for that loss.

Second, a negative nominal interest on money holdings (i.e. deposits) can be thought of as a form of tax on deposits. That lowers real wealth and will generate a

negative “wealth effect” on consumption spending and AD. Balanced against this, there will be a positive wealth effect on AD owing to the portfolio shift away from money to other assets that increases the price of existing assets.

In sum, economic theory says the net impact of negative nominal interest rates on saving and AD is ambiguous. Negative interest rates could reduce saving, but they could also increase saving.

6. The effect of NIRP on AD reconsidered

The above arguments have profound implications. NIRP advocates simply assume that lower interest rates will increase AD by increasing investment and lowering saving. That assumption is wrong.

The impact of lower interest rates on demand may initially be positive, but the impact likely steadily diminishes and eventually becomes zero as the return on investment falls to zero. That means there may be no interest rate that can ensure sufficient AD to deliver full employment. Furthermore, if negative interest rates increase saving, NIRP will worsen the problem of demand shortage and further lower output and employment.

Lastly, there is a widespread perception that NIRP increases AD via deleveraging and refinancing which lowers interest transfers from high-spending debtors to creditors. That is certainly true of lower rates in a positive interest rate world, but it may not be true in a negative rate world. As will be discussed in the next section, if NIRP lowers the short-term interest rate, it may penalize savers without lowering the interest rate to borrowers. Indeed, it can even raise the interest rate for borrowers. If QE is used to push down the long bond rate, that helps government finances and it helps private borrowers

who refinance. However, it can also increase total leverage and interest payments if private agents increase borrowing to finance asset purchases.

7. Financial disruption effects of NIRP

In addition to these adverse demand effects, NIRP may have adverse effects via the financial sector. These financial effects tend to get over-looked because mainstream economic theory views money as “neutral” (i.e. money only impacts prices and inflation, and not output and employment). However, money, and financial effects can indeed produce adverse effects including credit disruption in the banking sector, the promotion of generalized financial instability, and macroeconomic policy whiplash effects.

(a) Disruption of bank credit

Negative interest rates can disrupt the provision of bank credit and also raise the cost of credit. At this stage, it is necessary to discuss the two options for implementing negative rates. Option 1 has the central bank lower its lending rate to commercial banks below zero. Option 2 has the central bank charge commercial banks with interest on their deposits with the central bank. In practice, central banks have favored option 2 over option 1.

Option 1. If the central bank charges a negative lending rate, the wholesale cost of finance is negative. Banks will push their deposit rates below zero, penalizing depositors. Depositors will have an incentive to reduce money holdings and shift into other assets, and lower rates of return may then increase or decrease saving. Firms will not increase investment once the return on investment becomes zero. Instead, they will use negative interest rate credit to reduce equity (i.e. stock buybacks) and finance merger and acquisition activity.

Central bank lending at a negative interest rate is an implicit fiscal transfer. Effectively, the central bank subsidizes borrowing. Viewed in this light, a negative central bank loan rate is a form of helicopter money that drops money on the debtors and those with access to lines of credit. The fact that a negative lending rate is an implicit fiscal transfer, combined with the incentive it gives to increase leverage, may explain why central banks have shied away from setting a negative target interest rate.

Option 2 involves the central bank charging commercial banks interest on reserves. This is a subtly different way of lowering interest rates as it works asymmetrically by lowering just the deposit rate.

Commercial banks will pass the central bank's charges on to ordinary depositors by lowering the deposit rate they pay. On the positive side, a lower deposit rate induces a portfolio shift into other financial assets, which drives up asset prices and generates a wealth effect that stimulates consumption. On the negative side, lower rates on deposits are akin to a tax on that lowers interest income, which may decrease consumption spending and increase saving.

In addition to these simple effects, there are also more complex possible effects. Suppose depositors are valued by individual banks because they are a cheap and stable source of bank finance based on long-term customer relations. In that case, banks may refrain from passing on their costs to depositors. Instead, the central bank's deposit charge will be shifted to other areas. One possibility is that banks eat the cost, which will lower bank profits. That could cause banks to engage in credit rationing or to withdraw from providing credit to particular markets and customers which are more risky and only marginally profitable. That would adversely impact AD. A second possibility is that

banks would pass the cost on to borrowers via higher loan rates. In that case, the central bank's attempt to generate negative interest rates to stimulate the economy would backfire in the form of higher loan rates that discourage borrowing and reduce AD.

(b) Financial fragility and instability

A second financial problem from NIRP concerns financial fragility and instability. In general, these concerns can also apply to lower interest rates, but they are amplified in an environment of negative interest rates.

First, we have already seen that NIRP encourages risky balance sheet re-engineering by firms. The availability of negative interest rate credit will not induce additional investment. Instead, firms will use that credit to repurchase equity (i.e. shift toward debt financing) and to purchase existing assets (i.e. engage in speculative merger & acquisition activity). This is exactly what has happened since low interest rate policies have been implemented in the wake of the financial crisis and the result has been to leverage up corporate balance sheets. That balance sheet leveraging creates financial fragility as increased debt makes firms vulnerable to future unexpected adverse developments. It also poses a threat to future economic activity by limiting firms' capacity to undertake future investments.

Second, negative interest rates encourage asset price bubbles. With regard to firms, there is an incentive to engage in credit-financed mergers and acquisitions. With regard to households, there is an incentive to reduce portfolio holdings of money and bonds, and to increase holdings of risky assets and alternative stores of value in a chase a chase for yield and capital gains. Both of these actions inflate asset prices.

(c) Financial disintermediation

Another set of challenges concerns the possible impact of NIRP via financial disintermediation. Negative deposit rates induce economic agents to reduce money holdings and look for other stores of value and media of exchange. This search for alternate stores of value may show as precious metals inflation, commodity price inflation and land inflation as agents look for other ways to hold wealth. Changes in medias of exchange may result in the increased use of cash and credit cards, the introduction of new monies such as bit-coin, and allocation of more resources to minimize money holdings subject to holding charges.

These developments constitute a form of inefficiency that reduces potential economic output. Money reduces transactions costs. Imposing a penalty on money raises transaction costs, which can both discourage productive transactions and reduce the gain from those transactions that are undertaken. This constitutes an adverse “supply-side” effect of NIRP. Furthermore, particularly as regards use of cash, there may be adverse fiscal implications in the form of tax evasion and the increased size of the underground economy.

Additionally, ultra-low and negative interest rates can cause financial disruption by jeopardizing the business models of insurance and retirement income provision sectors, which are large and important financial sub-sectors. Insurance companies rely on investment income to meet claims, while pension funds rely on investment income to meet future pension payments. Both insurance companies and pension funds are threatened by ultra-low and negative interest rates which lower their income.

In response, insurance companies may raise premiums, which is the equivalent of a small tax that lowers aggregate demand. Both insurance companies and pension funds

will also shift the composition of their portfolios toward risky assets, in a search for yield. That shift will add to asset price bubble pressures, and it also makes their balance sheets more fragile and vulnerable in the event of future asset price reversals. This vulnerability has no immediate impact today, but it is a channel for future economic disruption. It illustrates how the use of monetary policy today can impose significant costs tomorrow.

8. Whiplash effects of NIRP

The potential future costs of financial fragility and asset price bubbles raise the prospect of policy whiplash effects due to contradictions between current and future policy actions.

The economy currently suffers from shortage of AD owing to systemic failings related to income inequality and trade deficit leakages. That demand shortage was papered over by a thirty-year credit bubble plus successive asset price bubbles, which eventually burst with the financial crisis of 2008. Now, central banks are seeking to revive AD via negative interest rates that will reflate the credit and asset price bubbles.

This policy is based on a contradiction. If it is successful, it will necessitate raising interest rates in future. That risks triggering another financial crisis as the new bubbles burst and the effects of accumulated financial fragility magnify the ensuing fallout. When asset prices are inflated, subsequent very small upward moves in the interest rate can produce large capital losses. In effect, policy measures to revive the economy now via NIRP can generate even greater imbalances that produce whiplash effects later.

This whiplash dynamic has been building over the past thirty years. Disinflation allowed successive lowering of interest rates from their double digit levels of 1980,

thereby producing successively larger boom – bust cycles. That process appeared to be ended by the financial crisis of 2008 which pushed the economy to the ZLB. However, central banks are now seeking to circumvent the ZLB circuit-breaker via NIRP. If NIRP is pursued for an extended period of time, without remedying the deep causes of AD shortage, the prospect is a future more intractable economic crisis.

9. Competitive devaluation and NIRP

In addition to these adverse domestic economic effects, NIRP also has adverse international economic effects. Those adverse effects concern the process of competitive devaluation, which Brazil's former finance minister Guido Mantega has referred to as “currency wars”.

The problems of competitive devaluation were illustrated in the Great Depression of the 1930s . In the run up to the Second World War, competitive devaluation produced a “beggar-thy-neighbor” international political economy. In an economic environment of demand shortage, countries have an incentive to depreciate their currencies. That makes their exports cheaper and imports more expensive, which together increases demand for domestically produced goods and services. The trouble is the demand comes at the expense of demand for other countries' products: hence, the beggar-thy-neighbor label.

This problem was pervasive in the 1930s and has re-emerged with NIRP, which generates competitive devaluation on steroids. Negative interest rates give private investors an incentive to exit a country's money and exchange it for another's to earn higher rates elsewhere. These incentives have only been strengthened by financial capital mobility and capital account openness. For example, in Japan negative interest rates have sparked a carry-trade that involves borrowing yen and then converting into dollars to buy

higher yielding dollar denominated securities.

Additionally, globalization has increased policymakers' incentives to engage in strategic competitive devaluation by encouraging an offshore manufacturing model in which corporations from developed countries either build export production platforms in developing countries or outsource manufacturing to those countries. Developing countries then sell that production in developed country markets. This has accelerated the prevalence of export-led growth whereby developing economies grow by increasing their exports rather than by developing their own domestic markets. Since exchange rates are key to the export-led model, this intensifies policymakers' incentives for competitive devaluation because countries are trapped in a dog-eat-dog struggle for export markets and new foreign investment. NIRP may worsen this proclivity to monetary policy conflict between countries by increasing the sensitivity of exchange rates to the policy interest rate.

Worse, competitive devaluation does not just shift demand between countries, it may also reduce total global demand by creating financial uncertainty, which undermines firms' incentives to invest. Firms will refrain from making costly investments if they think that future exchange rate movements may undermine the competitiveness and profitability of those investments.

10. Political economy and future stagnation dangers of NIRP

A last set of issues concerns NIRP's political-economic impacts on wealth distribution. Like QE, NIRP aims to increase the price of financial assets – particularly risky assets like equities which become more attractive as interest rates fall. Since such risky assets are predominantly held by wealthier households, that further increases the relative wealth

of those households at a time of heightened income and wealth inequality.

That may have significant adverse impacts on politics and policy. First, given the powerful role of money in politics, increasing the wealth of the wealthy enables them to further influence politics. Second, to the extent that the wealthy are satisfied with the impacts of NIRP, that diminishes the pressure for other policies to strengthen the economy which could have a greater effect on other segments of the population. NIRP therefore does double damage: it has a plutocratic bias and it also removes the pressure for other more substantial policies.

NIRP also has profound effects on the outlook for retirement and retirement income. Lower interest rates reduce the capacity to save for retirement, and negative interest rates have an even worse effect. Ordinary households are more risk averse because of their lower wealth and inability to bear losses. Thus, asset price gains induced by policies like QE and NIRP are likely to bypass those households because they cannot afford to take the risk of holding risky asset classes and suffering potential future losses.

Historically, bank certificates of deposit (CDs) and bonds have provided risk-appropriate returns for such households, but NIRP takes both off the table. CD yields can go negative and bonds become vulnerable to price losses in the event that future interest rates are higher. In a NIRP fed environment of asset price bubbles, ordinary risk averse households are stuck between the devil and the deep blue sea - the devil of negative interest rates and the deep blue sea of potentially disastrous capital losses from a burst asset price bubble. Moreover, this tradeoff comes at a time when defined benefit pensions have been significantly curtailed and the risk of retirement income provision has been shifted on to individual households. That microeconomic impact is over-looked by

monetary economics which tends to focus exclusively on macroeconomic concerns, and it explains why NIRP has encouraged bitter political feelings that foster toxic political outcomes.

Younger workers are also vulnerable to NIRP induced asset market distortions. Those who acquire equities for their retirement portfolios risk large future losses if interest rates revert to normal levels, which is the express goal of NIRP. Historically, retirement income has been facilitated by an equity premium. NIRP risks transforming that into an equity penalty.

The problem is even worse with house prices, which are particularly prone to NIRP induced bubbles. House purchases are largely financed with mortgages, and lower interest rates therefore drive up prices by lowering mortgage payments and increasing cash-flow affordability. However, there are massive downsides stemming from mortgage debt. The interest payment on a \$200,000 home at 6% is the same as the payment on a \$400,000 home at 3%. Yet, purchasers are saddled with a larger mortgage that they must pay back in the future, and they also lose financial flexibility and are rendered more financially vulnerable. If house prices subsequently fall back because interest rates mean revert (i.e. revert to normal), then borrowers will find themselves underwater. That may prevent them from selling and moving to take up better employment opportunities elsewhere. If the household suffers an economic shock (e.g. a job loss), it may be unable to pay its mortgage and risks default and the lasting losses that go with that.

The benefits of NIRP induced stock price and house price inflation go to existing owners. Normal future capital gains are brought forward and transferred to current owners, while buyers are subjected to significant financial risk. Viewed in such a light,

asset price inflation is a form of inter-generational transfer that ladens the future with burdens and risks while the transfer of future capital gains removes an important source of future economic stimulus.

Putting the pieces together, using NIRP to fight stagnation today is likely to be ineffective and possibly counter-productive for reasons discussed above. At the same time, NIRP may shift stagnation into the future via asset transactions that burden the future, and that process can generate future disappointments and resentments that produce ugly politics.

11. Conclusion: the misguided new consensus of ZLB economics and NIRP

NIRP is quickly becoming a consensus policy within the economics establishment. This paper has argued that consensus is dangerously wrong, resting on flawed theory and flawed policy assessment.

NIRP draws on fallacious pre-Keynesian economic logic that asserts interest rate adjustment can ensure full employment. That logic has been augmented by ZLB economics which claims that times of severe demand shortage may require negative interest rates, which policy must deliver by either charging banks for holding reserves or via extreme QE focused on long bonds.

NIRP turns a blind eye to the possibility that negative interest rates may reduce AD, cause financial fragility, create a macroeconomics of whiplash owing to contradictions between policy today and tomorrow, promote currency wars that undermine the international economy, and foster a political economy that spawns toxic politics. Worst of all, NIRP maintains and encourages the flawed model of growth, based on debt and asset price inflation, which has already done such harm.

Further Reading

Eggertsson, G.B. and Krugman, P. (2012), “Debt, deleveraging, and the liquidity trap: a Fisher-Minsky-Koo approach,” *Quarterly Journal of Economics*, 127 (3), 1469-1513.

Krugman, P. (1998), “It’s baaack: Japan’s slump and the return of the liquidity trap,” *Brookings Papers on Economic Activity*, 2, 137–205.

Palley, T.I. (2016a), “Why ZLB Economics and Negative Interest Rate Policy (NIRP) are Wrong: A Theoretical Critique,” IMK Working Paper, Institute for Macroeconomics, Dusseldorf, Germany, forthcoming.

----- (2016b), “Zero Lower Bound (ZLB) Economics: The Fallacy of New Keynesian Explanations of Stagnation,” IMK Working Paper No. 164, Institute for Macroeconomics, Dusseldorf, Germany, February.

----- (2011), “Quantitative Easing: A Keynesian Critique,” *Investigacion Economica*, (Julio – Septiembre) LXX, 69-86.