Understanding the Great Recession: Some Fundamental Keynesian and Post-Keynesian Insights, with an Analysis of Possible Mechanisms to Achieve a Sustained Recovery

Mario Seccareccia and Marc Lavoie[1*]

Working Paper No. 37

January 2016

ABSTRACT

Fears of deflation and long-term stagnation have become more commonplace since the Great Recession. Yet, within the mainstream, economists are divided into two camps: those who see the benefits of downward wage and price adjustment, as a private sector stabilizer, and those who fear deflationary pressures because of their destabilizing consequences. This paper reviews this theoretical literature using a simple "New Consensus" framework of analysis and it also

seeks to describe how mainstream and heterodox economists analyzing the consequences of deflationary pressures come to very different conclusions on the nature of private sector stabilizers in a recessionary environment. After reviewing the different perspectives, the paper undertakes a comparative analysis of the experience of both the Great Depression and the Great Recession by looking at the behavior of certain key variables in three countries: Canada, the United States and the United Kingdom. The paper concludes that, if it was not for the quick actions of governments in stabilizing the economy through activist macroeconomic policies during the Great Recession, private sector stabilizers were actually less significant during the recent crisis than they were during the 1930s.

JEL codes: B22, B5, E1, E3, E5, E6.

Key words: Deflation, self-correcting mechanism, private/public sector stabilizers, Great Depression and Great Recession.
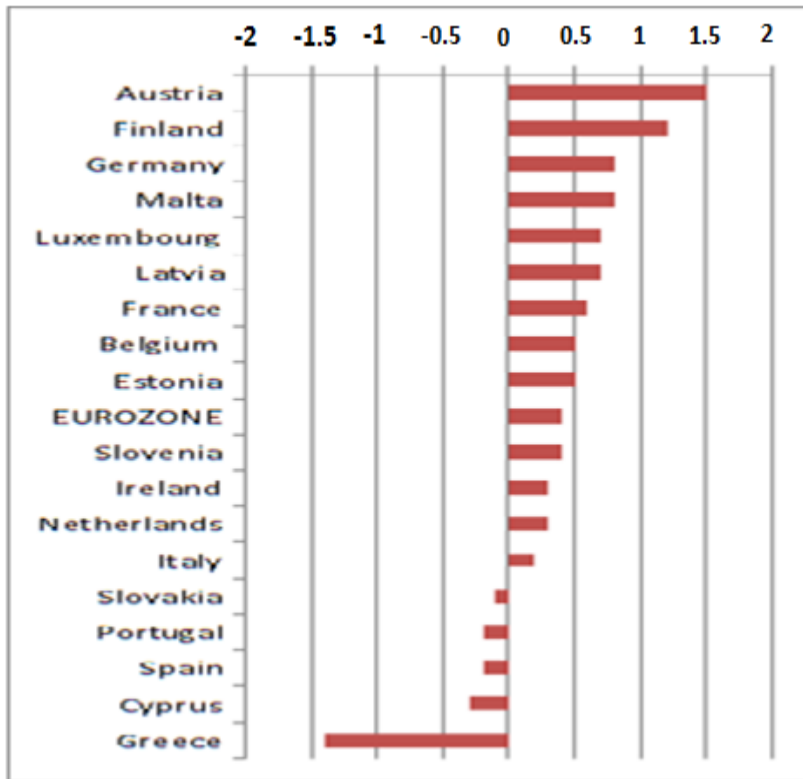
1. Introduction

Until the financial crisis, pro-rentier macroeconomic authorities in Western industrialized countries had long been apprehensive about inflation, which had been the principal policy concern, particularly of central bankers, for over three decades since the 1970s. Until the *Wall Street Journal* (August 18, 2007) had announced that the "Minsky moment" had arrived with the potential of debt deflation, anyone who dared to raise the specter of an accompanying commodity deflation after an asset market "correction", which could potentially be looming over Western economies, was hardly taken seriously and would normally have been brushed aside as a fear-mongering crank. Despite the fact that, for almost two decades Japan had already been dogged with mild deflation, policy makers were still being told before the financial crisis that fiscal deficit-fighting together with appropriate levels of *positive* real interest rates to combat inflation were essential to achieving sustained and non-inflationary economic growth. The inflation fighters were so triumphant that, over the fifteen years before the financial crisis, a large number of countries, some thirty countries, joined the bandwagon and committed themselves officially to inflation targeting (IT) with precise numerical targets usually gravitating around a 2 percent norm for the inflation rate. Hence, officially, the fear by policy makers was inflation and not deflation, and this still formally remains so. But why would anyone fear inflation or deflation, when, during that era of the "great moderation", it seemed that the powerful central bank *maestro* could efficiently conduct macroeconomic policy through real interest rate setting that would ensure that domestic inflation rates would converge towards the desired target rate? None of the neo-Wicksellian IT-central bankers of the pre-financial crisis era ever imagined that they would find themselves cast in a scenario of the type that gripped policy makers during the 1930s.

Yet, this fear has once again slowly been creeping back to haunt some mainstream policy circles, as prognoses for recovery have remained gloomy and fears about secular stagnation and continued concerns about both asset and commodity price deflation seem to have become more commonplace. This has been especially so in certain countries of the Eurozone, where both wage and price deflations have taken hold, often encouraged by the heavy hand of the state via the implementation of austerity measures. As also shown by Sau (2015), in the case of the Eurozone, displayed in Figure 1 below, if one looks at the inflation rates for each country based on Europe's Harmonized Indices of Consumer Prices (HICP), in this case for 2014, one can easily notice the tendency towards deflation in some very distressed regions faced with mass unemployment. Also of concern, even if one would remove a small country like Greece for being the outlier or *enfant terrible* of the Eurozone, the overall Eurozone inflation rate at just slightly above zero (at 0.4 percent) attests to the European Central Bank's inability to manage effectively what can well become an impending overall deflation since there remain a good number of European countries hoovering around zero

inflation, if not actually in a state of deflation! This scenario, where so many other industrial countries outside of Japan are now in the grip of mild deflation, would have been completely unimaginable before the financial crisis and Great Recession over half a decade ago.

Figure 1: Inflation/Deflation Rates (HICP): Eurozone 2014
(Percentage Point Changes)

Source: Eurostat

There is a long tradition going back centuries (as pointed out by Bagus (2015)) of economists who debated the effects of downward price adjustment or deflation. This was especially so during the 1920s and 1930s during which period some economists who, at the time, were relatively mainstream quantity theorists, did point to the problem of deflation. This was the case of J.M. Keynes in his *Tract on Monetary Reform*, of Sir Denis Robertson with his plea for a mild inflation (in the context of what he dubbed a liquidity trap), and of Irving Fisher with his debt deflation theory of Great Depressions. Yet, despite such fears of deflation and the debates that ensued during the 1930s and 1940s, the powerful logic of neoclassical theory, with its confidence in a self-adjusting system and economists' fervent belief in the logic of supply/demand analysis favoring downward wage and price adjustment during a recession, overrode all other concerns. This can be seen with the triumph of the ideas of A.C. Pigou and Don Patinkin in the early postwar years, which Milton Friedman and the later New Classicals

never really rejected, that wage and price flexibility can eventually get an economy back to full employment or to some natural rate of unemployment broadly consistent with what J.M. Keynes of the *General Theory* described as frictional unemployment. Indeed, as everyone knows, already from first-year economics textbooks, even the usual downward-sloping nature of the aggregate demand curve in aggregate price level/real output space rests on the significance of Pigouvian/Patinkinesque effects, with price deflation making asset holders feel richer and thus raising their consumption expenditures. Nowadays, on the empirical side, this has even taken the form of more technical debates over whether real GDP series are trend stationary or have autoregressive unit roots, namely whether shocks to GDP tend to be transitory or, instead, have effects of a more permanent nature (see Cushman 2016).

This belief in some self-adjusting systems was never accepted by the close followers of Keynes. Basing themselves on the actual experience of the 1930s, a fundamental insight offered by Keynes himself, Michal Kalecki, Joan Robinson and subsequent advocates of what became post-Keynesian economics is that, when responding to a major crisis, the economic system is not self-adjusting as Pigou and Patinkin wanted the profession to believe. In a modern monetary capitalist economy, private sector stabilizing forces do exist; but, at best, they can be considered rather weak, while the destabilizing elements tend to dominate. This underlying asymmetry would suggest that, in the absence of government policies to counteract such instabilities, the inexorable outcome of a deep crisis is long-term stagnation. However, in contrast to other heterodox economists, especially from the Marxian tradition, post-Keynesians tend to believe that it is possible even within a capitalist economy to counteract effectively these destabilizing tendencies through appropriate macroeconomic policy actions of the state. This could occur, of course, as long as the political conditions are in place, as it happened to some extent during the early post-World War II "Golden Age", especially as implemented by certain social democratic regimes, which had held power, as was the case on the European continent, and whose policy makers were committed to full employment.

The object of the present paper is to explore both theoretically and empirically the properties of these stabilizing/destabilizing factors so as to shed some light on the nature of the present crisis using a simple framework that would be widely understood by mainstream economists of the so-called New Consensus that existed before the Great Recession and to describe its internal contradictions. Its purpose is also to explain the significant insights offered by Keynes and explored by some post-Keynesians historically in understanding these internal stabilizers/destabilizers and to understand why such a scenario of long-term stagnation, characteristic of the 1930s, is to some extent being played out again today. We shall briefly also explore possible long-term measures to pull economies out of what we believe has become a macroeconomic austerity trap.

2. A Self-Correcting System or Should Deflation Be Feared?

In contrast to most current policy makers who are generally quite fearful about the consequences of deflation, the vast majority of theoretical models, which continue to be taught by mainstream macroeconomists to undergraduate students using the standard AD/AS analysis, preach the virtues of downward wage and price adjustments as a market-clearing device in both the product and labor markets. We are told that, if ever the system derails and falls into recession, all that is needed to fill the recessionary gap is wage and price flexibility that will guarantee eventually the system's self-correction. For instance, in what is one of the most "Keynesian" of textbooks that is now in its 12th edition in the US, *Economics: Principles and Policy* by William Baumol and Alan Blinder, in the macroeconomics Chapter 27 on aggregate supply, they ask the fundamental question: is there a self-correcting mechanism in a modern monetary capitalist economy that can eventually bring an economic system to full employment following a negative macroeconomic shock? Baumol and Blinder conclude on logical grounds that the system will eventually be self-adjusting since, in accordance with the internal logic of the model of aggregate supply and demand (in aggregate price level/output space), a downward shift of the aggregate supply curve will sooner or later lead to a rise in output along a downward-sloping aggregate demand curve. Indeed, much as Patinkin (1948) had argued, this process of adjustment could be a very slow one. The existence of this inertia in the system, because of institutional wage and price rigidities, would leave room for the government to pursue some form of activist macroeconomic policy, so as to speed up the recovery toward potential output.

The same story is told by Paul Krugman (2010). For instance, after referring to the negative expectations effects and problems of the rising burden of debt in the context of deflation, Krugman (2010) points out that ultimately:

" … in a deflationary economy, wages as well as prices often have to fall – and it's a fact of life that it's very hard to cut nominal wages — there's downward nominal wage rigidity. What this means is that in general economies don't manage to have falling wages unless they also have mass unemployment, so that workers are desperate enough to accept those wage declines."

Such statements are repeated frequently by many others (see, for instance, Wessel (2014)) and the only logical conclusion that a student can derive from this is that, subsequent to a negative demand shock, the reason why unemployment appears is because wages and prices are not sufficiently flexible downward and not falling fast enough. All mainstream economists agree with this simple logic based on a micro analysis of the macro economy.

Largely oblivious to these fears, the debate among mainstream academic economists is not really over the self-correcting properties of the price mechanism, since all agree that the

private market system is in its essentials a self-adjusting one. Where they disagree is over the speed at which the system self-adjusts, with New Keynesians emphasizing the stickiness of wages and prices in the short run while the so-called New Classicals do not. Hence, problems of cyclical unemployment arise because of price rigidities and workers' resistance to a cut in wages and, while the New Keynesians advise stimulus measures in the short run, the latter New Classicals including the neo-Austrians, would welcome stronger doses of deflation during cyclical downswings in aggregate demand.

3. Developing a Simple Framework of Analysis

Let us now try to describe briefly the logic of the neoclassical analysis by using what had been the generally-accepted macroeconomic model of the economy until the financial crisis, the so-called "New Consensus" approach, by means of three well-known equations discussed below.

First, an aggregate demand relation that could explain the level of output or, as specified below, its deviation from potential output:

$$y - y^* = \alpha_1 A - \alpha_2 r \qquad [1]$$

where y is real output or income, y^* is potential output (consistent with some pre-specified NAIRU, which is impervious to the actual level of unemployment), A is real "autonomous" spending, that is, spending which is inelastic to interest rate changes, r is the policy-determined real rate set directly or indirectly by the monetary authorities, and tied to the central-bank administered "overnight" (or interbank) rate, assuming a stable relationship between these two rates, and the parameters $\alpha_1 > 0$ and $\alpha_2 > 0$ in accordance with received theory (as can be found, for instance, in Carlin and Soskice (2015)).[1]

Obviously, if real output is to be equal to potential output, then the real rate of interest r will need to equate a specific value, which we denote by ρ_0, and which is called the natural (real) rate of interest. This specific value will have to be such that:

$$r = \rho_0 = (\alpha_1/\alpha_2)A \qquad [1a]$$

Second, there is also specified a Central Bank reaction function, normally of the Taylor rule variety, as described below:

$$r = r_0 + \rho_1(\hat{p} - \hat{p}^T) + \rho_2(y - y^*) \qquad [2]$$

---

[1] Note that A in this formalization could be negative, in which case the natural real rate of interest would need to be negative, as is often assumed to be the case by those New Keynesian authors such as Larry Summers or Paul Krugman who claim that the Global Financial Crisis has had such a negative effect on the economy that the return to potential output requires highly negative real interest rates.

where $\hat{p}$ is the actual inflation rate, $\hat{p}^T$ is the inflation target of the central bank and r_0 is some long-run real interest rate target, with $r_0, \rho_1, \rho_2 > 0$ and $\rho_1, \rho_2 = 0.5$, but such Taylor Rule weights may differ, for instance, with the original Wicksellian reaction function having ρ_2 and $\hat{p}^T = 0$ and ρ_1 taking a value different from 0.5.

This representation of the central bank's reaction function gives all the power to the monetary authorities to tinker with the real rate of interest r, in its attempt to bring the economy to a zero output gap consistent with a low target inflation rate of, say, 2%, as pursued in many IT countries since the 1990s. Combining equations [1] and [2], and solving for y, we get:

$$(y - y^*) = \left[\frac{\alpha_2}{1 + \alpha_2 \rho_2}\right] \left\{ \left(\frac{\alpha_1}{\alpha_2} A - r_0\right) - \rho_1(\hat{p} - \hat{p}^T) \right\} \qquad [2a]$$

If actual output is to equate potential output *at the target rate of inflation*, as desired by the monetary authorities, then the parameter r_0 in the reaction function [2] will have to equal the natural real rate of interest as defined in equation [1a], so as to have both terms on the far right-hand side of equation [2a] equal to zero. Hence we shall need:

$$r_0 = \rho_0 \qquad [2b]$$

Thus, as an alternative, combining equations [1], [1a] and [2a], we have;

$$(y - y^*) = \left[\frac{\alpha_2}{1 + \alpha_2 \rho_2}\right] \left\{ (\rho_0 - r_0) - \rho_1(\hat{p} - \hat{p}^T) \right\} \qquad [2b]$$

Finally, there is the usual aggregate supply (or inflation expectations-augmented Phillips curve) relation:

$$\hat{p} = \gamma_1(y - y^*) + \gamma_2 \hat{p}^e \qquad [3]$$

where $\hat{p}$ and $\hat{p}^e$ are the actual and expected rates of inflation, and where $(y - y^*)$ is, as above, the output gap, with $\gamma_1 > 0$ and $\gamma_2 > 0$. Neoclassical NAIRU believers assume a specific value for γ_2, that is, $\gamma_2 = 1$. This generates the vertical Phillips curve, when inflation expectations quickly adapt to the actual rate of inflation, in which case we have:

$$\hat{p} = \gamma_1(y - y^*) + \hat{p}^e \qquad [3a]$$

Instead of a Phillips curve version of the inflation-adjustment relation, one may replace it with what may be described as a Wicksellian inflation equation, which is also implicitly accepted by many central bankers nowadays, and which depends on the values taken by $(\rho_0 - r_0)$, $\hat{p}^T$ and $\hat{p}^e$, as is obvious when substituting $(y - y^*)$ by its value in [2b] (see Seccareccia (1998) for further discussion of the internal features of such a view going back to Knut Wicksell). It can also be noted that when the central bank knows the true value of the

natural real interest rate ρ_0 and applies it to its reaction function, with the inflation rate determined by equation [3b], the actual rate of inflation will be equal to its target at potential output only when agents expect the target rate of inflation set by the central bank to be realized. This means that we need inflation to be determined in the following way:

$$\hat{p} = \gamma_1(y - y^*) + \hat{p}^T \qquad [3b]$$

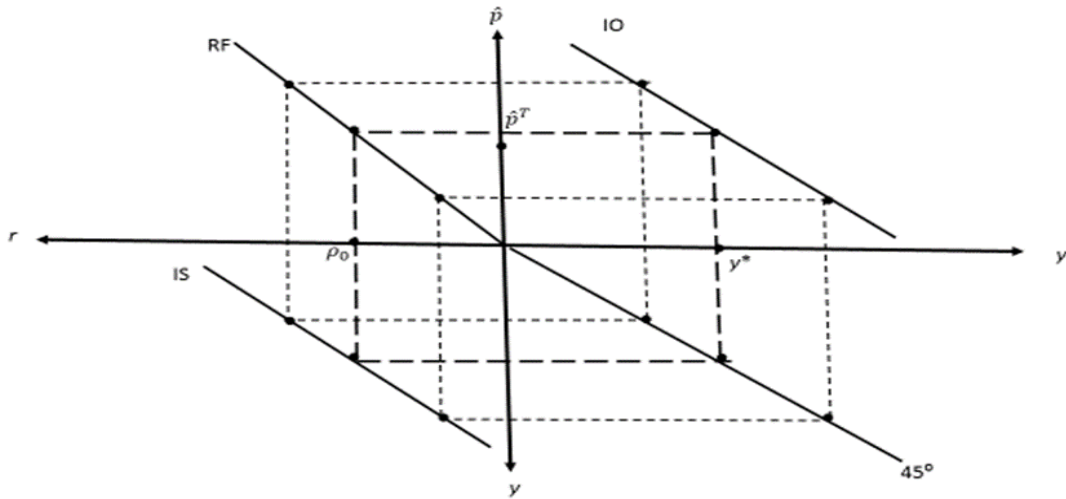Or, at worse, that agents act in such a way that:

$$\hat{p} = \gamma_1(y - y^*) + \gamma_2\hat{p}^e + (1 - \gamma_2\hat{p}^T) \qquad [3c]$$

The New Consensus model can be illustrated in a number of ways by using a simple four-quadrant diagram relating the three key variables defined by the above three equations (see Lavoie (2004) and Fontana and Setterfield (2009)). Here we choose the following description. The higher left-hand quadrant simply describes the central bank reaction function (RF) relating the inflation rate $\hat{p}$ and the real rate of interest r administered by the central bank, for a given natural rate of interest and inflation target, as in equation [2]. The lower left-hand quadrant describes the aggregate expenditure relation representing equation [1], often referred to as the IS curve.[2] The upper right-hand quadrant is a downward-sloping inflation/output (IO) relation in inflation-output space that is sometimes inappropriately described as an "aggregate demand" relation.[3] It is the result of combining the value of r found in equation [2] and inserting it in equation [1]. Hence going about counterclockwise, a historically given rate of inflation $\hat{p}$, will be associated with a certain real rate of interest set by the central bank, which via equation [1] will be associated with a specific output gap, $(y - y^*)$ taking into account feedback effects.

Figure 2: Graphical Integration of the Two Relations to Derive an IO Curve in Inflation/Output Space

---

[2] As explained by Sebastian Dullien (2010), IS in the neoclassical sense stands for "intertemporal substitution", where the change in economic activity is generated by the effects of the interest rate on the supply of labor; whereas in the Keynesian tradition IS stands for the changes in aggregate demand tied to the equality between investment and saving at different interest rates. A similar reduced-form equation has quite different economic and causal interpretations.

[3] See, for instance, Romer (2013). Also see Colander (1995) for a comprehensive analysis of the problems with the concept of aggregate demand within the AD/AS framework.
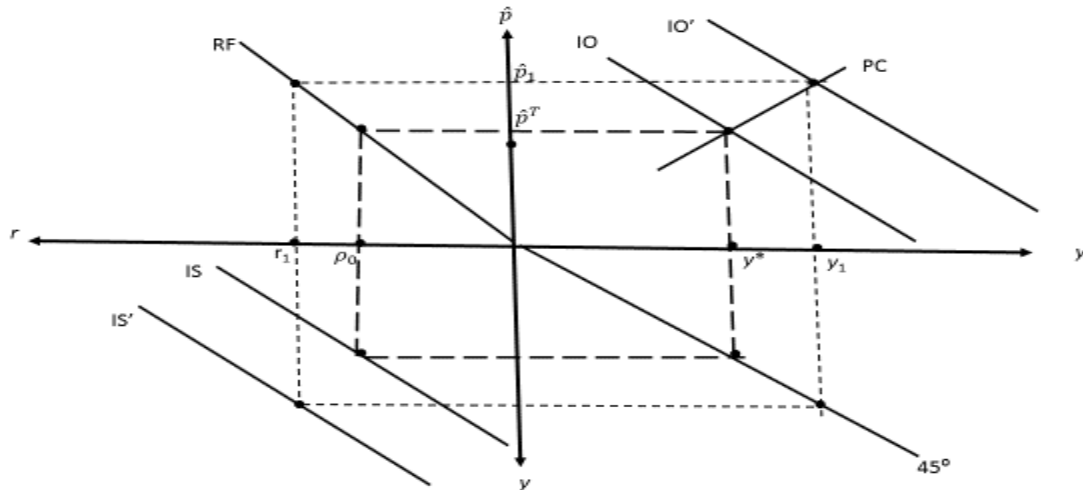
This says that, for a given central bank reaction function, there will be determined a real rate in relation to the existing rate of inflation (in the upper left-hand quadrant, obtained from equation [2], much as discussed in David Romer (2000: 154-57)). Once that real rate is set, the latter will then be associated with a certain level of output (and output gap) in the upper right-hand quadrant (derived from equation [1]). From this, we are able to derive a downward-sloping inflation-output (IO) relation as depicted in Figure 2 above. The IS and IO curves are drawn as linear, but they could just as well be non-linear if we did not assume the second-derivative of α_2 to be zero.

4. Making Use of the Simple Framework

Let us now make use of this simple graphical analysis, adding to it the short-run Phillips curve (PC) relation described in equation [3b] above, thus assuming in Figure 3 that $\hat{p}^e = \hat{p}^T$ and $\Upsilon_2 = 1$, so that this short-run Phillips curve intersects the IO curve when $y = y^*$.

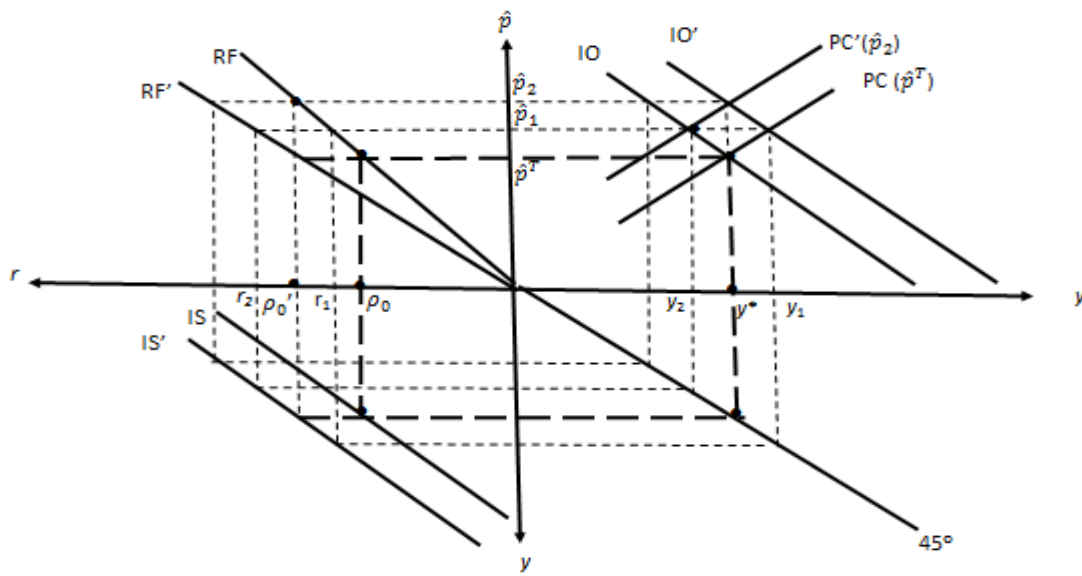**Figure 3: The Effect of a Temporary Positive Aggregate Demand Shock**

Hence we first imagine a situation in which the economy is initially at the inflation target with a zero output gap as depicted in Figure 3. Suppose that there is a temporary positive demand shock (say, because autonomous expenditures, A, rise) that is associated with a shift of the IS curve and hence a rightward shift of the inflation-output relationship from IO to IO', as shown in Figure 3. This generates a positive output gap, with $y = y_1$ and pushes the inflation rate above its target level, at $\hat{p} = \hat{p}_1$ as shown in the figure. Within the New Consensus framework, the usual solution offered is that, under the Taylor-type assumption about central bank behavior, the central banking authorities will raise real interest rates above the previously assessed natural rate ρ_0, at r_1 in the figure, not only because inflation has exceeded its target level but also because output is above its potential level, as a preemptive check against future inflation, as well as a derivative control measure so as to avoid cyclical behavior. This would, therefore, lead to a tightening of monetary policy through higher real interest rates, until the inflation-output curve goes back to IO and, thus, falls back to a situation consistent with the target rate of inflation, that is, until the temporary positive demand shock disappears. All of this will happen smoothly provided the rate of inflation expected by economic agents remains at the rate $\hat{p}^T$ targeted by the central bank, so that the economy will be moving up and down the single short-run Phillips curve PC. This justifies the credibility requirement that neoclassical authors so often assign to the central bank.

Figure 4 repeats the story when the positive demand shock – the higher value of A – is a permanent one. As before, the IS and IO curves shift to IS' and IO' respectively, and once more the central bank pushes up the real interest rate to r_1, while output goes beyond potential output at y_1, and the inflation rate rises to $\hat{p}_1$. With a permanent shock, the IS and IO curves do not on their own come back to their initial position. However, this situation will not last, as economic agents realize that the actual inflation rate is higher than the target rate set by the

central bank. In this case, the short-run Phillips curve will be shifting up, all the way to PC',
where inflation expectations are realized, with $\hat{p} = \hat{p}^e = \hat{p}_2$, and where real output is back to
potential output y^*. The positive output gap has been removed by further increases in the real
rate of interest, all the way to $r = \rho_0'$, as shown in Figure 4.

Figure 4: The Effect of a Permanent Positive Aggregate Demand Shock

This, however, is insufficient to bring back the economy to the target rate of inflation.
The reason is that the demand shock is permanent. Unless it is compensated by a restrictive
fiscal policy, it implies that the natural rate of interest has now changed and is higher than what
it was before the shock. This is obvious from equation [1a]: the rate of interest ρ_0 compatible
with $y - y^* = 0$ has to be larger if A is larger. In Figure 4, this new natural rate of interest is ρ_0'.
Thus the monetary authorities need to raise the real interest rate, not only because inflation
and economic activity have risen, but also because the natural rate of interest has itself risen.
This implies a rotation of the reaction function of the central bank, from RF to RF', which also
leads to a downward shift of the inflation-output relation, which goes back from IO' to IO. Thus
the real rate of interest needs to be increased all the way to r_2 on Figure 4. This will put the
economy into a recession, with output equal to y_2. Inflation expectations will then gradually
adapt to the new lower rates of inflation, until finally the economy is brought back to full
equilibrium, with output at potential, inflation at its target, and the real interest rate equal to
its new natural rate, at ρ_0'.

Hence, in the typical story to be found in the New Consensus literature, if the macro
policy authorities wish to get the inflation rate back to target, one of two things must happen.
The first possibility is for the fiscal authorities to pursue fiscal austerity, so as to compensate for

the increase in private aggregate demand by a decrease in the component associated with government expenditures and net transfers. This option had been neglected over most of the last decades before the financial crisis, with fiscal policy playing a very secondary role, the focus being put on balancing the budget over the business cycle rather than on counter-cyclical policies. The second possibility is for monetary policy to be the dominant factor, as explained above, and this, until recently, was the New Consensus. While this analysis is of interest and points to the need for discretionary policy, this tale is somewhat inconsistent with the traditional neoclassical vision, since there is no market mechanism in place to bring the inflation rate back to target or back to zero if zero inflation is the target. It must fully rely on the actions of either the fiscal or monetary authorities.
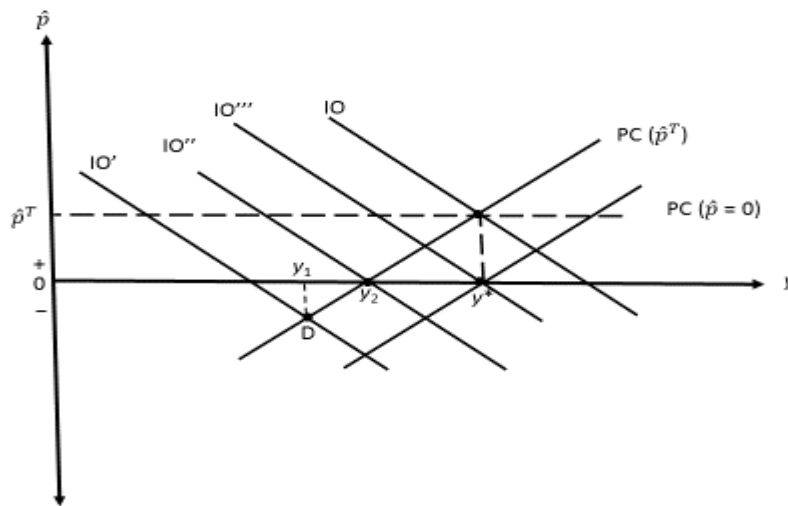
5. Alternative Neoclassical *Laissez-Faire* Mechanism and Its Problems

All those hardline neoclassical economists uncomfortable with this New Consensus story could, however, easily rely on a much simpler mechanism, going back to A.C. Pigou, to insure that aggregate demand falls back automatically to its original level. This is because one of the elements of "autonomous" expenditures (A) in equation [1] is normally assumed to be negatively affected by changes in the price level, owing to significant wealth effects. A lower price level is linked to larger consumer spending, as a lower price level is said to be associated with higher real wealth. How would this automatic mechanism work itself out in an extraordinary situation like the Great Depression in which a vicious cycle of deflation had already taken hold and where the "fear of deflation" had become a reality?

Let us go back to our graphical representation, but let us now focus only on the top right-hand quadrant, with the inflation-output relation and the Phillips curve. As before, suppose that the inflation-output relation is given by the IO curve, and that a full equilibrium occurs when the economy is at output y^* and at the rate of inflation $\hat{p}^T$ targeted by the central bank, with inflation expectations in line with this target. Now suppose that a large negative shock has brought the economy to be on the IO' curve, so that the economy would be at point D, at the intersection with the existing short-run Phillips curve given by PC($\hat{p}^T$), as shown in Figure 5. Thus output is y_1, below its potential level, and the rate of price inflation is well below target and even negative. The wealth effect or real-balance effect described by Pigou and Patinkin now comes into play. As shown in Figure 5, this will generate a smooth self-adjusting mechanism, shown by the shift of the inflation-output relation from IO' to IO'', as the positive wealth effect of the deflation brings the economy back towards the potential level of output, without however reaching it. With economic agents still expecting inflation to be back to its target level, the Pigou mechanism stops when price deflation is over and output reaches y_2. For the Pigou mechanism to work fully, inflation expectations need to be brought down to zero, so as to shift down also the short-run Phillips curve, thus achieving fully the process of self-

correction, with the output level being brought back to its potential level y^*. Thus the Pigouvian mechanism works fully only if the target rate of inflation is zero, for if inflation expectations are anchored at a target rate well above zero, the economy will not manage to come back to potential output through the price deflation mechanism. This helps to understand why so many neoclassical academics felt that a 2 per cent inflation target was way too high, arguing instead that a zero inflation target or even a negative inflation target would be more appropriate.

Figure 5: Traditional Pigouvian Mechanism of Adjustment in a Deflationary Environment

There is thus a neoclassical view that argues that the economy will always be brought back to its potential output, either through this automatic Pigouvian effect or through the proper reaction function of the monetary authorities as advocated by proponents of the New Consensus. As much as this is a logically-consistent analysis, there are a number of problems or flies in the neoclassical ointment, at least one of which has been recognized by some advocates of the New Consensus and by central bankers.

5.1 First Problem: Nominal Interest Rate Zero-Lower Bound and Rising Real Interest Rates

Firstly, the shape of the IO relation could actually be different from that shown in Figure 5 above. It need not be downward-sloping. The assumed symmetry of the shape (whatever is the rate of price deflation) that is depicted in the diagram above is problematic. This is so for at least three reasons. The first reason has been sufficiently discussed even in the mainstream literature. It is said that real interest rates are most likely to be rising with falling prices as a result of the zero-lower bound for nominal interest rates, making monetary policy completely

ineffective. This is undoubtedly an important reason why central bankers fear deflation, since it would take away their only effective instrument of policy. This has now become almost universally accepted as a problem by neo-Wicksellian economists who recognize the incapacity of central banks to bring down real interest rates sufficiently when confronted with a fall in the natural rate ρ_0 (as defined by equation [2b]) into deep negative territory (see, for instance, Summers (2014) and Curdia 2015)).

The question to be answered is the following: for what negative rate of inflation, or for what rate of price deflation, will it become impossible for the central bank to lower real rates of interest when it would need to do so? The smallest real rate of interest r_{min} that the central bank can achieve is equal to:

$$r_{min} = 0 - \hat{p}$$

Taking equations [1] and [2], and solving for r, we find that the real interest rate that the central bank would like to set, for a given inflation rate is equal to:

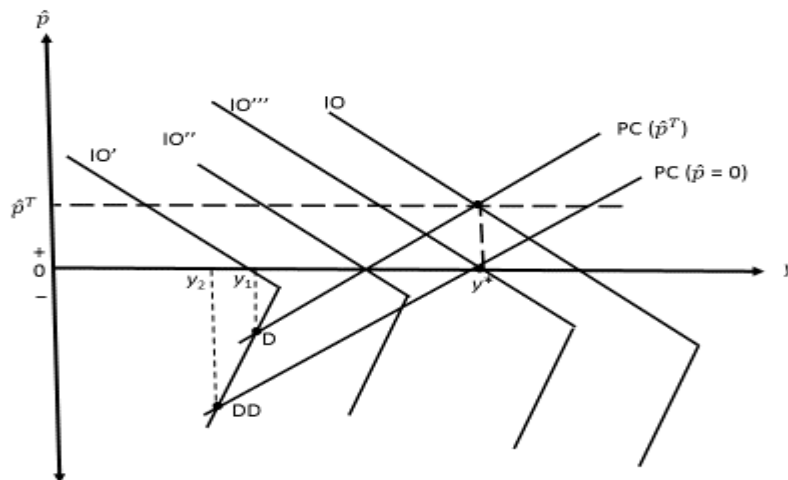$$r^* = \frac{r_0 + \rho_2 \alpha_1 A + \rho_1(\hat{p} - \hat{p}^T)}{1 + \rho_2 \alpha_2}$$

Thus, the central bank wishes to reduce the real rate of interest whenever the inflation rate is lower, and in particular whenever the rate of price deflation gets larger in absolute terms. The central bank will be unable to do so, and hence real interest rates will rise instead of going down for larger rates of price deflation whenever $r^* < r_{min}$. Solving for the rate of price inflation, this inequality implies that:

$$(1 + \rho_1 + \rho_2 \alpha_2)\hat{p} < \rho_1 \hat{p}^T - r_0 - \rho_2 \alpha_2 A$$

Thus, for a given inflation target and a given r_0, the higher A, and hence the further to the right the inflation-output curve is, the larger price deflation has to be for the slope of the inflation-output curve to start being reversed, as also shown graphically by Romer (2013: 101) and by Buttet and Roy (2014, 2015). As depicted in Figure 6 below, when the rate of price deflation is large enough for a given autonomous aggregate demand, as represented by A, the slope of the IO curve gets inverted and becomes positive. As prices continue to fall in a downward spiral, real interest rates rise and, therefore, reduce further interest-elastic private spending. The perversity of this effect would, of course, depend on the elasticity of the components of IO to real interest rates, but, even in the best case scenario in which the interest elasticity of IO is zero, the shape of the IO curve at some stage becomes vertical in an economy faced with a state of deflation.

In the example provided by Figure 6, a large negative shock on aggregate demand, such as the one experienced during the Great Depression or during the recent Global Financial Crisis could push the economy onto the inflation-output curve given by IO'. With inflation expectations anchored at the target rate of inflation, the economy would find itself at point D in Figure 6, with a high rate of price deflation and a level of output given by y_1. If inflation expectations adapt to the circumstances, for instance, as shown in Figure 6, if expected inflation fall to $\hat{p}^e = 0$, things will be even worse, with the deflation rate now being even larger and real output now falling to y_2 at point DD. Thus, in contrast to what was happening in Figure 5 with the Pigouvian mechanism, the fall in expected inflation accompanying the negative output gap makes matters worse and takes the economy further away from potential output.

Figure 6: Effect of Deflation in an Economy Reaching the Zero-Lower Bound of Nominal Interest Rate

Although this argument against deflation rests on the significance of the negative inflationary expectations, there is a still much more challenging fly in the ointment.

5.2 Second Problem: Kaleckian Debt Effects

Starting with Kalecki (1944), post-Keynesian economists have questioned this analysis on both logical and empirical grounds (Lavoie 2010; Seccareccia 2010). These critics of the mainstream view argue that, while consumption may well be affected by positive wealth effects, it could also be affected by negative Fisher debt effects, as also argued by James Tobin (1980). These debt effects, in a period of deflation, may become significant in not only offsetting the positive wealth effects on the consumption function, but even more significantly it could badly hamper real investment because of problems of insolvency and negative expected returns. In this
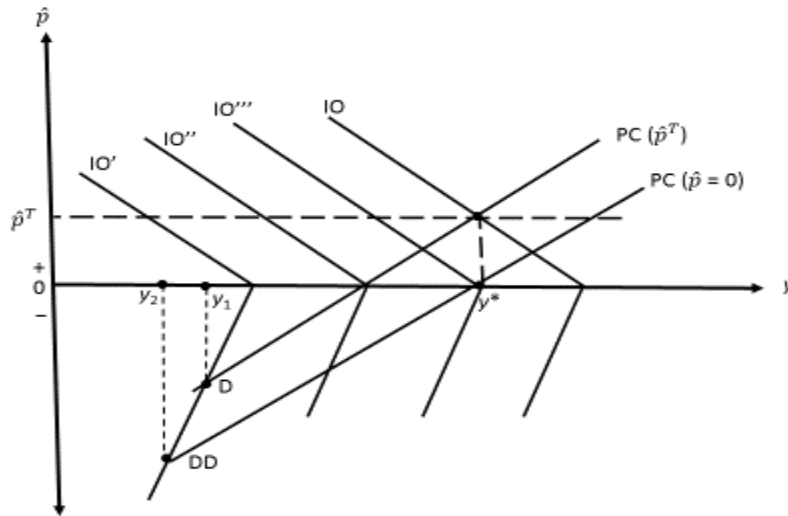
scenario, this would have the effect of shifting the IO curve further away to the left. A spiraling deflation with a downward shifting Phillips curve would only compound still further the effects already resulting from the initial deflation.

Hence, in terms of equation [1], not only would the first term on the right-hand side have to be revised because of the significance of real wealth, *W/P*, as an element in the determination of *A* (where *W* is the nominal value of wealth and *P* the price level); but one would have to include also the real debt burden, *D/P*, with $\delta A/\delta(W/P) > 0$ and $\delta A/\delta(D/P) < 0$, and *D* the nominal debt, as discussed in Baumol, Blinder, Lavoie, and Seccareccia (2010, p. 230). Indeed, from equation [1], during periods of inflation, it may well be that $\delta A/\delta(W/P) > \delta A/\delta(D/P)$, even though the effect of inflation on investment may not be neutral for reasons articulated by writers such as D.H. Robertson in the 1920s. However, for an economy in a depressive state of deflation, it would most likely face a situation in which $\delta A/\delta(W/P) < \delta A/\delta(D/P)$ because of the significance of this balance-sheet effect, as emphasized, among others, by Richard Koo (2009; 2015). The IS relation may thus be rewritten as:

$$y - y^* = \alpha_1 A(W/P, D/P) - \alpha_2 r \qquad [1b]$$

Figure 7 illustrates the Kaleckian debt effect or, as Koo calls it, the balance-sheet deflation effect when one abstracts from the perverse real interest rate effect of deflation discussed previously. Indeed, the figure is similar to that of Figure 6, except that the inflation-output curve now switches the sign of its slope as soon as the rate of inflation becomes negative. As before, an unstable process sets in, away from potential output *y**. With the inflation-output curve having been shifted down to IO' as a result of the initial negative shock, the economy would be at point D, and would fall to DD as price deflation takes hold and expectations of lower price inflation further compounding the effect.

Figure 7: The "Fear of Deflation" Realized, in an Economy Characterized by a Kaleckian Cumulative Negative Process of Deflation

It follows from this that a deflationary episode, as depicted in Figure 7, would lead to a cumulative process away from $y = y^*$ as the economy plunges ever further into stagnation. The downward expectations of deflation would merely feed further this negative cumulative process as the PC relation shifts downward with the private economy spiraling into the abyss of a Great Depression. Without some other counterforce in place, in a world in which monetary policy is impotent, the only effective tool to stop this downward spiral is through strong fiscal policy actions, say, of the New Deal variety.

5.3 Third Problem: The Real Wage as a Distribution Parameter

A third problem in the laissez-faire story has to do with income distribution effects to which many neoclassical writers seem to be almost oblivious. Keynes (1936) had argued that, while these instabilities of erratic private spending with cumulative feedback effects are a characteristic feature of the capitalist process, such economies are not violently unstable with certain forces also working to stabilize the system. But what forces other than the trivial positive wealth effects emphasized by neoclassical economists could serve as countervailing force against such Kaleckian downward pressures?

For Keynes and post-Keynesians, consumption spending is not only affected by real disposable income, which would be falling sharply during a depression, but also by the distribution of this income over time. One such key income distribution variables is the evolution of the real wage itself, ω/P, which normally tends to work in reverse to what is depicted in the neoclassical conception of the labor market (where ω is the money wage). This would suggest that the real wage, ω/P, or some other such distribution variable, ought also to be considered a critical argument in the determination of A, as depicted in equation [1c] below:

$$y - y^* = \alpha_1 A(W/P, D/P, \omega/P) - \alpha_2 r \qquad [1c]$$

The real wage, ω/P, ought to be considered a critical determinant of A, for reasons made clear by Keynes himself in the *General Theory*, but even more so by Michal Kalecki, Nicholas Kaldor and Luigi Pasinetti, who had postulated differential propensities to consume according to income groups, with the propensity to consume out of labor income being significantly higher than that from property income.
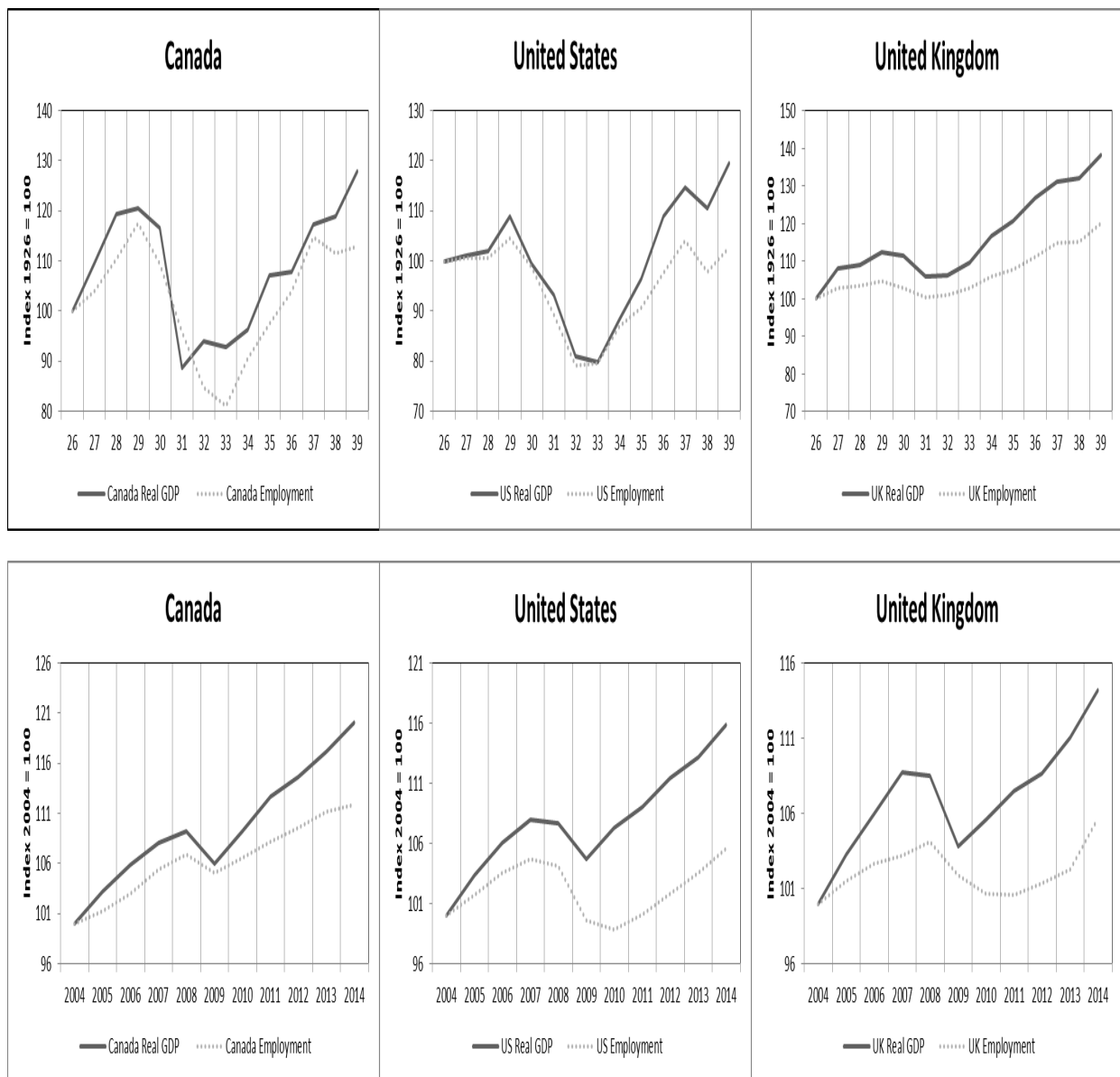
In contrast to neoclassical theory, which would predict an overall increase in employment and output resulting from a fall in the real wage for standard microeconomic reasoning pertaining to the neoclassical conception of the labor market, Keynesians and post-Keynesians would argue that a fall in the real wage would tend to exacerbate the situation in the labor market because of its consequences on the product market (Seccareccia 1991). Hence, in terms of equation [1c] above, the relation between the real wage and private spending would normally be a positive one, unless perhaps the domestic economy is overly dominated by foreign trade, that is $\delta A/\delta(\omega/P) > 0$ (Storm and Naastepad 2012; Onaran and Galanis 2013; Hartwig 2014). From this reasoning, it follows that a downward reaction of real wages to a downward aggregate demand spiral is important and could, therefore, either intensify the depression or mitigate its effects, in the latter circumstances where foreign trade constitutes a very large share of domestic output. Indeed, if the traditional neoclassical prescription of cutting wages actually brings about a decline in the real wage, a falling real wage in a large economy would merely aggravate the situation. However, these are all empirical questions to which we would like to turn. We shall do so by looking at some stylized facts about the Great Depression of the 1930s and the current Great Recession by focusing on the experience of Canada, the United States and the United Kingdom for which some data were readily available.

6. Are There Any Private Sector Stabilizers that We Can Decipher from Some Visual Evidence for Both the Great Depression Era and the Recent Great Recession?

We have looked at some key economic indicators that are easily available from both the Great Depression and the recent Great Recession to point out if there were some common features particular to each of these two major slumps in economic activity. One obvious common feature was that the center of the crisis was the United States and each involved Wall Street financial institutions in a significant way. Each of these slumps was precipitated by a financial crisis in either 1929 or 2008 following a real estate bubble (for further discussion, see Seccareccia 2015). However, if one looks at the depth of the decline in real activity in Figure 8 below, the 1929 collapse in the United States quickly dragged Canada into the quagmire, but it made a much smaller dent on employment and output across the Atlantic, in part because Britain had already been stagnating a great deal prior to 1929 as a result of Britain's return to

the pre-W.W.I parity, with the restoration of the gold standard in 1926. It can easily be seen how the Bank of England's abandonment of the gold standard by 1931 quickly led to a reversal of the pattern of growth, which was followed by the United States abandoning the gold standard by 1933. However no such institutional change of this magnitude occurred during the Great Recession. Indeed, while the United States was at the epicenter of the collapse in 2008, in contrast to the Great Depression, the roles switched somewhat with both the US and the UK witnessing similar fluctuations in output and employment, while Canada suffering a somewhat milder recession in 2008-2009.

Figure 8: Output and Employment Fluctuations: Great Depression versus Great Recession, Canada, United States and the United Kingdom, 1926-1939 and 2004-2014

Sources: **Canada**: Statistics Canada, CANSIM Series D14442; and Statistics Canada, *Historical Statistics of Canada* (Second edition). Ottawa: Statistics Canada, 1983, Series D528; Statistics Canada, CANSIM Series V2522952 and V62305752.

United States: S.B. Carter et al. (eds.), *Historical Statistics of the United States* (Millennium edition). New York: Cambridge University Press, 2006, Vol. 2, Table Ba840: 12-112; and Vol. 3, Table Ca9: 3-25; U.S. Bureau of Statistics, Establishment Data, Historical Employment B-1; U.S. Department of Commerce, Bureau of Economic Analysis, Selected NIPA Tables, Table C1.
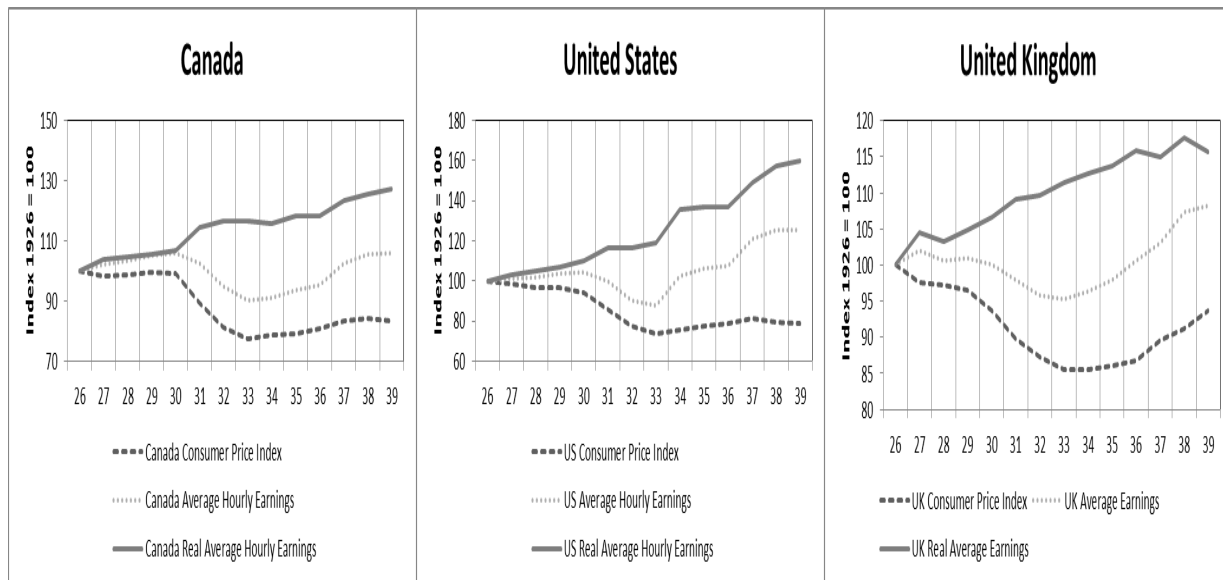
United Kingdom: Ryland Thomas, Sally Hills, and Nicholas Dimsdale, "The UK Recession in Context – What Do Three Centuries of Data Tell Us?" *Bank of England Quarterly Bulletin* (December 13, 2010); dataset is available on the Bank of England website see: www.bankofengland.co.uk/publications/quarterlybulletin/threecenturiesofdata.xls, Table 1, Column B and Table 12, Column D; UK Office of National Statistics (ONS) Series CAGR and BCAJ.
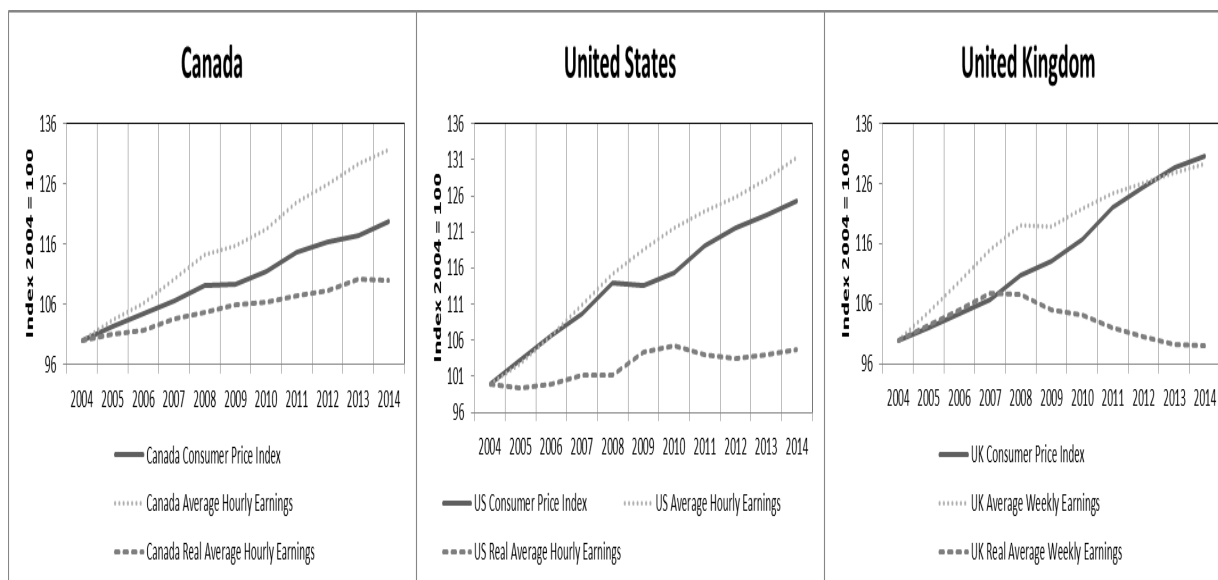
Given the sharp decline in employment and output during the Great Depression, one does witness similar declines in consumer prices in the two more industrialized countries on the North American continent, while British consumer prices fell slightly less across the Atlantic during the 1930s. In much the same way, money wages (measured as average hourly earnings, AHE) display a much more mitigated decline in Britain, while the United States and Canada witness a common pattern with money wages hitting bottom by 1933 (as can be seen in Figure 9). In light of this, if one had to take seriously the neoclassical mechanism, the cause of the mass unemployment must have been due to the fact that money wages had not fallen as quickly as prices, thereby leading to a fall in employment, as firms presumably sought to maximize profits along the marginal product curve for labor. Yet, despite the reversal of the evolution of employment after 1933, real wages show a sustained rise throughout the Great Depression, regardless of whether employment was declining as between 1929 and 1933 or rising subsequently. In contrast, the post-Keynesian explanation would make much more sense, namely that while a tremendous number of workers lost their jobs during the slump because of the collapse of private investment demand and foreign trade, those 75 percent or more of the labor force who were initially lucky enough to retain their jobs experienced a tremendous gain in real wages, which served as an important stabilizing element, especially in the recovery phase as real wages sustained growth in consumption spending and/or allowed working households to deleverage, if burdened, for instance, with mortgage debt. Hence what can be said for the Great Depression was that an important private sector stabilizer played out its role, notwithstanding the fall in employment that resulted from the collapse in business investment during the first few years of the Great Depression.

Was the phenomenon similar during the recent Great Recession? Despite the slowdown in prices and wage growth, real wages exhibited widely different patterns, where in Canada they showed a mild but persistent rising trend while in the US they showed a very slight jump during the actual slump of 2008-2009, but otherwise a relatively flat pattern. The case of the UK is of special interest because the behavior of real wages seems to have tracked a pattern that

would have pleased traditional neoclassical economists, and yet experiencing an employment growth that was not different from that of the US and hardly superior to that of Canada where real wages did not show a trend decline. Post-Keynesian economists would suggest that while the real wage distribution parameter, ω/P, was playing an important private-sector stabilizing role during the Great Depression, this was not the case during the Great Recession. Actually, in the case of the UK, its role was somewhat perverse, thereby serving as a drag on further growth and sustaining the current tendency towards secular stagnation. Indeed, one can easily contextualize the recent rise of Corbynomics within the British Labour Party following this significant collapse of real wages in Great Britain.

Figure 9: Evolution of Real Wages (AHE): Great Depression versus Great Recession, Canada, United States and the United Kingdom, 1926-1939 and 2004-2014

Canada	United States	United Kingdom

Another important issue has to do with how significant were the net wealth/debt effects as they played themselves out during both slumps and recoveries. To get an idea of whether consumption was behaving in accordance with the storyline suggested by neoclassical theory, one can see from Figure 10, the evolution of the personal saving rate in the three countries, which displays a sharp decline until 1933-35. Was this because of the strength of Pigouvian wealth effects? While consumer prices fell a great deal (particularly because of the more dramatic decline in primary commodity prices), asset values, as represented, for instance, by the share values of enterprises held by rentier households, must have fallen even more during the initial collapse so that, for instance, as is well known, by 1932 Wall Street stocks prices declined to only a small fraction of their 1929 peak values (see, for instance, White 1990). Moreover, in addition to asset price deflation that eroded household wealth, as emphasized by both Fisher (1933) and Minsky (1986) many business firms facing "stampede liquidation" of assets were unable to avoid bankruptcy and thus wiping out business debt on a wide scale, whose counterpart was household wealth.

In contrast to this reality, the belief ever since the 1940s by so many within the mainstream that Pigouvian wealth effects were substantial and leading to an *increase* in the
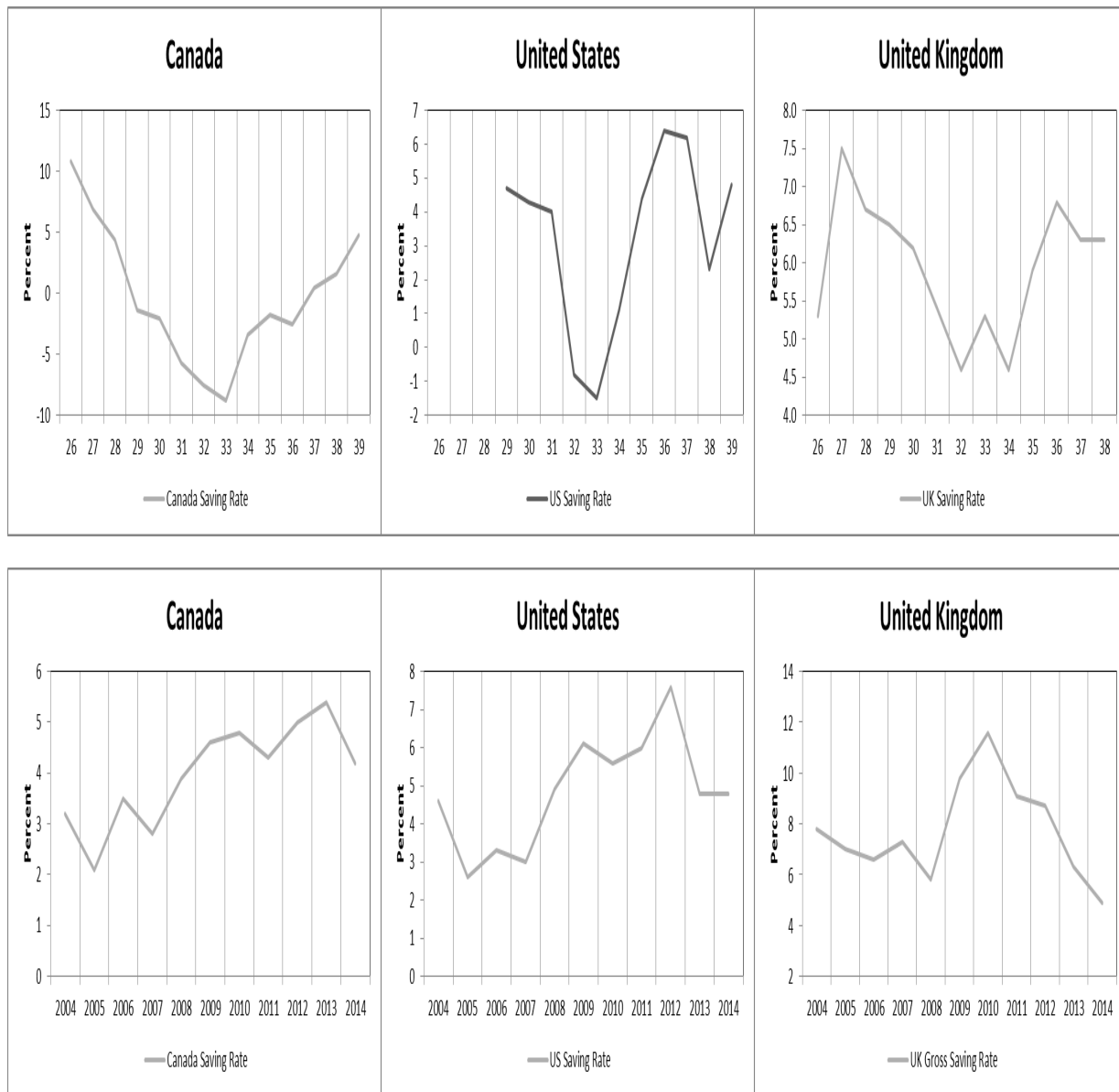
value of real assets (with households becoming collectively wealthier during the initial deflation to have brought about a decline in the saving rate) seems bizarre and highly implausible as an explanation of what happened during the first few years of the Great Depression. Since there was a substantial initial decline in the personal saving rate, the most plausible explanation is that especially unemployed households, who were experiencing a loss of income, would have been trying to maintain their previous consumption norm along the lines of what institutionalist economists such as James Duesenberry had defended during the 1940s (see Seccareccia 2010). On the other hand, the steep rise in the saving rate after 1933 appears to be primarily a balance sheet phenomenon. Indeed, once employment stabilized and began to turn around as a consequence of New Deal policies in the US, households began to reduce their debt load in face of still continued uncertainty about the prospects of income growth. This household consumption behavior had, therefore, a stabilizing effect on aggregate effective demand; and households only began to raise their saving rate and to deleverage once employment and income began their upward trend after 1933.

This behavior during the 1930s contrasts with that of the more recent past, where the saving rate rose immediately after the financial crisis. Households sought to deleverage right away because of the enormous weight of their overhanging debt accumulated during the previous decade. This phenomenon of immediate and then prolonged household debt deleveraging, associated with what Koo (2009) described as a balance-sheet recession, can help explain the dismal performance of consumption, as for example in the US, since 2007 (see Albuquerque and Krustev (2015)). Post-Keynesian writers would argue that the behavior of the personal saving rate and how the evolution of the real wage interacts with the saving rate, can tell us a lot about the nature of these private sector stabilizers and how they differed between the Great Depression and the Great Recession.

As we previously discussed, the rise in real wages during the Great Depression served to sustain consumption spending at a time when private investment, which was held back because of jittery "animal spirits", had collapsed. Moreover, the accompanying initial decline in the personal saving rate during the early years of the slump was actually sustaining consumption spending when it was most needed to offset the decline in business spending. Hence, it may be said that, despite the severity of the 1929 collapse, it triggered some important private sector stabilizers that prevented the private economy from spiraling downward even more than it did. Neither of these two private sector stabilizers were present following the 2008 financial crisis. Depending on the country, real wages either declined (as in the UK) or grew only very mildly as in Canada and the US. In addition, personal saving grew in all three countries as households sought to deleverage immediately after the financial crisis, which had not been the case during the early 1930s. In a world of low investment, the lack of these private sector stabilizers would suggest a private economy nowadays plagued by persistent or secular stagnation that may have

the potential to turn out to be even more prolonged than what had been experienced during the 1930s.

Figure 10: Evolution of Personal Saving Rate: Great Depression versus Great Recession, Canada, United States and the United Kingdom, 1926-1939 and 2004-2014

Source: **Canada:** Statistics Canada, *Historical Statistics of Canada* (Second edition). Ottawa: Statistics Canada, 1983, Series F83 and F90; Statistics Canada, CANSIM Series V647038 and Table 380-0072.
United States: S.B. Carter et al. (eds.), *Historical Statistics of the United States* (Millennium edition). New York: Cambridge University Press, 2006, Vol. 3, Table Ce122: 3-312; FRED Database, Federal Reserve Bank of St. Louis.
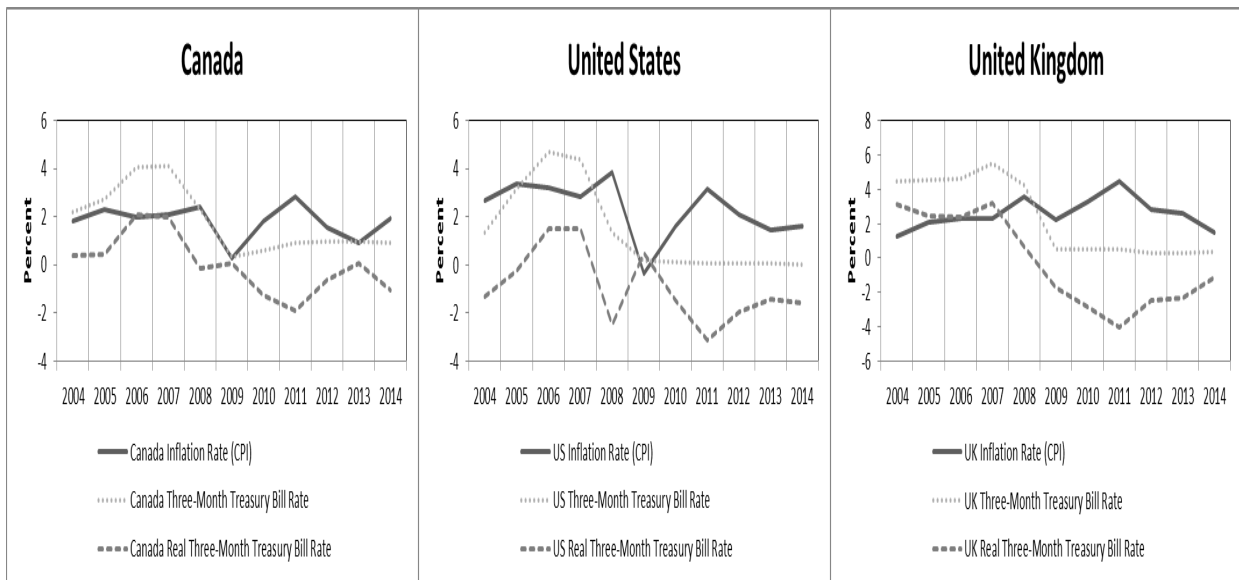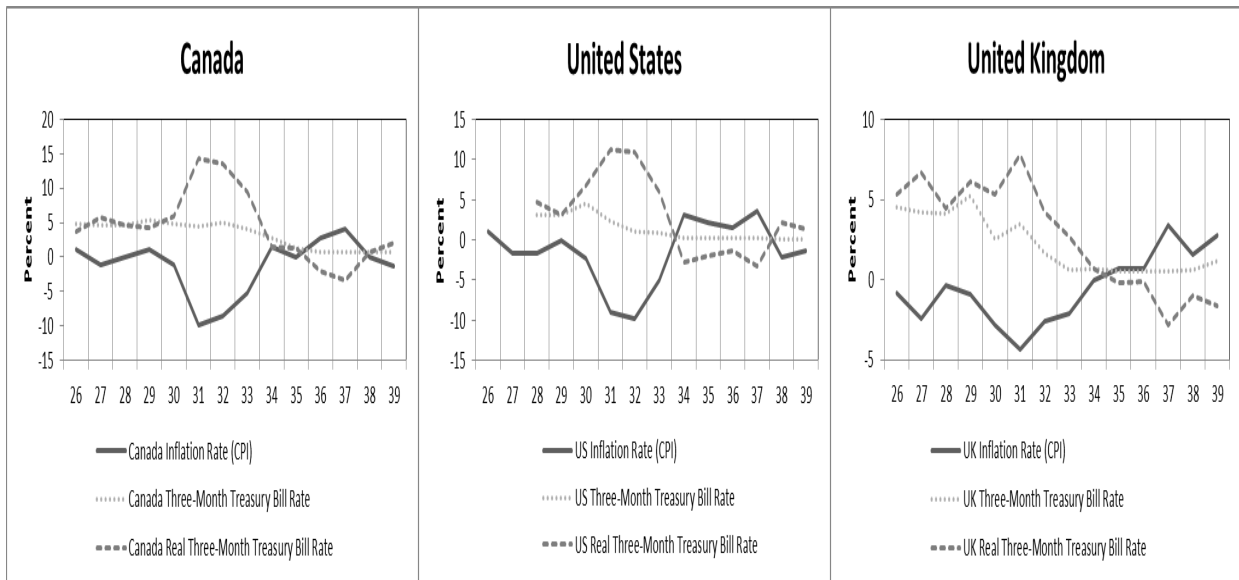**United Kingdom**: Ryland Thomas, Sally Hills, and Nicholas Dimsdale, "The UK Recession in Context – What Do Three Centuries of Data Tell Us?" Bank of England Quarterly Bulletin (December 13, 2010); dataset is available on the Bank of England website see:

In the absence of some of these private sector stabilizers, which had characterized the Great Depression, it is somewhat surprising that the performance of these economies during the Great Recession was not worse. We wish to argue that this has to do primarily with the magnitude (and some of the features) of government policy actions pursued over the last decade when compared to the policy behavior during the 1930s.

Let us begin with the monetary policies pursued during these two historical episodes. What distinguished the two epochs is the relative rigidity of nominal interest rates during the early years of the Great Depression as these economies were navigating under the restrictive conditions imposed by the gold standard. But after 1933, as can be seen below from the evolution of short-term real interest rates, they fell eventually into negative territories for most of the late 1930s. In the case of the last decade, these short-term real interest rates went into negative range very quickly during and following the financial crisis of 2008 by the direct actions of the various central banks. Because of this fall in interest rates that began already during the preceding sub-prime crisis in 2007-8, some of the worst problems of large-scale bankruptcies that characterized the post-1929 collapse did not materialize to the same extent during the post-2008 period.

Central banks pegged real rates in negative territory throughout the post-2008 period as they feared a major financial collapse of the household sector (that was trying to deleverage) because of the excessive burden of consumer and mortgage debt. However, given the low interest-elasticity of investment spending, the fall in rentier income during the post-financial crisis period may well have reduced rentier consumption spending as well, which would have differed a great deal when compared to what had occurred during the Great Depression. Despite the negative impact on rentier households' consumption, the net effect of the immediate negative interest rate policy was to prevent the 1930s' debacle because of the beneficial effects on the already heavily indebted households. On the other hand, as we have argued elsewhere (Lavoie and Seccareccia 2012), central bank policies of quantitative easing had little effect other than remolding somewhat the yield curve by also bringing down long-term interest rates.

Figure 11: Indicator of Monetary Policy Stance: Great Depression versus Great Recession, Canada, United States and the United Kingdom, 1926-1939 and 2004-2014

Canada (top-left chart, y-axis Percent 20 to -15, x-axis 26–39)
Canada Inflation Rate (CPI)
Canada Three-Month Treasury Bill Rate
Canada Real Three-Month Treasury Bill Rate

United States (top-middle chart, y-axis Percent 15 to -15, x-axis 26–39)
US Inflation Rate (CPI)
US Three-Month Treasury Bill Rate
US Real Three-Month Treasury Bill Rate

United Kingdom (top-right chart, y-axis Percent 10 to -5, x-axis 26–39)
UK Inflation Rate (CPI)
UK Three-Month Treasury Bill Rate
UK Real Three-Month Treasury Bill Rate

Canada (bottom-left chart, y-axis Percent 6 to -4, x-axis 2004–2014)
Canada Inflation Rate (CPI)
Canada Three-Month Treasury Bill Rate
Canada Real Three-Month Treasury Bill Rate

United States (bottom-middle chart, y-axis Percent 6 to -4, x-axis 2004–2014)
US Inflation Rate (CPI)
US Three-Month Treasury Bill Rate
US Real Three-Month Treasury Bill Rate

United Kingdom (bottom-right chart, y-axis Percent 8 to -6, x-axis 2004–2014)
UK Inflation Rate (CPI)
UK Three-Month Treasury Bill Rate
UK Real Three-Month Treasury Bill Rate

Source: **Canada:** Statistics Canada, *Historical Statistics of Canada* (Second edition). Ottawa: Statistics Canada, 1983; S.E. Nixon et al., "Interest Rates in Canada." *Canadian Journal of Economics and Political Science*, 3 (3), 1937, Table VI: 427; P.S. Amarel and J.C. MacGee, "The Great Depression in Canada and the United States." *Review of Economic Dynamics*, 5 (1), 2002: pp. 45-72; S. Homer and R. Sylla, *A History of Interest Rates* (Fourth edition). New Brunswick, N.J.: Rutgers University Press, 1991, Table 75: pp. 549-550 (Composite of Related Short-Term Rates); and Statistics Canada, CANSIM Series V122531; Bank of Canada, Data and Statistics Office, Inflation Series and Three-Month Treasury Bill Rate.

United States: FRED Economic Database, Federal Reserve Bank of St. Louis; U.S. Bureau of Labor Statistics (Three-Month Treasury Bill Rate); and Board of Governors of Federal Reserve System, Historical Data, Selected Interest Rates, H-15; Bureau of Labor Statistics, U.S. Department of Labor, Consumer Price Index, All Items (Three-Month Treasury Bill Rate).

United Kingdom: Ryland Thomas, Sally Hills, and Nicholas Dimsdale, "The UK Recession in Context – What Do Three Centuries of Data Tell Us?" *Bank of England Quarterly Bulletin* (December 13, 2010); dataset is available on the Bank of England website see:
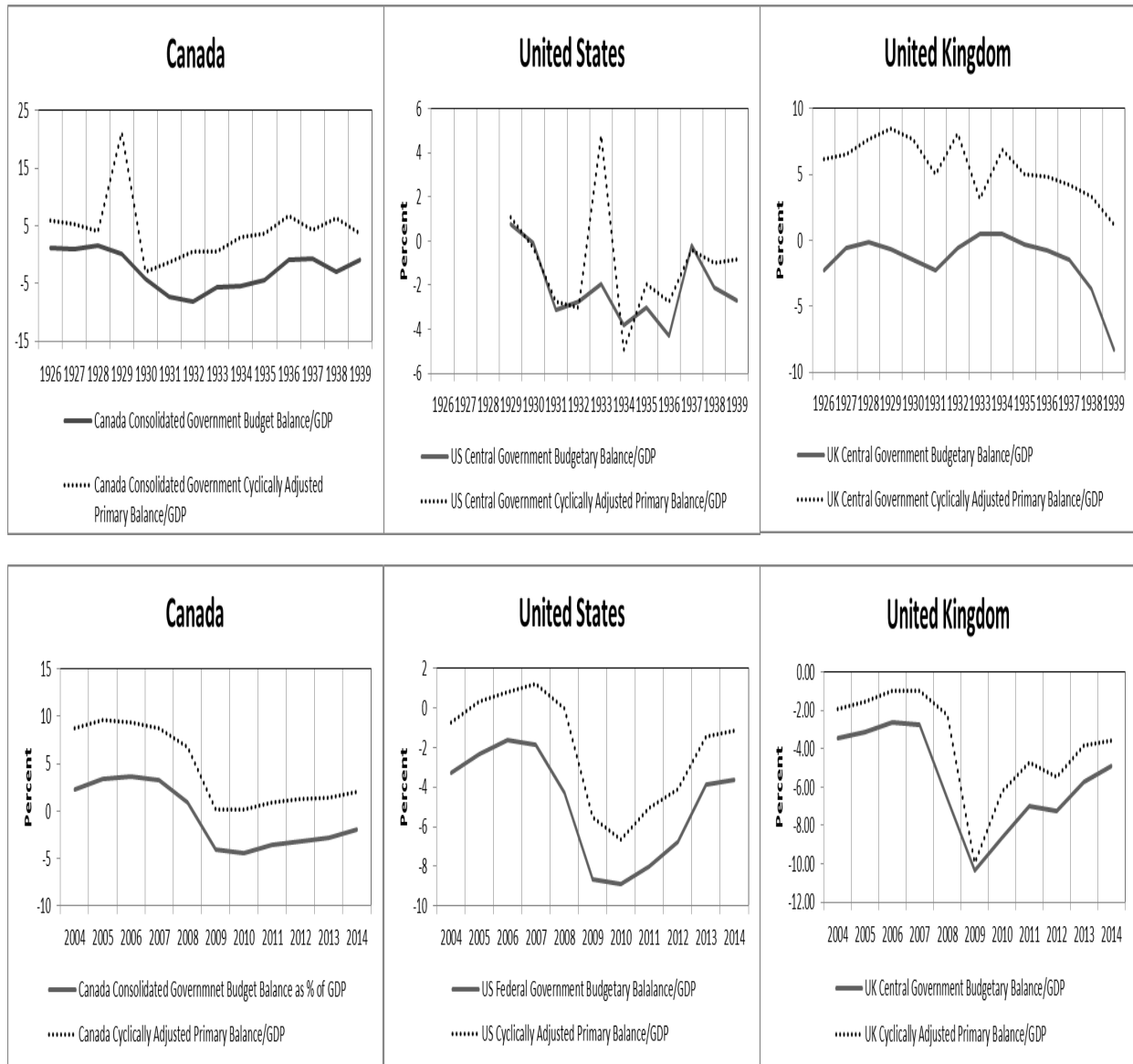
It is on the fiscal side that there was a much more obvious change of policy between the two eras and this change in fiscal behavior took place immediately after the financial crisis as governments tried to implement fiscal stimulus packages internationally: a policy that has been described elsewhere as the post-2008 "new fiscalism" (Seccareccia 2012). To get an indicator of the fiscal stance of the governments during the two eras, depicted in Figure 12, we obtained the actual budget balances of either all levels of governments or, lacking that, central governments of the three countries, as well as calculated estimates of the cyclically-adjusted primary balances. While there are numerous problems with interpreting these estimates that have been analyzed and criticized in great detail by Costantini (2015), we find it useful to get some even imperfect measure of the actual fiscal positions taken by the respective governments that were not the result of automatic stabilizers in the system.

Following somewhat the methodology adopted by the European Commission before 2005 (see European Commission 1995), our indicator of potential output was obtained by applying a simple HP filter to the series of the rate of growth of real output, with its difference being taken as the output gap, for the periods, namely 1926-1939 and 2004-2014 respectively. The cyclical component of net revenues was calculated by estimating the elasticity of revenues and outlays to the changes in output, with that component being obtained by multiplying the estimated elasticity of net revenues and the HP estimated output gap ($y - y^*$). These cyclical-adjusted balances are displayed in Figure 12 below (for a more detailed analysis of the methodology adopted, see the Appendix). We have also done a comparison of our estimates and the official "budgetary office" estimates of the three respective countries for the 2004-2014 period (displayed in Figure 13 below), and, while they are not identical, they are remarkably similar to our estimates for the last period, despite differences in methodology. However, when we compare those estimates for the last decade with those of the 1926-1939 period, what jumps out are the widely different behaviors of the fiscal authorities during the Great Depression, with most of them targeting cyclically-adjusted primary surpluses that did not follow a pattern similar to the evolution of the actual balances. Although there may well be some possible problems with the available data for all governments or central governments of that era, what does seem to be obvious is that these countries were hardly implementing policies of functional finance, with some odd jumps in the cyclically-adjusted data. In contrast, when one looks at the Great Recession the evidence would suggest that these two series were moving closely in tandem in all three countries. Hence, it would appear that all these governments reacted to the recession by implementing mildly activist discretionary fiscal measures for the early post-2008 period. The least activist was the Canadian government, which, regardless of the estimate in Figures 12 and 13, never actually run a cyclically-adjusted

primary deficit, but, on the other hand, was the least quick to move back sharply towards greater cyclically-adjusted primary surpluses.
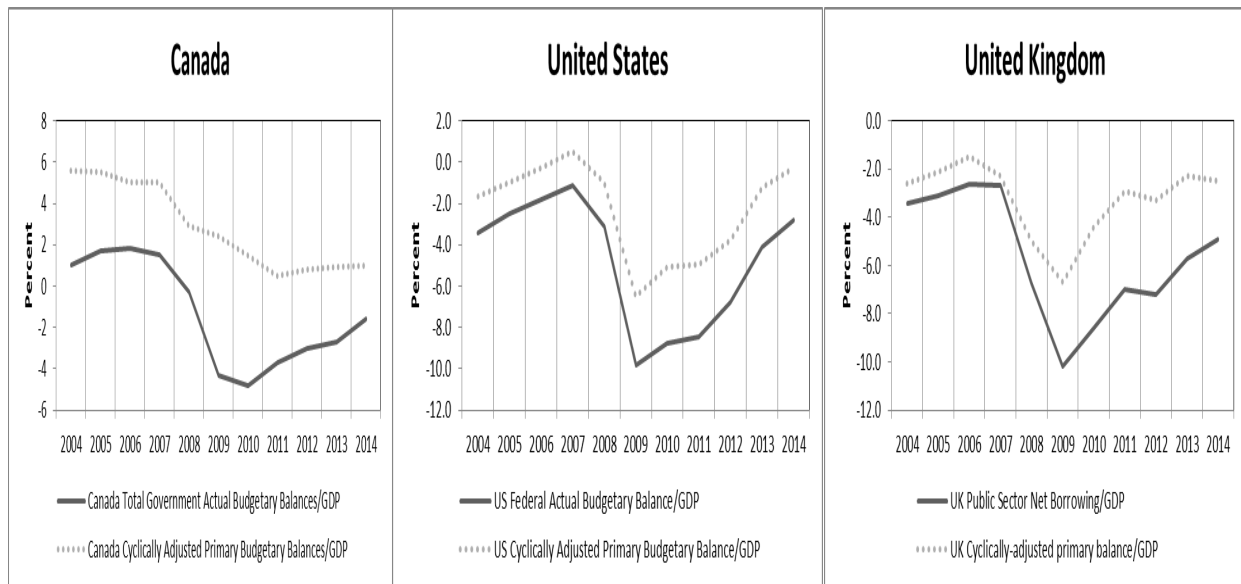
Figure 12: Indicators of Fiscal Policy: Actual Overall Balances versus Estimated Cyclically-Adjusted Primary Balances, Great Depression versus Great Recession, Canada, United States and the United Kingdom, 1926-1939 and 2004-2014

Source: **Canada**: Statistics Canada, *National Income and Expenditure Accounts*, Volume 1, *The Annual Estimates, 1926-1974*, (Catalogue 13-531); Statistics Canada: CANSIM Tables 380-0064 and 385-0032.
United States: US Bureau of Economic Analysis, http://www.measuringworth.com/usgdp/ and John W. Kendrick, *Productivity Trends in the United States*, Princeton: Princeton University Press (for NBER), 1961. Table A-III, from http://www.measuringworth.com/usgdp/ or see http://www.measuringworth.com/datasets/usgdp12/sourcegdp.php; FRED Economic Database, Federal Reserve Bank of St. Louis

United Kingdom: Ryland Thomas, Sally Hills, and Nicholas Dimsdale, "The UK Recession in Context – What Do Three Centuries of Data Tell Us?" *Bank of England Quarterly Bulletin* (December 13, 2010), dataset is available on the Bank of England website see: www.bankofengland.co.uk/publications/quarterlybulletin/threecenturiesofdata.xls, Table 1, Column B; Office of National Statistics (ONS): Series BKTL, JW20, KX5Q, J5II, and (J5II-JW2P+JW2L+JW2M).

Figure 13: Actual Budgetary Balances and Official Estimates of Cyclically-Adjusted Primary Balances during the Great Recession, Canada, United States and the United Kingdom, 2004-2014

Source: **Canada**, Federal Department of Finance, *Fiscal Reference Tables – 2015*, Table 46; **United States** Congressional Budget Office, "How CBO Estimates Automatic Stabilizers" (November 2015), "Historical Budget Data" (January 2015); **United Kingdom** Office of Budget Responsibility, Public Finances Databank.

All of this seems to show that, during the last Great Recession, the macroeconomic policy authorities had learned some hard lessons from the 1930s in immediately adopting measures (both monetary and fiscal measures) that sought to counteract the economic crisis, which had not been the case during the 1930s. Hence, because of the public sector stabilizing behavior and because of the sheer size of the public sector in the national economy, governments were able to provide a make weight that did not lead to a collapse on the scale of the 1930s. On the other hand, because of institutional changes, especially because of the importance of household debt in a modern financialized economy, and the strength of more globalized business enterprises that prevent real wages from increasing even during periods of growth, private sector stabilizers have played a somewhat perverse role during the post-2008 crisis.

7. Concluding Remarks

We have seen how a number of Western capitalist economies are slowly becoming ensnared in a long-term state of mild deflation, which had not been observed since the 1930s. Accompanying this, we have seen a revival of ideas that look eerily familiar within mainstream neoclassical economics, with at least two opposing camps that have crystallized on the issue of deflation. There are those, such as the neo-Hayekians together with the neo-Pigouvians, who see deflation as an essentially positive "temporary" step towards a more "permanent" or sustained long-term private-sector recovery. On the opposing side, there are neo-Keynesians *cum* neo-Wicksellians who fear a deflationary environment and its devastating consequences. However, these economists are apprehensive about deflation largely because of the rigidities of real interest rates as a Wicksellian market-clearing device when nominal interest rates are stuck at their institutional lower bound during a severe recession (as in 2008-2009).

While post-Keynesians recognize the dangers of the zero-lower bound (or the so-called liquidity trap) to the conduct of monetary policy, they also do point to (1) the perils of strong net debt effects and debt deflation within a recessionary environment, and (2) the perversity of declining real wages as a supposedly self-correcting measure during a slump. On the contrary, as Keynes of the *General Theory* had long surmised, a cut in real wages during a recession would be destabilizing, unless an economy is heavily dependent on foreign trade, in which case it would merely be promoting a neo-mercantilist and disruptive beggar-thy-neighbor policy in the world economy. In any case, a coordinated cut in real wages in all countries would merely reduce domestic aggregate demand in each country and would have no beneficial effect on external demand, as shown by Onaran and Galanis (2013).

From the simple stylized facts on private sector stabilizers presented above, we have seen how both the net debt effects and the lack of real wage growth have played a destabilizing role during the post-financial crisis era, which had not been the case in the 1930s. Without the immediate supportive "fiscalist" actions of the public authorities, the situation could have quickly degenerated and it would appear that, in the absence of persistent long-term government fiscal measures, Western capitalist economies could be staring into the face of stagnation for a very long time. This points to the relevance of Keynesian macroeconomic policy ideas, especially of the type that Keynes himself had discussed at the end of the *General Theory* in support of sustained public investment in the long-term as a makeweight for the capitalist economy (Seccareccia 2011-12). Without such an important makeweight measure (which Keynes had referred to as the "socialization of investment"), and because of the inadequacy of private sector stabilizers in modern financialized economies, the private system may be even more vulnerable to shocks today (and can find itself stuck in a longer state of "secular stagnation") than what had occurred during the 1930s. In addition to these long-term fiscal policy proposals, there is also the need to pursue labor market measures to sustain real wage growth, which would sustain consumption spending without the build-up of unsustainable

household debt, thereby further complementing a pro-growth Keynesian long-term public investment policy (see Lavoie and Stockhammer 2013). Much as in the 1930s, policy makers today face the choice of promoting prosperity through long-term public investment *cum* real wage growth, or promoting austerity, thereby leading to declining real wages and long-term stagnation.

APPENDIX: A Note on the Methodology in Calculating the Cyclically-Adjusted Primary Budget Balance

The method of calculating our Cyclically-Adjusted Primary Budget Balance was based on a simple procedure derived primarily from a technical note from the European Commission's *European Economy*, No. 60, published in 1995. In a general sense, this procedure involves calculating the elasticity of the budgetary revenue and expenditures and multiplying these by an output gap. The procedure can be decomposed into both the generation of the output gap (using the H-P Filter method) and computing the elasticities.

To compute the Output Gap we begin by using the H-P Filter to compute "potential" (or trend) GDP. Then we subtract this from the actual nominal GDP and express it as a percentage of potential GDP.

$$GAP_t = \frac{(Y_t - Y_t^*)}{Y_t^*}$$

where Y is nominal GDP and Y* is Potential GDP. To compute the cyclical component of budgetary revenue, r, we have:

$$r = \left(\frac{R}{Y}\right)_t * \varepsilon_r * GAP_t$$

where *GAP* is the output gap, *(R/Y)* is the average rate of receipts and ε_r is the elasticity of revenue, defined as *(ΔR/R)/(ΔY/Y)*.

To compute the cyclical component of budgetary expenditure, *e,* we followed a similar procedure:

$$e = \left(\frac{E}{Y}\right)_t * \varepsilon_e * GAP_t$$

where *GAP* is the output gap, *(E/Y)* is the average rate of expenditures and ε_e is the elasticity of current expenditure, defined as *(ΔE/E)/(ΔY/Y)*.
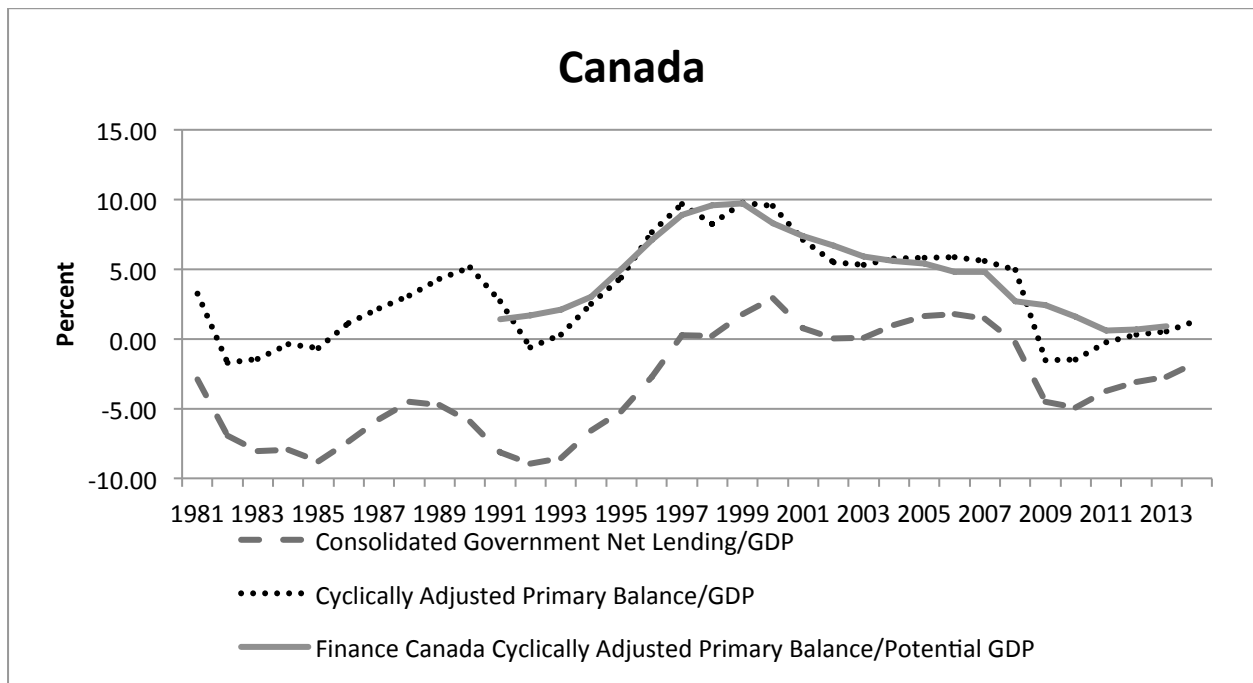
Finally, removing the cyclical portion of the revenues and expenditures from the actual budget, we get the cyclically-adjusted budget balance, *B**:

$$B^* = (R - E) - (r - e)$$

where *R* is actual budget revenue, *E* is actual budget expenditure and *(r – e)* is the cyclical component of the budget.

For computing the primary cyclically-adjusted budget balance we merely subtracted the interest payments on the public debt from the "*E*" term in the equation for the *B** above.

NB: This procedure is sensitive to the data entered. For instance, the H-P filter has several limitations in its use as an estimate for potential GDP, including being biased around its "end points". In addition, estimating the elasticity of revenue or expenditure can be sensitive to large change in revenue/expenditure when the change in GDP has been comparatively minimal. This may cause the elasticity to "explode". Lastly, our methodology differs from the original European commission report in a major way, namely, calculating the elasticity of budgetary expenditure. Whereas the European Commission estimated this based on changes in unemployment benefits, we are taking into consideration expenditures as a whole. Although this is an important difference in methodology, and could lead to the skewing of our results, in practice this does not seem to be the case. When we look at data for the period 1981 to 2014 for Canada and comparing our method to the Government of Canada's Department of Finance "official" cyclically-adjusted primary balance, we can see from the chart below that our methodology does approximate the official estimates. As was previously mentioned, the sensitivity to major changes in expenditures may explain the difference between the two methods, particularly around 2007-2009. An alternative explanation for the differences between the two methods is that the government estimates use some form of "smoothing" of which we are unaware. While recognizing its limitations, we still felt that our methodology was sufficient for heuristic purposes.

Source: Statistics Canada, Table 380-0064, Table 380-0080 and Table 385-0032**.**

References

Albuquerque, Bruno, and Georgi Krustev (2015), "Debt Overhang and Deleveraging in the US Household Sector: Gauging the Impact on Consumption", *Staff Working Paper 2015-47, Bank of Canada* (December); http://www.bankofcanada.ca/2015/12/staff-working-paper-2015-47/

Bagus, Philipp (2015), *In Defense of Deflation*, Cham: Springer International Publishing.

Baumol, William J., and Alan S. Blinder (2012), *Economics: Principles and Policy*, (Twelfth Edition), Cengage.

Baumol, William J., Alan S. Blinder, Marc Lavoie, and Mario Seccareccia (2010), *Macroeconomics: Principles and Policy* (First Canadian Edition), Toronto: Nelson.

Buttet, Sebastien, and Udayan Roy (2014), "A Simple Treatment of the Liquidity Trap for Intermediate Macroeconomics Courses", *Journal of Economic Education*, Vol. 45, no. 1, 36-55.

Buttet, Sebastien, and Udayan Roy (2015), "Macroeconomic Stabilization When the Natural Real Interest Rate Is Falling", *Journal of Economic Education*, Vol. 46, no. 4, 376-393.

Carlin, Wendy, and David Soskice (2015), *Macroeconomics: Institutions, Instability and the Financial System*, Oxford: Oxford University Press.

Colander, David (1995), "The Stories We Tell: A Reconsideration of AS/AD Analysis." *Journal of Economic Perspectives*, Vol. 9, no. 3 (Summer), 169-188.

Costantini, Orsola (2015), "The Cyclically Adjusted Budget: History and Exegesis of a Fateful Estimate", *Working Paper No. 24*, Institute for New Economic Thinking (October); http://ineteconomics.org/uploads/papers/WP24-Costantini.pdf

Cúrdia, Vasco (2015), "Why So Slow? A Gradual Return for Interest Rates", *FRBSF Economic Letter* (October 12); http://www.frbsf.org/economic-research/files/el2015-32.pdf

Cushman, David O. (2016), "A Unit Root in Postwar U.S. Real GDP Still Cannot Be Rejected, and Yes, It Matters", *Econ Journal Watch*, Vol. 13, no. 1 (January), 5-45.

Dullien, S. (2010), "*Macroeconomic Theory and Macroeconomic Pedagogy* – A review of the book edited by Giuseppe Fontana and Mark Setterfield*", Intervention: European Journal of Economics and Economic Policies*, Vol. 7, no. 2, 266-271.

European Commission. 1995. *European Economy* (1995 Broad Economic Policy Guidelines). No. 60. Brussels: ECSC-EC-EAEC.

Fisher, Irving (1933), "Debt-Deflation Theory of Great Depressions", *Econometrica*, Vol. 1, no. 4, 337-57.

Fontana, Giuseppe, and Mark Setterfield (eds) (2009), *Macroeconomic Theory and Macroeconomic Pedagogy*, Basingstoke: Palgrave Macmillan.

Hartwig, Jochen (2014), "Testing the Bhaduri-Marglin Model with OECD Data", *Inernational Review of Applied Economics*, Vol. 28, no. 4, 419-435.

Kalecki, Michal (1944), "Professor Pigou on the 'Classical Stationary State' - A Comment", *Economic Journal*, Vol. 54, no. 213 (April), 131-132.

Koo, Richard C. (2009), *The Holy Grail of Macro Economics: Lessons From Japan's Great Recession* (Revised Edition), New York: Wiley.

Koo, Richard C. (2015), *The Escape From Balance Sheet Recession and the QE Trap: A Hazardous Road for the World Economy*, Singapore: Wiley.

Krugman, Paul (2010), "Why Is Deflation Bad?" *New York Times*, (August 2); http://krugman.blogs.nytimes.com/2010/08/02/why-is-deflation-bad/?_r=0

Lavoie, Marc (2004), "The New Consensus on Monetary Policy Seen from a Post-Keynesian Perspective." In *Central Banking in the Modern World: Alternative Perspectives*, ed. by M. Lavoie and M. Seccareccia, Cheltenham: Edward Elgar, 15-34.

Lavoie, Marc (2010) "The Possible Perverse Effects of Declining Wages", *International Journal of Pluralism and Economic Education*, Vol. 1, no. 3, 260-175.

Lavoie, Marc, and Mario Seccareccia (2012), "Monetary Policy in a Period of Financial Chaos: The Political Economy of the Bank of Canada in Extraordinary Times." In *Monetary Policy and Central Banking: New Directions in Post-Keynesian Theory*, ed. by L.-P. Rochon and S.Y. Olawoye, Cheltenham, U.K.: Edward Elgar, 166-89.

Lavoie, Marc, and Engelbert Stockhammer (2013), "Wage-Led Growth: Concept, Theories and Policies." In *Wage-Led Growth: An Equitable Strategy for Economic Recovery*, ed. by M. Lavoie and E. Stockhammer, New York: Palgrave Macmillan, 13-39.

Minsky, Hyman P. (1986), *Stabilizing an Unstable Economy*, New Haven, Ct.: Yale University Press.

Onaran, Özlem, and Giorgos Galanis (2013), "Is Aggregate Demand Wage-led or Profit-led: A Global Model." In *Wage-Led Growth: An Equitable Strategy for Economic Recovery*, ed. by M. Lavoie and E. Stockhammer, New York: Palgrave Macmillan, 71-99.

Patinkin, Don (1948), "Price Flexibility and Employment", *American Economic Review*, Vol. 38, no. 4 (September), 543-564.

Romer, David (2000), "Keynesian Macroeconomics without the LM Curve", *Journal of Economic Perspectives*, Vol. 14, no. 2 (Spring), 149–169.

Romer, David (2013), "Short-Run Fluctuations" (January 2013 version), University of California, Berkeley, 2013 http://eml.berkeley.edu//~dromer/papers/Romer%20Short-Run%20Fluctuations%20January%202012.pdf

Sau, Lino (2015), "Coping with Debt Deflation", Presentation at the International Post Keynesian Conference, *Money, Crisis and Capitalism*, University of Grenoble, France (December 10-12).

Seccareccia, Mario (1991), "An Alternative to Labour-Market Orthodoxy: The Post-Keynesian/Institutionalist Policy View", *Review of Political Economy*, Vol. 3, no. 1 (January), 43-61.

Seccareccia, Mario (1998), "Wicksellian Norm, Central Bank Real Interest Rate Targeting and Macroeconomic Performance." In *The Political Economy of Central Banking*, ed. by P. Arestis and M.C. Sawyer, Cheltenham, UK: Edward Elgar Publishing, 1998, 180-98.

Seccareccia, Mario (2010), "The Determinants of Consumption and Saving from a Heterodox Perspective." In *Introducing Macroeconomic Analysis: Issues, Questions, and Competing Views*, ed. by H. Bougrine and M. Seccareccia, Toronto: Emond Montgomery Publications, 2010, 79-88.

Seccareccia, Mario (2011-12), "The Role of Public Investment as Principal Macroeconomic Tool to Promote Long-Term Growth: Keynes's Legacy", *International Journal of Political Economy*, Vol. 40, no. 4 (Winter), 62-82.

Seccareccia, Mario (2012), "Understanding Fiscal Policy and the New Fiscalism: A Canadian Perspective", *International Journal of Political Economy*, Vol. 41, no. 2 (Summer), 61-81.

Seccareccia, Mario (2015), "Economics and History: Why Economists and Policy Makers Need to Understand the Latter." In *Marx, Veblen, and the Foundations of Heterodox Economics*, ed. by T.-H. Jo and F.S. Lee, London: Routledge, 176-98.

Storm, Servaas, and C.W.M. Naastepad (2012), *Macroeconomics beyond the NAIRU*, Cambridge (Mass.): Harvard University Press.

Summers, Lawrence H. (2014), "U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound", *Business Economics*, Vol. 49, no. 2, 65-73.

Tobin, James (1980), *Asset Accumulation and Economic Activity*, Chicago: University of Chicago Press.

Wessel, David (2014), "Five Reasons to Worry About Deflation." *Brookings* (October 16); http://www.brookings.edu/research/opinions/2014/10/16-reasons-worry-about-deflation-wessel

White, Eugene N. (1990) "The Stock Market Boom and Crash of 1929 Revisited", *Journal of Economic Perspectives*, Vol. 4, no. 2 (Spring), 67-83.