More on Keynes and the Classics

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Abstract

This paper provides a simple, graphical review of the Keynes versus the classics debate. It focuses on four key issues: the roles of °exible wages and the velocity of money as well as the determination interest rates and the nominal price level. Its aim is to improve upon the rather bland presentation of Keynes' model usually found in textbooks and to give students a sense of the point counterpoint of this important debate.

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1 Introduction

In undergraduate textbooks, the foundations of Keynesian economics usually rest on sticky input prices and/or misforecast output price levels. In this macroeconomic short run, the price elasticity of aggregate supply is positive so that stimulus to aggregate demand will raise output and employment. In the long run, however, prices are °exible, forecasts are not persistently wrong and equilibrium real output is what is produced when input markets clear. A stimulative - `Keynesian' - aggregate demand policy may speed recovery to full employment real output (perhaps overshoot it), but cannot a®ect its long run level. The role of aggregate demand is ultimately to determine the nominal price level and the allocation of real output among its expenditure claimants.

While this model may have considerable merit as a description of reality, little in it re°ects what Keynes wrote. The General Theory was a highly polemical treatise motivated by what Keynes viewed as the misleading `special case' of the classical macroeconomic model. The purpose of this paper is to set out a simple, largely graphical, presentation of the `Keynes versus the classics' debate which can be followed by students with an intermediate economics background. While not every twist and turn in the debate can be examined, four issues which made (and make) the debate so engrossing are discussed. The ¯rst is the role of wage °exibility. This is the sine qua non of labor market clearing in the classical model and in the usual textbook analy-

sis where nominal wage adjustments shift the short-run aggregrate supply curve along the aggregate demand curve towards full employment output. In the General Theory, Keynes questioned whether wage reductions could be readily achieved and was skeptical that, even if they could, employment would rise. The adverse consequences for the e®ective demand for output were the principal concern.

The second issue is the determination of interest rates. Keynes and his followers viewed the liquidity preference theory as a triumph over the classical loanable funds model. Its signi¯cant new role for money (and monetary policy) and the importance it ascribed to portfolio balance decisions for the °ows of output and inputs clearly resonated with the contemporaneous experience of ¯nancial market turmoil and depressed employment. Little of this is today conveyed to students who are shown interest rates and real incomes in simultaneous stock °ow equilibrium at the intersection of IS and LM curves. This paper displays both the `natural rate' argument of the classical model and Keynes' view that interest rates are determined in the markets for asset stocks and then income, not interest rates, adjusts to equate °ows of savings and investment.

The third issue is the role of the velocity of money. Unlike the usual textbook treatment, this paper emphasizes that an unstable velocity is a key element of Keynes' model. In contrast, modern quantity theorists (or `monetarists') argue that, as an empirical matter, velocity is a stable function

of a few variables. Their criticism of Keynes' model, also reviewed in this paper, is therefore thrown into sharp relief.

Finally, the paper considers the determination of the aggregate price level. For Keynes' critics, this has long been the `Achilles heel' of his analysis. In the classical model, the quantity theory of money provides an explicit solution for the price level. No equivalent precision is to be found in Keynes' model. The paper demonstrates how the resulting `real balance e®ect' argument associated with Pigou and Patinkin (i.e., a falling nominal price level will directly stimulate e®ective demand) led to the reconciliation of the two models in the mainstream literature.

The plan of the paper is as follows. In the next two sections, the classical Keynesian models are laid out respectively. In each, a four panel ¯gure summarizes the analysis and these facilitate a graphical comparison of the two models. In the fourth section, the modern monetarist and neoclassical synthesis responses to Keynes' model are discussed. Concluding remarks are found in the ¯nal section.

2 The Classical Model

The basic unknowns in this model are real output Y, employment L, the real interest rate r, the real wage $!=P$ and the nominal output price level P. (The last two imply the equilibrium nominal wage level $!$. Any in°ation gap between the real and nominal interest rates is discussed below.) Their

solutions, subscripted with a `c', appear in the four panels of Figure 1.

The short-run aggregate production function in panel (a) displays positive and diminishing marginal product of labor. (Notwithstanding positive investment, installed capital is temporarily fixed and labor is the only variable input.) This yields the downward sloping marginal product of labor schedule in panel (b) which is also the competitive demand for labor curve drawn against the real wage. There are several possibilities for labor supply. The simplest (as shown) is perfect inelasticity. More complex would be labor supply displaying both non-zero real wage elasticity and, consistent with recent real business cycle analysis, sensitivity to the real interest rate. This last possibility is discussed in footnote 1 below.

Figure 1 about here

Labor market clearing in panel (b) yields equilibrium $(!=P)_c$ and L_c. Returning to panel (a), the solution for L_c determines equilibrium real output Y_c. This classical macroeconomic model is `block recursive': solutions for Y_c, L_c and $(!=P)_c$ are independent of the remaining unknowns. Indeed, it was of particular significance for Keynes that the classical solution for real output does not depend on the demand for it. Moreover, assuming flexible nominal wages, the solution for Y_c is also independent of the nominal price level P. This explains the perfectly inelastic `aggregate supply curve' in panel (d).

In the loanable funds model illustrated in panel (c), the real interest rate adjusts to equate the °ows of savings and investment. In this paper, we abstract from government and the foreign sector so that investment represents the net demand for credit (or supply of new bonds) in the current period and savings is its net supply (or demand for new bonds). Since saving is generally a function of real income as well, there could be illustrated in panel (c) a `family' of savings loci, one locus for each level of real income. Given our prior solution for Y_c, however, only the savings locus drawn for it appears.

The equilibrium interest rate r_c illustrated in panel (c) is the `natural rate'; that is, the rate equating savings to investment at full employment output. Its existence provides the classical response to the point above that no explicit demand for output has been speci¯ed. Consider the familiar `Keynesian cross' diagram with a 45± ray from the origin and where aggregate expenditure is a function of consumption and investment. The natural rate r_c ensures that this function intersects the 45± ray at Y_c. If not, then savings (withdrawals from the income °ow) would not equal investment (expenditure injections) at Y_c. In the classical model, the interest rate would then adjust. Both consumption and investment would thereby change and shift the aggregate expenditure curve into the correct position. In the classical model, °exible interest rates ensure su±cient demand for the supply-side determined real output level.[1]

[1]A more complex natural rate model has labor supply sensitive to the real rate (from intertemporal optimization). If labor supply rises with higher r, panels (a) and (b) yield a

Consider finally the solution for the nominal price level P_c. That the real unknowns have been determined prior to its solution is itself a result: the classical neutrality of money. The solution shown in panel (d) follows from the quantity theory of money where the `aggregate demand' curve in that panel is the rectangular hyperbola of $(P; Y)$ points satisfying the quantity equation $M V = P Y$, where M is the exogenous nominal money supply and V is the income velocity of money. Velocity can be treated as an exogenous constant (reflecting the current state of `transactions technology') or derived from the equilibrium requirement that the demand for money $M^d = k \cdot P Y$ equal its supply, in which case $V = 1/k$. The behavioural variable k can be exogenous or sensitive to the nominal interest rate i_c (the opportunity cost of holding money). From the Fisher equation, i_c is the sum of r_c found above and the rate of inflation determined by the (exogenous) growth rate in the nominal money supply and the (endogenous) rate of real output growth.

3 Keynes' Criticism

The initial point of Keynes' critique of the classical model is its solution for the real interest rate. As emphasized above, its role there is to equate flows of savings and investment and thereby ensure sufficient demand for the (supply-side determined) real output level. Keynes' liquidity preference

positive relationship between r and Y. From panel (c), an inverse (IS curve) relationship between r and Y results as we shift to savings loci for higher incomes. The equilibrium $(r; Y)$ pair thus involves simultaneous solutions in panels (a), (b) and (c). Barro and Lucas' intermediate macro text (1998) provides an elaborate version of such a model.

model views this as a special case of a more general model that solves for r from consideration of portfolio balance decisions over asset stocks. His principal conclusion is that no market-based, equilibrating mechanism exists to ensure su±cient demand for the full employment output of the economy.

In the liquidity preference model, representative individual j at time t selects a portfolio from money and the interest-bearing asset, call it `bonds', subject to the wealth constraint

$$M_j^s + P_t^B B_j^s = M_j^d + P_t^B B_j^d;$$

where $(M_j^s; B_j^s)$ are the asset supplies owned by the individual, $(M_j^d; B_j^d)$ are their desired levels, and P_t^B is the nominal price of bonds at time t. The constraint means that the portfolio selection decision cannot create wealth at the time it is made. If the constraint holds for an individual, it holds for the economy as a whole and so an aggregate wealth constraint can be written in the form:

$$(M - M^d) + P_t^B(B^s - B^d) = 0:$$

If the demand for money (`preference for liquidity') equals its supply, the above `Walras's Law for assets' implies that the bond stock will also be willingly being absorbed into the economy's portfolios. Associated with the equilibrium price P_t^B will be an equilibrium yield or interest rate on bonds. It should be emphasized that B^s here denotes the aggregate stock of bonds in existence at time t, not just the current `new' issue.

An explicit form demand for money function is $M^d/P = k(r_t; : : :)Y$ where we assume (for the moment) zero in°ation and `: : :' refers to in°uences on money demand other than the current interest rate. Unlike the classical model, these comprised for Keynes a large and mercurial set: liquidity preferences and thus velocity $1/k(\cdot)$ are erratic. For example, pessimism over future bond prices may induce a shift of wealth into money to avoid potential negative rates of return on bonds. Such money `hoarding' not only slows velocity but creates a self-ful¯lling prophecy as bond prices fall and interest rates rise in response.

Figure 2 about here

Consider panel (d) of Figure 2 in which a liquidity preference (`real demand for money') locus is drawn for the classical real income Y_c. The (exogenous) real money supply M/P would be held at real rate r_1. We assume that the preference for liquidity is strong enough (i.e., high k and thus low V) that when transposed onto panel (c) of Figure 2, we have $r_1 > r_c$. In the classical model, this inequality would signal an excess demand for `new bonds', raising their price and lowering r. In Keynes' model, any such demand is dwarfed by the accumulated supply of all existing bonds. No market force requires that the entire bond stock be absorbed into portfolios at the higher price (lower yield) required for full employment by the classical model. For Keynes, stocks dominate °ows and in the present case the °ow of income in particular will fall

to equate savings and investment. It is possible that r_1 and the natural rate r_c could be the same, but in Keynes' analysis that would be a `special case'. In general, the two will not be equal. Given unstable liquidity preference (highly variable velocity of money), it would therefore only be fortuitous if the Keynesian solution for Y would match the classical.

As income falls, we move to savings and liquidity preference loci lying to the left in panels (c) and (d), and ultimately a Keynesian pair $(Y_k; r_k)$ is found which satisfies both asset stock and income flow equilibrium conditions.[2] While $r_c < r_k < r_1$ in Figure 2, it is possible that $r_c < r_k = r_1$ if the economy is in a `liquidity trap' to be discussed below.

The income level Y_k is now transposed onto panel (a) of Figure 2.[3] From the production function in panel (a), Keynesian employment L_k is found, where $L_k < L_c$. This solution in turn fixes the position of the Keynesian `kinked' demand for labor curve in panel (b). This curve is coincident with the classical demand for labor (reproduced from Figure 1) for real wages above the marginal product of L_k and perfectly inelastic for real wages below it. The inelastic range reflects the constraint that additional output from more employment cannot be sold.

At the classical equilibrium real wage $(!=P)_c$, unemployment now results.

[2] This same pair would be found at the intersection of IS and LM curves which can be derived from panels (c) and (d) in Figure 2 respectively.

[3] In contrast with the classical model where output and employment solutions were first derived in panels (a) and (b) of Figure 1 and then exported to its `asset panels' (c) and (d), note that the `flow of causality' in the Keynesian model is reversed.

It should be clear that the problem is not that this real wage is too high, but rather that the price of bonds in the securities markets is too low for classical full employment. Nevertheless, there will be pressure on real wages to fall and, assuming sufficient real wage elasticity of labor, a market clearing real wage $(!=P)_k$ exists. In Keynes' analysis, such real wage reductions will be resisted by labor since, consistent with the inelastic labor demand curve range in Figure 2(b), they will not promote higher employment or output.

A more subtle point argued by Keynes (and emphasized by `British Keynesians' such as Robinson 1956 and Kaldor 1966) is that wage cut resistence may itself be beneficial by preventing further erosion of output and employment. The argument, which provided one of the significant bridges between Keynesian and Marxian economic theory, revolves around the distribution of income. If real wages fall in panel (b), the share of Y_k claimed by the owners of capital (or non-labor fixed inputs) rises. Assuming such ownership is concentrated in a few hands, `capitalists' can be expected to have a higher propensity to save than the `working class'. If so, aggregate saving from Y_k will increase. The real wage, in short, is potentially a shift variable in the savings function and a fall in the real wage in particular will shift the `family' of savings loci in panel (c) to the right. Inspection of Figure 2 reveals that this will set off a `second round' of surplus output and associated interest rate, income and real wage reductions.

A shift in the relative share of income away from labor may also increase

the absolute income claimed by the owners of bonds and push up their price. This, in turn, may stimulate investment and weaken the asset market's preference for liquidity. The real wage, in other words, may be a shift variable in the liquidity preference function and the marginal efficiency of investment locus in panel (c), rousing `animal spirits' and offsetting the downward spiral of the economy described in the previous paragraph. Further investigation of the relative strengths of these forces is beyond the scope of this paper. It is simply noted that for Keynes and his followers, there was no reason to believe that the economy will smoothly converge to full employment as in the classical model. Active macroeconomic stabilization policy is therefore called for.

An obvious policy lever to pull would be the nominal money supply. Assuming sufficiently inelastic liquidity preferences with respect to interest rates, raising the money supply should reduce the interest rate. Indeed, with $L_k < L_c$ and $Y_k < Y_c$, nominal wages and output prices may well fall and thereby raise the real supply of money endogenously. Keynes was certainly aware of these possibilities (and, contrary to the usual textbook discussion, did not assume rigid nominal prices) but had two principal concerns. First, since liquidity preferences were considered unstable, the exact real money supply needed for full employment became itself an elusive target. The more famous concern, however, was that the liquidity preference loci may become perfectly elastic at an interest rate greater than the natural rate: a `liquid-

ity trap'. In this case, the ¯ckle psychology of asset markets establishes a maximum price for bonds and no further excess demand for them will build regardless of how much (real) money is pumped into the economy. In this event, manipulating aggregate expenditure and directly shifting the savings loci left in panel (c) through, say, activist ¯scal policy may be necessary.

4 The Classical Response

In this section, we consider the response of critics of the Keynesian model above. Quite prominent in recent years have been the modern quantity theorists or `monetarists' associated with Milton Friedman and his followers. Their essential criticism is relatively simple to describe: as an empirical matter, it is not true that the demand for money (liquidity preference) is erratic. On the contrary, the evidence is that the demand for money is a stable function of a few variables. While `k' in the explicit form demand for money function above is not necessarily ¯xed (and the velocity of money not some rigid, `natural' parameter), it does not °uctuate wildly (Friedman and Schwartz 1963). Moreover, it is not particularly elastic with respect to interest rates. A Keynesian policy of actively manipulating the money supply in order to stabilize interest rates and the economy will in practice have a destabilizing impact on nominal income. The principal element of a sound monetary policy should be a stable, predictable nominal money supply growth rate (Friedman 1960).

Given a stable velocity of money, an associated monetarist conclusion is that variations in nominal income are best predicted by tracking oscillations in the nominal money supply. In the classical model above, these would be localized more narrowly in °uctuations in the price level. In the monetarist view, however, the linkage between a higher nominal money supply and a rising price level is not so direct (Friedman 1968). For example, agents setting nominal wages and other input prices for a contractually ¯xed time interval will take into account expected in°ation over the interval. These expectations will unlikely re°ect a perfect forecast of the nominal money supply growth (particularly if an `activist' monetary authority is making it di±cult to predict to begin with). An unanticipated increase in the nominal money supply can raise both P and Y in the short run, with the distribution between the two subject to variable time lags. Only over the longer run (by which time the implications of the money supply policy are better understood), will the e®ect be felt in P alone. This view, extended to aggregate demand manipulation in general, largely underlies the standard textbook treatment described in the ¯rst paragraph of this paper.

As a ¯nal note on the `velocity debate', consider a modern Keynesian response to the monetarist critique: money supply targeting as a stabilization device has been widely abandonned by major western central banks. A signi¯cant problem appears to have been that various aggregates of ¯nancial market assets may constitute `money' and controlling any one of them invites

substitution into (or creation of) those outside the controlled aggregate. Like the stable Phillips Curve, the velocity of money appears stable only if that stability is not exploited for policy purposes. (B. Friedman 1988, Judd and Scadding 1982)

A second broad criticism of Keynes' model is that it provides no solution for the nominal price level. This concern should not be confused with the (invalid) objection that Keynes' model cannot allow for in°ation. Consider this last point ¯rst. If we adopt the classical view that for given Y in°ation is equal to the growth rate in the nominal money supply, then the real money supply M=P will be una®ected by in°ation: the numerator and denominator are simply growing at the same rate. The opportunity cost of holding money, however, is foregone nominal interest and in these circumstances the equilibrium interest rate determined in Figure 2(d) is the nominal rate. Given the Fisher equation, however, it is a short step to subtract from this solution the (exogenous) rate of nominal money growth to solve for r_k. This solution can then be transposed onto panel (c) of Figure 2 and the rest of the model unfolds as in the previous section.

The more fundamental objection is that with a given nominal money supply, his model does not solve for the nominal price level. Keynes was not unaware of this omission, but dismissed it as having little relevance (General Theory p.253). Like many Keynesians since, his view was that nominal output prices are a function of nominal costs (like in perfect competition or

some imperfectly competitive `markup' scheme) and nominal costs in turn are closely linked to the nominal wage of labor !. Since the ratio of the two, the real wage, is ultimately determined by shifting relative bargaining strengths in the `struggle' over the allocation of Y_k, the exact nominal values in this ratio were therefore `second order indeterminate'.

This dismisal proved controversial. Pigou (1943) and then Patinkin (1948) made essentially the following argument: if $Y_k < Y_c$ and $L_k < L_c$, then nominal wages and output prices can be expected to fall and thus raise the real money supply. Even if the economy has fallen into a `liquidity trap' so that real rates do not immediately decline, these authors argued that since money balances are a component of wealth, lower nominal prices will reduce the incentive to build wealth further through saving out of current °ow income. In short, falling nominal prices will shift the savings loci left in panel (c) of Figure 2 and thereby directly restore e®ective demand for full employment output.

The foregoing `real balance e®ect' argument proved convincing to many puzzled by the Keynesian notion that the market-based economy cannot reach a Pareto optimum. Defenders of the Keynesian orthodoxy responded in part by arguing that what constitutes money in the modern economy is most often the liability of some agent in the economy (Kalecki 1944). The `net outside' money in the economy is therefore a very small component of real wealth - and zero in the `pure credit' economy of Keynes' predecessor

Wicksell. To rely on a changing value of this component of aggregate real wealth was a thin reed to lean on. Nevertheless, this aspect of the debate provided its basic resolution found in most textbook treatments. On the level of `high theory', Keynes was wrong: market adjustments do exist to eliminate persistent unemployment. On a practical level (and notwithstanding monetarist views discussed above), however, such mechanisms can be slow and unreliable. Activist Keynesian macroeconomic policy interventions can be justi¯ed on e±ciency grounds.

5 Conclusion

The purpose of this paper was to provide a simple review of the Keynes versus the classics debate. It lies at the heart of many current macroeconomic debates and yet, perhaps feeling the need to present undergraduates with a `clear picture', the point counterpoint of the debate is omitted from most textbook presentations of Keynesian economics. This e®ort, it is hoped, will clarify some of the important issues for students.

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Figure 1

The Classical Model

Figure 2

The Model of Keynes