Research Network Macroeconomics and Macroeconomic Policies

31 October – 1 November 2008

Berlin

Macroeconomics Policies on Shaky Foundations – Whither Mainstream Economics?

**Tax Policy and Innovation: A Search for Common Ground**

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October 2008
Introduction

The themes of the 2008 Research Network Macroeconomics and Macroeconomic Policies conference are to examine the changes that are taking place in mainstream economics; to establish what, if any, is the new orthodoxy; and to identify the implications for Post Keynesian economics. In particular, the conference organisers have asked contributors to examine the role of discretionary fiscal policy in both mainstream and Post Keynesian\textsuperscript{1} macroeconomics with a view to establishing whether there is any possible common ground between them. This is the task we have set ourselves in this paper.

In a sense, our task is ‘mission impossible’ because the principal emphasis of mainstream macroeconomics is on monetary policy, denying any substantive role for discretionary fiscal policy, except possibly in times of severe recession. On the other hand, the principal emphasis of Post Keynesian (JMK) macroeconomics is on fiscal policy, rejecting many of the mainstream criticisms of fiscal policy as groundless or irrelevant. For as long as mainstream and Post Keynesian (JMK) economics maintain their entrenched stances, we see little prospect of a meaningful dialogue emerging between them. Rather than sit uncomfortably sandwiched between Tweedledum and Tweedledee, we concentrate on an area in which mainstream economics recognises that discretionary fiscal policy has an important, perhaps critical, role to play, namely, the control of greenhouse gas emissions and show how we think Post Keynesian (MK) economics may provide common ground on which a useful dialogue may take place.

The paper is in seven parts. In part one we review briefly the current mainstream stance on fiscal policy. In part two we discuss the dominant Post Keynesian (JMK) approach. In part three we identify the main features of the Post Keynesian (MK) approach to fiscal policy that distinguish it from the Post Keynesian (JMK) approach. In part four we discuss the role of taxation in a Kaleckian growth model. In part five, we demonstrate how a Kaleckian approach to the taxation of greenhouse gas emissions can influence the rate of innovation. In part six, we show how policy measures to stimulate innovation may be thwarted by a political innovation cycle. Finally, in part seven, we consider what common ground there may be between mainstream and Post Keynesian (MK) economics on the interaction between tax policy and innovation.

\footnote{We distinguish two categories of Post Keynesian economics. The category that has its origins in Keynes we designate as Post Keynesian (JMK). The category that has its origins in Kalecki we designate as Post Keynesian (MK).}
1. Role of Tax Policy in the Mainstream Fiscal Policy Stance

Contemporary mainstream macroeconomics identifies itself as the New Economic Consensus (NEC) and is an amalgamation of the developments in macroeconomics from the post-war Neoclassical Synthesis to the present day. Its defining characteristic is the claim that choice-theoretic micro-foundations determine macroeconomic outcomes. In order to explain aggregate employment and output, all macroeconomic models, according to the NEC, must incorporate individual inter-temporal decision-making based on rational expectations. Within this framework, however, there are still disagreements as to the role of fiscal policy (Tscherneva, 2008).

Having virtually abandoned fiscal policy during its monetarist phase, there are now influential voices within NEC that recognise it may have a limited role to play (Bernanke, Reinhart and Sack, 2004, Krugman, 2005). This rather grudging concession stems not so much from an acknowledgement of any positive merits of fiscal policy as a recognition that there may be circumstances, for example, when the short-term rate of interest falls to zero, under which no further economic stimulus from monetary policy is possible. However, within the NEC coterie, fiscal policy is viewed very much as a measure of last resort to be used only in periods of extreme deflation despite its distortive and inflationary effects. It is now accepted by Bernanke (2003a), among others, that in the short run fiscal authorities may have important reasons for deviating from a balanced budget (or budget surplus) stance when faced with national emergencies or deep recessions. In the long run, however, the fiscal disciplines of the balanced budget and responsible levels of national debt must be maintained.

An important feature of the emerging NEC stance on fiscal policy is a recognition that the Ricardian equivalence hypothesis that had previously precluded fiscal policy effectiveness may not hold. This opens the possibility that wealth effects from deficit spending may have an impact on aggregate demand. Abandonment of Ricardian equivalence raises the fear that governments may lose financial discipline and incur ever-rising debts. Sustainability of a government’s budget is a major concern for NEC economists. The NEC overwhelmingly subscribes to the doctrine of ‘sound finance’ to avoid the distortive and inflationary effects of government spending. The dominant NEC view is that the principal goal for fiscal policy is to avoid an intolerable tax burden on future generations. The inter-temporal budget constraint is an important underlying condition for understanding the role of fiscal policy from a NEC perspective.

There is widespread agreement in the NEC that fiscal policy is inherently inflationary and that its use should be restricted to deflationary conditions. At all other times, monetary policy should dominate
and fiscal policy should remain passive and be automatic, transparent, credible and rule-compliant. There is a strong supply-side predilection in the NEC so that if fiscal policy is deemed necessary it should take the form of tax cuts and not of increases in government spending.

The final issue we consider is the NEC view of the link between fiscal policy and full employment. The NEC dynamic general equilibrium model does not admit of the existence of involuntary unemployment. This marks a complete break from Keynes whose revolutionary *raison d’être* was to find a cure for involuntary unemployment.

This necessarily brief summary of the NEC stance on fiscal policy confirms that except under the direst of circumstances it is to be avoided like the plague, bringing with it as it does all sorts of unwelcome complications such as inflation and resource misallocation. For the NEC ‘sound finance’ and balanced budgets are the *sine qua non* of responsible macroeconomic fiscal policy.

There is, however, one important area in which the NEC sees positive merit in fiscal policy and that is the area of climate change where the use of taxes is advocated as an important instrument in controlling the levels of greenhouse gases into the atmosphere (Stern, 2006). We return to this issue in more detail in part 5 below.

2. Post Keynesian (JMK) Stance on Fiscal Policy

The Post Keynesian (JMK) camp takes a diametrically opposite view of the role of fiscal policy. In terms of achieving macroeconomic coordination and stabilisation objectives, Post Keynesians (JMK) such as Arestis and Sawyer (2004) see fiscal policy as a more potent instrument than monetary policy, although, surprisingly, they give little credit to Kalecki’s contribution. Post Keynesian (JMK) analysis revives Lerner’s (1943) functional finance approach in which fiscal policy is to be judged not by ex-post budgetary results but by its real effects on the economy. Governments face no limits to their spending and the role of fiscal policy is to spend as much as is necessary to bring the economy to full employment. Although Arestis and Sawyer identify a number of NEC assumptions that undermine fiscal policy effectiveness, they argue that the Post Keynesian (JMK) functional finance approach is not necessarily inconsistent with the NEC. They reject crowding out and add to the criticisms of the Ricardian equivalence hypothesis. If these arguments are considered irrelevant, it follows that there is room for fiscal policy.
The type of fiscal policy advocated by Post Keynesians (JMK) is one that encourages investment and growth. For example, Arestis and Sawyer write:

Fiscal policy of the ‘functional finance’ type boosts aggregate demand, and thereby has a stimulating impact on investment, which raises the future productive capacity of the economy.....The growth rate may thereby be favourably enhanced by fiscal policy (Arestis and Sawyer, 2004 p. 139). This version of the Post Keynesian (JMK) functional finance approach stimulates investment and growth and aims to reduce the demand gap. It is not dependent on any particular type of public spending or investment. These are critical issues to which we return in more detail below. The main virtue of this Post Keynesian (JMK) approach is that it always raises aggregate demand, unlike in the NEC where fiscal policy only has demand side effects in non-Ricardian regimes.

As in the NEC, the barrier to attaining full employment is inflation although Post Keynesians (JMK) have a different interpretation of inflation. There is no single NAIRU but rather a fluctuating structuralist inflation barrier whose level depends on a number of factors such as capacity utilisation and the rate of growth of capital stock. With a fluctuating inflation barrier, full employment will be given by the level of employment when aggregate demand hits this barrier. Thus, there may be a number of levels of full employment depending on the level of aggregate demand and the location of the inflation barrier.

The principal feature of the Post Keynesian (JMK) approach is its belief in the effectiveness of fiscal policy which contrasts with the relative ineffectiveness of the NEC view. The Post Keynesian (JMK) approach rejects the crowding out effect, Ricardian equivalence and the fixed supply assumptions of the NEC. Whereas the NEC treats the growth rate as given, in the dynamic Post Keynesian (JMK) approach as advocated by Arestis and Sawyer, growth rates will change in response to changes in government spending so that fiscal policy need not run into traditional budget constraints. However, in contrast to the NEC approach, the Post Keynesian (JMK) macroeconomic approach as articulated by Arestis and Sawyer, for example, makes no explicit reference to the corrective role of fiscal policy and the use of greenhouse gas taxes.

3. Fiscal Policy: Keynes or Kalecki?

The ghost of Keynes is present at both the NEC and Post Keynesian (JMK) feasts. The NEC is determined to exorcise it once and for all while Post Keynesians (JMK) are keen to resuscitate it. However, Keynesian fiscal policy is not the only Post Keynesian game in town. It has become widely recognised that Kalecki has at least a strong a claim as Keynes as the founder of Post Keynesian economics (Harcourt, 2006) and a stronger claim for primacy on the role of tax policy (Asimakopulos, 1978). As early as 1937, Kalecki (1937) recognised that the publication of Keynes’s General Theory
required a whole new approach to the study of taxation. Kalecki worked through the short-period macroeconomic effects of taxes on commodities, incomes and capital but never explicitly incorporated taxation into his subsequent dynamic analyses. Asimakopulos and Burbidge (1974) published a fully developed short-period Kaleckian model. The full integration of taxation into Kalecki’s theories of income distribution, income determination, investment, business cycle and growth has been undertaken by Laramie and Mair (2000).

There are a number of important differences between Post Keynesian (JMK) and the Post Keynesian Kaleckian (MK) approaches to fiscal policy which we summarise below.

**Balanced budget:** The essence of the Post Keynesian (JMK) approach is the stimulation of aggregate demand by the injection of additional government spending and the accumulation of budget deficits. The Post Keynesian (MK) approach identifies the macroeconomic effects within a balanced budget regime without requiring any changes to aggregate government taxation or spending.

**Expenditure vs revenue sides of budget:** The Post Keynesian (JMK) approach focuses on the expenditure side of the government budget. The Post Keynesian (MK) approach focuses on the revenue side and considers the macroeconomic effects of equal-yield substitutions between taxes and holding government expenditure constant.

**Functional finance and functional distribution of income:** Both Post Keynesian approaches recognise the importance of functional finance. However, unlike the Post Keynesian (JMK) approach, the Post Keynesian (MK) approach emphasises the macroeconomic consequences of fiscally-induced changes in the functional distribution of income.

**Tax shifting and incidence of taxation:** Tax incidence is applied income distribution theory. Therefore, in studying the incidence of taxation it is important to specify on which theory of income distribution it is based. The Post Keynesian (JMK) approach does not specify its theory of income distribution. The Post Keynesian (MK) approach is explicitly based on the degree of monopoly theory of income distribution. The importance of tax shifting is recognised in the Post Keynesian (MK) approach and quite different macroeconomic effects follow depending on whether or not taxes are shifted.

**Fiscal policy and growth:** Both Post Keynesian approaches emphasise the role of fiscal policy in promoting a faster rate of growth. In the Post Keynesian (JMK) approach, the mechanism operates via
the impact of functional finance on aggregate demand which in turn stimulates investment and raises the future productive capacity of the economy. The Post Keynesian (MK) approach uses an investment model to identify the drivers of growth and the channels through which balanced changes in the structure of taxation will have an impact on investment and growth.

*Fiscal policy and innovation:* The Post Keynesian (JMK) approach treats the rate of innovation as exogenous and does not identify any role for fiscal policy. The Post Keynesian (MK) approach recognises that fiscal policy can stimulate innovation although its impact may be limited by a political innovation cycle.

Kalecki’s original 1937 formulation and its subsequent extension by Asimakopulos and Burbidge are both short period approaches in which the level of investment is determined by decisions taken in some earlier time period. They require to be incorporated in a dynamic model that seeks to identify the dynamic effects of fiscal policy as it impacts on investment, income distribution and growth. This we do in the next section.

4. Role of Taxation in a Kaleckian Growth Model

Having identified the most important differences between the two Post Keynesian approaches to fiscal policy, we now proceed to illustrate in more detail how balanced changes in the structure of taxation can impact on the rate of growth in a Kaleckian growth model. In particular, we show how taxation can have an impact on the rate of innovation.

Our starting point is Kalecki’s (1962) theory of investment as modified by Gomulka, Ostaszewski and Davies (1990). In the Kaleckian approach, the macroeconomic impact of taxation depends on:

- the relative marginal propensities to consume out of wages and profits
- whether compensating changes exist in government expenditures
- the extent to which a tax change is shifted through changes in business mark-ups.

A critical element in the Kaleckian approach is the pricing behaviour of firms as this determines whether or not changes in the taxation of wages or profits result in changes in business mark-ups and in the distribution of income.

Kalecki’s theory of profits is made dynamic by linking taxation to his theories of profits, national income determination, income distribution, investment and growth. For Kalecki, everything is driven by
what happens to investment. Changes in the structure of taxation today can affect investment and, thus, profits, tomorrow.

In Kalecki’s theory of investment, there are two channels through which taxation has an impact on investment:

- the rate of depreciation
- the level of profits

The rate of depreciation channel operates by altering the relative profitability after tax of existing and new plant and equipment. With technology continually improving through time, an increase in the tax on profits will lower the real profits generated by older plant and equipment relative to new plant and equipment, accelerating the obsolescence of the former and encouraging investment in the latter.

The effect of taxation on the level of profits also operates through two channels (ignoring the foreign sector):

- the impact on the government budget position
- the effect on income distribution

The effect via the government budget position is the balanced budget multiplier effect. The effect via income distribution depends on whether or not tax shifting occurs as a consequence of firms altering their mark-ups in response to changes in the structure of taxation. The extent to which this will occur will depend on the strength of the degree of monopoly. Quite different macroeconomic effects occur depending on whether or not tax shifting takes place.

The economy’s trend growth rate can be affected by changes in the structure of taxation when both the rate of capacity utilisation (White, 1999) and business balance sheets matter in making capital investment decisions (Courvisanos, 1996, pp. 103-6). Businessmen are assumed to desire a certain rate of capacity utilisation. An increase in the rate of capacity utilisation above the desired level will accelerate expansions and dampen contractions in investment. A decrease in the rate of capacity utilisation below its desired level will dampen expansions and accelerate contractions in investment.

Business balance sheets are incorporated by taking into account the firm’s gearing ratio (the ratio of total liabilities to net worth) in order to capture the effect of increasing risk associated with investment (Kalecki, 1971). An increase in the gearing ratio puts more of a business’s capital at risk in the case of failure.
In the long run, taxation has an impact on investment through three channels:

- the rate of depreciation
- the level of after-tax profits
- the rate of capacity utilisation

Changes in the rates of tax on wages and on profits will affect the trend level of investment under different conditions, assuming that the government maintains a balanced budget stance and that the semi-autonomous component of capitalists’ consumption remains unchanged. A change in the structure of taxation, comprising an increase in the rate of profits tax, offset by an reduction in the rate of tax on wages, so that the government budget position remains unchanged, will have a positive effect on the rate of investment if:

- no tax shifting occurs
- workers do not alter their savings
- the capacity utilisation rate reaction coefficient is non-zero positive.

5. Tax Policy and the Rate of Innovation

Having established the channels through which taxation can impact on investment and then through this to the growth performance of the economy, we now introduce the link from investment to innovation. This will enable us to model the impact of tax policy changes on the rate of innovation and the dynamics of economic growth. This link is through the idea of the margin of obsolescence (Bloch, Mangano and Courvisanos (B-M-C) (2007)).

5.1 Decision rule on innovation: Investment in capital equipment that embodies best practice technology is a specific form of innovation. When firms make a decision to invest in plant and equipment that embodies new technological knowledge, whether that knowledge is related to products or processes, technological innovation (TI) takes place. Salter (1966) provided a seminal analysis of how technical change comes about through capital accumulation by focusing on the reverse side of innovation, that is, on technological obsolescence (TO).

Salter (1966, p. 54) defined TO as ‘plants which are sufficiently outmoded to be profitably replaced’. At any time, with both new and established knowledge, there is a spectrum of techniques used in production, ranging from ‘up to date’ to ‘outmoded’ to ‘obsolete’. There are a number of factors that determine investment decisions in addition to TO. There is no inevitability that firms will automatically make investment decisions immediately to order the most up to date capital equipment. This may be due
to financial constraints, wage costs, industry competitiveness (or lack of) and the level of technological flexibility (or inertia).

To incorporate TI into the theory of investment analysis has not been easy. Most studies, including new endogenous growth theory models, have viewed technical change as exogenous. However, by defining TO in terms of cost minimisation, Salter provides a method of identifying how and when firms find it profitable to invest in the TI embodied in the newest vintage capital equipment. Thus, technical change through TI becomes endogenous to the investment process.

Salter (1966, pp. 74 –5) argued that the ‘margin of obsolescence’ appears in a particular plant when the unit total (operating plus fixed overheads) cost of production using best-practice capital equipment equals the unit operating (materials plus labour) costs of production of the oldest vintage capital equipment. On the ‘margin of obsolescence’ the capital stock in a particular plant will be such that the implications, from a cost minimising perspective, to stay with the existing stock or invest in new equipment are identical. Salter’s concept of the ‘margin of obsolescence’ can be linked to Kalecki’s investment function through capacity utilisation on the basis that the ‘margin of obsolescence’ can be alternatively identified as the point at which the total cost of new capacity equals the operating cost of existing outmoded capacity. Thus, when the total cost of new capacity becomes less than the operating cost of existing capacity, then existing ‘marginal’ capacity becomes TO. Salter’s contribution is a clear decision-based convention or rule for when new TI should be introduced into the investment ordering process, subject to growth in demand.

Kalecki’s (1954) degree of monopoly and TI are linked via four potentially quantifiable determinants of the degree of monopoly - the role of giant firms; the development of sales promotion through advertising, selling agents etc.; the influence of changes in the level of overhead costs in relation to prime costs; and the power of trade unions. From a theoretical perspective, TI should be incorporated into investment theory as innovation alters the incentive to invest by ‘changing the cost of production’ or ‘altering product demand’ (B-M-C, 2007, p.5). This is what Kalecki intended in his formulation of the degree of monopoly. ‘Changing the costs of production’ is encapsulated in his identification of the ‘role of giant firms’ (industry concentration and economies of scale), ‘changes in the level of overhead costs in relation to prime costs’ and ‘the power of trade unions’ (wage costs); while ‘product demand’ is encapsulated in ‘the development of sales promotion’ (product differentiation).
Kalecki’s theory of income determination states that profits (capitalists’ income) are determined by capitalists’ spending (investment) decisions in a previous time period, so that if capitalists are to experience an increase in their income they must translate an increased ‘incentive to invest’ into the actuality of a higher degree of monopoly by investment in one or more of the elements that determine the degree of monopoly.

Econometric results obtained by Laramie, Mair and Reynolds (2000) show that both ‘cost of production’ and ‘product demand’ factors have influenced the degree of monopoly in UK manufacturing industry in recent years. These results allow us to endogenise the effects of technical change on the degree of monopoly. Technical change, in a monopoly-capital scenario, encourages investment and increases profits, the wage bill, and national income. However, if the benefits of technical change are captured exclusively by businesses, business mark-ups increase, the wage share decreases, which further increases the level of profits through a reduction in worker savings, but dampens the investment-induced increase in the wage bill and national income. In addition, by reducing the real costs of production (increasing profits relative to national income), this income redistribution effect of technological change reduces the rate of depreciation and slows down the effect of technical change on new investment. Accordingly, we expect technologically induced changes in investment to move in cycles (for empirical evidence see Courvisanos and Verspagen, 2004). The potential result is a contradiction between technologically induced growth and income distribution, which will give rise to cycles and to trends at below the level of full employment.

The Salter-B-M-C approach identifies a clear decision rule as to when a firm should adopt the most recent TI and undertake the necessary capital investment. We now consider how the introduction of taxation may influence this decision rule. Two conditions must hold. First, the introduction of taxation must increase the after-tax operating (material and labour) cost of existing capital equipment relative to the after-tax total cost of best-practice capital equipment, or, in the Salter-B-M-C terminology, accelerate TO; and, second, the introduction of taxation must increase the after-tax profitability of best-practice capital equipment relative to its pre-tax profitability, or, in Kaleckian terminology, increase the rate of depreciation. If these conditions do not hold, then altering the structure of taxation has no role to play in influencing TO or the rate of depreciation.

5.2 Taxation and the decision rule on innovation: The analysis is carried out in a time-dated framework, so that future costs and profits are expressed in discounted values. We begin by assuming that the firm is operating in time period \( t \) with existing capital equipment and operating cost, \( OC_t \). It has
to decide whether to replace this existing equipment in time period $t + \tau$ with best-practice capital equipment with total cost $TC_{t+\tau}$. We assume that the operating and overhead costs of producing with best-practice capital equipment in $t + \tau$ are known with certainty in time period $t$. The Salter-B-M-C decision rule applies when $TC_{t+\tau} = OC_{t+\tau}$. The operating cost of best-practice equipment, $OC_{t+\tau}$, must be less than $OC_t$, otherwise the decision rule will not be operational, i.e. $OC_{t+\tau} < OC_t$. However, overhead cost, $OHC_{t+\tau}$, will be greater than $OHC$, because of higher amortisation charges consequent on investment in best-practice capital equipment, i.e. $OHC_{t+\tau} > OHC$, ceteris paribus.

The Salter-B-M-C rule only relates to firms’ costs and does not specify a profit condition. The profit condition is that $P_{t+\tau} > P_t$. If the firm is applying the Kaleckian mark-up pricing rule, it follows that the mark-up, $k$, in $t + \tau$ has to rise, i.e. $k_{t+\tau} > k_t$. This is because the application of an unchanged mark-up to the lower operating cost, $OC_{t+\tau}$, (to determine price per unit of output) inevitably means that, with the higher overhead cost, $OHC_{t+\tau}$, profits in $t + \tau$ will be lower, i.e. $P_{t+\tau} < P_t$. Thus, the Salter-B-M-C rule may be a necessary condition but is not a sufficient condition for TO. A necessary condition for TO to result in an increase in profits, thereby encouraging investment, is that price/cost mark up on output associated with new equipment must increase. That is, the rate of depreciation must also be such that $P_{t+\tau} > P_t$. However, as indicated above, a rise in mark-ups has consequences for the distribution of income. The mark-up-induced decrease in the wage share dampens the effect of TI (TO) on depreciation and investment. For this dampening effect to be small, the effect of the technological change on the aggregate business mark-ups would have to be small (although perhaps large for some firms or industries).

We now consider how the introduction of taxation affects the above conditions. We illustrate the effect by reference to the introduction of a tax on the emission of green house gases (GHG). We accept all the efficiency arguments in favour of GHG taxes to ensure that GHG emissions are priced to reflect the damage they cause (Stern, 2006). We identify two categories of GHG tax (GT). The first is levied on GHG emissions associated with the production of production-goods (GTP). The second is levied on the GHG emissions associated with the consumption of wage-goods (GTW).

If there is to be an increase in TO, the gap between $OC_t$ and $OC_{t+\tau}$ has to widen. This can only occur in response to an increase in GTP or a shifted increase in GTW. This happens because operating costs (including wage costs and profit taxes), $OC_t$, are higher than $OC_{t+\tau}$, an increase in GTP and a shifted increase in GTW will have a relatively greater impact on $OC_t$ than on $OC_{t+\tau}$. A tax-induced stimulus to TO will be generated and the real costs associated with existing capital equipment at time period $t$ will rise, thereby stimulating the rate of depreciation.
However, GTW shifting implies an inverse relationship between the mark-up and GTW. Shifting of GTW will, therefore, result in a fall in the mark-up. With GTW shifting, the price/cost mark-up on existing equipment will increase relative to the price/cost mark-up on new equipment, which in turn will increase the relative profitability of new equipment and reduce the relative profitability of existing equipment, which, in turn will accelerate its depreciation. The profits on new investment can rise as a result of either having a large pool of profits to draw on or because of increases in relative price/cost mark-ups.

With this modification, we examine first an increase in GTW. The effect of a shifted increase in GTW on the level of profits, $P_t$, will depend on the extent to which the shifting will increase the wage share, the wage bill, and workers’ savings. When workers’ savings are zero, a balanced budget tax change will have no effect on post-tax profits, $P_t$. It is, therefore, not inconceivable that the increase in GTW in time period $t$ would have no effect on $P_t$ although it is more likely that $P_t$ will fall, if GTW is shifted, and workers have a positive propensity to save. An increase in GTP and a shifted increase in GTW in time period $t$ will give a kick-start to TI (and result in existing capital stock gradually becoming obsolete).

We now consider how the firm will respond to this stimulus and how fiscal policy can influence that response. In time period $t$ the firm recognises two consequences of these changes. First, it has a stronger financial incentive to replace its existing capital equipment; and, second, when GTW is shifted, its degree of monopoly has fallen, as witnessed in the fall in its mark-up. The firm must, therefore, seek to enhance its degree of monopoly, i.e. increase its mark-up, in order to make investment in TI financially viable in time period $t + \tau$. In either case, the firm attempts to shift these tax effects by accelerating the rate at which it innovates.

From the above analysis we can see that a tension exists between the effects of taxes on GTP and investment, and the effects of taxes on depreciation and investment. Balanced budget increases in GTP, when un-shifted (price/cost mark-ups are given) and when workers’ propensity to save is zero, have no effect on after-tax profits and no effect on profits, but this increases operating costs and accelerates the margin of obsolescence of existing equipment while stimulating TI. Balanced budget increases in GTW, assuming workers’ propensity to save is zero, when shifted, have no effect on after-tax profits, increase national income, through a reduction in the profit share, and, like GTP, accelerate the margin of obsolescence of existing equipment.
There exists a balanced budget tax change that will accelerate the margin of obsolescence with positive effects on after-tax profits and the level of national income. This tax change is a combination of (i) an un-shifted increase in GTP and (ii) an un-shifted reduction in GTW. Assuming no change in workers’ savings and a non-zero positive capacity utilisation reaction coefficient, this tax package is not conducive to innovation.

6. Tax Policy and the Political Economy of Innovation

Having established conditions under which the government can use balanced changes in the structure of taxation to influence positively the margin of obsolescence, the question arises whether it will in fact actually do so. This parallels the question Kalecki posed in relation to the attainment of full employment in Political Aspects of Full Employment (PAFE) (Kalecki, 1943). While he and Keynes had provided the policy tools and techniques that could ensure full employment, Kalecki, from a political economy perspective, recognised that sustained full employment in a capitalist economy is unattainable. In the context of a capitalist policy solution, Harcourt (2006) refers to this as ‘the Kaleckian dilemma’.

Kalecki (1943) identified the fears that capitalists have of full employment - loss of economic control and industrial control. Mair and Laramie (2002) develop this further by arguing that through the process of forming distributional coalitions, business interests can ensure that they do not lose these controls, thereby preventing a permanent and sustained attainment of full employment. Steindl (1979), Bhaduri and Steindl, (1983) and Catley and McFarlane (1981) have provided empirical evidence of a Kaleckian-type political business cycle (PBC) in advanced industrial economies such as USA, UK and Australia. Courvisanos (2007) applied Kalecki’s PAFE approach to innovation. Whereas in the original formulation of PAFE and its subsequent development, innovation played only a minor role, Courvisanos (2007) argued that analogous to PAFE, the ‘political aspects of innovation’ (PAI) can also be identified in the recent experience of mature industrial economies.

Analogous to PAFE, the PAI approach identifies three fears that capitalists have with innovation:

(i) loss of economic control with respect to their individual market power as innovation encourages new entrants that have the potential to reduce the incumbents’ market share and ability to control the market.

To counter this threat, governments are persuaded by business interests to introduce various innovation policies to support incumbents, R and D subsidies to support incremental innovations, patent protection and other intellectual property rights.
loss of *policy* control as innovation becomes distributed across society through public institutions and public infrastructure that creates the national innovation system.

To counter this threat, governments are persuaded by business interests to develop various strategies that support incumbents to regain some policy control, notably privatisation, public-private infrastructure programmes and public contracting.

*loss of industrial* control of the workforce if governments maintain industrial relations policies that reflect the full employment-type, high-union membership structures of the 1950s and 1960s.

To counter this threat, governments are persuaded by business interests to introduce new industrial relations policies in the name of innovation aimed at supporting and encouraging ‘flexibility’ in the workplace. This flexibility relates to the ability of firms to alter labour costs and structures when they introduce new process innovations that require less (and more flexible) labour.

7. **Kaleckian Tax Analysis: A Pathway to Common Ground with NEC**

As we have shown, there are quite fundamental differences within the Post Keynesian camp between the Keynesian and Kaleckian approaches to fiscal policy. In favour of the Kaleckian approach, it has the major advantage of being a balanced budget approach and, consequently, satisfying the NEC cardinal rule of ‘sound finance’. Also, with its emphasis on the revenue side of the budget, the Kaleckian approach of balanced changes in the structure of taxation is more in tune with the supply side orientation of the NEC. Indeed, as we have shown in part 5, a Kaleckian GHG tax operates by offering firms a fiscal ‘incentive’ which under certain conditions will accelerate the obsolescence of the plant and equipment and undertake new higher technology investment.

The NEC has a morbid fear of inflation. To the extent that this is attributable to increased government spending, this fear is allayed by the balanced budget Kaleckian approach. The mantra of full employment does not arise in the Kaleckian approach. As early as 1943, Kalecki recognised that while full employment might be a technical possibility, the pressure of business interests would ensure it would be a political impossibility. Similarly, as we have shown in part 6, while fiscal policy may have a stimulating effect on innovation, again the pressure of business interests will generate a political innovation cycle so that that the full economic impact of innovation will never be achieved. NEC economists need not lie awake at nights worrying about the inflationary implications of Kaleckian fiscal policy.
A feature of the NEC approach, which finds a resonance in the Kaleckian approach is ‘crowding out’. For the NEC, ‘crowding out’ is a physical concept in which the demands of the public sector for land, labour and capital elbow out the needs of the private sector, resulting in inflation and resource misallocation. The Kaleckian concept is more subtle and refers to the reaction of the business class to fears of a loss of political and economic control as the state ‘crowds out’ the private sector by extending its activities into spheres which had been the traditional preserve of the private sector (Kalecki, 1943). This Harcourt (2006) describes as the ‘Kaleckian dilemma’. But the NEC faces its own dilemma over Ricardian equivalence. Fiscal policy effectiveness can only be realised by abandoning Ricardian equivalence and the strict rationality assumption on which it is based.

Perhaps the most fundamental difference between the NEC and Post Keynesian (both varieties) approaches to fiscal policy is their stances on fiscal policy and growth. For the NEC fiscal policy has no contribution to make to growth and, at best, is a short-term palliative to be considered only when the economy is in the grips of serious recession. The Post Keynesian (JKM) approach recognises that fiscal policy contributes to growth by an expansion of aggregate demand resulting in an increase in investment, productive capacity and growth. But in the Keynesian ‘functional finance’ approach this increased investment need not be anything more sophisticated than the purchase of shovels for the purpose of digging holes and filling them in again. Again, the Kaleckian approach is more subtle. It specifies the determinants of investment and identifies the channels through which changes in the structure of taxation can have an impact on these determinants. As we have shown in part 5, the Kaleckian fiscal approach endogenises innovation so that fiscal policy can, under certain conditions, encourage an acceleration of technical progress.

References


