POPULATION AGEING AND INTERGENERATIONAL CONFLICT: A POST-KEYNESIAN VIEW

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Abstract

Population ageing has been seen as creating economic problems often described as a worsening intergenerational conflict for resources. A rising dependency ratio is said to increase the 'burden' on the working population by forcing sacrifices in their consumption. Such apparently intuitive ideas are based on the assumption of a binding aggregate resource constraint, as would occur if resources were fully utilised. From a post-Keynesian perspective, however, unemployment and excess capacity are normal to the functioning of capitalist economies, and resources are not in general fully utilised. This paper argues that the Keynesian process of national income determination precludes any immediate relationship between population ageing and the 'burden' imposed on income recipients. Below full employment, a rising dependency ratio is not guaranteed to reduce the expenditure share of income recipients or raise their tax rates. An exclusive emphasis on intergenerational conflict can give a misleading impression of the consequences of population ageing.

Keywords: population ageing, dependency ratio, intergenerational conflict, taxation, Keynesian economics

Introduction

Most developed countries are experiencing chronic population ageing, which first became prominent in the early years of the twentieth century and is expected to continue until well into the twenty-first century. Although the precise pattern of ageing differs between countries, the main demographic trends are similar: the older age groups are increasing in relative size and the average age of the population is rising. These trends are often seen as creating economic problems.

The traditional concerns highlight the growing 'burden' of the economically inactive elderly on the working population (Sauvy, 1948; Hopkin, 1953; Paish and Peacock, 1954; Clark and Spengler, 1980). A common summary statistic is the dependency ratio, which expresses the retired elderly as a proportion of the population of working age. Under population ageing the dependency ratio rises, so that each potential member of the labour force must 'support' a greater number of retired individuals. Resources may have to be diverted away from the working population towards the elderly, through changes in taxation, pension arrangements and social policy provision.

Economic discussion of population ageing has concentrated largely on pensions and social security (examples are Altmann and Atkinson, 1982; Creedy and Disney, 1989; Ermisch, 1981; Hemming and Kay, 1982; Schmähl, 1990). Other studies have looked at the implications of population ageing for health care, education and social services (Ermisch, 1983; Hagemann and Nicoletti, 1989; Heller *et al*., 1986; OECD, 1988; Pearson *et al*., 1989). A few authors, going beyond public expenditure, have warned of an 'intergenerational conflict' that will embrace many forms of economic and political activity (Johnson *et al*., 1989; Longman, 1987; Thomson, 1989). At all these levels, population ageing is thought to cause friction between age groups over the distribution of resources. Despite the ability to transfer financial resources through time by the funding of pensions,

actual physical resources are not transferable and call for a cross-sectional perspective (Barr, 1979). The central problem of population ageing is perceived to be the intensifying of intergenerational conflict over the distribution of current resources.

Given the tenor of the debate, much rests on the nature of the resource constraints being faced. Two types of resource constraint will be identified here, one based on the economy's total output, the other based on the government's budget. The first type of constraint seeks to represent the current availability of resources in the economy, as indicated by the national income accounts. Friction between age groups may arise over their shares in national income or expenditure. The retired elderly are an inactive group with no formally recorded income, but with a share of total national expenditure financed either from transfer payments or from previously accumulated pension funds. If population ageing raises the share of the retired elderly in total expenditure and reduces the share of income recipients, then it can be said to increase the 'expenditure burden' on income recipients. The second type of constraint seeks to represent the availability of public resources, as indicated by the government's budget constraint. For a government that maintains a balanced budget, population ageing may raise public expenditure on the retired elderly and increase the 'taxation burden' on income recipients. The stress on public expenditure is narrower in scope than a national income framework, but it focuses on the concrete experience of taxpayers, which may be the nub of the policy problem. Both types of constraint rely on formal monetary payments and exclude all informal activity. The major contribution to the care of the elderly by unpaid, informal carers goes unrecorded (Williams, 1985). One should bear in mind that conventional macroeconomic modelling omits much economic activity that should be included in a full assessment of the economy's production possibilities.

In neoclassical economics, population ageing is usually treated as a long-run issue, under assumptions of full employment and efficient resource utilisation. Employment is subject to a demographic constraint, which cannot be avoided and imposes an increasingly severe restriction as the population ages. Non-neoclassical theory, by contrast, places less

emphasis on full employment and market clearing. There is no binding demographic constraint, and the utilisation of labour is governed by considerations other than the size of the working population. Scepticism about full-employment assumptions is found in most non-neoclassical theory, notwithstanding differences in method; some authors retain a long-period equilibrium, but without market clearing (Garegnani, 1983); others doubt the value of equilibrium concepts (Robinson, 1979). Common to these views is an acceptance that unemployment is a normal part of the functioning of capitalist economies. To investigate population ageing under full-employment assumptions may be misleading.

The present article adopts a post-Keynesian method to address some macroeconomic consequences of population ageing which are neglected in many analyses of demographic change and yet germane to the question of a growing burden of dependence. It will be argued that the Keynesian process of national income determination dilutes the effect of demographic change on resource conflicts. From a post-Keynesian perspective, a positive relation between the demographic dependency ratio and the expenditure or tax burdens on income recipients cannot be taken for granted.

A Post-Keynesian model

The demographic feature of interest is the balance between the retired and working populations. To represent this, the Keynesian relationships will be stated in per capita terms, with employment, unemployment and retirement depicted explicitly. The result is a standard post-Keynesian model, in which aggregate income and expenditure are equated by changes in employment and hence in the distribution of expenditures within the working population.

The income (or output) side of the model is:

$$Y = VE$$

where Y is total income; V is the average value added per employee per period; and E is employment. National income is equal to the average per capita output V, multiplied by employment E. V is the average productivity of labour; in non-neoclassical theory V may vary even in the short run, through changes in the organisation of production (Hodgson, 1982; Jackson, 1990). In this model, however, V will be assumed constant, so as to isolate the interaction of demographic change with employment.

The expenditure side of the model is:

$$\begin{aligned} X &= \beta_u B(L-E) + \beta_y(1-t)VE + \beta_r PR + A \\ &= \beta_u BL + \beta_r PR + (\beta_y(1-t)V - \beta_u B)E + A \end{aligned} \qquad (1)$$

where X = total expenditure; L = working population; R = retired population; B = average transfer payments to the unemployed; P = average retirement pensions; A = autonomous expenditures; β_u = average propensity to consume from transfer payments; β_y = average propensity to consume from private incomes; β_r = average propensity to consume from retirement pensions; and t = average tax rate on private incomes. L, R, B, P, β_u, β_y, β_r and t are assumed to be constant; A can vary exogenously. The population is of size $L+R$, divided between the working population and the retired by a fixed retirement age. Total expenditure has four main components. The first is expenditure from transfer payments received by the unemployed, $\beta_u B(L-E)$. The second is expenditure from private incomes, taxed at an average rate t, leading to spending of $\beta_y(1-t)VE$. β_y and t in practice depend on the distribution of VE between wage and non-wage incomes, which is here assumed to be approximately stable, so that β_y and t are constant. The third component is expenditures from retirement pensions, paid out as state pensions or from occupational pension funds: in either case the payments are distinct from private wage and non-wage incomes. At an

average pension level P expenditures are $\beta_r PR$. The final component is autonomous expenditure A, which for a closed economy is composed of investment and government spending on goods and services.

V is assumed constant, so changes in E are the means by which national income movements are accomplished. In a steady state Y and X are equated, yielding an employment level:

$$E = \frac{\beta_u BL + \beta_r PR + A}{(1-\beta_y(1-t))V + \beta_u B} \qquad (2)$$

The method will be to single out demographic changes (in L and R) under *ceteris paribus* assumptions within what is usually construed as a short-run model of employment determination. This may not be particularly realistic, but it serves to accentuate the role of demographic change: if anything, it veers towards generosity in maximising the chances of demographic change having significant effects on the expenditure and taxation burdens.

Population ageing and the expenditure burden

The officially reckoned producers of national income are the currently employed and the suppliers of other factors of production, who receive incomes recorded in the national accounts. These groups differ from the working population or the labour force and, if by 'burden' we mean the relaxation of entitlements to consume, then it is more accurate to speak of the burden on income recipients than on workers or the employed. Not all income recipients are of working age, and some will themselves be elderly. The burden on income recipients stems from the shortfall of their aggregate expenditure below their income, partly through taxation and partly through saving. Since the national income identities must hold at all times, incomes not spent by the income recipients must be spent

in other ways. For a closed economy the usual classes of such expenditure are investment and government spending on goods and services; two further classes merit attention, namely the expenditures by the unemployed from transfer payments and the expenditures by the retired from state pensions or funded pension capital.

Returning to the model, let b denote the expenditure burden on income recipients, that is, the ratio of expenditures from sources other than private incomes to total national income. The key issue is the effect of changes in L and R on b. From equation (1) and the steady-state condition it follows that:

$$b = \frac{\beta_u B(L-E) + \beta_r PR + A}{Y} = 1 - \beta_y(1-t) \qquad (3)$$

As long as the economy is below full employment ($E < L$), national income determination keeps b constant and equal to the net propensity to save $1 - \beta_y(1-t)$. In equation (3) changes in L and R have no direct effects on b, contradicting the idea of a worsening conflict over expenditure shares. The reason is that Keynesian economics provides a built-in adjustment of aggregate savings to aggregate expenditures from non-income sources. If changes in L and R induce changes in the terms $\beta_u B(L-E)$ and $\beta_r PR$, then net savings are brought into line by changes in E, not in b. Total output is below capacity, and the leeway for higher employment permits a rise in aggregate saving without a downward shift in the proportionate expenditures of income recipients. Because the status of the unemployed is akin to that of the retired, true aggregate dependence is endogenous to the model. Variations in dependence from unemployment offset the influence of the demographic dependency ratio.

As is clear from equation (3), population ageing may still affect b indirectly through changes in β_y or t. According to life-cycle models of consumption (Modigliani and Brumberg, 1954), an ageing population of income recipients can bring about a change in β_y. The net effect on β_y is ambiguous, but if older individuals save less, then a rise in β_y and a *fall* in b may ensue. The life-cycle model has not always been borne out by empirical

evidence, however, so its significance should not be overemphasised (Danziger *et al*., 1982; Green, 1981; Wiseman, 1989). Population ageing could also elicit shifts in t, if higher taxes are necessary to finance a state pension scheme. In equation (3), t is positively related to b, and any rise in t would produce a rise in b. The circumstances under which a change in the demographic dependency ratio may cause a rise in t are discussed in the next section.

The direction of change in E depends on the pattern of changes in R and L and is not uniquely linked to changes in the demographic dependency ratio, $D \equiv R/L$. From equation (2), the change in E satisfies:

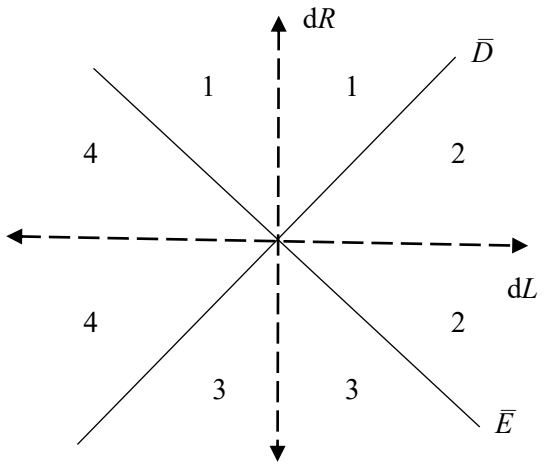
$$dE = \frac{\beta_u B dL + \beta_r P dR}{(1 - \beta_y(1-t))V + \beta_u B} \begin{matrix} \geq \\ < \end{matrix} 0 \quad \text{as} \quad dR \begin{matrix} \geq \\ < \end{matrix} -(\beta_u B/\beta_r P)\, dL \qquad (4)$$

Employment will rise if the expansionary effects of a growing retired population outweigh the contractionary effects of a diminishing working population. The position is illustrated in Figure 1. The upward sloping line labelled $\bar{D}$ has a slope of R/L; above the line $dR/dL > R/L$ and D is rising; below the line $dR/dL < R/L$ and D is falling. The downward sloping line labelled $\bar{E}$ has a slope of $-(\beta_u B/\beta_r P)$, as given by equation (4); above the line E is rising; below the line E is falling. Any combination of changes in D and E is possible, depending on dR and dL, but in all cases the change in E ensures that b remains constant.

At full employment ($E = L$) the situation differs. With no slack in the economy the term $\beta_u B(L-E)$ disappears from equation (3), and it follows that:

$$b = \frac{\beta_r PR + A}{Y} = \frac{\beta_r PR + A}{VL} = 1 - \beta_y(1-t)$$

Figure 1. The relation between changes in D, E and b below full employment



Area 1: $D\uparrow$, $E\uparrow$, $\bar{b}$

Area 2: $D\downarrow$, $E\uparrow$, $\bar{b}$

Area 3: $D\downarrow$, $E\downarrow$, $\bar{b}$

Area 4: $D\uparrow$, $E\downarrow$, $\bar{b}$

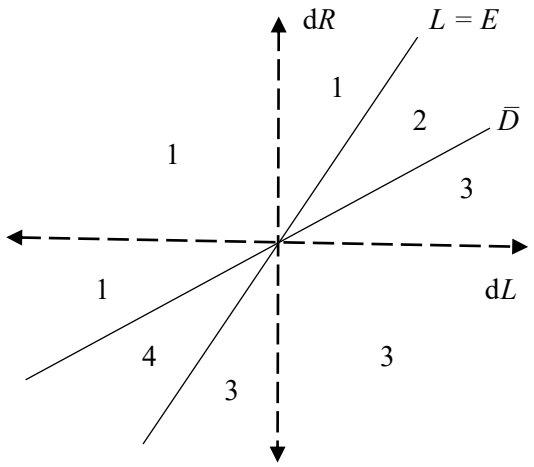
The relation between b, R and L is now immediate and, without a compensating shift in β_r, P, A or V, a higher dependency ratio can be accommodated only by a fall in β_y or rise in t. The only exception to this is when the changes in R and L cause a movement away from full employment. For L to exceed E it must be true that $dL > dE$, so that (from equation (4)):

$$dL > \frac{\beta_u B dL + \beta_r P dR}{(1 - \beta_y(1-t))V + \beta_u B} \quad \rightarrow \quad dR < \frac{(1-\beta_y(1-t))V}{\beta_r P} dL \qquad (5)$$

If inequality (5) holds, then the economy moves back into an unemployment regime and b stays constant. The position is illustrated in Figure 2. The line labelled $L=E$ has slope $(1-\beta_y(1-t))V/\beta_r P$; above the line full employment occurs and b varies positively with D; below the line L exceeds E and b is constant. The $\bar{D}$ line is defined as in Figure 1 and is flatter than the $L=E$ line, given that $R/L < (1-\beta_y(1-t))V/\beta_r P$, for $A > 0$ and $L \geq E$. Provided that the economy stays at full employment, a rise in D will necessitate a rise in b, other

things being equal. It is possible, though, for a rise in D to induce unemployment and leave b constant, as in area 2 in Figure 2. Full employment increases the likelihood of population ageing raising b in the present model, but still allows the possibility of b being constant.

Figure 2. The relation between changes in D and b at full employment



Area 1: $D \uparrow$, $L = E$, $b \uparrow$

Area 2: $D \uparrow$, $L > E$, $\bar{b}$

Area 3: $D \downarrow$, $L > E$, $\bar{b}$

Area 4: $D \downarrow$, $L = E$, $b \downarrow$

For an economy which generally operates below full employment, the case shown in Figure 1 will be normal and that shown in Figure 2 largely hypothetical. As Kalecki (1943) pointed out, there is little reason to believe that capitalist economies will reach full employment even in the long run. Demographic changes are superimposed on an economy with unemployment and excess capacity, permitting offsetting variations in employment. If population ageing causes E and L to converge, then the proximity of full employment may invoke deflationary pressures and a fall in A. In this case population ageing would bring changes within the group of non-income expenditures, with investment

replaced by expenditures connected with the elderly. A fall in investment has often been predicted as a consequence of population ageing. Keynesian authors were among the first economists to consider population ageing, and the centrepiece of their analysis was the expected decline in investment with an ageing population (Hansen, 1939; Harrod, 1939; Keynes, 1937; Reddaway, 1939). Lower investment would be to the detriment of unborn generations, while lessening conflict over the consumption of existing generations.

A Keynesian method introduces the unemployed as an additional dependent group whose financial status is similar to that of the retired elderly. The dependence of the unemployed is endogenous to the economic system and created through the skewed distribution of employment (Jackson, 1991). Changes in the size of the dependent elderly population will, in a Keynesian model, cause an accommodating adjustment in the number of unemployed, which corrects any mismatch between expenditure claims and national income. This is fundamental to Keynesian economics: changes in national income and employment equate planned expenditures from non-income sources (injections into the circular income flow) with planned sacrifices in current consumption (withdrawals from the circular income flow). The whole Keynesian system can be seen as a resolution of the conflict between the expenditures of investors, the government, the elderly, and so on, and the entitlement of private income recipients to spend their incomes. Whenever there is unemployment and excess capacity in the economy, changes in expenditures from non-income sources do not compel major changes in the share of total expenditure undertaken by private income recipients.

Besides unemployment, the state of retirement itself may be endogenous to the economic and social system. Authors in sociology and social policy have argued that the dependence of the elderly is not merely a reflection of their physical incapacity, but influenced by the state and society through formal retirement practices (Hendricks and McAllister, 1983; Phillipson, 1982; Townsend, 1981; Walker, 1980). When labour is scarce, the elderly are urged to be economically active; when labour is plentiful, earlier retirement is encouraged as a means of disguising unemployment. Dependence among the

elderly is 'structured' in accordance with economic conditions. The dividing line between the retired and working populations is arbitrary and at least partially manipulable as a policy instrument. Economic events may prompt a reinterpretation of the term 'elderly'; in the present model R, L and D may change through retirement practices and no longer be determined by demographic change alone. A raising of the retirement age in response to population ageing could lessen or even remove the effects of ageing on economic activity.

Population ageing and the taxation burden

The most visible burden borne by income recipients is taxation, and by this token the effects of population ageing on taxes may be the matter of prime concern for policy. An ageing population will entail higher public spending on pensions and social services, which may imply a rise in tax rates. The familiar arguments about disincentives then become relevant. Higher taxes may also arouse tension between generations and at worst may provoke a breach of the 'intergenerational contract' by which social provision for the elderly is funded. The importance of these considerations is debatable, and they will not be discussed further here. Attention will instead be directed at the prior question of the strength of the relationship between population ageing and tax rates. Simple full-employment models yield a positive relation between the demographic dependency ratio and the average tax rate, unless productivity gains intercede (Creedy and Disney, 1989). In a post-Keynesian model, the relation between the dependency ratio and the average tax rate is more complex.

Suppose that the government finances its pension and social security payments on pay-as-you-go principles, with a cross-sectional revenue constraint. Strictly speaking, social security need not be financed this way, and the government's budget need not be balanced at all times. But to assume a binding revenue constraint will increase the chances of the demographic dependency ratio having effects on taxation; it is also in tune with

Keynesian arguments about the financing of social security (Keynes, 1936, Chapter 8; Wray, 1990). If all pensions are state financed and unemployment benefits are the only public expenditures, then the government's budget constraint is:

$$tVE = B(L - E) + PR \tag{6}$$

Assume that the economy is below full employment and, for simplicity, that $\beta_u \approx \beta_r$. For changes in R, L and t to maintain a balanced budget, other things being equal, it must be true that:

$$[\ VE + (tV + B)\ \partial E/\partial t\ ]\ \mathrm{d}t$$

$$= \ [\ B - (tV + B)\ \partial E/\partial L\ ]\ \mathrm{d}L \ + \ [\ P - (tV + B)\ \partial E/\partial R\ ]\ \mathrm{d}R \tag{7}$$

which implies that:

$$\frac{[\ ((1-\beta_y)V + (\beta_u-\beta_y)B)VE\ ]}{(1 - \beta_y(1-t))V + \beta_u B}\ \mathrm{d}t \ = \ \frac{V(1 - \beta_y(1-t) - \beta_u t)\ (B\mathrm{d}L + P\mathrm{d}R)}{(1 - \beta_y(1-t))V + \beta_u B}$$

Under the standard assumption that $\beta_u > \beta_y$, the square bracketed term on the left-hand side of equation (7) will be positive. It follows that:

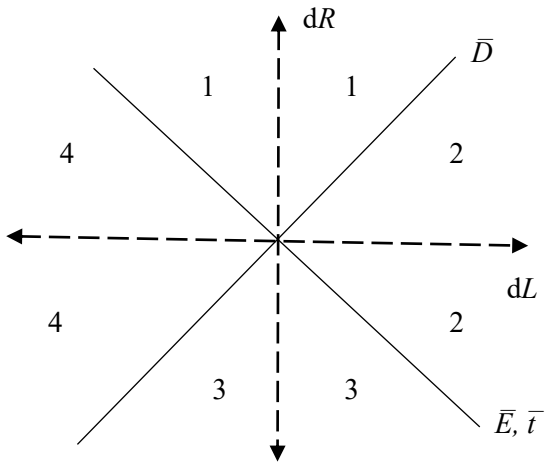
$$\mathrm{d}t \ \begin{matrix}\geq \\ < \end{matrix}\ 0 \quad \text{as} \quad \mathrm{d}R \ \begin{matrix}\geq \\ < \end{matrix}\ -(B/P)\mathrm{d}L \tag{8}$$

The change in employment satisfies $VE\mathrm{d}t - B\mathrm{d}L - P\mathrm{d}R = -(tV + B)\mathrm{d}E$. Substituting for $\mathrm{d}t$ from equation (7) yields:

$$dE = \frac{(\beta_u - \beta_y)\ (B\mathrm{d}L + P\mathrm{d}R)}{(1 - \beta_y)V + (\beta_u - \beta_y)B} \ \begin{matrix}\geq \\ < \end{matrix}\ 0 \quad \text{as} \quad dR \ \begin{matrix}\geq \\ < \end{matrix}\ -(B/P)\mathrm{d}L \tag{9}$$

Condition (9) coincides with condition (4) under the same assumptions. The position is illustrated in Figure 3. The $\bar{D}$ line has a slope of R/L, as in Figure 1. Under the simplifying assumption that $\beta_u \approx \beta_r$, the $\bar{E}$ and $\bar{t}$ lines both have a slope of - B/P. Above $\bar{t}$ the tax rate and employment are increasing; below $\bar{t}$ the tax rate and employment are falling. Any combination of changes in D and t can occur, depending on dR and dL. It can no longer be concluded that a rise in D inevitably leads to a rise in t.

Figure 3. The relation between changes in D, E and t below full employment



Area 1: $D\uparrow$, $E\uparrow$, $t\uparrow$

Area 2: $D\downarrow$, $E\uparrow$, $t\uparrow$

Area 3: $D\downarrow$, $E\downarrow$, $t\downarrow$

Area 4: $D\uparrow$, $E\downarrow$, $t\downarrow$

As with the expenditure burden, the relation between D and t differs at full employment. When $L = E$, the revenue constraint of equation (6) becomes

$$tVL = PR \quad \rightarrow \quad t = PR/VL = (P/V)D$$

If full employment is maintained and P/V is constant, then t and D are positively related and a rise in D leads to a rise in t. The model reduces to the full-employment special case

that characterises much discussion of population ageing. If, however, the changes in R, L and t cause the economy to move below full employment, then the relation between D and t could be negative. For L to exceed E it must be true that $dL > dE$, so that (from equation (9)):

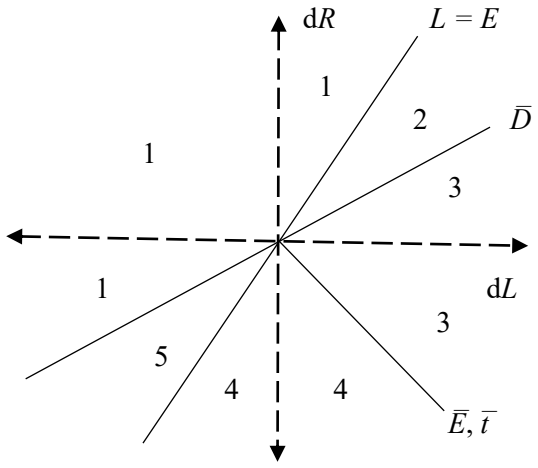
$$dL > \frac{(\beta_u - \beta_y)(B\,dL + P\,dR)}{(1 - \beta_y)V + (\beta_u - \beta_y)B}$$

which implies that

$$dR < \frac{(1 - \beta_y)V}{(\beta_u - \beta_y)P}\,dL \qquad (10)$$

If inequality (10) holds, then the economy moves back into an unemployment regime. The position is illustrated in Figure 4. The $L = E$ line has a slope of $(1 - \beta_y)V/(\beta_u - \beta_y)P$; above the line full employment occurs; below the line L exceeds E. The $\bar{D}$ line again has a slope of R/L and is flatter than the $L = E$ line, given that $R/L < (1 - \beta_y)V/(\beta_u - \beta_y)P$, for $A > 0$, $L \geq E$, $\beta_u > \beta_y$, $\beta_r > \beta_y$. The $\bar{E}$ and $\bar{t}$ lines, defined as in Figure 3, are now relevant only in the area below the $L = E$ line, where $L > E$. Under the assumption that $\beta_u \approx \beta_r$ below full employment changes in E and t are always in the same direction. Areas 1 to 5 give the possible combinations of changes in D and t. Unlike the previous case a rise in D cannot be accompanied by a fall in t: if D rises in such a way as to move the economy below full employment, then the economy is in area 2, and E and t must be rising. But the position is asymmetrical, and a fall in D can be accompanied by a rise in t if it occurs within area 3, where the economy moves below full employment with E and t both rising. Full employment in this model guarantees that a rising D will raise t, but not that a falling D will reduce t. Even at full employment, one is not assured of a positive relation between the demographic dependency ratio and the tax rate.

Figure 4. The relation between changes in D and t at full employment



Area 1: $D \uparrow$, $L = E$, $t \uparrow$

Area 2: $D \uparrow$, $L > E$, $t \uparrow$

Area 3: $D \downarrow$, $L > E$, $t \uparrow$

Area 4: $D \downarrow$, $L > E$, $t \downarrow$

Area 5: $D \downarrow$, $L = E$, $t \downarrow$

The norm in Keynesian modelling is to be below full employment, so Figure 3 is the standard case. The addition of the unemployed as a further dependent group severs the immediate connection between the demographic dependency ratio and the taxation burden on income recipients. A rise in D may still be associated with a rise in t, but they are no longer synonymous. Figure 3 envisages a negative relation between D and t just as readily as a positive one.

Conclusion

Short-run post-Keynesian modelling can only hope to delineate a few salient features of population ageing. In practice, the strong *ceteris paribus* assumptions made in short-run modelling will be broken. Changes will take place in most if not all macroeconomic variables and a distinct role for demographic change will be difficult to identify. To single

out a specific macroeconomic effect of demographic change may thus be a rather artificial exercise, but it does magnify the influence of demographic change on the economy. By holding everything else constant, the age structure is being treated as if it were a short-run variable that could alter rapidly in comparison with others. The outcome is a 'pure' effect of demographic change, unadulterated by changes in other variables. In spite of these favourable assumptions, it turns out that population ageing has an indeterminate effect. An ageing population may or may not increase the expenditure and taxation burdens imposed on income recipients. The notion of an intensified intergenerational conflict within a binding resource constraint is oversimplified, because of the presence of the unemployed as an endogenous source of dependence. When the dependency ratio rises, it may bring about changes in employment which modify and perhaps reverse the predicted increases in resource burdens. Conflicts over resources would be likelier for economies at full employment, but from a non-neoclassical viewpoint capitalist economies contain internal pressures that prevent full employment being reached. The effects of population ageing will always be indirect and mediated by changes in employment or investment. Where unemployment is present, it is inappropriate to portray a rising dependency ratio as causing immediate conflicts within binding resource constraints.

The conclusion is not that population ageing is negligible, but that its effects are more complex than a direct, positive link between the demographic dependency ratio and resource burdens. A short-run post-Keynesian model is restricted to showing the absence of binding demographically based constraints and sheds little light on the full complexity of the long run. In a proper treatment of the long run, population ageing should take its due place as one of the many kinds of structural change, which will collectively transform employment, output and productivity.

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