Review of Political Economy
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/crpe20

Viability of Pay-As-You-Go pension systems: a demand side perspective

Aldo Barba [a]
[a] Università di Napoli 'Federico II', Italy

Available online: 23 Jan 2007

To cite this article: Aldo Barba (2006): Viability of Pay-As-You-Go pension systems: a demand side perspective, Review of Political Economy, 18:3, 413-425

To link to this article: http://dx.doi.org/10.1080/09538250600797966

Review of Political Economy,
Volume 18, Number 3, 413–425, July 2006

Viability of Pay-As-You-Go Pension Systems: a Demand Side Perspective

ALDO BARBA
Università di Napoli 'Federico II', Italy

ABSTRACT *We analyse the effects that changes in the scale of public pension systems may exert on production and employment when there is some unused productive capacity, and income distribution results from workers' and capitalists' inconsistent claims on output shares. The essay calls attention to the way in which pension schemes, functional income distribution, and the principle of effective demand interact in the short run.*

1. Introduction

Pay-As-You-Go (PAYG) pension systems are tax-transfer schemes that allocate income to the *current* generation of pensioners, giving them the right to claim some of the *current* production. Looking behind the veil of the insurance fiction,[1] it becomes clear that the redistribution these schemes entail can be unsustainable only in three senses.

The first concerns the political dimension. Governments, and thus majorities (to the extent that the political process gives them adequate representation), may resolve that society devotes excessive provisions to its members who are no longer active, and consequently choose to downsize the PAYG system. This form of unsustainability is the outcome of a political choice, and therefore it may be overcome by a reorientation of the political consensus in favour of elderly people.[2]

Correspondence Address: Aldo Barba, Università di Napoli 'Federico II', Italy. Email: albarba@unina.it

[1]For a critical discussion of the insurance dimension of unfunded pension systems see Barr (1987, pp. 188–238). For an examination of the insurance fiction in the light of alternative economic theories see Cesaratto (2002).

[2]A statistical survey conducted in Germany and Italy in 2001 indicates that, although 'a majority of citizens in both Germany (81%) and Italy (58%), believe that 'in the course of the next ten years there will be another pension reform reducing significantly the amounts of public pensions' (Boeri *et al*., 2002, p. 397), '[t]he status quo is a majoritarian outcome along many dimensions', and '[o]pposition to any reform is high even among those aware of unsustainability' (Boeri *et al*., 2002, p. 396). According to the authors, that pension reform supporters are not in a majority is due to lack of information about the costs of the PAYG, economic self-interest, normative view about the role of the state, time inconsistent preferences and selfishness.

ISSN 0953-8259 print/ISSN 1465-3982 online/06/030413–13 © 2006 Taylor & Francis
DOI: 10.1080/09538250600797966

The second form of unsustainability is linked to financial considerations. The current debate on social security abounds with concerns about the financial collapse of actuarially 'unsound' public pension systems. Public pensions, it is argued, will face financial crisis since they do not assure strong actuarial links between the level of pension benefits received and the amount of contributions paid during the past working life (see, for example, European Commission, 2002). The insurance companies' jargon, however, cannot change the fact that the PAYG is a tax-transfer scheme, and its financial soundness does not rely upon some form of actuarial consistency, but upon the government's capability to find an adequate amount of fiscal revenues. Social security cannot face bankruptcy unless the Treasury becomes insolvent.[3]

The third and more substantial sense in which a PAYG system could be unsustainable rests on the influence it may exert on the process of production of goods and services. A PAYG that operates in such a way as to impair economic performance is indeed not viable, even though it is stable in purely financial terms and is supported by a widespread consensus. 'A substantial volume of work during the past quarter century', Martin Feldstein (2005, p. 16) states, 'has shown the various ways in which social insurance programs do affect individual behavior and the overall economy. These effects include reducing national saving, inducing early retirement, raising the unemployment rate, pushing up the cost of health care, and crowding out private health insurance'.

The influence of social security on private saving and capital accumulation is probably the main argument against the PAYG.[4] In essence, this line of reasoning revolves around the idea that making people entitled to receive public pensions in old age lowers the national propensity to save. In this way, pension benefits would prevent the creation of an amount of capital that should provide the income flow the elderly population needs: 'Social Security "wealth", the present actuarial value of Social Security benefits, significantly reduce[s] personal saving,' and thus 'Social Security assets act as a substitute for real capital accumulation' (Feldstein, 2005, pp. 35–36).

The notion that unfunded public pension schemes impair accumulation is usually criticised on the ground that Social Security wealth is not *net wealth*. National saving therefore would not be affected by public dissaving. Due to these considerations, in the current debate a shift in focus has occurred away from net wealth effects and towards the deadweight losses the PAYG could generate.[5] Social insurance programmes and the levies needed to finance them may distort incentives. This causes an inefficient use of resources, even though forward-looking maximizing agents take care of future taxes. The belief that the PAYG

[3]We will assume, for the sake of simplicity, that Social Security is fully financed by taxation. This is by no means a condition necessary to guarantee the financial viability of the PAYG, the insolvency of the latter being only remotely connected with the government's capability to tax in the more general case that encompasses money financing.

[4]Feldstein (1974) is the classical reference on this point.

[5]For a critique of the net wealth effect see Ture (1983, pp. 538–541). For a discussion about PAYG-induced deadweight losses see Feldstein (2005).

perturbs optimal factor supplies, and negatively affects a supply-determined output level, would remain sound, in spite of the Ricardian Equivalence argument.

Yet, a substantial weakness in the idea that the PAYG slows accumulation lays behind the discussion about social security wealth and deadweight losses. The basic tenet that resources can be devoted to investment only curtailing consumption holds if aggregate demand constraints do not bind. If no automatic device assures that investment adjusts to full-employment saving, abstention from consumption might not promote growth; it might impel underemployment of resources and a slower pace of capital formation.

From this Keynesian perspective, the viability of PAYG systems appears largely unaffected by the theme of factor supply constraints. The issue should instead be properly referred to the complex interaction among changes in income distribution, effective demand, and accumulation. The purpose of this work is to discuss some aspects of this problem. Particular emphasis is given to the influence that the scale of public pension systems may exert on distribution, on the society's propensity to consume, and on the rate of utilization of productive capacity. The essay is structured as follows.

Section 2 sets out the basic relationships we use. We refer to an economy with no tendencies towards full employment. Competition pushes prices to the level that assures the normal rate of return on investment. We consider this rate of profit as dependent on the rate of interest obtained on long-term riskless placements. Both political contingencies and employment rates determine money wage claims of the workers. An inflationary process starts while normal distribution is unaffected, if unions achieve permanent increases in money wage rates and the Central Bank manages the money interest rate in order to fix the real rate. Rising prices, though, may compel the monetary authority to change long-term real rates, in order to avoid undesired upshots of the inflationary process. Income distribution will result from the interaction between the behaviours of wage setters and the restrictions the Central Bank faces in conducting monetary policy.[6]

Effective demand is affected by these changes in distribution, because workers and capitalists have different propensities to save. A shift from wages towards profits depresses the society's propensity to consume. The rate of capacity utilization falls, unless countervailing increases in aggregate demand take place.

Section 3 examines the way in which the PAYG relates to the behaviours of wage setters and policy institutions. Besides the Central Bank's conduct, the tax-transfer scheme brings an additional institutional dimension into the monetary theory of distribution. Money wage and pension levels result from the interaction between wage bargaining and the rules governing the PAYG. Inflation will make the tax-transfer operate a distribution from wages towards pensions if unions are able to protect their post-tax wages from social security contributions and the normal profit rate remains unchanged. Yet, even the profit share becomes vulnerable to the pensioners' claim on output, when the monetary authority controls inflation.

[6]On this monetary theory of distribution see Pivetti (1985, 1991, 2001) and Stirati (2001, pp. 430–435).

An example of a rationale for a stable inflation target is offered in Section 4. The economy is opened to external trade, and the monetary authority manages the interest rate to protect international competitiveness. The pension share enlargement raises price inflation and engenders external trade imbalances if money wages do not buffer the whole increase in social security contributions. To prevent this, the Central Bank may change the normal distribution.

Section 5 summarises the main arguments of the paper and contains some concluding observations and comments.

2. The Basic Relationships

The economy consists of two classes of economic agents with different sources of income and different propensities to save. Workers receive wages and consume all their income. Capitalists receive profits, saving part of them. There is less than full employment.

Nominal national product at market prices equals the sum of wages and profits:

$$PY = WE + \Pi E \tag{1}$$

where P is the price of a composite good representing production, W and Π are nominal wages and profits per employed person, respectively, and E is total employment. Output per unit of labour is constant:

$$Q = \frac{Y}{E} \tag{2}$$

The mark-up equation for the whole economy is equal to:

$$P = \frac{1}{1-\rho}\frac{W}{Q} \tag{3}$$

The profit share is $\Pi/PQ = \rho$, while the wage share is $W/PQ = \omega = 1 - \rho$. In correspondence with the profit share ρ and when capacity is operated at the normal rate (u_n), entrepreneurs gain the normal rate of profit $r_n = \rho(u_n/v)$, where $v = K/\hat{Y}$ indicates the capital to full capacity output ratio.

The mark-up to which we refer in equation (3) is not a manifestation of the degree of monopoly in particular markets, but expresses the final result of income distribution as reflected in the general rate of profit. In line with the monetary theory of distribution, the analysis is completed with a theory of the profit rate, as determined by the rate of interest on riskless placement. The Central Bank controls the real long-term interest rate and thus sets the profit rate. Normal prices earn to entrepreneurs this profit rate.

Workers struggle on money wages. The money wage is set according to a given target level in real terms and to expected prices:

$$W = \phi P^e \tag{4}$$

where ϕ is assumed to depend on both political contingencies and employment rates. Expected prices are fixed in an adaptive fashion:

$$P^e = P_{-1} \tag{5}$$

where P_{-1} is the lagged price level. Wages are fully indexed to the price level of the last period, so the real wage is eroded if prices rise during the period.

The rate of price inflation is nil if the target for real wages (ϕ) and the normal profit per employed person ($Q\rho$) are compatible: $\phi = Q(1 - \rho)$. Prices grow and a steady inflation will preserve distribution when the target for real wages is higher than ϕ and no change occurs in the real interest rate.[7] If for some reason higher inflation must be avoided, real interest rates have to fall. Distribution results from the interaction between enterprises, unions, and the Central Bank. Firms' behaviour is restricted by competition, workers' behaviour is restricted by their bargaining power, and the Central Bank's behaviour is restricted by obstacles in the control of the rate of interest. Workers have some lead in the determination of distribution when unions have a strong bargaining power, and the Central Bank is inflation-averse.

Private saving is:

$$S = s\rho\frac{u}{v}K \tag{6}$$

where s ($0 < s < 1$) is the capitalists' constant propensity to save.

Capacity utilization is determined in the short run once private savings have adapted to planned investments:

$$u = g\frac{v}{s\rho} \tag{7}$$

where g is the growth rate of capital. An enlargement of the profit share depresses production and employment, *if g is given*:

$$\frac{\mathrm{d}u}{u} = \frac{-\mathrm{d}\rho}{\rho} \tag{8}$$

where $\mathrm{d}u/u$ is the proportional variation in the utilization rate, and $\mathrm{d}\rho/\rho$ is the proportional variation in the profit share.

3. Adding a Balanced PAYG Pension System

Let us introduce a new class of agents, the pensioners, who consume the whole income they receive from the PAYG scheme. Total taxation revenues in money terms are equal to taxes on wages:

$$T = tWE \tag{9}$$

where t is the tax rate on wages. Total pension expenditure is RA, where R is the average pension in real terms[8] and A is the number of pensioners. Assuming the government only spends on pensions and the PAYG is balanced, the total tax

[7] A price–wage spiral starts when wage increases are fixed according to experienced inflation.

[8] This implies that pension payments adjust in full to changes in the cost of living. Although a rather unrealistic hypothesis, complete indexation to current prices fixes the real amount of output that is devoted to pensioners, and thus allows us to concentrate on the effects this redistribution exerts on wages and profits.

bill equals pension expenditure:

$$T = PRA. \tag{10}$$

National income is now shared between wages *gross* of taxation, and profits:

$$1 = \omega + \rho \tag{11}$$

where ω is the sum of ω_n (net wages/income) and τ (social security contribution/income). Since τ coincides with the pension/income ratio $\gamma = RA/Y$, $\omega = \omega_n + \gamma$. Wage setters fix gross money wage according to the bargaining function:

$$W = \frac{\phi P_{-1}}{(1-t)^{\beta}} \tag{12}$$

where β is a coefficient of *money wage resistance* that expresses the elasticity of gross money wages with respect to social security contributions. When β is equal to zero, unions are unable to protect the workers' money wage from taxation, and labourers bear the burden of social security contribution increases. When β equals one, workers are able to negotiate the same money wage net of tax regardless of the level of social security contributions. In this way, they attempt to pass the entire tax increase onto employers.[9] This effort will result in higher inflation and/or higher real wages, depending on the degree of freedom in the conduct of monetary policy.

Prices will grow with money wages ($\mathrm{d}P/P = \mathrm{d}W/W$) if the Central Bank is able to set the nominal interest rate in order to assure an unchanged distribution. Given that:

$$\mathrm{d}\rho = (1-\rho)\left(\frac{\mathrm{d}P}{P} - \frac{\mathrm{d}W}{W}\right) \tag{13}$$

no change in the profit share occurs. As a result, capitalists obtain the same level of real profits per worker ($Q\rho$), regardless of the social security contribution levels and of wage resistance. Each worker has to sacrifice a portion of his real wage equal to the average pension in real terms multiplied by the dependency ratio A/E (i.e. the number of pensioners per employed person): $(1-\rho) - R(A/E)$. The PAYG works as a distributive scheme that moves income from workers to pensioners. Since we assume that neither workers nor

[9]An alternative interpretation of β could be given with reference to the *contributive* nature of the payroll taxation. Labourers could consider the social security contributions as a sort of delayed compensation, since these contributions are used to finance programmes reserved to workers only. Taking account of the tax/benefit linkage, they would therefore curtail current wage accordingly (cf. Summers, 1989). Of course no linkage between current taxes and future benefits exists, as elder people receive pensions from the current workers and not from their previous contributions. Yet, to the extent that labourers believe the PAYG will also work when they will be receivers, pensions could be part of the wage bargaining process. According to this line of reasoning, a low value of β could be seen as determined by the workers' belief that pension benefits will not be downsized in the future.

pensioners save, this redistribution leaves unchanged the production that equates injections and leakages.[10]

Although unable to affect the real side of the economy, the level of money wage resistance sets the rate of price inflation. Without wage resistance, the incidence of the PAYG is placed on the wage share by the trade unions' weakness and no change in the inflation rate is required to protect the profit share. On the contrary, inflation reaches a higher plateau when there is some wage resistance:[11]

$$\frac{\mathrm{d}P}{P} = \frac{\mathrm{d}P_{-1}}{P_{-1}} + \frac{\beta}{(1-\rho)-\gamma}\mathrm{d}\gamma \tag{14}$$

Let us now consider the case in which monetary policy choices are restricted and the Central Bank keeps the inflation rate steady:

$$\frac{\mathrm{d}P}{P} = \frac{\mathrm{d}P_{-1}}{P_{-1}} \tag{15}$$

With wage resistance, the monetary authority has to reduce long-term real rates to obtain stable inflation. Distribution between wages (plus pensions) and profits is now influenced by the pension/income ratio:

$$\mathrm{d}\rho = -\frac{\beta(1-\rho)}{(1-\rho)-\gamma(1-\beta)}\mathrm{d}\gamma \tag{16}$$

When unions are able to include social security contributions in the bargaining, capitalists are required to finance some of the redistribution the pension scheme induces. The profit share shrinks to accommodate the increase in the pension/income ratio. The PAYG brings about a redistribution between capitalists and pensioners, leading to a change in the utilization level:

$$\frac{\mathrm{d}u}{u} = \frac{\beta(1-\rho)}{\rho[(1-\rho)-\gamma(1-\beta)]}\mathrm{d}\gamma \tag{17}$$

If $\beta = 1$, the whole burden of the PAYG is placed on profits ($\mathrm{d}\rho = -\mathrm{d}\gamma$), and equation (17) coincides with equation (8).

4. The Open Economy

Monetary authorities do not freely manage the rate of interest to regulate distribution, since they pursue a variety of objectives and face a set of constraints. An example of these constraints is offered by high levels of indebtedness, in both the private and the public sector. The openness of the economy to international trade constitutes another outstanding source of limitations in the determination of the monetary policy stance.

To develop some considerations on this, let us modify the exercise of the previous paragraph, adding exports of finished goods and imports of raw materials.

[10]The exercise could be easily amended to take account of the different propensities to save of workers and pensioners; see, for example, Mott & Slattery (1994).

[11]A price–wage spiral will start if employees bargain taking account of expected inflation. See note 7.

Due to the presence of imported raw materials, the mark-up equation for the whole economy becomes:

$$P = \frac{1}{1-\rho}\left(\frac{W}{Q} + \frac{eP^*}{MP}\right) \tag{18}$$

where P^* is the price of imported raw materials in foreign currency, e is the rate of exchange and MP is the productivity of imported raw materials (assumed constant in the short period).

The trade balance in units of domestic goods is

$$NX = X - M = (\theta)^{\varepsilon_x} Y^{*\eta_x} - \theta(\theta)^{-\varepsilon_m} Y^{\eta_m} \tag{19}$$

where $eP^*/P = \theta$ is the international price competitiveness, Y^* is the real foreign income, while ε_i and $\eta_i (i = x,m)$ are the price- and income-elasticities of exports and imports, respectively (cf. Sarantis, 1990–91, pp. 175–178, and Blecker, 1998, p. 499).

The utilization rate is obtained equating the excess of private domestic saving over investment to the trade balance:

$$\frac{\mathrm{d}u}{u} = Z\left\{\frac{\mathrm{d}\theta}{\theta}(\varepsilon_x + \varepsilon_m - 1)\sigma_x - \mathrm{d}\rho s\right\} \tag{20}$$

where we are assuming that foreign trade balances at the start and that the foreign income and autonomous expenditure stay constant. Z is the multiplier $1/(s\rho + \sigma_m \eta_m)$, and $\sigma_i (i = x,m)$ are the shares of X and M in GDP.

The proportional variation in international price competitiveness is:

$$\frac{\mathrm{d}\theta}{\theta} = \frac{\mathrm{d}e}{e} + \frac{\mathrm{d}P^*}{P^*} - \frac{\mathrm{d}P}{P} \tag{21}$$

The variation in the profit share is now equal to:

$$\mathrm{d}\rho = (1-\rho)\left[\frac{\mathrm{d}P}{P} - \frac{\alpha \mathrm{d}W}{W} - (1-\alpha)\left(\frac{\mathrm{d}P^*}{P^*} + \frac{\mathrm{d}e}{e}\right)\right] \tag{22}$$

where a and $(1 - a)$ are the shares of wage costs and imported raw material costs in unit prime costs.

As shown in the previous paragraph, in a closed economy no changes will occur in income and employment levels if inflation arises as result of the distributive conflict. In an open economy, a direct connection between inflation and output levels emerges since we have to consider the effects higher prices could exert on international competitiveness:

$$\frac{\mathrm{d}\theta}{\theta} = -\frac{\alpha\beta}{(1-\rho) - \gamma[1 - \beta(1-\alpha)]}\mathrm{d}\gamma \tag{23}$$

where we are assuming that the exchange rate does not vary, and that domestic and foreign inflation coincide before the change in the pension/income ratio $\mathrm{d}P^*/P^* = \mathrm{d}P_{-1}/P_{-1}$. If the Marshall–Lerner condition holds ($\varepsilon_x + \varepsilon_m - 1 > 0$),

the increase in the pension/GDP ratio reduces production and employment:

$$\frac{\mathrm{d}u}{u} = \left\{ -Z \frac{\alpha\beta(\varepsilon_x + \varepsilon_m - 1)\sigma_x}{(1-\rho) - \gamma[1 - \beta(1-\alpha)]} \right\} \mathrm{d}\gamma \tag{24}$$

When the Central Bank stabilizes the inflation rate in order to preserve relative purchasing power parity, normal distribution changes, and some of the burden of the variation in the pension/income ratio will be placed on the profit share, according to the intensity of wage resistance:

$$\mathrm{d}\rho = -\frac{(1-\rho)\alpha\beta}{[(1-\rho) - \gamma(1-\beta)]} \mathrm{d}\gamma \tag{25}$$

In this case:

$$\frac{\mathrm{d}u}{u} = Z \left\{ \frac{(1-\rho)\alpha\beta s}{[(1-\rho) - \gamma(1-\beta)]} \right\} \mathrm{d}\gamma \tag{26}$$

and the influence of a change in the pension share on the balance of trade is restricted to the increase in the imports needed to sustain the higher output level.

To those accustomed to think that problems of competitiveness have to be solved by curtailing gross wage costs, it could seem rather odd that cutting pensions may not exert positive effects on economic performance. Yet this occurrence cannot be easily dismissed when it is recognised that nothing could ensure that increases in autonomous expenditure could compensate a falling propensity to consume. Instead of spurring growth, higher profit margins may well exacerbate a deficiency of domestic demand.

The loss of competitiveness the PAYG is determining, or could determine in perspective, is one of the most common arguments against public pension systems, particularly in the European debate. Yet European unit labour costs are shrinking (see ILO, 2005, ch. 1), and competitiveness does not depend only on domestic labour costs. The implications of subordinating the viability of PAYG schemes to the international competitiveness argument can be better understood by bringing exchange rate instability into the picture. Very rough figures can help to illustrate the point. Let us consider the period from March 2003 to March 2005, a time span during which the dollar has lost more than 30% of its value against the euro. To leave the international price competitiveness of European goods unimpaired, domestic prices should have fallen by almost the same amount. With a share of wage costs in unit prime cost of about three quarters, and prices of imported raw materials in our currency unchanged (since rising foreign prices of imports have more than compensated for the fall of the dollar), domestic money labour costs should have been cut by about 40% to solve competitiveness problems. Given that social security contributions are around one quarter of the money wage, even if European pensioners could live on air and the whole PAYG be suppressed, the level of competitiveness could not have been preserved. Moreover, additional investments in a range between 10 and 15% of GDP should have been activated to preserve the level of domestic demand.

When we fix our attention on the wage-cum-pension share, a further point emerges. If we look at the evolution of income distribution in the last quarter of

the twentieth century, what we see is not an expansion of workers' and pensioners' claims on output. On the contrary, in a great number of European countries the data show a retrenchment of the direct wage share of GDP that has more than compensated the increase in the pension share. The wage-cum-pension share is thus on a declining path, and even if the pension/GDP ratio grew five more points, wages gross of social security contributions in proportion to value added would be below the level at which they stood in 1975.[12] This fundamental issue goes rather unnoticed in the current debate, while great emphasis is given to the increases in the tax wedge (i.e. the difference between the worker's take-home pay and what the worker costs to the employer).

5. Conclusions

Nowadays, unfunded public pensions are considered as one of the major culprits for the dismal performance of advanced capitalist economies, the dominant view being that PAYG schemes distort labour/leisure choices, lessen national saving, and restrain capital accumulation. The soundness of this perspective rests on the belief that some adjusting mechanism assures a demand adequate to buy full-employment supply, leaving the latter governing output levels. Neoclassical arguments weaken if we take properly into account the possibility that capital and labour are underemployed, since the effective demand principle substitutes potential supplies as the regulator of production and employment.

Changes in the public pension provisions fit into this demand-side perspective, as both the propensity to consume and the inducement to invest are affected by the redistributive effects that the PAYG generates. With the help of some basic relationships, we have discussed some channels through which these redistributive effects may operate on the propensity to consume.

The influence of pension provisions on income distribution has been analysed in the framework of the monetary theory of distribution. The capability of PAYG schemes to modify distribution depends upon two sets of circumstances. The first is whether wage earners are able to protect their money wage from social security contributions, an occurrence that depends on workers' bargaining power. The second is whether the Central Bank cannot freely set long-term real interest rates. If workers are unable to maintain the money value of post-tax wages, the PAYG redistributes a given income between workers and pensioners. On the contrary, when workers manage to protect their wages and the Central Bank is not inclined to accommodate higher prices, the conflicting claims of workers, pensioners and capitalists will modify income distribution.

Given the autonomous components of demand, increases in pension provisions exert a positive influence on output as long as the *wage-cum-pension share* increases, if the workers' and pensioners' propensity to save is lower than the capitalists'.

It is a widespread idea that if the elderly population's claims were curtailed, workers and firms would share the fruit of the retrenchment in social security

[12]See de Serres *et al*. (2002) for a quantitative analyses of wage share trends in Europe and in the US, and Weller (2004) for some data on old-age cash benefits and public pension tax rates.

contributions. Yet the output level cannot be considered as given regardless of the result of the conflict over its shares. Moreover, if pensioners are defeated, nothing ensures that workers will enjoy the gains coming from this alliance with entrepreneurs. In whatever way legal dispositions divide reductions in social security contributions between employers and employees, pension share cutbacks will change distribution according to the final result of the distributive conflict.

As an example of the several impediments that can restrict the behaviour of the monetary authority, reference has been made to an open economy that cannot sustain growing external imbalances. Changes in distribution can arise if inflation has to be contained in order to avoid trade deficits. Of course, obstacles in the control of interest rates do not assure by themselves that some of the burden of higher pensions will be placed on the profit share. A successful drive of a hard bargain over money wages with employees, and the downsize of the scale of the PAYG are the probable reactions against the tendency towards the enlargement of the wage-cum-pension share.

Closing this exposition, we stress the main limitations and some potential extensions of our analysis.

In the exercise we have developed, autonomous expenditure is considered as given, and the utilization rate is determined by equating injections and leakages. This inescapably means restricting the analysis to the short-run, changes in normal distribution being a fundamental determinant of the inducement to invest. Moreover, it is reasonable to assume the tendency towards the elimination of any discrepancy between effective and normal utilization rates. A proper analysis of the long run would thus have to consider changes in the inducement to invest (cf. Pivetti, 1991, pp. 43–46), and the adjustment of the effective utilization rate to the normal rate (see on this Ciampalini & Vianello, 2000, pp. 384–391). When these topics are taken into proper account, pensions may negatively affect capital formation through changes in normal distribution. It could be argued that when a demand-side perspective is adopted, the negative relation between public pension schemes and accumulation postulated by the neoclassical theory might be confirmed, although by a different route. When dealing with this argument, however, it should not be overlooked that in the neoclassical theoretical setting the impairment in capital formation is an *unavoidable* outcome deriving from the hypothesis of full-employment and optimal factor supplies. On the contrary, the Keynesian perspective leaves the relationship between the pension share and accumulation open. Changes in distribution, effective demand variations, technical changes and accumulation can engender a variety of long-run developments. The way changes in distribution affect the society's propensity to save is one of the fundamental factors in this complex interaction.

We have abstracted from considerations about the influence that monetary policy and interest rates may exert on effective demand, apart from their effects on normal distribution.

No form of taxation and public spending has been considered except the tax transfer operated by the PAYG. The price level and the rate of profit alter with changes in taxation according to the various types of taxes. An analysis of alternative PAYG financing systems could thus be developed, adding income taxation, profit and capital taxes, as well as indirect taxation. Pension financing affects

distribution according to the fact that the tax is included (directly or indirectly) in normal monetary costs, and modifies the ratio between money wages and prices. For example, indirect taxation may exert on money wages an effect similar to the wage tax, as long as unions are able to bargain considering consumption prices. Profit income taxes, instead, might rest on profit, although they could affect distribution indirectly (for example by influencing the unemployment rate through changes into the propensity to save or the inducement to invest).

The size of the 'industrial reserve army' is the main determinant of the workers' strength in the bargaining process. In our analysis, for the sake of simplicity we have ignored the effects that changes in the employment rate may exert on the target real wage and on the level of money wage resistance. This simplification must of course be removed in a discussion that covers a wider time span.

An investigation of the long-run interaction between changes in the wage-cum-pension share, the speed of accumulation and the course of available productive capacity would be the natural development of this essay.

Acknowledgments

I would like to thank Massimo Pivetti and Giancarlo de Vivo for their comments and suggestions. I am also grateful to two referees of this journal who provided many valuable criticisms which led to substantial qualifications of some points of the paper.

References

Barr, N. A. (1987) *The Economics of the Welfare State* (London: Weidenfeld & Nicolson).

Blecker, R. (1998) International competitiveness, relative wages, and the balance-of-payments constraint, *Journal of Post Keynesian Economics*, 20, pp. 495–526.

Boeri, T., Boersch-Supan, A. & Tabellini, G. (2002) Pension reforms and the opinions of European citizens, *American Economic Review* (Papers and Proceedings), 92, pp. 396–401.

Cesaratto, S. (2002) The economics of pensions: a non conventional approach, *Review of Political Economy*, 14, pp. 149–177.

Ciampalini, A. & Vianello, F. (2000) Concorrenza, accumulazione del capitale e saggio del profitto. Critica del moderno sottoconsumismo, in: M. Pivetti (Ed.) *Piero Sraffa, Contributi per una biografia intellettuale* (Roma: Carocci).

de Serres, A., Scarpetta, S. & de la Maisonneuves, C. (2002) Sectoral shifts in Europe and the United States: how they affect aggregate labour shares and the properties of wage equations, OECD, *Economics Department Working Papers*, No. 326.

European Commission (2002) Reform challenges facing public pension systems: the impact of certain parametric reforms on pension expenditures, Economic Policy Committee, EPC/ECFIN/237/02.

Feldstein, M. (1974) Social security, induced retirement and aggregate capital accumulation, *Journal of Political Economy*, 82, pp. 905–926.

Feldstein, M. (2005) Rethinking social insurance, *NBER*, Working Paper, No. 11250.

ILO (2005) *Key Indicators of the Labour Market*, 4th edn (Geneva).

Mott, T. & Slattery, E. (1994) Tax incidence and macroeconomic effects in a Kaleckian model when profits finance affects investment and prices may respond to taxes, *Journal of Post Keynesian Economics*, 16, pp. 391–409.

Pivetti, M. (1985) On the monetary explanation of distribution, *Political Economy*, 1(2), pp. 73–103.

Pivetti, M. (1991) *An Essay on Money and Distribution* (London: Macmillan).

Pivetti, M. (2001) Money endogeneity and monetary non-neutrality: a Sraffian perspective, in: L.P. Rochon & M. Vernengo (Eds) *Credit, Interest Rates and the Open Economy. Essays on Horizontalism* (Cheltenham: Edward Elgar).

Sarantis, N. (1990–91) Distribution and terms of trade dynamics, inflation, and growth, *Journal of Post Keynesian Economics*, 13, pp. 175–198.

Stirati, A. (2001) Inflation, unemployment and hysteresis: an alternative view, *Review of Political Economy*, 13, pp. 427–451.

Summers, L.H. (1989) Some simple economics of mandated benefits, *American Economic Review* (Papers and Proceedings), 79, pp. 177–183.

Ture, N.B. (1983) Supply-side effects of social insurance, *Cato Journal*, 3, pp. 537–546.

Weller, C.E. (2004) The future of public pensions in the OECD, *Cambridge Journal of Economics*, 28, pp. 489–504.