Pensions, distribution and the labour market in an ageing society: a non-conventional view[*]

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This paper explores from a Classical point of view the economic impact of ageing with a particular concern for the future of Social Security organised along Pay-as-you-go (*PAYG*) lines. Elsewhere I have shown the shortcomings of the two major pension reforms under discussion. Cesaratto (2002, forthcoming a: chapter 2, forthcoming b) pointed out the pros and cons of the *Notional Defined Contribution* (*NDC*) reforms that, although in principle (and not without delay) provide the financial stability of *PAYG*, attain it in the most obvious way of cutting pension benefits, thus leaving aside the social sustainability of *PAYG*. Cesaratto (2002, forthcoming a: chapters 3 and 4, forthcoming c) put forward the various shortcomings of the transition plans aimed at the creation of Fully-Funded (*FF*) schemes. Cesaratto (forthcoming a: chapter 6) showed that, according to the theory of effective demand, the welfare

state, and *PAYG* in particular, are not necessarily detrimental to economic growth, in fact they may foster it. I also regarded the welfare state and *PAYG* as a part of a Classical view of income distribution in which there is no natural distribution setting associated with factors' full employment as in the Neoclassical theory. According to this view, it is the political opposition to changes in income distribution favourable to labour, rather than the Neoclassical mechanical association between distribution and output, that may determine a negative influence of social spending on growth.

In this paper I shall use a Classical-Keynesian approach to explore the sustainability of an ageing society and of *PAYG* within it. The concepts of *working age* and *retirement age* are eminently cultural, and only loosely associated, respectively, with physical strength and decline. In particular in the recent decades, retirement and old age have been partially detached from the idea of physical decline, but times are changing (the OECD has extended the working life span from '15-64' to '15 and over'). The concept of *ageing* may instead be considered as a demographic concept relative to the changing age structure of the population.

Contingent on the retirement of the baby-boom generation and, more persistently, on the combination of lower fertility rates and higher longevity, developed and increasingly also intermediate economies are facing a process of ageing. Conventional wisdom tells us that a forthcoming labour scarcity plus the ageing process will place the economies under an intolerable strain, jeopardising the sustainability of *PAYG*. We shall argue that two effects worry the ruling classes: (i) a progressive shrinking of the industrial reserve army and (ii) an increased tax burden to sustain the elder generations.

We shall begin in section 8.1 by presenting some demographic scenarios that put ageing in the context of the possible evolution of human population, also allow it to be considered in a different, more positive, perspective. This evolution can indeed be interpreted as the result of the world population approaching a stabilisation phase. Migration flows appear not to be able

to reverse the ageing process. We shall then assess the impact of the demographic developments on the level of the working-age population, which is the potential labour supply, and on the proportion of old-age population over the population in working-age. The economic impact of ageing, however, cannot be assessed by mere demographic ratios and we must move from *population* to *political* economy.[1] Section 8.2 is thus mainly devoted to discussing the impact of the demographic development on the labour market. Section 8.3 explores the *financial* versus the *real* sustainability of *PAYG* viewed through the lens of the alternative economic theories.

8.1 Stylised demographic trends

8.1.1 Some impressive global scenarios

Both developed and less developed countries are undergoing major demographic transformations. Current demographic developments consist of the continuation of a secular process that started in the most industrialised countries in the 19th century as represented by a progressive fall in fertility and a lengthening of the average life span. Declining infant mortality, among other causes, might have represented the inception of the progressive fall in fertility, which has been the dominant demographic factor at work so far (Bloom and Canning 2004: 4-10). The lengthening of the expected life span, which was quite rapid in the recent past, is becoming progressively more important on the assumption that, in most regions of the world, fertility stabilises at the reproduction level. By definition this complex process determines a progressive ageing of the population. The baby-boom burst in fertility in the developed countries after the second world war appears as an isolated episode within this long period trend, although its effects will be still felt in the next few decades. Secular demographic transforma-

tion is called 'demographic transition', a process 'in which mortality and then fertility decline from higher to lower levels' (UN 2002a: 5).

In developed countries the two persistent factors, lower fertility and increasing longevity, have been at work for many decades. In these countries the transition of fertility to below the population replacement level of 2.1 children per woman took place a couple of decades ago (the fertility rate fell from 2.8 in 1950-1955 to 1.5 in 2000-2005, cf. UN 2002a: 5). On top of this, in the first quarter of the century, the developed countries will experience the progressive retirement of the baby boom generation, the so-called baby bust. According to the UN Population Division (2002b), a number of intermediate-fertility developing countries, roughly those at a relatively high stage of economic development, are also completing the fertility transition from high fertility rates towards below-replacement rates. In both cases the initial expectations that the threshold of the replacement level would not be exceeded proved to be wrong.

Predicting the future levels and composition of the population is not so simple. The divergence in the scenarios of the future evolution of the world population produced by the combination of different conjectures is striking. The UN experts suggest that these scenarios are not 'projections' since they represent only 'a few of the many possible future paths of the world population. The value of the scenarios …is that they illustrate, often dramatically, the implications of small differences in future fertility levels' (UN 2003: 8).

Before we focus on the effects of the falling fertility rates on ageing, working-age population etc. in the more developed countries, let us first dwell on the effects on total world population trends. Small differences in the fertility rates of the world population, or of significant countries or areas – below or above the replacement rates - produce dramatic divergences in the scenarios. In those prepared by the UN Population Division (UN 2003), the fertility rate is assumed to be below or above the replacement level (2.1) by just a quarter of a child (Table

8.1). In the below replacement scenario (fertility 1.85 children per women) the world population is projected to be 7.4 billion in 2050 and 2.3 billion in 2300, while in the 'high' scenario (fertility 2.35) the figures are, respectively, 10.6 and 36.4 (the world population was 6.1 billion in 2000). In the 'medium' scenario, in which fertility remains below the replacement level up to 2175 and then returns to the replacement level, the population would reach 9.2 billion in 2075 and then decline to 8.3 billion in 2175. What is striking is that *all* these scenarios result in a significant ageing of the world population (that is, a small increase in the fertility rates has dramatic effects on the population levels but has a negligible effect on the ageing process).

Developing countries are where some of the possible population developments show the most explosive outcomes and where, of course, the completion of the demographic transition is most hoped for. In these countries, even a fertility rate which has remained only slightly above replacement since 2100 leads, albeit in the long run, to levels of population that appear, at least so far, to strain sustainability, without avoiding substantial ageing (UN 2003: 13-14). Developed countries have completed their transition and are, in a sense, in the opposite situation in which the continuation of the present trends will determine a dramatic diminution of total native population. What must be noted, however, is that although in some developed countries a recovery of the fertility trends may be hoped for, in addition to migration, in order to reach a stabilisation of the local population, this will not be enough to slow down the ageing process.

After years of alarm about the explosion of the world population, ageing is now drawing much attention in the developed countries, where the below replacement rates is felt as a problem. According to many expert opinions collected by the UN (e.g. UN 2003b: 9), this has diverted the attention of the developed world from the consequences on the world population of too high world-wide fertility rates. It is impressing that the hypothetical continuation

of the current fertility rates would lead to a population of 244 billion in 2150 and of 134 trillion (sic) in 2300! What is striking in this case is that only in this scenario – or in equivalent ones – might we obtain, in the long run, a reversal of the ageing process capable of calming the ageing alarmists. To rational minds, ageing would thus appear as the price that humanity has to pay to bring population growth under control – so that lower fertility, higher longevity and ageing appear as a positive result of human development.

(Table 8.1 around here)

8.1.2 Working-age population and ageing in the more developed countries

Although it is serious in all developed countries, the challenge from demographic developments is not the same in all regions and countries. The broadest subdivision is between traditional settlement areas (typically the western offshoots: US, Canada and Oceania), in which the impact is softer, and non-settlement regions (typically Europe and Japan), in which the impact is more dramatic. Among developed European countries, however, there are also marked differences.[2]

The first consideration is that ageing is a process that has been taking place for many decades at the global level, including the less developed countries, due to the demographic transition synthesised by the trend of the fertility rated and life expectancy. In all regions the age-group composition of the population is changing in favour of the older sections and demographic dependency ratios are on the rise. These ratios should be considered with care, since they may tell us little about the economic sustainability of the inactive population. It may be noted here that the total demographic dependency ratio rises considerably less than the old-

age ratio (the former actually falls in the less developed world due to the expected dramatic fall in the fertility rate).

The second consideration regards the differences between the developed regions. In short, if we were to enlist the regions according to the momentum of the ageing process, this is more serious in Japan and Southern Europe than in Western and Northern Europe, and is less dramatic in the traditional immigration or 'settlement' western offshoots.

To sum up the argument so far, in spite of the quantitative uncertainty, especially in the medium-long range - in the short term the retirement of the baby boom generation is a certain fact -, it can safely be acknowledged that an ageing process is under way, condensed by an increasing 'demographic' old-age dependency ratio. This process cannot be reversed unless the population is allowed to explode at world and local levels. The process is occurring, however, at a different pace in different world regions. Examining the most developed regions, the difference between them is represented by the fertility rate, closer to the replacement level in the 'new' countries and below it in the 'old' regions. Past and expected migration flows to the former, settlement, countries are also higher. The two aspects are likely also to be interconnected, since migrants tend, at least initially, to show a fertility rate higher than the native population. The next question is then the degree to which more robust migration flows both in settlement and non-settlement developed regions may slow down, or even reverse, the ageing process.

8.1.3 Replacement migration

The UN-Population Division has tried to assess the 'replacement migration' necessary to retain in 2050 some demographic variables at the present level (UN 2000). The estimates (Table 8.2), based on the UN projections of 1998 (medium variant), indicate the number of im-

migrants necessary, respectively, to keep constant: the size of the overall population (column [3]), (ii) the size of the working-age population (15-64) (column [4]) and (iii) the old-age dependency ratio constant (column [5]). The number of migrants is increasing from (i) to (iii). For instance, in the EU (15 countries) between 2000 and 2050 about 47 million migrants would be needed to maintain the size of the overall population at the present level; about 79 million to maintain the size of the working-age population; and 700 million migrants to preserve the old-age dependency ratio. The last target is practically out of reach even for non-European settlement countries. The first target is the most easily reached in most cases with robust but plausible migration flows (both total and per-year) since the required migration is actually in line with that experienced in the recent past (UN 2000: 93). It is more difficult to obtain the second result (the population in working age declines faster than total population since the former suffers from the smaller size of the younger generations while the latter benefits from the increasing longevity). Also in this case, however, the UN argues that while 'some of these numbers may appear high, they remain within the range of migration experienced in the recent past in some industrialised countries' (UN 2000: 94). In some countries, the dramatic impression given by the migration flow required simply to keep the labour population constant (e.g. in Italy, 357 thousand immigrants per year according to the UN) is diminished if we consider that from the point of view of economics, the sustainability of ageing depends not on the amount of the labour-age population, but on the share of it that is in effect used in production, on its efficiency and on income distribution.

(8.2 around here)

We shall next focus upon the repercussions of ageing: (a) on the labour market and (b) on *PAYG*'s costs in relation to output levels.

8.2 Ageing and the labour market

8.2.1 Scenarios on the evolution of labour supply and dependency ratios

In a recent study (Burnieaux et al. 2003), the OECD has estimated the evolution of labour supply over the periods 2000-2025 and 2025-2050 in the participant countries. It should not pass unnoticed that in this official document the *potential* labour supply is defined as the population aged 15 and over, modifying the hitherto standard definition of working-age population as that aged 15-65, as if retirement had become a residual not the last part of the standard life-course. More importantly, it must be observed that the OECD economists share the Neoclassical view according to which labour supply tends to be employed at its 'natural' level, that may be identified for short with full employment.[3] According to a less conventional view, labour demand depends on effective demand and not on the labour supply, so that labour supply cannot be defined as 'abundant' or 'scarce' without knowing the labour demand (let alone that, in this view, the secular trends of labour demand are one main determinant of the long run evolution of labour supply). So, we shall sometimes use the expression 'relative labour scarcity (or abundance)', bearing in mind that the scarcity and abundance must be defined with respect to given levels of labour demand and not in absolute terms. With this warning in mind, let us consider the OECD estimates of the future evolution of labour supply.

In Table 8.3 we have re-classified the OECD data, grouping countries into Settlement, Newcomers, and Greying (gently or not) nations.[4] This procedure allows some broad patterns to be identified, with the proviso that each country has a very marked specificity in its demographic and economic history.

(Table 8.3 around here)

In their baseline scenario the OECD experts consider the positive effects on labour market participation due:

1. to the cohort effect (frozen at 2000 levels) which, more significantly in the Southern European countries, will positively affect the participation rates of the younger generations of women with a stronger educational background, and

2. to already deliberated pension reforms aimed at increasing the retirement age.

They also postulate lower unemployment rates and higher fertility rates. All these factors increase the participation rates but are not able to contrast the demographic effect in the long run. Over the period 2000-2025, in spite of the fact that total population is still rising (column [1]), the change in its composition due to the ageing process is the main factor behind the fall of the labour supply in the Greying countries (column [2]). The labour supply is still rising in the settlement countries, late-comers and in most gently-greying countries in which the more marked rise in total population helps to offset the ageing process. On average, labour supply in the OECD area is still on the rise. Over the period 2025-2050 the fall in total labour supply is dramatic in most countries, with the notable exception of the US (column [3]). The OECD next assumes that additional reforms are enacted in order to provide further inducement to the female participation rate, through various incentives, and to later retirement, so as to obtain a fast convergence to a standard retirement age of 67 in 2025 accompanied by actuarial disincentives to earlier retirement. We report here the most prudent 'low' scenarios. The outcome (columns [5] and [6]) in most countries is a positive growth in labour supply. However, considering a longer time span, 2000-2050, the sign would remain negative for most countries in the Greying world, particularly in Japan and Italy. The participation rates of the standard working-age population (Table 8.4) would decline slightly in 2000-2025 in most countries

due to the ageing process and the associated retirement process, and rise slightly in the following period. A more substantial rise is expected if further reforms are legislated that favour female and older worker participation.

(Table 8.4 around here)

In synthesis, there is a remarkable variety of regional situations. In the settlement and newcomers countries the evolution of the population and of the participation rates is such as to assure a growth in labour supply. In countries like Italy, characterised by current low employment rates, a given constant level of labour demand may be met in the short run by employing the large pool of domestic idle labour and by resorting to immigration, but a relative shortage of labour might appear, *ceteris paribus*, in the long run (Aprile et al. 2002). Japan may encounter a similar situation (Feldman 2004). Independently of the regional patterns, however, the composition of the labour force is presumably changing everywhere in favour of the female and older sections, augmenting, *ceteris paribus*, the pressure on the male, prime age section of the labour supply.

In addition in all countries the old-age dependency ratio, defined as the ratio between the inactive over-65s on the labour force (those aged over 15 that participate in the labour market), actually rises whatever the scenario. Worth noticing are the trends in the *total* dependency ratio, defined as the ratio between the inactive population on the labour force.[5] In the OECD baseline scenario this ratio rises less than the old-age ratio given the compensating effect exerted by the diminished number of both dependent young and adults. In a number of cases it even becomes negative in the 'further reforms' scenario, with the effect being felt more strongly in the more greying countries. We shall return to this.

8.2.2 The economics of the impact of the demographic changes on the labour market

Classical economists showed a primary interest in the relations between population, wages and accumulation. The centrality in their theories of the notion of wage rate as the amount of commodities that workers and their families must receive in order to survive (Garegnani 1984) naturally suggests an interest in the circumstances that regulate the standard of living and the reproduction of the labour force. In addition, the determination of the wage rate on the basis of the bargaining power of labour propounds a connection between the speed of the accumulation process – which influences labour demand and wages - and population developments - which influences labour supply. Having said this, with the exception of Malthus, the Classical economists were far from holding the simplistic view of these inter-relations that has often been attributed to them. In particular: (i) labour demand, and not just the wage level, was seen as inducing population changes; moreover (ii) the level of wages could influence population in either direction; finally, (iii) unfavourable population developments and accumulation rates had no mechanical or immediately negative influence on the wage rate, which depended on enduring social habits and conventions (Stirati 1994: chapter 4 and 175-176). While Marx regarded the existence of an excess of labour population over the job opportunities as a necessary check on wages, he considered population movements too slow to account for the preservation of a labour reserve army over the cycle and during the process of accumulation – a role that was not, nonetheless, excluded in the long run. The most direct role in preserving the industrial reserve army was rather assumed by the modalities of the accumulation process itself, in particular: by (a) the weakening of the accumulation process, for a given 'organic composition of capital' and, were its pace putting too much pressure on a

given labour supply, by (b) the progressive substitution of variable capital (direct labour) with constant capital in the production process that *diminished* labour demand in the course of the accumulation process (Marx, [1867] 1974, Vol. I: chapter XXV: sections 1-3, e.g. 580-581 and 597-599).[6]

In the Marginal theory, population, although behind the determination of the labour supply schedule, played a very indirect, *de facto* secondary role, in the determination of the wage rate which results from the relative factors' scarcity and the technical conditions of production. The interest in the complex relations between the wage rate and labour population developments investigated by the Classical economist was lost, as much as the existence of a surplus of labour population, involuntary unemployed, as a check on wages, whose interpretation was also the fruit of the Classical conflict view of income distribution. The excess of population in working age over the employed population is seen by Marginal theory as consisting of voluntarily or temporarily unemployed.

According to Neoclassical theory, a fall in the rate of growth of labour supply does negatively affect the patterns of employment and output. It is, however, expected that the per-capita capital endowment rises. As a result of the mutation in the relative scarcity of factors, the wage rate is expected to rise and the profit rate to fall.[7] In principle, therefore, a fall in the population in working age is accommodated by the Neoclassical view like any other mutation of factors' endowments. However, we are authorised to suspect that, in practice, a situation of greater labour scarcity is seen by these economists with disquiet, given its impact on the bargaining power of labour and distribution (e.g. Cotis 2003).[8] The impact of ageing on the costs of *PAYG* in relation to output, to which we shall return, is viewed with even more open apprehension.

The Classical-Keynesian approach looks at the demographic developments in the context in which employment is determined by the patterns of effective demand. According to this

approach, employment is labour-demand and not labour-supply led as in the Neoclassical approach. Historical experience suggests that, in the past, capitalism has never suffered from labour scarcity, mainly because it has resorted to migration flows. Peasants, women, children and immigrants - that is the 'pre-capitalist' world that overlaps the 'reserve army' in which Marx included the elderly -, in different historical phases have constituted pools of labour supply from which capitalists have drawn workers in their millions, when necessary (Patnaik 2003). This is not to underestimate the novelty of the demographic developments that occur which, as we have seen, not even robust migration can arrest. What must necessarily be reiterated in analysing these events is that whatever the events on the labour supply side, labour demand does not mechanically depend on labour supply through the flexibility of the wage rate, as argued by Neoclassical economists, but on effective demand.

In dealing with the relative fall in the working age population – possibly bounded by migration, but only within the limits suggested by population density, political and cultural considerations - the non conventional approach would point in the directions suggested by Marx and reconsidered by Kalecki (1943), that it is necessary for capitalism to be endowed, on average, with a labour reserve army in order to discipline the workforce. The first reaction of capitalism to a reduction in the labour supply – for a given labour demand – would be to recruit those who are still outside the labour market, women, old workers, but also the young and even invalids (as stated in a official document of the OECD 2004).[9] A persistent situation of relative labour scarcity for a given level of labour demand may also determine a reaction on the side of the capitalist class applied to reconstituting the industrial reserve army through variations of output levels – achieved by deliberate economic policies or by a fall in investment decisions. It is mainly in this sense that, in a Classical-Kaleckian context, circumstances on the labour-supply side can influence labour demand and output. So, although in principle a situation of relative labour scarcity may favourably affect the direct and social wage rates and

raise the propensity to consume, thus sustaining effective demand, it may also induce a reaction on the side of the dominant classes aimed at restraining labour demand and preserving an industrial reserve army. Marx's theory of the labour reserve army would also suggest a wave of labour substituting innovations.

The real threat is that, especially in Europe, the ageing process associated to the alarm over a labour shortage and the consequent fear of the necessity of increasing the share of income going, directly or indirectly to labour, might lead to neo-Malthusian, economic stagnation policies in order to preserve an industrial reserve army. The present policies of weakening the labour market institutions that reinforce the labour bargaining power may also be explained in this perspective. In this context, policies devoted to diminishing the expected level of pensions may change the life-cycle conceptions that were consolidated in the second half of last century, inducing the social acceptance of a higher retirement age up to the point of again making acceptable the idea of working in old age – which, given the higher longevity, would mean over 65 years or so – to avoid poverty.

8.3 Ageing and the cost of PAYG

8.3.1 Scenarios on the cost of PAYG on GDP

The second question associated with ageing is the increasing weight of *PAYG* on output. The conventional wisdom is that this will determine an increase in tax burden, which might act as a disincentive on labour and saving supply, or increase public deficits and debt which, by absorbing saving and determining a rise in the interest rates, would undermine capital accumulation. Let us consider some OECD estimates of future *PAYG* costs on GDP in order to estimate the order of magnitude involved (Dang et al. 2001). Behind the projections there is a

supply-side model in which labour supply and productivity growth determine the rate of growth of GDP. This is unsatisfactory from a Keynesian point of view, according to which the GDP trend is based on the pattern of effective demand – which depends on policies (including pension policies) rather than on 'natural' market forces. Nonetheless, this conventional kind of exercise may provide an order of magnitude for the phenomenon under observation.

The OECD bases its estimates on the following equation:

$$\frac{\text{PENS}}{\text{GDP}} = \frac{\text{POP}^{+55}}{\text{POP}^{20-64}} \frac{\text{POP}^{20-64}}{\text{Employment}} \frac{\text{Av.Benefit}}{\text{Av.Productivity}} \frac{\text{Recipients}}{\text{POP}^{+55}} \tag{1}$$

$\frac{\text{PENS}}{\text{GDP}}$ is *PAYG*'s costs on gross output. $\frac{\text{POP}^{+55}}{\text{POP}^{20-64}}$ is the ratio between the population over-55 *over* the population in working-age (standard definition). This ratio measures the ageing process that influences the relative old-age pension costs since many workers retire before 65.

$\frac{\text{POP}^{20-64}}{\text{Employment}}$ is the inverse of the employment rate. This ratio measures the aforementioned expected rise in the share of working-age population in employment given, on the one side, the fall in the potential labour-supply and, on the other, the increasing female labour market participation and the measures to reduce early retirement. Observe that a fall of this ratio, say due to a fall of POP^{20-64} for a given employment level, indicates that a decreasing number of inactive adults is dependent on the active adults, and this may compensate the ageing burden.

The term $\frac{\text{Av.Benefit}}{\text{Av.Productivity}}$ is the ratio of the average pension benefit on per capita productivity, measuring the effects of pension reforms – such as the abolition of the real indexation of pensions to wages or, in Italy and Sweden, the effects of the *NDC* reforms that link the pension benefit to the average (not the final) wage and reduce them whenever the expected years

of retirement increase. Finally, the terms $\dfrac{\mathrm{Re\,cipients}}{\mathrm{POP}^{+55}}$ is the eligibility rate, which also reflects

the introduction of more restrictive rules of access to retirement and pensions.

The OECD estimates the rate of change over 2000-2050 of $\dfrac{\mathrm{PENS}}{\mathrm{GDP}}$ as the summation of

the rate of change of the components on the right hand side of equation [1]. Table 8.5 shows

the results.

(Table 8.5 around here)

Initial spending ratios, shown in the first column, depend not just on the stage reached in

the ageing process, but also on the employment rate – which, in countries like Italy, where it

is particularly low, determines an heavier pension burden on the employed. It also depends on

the national characteristic of the national pension system – which is much less generous in

countries in which the benefit is not broadly linked to pre-retirement earnings but is mainly

'flat-rate' (the traditional example is the UK). The coefficient of variation (the standard de-

viation over the average) measures the scatter of the national data around the average. It falls

from 0.43 in 2000 to 0.35 in 2050 (0.32 if the expenditure in the UK is considered as 6.5%,

which now sounds more reasonable),[10] suggesting that in 2050 there will be a greater relative

homogeneity among the OECD countries. Although the ratio of over 55 on the population in

working age is increasing at a different pace, the pension reforms endeavoured by some

countries (and further reforms will take place in the next future) affecting the level of pen-

sions in relation to productivity (and wages) and restricting the eligibility rights, and the rise

in the rate of employment of the working age population in countries where this was rela-

tively low, contribute to this greater homogeneity. The case of Italy is very representative,

since in spite of presenting the most extensive ageing process (with Japan), this country suc-

ceeds in stabilising (albeit in the long run) the expected spending ratio as a result of the *NDC* reform and of a rising employment ratio. The dramatic effect on the level of benefits with reference to per-capita output is quite evident from the table. The social problem that this perspective opens does not regard only Italy.[11] The OECD is clearly more worried about the impact of the increasing old-age spending (which should include also health spending) on taxation and the public debt than on the social effects.

8.3.2 Compensation factors: productivity growth and the (relative) constancy of the total dependency ratio

The role of productivity growth in alleviating the rise of the ratio of pension spending to output needs also to be carefully examined. Productivity growth is not a panacea, as is often envisaged. In a nutshell, if productivity growth is used to offset ageing (the rise in the number of retirees over employment), than it cannot be used to increase pensions in line with increased productivity. It might therefore be necessary to redistribute income from wages and profits towards the retirees if we want to keep pensions in line with the growth of incomes in the active population. Nonetheless, productivity gains, which have been spectacular over the last two centuries, will lead to a substantial increase in the *level* of net real income of active workers in spite of a possible higher contribution rate (Palley 2002). The burden of *PAYG* can also be transferred to non-wage earners either by increasing real wages in proportion with contributions, or by using general taxation. As Wray (1999: 1 *et passim*) has pointed out, most economists fail to distinguish between the *financial* imbalances of *PAYG*, that may well increase into the future, given the current parameters that govern the schemes, and the '*real* problems involved in producing a sufficient quantity of resources to care for future retirees', that cannot realistically be considered as an insurmountable burden. The viability of *PAYG* is,

to a large extent, a question of distribution of the social product between generations and social classes, and this has no mechanical negative impact on economic growth and welfare. One big question concerns the difficulty of raising taxes, especially over financial capital, in this era of financial liberalisation and tax competition. In this regard, it must be noted that financial liberalisation has been a deliberate political choice pursued, *inter alia*, in order to create problems for the financing of the Welfare State.

It may also be asked if the cost of an ageing society is not compensated by the lower costs of youth and dependent adults. As aptly observed by Concialdi, ultimately 'it is …the ratio of the population out of work to the population employed that gives the most reliable idea of the importance of future social expenditures' (Concialdi 1999: 6/section 4). Indeed, as also seen above, the total dependency ratio (the inactive population on the labour force) rises less than the ratio of the old-age dependency ratio (inactive elders on the labour force). Conventional economists have actually led us to regard the ageing process as a progressive contraction of the active population in favour of the inactive, forgetting that this is a process partially offset by the falling number of dependent adults. They are probably trapped into this way of thinking by the Neoclassical theory that our economies are, on average over the business cycles, in full employment.

Concialdi defines as the '[overall] economic dependency ratio … the ratio of people out of work (whether inactive or unemployed) to people in work' (Concialdi 1999: 7/section 4). The inactive section of the population has two components: the inactive young and the non-working adults. As far as the former group is concerned, the debate on the relative costs of their upbringing and education versus the support costs of the old has not led to conclusive results (see, for instance, Denton and Spencer 1999). The prevalent opinion seems that once the reduced spending for the shrinking young section of society is duly taken into account, this will not be a decisive counter force to the increasing relative costs of ageing. With regard

to the second group, as we have seen, the ageing process should accelerate the participation in the labour market of women and of mature workers, reducing the share of inactive adults (in practice many capitalist economies will approach a genuine full employment). Concialdi estimates the overall economic dependency ratio for the European Union over the next two or three decades on the basis of various hypothesis on the trends of total employment. The principal conclusion he draws is that 'there is some possibility that future structural change will not increase the economic burden on workers' (Concialdi 1999: 8/section 4). In a nutshell, this author assumes that in the next two decades or so in Europe employment will not fall significantly (and will possibly increase slightly). Since also total population is not expected to fall - merely to grow older -, the *overall economic dependency ratio* will not rise greatly. So, if productivity rises, the dependent and the active population can both share in the productivity gains without changing the distribution of the social output between the two sections of the population: 'when we look at the whole population of the European Union, variations in the numbers of the dependent population will be relatively small over the next 25 years. There was an estimated dependent population of 222 million people in 1995. The figure for the year 2020 will be between 218 and 230 million. Consequently, the average cost of the dependent population could approximately follow the rate of real economic growth without increasing the burden on workers' (Concialdi 1999: 10/section 5). If the *overall economic dependency ratio* rises, the dependent population can only share part of productivity growth, but its welfare will still rise as long as the latter grows at a higher rate than the former. Let us define $e_{tot} = \dfrac{\text{DepPop}}{N^w}$ as the *overall economic dependency ratio* and $d = \dfrac{\text{DepPop}}{N^w} \dfrac{b_d}{\pi}$ as the weight of the dependent population on output $- N^w$ is the number of workers, b_d is the average transfer to the dependants and π is output per worker (time subscript omitted). The last expression can be written $d = e_{tot} \dfrac{b_d}{\pi}$. If we want d to remain constant, then:

$$\hat{b}_d = \hat{\pi} - \hat{e}_{tot}, \tag{2}$$

where the hat indicates the rates of growth. According to Concialdi (1999: figure 5), in spite of the rise in e_{tot}, an expected $\hat{\pi}$ higher than e_{tot} will allow a substantial rise in b_d in many European countries at least up to 2020 (e.g. around 40-50% in France, Germany and Italy). Note that it is the approximation to full employment conditions that does the trick (idle labour resources tend to disappear and this compensates for the rise in the old population). In this regard, the conclusions of section 8.2 must be recalled: it is the contraction in the labour reserve army that may represent the real obstacle to an effective coping with an ageing society, not the lack of labour resources.

Concialdi's method is interesting, and it deserves to be developed in future research. This should also better assess the impact of the changing composition of the dependent population – less young and prime age inactives, more old – on private and social support costs, and on the financing sources (say, inactive spouses would transit from family support to old-age pensions), since this has serious income distribution implications.

8.4 Final remarks

This paper has tentatively explored the possible economic impact of ageing on the labour market and the viability of *PAYG*.

The conventional wisdom is that the fall in fertility may negatively influence the level and growth of employment, at least in the developed countries. Not all countries would be on the same footing in this regard: some possess reserves of labour that are currently (shamefully) kept idle; traditional settlement countries may welcome a larger number of immigrants than congested non-settlement regions. In addition, in most countries the emerging situation may

produce a spontaneous increase in the demand for the labour services of older workers, many of whom are presently still being dismissed against their will. Finally, per capita productivity growth, including some reversal of working hours, may free labour resources from the current activities. The conventional view strongly reflects the standard theory whereby the level of employment is governed by the labour supply through the flexibility of wages. We reject this view. This does not imply, however, discharging the impact of the falling supply of labour population on to the labour market. Assuming as a working hypothesis the persistence of employment at the present levels (with output growth resting on productivity growth), the falling supply of domestic labour population is not necessarily a constraint on output growth, insofar it is in most countries compensated by higher participation rates (including later retirement), technical progress, immigration and, perhaps, some recovery in fertility. The challenge of a shrinking labour supply will, however, seriously bite in some countries like Japan and Italy. The novel dimension added in this paper is whether the additional sources of labour supply are such as to preserve an industrial reserve army and if capitalism can live without a significant labour reserve army that keeps the whip of competition on the workers. It is in this sense that, according to non conventional economic analysis, a shrinking labour supply may affect employment and growth by inducing deflationary choices, particularly in Europe. The more so if ageing brings about a rising cost of the dependent population.

Most projections forecast a rise in *PAYG*'s cost over income. Whereas differences within developed countries will persist, the tendency – as presently predicted - is towards a greater homogeneity. We discussed the role of productivity growth in attenuating the expected rise in *PAYG*'s burden on social output. In synthesis, this factor can help to keep the effects of a rising dependency ratio at bay, but cannot at the same time be used to raise pension benefits in line with per-capita output growth. If we wish to avoid a relative impoverishment of the retirees, we may have to accept the idea that wages and/or profits have to share part of the pro-

ductivity gains with the retirees. To look at the old-age dependency ratio alone might, however, be too limited a prospect. Some authors suggest looking at a total dependency ratio that includes also the dependent youth and the dependent adults, both shrinking components. The total dependency ratio would therefore suggest a less gloomy future. The composition of the dependent population would, however, change in favour of the old component, more dependent on public (tax-financed) public support compared to the other components (young and spouses) sustained by the family. The old component is generally considered also to be more costly. Although the total flow to the dependents changes less than expected, the increase and changing composition of the flow may open up questions of political acceptability.

We may finally note that according to the Classical-Keynesian approach there is no mechanical relation between an increasing amount of resources going to the old, or more generally to the dependents, and economic growth. On the one hand social transfers have positive effects on aggregate demand and hence on growth. On the other hand they may negatively affect the political climate and the incentive to invest. The incentive to invest may be negatively affected also by tax competition in open economies. This is not, however, a mechanical result and may be avoided if a robust and persistent social consensus sustains those social transfers, so as to induce capitalists to accept a lower post-tax rate of profit. International social dumping might be avoided by a degree of tax co-ordination and, perhaps, by the reintroduction of forms of capital control. From an analytical point of view what must be strongly noted is the absence, in a heterodox framework, of an automatic negative effect of increasing social transfers on accumulation: these effects may take place, but their origin resides in the refusal of a changing income distribution, not in some mechanical relation.

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Table 8.1 Evolution of the world population: Alternative UN scenarios by regions (billions)

Year	Low	Medium	Zero-growth	High	Constant
			World		
Year	*Low*	*Medium*	*Zero-growth*	*High*	*Constant*
2000	6.1	6.1	6.1	6.1	6.1
2050	7.4	8.9	8.9	10.6	12.8
2100	5.5	9.1	9.1	14	43.6
2150	3.9	8.5	8.5	16.7	244.4
2200	3.2	8.5	8.3	21.2	1,775
2225	2.7	8.8	8.3	27.8	14,783
2300	2.3	9	8.3	36.4	133,592
			*More developed regions**		
Year	*Low*	*Medium*	*Zero-growth*	*High*	*Constant*
2000	1.2	1.2	1.2	1.2	1.2
2050	1.1	1.2	1.2	1.4	1.2
2100	0.8	1.1	1.1	1.7	0.9
2150	0.6	1.2	1.1	2.2	0.8
2200	0.6	1.2	1.1	2.8	0.7
2225	0.5	1.2	1.1	3.6	0.7
2300	0.4	1.3	1.1	4.7	0.6
			Less developed regions		
Year	*Low*	*Medium*	*Zero-growth*	*High*	*Constant*
2000	4.9	4.9	4.9	4.9	4.9
2050	6.3	7.7	7.7	9.3	11.6
2100	4.7	7.9	7.9	12.4	42.7
2150	3.3	7.3	7.3	14.6	243.6
2200	2.6	7.3	7.2	18.4	1,775
2225	2.2	7.5	7.2	24.2	14,782
2300	1.9	7.7	7.2	31.8	133,591

Notes: * Excl.Oceania.

Legenda scenarios:

Low: total fertility rates (slightly) below replacement rate for most of the periods.

Medium: total fertility rates below replacement rates over 2050-2175 and then at replacement level.

High: total fertility rates (slightly) above replacement rates.

Zero-growth: when population reaches a standstill under the medium scenario, then births exactly balance deaths in order to maintain population constant in spite of the enduring reduction of mortality.

Constant fertility: each country maintain the fertility it showed in 1995-2000.

Source: UN-Population Division (2003)

Table 8.2 Impact of migration flows: Alternative UN scenarios (thousands)

Scenario Country or region	Medium variant	Medium variant with zero migration	Constant total population	Constant age group 15-64	Constant ratio 15-64/+65
Hypothetical net number of migrants over 2000-2050: scenarios by country or region.					
France	325	0	1,473	5,459	89,584
Germany	10,200	0	17,187	24,330	181,508
Italy	310	0	12,569	18,596	113,381
Japan	0	0	17,141	32,332	523,543
Republic of Korea	-350	0	1,509	6,426	5,128,147
United Kingdom	1,000	0	2,634	6,247	59,722
United States	38,000	0	6,384	17,967	592,572
Europe	18,779	0	95,869	161,346	1,356,932
European Union (15)	13,489	0	47,456	79,375	673,999
Total population in 1995 and by hypothetical scenarios in 2050					
	1995	*2050*			
France	58,020	59,883	59,357	61,121	67,130	187,193
Germany	81,661	73,303	58,812	81,661	92,022	299,272
Italy	57,338	41,197	40,722	57,338	66,395	193,518
Japan	125,472	104,921	104,921	127,457	150,697	817,965
Republic of korea	44,949	51,275	51,751	53,470	60,125	6,233,275
United Kingdom	58,308	56,667	55,594	58,833	64,354	136,138
United States	267,020	349,318	290,643	297,970	315,644	1,065,174
Europe	727,912	627,691	600,464	727,912	809,399	2,346,459

	1995	2050				
European Union (15)	371,937	331,307	310,839	372,440	418,509	1,228,341

Potential support ratio in 1995 and by hypothetical scenarios in 2050

	1995	2050				
France	4.36	2.26	2.26	2.33	2.49	4.36
Germany	4.41	2.05	1.75	2.26	2.44	4.41
Italy	4.08	1.52	1.52	2.03	2.25	4.08
Japan	4.77	1.71	1.71	2.07	2.19	4.77
Republic of Korea	12.62	2.4	2.4	2.49	2.76	12.62
United Kingdom	4.09	2.37	2.36	2.49	2.64	4.09
United States	5.21	2.82	2.57	2.63	2.74	5.21
Europe	4.81	2.11	2.04	2.38	2.62	4.81
European Union (15)	4.31	1.97	1.89	2.21	2.42	4.31

Source: UN-Population Division (2000)

Table 8.3 Evolution of labour supply 2000-2050, OECD projections

Settlement countries	Baseline scenario 2000-25		Baseline scenario 2025-50		Labour supply with further reforms 2000-25*	Labour supply with further reforms 2000-50*
	total population change	total labour supply	total population change	total labour supply		
Australia	29.8	18.3	9.8	0	25.2	26
Canada	23.8	12.4	3.6	-1.9	17.1	15
New Zealand	25.1	11.9	5.9	-3.8	17.9	13.7
United States	24.9	14.5	19	17.3	19.7	40.5
Newcomers						
Mexico	49.8	60.4	17.8	11.6	63.8	83.4
Turkey	43.4	11.8	17.7	2.4	17.1	21.6
Gently greying Europe						
Iceland	21.1	16.6	5.1	-3.1	17.7	14.4
Norway	14.4	10.1	4.4	2.5	15.7	18.7
Sweden	8.9	-6.9	2.8	0.8	-2.6	-1.7
Netherlands	14.5	6.6	0.9	-2.2	17.7	14.9
Luxemburg	18.6	12.6	8.4	5.5	22.4	28.1
Ireland	24.2	34.8	7.5	-0.8	45.3	44.7
United Kingdom	12	4	1.1	-2.3	9.5	7.2
Portugal	8.1	8	1.6	-5.4	18.1	13.2
Greying World						

Denmark	7.8	-3.7	-0.7	-3.5	-1.6	-5.1
Finland	5.6	-8.3	-6.8	-8.4	-3.4	-11.4
Austria	4.7	-9.8	-5.8	-15.4	-2.7	-16.9
Belgium	8	3.5	2.1	-4.1	12.8	8.5
France	10	-3.4	-1	-6.6	9.3	2.8
Germany	2.5	-3.7	-7.8	-13.4	5.7	-8.3
Switzerland	6.4	1.6	-3.5	-7.6	7.8	-0.3
Italy	-2.2	-4.2	-14.2	-24.7	4.4	-20.2
Spain	10.7	9.1	-5	-15.2	24.6	7.7
Greece	1.4	9.8	-5.7	-11.1	11.6	-0.6
Czech Re-public	-0.5	-12.9	-14.7	-32.5	-7.4	-36.9
Hungary	-1.9	-17	-15.6	-34.8	-16	-44.7
Poland	5.7	-9	-11.9	-28.6	-4	-31.1
Slovakia	10	-4.4	-10.3	-31.8	-0.4	-31.3
Korea	11.2	-7.2	-13.1	-24.2	4.7	-18
Japan	-1	-11.8	-16.1	-23.1	-2.5	-24.5
Oecd unw-wighted av-erage	13.2	4.8	-0.8	-8.8	12.9	7

Source: Burnieaux et al. (2003)

Table 8.4 Evolution of participation rates in OECD countries: Scenarios by the OECD

	Levels in 2000[a]	Baseline scenario, changes over		Further reforms[b], changes over	
		2000-25	2025-50	2000-25	2025-50
Settlement countries					
Australia	73.8	-0.3	-0.6	2.9	2.3
Canada	76.3	1.2	0.2	3.8	4
New Zealand	75.2	-2.3	-0.9	1.4	0.4
United States average	77.2	-1.7	0.8	1.4	2.2
Newcomers					
Mexico	62.3	6.5	0.2	9.1	9.1
Turkey	51.8	-10.2	-2.4	-6.3	-8.9
Gently greying Europe					
Iceland	86.6	2.3	-0.9	2.5	1.5
Norway	80.7	1.7	1.1	4.1	5.2
Sweden	78.9	-5	0	-4.3	-0.2
Netherlands	74.6	2.2	1.6	9	10.3
Luxemburg	64.2	2	1.8	10.3	11.9
Ireland	67.4	9.7	1.1	16.3	17.4
United Kingdom	76.6	-1.2	0.8	1.7	2.5
Portugal	71.1	1.4	0.4	7.8	8.2
Greying World					
Denmark	80	-2.3	0.3	-0.7	-0.4
Finland	74.3	0.3	1.4	3	4.2
Austria	70.6	-4.6	0.4	-0.4	-0.1
Belgium	65.2	1.7	0.4	8.7	9.1

France	68	-2.6	0.3	6.5	6.8
Germany	72.2	2.2	0.3	9.6	9.9
Switzerland	80.5	1.7	-0.6	5.4	4.6
Italy	60.3	2.9	0.2	8.1	8.3
Spain	66.7	3.2	1.7	11.8	13.5
Greece	63	8.4	0.6	11.1	11.7
Czech Republic	71.6	-1.4	-5.3	3.8	-1.4
Hungary	60.2	-1.9	-5.7	0.3	-4.8
Poland	65.8	-0.7	-6.2	4.2	-1.9
Slovakia	69.9	-1.3	-5.8	2.4	-3.3
Korea	64.3	-3.2	0.9	3.9	4.5
Japan	72.5	1.4	-0.3	10.7	10.5
OECD unweighted average	70.7	0.3	-0.5	4.9	4.5

Notes: [a] Percentages of population aged 15-64. [b] Conservative scenario

Source: Burnieaux et al. (2003)

Table 8.5 Changes in old-age pension spending 2000-2050, OECD estimates

	Total old-age pension spending. Level in 2000	Total old-age pension spending. Level in 2050	Variation 2000-2050	Contributions of			
				old-age depend-ency ratio	em-ploy-ment ratio	benefit ratio	eligi-bility ratio
Settlement coun-tries							
Australia	3	4.6	1.6	2.5	-0.1	-0.5	-0.2
Canada	5.1	10.9	5.8	5.1	0	-0.6	1.3
New Zealand	4.8	10.5	5.7	4.7	-0.1	1	0
United States	4.4	6.2	1.8	2.4	-0.1	-0.2	-0.3
average	4.3	8.1	3.7				
Gently Greying Europe							
Norway	4.9	12.9	8	3	0.1	3.9	1.2
Sweden	9.2	10.8	1.6	3.9	-0.5	-2.1	0.4
Netherlands	5.2	10	4.8	3.8	-0.5	0.2	1.4
United Kingdom	4.3	3.6	-0.7	1.7	0.1	-2.5	0.1
average	5.9	9.3	3.4				
Greying World							
Denmark	6.1	8.8	2.7	2.7	-0.3	-1.5	1.7
Austria	9.5	11.7	2.2	7.6	-1.9	-1.1	-2.4
Belgium	8.8	12.1	3.3	4.7	-0.7	-1.6	1
France	12.1	15.9	3.8	7.6	-0.5	-3.4	0.4
Germany	11.8	16.8	5	6.4	-0.7	-2.7	2.1
Italy	14.2	13.9	-0.3	10.1	-3.2	-5.5	-1.5
Spain	9.4	17.4	8	8.6	-2.6	0	2
Czech Republic	7.8	14.6	6.8	8.2	-0.8	-0.1	-0.1
Hungary	6	7.2	1.2	2.9	-1	-0.3	-0.4
Poland	10.8	8.3	-2.5	7.3	-1.3	-5.9	-2.1
Korea	2.1	10.1	8	4.8	-1	0.2	5
Japan	7.9	8.5	0.6	5.1	-1.2	-3.9	0.9
average	8.9	12.1	3.2				
OECD un-weighted aver-age	8.1	11.6	3.5	5.6	-1.0	-1.5	0.6
Coeff. of varia-tion*	0.43	0.35					

Notes: * standard deviation/average

Source: Dang et al (2001).

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* This paper is based on chapter 8 of Cesaratto (forthcoming a).

[1] We are echoing the procedure famously advanced by Marx in the *Grundrisse*: 'It seems to be correct to begin with the real and the concrete, with the real precondition, thus to begin, in economics, with for example the population, which is the foundation and the subject of the entire social act of production. However, on a closer examination this proves false. The population is an abstraction if I leave out, for example, the classes of which it is composed. These classes are in turn an empty phrase if I am not familiar with the elements on which they rest. For example, wage labour, capital, etc. […] Thus, if I were to begin with population, this would be a chaotic conception of the whole, and I would then, by means of further determination, move analytically towards ever more simple concepts, from the imagined concrete towards ever thinner abstractions until I had arrived at the population again, but this time not as a chaotic conception of a whole, but as a rich total of many determinations and relations'. (Marx 1857-1858 [1973]: 100)

[2] The reader is referred to Table 8.2 in Cesaratto [forthcoming a] that provides a broad idea of the most likely comparative evolution in different regions based on UN projections concerning the period 2000-2050 (UN-Population Division 2002a).

[3] Of course, for mainstream economists the *potential* and the *effective* labour supply do not coincide, given the existence of people that remain *voluntarily* outside the labour market. Only with the contraction of the number of people in labour age, do potential and effective labour supply tend to correspond.

[4] The OECD experts assume that migration flows remain at their recent past levels, which have been very high for the US but not necessarily so for European countries, so these estimates should be looked upon with the proviso of a conservative hypothesis on the migration flows for many countries.

[5] The reader is referred to table 8.6 in Cesaratto (forthcoming a) also based on Burnieaux et al. (2003).

[6] Marx could therefore conclude that the 'law of capitalist accumulation, metamorphosed by economists into a pretended law of Nature, in reality merely states that the very nature of accumulation excludes every diminution in the degree of exploitation of labour, and every rise in the price of labour, which could seriously imperil the continual reproduction, on an ever-enlarging scale, of the capitalistic relation' (Marx [1867] 1974, Vol. I: 582). In other words, the existence of a labour reserve army does not depend, according to Marx, on fertility variations, too slow to be effective for this purpose, but on the patterns of accumulation. It should be noted that in Marx labour supply does not directly affect labour demand, as the existence of persistent unemployment shows (this is true also for the other Classical economists, cf. Stirati 1994: chapter 6), but may affect the rate of accumulation, and therefore indirectly labour demand, by influencing distribution.

[7] The rise in the wage rate may induce some voluntary unemployed, whose reserve wage is below the new level of the wage rate, to enter the labour market, thus raising the activity and employment rates

[8] An example of Neoclassical analysis is provided by Boersch-Supan (2003).

[9] '[R]eforms need to identify disabilities correctly, distinguishing between minor and major disabilities in order that the term 'disabled' is no longer equated with being unable to work' (Boersch-Supan 2003: 10-11).

[10] The projections for the UK are over-optimistic. According to the *Economist* (Sept. 2004) the disarray of the British private-pillar 'casts doubts on the sustainability of Britain's cheap public pensions'. This opinion follows the results of a Government commission on pensions that presented very pessimistic forecasts about expected pension incomes in Britain.

[11] The OECD experts specify that the expected decline in average benefits relative to average productivity over the period 2000-2050 will be –16% in Belgium, -11% in Denmark, -21% in France, -20% in Germany, -30% in Italy, -38% in Japan, -51% in Poland, -22% in Sweden, and –47% in the United Kingdom.