ON THE TREATMENT OF POPULATION AGEING IN ECONOMIC THEORY

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Abstract

Population ageing is often thought to have adverse economic consequences, and economics therefore has a responsibility for contributing to an understanding of ageing. This paper discusses the treatment of population ageing in economic theory and argues that mainstream economics is too narrow and restrictive to provide an adequate representation of ageing. An alternative to mainstream economic theory is a more pluralistic view of ageing, drawing from non-neoclassical economic theory and from the theorising of the other social sciences.

Keywords: population ageing, economic theory, economic methodology, social gerontology, realism, pluralism

Introduction

Much concern about population ageing centres on its economic consequences. In an ageing population the average age of the labour force increases and the inactive elderly become a larger proportion of the total population. These changes raise the demand for goods and resources relative to productive potential, intensifying what is commonly perceived as the economic problem, that is, the scarcity of resources and the need to allocate them among alternative uses.

Given the economic emphasis, economic theory should be able to assist in understanding population ageing. Population is usually discussed as a specialised topic in economics, falling outside the general run of economic theorising. Economics now embraces many specialisms (labour, development, industrial, public, international, urban, transport economics, and so forth), most of them applying mainstream economic theory to a specific area of interest. Population has been discussed by a number of economists, yet it has never quite had the status of a recognised specialism: only recently have attempts been made to set up a distinct 'population economics'.[1] Over the next few years population economics will probably be firmly established as a specialised branch of the economic mainstream. Part of its remit will be to investigate population ageing.

The increasing attention of economists to population is to be welcomed, but there is room for doubt as to whether mainstream economics is an ideal vehicle for depicting population ageing. The present paper raises some reservations about the modelling of ageing in mainstream economic theory; it will be argued that mainstream theory is too narrow to cope with ageing, and a case will be made for a more pluralistic perspective.

The economic approach to human behaviour

One definition of economics is by its approach rather than its subject matter, so that economics has a unique and distinctive representation of social and economic events. Following this line, some economists have claimed that all human behaviour is susceptible to the economic approach, implying that the other social sciences would do well to adopt it.[2] Such views are especially pertinent to population, since many economic analyses of population have stemmed from the economic approach and its research programme. Economic theories of fertility, for example, stand alongside economic theories of crime, the family, marriage, church attendance, suicide, and so on, as applications of the economic approach. It is worth looking in more detail at the economic approach and its relation to mainstream economics.

The economic approach to human behaviour has three main components. The first is methodological individualism, deriving social phenomena from individual behaviour alone. There are no social wholes, and social events and institutions can be traced back to the actions of individuals. The second component is instrumental rationality. Agents are assumed to have stable, well-defined preferences, furnishing an objective for their behaviour. Rationality consists in maximising this objective, subject to any constraints that may be relevant. The final component is market equilibrium. Individuals interact through voluntary self-interested agreements, which bring mutual gain is a stable equilibrium. Together these three components constitute a self-contained world view, applicable to all human behaviour. This goes even for cases where agents do not consciously optimise, or where no market exists; it is believed that behaviour will still correspond to the model's predictions, as if the model held in reality. Hence, all behaviour is modelled through the actions and interactions of instrumentally rational agents.

The connection between the economic approach and mainstream economics is close, but ambiguous. They share a grounding in the late-nineteenth-century neoclassical economics of Jevons, Marshall and Walras. The economic approach is an extension and generalisation of the neoclassical ideas of rationality and market-clearing equilibrium. Mainstream economics appends a further set of ideas about market failures and imperfections, which question the attainment of an efficient equilibrium. An example is the invoking of labour market rigidities to permit Keynesian unemployment. Mainstream macroeconomics is sometimes termed the 'neoclassical synthesis', a synthesis of Keynes with the earlier neoclassical economics.

By introducing exogenous constraints, mainstream economics is more amenable to the modelling of social and institutional influences on behaviour, and also to the advocacy of policy intervention. The purer individualism of the economic approach is often allied to *laissez-faire* opinions, as is evident in the writings of the Chicago School and the New Right. A thoroughgoing *laissez-faire* would trust markets to make the necessary adjustments for population ageing, so there would be no call for policy responses. Mainstream economics is less sanguine about the economy's self-adjusting properties, and leaves more openings for policy intervention to offset market failure. There remains a residual doubt about policy, however: if constraints are introduced as rigidities preventing market clearing, then it can easily be concluded that constraints should be removed to restore an efficient market-clearing equilibrium. Mainstream economics has the same basic formulation of the economy as neoclassical theory, and can be criticised as being an 'imperfectionist' version of neoclassical economics.[3] Many mainstream economists espouse neither the full-blooded economic approach nor *laissez-faire*, yet mainstream economics has close affinities with the neoclassical conception of the economy.

In considering economic theory the present discussion will concentrate on mainstream economics, in other words, a type of theorising which uses rational individual behaviour and market-clearing equilibrium, but with additional constraints and imperfections.

Whether the resulting approach is an incomplete realisation of a more fundamental individualism or a distinctive approach in its own right is open to debate: mainstream theory can be interpreted in either way.

Ageing and mainstream economics

Because of the individualistic foundations of mainstream economics, its treatment of population ageing is constructed from its treatment of individual ageing. For ageing to be possible a model must be intertemporal, with two or more time periods; timeless, single-date modelling cannot accommodate ageing. The standard intertemporal technique in mainstream economics is to set up a life-cycle model, whereby instrumental rationality governs an individual's full lifespan. Preferences are defined intertemporally, assuming comparability of utility between periods and discounting of future utility. The income constraint must also be intertemporal, a summation of the individual's income in each time period discounted by the interest rate. Behaviour over time depends on the maximisation of intertemporal utility subject to the income constraint, an expansion of timeless decision-making to an intertemporal framework.

Chronological ageing is not part of the decision. Individuals cannot choose their age, nor can they change the rate at which time passes; choices of this kind are at present unfeasible. Time and ageing enter mainstream modelling exogenously through the preferences and the constraints faced by an individual. Preferences mention age only if an individual's valuation of activities changes over time: otherwise dated activities could be aggregated, yielding undated preferences. Exactly what is meant by valuations changing with age is unclear. If preferences and utility are entirely psychic concepts, then any changes in valuations are also psychic. On this view the physical effects of ageing are external to preferences, constraining the individual's true valuations. If, on the other hand, there is no

mind-body dualism, then physical changes with age are internal to preferences, which must reflect the physical capacity to undertake activities. Mainstream economics is silent on the nature of preferences; as the irreducible starting point of economic theory, their origin and the place of aging within them are largely unspecified. Time also enters the modelling of behaviour through the constraints on the individual. Earning opportunities at different ages are constrained by a mixture of the physical consequences of age and the social and economic conditions guiding life-cycle work patterns. Physical ageing eventually reduces marginal productivity and earning power, even if the individual has some control over health. Social and economic constraints, such as statutory retirement ages, ensure that most individuals conform to a particular pattern of behaviour. An individual chooses consumption, saving and working time to maximise intertemporal utility subject to the appropriate set of constraints. The resulting life-cycle plan describes the individual's behaviour as ageing occurs.

Population in mainstream economics is an aggregation of individuals making life-cycle constrained optimisation decisions. A simple neoclassical model would relate their behaviour through market equilibrium, but in neoclassical synthesis models the operation of markets can be obstructed by constraints and rigidities. Full employment is no longer guaranteed, and at least in the short run the economy can be in disequilibrium. Once away from equilibrium, population ageing can influence the economy through the Keynesian principle of effective demand, as was noted in early Keynesian writings.[4] The neoclassical synthesis model nevertheless plays down the disequilibrium influence of population. Demographic change is classed as a long-run phenomenon and tied in with long-run, full employment analysis, on the assumption that in the longer term markets will clear. Thus, for example, dependency ratios are often calculated with all individuals of working age in employment, disregarding the dependency of the unemployed, which closely resembles that of the elderly. The economy then appears to be facing a cross-sectional demographic constraint, with the number of 'producers' equal to the size of the working population. An

ageing population tightens the demographic constraint, causing a 'crisis' of rising dependency, with growing 'burdens' on the working population.

If, however, unemployment is accepted as normal in capitalist economies, in the long run as well as the short run, then the economy no longer faces a binding demographic constraint and some of those able and willing to work are unable to secure unemployment. An economy with high unemployment has no aggregate shortage of producers; indeed, it has more producers than are required to meet current demand. To base analysis on an intergenerational conflict for aggregate resources risks oversimplifying the economic consequences of ageing in economies with permanent unemployment and excess capacity. Ageing may still aggravate resource conflicts, but they are liable to be within specific public budgets and to involve groupings other than the young and old; empirical analysis of such conflicts needs more institutional detail than is customary in mainstream economics. At the aggregate level changes in the true dependency ratio, including unemployment, are characteristic of the normal functioning of capitalist economies, and it is misleading to single out population ageing as causing a 'crisis' of dependency.

Adherence to mainstream economics forces the discussion of ageing into a restrictive conception of the economy, too narrow to do justice to the considerations broached by ageing. For a less restrictive approach one has to seek alternative forms of theorising.

Alternative approaches

Theory is being assessed here from a realist position: theory should aim to be realistic, explaining events by highlighting the relevant parts of a more complex reality. Realism has not always been favoured by economists. Instead, mainstream economics frequently appeals to an instrumentalist position, with theory judged by its ability to generate accurate

predictions. Following the natural sciences, the yardstick of theory is whether or not it is falsified by empirical evidence; theory must give rise to testable predictions and stands or falls by them. Despite the doubts in both natural and social sciences about the possibility of objective, positive science,[5] much work in economics places faith in empirical testing as the arbiter of theory, while taking a more relaxed attitude to the realism or plausibility of assumptions. Regardless of how implausible a model may seem, if it can yield accurate and useful predictions, it is deemed valuable: theory is a practical tool, not a source of explanation. A realist position has different objectives, and even if a model can generate perfect forecasts, it does not necessarily offer an explanation or understanding of events. A 'black box' theory that produced good forecasts from raw data would be useful but would do little to further understanding of reality. Suppose, therefore, that realism is a valid objective of theorising. The question is whether the theoretical alternatives to mainstream economics can provide a more realistic account of ageing.

Difficulties with mainstream economics stem from its treatment of individual behaviour and from the interaction of individuals through market-clearing equilibrium. Consider firstly individual behaviour. In a life-cycle model individual preferences are taken as given, without being contingent on a particular society and without being altered or moulded by social pressures. Social and institutional factors are separate from preferences and can be portrayed only as exogenous constraints on behaviour. Institutions are construed as confining or restricting the individual's actions, diverting them away from a 'natural' state that would prevail in the absence of institutions. Individuals exist independently of their social surroundings, and there is no genuinely socialised behaviour. Time is modelled so as to permit individuals to make rational life-cycle decisions. Life-cycle planning is a static exercise, with behaviour over some future time horizon decided in the current period. Under perfect foresight there is no further active decision-making; individuals live out the rest of their lives fulfilling the conditions of an earlier life-cycle plan. If information is imperfect, it must still be available in probabilistic form if optimisation is to go ahead. True uncertainty about the future is ruled out.

Mainstream economics presents a specialised picture of individual action, which accords little importance to socialised behaviour or uncertainty. This can be illustrated diagrammatically, as in Figure 1.

Figure 1

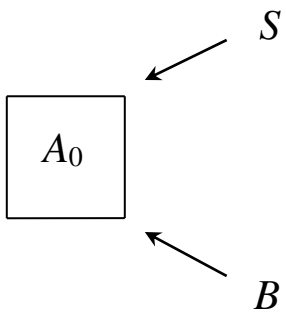
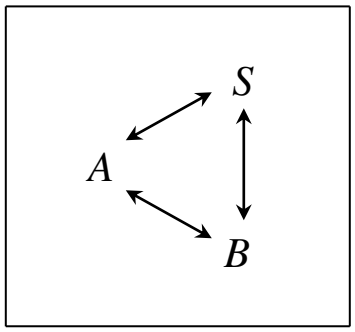


Figure 1 makes the conventional distinction between structure and agency as determinants of behaviour: *S* denotes the influence of social structures; *A* denotes individual agency. In discussing ageing it may be appropriate to add biology, *B*, as a third determinant of behaviour, given that physical decline with age has a strong biological component. Figure 1 shows the view of behaviour in mainstream economics. Both structure and biology can be modelled, but only as constraints on individual agency, which lies at the heart of rational individual behaviour. The stress on planning over time locates agency at date zero of the planning period, and modelling converges on to A_0, a single instance of individual agency. The square box signifies the individual's identity, equated with agency at date zero.

A wider view would give more equal status to the determinants of behaviour, as in Figure 2. Unlike Figure 1, structure and biology are internal to the individual and are no

longer of a lesser, external status in influencing behaviour. Both structure and biology play a role in the formation of the individual, while still leaving scope for agency. The square box signifying identity includes all three determinants of behaviour, which interact with each other and are less distinct than in Figure 1, so that individual agents are inseparable from their social and biological context. Behaviour cannot be traced back to some prior date, and *A*, *B* and *S* are all undated, with an influence occurring continuously over time. Figure 2 is more complex than Figure 1, but its greater generality can encompass socialised behaviour and uncertainty, which are highly germane to an individual's experience of ageing. To adopt the stance of Figure 1 is to impose arbitrary restrictions on the modelling of behaviour.

Figure 2



Theorising which comes closer to Figure 2 than Figure 1 can be found in non-neoclassical economic theory, and in the other social sciences. The idea of rational economic man has long been criticised from within and outside economics, and much economic theorising has different behavioural foundations. Marxian, institutional,

post-Keynesian and neo-Ricardian economics are all consistent with a less individualistic method, demonstrating that there are theoretical alternatives in economics, upheld by a minority of economists. The alternatives have not been applied systematically to ageing, so there is no well-established alternative view of the economics of ageing. The theoretical framework can, however, potentially be brought to bear on ageing and demographic change. Outside economics, social structure is more prominent in theorising, especially in sociology. Recent social theory has tried to strike a finer balance between structure and agency, concentrating on the formation of the individual agent within society.[6] Theorising about demographic change and ageing *per se* has sometimes been undertaken separately from economics or sociology, in the guise of population theory or gerontology. By contrast with the economic modelling of fertility, authors on population have focused on social and cultural factors as causes of fertility change.[7] Specialised discussion of ageing and its ramifications occurs within social gerontology, and here also there is greater awareness of the social and biological dimensions of age.[8] Although social gerontology is not primarily economic in subject matter, it could be extended into areas more usually treated by economics.

The other main difficulty with mainstream economics is its reliance on market-clearing equilibrium. Mainstream theory revolves around markets and the allocation of goods by price; equilibrium must exist as a benchmark, even if imperfections and rigidities prevent it from being continuously attained. In long-run analysis the most problematic issues are skirted by assuming the economy will be in equilibrium, reducing the task to a comparison of different equilibria. As an organising principle, market-clearing equilibrium is of doubtful relevance to demographic change, overstating the economy's self-adjusting properties and understating the place of social structure.

Again alternatives are to hand in non-neoclassical economic theory and in other disciplines. According to some interpretations, Keynesian economics implies a rejection of any tendency of capitalist economies to produce full employment; post-Keynesian theory

eschews the neoclassical labour market with its market-clearing equilibrium. On this view Keynesian economics is fundamentally different from the earlier neoclassical theory and cannot be properly synthesised with it. Institutional, Marxian and neo-Ricardian theory are equally critical of market clearing and general equilibrium, and make no use of them in either short or long run. Generally, non-neoclassical economics is more dynamic in its methods, dealing with processes occurring in historical time and subject to uncertainty. The lack of market equilibrium gives a better chance of capturing the quality of demographic change, with populations rarely in a well-behaved steady state. Authors outside economics have also discussed macroeconomic issues. An example is the notion of 'structured dependency', by which the dependency of the elderly is seen as socially created and linked to macroeconomic conditions.[9] Although propounded by authors in sociology and social policy, the theory of structured dependency addresses employment, pensions and retirement, topics normally the concern of economics. While hard to reconcile with mainstream economics, structured dependency could be more readily integrated with non-neoclassical economic theory.

As an alternative to mainstream economics, a way forward in modelling the economics of ageing would be greater pluralism, drawing from the theorising of non-neoclassical economics and the other social sciences, notably sociology, social policy and gerontology. This is merely to confirm the multi-disciplinary character of ageing, acknowledged in social gerontology. Economics is often noticeably missing from the multi-disciplinary amalgam, a sign of its propensity to distance itself from the other social sciences, observed in extreme form in the economic approach to behaviour. If economics is to participate fully in the multi-disciplinary investigation of ageing, its contribution is most likely to come from non-neoclassical economic theory, which is more diverse and flexible, and has more in common with the methods and viewpoints of the other social sciences.

Conclusion

Ageing is a subject that straddles academic disciplines, and one that cannot be neatly compartmentalised. It is impossible to hive off a separate 'economics of ageing', which can be handled by mainstream economics in isolation from other disciplines. Far from having a unique value in this regard, mainstream economics is too narrow to model ageing adequately. The present paper has argued that a more pluralistic perspective would be preferable, giving more leeway to theory from non-neoclassical economics and from other disciplines. It would be a pity if 'population economics' grew into just another branch of mainstream economics, without exploring other theoretical approaches. The best chance of economic theory helping an understanding of population ageing is for it to proceed on a wide front, transcending the core presuppositions of mainstream economics.

Notes

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