



Public economics as if time matters: Climate change and the dynamics of policy[☆]

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ABSTRACT

Tony Atkinson played a crucial role in shaping modern public economics, but throughout his life challenged whether we were making the right assumptions and were building models which captured the essence of the issues under examination. This paper examines questions discussed with Tony concerning public policy to foster change where the pace and nature of change are critical to any serious policy assessment. The primary example is climate change.

The paper argues that subjects such as the dynamics of innovation, of potentially immense and destabilising risks, and of political economy, together with technicalities around non-linearities and dynamic increasing returns, all of which are at the heart of the challenge of climate change, will require a series of focused models for their investigation. Attempts to build integrated assessment models (IAMs) for the analysis of climate change have been largely misplaced and omit key effects and questions of the above kind. Intertemporal issues and values are at the core of policy towards climate change and the paper shows that much of the intertemporal economic analysis of the issues around climate change has been misguided and has ridden roughshod over the analytical underpinnings and the underlying ethics of discounting. Where major decline is possible, discounting is fiercely endogenous; and where capital markets are imperfect and risk intense, discount rates cannot be read off from markets.

Notwithstanding the modelling difficulties and the challenging research agenda, the paper argues that the urgency of the problem (for example, world infrastructure will double in the next 15–20 years and there are major dangers of lock-in of dirty and damaging capital) require strong action and we know enough about policy to begin travelling down the path of an attractive low-carbon transition.

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1. Introduction

Tony Atkinson was one of the most thoughtful, creative, prolific and distinguished economists the world has seen. His deep humanity and decency, combined with his extraordinary intellectual ability, took him to the most important issues shaping the lives and livelihoods of people across the world, particularly the poorest. At the same time, he was constantly challenging and questioning, he never stopped asking whether the approaches we were using were capturing the essence of the crucial problems we were trying to tackle. He challenged our profession in the 1960s by bringing, in his first book (Atkinson, 1969), poverty and individual circumstances in developed countries to centre stage in economics, in contrast to the aggregate, growth and class focus which was dominating

so much of the discourse in our subject. And the intensity of his challenge to what economists do and how they do it continued to the last decade of his life, including in his 2015 book on inequality; indeed, in some ways it became still more intense.

This paper is an attempt, in part based on discussions with Tony, to articulate his agenda, and to add a little of my own, for public economics. It focuses on that fundamental part of the policy agenda which is about how change happens and what happens during change. It asks directly about the processes and pace of change. In other words, the task is the fostering or the creation of a genuinely dynamic public economics.

We had worked together on the *Journal of Public Economics* from its beginning in the 1970s (I was an editor with him for 17 years from 1981 to 1998, acting as a co-editor in the 1970s) and we never stopped discussing how public economics was faring and where it should go. I think his views on this crystallised and became stronger in recent years and I shall try to do justice to them. In doing so, I shall set out why a dynamic public economics matters so much, including and especially for a fundamental issue of our time, which Tony took extremely seriously, climate change.

[☆] I am very grateful to Erzo Luttmer, editor, for helpful comments and to a referee who provided very constructive guidance. My greatest debt is to Tony Atkinson for a lifetime of interaction, collaboration, inspiration and friendship. The paper draws on my discussion with Tony of August 2016, published in the *Annual Review of Economics*, 2017.

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The study of public economics has not, in its foundations, ignored processes of change but I think it is fair to say that they have been either on the margins or much less central than they should have been. Public economics should be about policy for beneficial change. The basic theoretical structure for our starting framework has been a static general equilibrium model which is designed to capture some problem or difficulty, which is identified and highlighted. The analysis then attempts to analyse and construct policy to manage or overcome the problem, as well as possible. This problem may be a market imperfection, externality or public good of the Pigou, Wicksell or Lindahl kind. Or it may be a constraint on information or tools available to the tax authorities, for example the inability to observe skill, which limits the ability to tax as, for example, in the models of Mirrlees, on income taxation; or the absence of lump-sum or income taxation in the models of Diamond and Mirrlees and others, following Ramsey, on commodity taxation. This was the great tradition of James Meade and it is valuable, focused and powerful. This standard approach is generally about the comparison of equilibrium outcomes under different policies, and not about how the change happens or how people are affected along the way, or indeed about how the process and pace of change during this policy transition influences what is possible in the future.

The standard approach has been extended to theories of reform, in other words the identification of improvements rather than optimality. Of course, the theory of optimality is embedded in the theory of reform; an optimum is a position from which there is no beneficial reform. James Meade, whom Tony knew well and enormously admired, was a key figure here, see particularly the mathematical appendix to his classic 1955 book on *Trade and Welfare* (see also, for example, Drèze and Stern, 1990; Guesnerie, 1977).

There is a different tradition which sees government failure as the pre-eminent difficulty and views the problem of public policy, in large measure, as being about getting the government out of the way so that the untrammelled market can do its job. It is argued that markets can and will perform the task of achieving efficiency and the fostering of initiative in a very effective, indeed in some sense optimal, way, provided the government plays a minimal role, confined to some basics, including the rule of law and security.

Both of these perspectives, and various combinations and variants, work mainly in terms of comparative statics; not exclusively but in large measure. We find two static equilibria, one with policy structure A, another with policy structure B, and policy A is better than policy B if the outcomes under A are preferred to B under some criterion (or criteria) for assessment.

For Tony there were many problems with this approach. As we shall see, the basic perfectly competitive structures troubled him when offered as a description of the world. So, too, did many of the criteria commonly used. And that, the main subject of this paper, the processes and pace of change played a minimal role. A comparison of end points in a process of change is, of course, of real value to policy assessment, public discussion and decision-making. But, we know that we cannot switch straight from one equilibrium to another, if indeed the challenge is about moving from one equilibrium to another. Further, what happens along the way can be of profound importance. Take one critical example, managing climate change. The phenomenon of global warming is associated with concentrations of greenhouse gases (GHGs) in the atmosphere, which inhibit the escape of infra-red energy and thus cause warming. These stocks or concentrations are a result of preceding flows, or emissions. Hence the path of emissions is critical. For two paths with the same emissions now and in 2050, one may yield much higher concentrations of GHGs in 2050 than another which reduces emissions later in the period between now and 2050. The path influences not only outcomes within the period but also beyond because, if the stock of concentrations is higher at the end, there will be more warming and climate change in the years to follow. Further, many of the damages to environment, natural capital and infrastructure will be difficult or impossible to reverse.

1.1. Some of Tony Atkinson's issues for public economics

As a background or foundation for an examination of what is involved in building a dynamic public economics, let me draw on some of Tony's concerns with the standard modelling of, and approaches to, policy issues. These are based, first, on a one-hour structured discussion I had with Tony, on his life and work, in August 2016, published in the *Annual Review of Economics* in 2017 and, second, on the introduction to the new edition of [Atkinson and Stiglitz \(2015\)](#), *Lectures on Public Economics*. Tony raised five issues in our August 2016 discussion.

1.1.1. Subject matter or objectives

We should, he argued, go beyond aggregates, such as growth or total or average income with undifferentiated individuals. And we should get more specific than generalised social welfare functions with their general, but unspecific, vectors of consumption. Further, these vectors are usually dependent only on own consumption. The generality has its usefulness but the lack of specificity loses focus on what matters. The narrow self-interest embodied in the restriction to own consumption is, on the other hand, far too restrictive. We should try to study the issues that do, or should, concern the lives and livelihoods of people, particularly those in difficult circumstances, and of those who will come later. For Tony, our subject matter should have at its core: poverty and inequality; living standards understood in specific ways such as food, shelter, health and education; environment and sustainability. These can be shoe-horned into the standard formulations, but often only in artificial and restrictive ways.

1.1.2. Breadth

Tony saw himself as an economist and not as one particular category; he argued that narrow self-labelling as, say, "a labour economist" or "industrial economist", potentially limited understanding. We should start with the issue and bring to it the analytical tools and perspectives it requires. That includes going beyond economics. He was a great example of the approaches that he advocated.

1.1.3. Modelling

Again, focus on the issues and questions. This may well imply that the perfectly competitive equilibrium is not the natural starting point. He was concerned both with the adjective, perfectly competitive, and with the noun, equilibrium. He saw examples of managers of firms pursuing narrow self-interest at the expense of owners, employees, consumers and society as a whole. He saw the destruction of assets and the corrosion of the social fabric in the UK in the 1980s as a damaging and unnecessary phenomenon arising from a policy, often termed 'market fundamentalism', whose motivations appeared to attach little importance to processes of change and what they might mean for the people involved.

1.1.4. Political economy

Policy formulation and design should analyse interests and mechanisms that might oppose policy reform. He spoke more and more of the purchase, by very powerful vested interests, of policy-makers and policy-making in, for example, the USA.

1.1.5. Process and pace of change

For many key issues the process and pace of change will be absolutely central to shaping outcomes over time and people. And the process and pace will be influenced by the above four issues that Tony raised directly in our August 2016 discussion.

Tony Atkinson and Joe Stiglitz revisited the underlying assumptions and approaches of public economics, which they had adopted in their 1980 volume, which was designed to capture the then state-of-the-art. They expressed some of their concerns in their introduction to *Lectures on Public Economics* (2015), thirty-five years after the original publication. It is perhaps unsurprising that the experience, often

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