ELRR

Services and evidence of irremediable market failure in rich countries: Australian experience

The Economic and Labour Relations Review
2022, Vol. 33(3) 654–671

DOI: 10.1177/10353046221116495
journals.sagepub.com/home/elra
SAGE

Adam Fforde
University of Melbourne, Australia
Victoria University, Australia

Abstract

A large and increasing share of economic activity in modern rich economies can be shown to lie outside what mainstream neoclassical economics itself says it can be applied to: according to neoclassical economics, such activities are unsuited to markets. Since World War II rich economies have de-industrialised, shifted to services. Since the 1970s neoclassical economics has come to dominate policy advice. This worldview justifies state interventions when there is remediable market failure, but it ignores irremediable market failure, where its theory says that markets cannot work efficiently (such as where there is joint production or own consumption). Servicisation, this article argues, has increased and is increasing the extent to which neoclassical economics is, in its own terms, 'knowably ignorant'. This is because, where service provision is subject to irremediable market failure, neoclassical economics, in its own terms, is inapplicable. The GDP [Gross Domestic Product] share of sub-sectors serving diverse human needs, such as aged care and education, is large and rising. Such sub-sectors are dominated by joint production, manifest as diverse outputs (complex and inter-related changes in the welfare of their diverse clients). Setting aside questions of the wider 'scientific' validity of neoclassical theory, the article focuses on its assertion that markets cannot generate economically efficient outcomes in such activities. Arguing that the constrained optimisation of its conceptual world cannot happen in the case of joint production and own consumption of service outputs, neoclassical theory reports itself as unable to determine optimal resource allocation, and so by implication cannot fulfil its role as the foundational basis of state economic policy. Yet the literature shows that the coverage of this theoretical result is not publicised – it is 'knowable' but not widely known. The article concludes that, as neoclassical economics is foundational to contemporary state

Corresponding author:
Adam Fforde, Asia Institute, University of Melbourne, 13 Riverview Road, Parkville, VIC 3010, Australia.
Email: adam@aduki.com.au

policy, both GDP data and neoclassical theory show that it, and markets, are knowably and increasingly inapplicable. Therefore, mainstream policy thinking continues to face an increasing 'state of ignorance', and the cognitive foundations of state policy are correspondingly weak.

JEL codes: A13, B20

Keywords
Allocative efficiency, joint-production, non-market resource allocation, services, servicisation.

Introduction and overview of the arguments

This paper makes two claims. First, mainstream neoclassical economics with its privileging of markets itself argues that it is unsuited to the analysis of allocative efficiency in certain types of activities. Second, these activities can be argued to make up a large and growing share of GDP [Gross Domestic Product] in Australia, and almost certainly in many other rich countries that have since WWII largely de-industrialised. Such activities are those that, in addressing the welfare of individuals in individualised ways, are increasingly important in certain sub-sectors of services, such as aged care.

It is important for clarity to explain what the article is *not* arguing. It does not address the question of the scientific validity of neoclassical economics. It takes as granted the importance of neoclassical economics to how public policies are construed and developed. The neoclassical worldview dominates the economics taught at universities, both to economists and others, such as commerce students. The article does not engage with the question of to what extent outside observers may take issue with the applicability of neoclassical theory to economic analysis. Rather, its focus is upon what the 'internal' of neoclassical theory has to say about its own applicability – what it says about the conditions under which its core analytical tools of constrained optimisation by consumers and producers cannot work. This is to do with its own interpretations, not those of outsiders. Given the lack of empirical support provided when core neoclassical theories are presented, it is quite reasonable to argue that its worldview is not plausible, but I do not argue that here.[1]

Further, as it is the case that it is neoclassical economics, rather than the range of heterodox alternatives, that dominates official and other narratives, it pays little attention to the latter. This is partly also for reasons of space. However, one consequence of this dominance is that the data to which the paper refers, influenced as it is by mainstream assumptions, has (as I will suggest) severe limitations. Whilst I do not argue this through here, it seems self-evident that, to the extent that its conclusions are valid, so we should expect heterodox approaches, and suitable data, to arise, and are likely already doing so. Mapping this process is the task of others.

I think it self-evident that since the 1970s economic departments have been largely dominated by neoclassical economics, and so public policy has increasingly

been dominated by its ideas. Central to these are the views that markets can lead to economically efficient outcomes unless there is market failure, and that only then are policy interventions justified to address those factors. These views are taught by and within the standard theories of the firm and the consumer that are foundational to the neoclassical worldview. The stance is therefore that market failure has remedies: that there are 'remediable' market failures (such as externalities, public goods, etc.). It is also well-known that neoclassical theory argues further that there are situations where, to deploy a perhaps unfamiliar term, market failure is not remediable but 'irremediable', in the sense that economically efficient outcomes are impossible, no matter the intervention. Two examples, well-known, are those of 'joint production' (subsequently, JP – when a producer's outputs are many) and 'own consumption' (when the producer is also a consumer of its own outputs). I elucidate this below. The central point is that neoclassical theory argues that under certain conditions, theory cannot model economic behaviour: there is irremediable market failure, so, logically, it cannot describe economically efficient outcomes: it is 'knowably ignorant'. The question then arises as to what can be said empirically about the extent to which such conditions apply – to what share of GDP? In what part of the economy is neoclassical economics, in its own terms, 'ignorant'? And so, what is the extent of the indeterminacy of wider public policy that platforms on it?

More widely, without questioning the scientific validity of neoclassical economics, it can be shown that neoclassical economics thus self-defines limits to its own applicability, and these can be assessed through gauging the apparent extent of 'irremediable' market failure. If this extent is large, then neoclassical economics is less applicable; if the extent is rising, then it is becoming even less applicable. Further, within this worldview, the extent of irremediable market failure, and its trend, are also suggestive of the extent to which markets can reasonably be expected to lead to economically efficient outcomes. A worldview founded upon belief in neoclassical economics supports use of markets, which the theory argues will lead to economically efficient outcomes even if there is remediable market failure justifying interventions. So, for policy makers who share this worldview, much depends upon the empirical extent to which the theory declares itself as not applicable. In this area, constrained optimisation cannot link producers and consumers, and so outcomes cannot be economically efficient. If this extent is high and rising, then the conclusion is that policy founded upon neoclassical economics is highly ignorant, and increasingly so.

Of course, those who think that neoclassical economics is generally implausible would argue that this result supports their beliefs, but the argument here is different: it is about the extent to which neoclassical economics works *in its own terms*. My argument is not about the validity of neoclassical economics, but about what it itself has to say about limits to its own applicability. For many, market solutions are seen as often problematic – for example, to give some limited examples in a wide range of studies, for tertiary education, see Connell (2019) on employment, Stewart and Stanford (2017) and Fforde (2018); on aged care, Meagher et al. (2019).[2] But I argue here that there are good reasons 'internal' to neoclassical economics that should lead its adherents to accept that it itself argues that it is of extensive and growing inapplicability. Thus, whilst neoclassical economics is often taught as being the study of 'the allocation of scarce resources to

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

competing ends', the data suggest that instead, neoclassical economics limits its scope to the study of market-based allocation, and it is, in its own terms, knowably ignorant about these limits.[3]

Like many core results in mainstream neoclassical economic theory, the conclusions here are highly knowable and longstanding.[4] An accessible, authoritative, and still-cited exposition is in Bailey and Friedlaender (1982) (from the AEA's *Journal of Economic Literature*, aimed at teachers):

> In essence . . . conventional measures of average cost are not well defined for a multiproduct firm. There is no single economically meaningful way to aggregate output. (1025-1026) . . . There is no single meaningful definition of average cost since there is no meaningful way to aggregate [different outputs] into a single output measure (1029) . . . *there is no one correct way to allocate . . . costs between the two* [outputs] (1031 − emphasis added).

A search for recent expositions of this result shows no real change. For example, Jordan (2018: 20), looking at mining, concludes a 'key finding of the survey is that little unifying and empirically tested theory explains the behaviour of multi-product firms . . .'

This implies that in the theoretical space of mainstream neoclassical economics, under such conditions, the nature of the economic activity in question is such that the conceptualised 'firm' cannot know how to cost changes in the output of each product – its marginal cost. Therefore, in this standard account of how competitive markets can lead to allocative efficiency, under such conditions the theory has long and knowably self-defined as inapplicable: its model cannot explain. I stress that this result is 'internal': it is part of the core microeconomics that has been taught for decades by mainstream economics, offered as plausible and valid statements about the basic, core, nature of an economy. In this theoretical space, theory argues that markets cannot operate at all, and so, inter alia, cannot produce allocative efficiency. The neoclassical worldview, where prices link production and consumption decisions through constrained optimisation and process, is blind: and the core models of neoclassical economics cannot be deployed. To repeat, this 'internal' result of neoclassical theory is clear and knowable.

A clear exposition of what neoclassical economics has to say about the relevance of this to public policy can be found in Stiglitz (2000), who argues that 'markets result in [economically] . . . efficient outcomes' (Stiglitz 2000: 77). In his Chapter 4 he discusses how this essential result may not (yet) happen, because market failure exists, and how policy can correct this to allow markets to work to create efficient outcomes. He writes that 'whenever there are such externalities, the resource allocation provided by the market will not be efficient' (81). The lesson taught is that market failure, which is remediable, justifies intervention. As I argue here, another lesson taught by neoclassical economics is that market failure can be irremediable, for example when there is joint production, for under those theorised conditions the theory is unable to model economic activity.[5]

A second example within neoclassical theory of irremediable market failure is that of own consumption. As Bardhan and Udry (1999) put it, many people in developing countries earn at least part of their livelihood by working in their own enterprises (often farms) and often consume a significant part of their own output, and therefore:

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

> . . . make simultaneous decisions about production (the level of output, the demand for factors, and the choice of technology) and consumption (labor supply and commodity demand). This mixture of the economics of the firm and of the household is characteristic of the situation of most families in developing countries and provides the starting point for our analysis. (p. 7)

However,

> The available empirical evidence casts serious doubt on the validity of the unitary model. . . . If the efficient household model cannot adequately account for the intra-household allocation of resources, it appears that it will be necessary to move towards more detailed, culturally and institutionally informed noncooperative models of the interaction between household members. (p. 18)[6]

If the 'internal' of neoclassical economics in these two examples identifies situations of irremediable market failure, then it is useful to consider how these limits to its own worldview might be empirically identified. I focus upon the first.

In my view, taking a step outside the paper's focus upon the 'internal' of mainstream economics, it is obvious that the frequent diversity of services is usefully seen as reflective of diversity in the human relationships of these transactions. To deploy Marxian notions, the abstraction that leads to what that analysis calls 'commodity fetishism' (so the human relationships embodied in a 'tin of beans' are hidden) tends to be stripped away by the assertion of human difference.[7]

Taking this line of argument further, perhaps it persuasive that humans interacting through such services, where they are dependent upon others' services for their welfare, are I think made more aware (as are those empathically close to them) of the contingent, specific, and unmediated aspects of their transactions, and their lack of identity with their transactional counterparts. This allows us to ponder on the wider implications of neoclassical theory's conclusions about the limits to its own applicability when there is irremediable market failure. These conclusions might be read as arguing that under conditions of JP the diversity of outputs means that abstract and generalising measures of value – a price applied across a range of transacting parties, will be unable to measure, to the satisfaction of those transacting, the pros and cons, for them and those they serve, of alternative resource allocations. The neoclassical insight may then, for such alternative worldviews, suggest the importance of information as a driver of its theoretical conclusion – JP means diversity of outputs, and as such a producer's output cannot be aggregated in a way that allows changes in output to be linked, through a price and marginal cost, to consumers' decisions and so, if a neoclassical worldview, underpin Stiglitz's statement that markets lead to economically efficient outcomes. The implication is that in order to secure economically efficient outcomes, far more information is needed, as well as ways of using it, and that markets cannot do this.[8] But this is to move outside the neoclassical worldview. Moving back inside it, and using the standard empirical framework we find in published GDP (Gross Domestic Product) data, the empirical question can be asked as to where such issues are likely to arise.

The standard GDP data show that services now dominate GDP in contemporary rich countries, whilst servicisation, not industrialisation, is the average pattern of structural change amongst developing economies (Buera and Kaboski, 2012; Fforde, 2018).[9] As I

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

will argue below, Australian data suggests around 1/3 of GDP occurs in services subsectors where JP is prevalent. It may be far higher. There are potential issues that arise because of the ways in which neoclassical economics conceives of production. Standard expositions, manifest in textbooks, theorise firms as *single* product producers, suggesting that this reflects the nature of production conditions (Jehle and Reny, 2020: Chapter 3).[10] A sector is then, theoretically, the arithmetic aggregate of those firms' models. This requires assuming, though this is not overtly stated, that all economic production is best conceived, and then modelled, in this way. Yet this may not be wise for services. For, in many services sectors, producers' output is differentiated and so producer output cannot reasonably be treated (as it is by neoclassical theory) as simply and arithmetically the sum of firms' individual outputs. I do not go deeper into these issues but flag that the tendency in GDP statistical work is to treat sectors as similar if their production conditions are, holding close to the notion of a production function, and this can be questioned if there is JP. Further, it can be asked what, in such terms, services sub-sectors such as tourism, retail, education, health, and others have in common. It is tempting to consider whether services are better considered as a residual, 'neither industry nor agriculture . . .'. This and other aspects of GDP data point us towards the likelihood that the limitations of that data are linked to the worldview of mainstream economics. For example, studies such as Livingstone and Sawchuk (2005), Rose (2005) and Kusterer (1978) suggest that the apparent uniformity of sectoral output in GDP data can be shown to mask underlying diversity: in the demotic, 'that cans of beans too have hidden inputs'. GDP data, like mainstream economics, tends to assume that economic activity produces homogeneous outputs whose value can be plausibly counted as the product of quantity and price.

My argument from here on has two components.

In the next section, I elucidate at greater length just how neoclassical economics manages for itself the existence of conditions for what I am calling 'irremediable' market failure. This examines its worldview's internal logic and implications. I then show that there are reasonable empirical grounds for neoclassical economists to judge, after looking at sub-sectors where such conditions are likely high, that such market failure is relatively significant and growing, marking the extent to which they and their adherents should conclude that the neoclassical worldview does not apply. The extent of 'knowable ignorance' is large and increasing. The final section concludes.

Applying the neoclassical world view – traditional vs. 'irremediable' market failure

This section elucidates and amplifies the point made in Section 1, which I refer to as the existence, within neoclassical economic theory, of irremediable market failure.

A central pillar of neoclassical economics, one of its most basic principles, is that allocative efficiency is not the same as production efficiency. This is a basis for the quote from Bailey & Friedlaender above. As mainstream textbooks and lecturers stress, in this worldview allocative efficiency is defined as being about ensuring more welfare, amidst generalised scarcity (resources, being scarce, impose opportunity costs when used for one purpose rather than another). That is, the constrained optimisations of consumers

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

and producers interact, through price-setting 'by the market' for a single output, to maximise welfare for given resource costs (in the absence of market failure). This is a rather beautiful result, intellectually. But what does the theory have to say about conditions when this interaction cannot take place?

The phrase 'market failure' is often confusing to non-economists as it on the face of it implies that markets cannot operate; but in fact it means, within the neoclassical theorisation of markets, that they operate but cannot generate allocatively efficient outcomes. Firms, outside this theoretical space, seem able to seek to maximise profits under any conditions: the question in mainstream theory, though, as taught, is whether this maximisation under given conditions can link inputs to outputs, and do so in a way that is allocatively efficient. Clearly, then, there are not one but two basic types of 'market failure'. The core difference is whether markets can be made to work, in this theoretical world, or not. This assumes that prices can link producer and consumer decisions. I stress that I am talking about the 'internal' of neoclassical theory; heterodox approaches can be very different.

First, as we learn from Bailey and Friedlaender and many others, if there is JP, then use of markets can *never* lead to allocatively efficient outcomes (except by chance) as prices cannot link producer and consumer constrained optimisation decisions: the firm does not know the marginal cost of changes in individual output levels. So then, in this theorised world that privileges allocative efficiency, there is no point to the discussion of market solutions, such as a role for government intervention. It seems useful to call this an 'irremediable' market failure.

Second, if there is no 'irremediable' market failure, theoretically, neoclassical economics thinks of consumers and producers as interacting through the standard models of constrained optimisation, linked through transactions of clearly defined (differentiated) and priced outputs. Here, under these theorised conditions, neoclassical theory can and does then assert that it knows what can stop an outcome from being allocatively efficient. This is what standard theory means by 'market failure': the failure of the 'invisible hand' to lead to good outcomes. The theory asserts, and assumes, that use of markets (themselves conceptualised in ways that suit the theory) under such conditions can lead to allocatively efficient outcomes but fails to do so without suitable interventions.

In passing, it seems plausible that this narrowing of emphasis, and consequent lack of interest in irremediable market failure, support the theoretical focus upon markets.

Let me now extend the argument to consider an illustrative example, remaining within the neoclassical worldview, that focuses upon constrained optimisation in consumption and production linked by prices.

GDP statistics offers measures of 'real sectoral output' usually derived in ways that assume that this is correctly calculated by viewing the sector (such as education) as producing a range of measurable and priceable outputs (such as certain types of educated students) by using a range of measurable and priceable non-factor (that is, neither labour nor capital) inputs and reporting the difference 'at constant prices' as being that sector's contribution to GDP. It can be argued (Fforde, 2021) that this will not equal what conceptually it is meant to equal (real factor inputs), but, far more importantly here, it assumes a certain homogeneity of inputs and, even more importantly, outputs: that is, that students

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

'of a certain type' are indeed (ontologically) equal, and so it makes sense to count them. This assumes an absence of 'joint production', thus inserting into the statistical exercise the core assumption – that there is no irremediable market failure caused by joint production.

Thus, in a service sector such as aged care, neoclassical theory may assert that 'every grandmother is unique': the facility is not a single product firm. The same thing could be said of education, health etc. To develop the illustrative example, blood tests for this individual may generate allocative efficiency, if she is willing to accept that tests of her blood be treated as a 'can of beans', but the taking of the blood may be quite another matter and attaining better use of resources to secure her welfare gains will require acceptance of her uniqueness – that is, that there is JP. Such arguments can inform neoclassical economics' 'internal' discussions of limits to its applicability – the sort of exposition made in classes discussing the standard theory of the firm. It is an empirical question as to whether this happens. The exposition in standard textbooks such as Jehle and Reny (2020) suggests that the worldview focuses on single product firms, from which the implication follows that such firms are empirically 'the norm' and joint production can be ignored.

Illustrating the aged care example further, neoclassical economists may imagine that those empathically linked to the grandmother may find that they cannot establish a suitable economic relationship with the service supplier, if it is profit-oriented, that allows them to find an equilibrium, where they pay a price that they want for what they want to get. Recalling that I am remaining within the neoclassical worldview, services to their grandmother would have to be treated 'like a tin of beans'; the same, as an undifferentiated output with the same pricing, as for each of the other residents in the facility; only in this way could a profit-maximising owner be able to calculate the marginal product of changes in inputs. But, in this worldview, such a plausible and knowable result is that they cannot be treated as single undifferentiated outputs, for they are essentially different – there is joint production. A similar framing would arise in similar sub-sectors such as education.

Such a neoclassical exposition should also note that a producer operating in such conditions can certainly profit-maximise, in a naïve sense, but neoclassical theory, as we have seen, if deployed into this illustrative example (with JP) says this cannot result in allocative efficiency.

The question then arises as to the extent of this issue, in terms of the different types of economic activity we can examine through GDP data. It turns out that we can use this macro data to form a view of the extent of 'irremediable' economic activity, and whether this is rising or falling, and at what rate. I can do this because the GDP data indicates levels of economic activity in sub-sectors, such as retail trade and education, where I can form a view of the likely extent of 'irremediable' market failure – the extent to which their outputs are differentiated, so that there is joint production. This view is not only provisional, but also limited, as I am focusing upon neoclassical economics, which has little to say about how resources can or may be allocated with economic efficiency in such areas of activity, and my assessment of the extent of such issues is, logically, uninformed by heterodox frameworks that would elucidate more clearly what is going on (e.g., in aged care, a clear example of heterogeneous outputs).[11]

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

Gauging the extent of 'irremediable' market failure

I use current price data.[12]

Services and structural transformation

Structural transformation can be simply understood as changes in the pattern of economic activity, with industrialisation usually understood to refer to a shift in factor incomes from agriculture to industry, and servicisation in the recent experience of today's rich countries being shifts from industry to services.

Globally, the share of services was about 55% in 1995, and grew to 65% in 2016, falling sharply and against trend, to 61% in 2018 (World Bank, 2020c). For OECD members, the share was near 70% in 2017, hardly changed from the 65% in 1997 (World Bank, 2020d). Over the same period the industry share (including construction) for OECD member countries fell from 26.5% to 22%.

Specific patterns of structural transformation, especially 'industrialisation', have been associated with unwise and high levels of confidence in their necessity, with associated policy mistakes. One example is the UK Selective Employment Tax of the 1960s which sought to prevent de-industrialisation and subsidise manufacturing industries by taxing services. This was in part based upon an empirically incorrect economic 'law' often referred to as Kaldor's Law which:

> . . . states that the higher the growth of the manufacturing output, the more significant is the growth rate of the economy's product as a whole (Marconi et al., 2016: 75).

Kaldor's analysis (Kaldor, 1966) was founded on a belief in the empirical universality of a stage-based theory of economic development that favoured manufactured goods (Marconi et al., 2016: 76). Whatever the reasons, in a predictive empirical (rather than theoretical) sense Kaldor was wrong.

Another example is the treatment of servicisation in studies of contemporary economic development (it has largely been ignored Fforde, 2018). The data in Fforde (2016, 2018) show that the pattern of structural change since the early 1990s in poor countries has been, on average, one of servicisation, and the faster the growth the greater the servicisation.

I now turn to examine Australian GDP data. I will examine the central issue of the extent of the economy – the indicated share of economic activity – that is likely to be characterised by joint production, and so 'irremediable' market failure, and what has been happening to this share. This is then, as I have been arguing, an indicator of the extent to which economic activity, in neoclassical terms, exhibits 'irremediable market failure' and so cannot use markets to secure economic efficiency.

The contemporary Australian economy and the pattern of value-added. The share of services in Australian GDP rose from 59.5 % in 1990 to 68% in 2016, and, like the global average, then fell to 66% in 2019 (World Bank, 2020b). The latest data shows a share only slightly less than the OECD average of 70%, so Australia is not particularly unusual in being largely services oriented.

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

For Australia, I use data for the calendar year 2018. This is the most recent year for which a breakdown of current price GDP between 'compensation of employees' and 'gross operating surplus and gross mixed income'. This is of interest to wider issues, but I do not address these here. For convenience I draw a comparison with data for calendar 2003, the oldest data in the tables that contain the 2018 data.[13] This and employment data are from the Australian Bureau of Statistics (ABS, 2020).

Table 1 gives detailed data for the sub-sectors of Australian services GDP. Here I focus upon sub-sectoral services GDP. Table 1 shows a dynamic situation with rather sharp changes in employment shares, GDP/worker, and relative GDP/worker. Table 2 shows the shares of three groups, with Group 1 (I argue) indicating a low degree of 'irremediable' market failure, Group 2, where I am somewhat uncertain, a medium degree, and Group 3, the core one for my argument, a high degree.

This data can then be examined to allow me to offer suggestions for the likely degree of JP.

The empirical extent of 'irremediable' market failure

Here I am seeking to establish the share of the economy exhibiting 'irremediable' market failure caused by joint production – non-homogeneous outputs. I proceed by classifying services sub-sectors according to my judgements of the extent to which their outputs are differentiated, and so where there is likely to be 'irremediable' market failure. This is somewhat ad hoc and further work is needed. I also start a discussion of the extent to which the absence of this 'irremediable' market failure may be revealed by what I call 'normal' competitive market behaviour, suggesting that, without irremediable market failure, markets work, driving down costs for outputs that are not jointly produced, and 'markets can work' in the neoclassical sense. I try to remain within the mainstream economic 'world view'.

I use a three-group classification. It is the third group that shows, I think, the most obvious signs of differentiated output, and is most suggestive of a high and rising extent of 'irremediable' market failure in the Australian GDP. I am unsure of the second group, and more research is needed. However, as already mentioned, this would require deployment of heterodox frameworks capable of analysing situations of 'irremediable' market failure associated with joint production and heterogeneous outputs, which I omit here because of my focus on neoclassical economics as the dominant mainstream.

Group 1 – '***Low'***. This group includes those services sub-sectors where market forces appear to work relatively well, indicating, in neoclassical terms, homogeneous outputs. This implies that they are not likely to exhibit 'irremediable' market failure. They are relatively unimportant in terms of their share of services GDP (see Table 2) and these shares are falling.

Here I put *Wholesale trade; Transport, postal & warehousing; Information media & telecommunications*. These sectors, it would seem, tend to produce undifferentiated products. This view is supported by the evidence for normal competitive forces operating, as capitalist firms focus upon ways of maximising profits by linking marginal costs, here identifiable as outputs are generally undifferentiated commodities.

For example, ***Wholesale Trade*** saw employment average 375,200 in 2003 and 374,200 in 2018, thus falling from 5.2% to 3.7% of total services employment.

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

Table 1. Australian services and its sub-sectors, 2003 and 2018 compared.

Services sub-sector						
2003 and 2018	% services employment	Change	Incidence of 'irremediable' market failure – high, medium or low	Share of services GDP	Change	Compensation per employee, % of services average
Wholesale trade	5.2% *fall* to 3.7%	−1.5%	Low	8.0% *fall* to 5.6%	–2.4%	148% *rise* to 166%
Retail trade	15.5% *fall* to 12.9%	−2.6%	Medium	7.6% *fall* to 6.2%	–1.4%	68.1% to 68.1%
Accommodation & food	9.0% *rise* to 12.5%	+3.5%	Medium	3.6% to 3.4%	–0.2%	73.1% to 73.2%
Transport, postal & warehousing	6.5% *rise* to 9.0%	+2.5%	Low	7.2% to 7.9%	–0.2%	55.6% *fall* to 50.9%
Information media & tele-communications	3.1% to 3.1%	ZERO	Low	5.7% *fall* to 3.5%	–2.2%	33.6% *rise* to 44.3%
Financial & insurance	4.8% *rise* to 6.2%	+1.4%	High	11.5% *rise* to 13.1%	+1.6%	40.1% *fall* to 29.8%
Rental, hiring & real estate services	2.3% *rise* to 3.0%	+0.7%	Medium	3.6% *rise* to 4.4%	+0.8%	42.4% *fall* to 36.8%
Professional, scientific & technical	8.7% *rise* to 14.8%	+6.1%	High	8.3% *rise* to 10.0%	+1.7%	84.8% *fall* to 76.2%
Administrative & support	4.8% *rise* to 5.8%	+1.0%	High	4.5% *rise* to 5.2%	+0.7%	90.3% *fall* to 86.9%
Public administration & safety (excluding defence)	8.1% *rise* to 11.0%	+2.9%	High	8.9% *fall* to 8.0%	–0.9%	81.7% *fall* to 82.2%
Education & training	9.8% *rise* to 14.4%	+4.6%	High	7.1% to 7.3%	+0.2%	88.2% to 88.6%
Health care & social assistance	12.8% *rise* to 23.5%	+10.7%	High	8.4% *rise* to 10.7%	+2.4%	85.0% *rise* to 86.9%
Arts & recreation	2.0% *rise* to 3.5%	+1.4%	High	1.6% to 1.3%	–0.5%	56.1% *rise* to 59.1%
Other	5.9% *rise* to 6.8%	+8.8%		3.2% to 2.7%	–0.5%	64.6% *rise* to 70.6%
Ownership of dwellings	n/a			11.0% to 11.6%	+0.6%	
Total services						

Sources: Based on ABS 6291.0.55.003 February 2020, Table 04; and ABS 5206.0 March 2018, Table 45.
Note: I understand GDP per sector or sub-sector to be GDP *before* adjustment to what ABS refers to as 'basic' prices, that is, before adding in indirect taxes and subtracting subsidies to obtain GDP measured 'at final demand' rather than 'at factor cost'. I thank an anonymous ABS official for support and clarification.

Table 2. Changes in shares of services GDP by incidence of 'irremediable' market failure.

Group 1 – 'Low'
Members: *Wholesale trade, Transport, postal & warehousing, Information media & tele-communications, Share of services GDP 2003 − 20.9%; 2018 − 17.0% – fall of 3.9%*
Group 2 − Medium
Members: *Retail trade, Accommodation & food, Rental, hiring & real estate services. Share of services GDP 2003 − 14.8%; 2018 − 13.2% - fall of 1.6%*
Group 3 − High
Members: *Financial & insurance, Professional, scientific & technical, Administrative & support, Public administration & safety (excluding defence), Education & training, Health care & social assistance, Arts & recreation. Share of services GDP 2003 − 50.3%; 2018 − 55.6% - rise of 5.3%*

Note: 'Other' and ownership of dwellings excluded. Source: see Table 1.

The sub-sector's share of services GDP[14] averaged 7.6% in 2003 and 5.6% in 2018. Compensation per employee rose from 148% of the services average to 166%. This seems a clear example of the relative reduction in sub-sectoral contribution to services GDP due to the operation of market forces, driving down costs and hiring fewer but better-paid workers, likely with higher levels of skills suited to the fixed capital and software investments in the sub-sector. Crucially, a 2000 study attributed greater production efficiency to adoption of better technology that 'moved the sector from a storage-based system to a fast flow distribution system [and] . . . greater competition' (Johnston et al, 2000: xii).

The data shows employment falling absolutely and relatively as firms have increased capital spending and organised better, facing the challenges of competition and the drive to secure higher profits. This is seen by government as an established trend (Australian Government National Skills Commission, 2020). Government measures to address traditional market failure (such as over-concentration leading to imperfect competition caused by monopoly power) therefore appear suitable and supported by the mainstream economic paradigm.

Further research would explore the extent to which my view, that these services sub-sectors are not characterised by joint production, is empirically justified.

Group 2 – '***Medium***'. Here I put *Retail trade, Accommodation and food, Rental, hiring and real estate services.* These sectors are also relatively unimportant (see Table 2) and their share is falling.

They seem under some pressure to produce differentiated products, but overall do not. They seem to sell commodities and it appears that the price advantages of treating these as undifferentiated, in competitive business terms, outweigh pressures to provide differentiated products, though these appear often mimicked through advertising, branding and so on. I conclude that the extent to which output is essentially homogeneous in these sub-sectors is somewhat unclear.

An interesting example is ***Retail Trade***, where I am unclear as to whether output is best seen as homogeneous or not. I note that the contrast between wholesale and retail is interesting. Compensation per worker is far lower in retail. Employment averaged 1.11 million in 2003 and 1.28 million in 2018, thus falling from 15.5% to 12.9% of total services employment. The sub-sector's share of services GDP averaged 5.2% in 2003 and 4.2% in

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

2018. Compensation per employee fell very slightly, from 56.7% of the services average to 56.4%. Employment growth is officially forecast to be slow compared with the national average (Australian Government National Skills Commission, 2020).

I conclude provisionally that the sub-sector exhibits 'Medium' levels of JP. Like Group 1, these services sub-sectors are not numerically very important.

Group 3 – '***High***'. Here I put *Financial and insurance; Professional, scientific abd technical; Administrative and support; Public administration and safety (excluding defence); Education and training; Health care and social assistance; Arts and recreation.*

These sub-sectors include the classic 'client-focused' sub-sectors of services where outputs are, essentially, the changed welfare of individuals – old people, the sick, children, students etc. Here statisticians often find it hard to measure output in terms of some priced physical product (such as administration, care industries and education), and so, given the massive problems in practice in measuring real sub-sector GDP by revaluing factor rewards at constant prices, there are surely major problems (apart from the conceptual ones mentioned above) in constructing plausible proxies for real gross output to generate real sub-sector GDP by revaluing gross outputs and non-factor inputs. It is these sectors that provide the most thought-provoking data.

Table 2 collects the results.

Table 2 gives results that, whilst tentative, are, as they stand, clear:

- The share of the economy most likely subject to 'irremediable' market failure – the third group – is high: more than half total services GDP, and so well over 40% of the whole economy. This excludes possible candidates in the 'Medium' category. The estimate is therefore likely a lower bound.
- This share is rising. Over the approximate 15 years covered, its share of services GDP rose to nearly 56% from near 50.5%.

The conclusion that neoclassical economics may draw from this is that, in its own terms, the limitations of its applicability are likely large and rising. This implies that the limitations of public policy based upon neoclassical economics – its revealed ignorance – are also large and rising.

Conclusions

My focus is upon the problems facing neoclassical economics in confronting its own theoretical results with evidence that the relative extent of the economy to which neoclassical economics' capacity to generate plausible theory is both surprisingly small and shrinking rather fast. The detailed arguments used to allocate sub-sectors to my three headings are provisional but stand up as a first 'stab', by which I mean that counter arguments and a more detailed examination are warranted. They raise persuasive questions.

My very provisional empirical analysis of Australian GDP data in fact suggests that 'irremediable' market failure is a characteristic of a relatively large part of the economy and of rising importance. A large and growing share (measured in current price GDP) of the Australian economy is located, the data suggests, in sub-sectors likely subject to 'irremediable' market failure – more than half of services and over 40% of Australian

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

GDP. Those services sub-sectors that are not so readily characterised as producing heterogeneous outputs are experiencing, unlike the other, declining shares of GDP.

Stepping back, outside of the neoclassical worldview, the analysis also suggested that securing economically efficient outcomes in such sectors of the economy will entail development and deployment of ways of managing the requisite information. These are invisible to the neoclassical world view, in its own terms, as joint production prevents links between output prices and changes in relevant costs. This invisibility (to the neoclassical mainstream) also suggests, of course, that the associated (newly mainstreamed) formal knowledge will, in order to become a new orthodoxy, have succeeded in dealing with the current neoclassical dominance of economics; if this has happened, at some time in the future, and become a core element of public policy, it will also have become teachable, a source of formal qualifications, [15] and so – in a nutshell – normalised. The paper has not explored this in any depth, but it seems self-evident that it will likely require considerable struggle and not happen quickly, if it does at all. Neoclassical economics is foundational to contemporary state policy, and the data indicates that it, and markets, are increasingly inapplicable to modern economies; we face an increasing 'state of ignorance', and the cognitive foundations of state policy are increasingly weak. This may help explain, to those who see things that way, tendencies for progressive politics to move away from the increasingly implausible statements of a lack of ignorance, and towards a 'we are with you' stance where state power is to be used to support a search for progressive change, likely through trial and error and deployment of heterodox worldviews.

Finally, the paper suggests, tangentially, that further investigation of the issue will need to manage the legacies of neoclassical domination in two areas. First, it will be necessary to move on from the assumption driving estimates of constant price GDP that it makes sense to treat sub-sectors characterised by heterogeneous outputs as though they were not, by constructing measures of sectoral gross output or final demand in terms of gauges of output multiplied by price. Second, it will be necessary to determine just how we make sense of economic activity in those sectors, without the neoclassical assumptions. It could be said that the latter comes down to how heterodox approaches cope with heterogeneity.

Declaration of conflicting interests

The authors declared no potential conflict of interests with respect to the research, authorship and/or publication of this work.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD


Adam Fforde https://orcid.org/0000-0001-6088-8310

Notes

1. This is apparent to me by a simple comparison of the empirical contextualisation of theories in neoclassical economics textbooks such as Jehle & Remy (2020) (almost none, and none that are predictively rigorous) with those in any standard natural science textbook.

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

2. It seems very likely, as can be found in works such as Livingstone and Sawchuk (2005), Rose (2005 and Kusterer (1978), that outside the world of neoclassical economics we can find very interesting work that explores issues raised here, such as that of heterogeneity. However, to repeat, my focus here is upon the 'internal' of mainstream economics and its confrontation with what can be inferred from the GDP data.
3. 'Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses' (Robbins, 1932: 15). The argument in this paper suggests that this is wrong: mainstream economics is, rather, a science that studies the validity of markets as the most significant form of human behaviour relating ends and scarce means. It excludes non-market forms of resource allocation that (the paper argues) likely may do this when and if markets cannot, not because policy does not intervene, but for other and irremediable reasons.
4. This is self-evident, to some extent, but for example – (Allgood et al., 2015: 317): 'The coursework for the economics major has not changed substantially since 1980'. I do not refer to the 'cutting edge', but the content of textbooks such as Jehl and Reny (2020). The theory of the firm and the consumer exposited there goes back to the pre-algebraic graphical apparatus that predates the mathematisation driven by Samuelson and others (Stigler, 1947).
5. The reader may note that I am here arguing about the 'internal' of neoclassical economics: what its own worldview has to say about the limits of its own applicability. I do not discuss the extent to which other theories may plausibly apply to situations where producers have diverse outputs.
6. This description, of an economic unit that is both producer and consumer, seems reminiscent of the modern multi-generational and productive asset rich middle-class household, with its cars, white goods, internet access etc. Economic resource allocation decisions within such household are almost never dependent upon 'internal markets'.
7. The argument here is about, essentially, ontological heterogeneity. For a valuable discussion of the effects upon research of assuming ontological universality (that 'an aged care facility in New York is that same as one in Sydney') as well as epistemological homogeneity (that the two just-mentioned things should be understood in the same way) see Kenny and Williams (2001).
8. Meagher et al. (2019: 1); stress 'the high value that older people place on their relationships with care workers and on the time that workers have available to provide care, as documented in the large body of scholarly literature on service quality'. This is clearly, if placed into the theoretical space of mainstream economics, interpretable as a statement about joint production and output differentiation, and how to secure greater allocative efficiency, though they do not put it in those terms.
9. On average developing countries are now not only servicising, but the faster the growth the greater the servicisation (Fforde, 2018).
10. Their Section 3.2 starts with a generalised formal statement of production possibility, with sets of inputs and outputs, but then shifts with no explanation to a single product firm – 'we will want to consider firms producing only a single product from many inputs.' (126). They mention neither 'joint production' nor 'multi-product' at all.
11. Further, though I do not go into this here, the framework of GDP statistical work assumes, to create constant price sectoral output data as well as constant price measures of final demand, that the output of such sectors can be seen as resulting from values created by multiplying output by price, with both treated as aggregates, and so assuming homogeneity. An illustrative example would be calculations of the real output of the aged care sector, which would have to be able to treat output as output multiplied by base year prices. This suggests that if there is, as I argue here, a high and rising share of economic activity that is characterised by heterogenous outputs, and so joint production and 'irremediable' market failure, that we need to think through what this may mean for our constant price GDP data.

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press

12. I note that for Kuznets, 'real' GDP data was current price data, and that, as discussed in Fforde (2021), there are major conceptual problems with price-adjusted GDP measures (Kuznets et al., 1941: 3; see also Arrow, 1974). Similar issues likely arise with price adjustment of final demand data.
13. I refer to ABS Cat No 5206.0 (ABS, 2020). In terms of cyclicality, 2003 was year of moderate growth (3%) after a few years nearer 4% (though 2001 saw a trough of 2%), and 2018 also saw near 3% after a few years around 2–2.5% after the rather high 4% of 2012. Deeper analysis would need to take account of this, so as to compare 'like with like' (World Bank, 2020a). The data here is GDP before adding in indirect taxes and netting out subsidies to give what the ABS calls GDP at 'basic prices' that aggregates to final demand. I use the 'original' data – that is, neither 'trend' or 'seasonally adjusted'.
14. That is, GDP defined as workers' compensation *plus* gross operating surplus etc., so before adding back in taxes less subsidies to get final demand at current prices (what the ABS calls 'Gross Value Added at basic prices').
15. One may note the current practice of treating business experience as a good qualification for management positions in services sub-sectors with high levels of joint production, such as aged care, education, disability support management and so on. Neoclassical analysis of joint production suggests that such experience, with its focus upon the 'bottom line', generalised key performance indicators, etc., inhibits economic efficiency. Negative references in the demotic to the effects of 'bean counters', 'who never leave their offices', upon economic efficiency can therefore be interpreted as consistent with the predictions of neoclassical theory: such managers are not equipped to manage the very different information associated with securing economic efficiency where there is JP and so heterogeneous outputs.

References

ABS (Australian of Statistics) (2006) *Australian and New Zealand Standard Industrial Classification (ANZSIC), (Revision 2.0)*. Canberra, ACT: ABS.

ABS (Australian Bureau of Statistics) (2020) Labour force, Australia, detailed, quarterly, Feb 2020 Cat. No. 6291.0.55.003. Available at: https://www.abs.gov.au/statistics/labour/employment-and-unemployment/labour-force-australia-detailed-quarterly/latest-release#data-download (accessed 10 August 2020).

ABS (Australian Bureau of Statistics) (2018) Australian National Accounts: National Income, Expenditure and Product, Mar 2018. Available at: https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5206.0Mar%202018%3FOpenDocument (accessed 12 July 2022).

Allgood S, Walstad W and Siegfried J (2015) Research on teaching economics to undergraduates. *Journal of Economic Literature* 53(2): 285–352.

Arrow K (1974) The measurement of real value added. In: David PA and Reder MW (eds.) *Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz*. New York, NY: Academic Press, pp. 3–20.

Australian Government National Skills Commission (2020) *Australian jobs 2021*. Available at: https://www.nationalskillscommission.gov.au/publications/australian-jobs-2021 (accessed 10 August 2020).

Bailey EE and Friedlaender F (1982) Market structure and multiproduct industries. *Journal of Economic Literature* 20(3): 1024–1048.

Bardhan P and Udry C (1999) *Development Microeconomics*. Oxford, UK: Oxford University Press.

Buera FJ and Kaboski JP (2012) The rise of the service economy. *American Economic Review* 102(6): 2540–2569.

Fforde A (2016) Vietnam: Economic strategy and economic reality. *Journal of Current Southeast Asian Affairs* 35(2): 3–30.

Fforde A (2018) Changing methods for the allocation of scarce resources to competing ends: A possible explanation for the wages squeeze and responses to it. *Economic Papers* 37(3): 287–298.

Fforde A (2021) Measuring economic transformation – what to make of constant price sectoral GDP – evidence from Vietnam. *Real World Economic Review*, Issue 98. Available at: http://www.paecon.net/PAEReview/issue98/Fforde98.pdf (accessed 12 July 2022).

Jehle GA and Reny PJ (2020) *Advanced Microeconomic Theory*, 3rd edn. Reading, MA: Addison-Wesley.

Johnston A, Porter D, Cobbold T and Dolamore R (2000) *Productivity in Australia's Wholesale and Retail Trade*. Staff Working Paper No. 1641.Canberra, ACT: Productivity Commission. Available at: https://www.pc.gov.au/research/supporting/wholesale-retail (accessed 12 July 2022).

Jordan B (2018) Economics literature on joint production of minerals: A survey. *Resources Policy* 55(C): 20–28.

Kaldor N (1978/1966) Causes of the slow rate of economic growth in the United Kingdom. In: Kaldor N (Ed.) *Further Essays on Economic Theory*. New York, NY: Holmes and Meier, pp. 282–310.

Kenny C and Williams D (2001) What do we know about economic growth? Or, why don't we know very much? *World Development* 29(1): 1–22.

Kusterer KC (1978) *Know-How on the Job: The Important Working Knowledge of 'Unskilled' Workers*. Boulder, CO: Westview Press.

Kuznets S, Epstein L and Jenks E (1941) *National Income and Its Composition, 1919-1938*. Cambridge, MA: National Bureau of Economic Research.

Livingstone DW and Sawchuk PH (2005) Hidden knowledge: Working-class capacity in the knowledge-based economy. *Studies in the Education of Adults* 37(2):110–122.

Marconi N, de Borja Reis CF and de Araújo EC (2016) Manufacturing and economic development: The actuality of Kaldor's first and second laws. *Structural Change and Economic Dynamics* 37: 75–89.

Meagher G, Cortis N, Charlesworth S and Taylor W (2019) *Meeting the social and emotional support needs of older people using aged care services*. Sydney: Macquarie University, UNSW Sydney and RMIT University. Available at: http://doi.org/10.26190/5da7d6ab7099a (accessed 12 July 2022).

Robbins L (1932) *An Essay on the Nature and Significance of Economic Science*. London: Macmillan.

Rose M (2005) *The Mind at Work: Valuing the Intelligence of the American Worker*. New York, NY: Penguin.

Stewart A and Stanford J (2017) Regulating work in the gig economy: What are the options? *The Economic and Labour Relations Review* 28(3): 420–437.

Stigler GJ (1947) *The Theory of Price*. New York, NY: Macmillan.

Stiglitz JE (2000) *Economics of the Public Sector*, 3rd edn. New York, NY: WW Norton & Company.

World Bank (2020a) GDP growth (annual %) – Australia. Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=AU (accessed 5 August 2020).

World Bank (2020b) Services, value added (%). Available at: https://data.worldbank.org/indicator/NV.SRV.TOTL.ZS (accessed 4 August 2020).

World Bank (2020c) Services, value added (% of GDP) – AU. Available at: https://data.worldbank.org/indicator/NV.SRV.TOTL.ZS?locations=AU (accessed 4 August 2020).

World Bank (2020d) Services, value added (% of GDP) – OECD. Available at: https://data.worldbank.org/indicator/NV.SRV.TOTL.ZS?locations=OE (accessed 4 August 2020).

Author biography

Adam Fforde Originally from north London, and currently resident in Victoria, Adam Fforde studied Engineering and Economics at Oxford and gained a PhD from Cambridge for research on Vietnamese agricultural cooperatives, conducted at Hanoi University in 1978/79. After a Post-Doc (again on Vietnam) he worked primarily as a consultant, mainly in Vietnam (also Laos and Cambodia), and then as an academic. He now holds honorary Professorial positions at the Victoria Institute for Strategic Studies (Victoria University, Melbourne) and the Asia Institute (University of Melbourne). Apart from a wide range of publications on contemporary Vietnam, he has published and continues to publish, on other developing countries' experiences, matters of method (especially epistemological issues in economics and development studies), issues of structural change in developing economies, and the question of servicisation.

https://doi.org/10.1177/10353046221116495 Published online by Cambridge University Press