The 'Phillips Curve' at 65 Years Old – Time for Retirement?

by

John Smithin
Aurora Philosophy Institute & York University

The 'Phillips Curve' at 65 Years Old – Time for Retirement?

John Smithin

Aurora Philosophy Institute & York University

Abstract

This note considers some remarks that have been made recently by Trevor Coombes about the legacy of the so-called 'Phillips Curve', originally due to Phillips (1958), which had played an important, but in my view mainly negative, role in the macroeconomic theory of the last 65 years. It purported to show a unique negative relationship between the inflation rate and the unemployment rate, which, if it held true, would have significant implications for macroeconomic policy and political economy. But it does not hold true - all sorts of relationships between inflation, unemployment, and economic growth are both theoretically and empirically possible. The theoretical results below are predicated on the assumption that the central bank is applying the so-called 'Smithin rule' - that is, adjusting the policy rate of interest of the central bank one-for-one with the observed inflation rate. If they do not do this all sort of pathologies are possible.

1. Introduction

The 'Phillips Curve', originally due to Professor A.W. Phillips (Phillips 1958) of the London School of Economics (LSE), was a hybrid empirical/theoretical concept which dominated the field of macroeconomics in the second half of the twentieth century. Phillips's initial contribution was a statistical investigation using British data going back to the nineteenth century. A couple of years later some theoretical underpinnings were provided by Phillips's LSE colleague R.G. Lipsey (Lipsey 1960). From the point of view of political economy the objective of the exercise seems to have been to cast doubt on the workability of the policies that had been suggested by John Maynard Keynes in the 1930s to reduce unemployment. Yes, or so the argument went, it might be possible to reduce unemployment somewhat by using Keynesian methods, but the price to be paid would be a higher rate of inflation. There would always be a 'trade-off' between inflation and unemployment.[1]

---

[1] It was never made clear exactly *why* a higher rate of inflation would be such a terrible thing as compared to the more-or-less obvious evil that unemployment would be for most people. In own work, for example most recently in

The flaw in this sort of reasoning has always seemed (to me at least) to be embarrassingly obvious. Even if something like a statistical Phillips Curve might be identified over a particular time period, and in a particular jurisdiction, there is no guarantee that this will hold in any other time or place. In reality, every possible relationship between inflation and unemployment is both theoretically possible, and has actually happened, at one time or place or another (Smithin 2018, 153). Whenever a period of so-called 'stagflation' does occur, meaning by this a combination of both high inflation *and* high unemployment, as occurred in the 1970s and again in our own times, this invariably seems to lead to talk of a 'crisis' in economic theory, a 'failure' of economic theory, and so on and so forth. Indeed, this sort of response itself might well be seen as one of the few genuinely identifiable empirical regularities in the field.

Trevor Coombes (2024, 1) has made the point in the following way:

> Couched in unemployment … and inflation … space the Philips Curve …, an artefact of data alone, is hardly a model. Accordingly, it requires another function to cut across it in such a way that meaning is attached to all intersections so created – anchor-points that denote non-accelerating rates of inflation, but which are nonetheless vulnerable to instability.[2]

In the present paper, I will go to discuss some of these issues based on a comparison between Coombes's recent Notes and some of my own previous work, notably in *Essays in the Fundamental Theory of Monetary Economics and Macroeconomics* (Smithin 2013), *Rethinking the Theory of Money, Credit and Macroeconomics* (Smithin 2018), and *Beyond Barter* (Smithin 2022). I am afraid that the conclusion, however, for the very reason suggested by Coombes, is bound to be that it will be impossible to resurrect or rehabilitate anything like the Phillips Curve

---

Smithin (2024), I have argued that *if* the policy rate of the central bank is always adjusted one-for-one with the inflation rate (as reported by the same central bank) then holdings of real money balances would be effectively indexed for inflation. In this case in principle there would be little downside. In some quarters, this suggestion has been dubbed the 'Smithin rule' (Rochon & Setterfield 2012).

[2] The so-called 'non-accelerating inflation rate of unemployment' (NAIRU) along with the closely related notion of the 'natural rate of unemployment', were among several seemingly politically charged 'pseudo-theoretical' concepts that emerged in the Phillips curve literature in the last third of twentieth century. Coombes alludes to this by suggesting that these supposedly fixed points are 'nonetheless vulnerable to instability'.

at this late stage. In perusing Coombes's Notes, I was reminded that the original paper by

Phillips was published around 65 years ago. This then lead me on to the thought that until

recently the traditional retirement age in the Anglosphere (and I believe in the West generally)

was also around 65 years of age. Hence the title of this paper.

In what follows, I will pursue these ideas by comparing my own approach to the issues in

my 'alternative monetary model' (AMM) to that of Coombes. The AMM was usually presented

in inflation and growth space rather than inflation and unemployment space but, as will be seen,

a very similar set of conclusions can be drawn.

2. Shapes of Things to Come

In economics, the continuous reference to 'curves' - such as demand curves, supply curves,

indifference curves, Phillips Curves, *etc.* - and also other geometric shapes (like the 'rectangular

hyperbola' in the quantity theory of money) is the legacy of the diagrammatic approach that was

set out in the appendices and footnotes of Marshall's *Principles of Economics* (1890) long ago.

This book, and this way of thinking about economic issues, dominated the English-speaking

world and beyond for much of the twentieth century. It was still very much alive in the 1970s,

when the present author was a student, in the form of such textbooks as Paul Samuelson's

Economics: An Introductory Analysis (Samuelson 1997), and *An Introduction to Positive

Economics*, by the previously-cited Richard G. Lipsey (Lipsey 1963). At this point in history, I

would argue that this Marshallian approach is long past it's 'sell-by' date and, moreover, is

undeniably tedious at best. Unfortunately, however, it can hardly be avoided in the present

discussion. In Smithin (2022b) I did try to discuss similar sorts of issues entirely 'in words', and

I will leave it to my readers to decide to what extent that was successful. But that would not be

suitable here.

There is nonetheless one much needed simplification that can easily be made, which is that although the original 1958 construction by Phillips was indeed curvi-linear (literally a curve), based on the particular data set that was used, we can here follow Coombes in restricting the graphical treatment to linear relationships (straight lines). As will be seen, what is really important are the signs and slopes of the various relationships, and a consideration of these sorts of things will suffice to make the point.

3. Inflation, Economic Growth, and Unemployment

In my *Rethinking* (Smithin 2018, 38-40) I provided a graphical illustration of a simple three-equation macroeconomic model in inflation (p) and economic growth (g) space,[3] known as the 'alternative monetary model' (AMM). This is depicted in *Figure 1* below.

There are three underlying relationships between the rate of inflation and the rate of economic growth depicted in *Figure 1*. These are:

(i)   The function labelled LRD, which is an upward-sloping relationship between the rate of inflation and the long-run rate of demand growth.

(ii)   The schedule labelled LRS which shows the relation between the inflation rate and the long-run rate of growth of the aggregate supply of goods and services. This is also upward-sloping and cuts the LRD schedule from below.

(iii)   The SRS schedule, which is flat. This illustrates the short-run adjustment process and will itself shift upwards or downwards whenever a disturbance occurs - eventually

---

[3] In Smithin (2018) the symbol that was actually used for economic growth was (y), lower case y. Here I have used the more familiar (g) to conform with Coombes's usage. As I also explained in that place (Smithin 2018, 20-1), I should mention that although the theoretical results are worked out within the framework of a simple closed-economy version of the AMM (and are exhaustive in that context), in principle the discussion has a very much wider sphere of practical application. The results will hold up in each of the following circumstances, (a) for a closed economy under autarky, (b) for the world economy (or possibly a regional economy) treated as whole, (c) *very importantly* - in an individual open economy with a floating exchange rate, and (d) in an individual open economy with a 'fixed-but-adjustable' exchange rate.

reaching the new equilibrium position at the intersection of the two long-run schedules. The behaviour of this SRS schedule will trace out the various up and downs of the short-run business cycle.[4]

*Figure 1*: The Alternative Monetary Model in Inflation/Growth Space
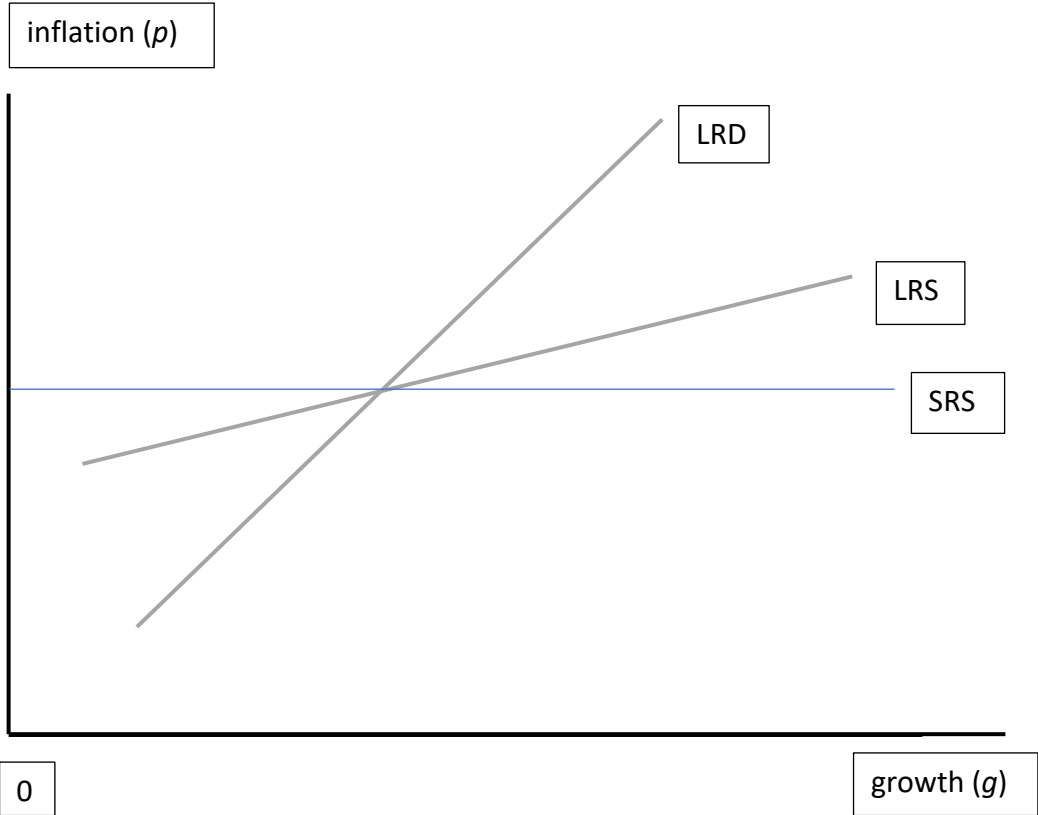
At a glance we can see that *Figure 1* fully bears out Coombes's remark that the Phillips Curve *per se* is 'hardly a model'. It is most unlikely that it will be able to survive in its original form as soon as two or more other inflation/growth/unemployment relationships are considered.

But, note also that there is no trace whatsoever of the so-called 'vertical long-run Phillips Curve' (vertical LRPC) a construct which began to make its appearance in the textbooks of the

---

[4] More detail on the business cycle *per se* and the various co-movements of economic variables over the cycle is provided in my *Rethinking* (Smithin 2018) and *Beyond Barter* (Smithin 2022).

1970s (*e.g.*, Dornbusch & Fischer 1978, 14-15) and presumably was itself designed to provide

some theoretical closure. This vertical 'LR'(PC) was never a genuinely 'long-run' relationship. It

was always liable to shift bodily one way or another whenever, for example, such things as

productivity changes happened to occur.

Figure 2: The AMM in Inflation/Unemployment Space
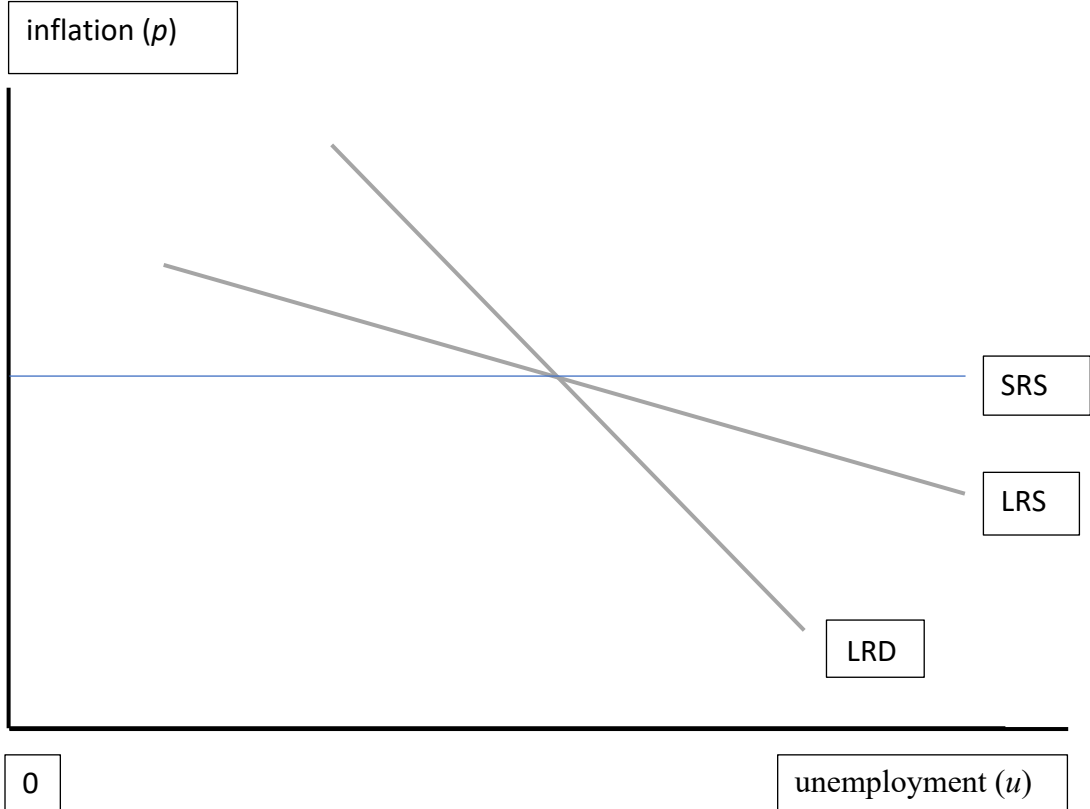
The next task is to compare the construct in *Figure 1* directly with that in Coombes's

'Notes'. This is done in *Figure 2*. As mentioned above, Coombes's analysis is conducted in

inflation (*p*) and unemployment (*u*) space, just as in the early Phillips Curve literature. *Figure 1*

must therefore be converted to *Figure 2* using something like the 'Okun's Law' relationship

between the unemployment rate and the growth rate, due to Okun (1962).

The results in *Figure 2* correspond to the diagram labelled 'Figure 4' in Coombes (2024, 3).[5] Using the same notation as in my *Figure 1*, the LRD function is downward-sloping. The LRS is also downward-sloping, and still cuts the LRD from below. The SRS is again flat.

Having made this comparison, in the next section we will move on to see how both of these constructs work out, and what effects there will be on inflation, growth and unemployment, when changes occur on the demand side of the model.

4. Demand Growth

In *Figure 3*, the objective is discover what will happen to the long-run inflation rate and the long-run growth rate when there is a increase in the rate of growth of aggregate demand. This would occur, for example, if there was a permanent increase in the ratio of government spending on goods and services to GDP.

In *Figure 3,* and in all subsequent diagrams we will dispense with the SRS relationship, and just focus on the 'before and after' intersections between the two long-run relationships. What occurs in *Figure 3*, when there is an increase in the rate of demand growth, is a shift of the LRD schedule outward and to the right. The end result will be an increase in both the inflation rate and the economic growth rate, as illustrated by the move from point A to point B in the diagram.[6] This is clearly something very like the original Phillips Curve logic. An improvement in economic conditions generally is 'paid for', as we might say, by an increase in the rate of inflation. But we can also begin to understand that another one of the underlying flaws in the

---

[5] It is not consistent, however, with Coombes's 'Figure 3' (not to be confused with *Figure 3* below). In that diagram (Coombes 2024, 3) the LRD schedule is upward-sloping in inflation/unemployment space. This would not be a feasible outcome in the context of the AMM.

[6] Points A and B are precisely Coombes's '… anchor-points that denote *non-accelerating* rates of inflation …' (emphasis added).

argument is that Phillips and his followers seem only to have focused on demand-side changes in

their thinking, to the exclusion of other types of change.[7]

Figure 3: An Increase in the Rate of Demand Growth in Inflation/Growth Space
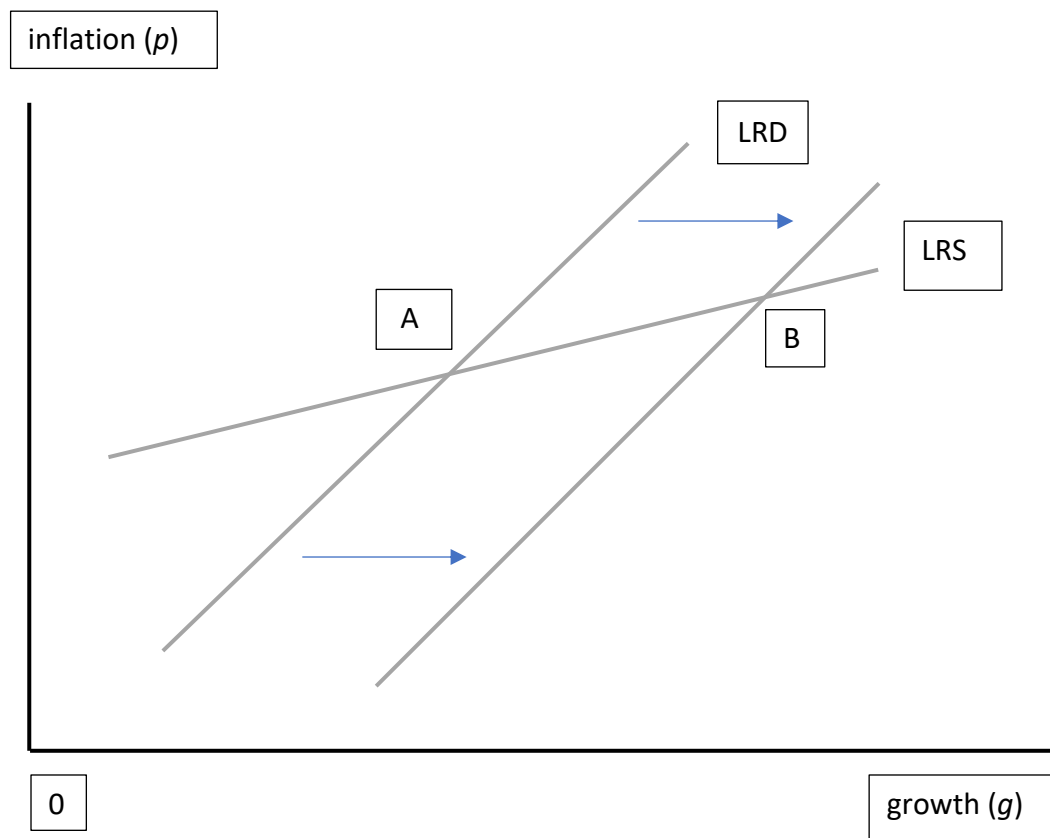

In *Figure 4*, the same demand-side argument is repeated in inflation and unemployment

space. In the case of *Figure 4* an increase in the rate of demand growth has to be shown by a shift

of the LRD schedule *inward* and to the left, towards the origin. In the limit, presumably, the

unemployment rate could possibly be reduced to zero, no doubt to the chagrin of all those

neoclassical economists who may tacitly be relying on something rather like Marx's 'reserve

---

[7] This focus has always seemed to me go completely against the basic insights of 'Economics 101' in microeconomics. In that context an increase in demand leads to both an increase in price and an increase in output, whereas an increase in supply leads to an increase in output, but a fall in price. See, for example, Smithin (2022a, 84-9).

army of the unemployed' to restrain the inflation rate (though they would probably not admit it).[8]

In practical terms, the results are going to be the same as in the previous *Figure 3*. An increase in

the rate of demand growth will indeed reduce the unemployment rate, but will also increase the

inflation rate. This is the basic Phillips Curve logic once again.

Figure 4: An Increase in the Rate of Demand Growth in Inflation/Unemployment Space
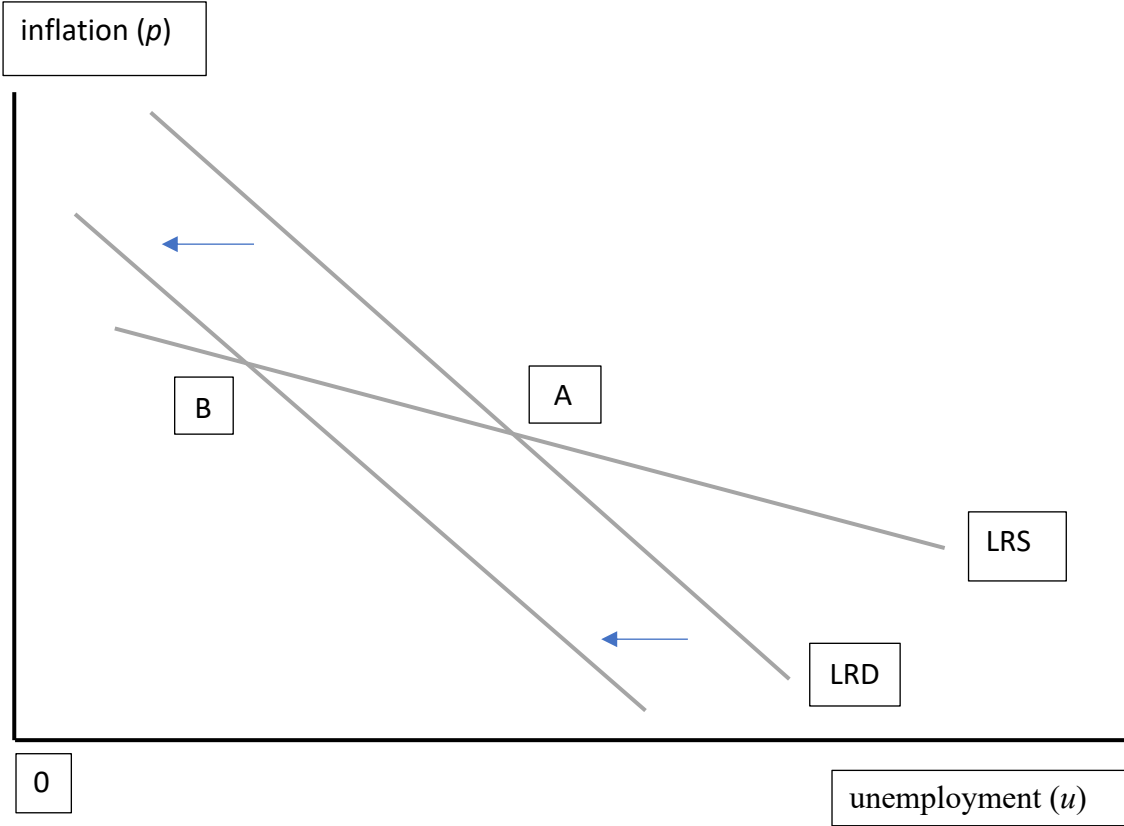

5. Improvements in Productivity

The title of the Notes originally circulated by Coombes earlier this year included the phrase the

'wage-productivity augmented Phillips Curve', and although I would not claim to have fully

understood all the details of Coombes's approach, I do think that the reference to productivity

---

[8] This general idea appears in several places in Marx's writings. The phrase actual used in *Das Kapital*, Vol 1. was 'industrial reserve army' (Marx 1867, 781).

pin-points another of the main deficiencies in the traditional Phillips curve literature. In this

Section of the paper we therefore turn to a consideration of the impact of autonomous changes in

labour productivity on inflation, growth, and unemployment outcomes.

Figure 5 illustrates the effect of a permanent improvement in productivity on the inflation

rate and the growth rate, in inflation and growth space.

Figure 5: An Improvement in Productivity in Inflation/Growth Space
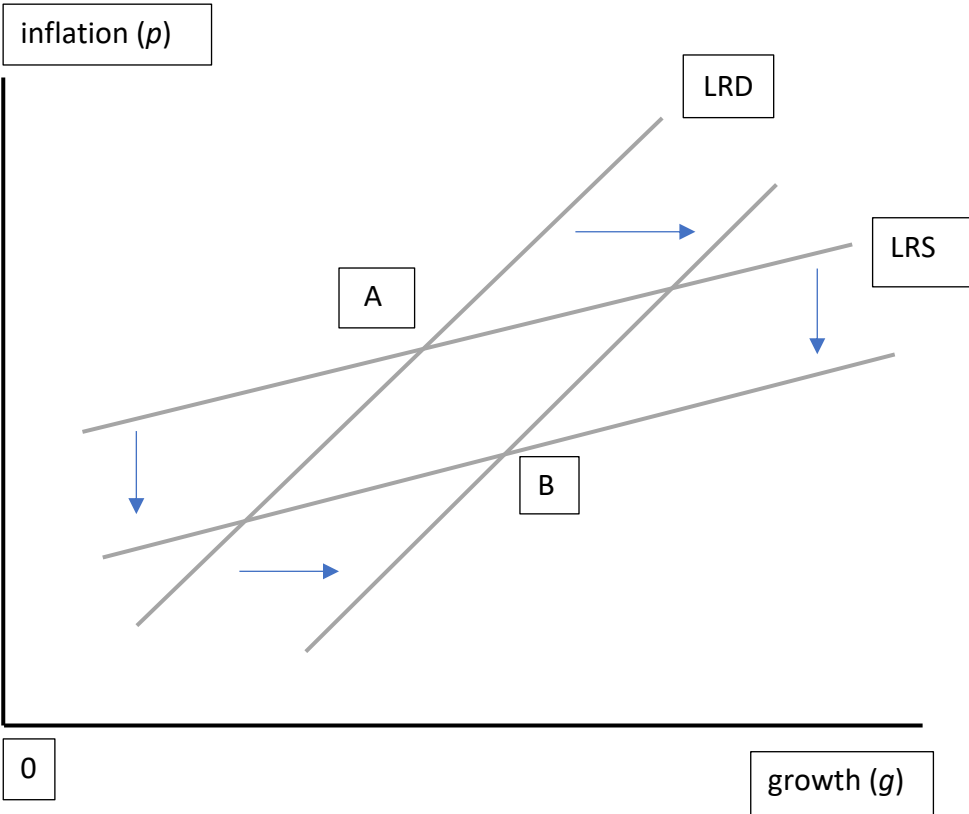
As might be expected, the LRS function will shift downward, but at the same time the

LRD function will shift outward and to the right. I suspect that the latter movement would be

missing from most of the mainstream/orthodox discussions of this phenomenon. This for the

reason that, typically, investment or 'firm spending' functions, in mainstream models, are based

on the rate of interest alone, rather than on profitability. It is the latter, however, which is the

most logical determinant of firm spending. There is no such omission in the AMM, which attempts to take full account of the significance of both realized and expected profits. The point is that in a log-linear rendition of an income distribution equation, the mark-up factor in entrepreneurial profit is going to be equal to the natural logarithm of average labour productivity, *minus* the natural logarithm of the average gross real wage rate, and *minus t*he real rate of interest.[9] Therefore, when productivity improves, profitability increases and firm spending/investment will also increase, adding to the demand-side as well as the supply-side of the model.[10]

Therefore, as can be seen in the diagram (illustrated once more by a movement from point A to point B) the net effect of an improvement in productivity is to both *increase* the rate of economic growth and *reduce* the rate of inflation. In popular parlance this would likely be described as a 'tech boom', or something of that kind. In the final diagram, *Figure 6*, we go on to carry out this same analysis in inflation and unemployment space.

In *Figure 6* the effect of an improvement in productivity must obviously be shown by a shift of both the LRD and LRS schedules inward towards the origin. The result once again is a reduction in the unemployment rate (as a consequence of the improvement in the economic growth rate) and also a fall in the inflation rate. Both *Figures 5* and *6*, therefore, turn the original Phillips Curve logic completely on its head.

---

[9] See Smithin (2018, 116-17) and Smithin (2002a, 164-7).
[10] This point, which I think is of crucial importance, is explained in greater detail in Smithin (2022b, 123-6).

Figure 6: An Improvement in Productivity in Inflation/Unemployment Space
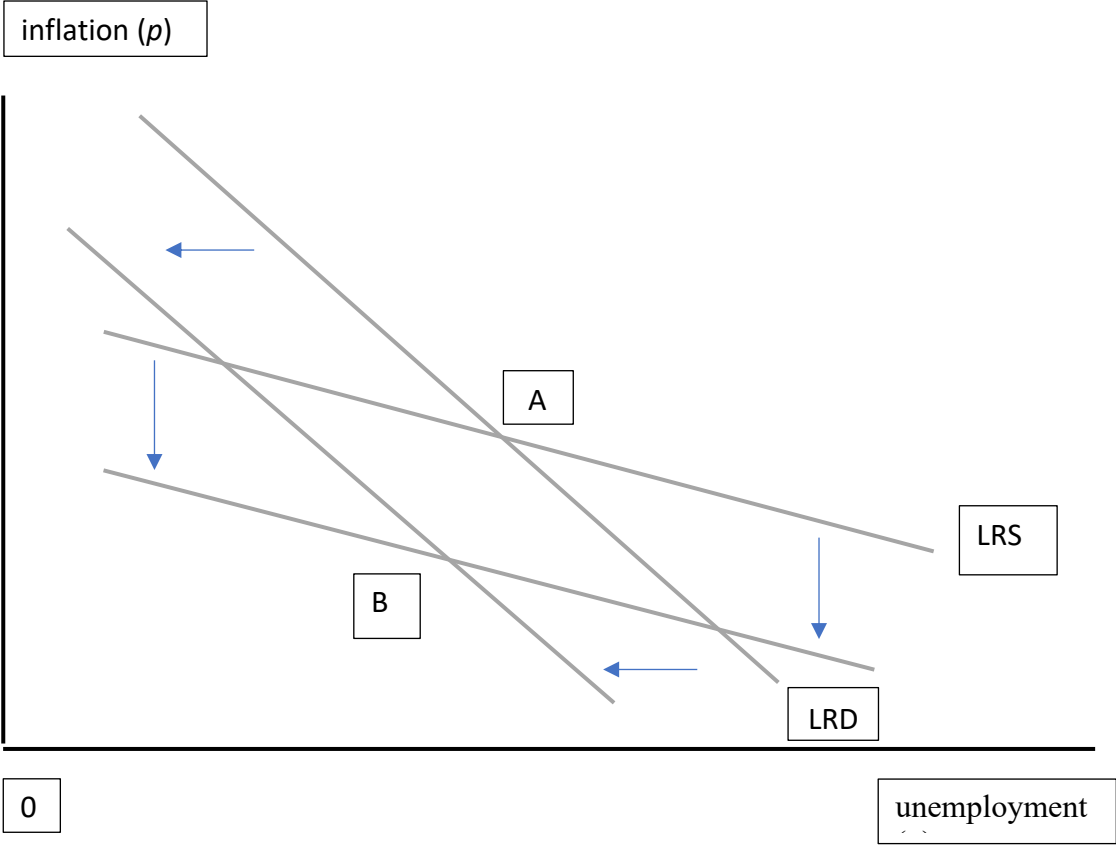
6. Conclusion

Evidently we could continue with the sort of analysis above more or less indefinitely. For example, in Smithin (2018, 28-40) and Smithin (2022a, 97-105), I looked at the effects of many more changes that might possibly occur, such as changes in the average tax rate (the ratio of total tax collection to GDP), changes in the real policy rate of interest set by the central bank (*i.e.*, changes in monetary policy), and changes in the psychological determinants of either physical investment in plant and equipment or financial investment ('animal spirits' or 'liquidity preference', including international liquidity preference). Nonetheless, the conclusion that must be drawn about the idea of the Phillips Curve is already quite clear from the analysis completed so far. It has no real merit.

In Section 4, it was shown that an increase in the rate of demand growth would lead to an increase in the economic growth rate and a reduction in the unemployment rate, but also an increase in the inflation rate. If, on the other hand, measures were taken to reduce demand growth the inflation rate would slow down, but there would also be a reduction in the growth rate and an increase in unemployment. This would be a stereotypical recession or depression. These results therefore do somewhat resemble the original Phillips Curve, but we should also remind ourselves of Coombes's important demonstration that these 'anchor-points', as he calls them, are in fact non-accelerating (or non-decelerating).[11] This immediately removes much of the force of textbook strictures against expansionary policy.

But, then, when it comes to the analysis of Section 5, any Phillip Curve-type correlations disappear entirely. A positive productivity shock would lead to both lower inflation and higher economic growth and also a lower unemployment rate. The opposite, a negative productivity shock, would be one of the possible causes of the dreaded 'stagflation'. In Smithin (2018, 153) and elsewhere, for example at one point in an encyclopedia entry that was literally about the Phillips curve itself (Smithin 2002, 584), I have summed up these conclusions as follows:

> Inflation is a complex social process, and it seems unlikely on the face of it that there is any one explanation of the phenomenon that is valid for all times and places. Empirically, all possible combinations of growth and inflation have actually been observed in reality. There have been periods of high growth with high inflation (an inflationary boom), low growth with low inflation (a depression), low growth with high inflation (stagflation) and, more benignly, non-inflationary growth.

So, perhaps it is now time to hold a retirement party for the Phillips Curve. I am not quite sure, however, that the PC necessarily deserves a gold watch. I suspect that there are many millions of people around the world who did *not* ultimately get their watch, or retirement party,

---

[11] As already mentioned, the textbook analyses of this issue did not involve genuinely long-run relationships. The idea of ever-accelerating inflation (or deflation) was based on the erroneous idea that there was a unique full employment level of output which could never be changed.

having prematurely lost their employment as a result of the various economic policies put in

place by the devotees of the PC logic.

References

Coombes, T. 2024. Wage-productivity augmented Phillips Curve: some cursory notes, Manuscript, June, 5pp.

Dornbusch, R. and S. Fischer. 1978. *Macroeconomics*, New York: McGraw-Hill.

Lipsey, R.G. 1960. The relation between unemployment and the rate of change of money wage rates in the United Kingdom, 1862-1957: a further analysis, *Economica* 27: 1-31.

Lipsey, R.G. 1963. *An Introduction to Positive Economics*, London: Weidenfield and Nicholson.

Marshall, A. 1890. *Principles of Economics*, London: Macmillan.

Marx, K. 1867. *Capital: Vol. I.* (As reprinted by Penguin Books: London, 1976)

Okun, A. 1962. Potential GNP: its measurement and significance, *Proceedings of the American Statistical Association* 7: 98-111.

Phillips, A.W. 1958. The relation between unemployment and the rate of change of money wage rates in the United Kingdom, 1861–1957, *Economica* 25: 283-99.

Rochon, L-P & M. Setterfield. 2012. Models of growth and distribution with conflict inflation and Post Keynesian nominal interest rate rules. *Journal of Post Keynesian Economics* 34: 497-520.

Samuelson, P.A. 1997. *Economics: The Original 1948 Edition*, New York McGraw-Hill.

Smithin, J. 2002. Phillips curve. In *An Encylopedia of Macroeconomics,* ed. B. Snowdon and H.R. Vane, 581-85, Cheltenham: Edward Elgar.

Smithin, J. 2013. *Essays in the Fundamental Theory of Monetary Economics and Macroeconomics,* Singapore: World Scientific Publishing.

Smithin, J. 2018. *Rethinking the Theory of Money, Credit and Macroeconomics: A New Statement for the Twenty-First Century*. Lanham MD: Lexington Books.

Smithin, J. 2022a. *Beyond Barter: Lectures in Monetary Economics after 'Rethinking'*, Singapore: World Scientific Publishing.

Smithin, J. 2022b. What is the sign of the balanced-budget multiplier? in S. Pressman and J. Smithin (eds), 111-29, *Debates in Monetary Macroeconomics: Tackling Some Unsettled Questions*, New York: Palgrave Macmillan,

Smithin, J. 2024. Smithin rule, in L-P. Rochon and S. Rossi (eds), *Encyclopedia of Central Banking,* 2nd edition, Cheltenham: Edward Elgar, forthcoming.