

# Comments on Paul Davidson’s “Full Employment, Open Economy Macroeconomics, and Keynes’ General Theory: Does the Swan Diagram Suffice?”

Peter Temin<sup>1</sup> and David Vines<sup>2</sup>

Working Paper No. 36

December 9th, 2015

## ABSTRACT

This is a response to a critique by Paul Davidson of our 2013 book *Keynes: Useful Economics for the World Economy* and related work,<sup>3</sup> where we describe, amongst other things, how the Swan diagram can be used to show how economies can use policy tools to achieve internal and external balance. In his article “Full Employment, Open Economy Macroeconomics, and Keynes’ General Theory: Does the Swan Diagram Suffice?” Davidson rejects our use of the Swan diagram and argues that it distorts Keynes’ own views. We show here why Davidson’s critique is incorrect, inconsistent and ahistorical.

**JEL codes:** B3, E12, E42, E61, F33, F41

---

<sup>1</sup> Elisha Gray II Professor Emeritus of Economics, MIT [ptemin@mit.edu](mailto:ptemin@mit.edu).

<sup>2</sup> Professor of Economics and Fellow, Balliol College, University of Oxford, [david.vines@economics.ox.ac.uk](mailto:david.vines@economics.ox.ac.uk)

<sup>3</sup> Davidson, Paul, “Full Employment, Open Economy Macroeconomics, and Keynes’ General Theory: Does the Swan Diagram Suffice?” <http://ineteconomics.org/uploads/papers/WP35-Davidson.pdf>

**Key words:** In Swan Diagram, balance of payments, fiscal policy, neoclassical Synthesis Keynesianism, Post Keynesianism.

Like all authors, we are glad that Davidson is interested in our work, and we welcome discussion of the Swan diagram. However, we would have preferred a more temperate and reasoned argument than that found in this essay. Davidson is incorrect, inconsistent and ahistorical. We describe these failings in turn.<sup>4</sup>

Davidson is a noted Post-Keynesian, which appears to mean that any contributions to Keynesian thought after Keynes are ignored or derided. Davidson rejects contributions to Keynesian thought by Hicks and Samuelson. We imagine he also has only scorn for Meade and Modigliani. The problem with this approach is that Keynes, like any important innovator, did not fully understand what he was doing as he was doing it. Keynes formulated his ideas during the 1930s with false starts and intuitive leaps. He would have been the first to argue that his contributions were the start of a new macroeconomics, not its end. Davidson's fealty to Keynes as a person appears to have blinded him to the contributions that followed. For example, he asserts in this essay that the Swan diagram is a full-employment model, incapable of describing unemployment. This was the stage that Keynes reached in 1930, but not where he ended. Rather than follow Keynes' thought, let us look at the Swan diagram. It has two axes. The vertical axis is the real exchange rate, that is the nominal exchange rate times the ratio of foreign and domestic prices. The horizontal axis is domestic demand, as labelled in our book. Domestic demand may be sufficient to give rise to the full-employment level of output, but, more often than not, domestic demand will be more or less than the precise amount necessary for this to happen.

The internal balance line shows the combinations of the real exchange rate and domestic demand that can give rise to internal balance; the external balance line shows the combinations of the real exchange rate and domestic demand that can give rise to external balance. The Swan diagram was designed to show how open economies might not reach full employment and external balance as a result of policy mistakes. There is nothing in the Swan diagram that leads the economy to full employment. Davidson appears not to understand the Swan diagram even though he angrily condemns it.

Davidson also is inconsistent. He attacks our use of sticky prices to identify the short run, saying that Keynes was not wedded to a fixed-price analysis. He proposes an alternate theory to Swan's from a development economist, Thirlwall. Davidson opens his application of this model by saying, "If we assume no change in relative prices for imports and exports, i.e., no

---

<sup>4</sup> Our exchange with Davidson has had two stages. Davidson presented what he calls his "original critical analysis" of our book in a first version of his essay. That presentation – in a slightly revised form – forms the body of the final version of his essay. We were invited to respond to his "critical analysis" and we provided extensive critical comments. Davidson rewrote his essay in order to engage with our comments and in the last section of his essay he "respond[s] specifically" to what we wrote. As a result, we believe it will be helpful to make those earlier comments of ours available. We include them in an Appendix.

change in the real exchange rate, then ...” Davidson clearly needs to have some fixed prices for his “Keynesian” analysis, although he chooses to hold the real exchange rate constant, rather than wages. This is the vertical axis of the Swan diagram, and Davidson is describing movements along a horizontal line in the diagram. It is not clear how the references to Thirlwall advance the discussion or how they conflict with the Swan diagram itself.

Finally, Davidson is ahistorical. He supports his interpretation of Keynes’ “bancor” plan for today, despite all that has happened since 1946. When we suggested in our earlier comments that parts of this proposal were more useful than others, Davidson insisted that only the full plan had any value. This ignores the history of the plan in the two reorganizations of the postwar international payments system. Neither the Bretton Woods system nor the Maastricht system for the euro had anything resembling the “bancor” plan. This plan did not have support then, and it does not have support now. By insisting on all or nothing, Davidson makes his policy recommendations irrelevant to the problems of the world economy today. We were writing about international problems after the Global Financial Crisis of 2008. Davidson does not even acknowledge this important breakdown of the world financial system.

We welcome constructive debate of our analysis and proposals. We are less happy with denunciations of our work as insufficiently faithful to a religion of Keynesian quotations. We are interested in models—particularly simple models—that help policy makers apply insights from Keynes and other scholars to analyze current events and needs. Nothing in Davidson’s essay advances discussion in that direction.

**23 November 2015**

## Appendix

### Comments on previous draft of “The Fallacy of the Temin-Vines Claim ...” by Paul Davidson

#### Peter Temin and David Vines

*Note:* This Appendix contains the comments which the two of us made on the original version of Davidson’s essay, in which he presented his “original critical analysis” of our book. The final, revised version of Davidson’s essay differs in some places from the original because of his responses to our comments. In addition he has added a section in which he “respond[s] specifically” to our comments. As a result we thought it would be helpful to include our comments on the original version of Davidson’s essay in this Appendix.

We have slightly edited these earlier comments, in two ways. First, we have introduced some drafting changes to improve the exposition. Second, in some places we have needed to rewrite our comments, simply because Davidson has changed his presentation.

With these two provisos, the text of this Appendix was drafted before we saw the final revised version of Davidson’s essay. As a result the material in the body of this Appendix does *not* respond to Davidson’s response to our comments in the last section of his essay.

We provide our response to Davidson’s response to our comments in a series of footnotes to this Appendix. Of course these footnotes have been written after we saw the final version of Davidson’s essay.

#### 1 Introduction and Summary

The final section of Davidson’s [original version of his] essay contains a discussion of plans for international monetary reform. This discussion contains a valuable point, although it is one which is already widely understood. The earlier parts of his essay contain material which is either irrelevant or incorrect. It is important for Paul Davidson that the discussion of international monetary reform, on which he embarks in the final part of his essay, is not compromised by the unhelpful earlier parts of the essay.

#### 2 The LM Curve

The claim which Davidson makes about the LM curve, in the initial section of the essay, is correct. The essential idea has to do with what Denis Robertson and others called the finance demand for money: a decision to spend (next period) will cause an increase in the demand for money (this period) in order for it to be possible for the person in question to pay for the actual expenditure (in the next period). This fact means that the LM curve is not independent of the IS curve. Modern monetary economics has made much of this cash-in-advance idea. It appears that Hicks accepted this point in his later years. And apparently Davidson played some part in inducing Hicks to accept this idea. This idea is now rather well known.

But this is not an important idea for the subject being discussed in this essay. Modern macroeconomics has moved away from an IS/LM framework, in a way which might make Davidson glad. Such modern macroeconomics no longer treats the money supply as a policy instrument, which is what is supposed by the LM curve, but instead treats the interest rate as the policy instrument; in modern macroeconomic models the interest rate follows something like a Taylor rule. In such a setup changes in the finance demand for money - of the kind highlighted by Davidson - are of no significance, since they will not, of themselves, cause the interest rate to change.<sup>5</sup>

The purpose of such a Taylor rule, in a macroeconomic framework, is to make the interest rate endogenous. It shows that, when output increases, or inflation increases, the interest rate will go up. It will do this not because the demand for money increases relative to a fixed supply but because of a policy decision made by the central bank. (And vice versa when output decreases or the inflation rate decreases.) But creating endogeneity of the interest rate is actually the function which an LM curve performs within a macroeconomic model. As a result, it is possible to think of the LM curve not as a description of reality but as a metaphor for the way in which monetary policy is actually conducted. In that - metaphoric - sense an LM curve remains a useful part of a straightforward Keynesian macroeconomic model, even although it might not describe reality at all realistically. This means that it can be helpful to go on using the IS/LM system as an expositional device for explaining Keynesian economics, even although it does not describe reality. That is how we now think of the IS/LM model.

The two of us took the strategic decision not to go into any of this detail. We did this because having an IS/LM model, with an LM curve in it, enabled us to carry out policy discussions in the latter part of our Keynes book, using a model in which the interest rate is endogenous. Thus - we would submit - whether the LM curve is a good way of representing Keynes's actual ideas in the 1930s, or whether it actually describes the economy that we live in, is not an important question in relation to the concerns of our book.<sup>6</sup> Those concerns are about the achievement of external and internal balance in an open economy.

### **3 The Swan diagram**

Davidson believes that Swan diagram is an inadequate device for discussing ideas about external and internal balance. He is both right and wrong.

Davidson is right because you cannot discuss a global problem - "currency warfare" - with a model of just one country - the Swan diagram.

---

<sup>5</sup> Davidson appears unfamiliar with the nature and operation of a Taylor rule. Such a rule makes the interest rate endogenous in the way described in the next paragraph; it is not exogenous as stated by Davidson. A change in the finance demand for money will *not* influence the interest rate, if it is set according to a Taylor rule. Any change in the interest rate specified by a Taylor rule may well - as Davidson says - influence entrepreneurial expectations. But a well-designed Taylor rule will - of course - be calibrated to allow for any such effect.

<sup>6</sup> Davidson claims that we made this remark about the Swan diagram. We did not - it is a remark about the LM curve.

Davidson is wrong because, after having recognised this, you then need not to criticise the Swan diagram - as Davidson does – but instead do the work necessary to generalise the Swan diagram to carry out an analysis of two or more countries.<sup>7</sup>

In more detail, we may say that the "flaws" which Davidson claims to detect in the Swan diagram – in particular about the relative size of the income effect and the substitution effect - are not flaws. By making these claims about flaws, Davidson is revealing that he does not understand how to carry out the necessary multi-country analysis. Such an analysis is widely available. The classic simple exposition of the analysis, presenting a two-country generalisation of the Swan diagram - can be found in the paper by Olivier Blanchard and Giancarlo Milesi Ferretti “(Why) Should Current Account Imbalances Be Reduced.” This is available at <https://www.imf.org/external/pubs/ft/sdn/2011/sdn1103.pdf> . One of us, David Vines, has written a paper, “On Concerted Unilateralism: When Macroeconomic Policy Cooperation is Helpful and When it is Not,” which provides a more extended, but entirely verbal, version of this analysis. That paper will appear as a chapter in a book called *Managing Complexity: Economic Policy Cooperation after the Crisis*, which is being edited by Tamim Bayoumi, Stephen Pickford and Paola Subacchi, and will be published by Brookings Press in January 2016.

The essential idea goes something like this.

Consider first a small open economy at full employment with a current account deficit. To improve the trade balance, whilst remaining at full employment, the country needs to both depreciate its real exchange rate (an “expenditure switching” policy) and reduce domestic demand (an expenditure changing policy). The expenditure switching policy will only work if trade flows are sufficiently responsive to the real exchange rate. Technically this policy will only work if the Marshall-Lerner conditions hold. These conditions require that the positive substitution effect, caused by the changes in relative prices which is a result of the real depreciation, is bigger in its effect on the trade balance – and on aggregate demand – than the negative income effect, which is a result of the fact that a depreciation of the real exchange rate causes the price of imports to rise relative to the price of exports (both prices being measured – for example - in domestic currency). There was much elasticity pessimism in the 1950s and 1960s. But, despite what Davidson says, no serious person now thinks that the Marshall-Lerner conditions do not hold. (Of course they will not hold immediately because there are lags. But

---

<sup>7</sup> In points 4 and 5 in the last section in his essay, Davidson indicates that he is not prepared to do the necessary work. We provided him with an indication of the necessary reading in our comments - see the paragraph which follows - and are disappointed that he was not prepared to read and refer to the relevant papers. Those papers enable one to understand the way in which international macroeconomics (*i.e.* the analysis of more than one country) generalises, and encompasses, the analysis of the macroeconomics of a small open economy.

Way back in 1952, James Meade (in his book *The Balance of Payments*) presented the ideas underpinning the Swan diagram in a very complicated piece of international macroeconomics which analysed a world of two countries. It took Trevor Swan to extract the underlying ideas, by providing an analysis of a single, small, open economy in his Swan diagram. And it has taken subsequent scholars much time to see how to present Meade’s complex analysis of two countries in a simple and transparent manner. We ourselves set out this analysis verbally in the later part of our book, and, as Davidson says, in an Appendix to that book. We also deliberately provided an account of the basic ideas in our comments on Davidson’s essay. It is important, if a conversation on this topic is to be valuable, that those who carry out the conversation understand the necessary analysis.

these lags are not included in the model because the model simplifies – like all models. The effect of allowing for these lags was very thoroughly discussed and understood– more than thirty years ago.)<sup>8</sup> As a result of this , we can say that the Swan diagram demonstrates that to achieve external balance whilst preserving internal balance, a country needs to use both an expenditure switching policy (a real currency depreciation) and an expenditure-changing policy ( a reduction in domestic demand).

But this story, of course, involves the use of the Swan diagram to analyse a small open economy. Instead now suppose that the economy in question is large. Suppose that it represents half of the world. Davidson is right to say that things are then different from what has just been described.

We start again by considering a depreciation of the real exchange rate by a country which is at full employment but which has a current account deficit. This country is now large – we call it the home country. To improve the trade balance, whilst remaining at full employment, the home country needs to both depreciate its real exchange rate (the “expenditure switching” policy) and reduce domestic demand (the expenditure changing policy). But the expenditure switching policy may now be compromised by what happens in the rest of the world. That policy will - of course - take aggregate demand away from the foreign economy and so cause output there to fall. If the foreign country does not expand its domestic demand at the same time – e.g. by a fiscal expansion - then a shortage of aggregate demand will emerge in the foreign country. That country will go into recession which will mean that its demand for the exports of the home country will fall. A world recession will emerge. This is the income effect to which Davidson so rightly draws to our attention. As a result of this effect, the home country will not be able to improve its trade balance by as much as it would if it were acting on its own – in the way described in the previous discussion – precisely because of the emergence of this global recession.

If policymakers in the home country believe that all they need to do is to act in the way described in the previous discussion then there may not be a good outcome. Furthermore if the foreign country responds by trying to depreciate its real exchange rate, then exchange rate warfare will develop. This is the issue which seems to bother Davidson – and he is right to be

---

<sup>8</sup> In the final version of his essay, Davidson still appears not to understand the point at issue here. He writes “They...tried to dismiss my technical Marshall-Lerner condition criticism completely by stating ‘despite what Davidson says, no serious person thinks the Marshall-Lerner conditions do not hold’ .... Yet, I have quoted a written statement from Ben Bernanke that the Marshall Lerner condition often does not hold, at least for a few years (in the short run?).”

Davidson should have noticed the sentence which precedes this footnote (which was itself in a footnote in our previous comments) which says precisely what Bernanke said. To be clear – serious people believe that the Marshall-Lerner conditions hold in the period of time relevant for the Swan diagram analysis. It is *not* the case, as Davidson asserts, that this period is a long run in which “as Keynes once noted, ‘we will all be dead’”. And it *is* the case, in shorter periods of time during which the Marshall-Lerner conditions may not hold, that countries will need to rely on capital movements to cover any balance-of-trade deficits. The Mundell-Fleming model – invented more than fifty years ago now – was designed for thinking about such shorter time periods. It was not our wish to discuss those shorter time periods. As Davidson will know, different models are useful for different purposes.

bothered by it. He reminds us that Keynes made much of this point too. But this important point is now widely understood.

The general version of this point is that if large countries act on their own, in the way just described, without considering the response of foreign countries, and if foreign countries also act in the same sort of way, then there may well be a very bad global outcome.<sup>9</sup> That is to say the Nash equilibrium in global macroeconomic policymaking may be much worse than the cooperative equilibrium.

However Davidson should notice that the Nash equilibrium is not always worse than the cooperative equilibrium. For example, if, in the case being considered, the foreign country lowered its interest rate in response to the reduction in demand for its goods caused by the depreciation of the home country's real exchange rate, then this would tend to restore the level of aggregate demand in the foreign country. (If there were a fixed LM curve in the foreign country then this is exactly what would happen, even without any policy change, because the lower level of activity there would reduce the demand for money there and so tend to cause the interest rate to fall.) The outcome – after allowing for all of the responses in the foreign country and the home country - could well be one in which there was lower government expenditure at home, a depreciation of the home real exchange rate, an improved current account for the home economy, lower world interest rates and full employment preserved in both countries. This is the kind of situation analysed by Blanchard and Milesi Ferretti in their paper. In this case the outcome of each country acting on its own will nevertheless be as good as the cooperative one: full employment in both countries and an improvement in the home country's current account. The paper by David Vines, referred to above, analyses when it is the case that cooperation is not necessary to get to a good outcome, and when it is necessary.

Davidson is right to claim that the Temin-Vines book does not explain this two country story as clearly as it might have done. But if he gained the impression that we thought that a Swan diagram model of one small economy was a sufficient piece of equipment with which to discuss the whole world economy then he did not read our book carefully. In a final chapter of our book we discuss the actions, and reactions, by currency blocs as a Prisoner's Dilemma game. We describe different possible outcomes of this game, and we claim that the world is now experiencing a bad, non-cooperative outcome. As we say on page 241, "In such an outcome, the attempt to correct external imbalances would put internal imbalance at continuing risk . . . , endangering the global recovery and leading to a sustained period of recession." Our argument is exactly the one spelled out in detail above. This seems like a prophetic view of the world economy, and the Swan diagram helped us to understand it – even if one needs a two-country version of that diagram to fully understand what is going on. By spelling this argument out we take the discussion way beyond the Davidson's (correct) criticism of the view (which we do not

---

<sup>9</sup> Davidson asserts that "this possibility alone should lead a 'serious person' to recognise that Keynes' plan to provide a clearing union, similar to the ... [Davidson] system ... will be required." This sentence contains a non-sequitur. "This possibility" instead leads us to recognise that policymakers need to understand the kind of international macroeconomics which we described in a previous footnote, and which Davidson seems so reluctant to understand.

hold) that one can the use of the Swan diagram for a small open economy to analyse the problems of the world as a whole.

We suggest in our book that the Swan-diagram framework might help not just us but other people as well, and we stand by that claim. And if Davidson were to look carefully at our other book, *Keynes*, he would see how, in the later chapters, we take the Swan diagram and the IS/LM framework, and use them together in the way described above. By doing this we are able to provide a simple account of recent historical events and to provide an analytical account of the problem that the world is now in.

#### **4 International Monetary Reform**

Armed with this more-than-one-country analysis it is possible to have a discussion of proposals for reform of the international monetary system.

Davidson's proposal for such reform has five rather strange components and then a sensible Part 6; this part 6 involves a policy which would penalise surplus countries, and force them to adjust. Keynes wanted this last thing as much as Davidson wants it – and we want it too. Keynes's "scarce currency clause" was designed to bring about the necessary pressure. And many of us in Europe have been arguing that there should be pressure on Germany to expand, and to accept higher inflation, rather than pressing all of the adjustment within Europe onto Southern European countries.

Furthermore it used to be the case, for example, in the 1980s with Brady Bonds for South America, that both lenders and borrowers took haircuts in negotiations about international debt. But now - again taking the European example - the primacy of bankers has thrown the onus entirely on borrowers.

We suspect that Davidson would agree with the points made in the previous two paragraphs. Our question to him is this: What new contribution does he bring to the discussion of international monetary reform? We find it hard to agree with his first five points.<sup>10</sup> But they do not seem necessary in order to underpin his important final point. His final point is the important one. However that point is already widely recognised.

**22 October 2015, edited on 23 November**

---

<sup>10</sup> Davidson writes "Apparently [Temin and Vines]... do not understand the necessity of the first five items of [my ]...proposal." We disagree with this statement since we regard the first five items of his proposal as entirely infeasible. And we comment on the ahistorical nature of Davidson's recommendation of these items in the second-last paragraph of the comments which precede this Appendix.