

MONEY, MACROECONOMICS AND KEYNES

This volume, along with its companion volume *Methodology, Microeconomics and Keynes*, is published in honour of Victoria Chick, inspired by her own contributions to knowledge in all of these areas and their interconnections. It represents both consolidation and the breaking of new ground in Keynesian monetary theory and macroeconomics by leading figures in these fields.

The chapters have been contributed by some of the many who admire Chick's work:

- C. Rogers, Rogério Studart and Fernando J. Cardim de Carvalho make contributions in monetary theory.
- Philip Arestis, Peter Howells, Charles Goodhart, David Laidler, Malcolm Sawyer, Alain Parguez, and Joseph Halevi and Rédouane Taouil make contributions relating specifically to endogenous money.
- Peter Kriesler, John Nevile, G. C. Harcourt, Peter Skott, Augusto Graziani, John Smithin, the late Bernard Corry and Maurizio Caserta make contributions in macroeconomics.
- Penelope Hawkins, Christopher Torr, Jesper Jespersen, Stephen F. Frowen and Elias Karakitsos make contributions in open economy macroeconomics.

The volume opens with an account of Victoria Chick's academic career and ends with a list of her publications.

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MONEY, MACROECONOMICS AND KEYNES

Essays in honour of Victoria Chick, volume one

Philip Arestis, Meghnad Desai and Sheila Dow

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INTRODUCTION: ON CHICK'S LIFE AS AN ACADEMIC

Philip Arestis, Meghnad Desai and Sheila Dow

Keynes talked of *The General Theory of Employment, Interest and Money* as part of his 'long struggle to escape from habitual modes of thought and expression'. But these modes of thought and expression continued to prevail, requiring subsequent like-minded economists to engage in their own struggle to escape. Victoria Chick is one of the leading economists to engage in such a struggle, and to assist others in the process.

We have prepared this volume and its companion volume (*Methodology, Microeconomics and Keynes*) bearing in mind the many economists, dispersed all over the world, who have assiduously sought out Victoria Chick's writings over the years to provide illumination and inspiration, who have benefited from her teaching, guidance and friendship, and who accordingly owe her a great debt of gratitude. It is therefore with great pleasure that we have invited a subset of her enormous international audience to contribute to the two volumes in her honour on the occasion of her retirement from University College London (UCL).

Victoria Chick was born in 1936, in Berkeley, California. She studied at the University of California at Berkeley where she took her Bachelor's and Master's degrees. Berkeley's Department of Economics was particularly strong and eclectic at that time. Thus, very high quality and tremendous concentration of calibre were two characteristics of the environment in which Victoria Chick developed as an economist. The important ingredient of that environment was the disparity of views that were flowing in the corridors and seminar rooms of the Department. The independent character and personality of Victoria Chick were stimulated by the diversity of theoretical views there, but she did not take sides on ideology or methodology. That came later. However, a continuity in her relationship with Berkeley was maintained through her friendship with Hyman Minsky.

At Berkeley she specialised in international trade theory and wrote a thesis on Canada's 1950s experience with flexible exchange rates. Then, in 1960 she moved to the London School of Economics (LSE) to continue postgraduate studies, where the impetus of Berkeley was maintained, indeed enhanced. That was the heyday of 'Methodology, Measurement and Testing' at the LSE. Just as at

Berkeley previously, both staff and students at the LSE were of enormously high caliber; Victoria Chick took full advantage of these opportunities. The Staff and Graduate Student Seminar chaired by Lionel Robbins, Wednesday evenings in the Three Tuns, and the London–Oxford–Cambridge graduate students’ seminars provided the platform for fertile ideas to be disseminated and indeed to become firmly embedded in the economics discipline. Victoria Chick was once more in the middle of different views as to how the economy worked, but still her ideas were in their gestation period.

In 1963 she took an Assistant Lectureship at UCL, and was promoted to Lecturer during the following year. She was then moving away from international economics to monetary theory and macroeconomics. Her book, *The Theory of Monetary Policy*, grew out of her teaching, a clear indication that she takes seriously the ideal of blending teaching with research; she continues an old tradition of publishing new material as ‘lectures’ – a commendable way to teach. The book was a conscious attempt to impose an order on monetary theory, an order which by comparison to international economics was sadly lacking at that time. That she did extremely well.

The approach of *The Theory of Monetary Policy* was in fact simultaneously sympathetic to and critical of Keynesians and monetarists alike. Ultimately, though, she rejected both schools of thought as theoretically inadequate. Inevitably, the *IS–LM* apparatus, the accepted framework of monetary debate, had to go as well. She had uncovered a logical inconsistency in the model which was connected with its static method. The suggestion was not well received either by the Anglo-American journals or by her own colleagues. Nonetheless, she persisted and the relevant paper was published, some five years after its drafting.

As these ideas were falling into place, she attended the 1971 meeting of the American Economic Association in New Orleans, where Joan Robinson gave her famous Ely Lecture, ‘The Second Crisis in Economics’. At that gathering Joan Robinson and Paul Davidson called a meeting of like-minded people, which gave Victoria Chick great courage in discovering that she was not alone and thus provided her with a tremendous impetus to carry on.

Publishing *The Theory of Monetary Policy* had created a vacuum: mainstream macroeconomics had been shown to be inadequate. Perhaps as a belated response to Hyman Minsky’s earlier attempt, at Berkeley, to teach her Keynes’s *General Theory* (see her *Macroeconomics after Keynes*, p. viii), she returned to that book and began teaching it to her undergraduate students and developing her views in the process. When she felt that she had a coherent and systematic story to tell, she published *Macroeconomics after Keynes*. With this book Victoria Chick made a major contribution to post-Keynesian thinking. As will become clear from the rest of this introduction and the papers that follow in the two volumes, she had already made her distinctive mark on post-Keynesian thought. *Macroeconomics after Keynes* consolidated her position as one of the more important and regular contributors to the attempt to complete and elucidate the post-Keynesian paradigm. She was promoted to Reader in 1984 and to Professor in 1993.

During the time Victoria Chick has spent at UCL, she supervised a great number of Ph.D. students, many of whom are represented in the two volumes. Victoria Chick has also taught at a number of universities throughout the world. These include McGill University in Canada, University of California at Berkeley and at Santa Cruz in the USA, Aarhus University in Denmark, University of Southampton in the UK, University of Burgundy, Dijon in France, and the Catholic University of Louvain in Belgium. As well as visiting universities, she spent a summer at the Federal Reserve Bank of New York and eighteen months at the Reserve Bank of Australia in Sydney. More recently (September–March, 2000–1) she has been appointed Bundesbank Professor of International Monetary Economics tenable at the Free University, Berlin.

Victoria Chick has been an active member of two British Study Groups, funded by the ESRC: she served on the Committee of the influential *Money Study Group* for many years; and she and Philip Arestis initiated and jointly chaired for many years the active and successful post-Keynesian Economics Study Group. Victoria Chick has also served as a member on the editorial board of the *Review of Political Economy* (1987–93), *European Journal of Political Economy* (1985–94) and *Metroeconomica* (1994–present). During the period 1991–6 she was elected and served on the Council of the Royal Economic Society (RES). Over the period 1994–6 she served on the Executive Committee of the RES.

Many of the issues raised by Vicky still remain unresolved, particularly those in monetary theory. Victoria Chick has an outstanding capacity to analyse critically the logical foundations of theoretical structures and to uncover hidden assumptions. Her analysis goes beyond the level of theory to that of method, where many of the apparent differences between theories have their source. She analyses theories on their own terms, yet she does not hesitate to point out where she regards these terms as unduly limiting with respect to real-world issues and to suggest more fruitful lines of enquiry. Nor does she hesitate to criticise Keynes's framework, with which she is most strongly identified.

Although Victoria Chick's own methodological approach has much in common with that of Keynes, she has an emphasis which he left largely implicit: the historical particularity of theories, that is the fact that different types of abstraction may be better suited to some historical periods than others. This approach encourages the fair-mindedness with which Victoria Chick explores different theoretical approaches for useful theories to deal with particular problems. She is not afraid to state her views on each theory, and on how it is used: views which are founded on a high standard of scholarship. The value of this aspect of Victoria Chick's work really cannot be emphasised enough.

We are grateful to Vicky's many colleagues and friends who responded so positively to our request to contribute to this volume. We apologise to the many more that have not been approached – this was entirely due to lack of space. We are also grateful to Taylor and Francis Publishers, and especially to Allan Jarvis, who responded so promptly and enthusiastically to our request to publish the two volumes.

THE ‘GREAT INFLATION’, 1520–1640: EARLY VIEWS ON ENDOGENOUS MONEY¹

Philip Arestis and Peter Howells

1. Introduction

It is a curious characteristic of most ideas which have to fight for acceptance that there comes a stage when it is felt that precedents help the cause. Thus, in recent years, many expositions of endogenous money pointed out variously: that endogeneity was not a radically new idea but that, *per contra*, it had been a theme in the two debates in the late eighteenth and early nineteenth centuries between the bullionists and the anti-bullionists and later between the banking and currency schools; that Keynes was *really* an endogenous money man even though in the *General Theory* he took the money supply to be given; and that it was all accepted by the Radcliffe Committee in 1958.

In this chapter we shall show that arguments over the endogeneity of money pre-date the late-eighteenth/early-nineteenth century by some considerable time, surfacing in one of the earliest documented monetary upheavals in Europe, the ‘great inflation’ of the seventeenth century. There appears to have been some scope for endogeneity, even in the very earliest ‘stages of banking’ (Chick 1986, 1993).

This chapter is organised as follows. In Section 2, we discuss aspects of the ‘great inflation’ as it was experienced in the UK between approximately 1520 and 1640, concentrating upon contemporary explanations for the rise in prices. This will show, firstly, that there was a clear division of opinion between commentators, some of whom felt that the appearance (exogenously) of specie, particularly from the New World, was responsible for the rise in prices, while others argued that prices were being driven upward by internal pressures, particularly of population, resulting in frequent shortages of money to which the imports of gold and silver were a response.

Section 3 attempts to offer a modern interpretation of the inflation experience between 1520 and 1640. It concentrates on the possibility that that inflation episode was an endogenous phenomenon. It argues that while it is well known that contemporary analysis of European monetary upheavals in the fifteenth and sixteenth centuries recognised the possibility that specie inflows were, exogenous, causing prices

to rise, this was based upon doubtful empirics and confused theory. By contrast, there were alternative views which recognised that monetary growth was induced by demand pressures. In the light of current scholarship, such views were well founded.

Finally, Section 4 summarises and concludes.

2. Inflation in Tudor and Stuart England

‘At its simplest, the price history of the four or five centuries before 1700 may be described as two periods of marked and prolonged inflation either side of a fifteenth century characterised by stagnant, or even falling, prices’ (Mayhew 1995: 238). From about 1520, a steady upward trend emerged by the end of which, in the 1640s, the general price level had increased about fivefold (Phelps-Brown and Hopkins 1956).² All the difficulties confronting the construction and interpretation of modern price indices are inevitably increased when we try to chart movements so far in the distant past. But there is no doubt that prices generally rose quite dramatically in this period and that while we might quibble about starting and ending dates, the period was remarkable when compared with the era of price stability which preceded it.

Inevitably, such a distinctive period has captured the attention of historians and much of their analysis has been conducted within a modern theoretical framework, which can be seen in particular in the way in which explanations incline towards either the ‘monetary’ or the ‘real’ (Outhwaite 1982; Mayhew 1995; Wrigley and Schofield 1989; Volckart 1997).

More interesting for us, however, are the contemporary reactions and explanations. Contemporary comment on the ‘great inflation’ was well aware of the possibility that monetary developments might be responsible for the upward price trend. The idea was promoted in two forms: currency debasement³ and the inflow of specie.

The first, which was fashionable in the middle years of the sixteenth century, shortly after the inflation got under way, was an argument that the systematic debasement of the currency under Henry VIII was largely responsible.⁴ One contemporary source for this view is the treatise, originally written by John Hales in 1549, titled *A Discourse of the Common Weal of this Realm of England*. However, it was not printed until 1581 with significant modifications which we shall come to later. The *Discourse* is constructed as a dialogue between a ‘Doctor’, as the source of wisdom and a ‘Knight’ posing the questions as an intelligent layman. In a famous passage, the Doctor says:

... and now I must come to that thinge ... which I take to be the cheife cause of all this dearth of thinges, and of the manifest impoverishment of this Realme, and might in breife time be the distruction of the same, yf it be not the rathere remedyede, that is the basinge or rather corruptinge of oure coine and treasure ...

(Tawney and Power 1953, III: 305)⁵

When the Knight asks ‘Now what remedie for all these thinges?’, he is told that ‘... all the coyne nowe curraunte should be after a certayne day not currant’ and the Doctor explains at length the principles to be established in the restoration of the coinage (Tawney and Power 1953, III: 308).

The difficulty with the debasement argument was that steps were taken to restore the value of the currency in 1560 and 1561 and yet prices continued to rise. Significantly, therefore, in the printed, 1581, version, the Knight’s question is replaced by a recognition of this difficulty:

If this [debasement] were the chiefest cause of the dearth... how cometh it to passe... that the pryces of all thinges fall not backe to theyr olde rate... whereas our english coyne... hath bene again thoroughly restored to his former purity and perfection?

The Doctor’s reply is twofold. First, the period of debasement disadvantaged landowners drawing income from rents set prior to the fall of the exchanges. As the leases came up for renewal, they responded with a vengeance. ‘... this rackynge and hoysing up of Rentes hath continued euer since that tyme, vntill this present day.’ The price rise initially caused by depreciation is thus converted to a long-term increase in one of the most basic costs of production for an agricultural economy.

The second part of his reply is the earliest statement (in English) we have of the effects of bullion imports.

Another reason I conceiue in this matter, to be the great store and plenty of treasure, which is walking in these partes of the world, far more in these our dayes, than euer our forefathers haue sene in times past. Who doth not vnderstand of the infinite sums of gold and siluer, whych are gathered from the Indies and other countries, and so yearly transported vnto these costes.

(Tawney and Power 1953, II: 310)

This shift in emphasis between the 1549 and 1581 versions of the *Discourse* is interesting. Outhwaite (1982: 24) claims that the later passages were added by Sir Thomas Smith, but Tawney and Power (1953: 305) attribute the changes to his nephew, William Smith, who, they say, was long credited with authorship of the whole. The significance of this difference is that Sir Thomas Smith had been ambassador to Paris and was something of a monetary enthusiast.⁶ Given this information, it is quite plausible that Smith was acquainted with the ideas of Jean Bodin, French philosopher and monetary expert. Bodin (1997) recognised that specie from the New World could be causing inflation in Europe and published his views in 1568, nineteen years after Hales’ original draft but thirteen years before its first printing. The oft quoted passage from Bodin runs:

I find that the dearness which we see today has {three} [some four or five]⁷ causes. The main and almost the only cause (which no one has

mentioned until now) is the abundance of gold and silver, which is greater in this kingdom today than it has been during the last 400 years.
(Bodin 1997: 59)

Logically, Bodin's argument consists of two strands. The first step requires him to establish constant conjunction. This he does in a wide-ranging sweep of history, starting with the conquest of Macedonia in the time of King Perseus. 'Aemilius Paulus, brought so much gold and silver into Rome that the people were exempted from paying taxes and the price of land in the Romagna instantly rose by two thirds' (ibid.: 59). In the revised edition Bodin quotes Suetonius as saying that the same thing happened when Augustus returned from the conquest of Egypt. Two other instances given are the Queen of Sheba's entry (with a windfall of precious stones) into Jerusalem and, nearer to Bodin's experience, the return of 'the Spaniard' from the New World.

It was, therefore, not the scarcity of land, which can neither increase nor decrease, nor monopoly, which cannot apply in such a case, but the abundance of gold and silver that caused the depreciation in value of these metals and the rise in the price of things.

(ibid.: 59)

Armed with the apparently universal proposition that the arrival of new money is followed by a rise in prices, the next step of course is to show that the experience of sixteenth century France was an instantiation of this general law. What is the evidence that France was undergoing, or had just undergone, a similar monetary expansion? Bodin's anticipation of Popperian logic is faultless. 'We must show, therefore, that there was not as much gold and silver in this kingdom 300 years ago as there is now; *and this can be understood at a glance*' (ibid., 1997: 60, emphasis added). The 'glance' in fact requires another extensive tour of international history. This begins with a list of kings who found it impossible in earlier times to raise funds even *in extremis*. Such was the shortage that Saladin was said to have been obliged to release Louis IX to raise his own ransom (ibid.: 60–1). How different it all was by the time that Bodin was writing. 'Now, if we turn to our own times, we find that, during a period of six months, the king raised more than 3,400,000 livres in Paris, without having to go elsewhere ...' (ibid.: 61). In the second edition, Bodin tries to strengthen his case that money had become more plentiful by citing a list of generous bequests by French monarchs to members of the royal family. The effect is marred rather by the examples all coming from the fourteenth century. (If this money were responsible for the sixteenth century inflation, then monetary shocks can have very long lags indeed.) The most potentially relevant evidence lies in a challenge to Malestroit to consult the records of the *Chambre des Comptes*, '... he will agree with me that more gold and silver has been found in France to meet the needs of the king and the commonwealth between 1515 and 1568 than could be found in the previous 200 years' (ibid.: 63) – but no figures are given.

Bodin's status in the history of the quantity theory is reflected in the fact that Marget (1938) chose, 400 years later, to open his monumental defence of the quantity theory by saying against its critics that 'We were being asked to turn our backs upon a type of reasoning which goes back at least as far as the time of Jean Bodin' (op cit.: 9).⁸ Both the identification of Bodin with the quantity theory (strictly defined) and the claim that money's influence on prices was unknown prior to Bodin are highly questionable. However, it matters more that we know that exogenous increases in the money supply were being advanced, as early as the 1540s, for a rise in the general price level and that subsequent scholarship has been prepared to recognise this contemporary explanation as lying within the quantity theory tradition.

By 1601, monetary expansion was circulating widely as the explanation of contemporary inflation:

According to the plentie or scarcitie of the money then, generally things became dearer or good cheape, whereunto the great store or abundance of monie and bullion, which of late years is come from the west Indies into Christendom, hath made everything dearer according to the increase of monie, which ... hath caused a great alteration and inhauncing of the price of every thing.

(Tawney and Power 1953, III: 387)

This passage is taken from *A Treatise of the Canker of England's Common Wealth ...* by Gerrard De Malynes who, although possibly of French extraction, was an English merchant. As Outhwaite says, 'This is pure Bodin' (Outhwaite 1982: 25).⁹

3. A modern interpretation

The question is, what are we to make of it all as an early parallel of later debates about the causal role of money and its endogeneity or exogeneity?

On the face of it, it is tempting to see the specie explanation as an obvious early example of a sharp increase in an exogenously determined money supply working its way through the economy on quantity theory lines. This is clearly what Bodin and other contemporaries intended and it fits naturally with more modern views which see commodity money as unambiguously exogenous (e.g. Niggle 1991) and endogeneity as being the outcome of the increasing sophistication of banking systems. The debasement argument is slightly less clear-cut. After all, debasements have their origin in a shortage of the medium of exchange. It may often be that the shortage is felt most acutely by the Crown, and most frequently for military adventures, but this is only an early version of a prior increase in demand requiring an increase in the medium of circulation. If we define endogeneity as the situation where the money stock responds to an increase in demand, then debasement, in a world without banks, is one obvious response to a

pre-existing shortage of currency brought about by many possible causes. But why stop there? In a world of commodity money an upper limit to the money stock is of course set by the total amount of precious metal available. But only a fraction of what was available, in the sense of having been mined and melted, was ever used as a circulating medium. In the event of extreme shortage, the melting and coining of plate and other decorative objects could introduce some elasticity into the money supply.

And the specie explanation, on closer examination, is not much different. It is tempting to see the output of gold and silver mines, half-way round the world, arriving in Europe like helicopter money. But it does not appear without reason. If a country runs a balance of payments surplus, it must expect (in the sixteenth and seventeenth century) to receive the surplus in specie. A booming economy experiences many shortages, one of which is currency, and this is met by imports of gold and silver.

From a present day perspective, where we think we can trace the endogeneity of money to the behaviour of banks, it is tempting to make banks a necessary condition. But if endogeneity means only that the quantity of money responds to demand, then there are many ways, of which we have mentioned just three, in which even commodity money can provide an example of monetary base endogeneity, increasing in response to trade demands. And there were those in the sixteenth and seventeenth centuries who were prepared to argue that this was exactly what was happening – at least that real trading conditions were responsible for the rising prices.

The most suitable non-monetary explanation for long-term trends was the contemporary rate of population growth. We have known for some time that the period from 1550 to 1625 was one of rapid population growth in England (Wrigley and Schofield 1989: 210–11). Population growth rates of 3–4 per cent per annum were not to be seen again after 1630 until the end of the eighteenth century. It was this rapid expansion and its effects upon food prices in particular that provided suggestive evidence for Malthus's *Essay*. More formally, Wrigley and Schofield (1989, chapter 10) have modelled the population growth – inflation relationship for the period 1541–1871 showing a very strong positive relationship until the mid-nineteenth century. The mechanism connecting population growth with price inflation, especially of consumables, is straightforward and was readily recognised at least by some contemporaries. In 1576, Lord Burghley received an application, from Alderman Box, to cultivate waste ground. The application begins with a sweeping history of agricultural overproduction but then turns to the newly changed situation.

Ther is a sayinge ... that corne and other victuall grewe to be so good cheape, that they dyd suffer their plowes to decay and their grounds lye waste [rather] then to plowe their grounde and sell their corne and other victuall, so cheap as it was then. ... But nowe the tyme is alterid, and is otherwise to be considerid. For the people are increasid and grounde for

plowes dothe wante, Corne and all other victuall is scante, many straingers sufferid hear, which make the corne and victuall deare. ... The husbände man would be glad to have grounde to set his plowe to worke yf he knew wher.

(Tawney and Power 1953, I: 74)

With rising population putting pressure on agricultural prices, there were many commentators prepared to argue that other prices must necessarily follow suit. The tin industry, for example, was itself subject to rising demands which pushed extraction into deeper and more costly locations, but some of its inputs were agricultural in origin. Tin prices were rising because of ‘... the derth of Tymber to bynde the mynes from fallinge, and of woods to make coles for melting the tyn, also ther chardges encreaseth muche by drawinge the water yerlye deper ...’ (Tawney and Power 1953, I: 285). Although he was satisfied that it was the inflow of specie which was the original cause of rising prices, even the author of the *Discourse* was also aware that high prices in one area of activity could mean high prices elsewhere, ‘And what things can be chepe when victuall and Cloth is Deare?’¹⁰

There were, therefore, contemporaries who regarded the rise in prices as the outcome of long-term shifts in the balance between demand and supply, demand expanding largely because of the growth in population.¹¹ Output was lagging behind demand because of low labour productivity in the agricultural sector. This supports the argument that inflation at that time had already materialised *before* the monetary shocks from the New World. Insofar as contemporaries were also presumably aware of the inflow of specie and the tendency of Bodin and others to make this inflow *the* causal explanation of rising prices, one might have expected them to take the next step and identify the inflow and an increase in currency supply as an endogenous response to prices being driven upward by the ‘state of trade’. Explicit statements to this effect are lacking, however. There may be an *implicit* argument that the behaviour of money was an endogenous response but it is never quite completed. This is the more surprising because the one piece of evidence which their argument needed – namely evidence of tight money – was there. It was most clearly present in the outburst of complaints about usury and excessive interest rates from the 1560s onward. A usury bill prohibiting interest in excess of 10 per cent was introduced in 1571 and cases of prosecution for its breach seem to have arisen at regular intervals through the remainder of the century.¹² Further ‘... long and persistent complaints about the shortage of money ...’ (Outhwaite 1982: 52) are documented in Miskimin (1964), but contemporary supporters of a *real* explanation for the Tudor and Stuart inflation seem not to have seen their significance.

If, over time, the money supply adjusts fully to prior changes in demand, then we would expect to see a long-run constant velocity. If the adjustment is only partial or lagged, then the trend in velocity will be upward. What it cannot do, of course, is decline. A fall in velocity is consistent only with an externally imposed, undemanded, increase in the money stock.

Recent work on the monetary history of the period confirms this shortage and reveals a sequence of events wholly incompatible with the inflow of specie as the cause of rising prices. Mayhew (1995, table 1) provides estimates of velocity at nine dates between 1300 and 1700. Over the whole period, the trend is slightly downward but the figures show a quite remarkable jump from 3.571 (1526) to 5.517 (1546) to 9.310 (1561), declining then to 6.286 (1600) but falling back to long-term orders of magnitude (*c.* 3.5) only by 1643. In the early stages of the inflation, therefore, there appears to be a distinct shortage of money. ‘Moreover, there can be little doubt that but for the arrival of very large quantities of silver at the London mint throughout Elizabeth’s reign, deflationary pressures would have become very severe.’ (Mayhew 1995: 251). Both the shortage and the rise in velocity to which it gave rise are confirmed by estimates of the money stock from 1526 to 1561 which put it unchanged at *c.* £1.45m (Mayhew 1995, table 2; Challis 1992). Over the same period, prices more than doubled (see above, note 7). A perfectly endogenous money supply, responding instantly and fully to shifts in demand, suggests a constant velocity. The fact that velocity was rising and that contemporary comment testifies to a shortage of currency, suggests that adjustment was to some degree impeded. But it suggests even more strongly the impossibility of *excess* money driving up prices.

4. Summary and conclusions

It is widely recognised that the concept of an endogenously determined money supply underlay selected monetary debates in the nineteenth century. What we have tried to explore here is the thinking of contemporaries exposed to a much earlier monetary upheaval, the ‘great inflation’ in Europe of the sixteenth and seventeenth centuries.

One interpretation, probably the best known, is that increased inflows of New World treasure caused prices to rise. As regards evidence, however, this argument suffered from the same weaknesses that have since been exposed in Hamilton’s later (1928, 1934) version. More interestingly, and what we have shown here, is that the contemporary *theoretical* basis for this point of view was also fragile in the extreme. Contemporaries cited the French monetary theorist, Jean Bodin, as authority for the mechanisms whereby money exogenously caused prices. Bodin certainly claimed this, but was confused once he got down to detail. He was confused between relative and absolute price-relevant mechanisms and between money as cause and effect. This should pose a problem for those who want to see Bodin as an early quantity theorist.¹³ For us, however, it shows that while some contemporaries certainly thought the inflation to have been caused by exogenous additions to currency, their case rested on weak empirical evidence and, in relying on Bodin, upon ambiguous intellectual foundations.

However, there were some contemporaries prepared to put the rise in prices down to increasing demand, itself resulting from a growing population, in which the role of money was to enable the growth in trade to occur. There was no

obvious contemporary theoretical champion of this view, though it is consistent with the ideas, later, of Malthus. It was the outcome of the observations of practical men – merchants and traders – of the period. Importantly for us, this view of money is lent further credibility by recent scholarship which shows that the chronology of prices, money, output and velocity suggest a demand for money leading supply.

Notes

- 1 We are grateful to Forrest Capie, Victoria Chick, David Cobham, Paul Davidson, Charles Goodhart, David Laidler, Angus Maddison and Malcolm Sawyer for very helpful comments on an earlier draft. The usual disclaimers apply.
- 2 Mayhew (1995, table 1) gives the following estimates of the price level at selected dates based upon Phelps-Brown and Hopkins (1956): 1300=104.8; 1470=104.6; 1526=135.1; 1546=172.3; 1561=289.3; 1600=478.3; 1643=597.8. It is not clear from the table what is the base year.
- 3 The reasons for the systematic debasement of the coinage can be traced to those which lay also behind the Henrician dissolution of the monasteries (which began in 1534): 'Finance is indeed the key to the proper understanding of the dissolution' (Woodward 1993: 4).
- 4 The mint price of 1lb weight of fine silver rose from £2.40 to £6.00 between 1542 and 1551 (i.e. 150 per cent). By March 1542 the silver standard was 75 per cent of the original pure sterling silver standard, 50 per cent by March 1545, 33.5 per cent by March 1546 and 25 per cent in 1551 (Davies 1994: 199).
- 5 The fullest version of the *Discourse* is that edited by E. Lamond (London, 1893). Throughout this paper we give references to the more recently published and more readily available versions. In all quoted extracts we have the spelling of the source from which we have quoted.
- 6 Sir Thomas Smith's claim to authorship is extensively discussed in Dewar (1966).
- 7 Depending upon the version. See the discussion in Section 3 below.
- 8 Keynes, both of the *Treatise* and the *General Theory* was his main target.
- 9 Bodin seems to have been subject to considerable plagiarism, see De Roover (1949, especially pp. 83–4).
- 10 Tawney and Power (1953, III, 320). For similar causes cited for recent inflationary periods see the OECD (McCracken Report) *Price Stability and Full Employment* (1977).
- 11 Youings (1984: 304) argues that 'the growth of population, itself the main cause of the increase in prices, ensured that those who suffered most were those most dependent on the earnings of wages'. Population in Britain was 2 million in 1450 and by 1600 jumped to 4 million (Davies 1994: 214). Its distribution changed too, with a pronounced urban drift, especially to London.
- 12 For details of the bill, see Tawney and Power (1953, II: 154–63) and for subsequent infringements (*ibid.*: 163–75). Other sources of contemporary comment on the practice of usury are contained in Tawney and Power (III: 345–86). The interest rates in question were, of course, nominal rates. It is at least theoretically possible that nominal rates were pushed by inflationary expectations, rather than tight money, real rates being largely unchanged. This seems unlikely in view of additional evidence about the 'shortage of money' (see *infra*).
- 13 The controversy over the originality of Bodin's ideas also appears in Munroe (1966, especially pp. 56–7), Hamilton (1928) and Hauser (1932). The phrase 'the quantity theory of money' did not become current until the late nineteenth century. The classic account of the early development of the theory is still Viner (1937). For a more recent discussion of the ideas underlying (and attacking) the quantity theory and their development since the eighteenth century, see Laidler (1991).

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THE ENDOGENEITY OF MONEY

Charles Goodhart

1. Introduction

It is often said that most of economics is built around two key concepts, demand and supply. Yet David Laidler has just edited a three volume tome on *The Foundations of Monetary Economics* (1999) with no section relating to the supply of money. There is a lengthy section (part IV) on ‘Theories of the Demand for Money’ with twelve constituent articles, and a somewhat shorter section (part V) on ‘Empirical Studies of the Demand for Money’, including five eminent papers; but issues relating to the supply of money appear only in a scattering of papers included under other headings. Does this not seem rather odd?

If Laidler had included a section on the supply of money, one of my preferred candidates¹ for inclusion would have been Victoria Chick’s paper on ‘The Evolution of the Banking System and the Theory of Saving, Investment and Interest’. In this Vicky argues persuasively that the factors determining the stock of bank deposits (the largest component of the money supply) have been institutionally determined and time varying. She claims that the monetary base multiplier is only applicable for some of the earlier stages of banking history, being superseded once the central bank seeks to, and succeeds in, establishing a chosen level of short-term interest rates in the economy.

Thus she writes (p. 197):

If a policy of stable interest rates is in place, however, reserves virtually disappear as a constraint on bank behaviour. Banks are now able to meet any reasonable rise in the demand for loans. Deposits will rise as a result and the shortfall of reserves is met by the system. This mechanism has been used often enough in Britain for the Bank of England to be referred to as ‘lender of first resort’.

This mechanism became established in the UK in the 1890s, as Richard Sayers has documented,² in the USA in the 1920s after the founding of the Fed, and in most other developed countries with their own central banks in the opening

decades of the twentieth century. The key objective of central banks was to make the (short-term) interest rate that they set ‘effective’, initially for the purpose of defending their gold reserves (and hence the fixed exchange rate), but subsequently for a variety of other (domestic) objectives. Open market operations, bearing down on the reserve base of the banking system, was the means to this end, but both the institutional form of the operational exercise (e.g. the design of the weekly Treasury bill tender and the access of the system to direct central bank lending) and the quantitative day-to-day decisions on the operations themselves, were invariably designed with a view towards making the central bank’s chosen key short-term rate effective in determining the set of other shorter-term market rates, and *not* in order to achieve any predetermined level of monetary base (high-powered money, H).

If the central bank decides to set the interest rate (price) at which reserves are to be made available, then the volume of such reserves becomes an endogenous choice variable of the private sector in general, and of the banking system in particular. As Vicky notes, the causal chain becomes as follows:

- 1 The central bank determines the short-term interest rate in the light of whatever reaction function it is following, perhaps under instructions from the government.
- 2 At such rates, the private sector determines the volume of borrowing from the banking system that it wants.
- 3 Banks then adjust their own relative interest rates, marketable assets, and interbank and wholesale borrowing to meet the credit demands on them.
- 4 Step 3 above determines both the money stock, and its various sub-components, e.g. demand, time and wholesale deposits. Given the required reserve ratios, which may be zero, this determines the volume of bank reserves required.
- 5 Step 4 then determines how much the banks need to borrow from, or pay back to, the central bank in order to meet their demand for reserves.
- 6 In order to sustain the level of interest rates set under step 1, the central bank uses OMO, more or less exactly, to satisfy the banks’ demand for reserves established under step 5.

The simple conclusion is that the level of H , and M , is an endogenous variable, determined at the end of a complex process, mostly driven by up-front concern with, and reactions to, the ‘appropriate’ level of short-term interest rates. This has been so, almost without exception, in all countries managing their own monetary policy for almost the whole of the last century, in the UK for even longer. Yet what economic textbooks, and teaching, have presented, again virtually without exception, is a diametrically opposite chain of events, broadly as follows:

- 1 The central bank sets the volume of the monetary base (H) through open market operations. This is usually treated as an ‘exogenous’ decision, not related to some feedback from other economic variables.

- 2 The private sector then determines the money stock via the monetary base multiplier, i.e.

$$M = \frac{(1 + C/D)}{(R/D + C/D)},$$

- primarily dependent on portfolio choices between currency and deposits and (amongst the banks) on the desired reserve ratio. Insofar as interest rates play any role in this process, they enter here.
- 3 Little, or no, attention is given to the question of how the banks' balance sheets balance, i.e. what brings their assets into line with their deposits. The usual (implicit) assumption is that banks can always adjust to the stock of deposits given in step 2 by buying, or selling, marketable assets, e.g. government bonds.
- 4 With the supply of money given by steps 1 and 2, the level of the short-term interest rates is then determined through market forces so as to bring about equilibrium between the demand and the supply of money.

This, alas, is not a caricature. Indeed it represents a reasonable description of how most of us continue to teach the derivation of the *LM* curve, within the *IS/LM* model which remains at the core of most first-year macroeconomic courses. Indeed this is how the determination of the money supply is introduced in macro-models in most of the current leading textbooks.³

Victoria Chick has been one of the relatively few economists to emphasise the error that the economics profession has persisted in making.⁴

2. What have been the practical policy implications of assuming that the monetary authorities set *H*, not *i*?

It would, nevertheless, be quite difficult to prove that this wrong view has had significant deleterious effects on actual policy decisions. Treating *H*, or *M*, as set by policy, and *i* as endogenously determined, was always more used pedagogically and in (abstract) theory. When discussion turned to actual policy decisions, as undertaken by Ministers of Finance and Central Banks, it was generally recognised that the short-term interest rate was the key decision variable, even by those most prone to treat *i* as an endogenous, market-determined variable in their own analytic work. I shall, however, argue in Section 3 later that this mix-up confused the issue of how the authorities *should* set interest rates.

There was, of course, the celebrated case when Volcker, and the US Fed, adopted the language of monetary base control, during the years of the non-borrowed reserve target (1979–82), to help them achieve levels of interest rates that were thought both necessary (to rein back inflation) and also above the political tolerance level of Congress (if presented as chosen directly). The facts that required reserves were related to a lagged accounting period; that the banks could

always access additional reserves via borrowing from the discount window; that there was a reasonably well-established relationship between such borrowings and the interest differential between the Fed Funds rate and the official Discount rate; and that there were (almost entirely unused) limit bands to constrain interest rates if one of the above relationships broke down; all these, if properly analysed, reveal that the Fed continued to use interest rates as its fundamental *modus operandi*, even if it dressed up its activities under the mask of monetary base control. The scheme succeeded in its short-run objective of getting interest rates levered up enough to restrain and reverse inflation. Nevertheless there was a degree of play-acting, even deception, which became, if anything, worse, and with less excuse, during the subsequent period of targeting the level of borrowed reserves.⁵

The excuse was, of course, that Congress, possibly also the President, would not have abided the level of interest rates necessary to restrain inflation. Indeed, a persistent theme of political economy in the post-war world is that politicians have been reluctant to accept levels of (increases in) interest rates sufficient to maintain price stability.⁶ The present fashion for central bank independence helps to resolve this problem by having the politicians set the target for price stability, and have the monetary policy authority use its technical judgement and abilities to set the interest rate independently.

Be that as it may, the argument that the monetary authorities could set M , by varying H via open market operations, through a multiplier process which did not explicitly mention interest rates at all, did lead some politicians, persuaded of the close links between monetary growth and inflation, to become confused about the nexus of interactions between money, interest rates and economic developments. In 1973, Prime Minister Heath, who was both sensitive to rising interest rates and rattled by 'monetarist' attacks on the rapid growth of £M3, ordered the Bank of England to find a way to restrict monetary growth without bringing about any further increase in interest rates; hence the advent of the 'corset'. Similar policy decisions have, no doubt, occurred elsewhere.

Mrs Thatcher was more of a true believer in the importance of monetary control. It is to her credit that she always refused to countenance direct (credit) controls. Nevertheless the difficulty of sorting out the money supply/interest rate nexus was clearly apparent in the numerous fraught meetings with Bank officials in the early 1980s. The initial part of the meeting would usually consist of a tirade about the shortcomings of the Bank in allowing £M3 to rise so fast; were Bank officials knaves or fools? Then in the second half of the meeting, discussion would turn to what to do to restrain such growth. In the short run with fiscal policy given, and credit controls outlawed, the main option was to raise short-term interest rates.⁷ At this point the whole tenor of the discussion would dramatically reverse. Whereas earlier in the discussion Mrs Thatcher would have been strong on the need for more radical action on monetary growth, and the Bank on the defensive, when the discussion shifted to the implications for interest rates, the roles suddenly reversed.

Central banks have perceived quantitative limits on monetary base as a sure recipe for far greater volatility in short-term interest rates, raising the spectre of systemic instability in those (spike) cases where the commercial banks come to fear that they may not be able to honour their convertibility guarantee. On various occasions the proponents of monetary base control either ignore entirely the implications for interest rates; or argue that greater interest rate volatility is both necessary and desirable to equilibrate the real economy; or that the market would find ways of adjusting to the new regime so that interest rate volatility need not be significantly greater, while the time path of such varying rates would be more closely attuned to the needs of the 'real' economy. My own fear had always been that the politicians would come to believe that monetary base control could allow them tighter control of H , and M , without any commensurate need for more volatile, and uncontrolled, variations in i .

In the event, issues about the appropriate mechanisms for the modus operandi of monetary policy, monetary base control or interest rate setting, were too technical and abstruse to generate much public interest or political momentum. The number of senior politicians who were prepared to allocate time to learn about the issues has been small. In these circumstances the continued and determined opposition of central banks, and the main commercial banks, to any such proposal has been decisive; though there was a formal debate, and Green Paper, on this subject in the UK in 1980, see Goodhart (1989).

3. What have been the analytical implications of assuming that the monetary authorities set H , not i

In the eyes of its admirers, one of the virtues of the monetary base multiplier is that it shows how the money stock can be expressed as a (tautological) relationship with only three variables, H , C/D and R/D . Insofar as interest rates, credit expansion and commercial bank adjustment to cash flows on its asset and liability books are involved, it would appear that these latter variables only matter insofar as they explain either H or C/D or R/D , and it is not immediately obvious why they should do.

But this simplicity is misguided and misleading. Once one recognises that the monetary base multiplier actually works to determine H , not M , then both a richer, and a properly realistic, analysis of money stock determination becomes necessary. One of the failings of the assumed process whereby $H \Rightarrow M \Rightarrow i$ is that it encourages one to ignore the interaction between (bank) credit and monetary growth, and similarly to ignore the question of how banks' balance sheets come to balance (how does a commercial bank adjust to asymmetric cash flows?).

With both the central bank and the commercial banks acting as interest rate setters and quantity takers, the commercial banks have to finance the demand for loans at the rates chosen by themselves. So the expansion of bank credit and of bank liabilities are intimately connected both with each other, and to the level and structure of interest rates, e.g. the pattern of interest rate differentials.

Of course, bank lending (L) and bank deposits (D) can temporarily diverge, when banks finance loan extension from non-deposit liabilities (equity, or various forms of non-deposit debt liabilities, or fixed interest liabilities, e.g. from non-residents, excluded from the monetary aggregates), or by adjustments in their marketable (liquid) assets. But such adjustment mechanisms are both limited, and usually temporary; L and D are cointegrated. For those who start by noting that central banks set interest rates, the credit expansion consequences are both intimately related to the monetary growth outcome; and the implications of credit growth and availability are just as, or more, important for consequential economic developments as the monetary outcomes. Moreover it is the demand for credit, at the interest rate chosen by the central bank, that is the prime moving force. Besides Victoria Chick, economists in this group include Bernanke, Stiglitz (and myself).

Let me, however, digress briefly to comment on two important aspects of the monetary debate where such misperceptions have no adverse effects whatsoever. The first concerns studies of the demand for money. If the money stock was actually determined by the authorities 'exogenously' setting the monetary base, while at the same time the C/D and R/D ratios remain relatively stable over time (as many monetarist economists, such as Rasche and Johannes (1987), posit), then it would be extraordinarily unlikely to find the current level of the money stock (M) significantly related to lagged levels of incomes and interest rates. Yet this is what such regressions typically find. Instead, if the authorities did set H exogenously, the appropriate regression would surely have been to have the level of short-term interest rates as the (endogenous) dependent variable, reacting to current and lagged levels of incomes and money supply. Such equations, however, typically fit extremely poorly. Of course, the authorities could have set H (as they do set i) according to some reaction function, so the interpretation of the so-called 'demand for money functions' remains clouded.

By contrast, if the authorities set interest rates, and do so with reference to some factors (exogenous or endogenous) besides current and lagged prices and output, then current and lagged levels of interest rates (and rate differentials) are appropriate explanatory variables in a demand for money function. Indeed, I would argue that the standard format of the demand for money function becomes justified insofar as the authorities set interest rates, and would *not* be so in those cases when the authorities might set the monetary base.

The second issue relates to the use of monetary aggregates as intermediate target variables. The fact that the money supply (and the monetary base) are endogenous variables has, in my view, no necessary bearing on the question of whether monetary aggregates have good indicator properties, and stable relationships, with current and future movement of incomes (or components of expenditures, such as consumption) and prices (and inflation). The argument that inflation is everywhere, and at all times, a monetary phenomenon is entirely unaffected by the issue of whether a central bank fixes the interest rate (i), or the high-powered monetary base (H). Similarly the question of whether the thrust

(or impetus) of monetary policy is better gauged by looking at levels of (real?) interest rates or by some measure of monetary growth is unaffected by the nature of central bank operations; this is currently an issue in the assessment of Japanese monetary policies. For what little it may be worth, I confess to considerable sympathy for the monetarist case on this front, especially where assessment of levels of real interest rates is complicated by unusual, or extreme, pressures of deflation (e.g. Japan) or inflation (e.g. former Soviet Union). Finally, note that the Bundesbank, and subsequently the ECB, chose a monetary aggregate target as 'a pillar' of their policy while absolutely appreciating that what they have used as their week-to-week operational instrument has been the level of short-term interest rates, *not* the monetary base.

Nevertheless the question of what the central bank actually does in its operations leads to very different views of the process of monetary (and credit) growth. The (correct) assessment that central banks set interest rates naturally leads on to a credit view, that credit expansion is a vital, central feature of the monetary transmission process. The (incorrect) belief that central banks actually set the level of the high-powered monetary base goes hand-in-hand with a belief that monetary analysis could, and should, be separated from, and is more important than, analysis of credit expansion. Does it matter that this, in my view invalid, doctrine has been influential, and prevalent, among leading monetary economists, especially in the USA? How could one try to answer that question?

The fact that central banks choose to set i , not H , has also led to confusion amongst those who do not properly distinguish between an 'exogenous' variable, and a 'policy-determined' variable. An exogenous variable is one which is not set in response to other current, or past, developments in the economy, e.g. it is fixed at some level irrespective of other developments, or is varied randomly according to the throw of a dice, or the occurrence of sunspots, or whatever. It would be extraordinarily rare, and stupid, for economic policy to be set in such an 'exogenous' way. Instead, virtually all economic policy is set in most part in response to other current, or past, or expected future economic developments. The key question is then whether the regular feedback relationships involved in such reaction functions are appropriate.⁸

At one time there was a tendency, perhaps, among economists who thought that monetary base control either was, or should be, the adopted monetary policy mechanism, to elide the distinction between a policy-determined, and an exogenous, variable. It can easily be shown that, should interest rates be set 'exogenously', then the price level is indeterminate, whereas if the monetary base is set 'exogenously' the price level is determinate (see Sargent and Wallace 1975). In reality, this has no important implications for policy whatsoever since no central bank would ever consider setting the interest rate 'exogenously', but for a long time this was somehow meant to prove that the policy of setting H was preferable to that of setting i .

This state of affairs, and the confusion that it has engendered for monetary policy, has been well described and analysed by Woodford (2000), who argues, as

does Svensson (1999) that if the central bank can condition its interest decisions upon an appropriate (optimal) set of variables, then this will be preferable to trying to set intermediate monetary targets, since these latter will inject unnecessary and undesirable additional noise from the variability of the demand for money functions. What is essential is to examine what is, and what should be, the central bank's conditional reaction function.

Fortunately, after decades in which monetary theorists and practical central bankers hardly spoke the same language, there has now been a major rapprochement. Woodford on theory, J. B. Taylor on reaction functions, and Lars Svensson on targetry are all theorists whose work is closely in accord with the thinking of central bank officials and economists, such as Blinder, Freedman, Goodfriend and King. The yawning chasm between what theorists suggested that central banks should do, and what those same central banks felt it right to do has largely now closed.

But why did it take so long?

4. Why did the division between monetary theory and monetary practice last so long?

There has always been a division between practical bankers who see themselves as setting rates, and then responding (passively) to the cash-flow requirements of depositors/borrowers, and the views of academic economists who allot bankers a more active role in initiating changes in monetary quantities. The monetary base multiplier has been utilised, for nearly a century, as a form of description/analysis by activist academics of how banks positively create money. For the more practical bankers the monetary base multiplier (though tautologically correct at all times) should be seen as working backwards, determining H (not M).

When analysis switches to central banks, the same dichotomy reappears. Practitioners know that central banks set interest rates and accommodate short-run changes in M and H (though one, or both, or neither, of these monetary aggregates might subsequently enter the central bank's reaction function, as occurred in the case of the Bundesbank, and currently with the ECB). By contrast, academics tend, at least in their theoretical and pedagogical guises, to assume that the central bank sets H , or even more implausibly M , and that short-term interest rates are then market determined.

This latter is *not* an issue of Keynesians vs Monetarists. The activist academic analysis lies at the heart of *IS/LM*, devised by Hicks and accepted by Keynes, and subsequently treated as representing the simplest, basic core of Keynesian analysis. Meade (1934) was an exponent of the monetary base multiplier. I have sometimes felt that some Monetarists embraced the $H \Rightarrow M \Rightarrow i$ model because that is how they believed that the monetary system should (normatively) work, and they allowed their preferences to influence their vision of what actually (positively) occurred. Others, for example, Friedman and Schwartz in their monumental *Monetary History of the United States*, perhaps using the 'as if' argument, felt that the

base/bank deposit multiplier provided a simple and concise way of explaining historical developments. Yet other Monetarists feel perfectly happy with the $i \Rightarrow L \Rightarrow M \Rightarrow H$ model.

So, while my belief is that more Monetarists accept, and teach, the $H \Rightarrow M \Rightarrow i$ model, and that as you progress through Keynesian to various factions of post-Keynesians, an increasingly larger proportion reject $H \Rightarrow M \Rightarrow i$ (with many accepting $i \Rightarrow L \Rightarrow M \Rightarrow H$), it is hard to argue that the issue is primarily ideological. So what has caused academic monetary theory to be out-of-step with reality for so long?

One view of the failings of economics is that it is too abstruse and mathematical. I believe that to be wrong. In financial economics (finance) complex maths, e.g. the Black/Scholes formula and the pricing of derivatives, goes most successfully hand-in-hand with practical and empirical work. My own criticism, instead, is that large parts of macroeconomics are insufficiently empirical; assumptions are not tested against the facts. Otherwise how could economists have gone on believing that central banks set H , not i ?⁹

Insofar as the relevant empirical underpinnings of macroeconomics are ignored, undervalued or relatively costly to study, it leaves theory too much in the grasp of fashion, with mathematical elegance and intellectual cleverness being prized above practical relevance. In the particular branch of monetary theory described here, that had remained the case for decades, at least until recently when matters have been greatly improving.

5. Summary and conclusions

- 1 In their analysis most economists have assumed that central banks ‘exogenously’ set the high-powered monetary base, so that (short-term) interest rates are ‘endogenously’ set in the money market.
- 2 Victoria Chick is one of the few economists to emphasise that the above analysis is wrong. Central banks set short-term interest rates according to some ‘reaction function’ and the monetary base (H) is an endogenous variable.
- 3 This latter has been better understood in practical policy discussions than in (pedagogical) analysis, so this common error has had less obvious adverse consequences for policy decisions (in the UK at least) than for analytical clarity.
- 4 At last, after decades in which practical policy makers in central banks and academics have often been talking at cross-purposes, more recently leading theorists, e.g. Svensson, Taylor, Woodford, have been narrowing the gap between academics and practitioners.

Notes

- 1 Others would include one of the early papers on the monetary base multiplier, e.g. Phillips (1920), Keynes (1930) or Meade (1934), and Tobin’s (1963) paper on ‘Commerical Banks as Creators of “Money”’.

- 2 See Sayers (1976, chapter 3, especially p. 28). Also see Sayers (1957, especially chapter 2, pp. 8–19) on ‘Central Banking after Bagehot’.
- 3 For a current example, see Handa (2000, chapter 10); but also Mankiw, 4th edn. (2000, chapter 18), Branson, 3rd edn. (1989, chapter 15), Burda and Wyplosz (1997, chapter 9.2), and many others.
- 4 See, for example, Chick (1973, chapter 5, section 5.7), on ‘The Exogeneity Issue’, pp. 83–90.
- 5 As noted earlier, this was a function of the differential between Fed Funds rate and the Discount rate. Given the Discount rate, there is a belief that the Fed chose a desired Fed Funds rate, and then just derived the implied associated borrowed reserves target (see Thornton 1988).
- 6 There are numerous reasons for this, several of which, including those usually put forward in the time inconsistency literature, are, however, neither convincing nor supported by much empirical evidence. Nevertheless better reasons can be found, see Bean (1998) and Goodhart (1998).
- 7 This is not the place to discuss over-funding, or the implications of trying to influence the slope of the yield curve.
- 8 Since what matters for economic policy are these predictable regular feedback relationships, it is, perhaps, not surprising that econometric techniques that focus on the erratic innovations (in i , or M) to identify monetary policy impulses, e.g. in VARs, have been coming under criticism from economists such as Rudesbusch and McCallum.
- 9 This is not just apparent in monetary economics. The whole development of rational expectations theorising has appeared to proceed with minimal concern about what it actually is rational for people to expect in a world where learning is costly and time short; and about what people do expect, and how they learn and adjust their expectations. Much the same could be said for models of perfectly flexible wage/price variation, or for models assuming some form of stickiness. There remains limited empirical knowledge of what determines the speed and extent of wage/price flexibility.

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THE TRANSMISSION MECHANISM WITH ENDOGENOUS MONEY¹

David Laidler

1. Introduction

It is a time-honoured monetarist proposition that no matter how money gets into the economic system, it has effects thereafter. But, if money is the liability of a banking system presided over by a central bank that sets the rate of interest, the quantity of money must surely be endogenous to the economy: how then can it play a causative role therein? Victoria Chick was probably the first person to nag me about this, when we first met at LSE in 1961–2, at a time when very few people thought that questions about the quantity of money were worth serious discussion. Vicky and I did at least agree that ‘money mattered’, though not about much else. And so it has been ever since. But I have always learned from our discussions, so what better topic for an essay in her honour than endogenous money, and its causative role in the transmission mechanism of monetary policy?

2. The role of monetary policy

If one were to discuss monetary policy with a representative group of central bankers, they would probably agree with the following four propositions: (i) Monetary policy should be focused on the control of inflation. (ii) In the long run, the logarithmic growth rate of real income, dy/dt , is beyond their direct control – though many supporters of inflation targeting would suggest that this variable’s average value might be a bit higher were the inflation rate, dp/dt , low and stable, as opposed to high and variable. (iii) Velocity’s long-run logarithmic rate of change, dv/dt , is largely a matter of institutional change – and to that extent again beyond the direct control of policy. (iv) The critical variable determining the inflation rate, again in the long run, is the logarithmic rate of growth of some representative monetary aggregate, dm/dt . In short, they would probably assent to the following formulation of the income version of the quantity theory of money:

$$\frac{dp}{dt} = \frac{dm}{dt} - \frac{dy}{dt} + \frac{dv}{dt}. \quad (1)$$

They would also agree that, within this equation, the important action, as far as their task is concerned, involves the influence of dm/dt on dp/dt .

Were the discussion then to turn to the actual conduct of policy, however, those same central bankers would probably agree that the framework that they actually deploy in setting the day-to-day course of monetary policy was some variation on a model whose basic structure can be set out in three equations: namely, an expectations augmented Phillips curve, an *IS* curve, and a Fisher equation linking the real rate of interest that appears on the right-hand side of the *IS* curve to a nominal rate that is a policy instrument, and hence an exogenous variable. This rather sparse framework must, of course, be filled out with many details in order to become a practical vehicle for policy analysis. A serious monetary policy model will include a foreign sector, and it might well deal with the interaction of not just one real and one nominal interest rate, but of the term structure of each linked by a term structure of inflation expectations. It will also take account of complicated distributed lag relations among its variables. Setting these complications aside, however, the underlying structure looks roughly as follows:

$$\frac{dp}{dt} - \left(\frac{dp}{dt}\right)^e = g(y - y^*), \quad (2)$$

$$y - y^* = h(r, X), \quad (3)$$

$$r = i - (dp/dt)^e. \quad (4)$$

Here y^* indicates the economy's capacity level of output, the superscript e the expected value of the inflation rate, X is a vector of variables that might shift the *IS* curve, and i should be regarded as an exogenous variable whose value is set by the monetary authorities.

There is a paradox here, for this framework seems to have no role for the quantity of money! To this observation, there is a standard answer: namely, that money is implicitly in the model after all. Equations (2)–(4) may be supplemented by a demand for money function, and linked to the supply of money by an equilibrium condition. Specifically, one may write

$$m^s = m^d = m(y, i)p. \quad (5)$$

But, since eqn (2) determines p (given some historical starting value), eqn (3) determines y (given that y^* is determined outside of this inherently short-run framework), and i is an exogenously set policy variable, this extra equation adds nothing essential to the model. It tells us what the money supply will be, but it also tells us that this variable responds completely passively to the demand for money, and has no effects on any variable that might interest us.²

3. Money and inflation: Channel(s) of influence

To the extent that the quantity of money's behaviour is related to that of output and inflation, however, it seems systematically to lead rather than lag these

variables, even when allowance is made for variations in interest rates. That ought not to happen if the quantity of money is a purely passive variable, though there are at least two stories that can reconcile this fact with the foregoing model. First, money might indeed be a lagging indicator of output and prices, but the proclivity of these variables to follow a cyclical time path might produce misleading appearances. Second, forward looking agents might adjust their cash holdings to expectations about future income and prices before they are realised.

But there is a third, altogether more intriguing, possibility. The money supply might, after all, be one of the variables buried in the vector X of eqn (3), and play a causative role in the economy.³ It is this line of argument that I wish to follow up in this essay. In particular, I shall address what I believe to be the main sticking point in getting its relevance accepted, namely, the widely held belief that though one might make a plausible case for it in a system in which some monetary aggregate, for example the monetary base, is an exogenous variable, this cannot be done when it is some rate of interest that the authorities set.

Let us start from the fact, particularly stressed by Brunner and Meltzer, that the banking system and the general public interact with one another not in one market, as conventional textbook analysis of the LM curve assumes, but in two.⁴ It is not just that the public demands and the banks supply money in a market for cash balances. It is also the case that, on the other side of their balance sheets, the banks also demand, and the public supplies indebtedness in a market for bank credit. Furthermore, activities in the credit market impinge upon the money market for two reasons. First, the banking system's balance sheet has to balance, and second the public's supply of indebtedness and demand for money are parts of an altogether broader set of interrelated portfolio decisions. These involve not only public and private sector bonds, but claims on, and direct ownership of, producer and consumer durable goods as well.

The relevant arguments are most simply developed in the context of an economy in which all banking system liabilities function as money, and that is how I shall now discuss them, but I shall also argue in due course that the essential features of the case carry over to a more complex system.

Consider, then, an economy operating at full employment equilibrium, with a stable price level (or more generally, a stable and fully anticipated inflation rate) in which the banking system is happy with the size of its balance sheet, and members of the non-bank public are also in portfolio equilibrium. In that case, the real rate of interest must be at its *natural* level at which the term $(y - y^*)$ in eqn (3) above is zero. Now let the central bank lower the nominal and therefore, given the expected inflation rate, the real rate of interest at which it makes high-powered money available to the banks. These will then lower the nominal and real rates of interest at which they stand ready to make loans to the non-bank public, thus disturbing portfolio equilibria among this last group of agents. They will wish to increase their indebtedness to the banks, but not, as conventional analysis of the LM curve would seem to have it, simply to add to their money holdings.⁵

As Hawtrey (1919: 40) put it, ‘no-one borrows money in order to keep it idle’. The fall in the interest rate at which the banks offer loans will disturb not just the margin between money balances and other stores of value, but also, and crucially, that between indebtedness to the banking system and desired stocks of durable goods. The non-bank public will, then, be induced to borrow money, not in order to hold it, but in order to spend it. Now, of course, this initial response is captured in eqn (3) of the simple model with which this paper began which describes the link between aggregate demand and the (real) rate of interest. This effect is only the first round consequence of an interest rate cut for spending, however. The money which borrowers use to buy goods is newly created by the banks, and though it leaves their specific portfolios as they spend it, it nevertheless remains in circulation, because it is transferred to the portfolios of those from whom they buy goods. Credit expansion by the banks in response to the demands of borrowers, even though it involves transactions that are purely voluntary on both sides, nevertheless leads to the creation of money which no one wants to hold.

At first sight this seems paradoxical, but money is, above all, a means of exchange, and what we call the agent’s demand for money does not represent a fixed sum to be kept on hand at each and every moment, but rather the average value of an inventory around which actual holdings for the individual will fluctuate in the course of everyday transactions. In a monetary economy, the typical sale of goods and services in exchange for money is not undertaken to add permanently to money holdings, but to obtain the wherewithal to make subsequent purchases of other goods and services. Only at the level of the economy as a whole will fluctuations in individual balances tend to cancel out. However if we start with a situation in which everyone’s money holdings are initially fluctuating around a desired average value, so that, in the aggregate, the supply of money equals the demand for it, the consequence of an injection of new money into circulation will be the creation of a discrepancy at the level of the economy as a whole between the amount of money that has to be held on average and the amount that agents on average want to hold, an economy wide disequilibrium between the aggregate supply and demand for money.

The consequence of this disequilibrium must be that, again on average, agents will increase their cash outlays in order to reduce their holdings of money. For the individual agent the destination of a cash outlay undertaken for this purpose is irrelevant to its accomplishment. That agent buys something, or makes a loan, or pays off a debt to another agent, or pays off a debt to a bank, and gets rid of surplus cash in each case. From the perspective of the economist looking at the economy as a whole, however, the agent’s choice of transaction, and hence the destination of the cash outlay, is crucial. Specifically, if that destination is a bank, as it would be, for example, if the agent decided that the most advantageous transaction available was to pay off a loan, excess cash is removed from circulation. If, on the other hand, the transaction is with another non-bank agent, portfolio disequilibrium is shifted to someone else. In the first case the economy’s money supply is reduced, and in the second case it remains constant, and hence has further consequences.

In principle, either type of response can dominate the second-round effects of a cut in the rate of interest, but with very different implications for the transmission mechanism of monetary policy. If, predominantly, money disappears from circulation at this stage, as bank debts are reduced, the overall consequences for aggregate demand of a cut in interest rates are dominated by the response of output to a discrepancy between the actual and natural rate of interest, the effect captured by the parameter h in eqn (3). If it mainly remains in circulation, however, portfolio disequilibria will persist, as will their effects on expenditure, until some argument of the demand for money function, the price level say, moves to adjust the demand for nominal money to its newly increased supply.

Let us refer to the first-round effects of the interest rate cut as working through a *credit channel* and the second and subsequent round effects as working through a *money channel*.⁶ Let us also agree that, in general, monetary policy can work through both channels, and that in particular times and places one or the other might dominate. Milton Friedman (e.g. 1992, chapter 2) has frequently asserted that no matter how money gets into circulation, its effects are essentially the same, that the method of its introduction makes, at the most, a small difference and only at the first round. In terms of the foregoing discussion, he should be interpreted as asserting that, as an empirical matter, the money channel dominates the transmission mechanism. On the other hand, in the model which Knut Wicksell (1898, chapter 9) used as the formal basis for expounding his pure credit economy, the bank deposits created at the beginning of the period of production, which is also the period for which bank loans are granted, all find their way into the hands of agents for whom the best course of action is to extinguish bank debt at the end of the period. In Wicksell's model, therefore, the credit channel is the only one at work.

It should now be clear why the existence of a complex modern banking system whose liabilities include many instruments that one would be hard put to classify as 'money', particularly if one takes the means of exchange role as being one of its important defining characteristics, makes no *qualitative* difference to the arguments that have been presented so far. If the money channel of the transmission mechanism is weak in a particular economy, that must be because individual agents who find themselves with excess cash typically transact with the banking system in order to rid themselves of it, and thereby reduce the money supply. In the simplest form of system in which all bank liabilities are means of exchange, this possibility already exists because agents have the option of paying off bank loans. A more complicated system provides them with more options whereby, in reducing their own cash balances, they also reduce the economy's money supply. It permits them to purchase and hold a variety of non-monetary bank liabilities. The richness of the menu of liabilities that a modern banking system offers to the public thus makes it more plausible to argue that the credit channel is likely to dominate monetary policy's transmission mechanism, but it does not make such an outcome empirically certain by any means. Indeed, the availability of such liabilities may only prolong, rather than eliminate, the working out of the money

channel, because non-monetary bank liabilities are, among other things, convenient parking places for excess liquidity, pending the formulation of plans to spend it.⁷

Now the foregoing discussion has been carried on in terms of an experiment in which equilibrium is disturbed by a policy action, by the central bank lowering the nominal and therefore, given inflation expectations, the real interest rate too. But equilibrium can also be disturbed by shocks to the natural rate of interest. Productivity shocks, or fluctuations in what Keynes called the ‘animal spirits’ of the business community, to cite two examples, can create a gap between the market and natural rates of interest and lead on to credit creation and money supply expansion just as surely as can policy engineered cuts in the market rate. Factors such as these are buried in the vector X of eqn (3) above. This consideration suggests that the workings of the money channel of the transmission mechanism can amplify, even dominate, not only the consequences of monetary-policy-induced disequilibria for private sector expenditure, but also the consequences of disequilibria whose origins lie elsewhere. Closely related, it also helps to explain the tendency of money to lead real income and inflation even in a world in which expenditure decisions are clearly subject to real disturbances originating outside of the monetary system.

4. Empirical evidence

Now it is appropriate to ask whether there is any reason to believe that the money channel as I have described it has any empirical significance. Here, I believe, the answer can be a guarded ‘yes’. Lastapes and Selgin (1994), for example, have noted that, were nominal money a passively endogenous variable, always adjusting to changes in the demand for it, one would expect shocks to the time path of real balances overwhelmingly to originate in shocks to the price level. Fluctuations in the nominal quantity of money would usually appear as equilibrating responses to changes in variables determining the demand for nominal money, rather than as factors creating disequilibria in their own right. But, analysing United States data for M2 over the period 1962–90, when many would argue that money was indeed a passively endogenous variable, they found that shocks to the nominal quantity of money were an important source of fluctuations in its real quantity.

In a slightly later study, Scott Hendry (1995) has analysed the nature of the error correction mechanisms underlying fluctuations of Canadian M1 around a co-integrating relationship that he interprets (quite conventionally and uncontroversially) as a long-run demand-for-money function. Were nominal money a purely passive variable in the system, one would expect to see these mechanisms dominated by movements in its quantity, as agents attempt to move back to equilibrium after a disturbance by transacting with the banking system. If, on the other hand, they transact with one another to a significant extent, and hence fail to remove excess nominal money balances from circulation, one would expect to see the return to a long-run equilibrium level of real money holdings also reflected in

changes in the price level. In fact, as Hendry shows, both mechanisms seem to be at work.

These results, however, do not help us to understand just what maximising choices they are that determine how much excess money falls into whose hands when, and what their best response is actually going to be. There is a gap in the analysis here, which, I suspect, it has only recently become technically feasible to fill.⁸ Specifically, I conjecture that recent developments in dynamic general equilibrium modelling provide a technical means of introducing some much-needed clarity here. The models in question, as they currently exist, are capable of dealing with interactions among the monetary authorities, a banking system, firms and households, in a framework that pays explicit attention to the timing of specific transactions between pairs of agents and the information available when decisions are made and acted upon, and also permits the imposition of a wide variety of restrictions on these activities which can significantly affect the economy's behaviour. Thus when participation in credit markets is limited to banks and firms, monetary policy has consequences by way of liquidity effects; when money wage stickiness is introduced, policy (and other) shocks can have real as well as purely nominal consequences; and so on.⁹

It ought to be possible to introduce some simple analysis of the demand for money by households into such a setup, by making utility a function of real balance holdings as well as consumption and leisure, and to supplement this with some adjustment cost mechanisms that are capable of producing 'buffer-stock' effects too. Firms too, might be given a demand for money function, perhaps by putting real balances into the productions function. And if the banking system were permitted to emit more than one type of liability, a further extension of the analysis to encompass simple portfolio decisions might be accomplished. To get at the tendency of injections of money to remain in circulation, it would also be necessary to introduce some variety among firms and households with regard to their starting level of indebtedness to the banking system too. I am sure it would not be easy to do all this, for if it were, someone would already have done it, but work along these lines does seem to me to be what is needed to fill the analytic gap to which I have pointed.¹⁰

The question naturally arises, however, as to whether such work would be worth the effort. I can think of at least three reasons why policy makers might find these matters of interest.

First, it is well known that monetary policy works with long lags. Perhaps eighteen months seem to elapse before a policy-induced interest rate change undertaken today will have noticeable effects upon the inflation rate. Some indicator variable, affected by the interest rate change, and in turn affecting aggregate demand, whose behaviour changes during the interval would surely be very useful. Potentially, the behaviour of some monetary aggregate can be the source of valuable intermediate stage information about the progress of policy, and the better understood are the theoretical mechanisms underlying that behaviour, the easier will it be to extract such information.

Second, already a problem in the United States, the United Kingdom and Canada, and soon to be a problem in Euroland too, or so one hopes, the basic framework described in eqns (2)–(4) which underlies inflation targeting policies, has been seriously undermined by its own success. Once the real economy has settled down in the region of full employment, the authorities, like everyone else, necessarily become uncertain about the sign, let alone the magnitude, of that all important output-gap variable ($y - y^*$). And this, of course, makes the whole framework set out in eqns (2)–(4) an uncertain basis for future policy. A modification to it that found a place for some extra indicator of the stance of policy would be well worth having under these circumstances.

Finally, recall that the foregoing analysis has told us that money responds not just to policy shocks, but to those originating in the real side of the economy also. Information about the occurrence of the latter, before they have an undue influence on money and prices, is surely of value to any monetary authority seeking to stabilise the inflation rate.

5. Concluding remarks

Now I referred at the outset of this paper to conversations with Victoria Chick that began nearly forty years ago. I hope that she will read this paper, and be convinced that, even though I have seldom agreed with her in the interim, I was, after all, usually listening. But if she does read it, I am sure she will remind me that there is something else that she has been trying to tell me for a long time: namely, that monetary institutions evolve over time, and that the model relevant to monetary policy in one time and place seldom remains so for long. She will also remind me that the problems that my monetarist colleagues and I have always had in pinning down a precisely defined monetary aggregate to put at the centre of our policy prescriptions is, from her point of view, simply the image that this problem projects when it is viewed through a monetarist lense.

Let me end this chapter, then, by assuring her that I have been listening to this bit of her argument too, and that the reason it is not dealt with here is that I do not have anything generally helpful to say about it. I can recommend nothing more concrete to monetary authorities who want to extract information from monetary aggregates than careful monitoring of the evolution of the particular financial systems over which they preside, and suggest nothing more hopeful than that policy designed in humble consciousness of weaknesses in its underlying framework is likely to be better formulated than that conceived in confident ignorance of them.

Notes

- 1 This paper draws on arguments developed in a specifically Canadian context in Laidler (1999). It was written during the author's tenure as Bundesbank Visiting Professor at the Free University of Berlin in the summer of 2000. It formed the basis of talks given at the Deutsche Bundesbank, the Universities of Frankfurt, Cologne, Hohenheim, the Free University of Berlin and the German Economic Research Institute, and the many

helpful comments received on those occasions from colleagues too numerous to mention are gratefully acknowledged.

- 2 Charles Goodhart (this volume) complains that academic economists have, from the very start, been unable to reconcile themselves to the fact that central banks have always controlled interest rates rather than a monetary aggregate, even so narrow an aggregate as the monetary base. In my view monetarists treat money as exogenous because of a methodological preference for simplified – sometime ruthlessly so – models adapted to whatever purpose is at hand, with exogenous money models being potentially well adapted to the study of the effects of monetary policy on inflation, and not out of willful blindness to institutional arrangements.
- 3 There are, of course, many precedents for this postulate in the old literature dealing with real balance effects. Recently, Meltzer (1999), Goodhart and Hofman (2000) and Nelson (2000) among others have taken up the issue, as indeed has this author (1999).
- 4 See Brunner and Meltzer (1993) for a systematic retrospective account of their work.
- 5 Note that I am here describing a sequence of events that takes place after the system is shocked, and out of equilibrium, and hence am presuming a modicum of price stickiness. Some flexible-price equilibrium models have it that a cut in the nominal rate of interest must lead to a new lower rate of inflation, and so it must if the economy is always in rational expectations equilibrium, but work by Cottrell (1989) and Howitt (1992) suggests that consideration of mechanisms of the type discussed here leads to the conclusion that the equilibrium in question is likely to be unstable and hence unattainable, thus rendering its properties uninteresting for policy analysis.
- 6 Let it be explicitly noted that the credit channel effect as discussed here does not encompass credit rationing effects such as Stiglitz and Weiss (1981) analysed. These effects would be complementary to those discussed here.
- 7 Indeed, the fact that narrow monetary aggregates seem to display a longer lead over output and inflation than broader aggregates, at least in Canadian data, may be related to this.
- 8 I do not mean to imply here that this problem has not been noted before. On the contrary James Davidson has devoted considerable attention to modelling it empirically (see e.g. Davidson and Ireland 1990). But, unless I have missed some work, an explicitly maximising analysis of the underlying theory is yet to be forthcoming.
- 9 See Parkin (1998) for an exceptionally lucid survey of the body of work I have in mind here.
- 10 Nelson (2000) has indeed already provided an interesting example of work in this genre, designed to show how money, or more specifically the monetary base, can influence aggregate demand even after the effects of changes in a short interest rate have been accounted for. The key feature of his model is that a long rate of interest affects both the demand for money and aggregate demand, so that changes in the quantity of money contain information about this variable over and above that contained in the short rate. Nelson's model does not investigate the role of the credit market in the money-supply process upon which the argument of this paper concentrates, and the effects of money disappear when the long rate is taken explicit account of. However, to the extent that the presence of the long rate of interest reflects in his analysis the idea that money is substitutable for a broad range of assets, it clearly has an important feature in common with the analysis presented here.

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ECONOMIC POLICY WITH ENDOGENOUS MONEY¹

Malcolm Sawyer

1. Introduction

This chapter considers the implications for economic policy of the essential endogeneity of money in an industrialised capitalist economy. Many practitioners (such as the Bank of England Monetary Policy Committee) have recognised that the stock of money cannot be directly (or even indirectly) controlled and that credit money is created within the private sector. Nevertheless an essentially monetarist perspective that inflation is caused by changes in money is retained, with the view that monetary conditions set the rate of inflation, and a retention of the classical dichotomy between the real and the monetary sides of the economy. In contrast, it is argued here that the endogenous approach to money suggests that inflationary conditions determine the growth of the stock of money and that monetary conditions have an impact on the real side of the economy.

In Chick (1973), Vicky was concerned, in the title of the book, with the theory of monetary policy, and she clearly set out the differences between the different schools of thought. The book was written at a time when monetarism had re-emerged and was challenging Keynesianism, and a chapter discussed ‘simple Keynesianism vs early monetarism’. Another chapter discussed the Radcliffe Report (1959), described as ‘a document of tremendous importance to the theory of monetary policy’ (p. 58), and argues that the reasons for the general rejection of the Report was because ‘it did not fit comfortably into generally accepted theory. Its very *method*, a process analysis covering a variety of time horizons, is at variance with the post-war conception of respectable economic theory’ (p. 58). The Radcliffe Committee (1959) did not use the terminology of endogenous money but much of the analysis sits comfortably with an endogenous credit money analysis. They concluded, for example, that ‘the factor which monetary policy should seek to influence or control is something that reaches beyond what is known as the “supply of money”’. It is nothing less than the state of liquidity of the whole economy; ‘monetary policy must take its influence upon the structure of interest rates as its proper method of affecting financial conditions and eventually, through them, the level of demand’ and

‘we attribute to operations on the structure of interest rates a widespread influence on liquidity and a slower, more partial influence on the demand for capital ...’ (p. 337; see particularly pp. 132–5). This type of approach was soon forgotten as the monetarist analysis (and the associated notion of potentially controllable exogenous money) swept all (or almost all) before it. This chapter returns to a discussion of monetary policy when money is not treated as exogenous and when the key monetary policy instrument is the rate of interest.

2. The nature of money

The idea that money is endogenously created within the private sector and does not depend on the creation of money by some ‘exogenous’ agent such as government is a long-standing one. However, as Chick (1992) argued, the banking system changes over time and can be viewed as proceeding through a number of stages. This chapter is based on the view that the banking system in industrialised countries has reached stage 5 in Chick’s terminology, where (changes in) the demand for loans leads to changes in the amount of loans, which generates (changes in) deposits, which in turn cause (changes in) reserves.

In recent years, the analysis of endogenous money has become particularly associated with post-Keynesian economics where there has been considerable debate on the specific nature of endogenous money (Moore 1988; Cottrell 1994 for an overview), and drawing on the circuitist approach (Graziani 1989). The flow of funds approach to money and credit (e.g. Cuthbertson 1985: pp. 171–3) can also be seen as embodying a similar approach.

The notion that money is exogenous, and can be changed by government (or central bank) action is embodied in the traditional *IS-LM* Keynesian model, with monetary policy represented by a shift of the *LM* curve. The monetarist approach continued and reinforced that perspective, albeit combined with a supply-side-determined equilibrium for output and employment. This quickly leads to the view that the rate of change of money supply determines the rate of inflation. There are two continuing influences of this monetarist approach. First, the idea of ‘natural rate of unemployment’ focused attention on the labour market, and on the idea that so-called imperfections in that market are a cause of unemployment, with the ‘equilibrium’ rate of unemployment and output determined by supply-side factors with no influence from the demand side. Second, the stock of money is seen as controllable (or at least worth targeting) as a means of determining (or at least influencing) the rate of inflation.

The term money supply is generally used to denote the amount of money in existence, but that is misleading for it suggests that the amount of money is supply determined rather than demand determined. We use the term stock of money to denote the amount actually in existence, and reserve the term supply of money for the willingness of banks to accept deposits. At any moment, the stock of money may diverge from the supply of money in the sense that, given the structure of interest rates, demand for loans and availability of loans, banks would

wish to have an amount of deposits which differ from the actual amount in existence, which may also differ from the amount which individuals would wish to hold (demand). The control of (the growth of) the money stock has proved difficult (if not impossible) to achieve. In the 1980s, a number of countries sought to target the growth of money but largely failed to achieve the target (and when they did so, this could be seen more as a matter of correct forecasting of growth of money and setting the target accordingly). Both the UK and the USA abandoned monetary targeting, and the Bundesbank had a track record of achieving the target range about half of the time. The targeting of the growth of money has largely been dropped, though the European Central Bank (ECB) has adopted a reference level of 4.5 per cent for the M3 definition. But, although interest rates, rather than the stock of money, have become the instrument of monetary policy with often no mention of the growth of the money stock (or supply) (the ECB being an exception), nevertheless there is still the idea that monetary conditions determine the rate of inflation. The Monetary Policy Committee (1999) argues that ‘monetary policy works largely via its influence on aggregate demand in the economy. It has little direct effect on the trend path of supply capacity. Rather, in the long run, monetary policy determines the nominal or money values of goods and services – that is, the general price level’ (p. 3). But ‘in the long run [when we are all dead ?] there is a positive relationship between each monetary aggregate and the general level of prices’ (p. 11, question in brackets added).

The starting point here is that the endogenous money approach is the realistic one for an economy with a well-developed banking system. Further, the endogenous money approach views inflation as the cause of the growth of the stock of money. Monetary policy is setting base (or discount) rate, and hence the effectiveness and impact of monetary policy has to consider the effectiveness of interest rates in achieving the stated objectives and the other impact of interest rate changes.

3. The nature of endogenous money

We can outline the key features of endogenous credit money. First, loans are provided by the banking system to enterprises and households if their plans for increased expenditure are to come to fruition: the expenditure plans may often focus on the investment ones by enterprises but it includes any intended increase in nominal expenditure, including those increases which emanate from cost and price increases. When the loans come into effect and are spent, deposits are created and thereby the stock of money expands.

Second, the stock of money depends on the willingness of the non-bank public to hold (demand) money. Loans can be repaid, and the ability of the public to do so is a major mechanism through which the stock of money is adjusted to that which people wish to hold. This may occur automatically (e.g. in the case of someone with an overdraft receiving money), and it may not be the only route through which the stock of money adjusts (Arestis and Howells 1999). Numerous studies of the demand for money have treated the stock of money as

the dependent variable and variables such as level of income (or wealth) and interest rates (or differential rates) as the independent ones. Those equations can be read as indicating that the stock of money is determined by demand for money factors.

Third, the stock of money also depends on the decisions and actions of the banking system. This includes the willingness of the banks to initially provide loans which backs the increase of bank deposits (and hence the stock of money). Any expansion of nominal expenditure (whether in real terms or through higher prices) requires some expansion of credit. In addition, since bank deposits are part of the balance sheet of the banks, the willingness of banks to accept deposits and the resulting portfolio become relevant. Banks may, for example, change their structure of interest rates in response to changes in their attitudes towards liquidity and risk.

Fourth, loans are provided by banks at rates of interest which reflect the perception of risk, which may be described as the 'principle of increasing risk' (Kalecki 1937). For the individual enterprise, this places limits on its ability to borrow for the simple reason that as its proposed scale of borrowing increases (relative to its assets and profits) it is perceived to be a riskier proposition, and the loan rate charged would increase, placing limits on the borrowing which occurs. During the course of the business cycle, the operation of this 'principle of increasing risk' may vary depending on the banks' attitudes towards risk and liquidity but also through movements in profits and loans. During a cyclical upswing, investment expands and would be loan financed. However, investment expenditure generates profits, and loans may be paid off. Thus the riskiness of the enterprises depends on the balance between the movements in loans and profits.

Fifth, a change in the demand for loans generates a change in the balance sheet of banks with consequent effects on the structure of interest rates. An increased demand for loans generates an expansion of the banks' balance sheets, and may require some increase in the reserves held by the banking system, depending on legal requirements and their own attitudes to liquidity. Those reserves are, if necessary, supplied by the central bank, thereby permitting the expansion of the balance sheets of the banks.

Sixth, a distinction should be drawn between money as a medium of exchange (corresponding to M1) and money as a store of wealth (corresponding to M2 or broader monetary aggregate other than M1). The transactions demand for money is a demand for narrow money, and the portfolio demand for money is a demand for broad money. It is M1 which currently serves as the medium of exchange but not M2 or M3 (other than the M1 part). M2 and M3 should be viewed as financial assets whose nominal prices are fixed (though that property would also apply to some financial assets outside of the banking system).

Whilst many monetary and other economists would recognise that the exogenous view of money is not tenable for an industrialised economy, there has not been a thorough-going recognition of the implications of endogenous money for policy-making purposes.² Specifically, the use of monetary targets or reference levels, or

the belief that monetary conditions can influence future inflation without detriment to the real side of the economy are based on the exogenous view of money. The monetarist 'story' here is quite straightforward: an increase in the stock of money in excess of the demand for money leads to the bidding up of prices as the 'excess' money is spent, continuing until the demand for money is again in balance with the stock of money. The level of output and employment is, of course, viewed as determined on the supply side of the economy at the equivalent of the 'natural rate' of unemployment, often now replaced by a non-accelerating inflation rate of unemployment (NAIRU), which retains the same essential characteristic, namely that there is a supply-side-determined equilibrium.

The endogenous money 'story' is substantially different. Loans are granted by the banking system to finance increases in nominal expenditure by the non-bank sector, whether that increase represents an increase in real value of expenditure or an increase in prices and costs. These loans create deposits, though the extent to which the deposits remain in existence, and hence how far the stock of money expands, depends on the extent of the reflux mechanism. Inflation arises from pressures on the real side of the economy, leading to an expansion of the stock of money. Monetary policy influences interest rates, and those rates may influence the pattern of aggregate demand, and in particular may influence investment.

4. Implications for the macroeconomy

The implications of endogenous money for the analysis of the macroeconomy are straightforward, and we highlight three here. First, whilst inflation may be 'always and everywhere a monetary phenomenon' to take part of the famous phrase of Friedman, it is in the sense that inflation generates an increase in the stock of money. An ongoing inflationary process requires enterprises and others to acquire additional means to finance the higher costs of production; these means are acquired in part through increased borrowing from banks and hence increased loans and deposits (Moore 1989).

Second, the operation of monetary policy is through the (base) rate of interest, which in turn is seen to influence the general structure of interest rates. Interest rates are likely to influence investment expenditure, consumer expenditure, asset prices and the exchange rate. This is well illustrated by the recent Bank of England analysis of the transmission mechanism of monetary policy (Bank of England 1999; Monetary Policy Committee 1999) where they view a change in the official interest rate as influencing the market rates of interest, asset prices, expectations and confidence and the exchange rate, which in turn influences domestic and external demand, and then inflationary pressures. In addition, interest rate changes can also have distributional effects, whether between individuals or between economic regions.

Third, the stock of money is not only viewed as determined by the demand for money but also can be seen as akin to a residual item. In effect the level of income and the price level are determined and then they give rise to a particular demand

for, and hence stock of, money. However, credit creation (and thereby the creation of deposits) may be a leading indicator of increasing expenditure, but is not a cause of that increased expenditure.

5. Policy implications

The policy implications from this approach are six fold. There are potentially a variety of instruments of monetary policy such as limits imposed on banks with respect to particular types of deposits and/or loans as well as the central bank discount rate. But these instruments share the common feature that they impact on the behaviour of banks and the terms on which the banks supply loans. Restrictions on loans would have an effect on level and structure of investment. The level of interest rates can affect the exchange rate as well as the level of investment. Thus monetary policy has real effects which may well persist. This contrasts with the view of, for example, King (1997) (Deputy Governor of the Bank of England), who has argued that ‘if one believes that, in the long-run, there is no trade-off between inflation and output then there is no point in using monetary policy to target output. ... [You only have to adhere to] the view that printing money cannot raise long-run productivity growth, in order to believe that inflation rather than output is the only sensible objective of monetary policy in the long-run’ (p. 6). It is perhaps surprising that the Deputy Governor should refer to the *printing* of money. It may well be that monetary policy cannot raise the rate of growth of the economy (indeed I would be surprised if it could, at least in a direct sense, since I would doubt that interest rates could have much effect on investment). But that does not establish the argument that monetary policy should have inflation as the objective: that depends on whether monetary policy can influence the pace of inflation. If it does so through aggregate demand channels, one has to ask whether there are hysteresis effects and whether monetary policy is the most effective way of influencing aggregate demand.

Second, interest rates are seen as influencing the level of and structure of aggregate demand, and as such its effects should be compared with those of the alternative, namely the use of fiscal policy. Keynesian fiscal policy has, for some, become identified with attempts to use fiscal policy to fine-tune the economy. For well-known reasons of delays in the collection of information and of lags in the implementation and the impact of fiscal policy, attempts at this form of fine tuning have been largely abandoned. But it has been replaced by attempts at the ultra fine tuning through the use of interest rates. In the UK, interest rate decisions are made monthly by the Monetary Policy Committee in an attempt to fine-tune to hit inflation targets two years ahead. Interest rates are easier to change than, say, tax rates or forms of public expenditure, but the questions of data availability and lags in the impact still arise.

The effectiveness of interest rate changes can be judged through simulations of macroeconomic models. The simulations reported in Bank of England (1999: p. 36) for a 1 percentage point shock to nominal interest rates, maintained

for one year, reaches a maximum change in GDP (of opposite sign to the change in the interest rate) of around 0.3 per cent after five to six quarters³: ‘temporarily raising rates relative to a base case by 1 percentage point for one year might be expected to lower output by something of the order of 0.2–0.35% after about a year, and to reduce inflation by around 0.2 percentage points to 0.4 percentage points a year or so after that, all relative to the base case’ (Monetary Policy Committee 1999: 3). The cumulative reduction in GDP is around 1.5 per cent over a four-year period. Inflation responds little for the first four quarters (in one simulation inflation rises but falls in the other over that period). In years 2 and 3 inflation is 0.2–0.4 percentage points lower: the simulation is not reported past year 3. It should be also noted here that the simulation which is used varies the interest rates for one year: in the nature of the model, there are limits to how far interest rates can be manipulated, and this has some reflection in reality. For example, there are clear limits on how far interest rates in one country can diverge from those elsewhere. A recent review of the properties of the major macro-econometric models of the UK indicates that ‘the chief mechanism by which the models achieve change in the inflation rate is through the exchange rate’ (Church *et al.* 1997: p. 92).

Some comparison with fiscal policy can be made. In the models reviewed by Church *et al.* (1997), a stimulus of £2 billion (in 1990 prices) in public expenditure (roughly 0.3 per cent of GDP) raised GDP in the first year by between 0.16 per cent and 0.44 per cent and between 0.11 per cent and 0.75 per cent in year 3.⁴

It is often argued that fiscal policy is impotent (or at least not usable) in a globalised world, essentially for two reasons. First, financial markets react adversely to the prospects of budget deficits: exchange rates fall, interest rates rise, etc. The exchange rate argument relies on fiscal expansion in one country: simultaneous fiscal expansion could not generate changes in relative exchange rates. The interest rate argument relies on a loanable funds approach, and overlooks the idea that budget deficits should be run when there is a (potential) excess of savings over investment. Second, the effects of fiscal policy spill over into the foreign sector. However, not dissimilar arguments apply in the case of monetary policy. Financial markets may respond adversely to lower interest rates (corresponding to budget expansion), and in any case we would expect the limits within which domestic interest rates can be varied to be heavily circumscribed unless the corresponding effects on the exchange rate are accepted. It is also the case that if the loanable funds argument is correct, there would be no room for manoeuvre over the level of interest rates.

Third, growth of the stock of money is a consequence of the rate of inflation rather than a cause of it. This suggests that monetary policy is almost inconsequential as a control mechanism for inflation, though it would be expected that the money stock would grow broadly in line with the pace of inflation. This means that the sources of inflation are arising elsewhere, and we would focus on factors such as the general world inflationary environment, conflict over income shares and a lack of productive capacity (relative to demand). This raises the obvious point that counter-inflation policies should be sought elsewhere.

Fourth, and related to the first and third implications already discussed, there would be reasons to think that the use of interest rates to control inflation may be counterproductive as far as inflation is concerned. At a minimum it could be said that there are counterproductive aspects. There are two which are particularly evident. The first arises from the question of the effect of interest rates on costs and price-cost margins. Although the effect may not be a major one, it could be expected that, directly and indirectly, higher interest rates have some tendency to raise prices. There is a direct effect on the cost of credit and of home mortgages which may not be reflected in the official rate of inflation. The effect of higher interest rates on consumer expenditure largely operates through an income effect: that is higher interest rates reduce the disposable income of those repaying variable rate loans and mortgages. Such a reduction in income, it could be argued, should be reflected in the 'cost of living'. The possible effect of interest rates on the mark-up of price over costs is generally ignored: the influence of the neo-classical short-run analysis being apparent with interest charges treated as fixed costs and not marginal costs, where it is the latter which is seen to influence price. However, if there is an effect, it would be expected that higher interest rates would raise, rather than lower, the mark-up.

The second route comes from the effect of interest rates on investment. It has long been a matter of debate as to whether interest rates (or related variables such as the cost of capital) have any significant direct impact on investment. In the event that investment expenditure is determined by factors such as capacity utilisation, profitability, availability of finance, etc., and not by interest rates, then variations in interest rates have less impact on aggregate demand (than would otherwise be the case): the effectiveness of monetary policy is thereby reduced. In the event that there is some effect of interest rates on investment (as is the case with the Bank of England model) there is an effect of future productive capacity, and on the outlook for future inflation (Sawyer 1999). However, the reported effect is that there is a unit elasticity of demand for business investment with respect to real cost of capital, but that it takes 24 quarters before 50 per cent of the eventual effect is felt, and 40 quarters for 72 per cent. There is a longer-term effect on productive capacity. The view taken here is that a lack of capacity relative to demand is a significant source of inflationary pressure, and hence raising interest rates in the short term may influence longer-term productive capacity and inflationary pressures adversely. This is based on a line of argument developed elsewhere to the effect that the NAIRU should *not* be considered as a labour market phenomenon but rather as derived from the interaction between productive capacity and unemployment as a disciplining device.

Fifth, monetary policy has distributional implications of various kinds. One obvious and immediate one is that interest rate changes can redistribute between borrowers and lenders (cf. Arestis and Howells 1994). Interest rate changes are likely to have implications for the composition of demand (e.g. between consumer expenditure and investment, between tradable and non-tradable goods). Regions may be differentially affected, and also interest rate increases are likely

to be geared to inflationary pressures in the high demand regions even when there is considerable unemployment in other regions. These effects may be relatively small but do point out that monetary policy should not be treated as though it leaves the real side of the economy unaffected.

Sixth, no significance should be attached to broad monetary aggregates such as M2 or M3 since they do not represent media of exchange. The evolution of the broader monetary aggregate may be quite different from that of the narrower one, as the former is likely to be related to wealth and portfolio considerations whereas the latter is likely to be related to income and transactions considerations. It can be argued that there is a close substitution between narrow money and broad money, and that they can be exchanged on a one-for-one basis. However, in the event that banks treat deposits of narrow money and deposits of broad money as the same in the sense of holding the same reserve ratios against each and not responding to a switch by bank customers between narrow money and broad money, then broad money could be seen as a repository of potential spending power. But in general that is not the case, and it is difficult to justify any particular policy concern over the path of M2 or M3.

6. Conclusions

It can be argued that many differences of analysis and perception arise from the adoption of the endogenous money perspective rather than the exogenous one. In this brief paper, we have sought to explore a policy dimension. It has been argued that there should be doubts over the effectiveness of monetary policy in addressing the issue of inflation.

Notes

- 1 Versions of this chapter have been presented at the conference of European Association for Evolutionary Political Economy, Prague, 1999 and at seminars at Universities of the Basque country, Bilbao, of Derby and Middlesex. I am grateful to the participants on those occasions for comments.
- 2 In the post-Keynesian literature on endogenous money, the main focus has been on the theoretical and empirical analysis of endogenous money. There has though been some discussion on the policy side: for example, Moore (1988) chapter 11 is on interest rates as an exogenous policy variable, and chapter 14 is on the implications of endogenous money for inflation. Lavoie (1996) does provide a discussion of monetary policy in an endogenous credit money economy.
- 3 The precise figures depend on assumptions concerning the subsequent responses of the setting of interest rates in response to the evolving inflation rate.
- 4 The construction of the models effectively imposes a supply-side-determined equilibrium. 'Each of the models ... now possess static homogeneity throughout their price and wage system. Consequently it is not possible for the government to choose a policy that changes the price level and hence the natural rate of economic activity. [With one exception] it is also impossible for the authorities to manipulate the inflation rate in order to change the natural rate' (Church *et al.* p. 96).

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VICTORIA CHICK AND THE THEORY OF THE MONETARY CIRCUIT: AN ENLIGHTENING DEBATE¹

Alain Parguez

1. Introduction

Victoria Chick devoted two critical essays to the comparison of the theory of the monetary circuit with her own version of the post-Keynesian theory of money.

The first essay (Chick 1986) was published in *Monnaie et production*, a journal I was editing at that time. It addresses the evolutionary theory of money, banking and the relationship between saving and investment. In her second essay (Chick 2000) she integrates her evolutionary theory into a thorough discussion of the major propositions of the Theory of the Monetary Circuit (TMC). She relates these propositions to a generalized version of the post-Keynesian theory of money explicitly rejecting Keynes's theory of money. Her main reason is that the supply of money is henceforth endogenous while there is no more a demand for money function generated by the preference for liquidity. According to Victoria Chick, TMC cannot provide heterodox economists with the new standard model that would overthrow the neoclassical textbook dogma. It imposes unsound constraints on the role of money, and those working within this paradigm are still searching a convincing logical structure. Too many questions have yet to be answered, which explains why the new theory cannot replace the post-Keynesian theory of money as soon as it is properly generalized.

Victoria Chick provides the opportunity to set the record straight on TMC, once for all. She criticizes TMC on five grounds: it confuses money with credit; it emphasizes the 'ephemerality' of money; contrary to post-Keynesian economics, money is only created to finance working capital; it rejects the Keynesian multiplier; and, finally, the TMC denies an evolutionary view of money and banking.

Victoria Chick's thorough critique allows me to clear up the deep misunderstandings, which have prevented many open-minded readers to grasp the true fundamental propositions of the TMC (or the Circuit Theory) since no circuit exists without money. She asks the right questions, which can be answered without jeopardizing the logical core of the circuit theory.

2. Modern money is deposits because it consists of the debts of banks and the State, which they issue on themselves

Money cannot be credit. The concept of credit embodies the loan of something to somebody who must give it back later to the lender. The specificity of bank credit is that banks lend money they create at the very instant they grant the credit to borrowers who spend the money to undertake their required acquisitions and who must give it back later by using their induced receipts. Credit is the sole instantaneous cause of money, which, therefore, exists as deposits initially held by borrowers and next by sellers of real resources. Money supports two kinds of debt relationships: The first debt relationship occurs when borrowers are indebted to banks, but this debt is only payable in the future, which forbids the aggregation of this debt with banks' instantaneous debt. The second debt relationship is the banks' instantaneous debt, which remains to be explained. Borrowers are instantaneously indebted to sellers, and this debt has been the initial cause of the credit itself and it is extinguished by the payment of transfer of deposits. Money is created to be spent instantaneously on acquisitions. This explains why there is no Keynesian finance motive because this famous motive is another cause of hoarding money instead of spending it. The motive is often used to confuse lines of credit, which are a promise to create money, with effective monetary creation.

There remains a fundamental question: the proposition 'money is deposits' implies 'money is the bank debt' but what do banks owe, and to whom? Post-Keynesians usually answer by interpreting deposits as 'convenience lending' (Moore 2000) or 'acceptance of money' (Chick 1992) which means implicit, automatic saving. Both notions could be infelicitous because they imply that banks are borrowing deposits and if they borrow deposits, they have instantaneously to lend them. The debt paradox still holds as long as it postulates that banks are indebted to somebody else.

The truth is that, when they grant credit, banks issue debts on themselves, which they lend to borrowers. The latter's own debt is to give back in the future those banks' debt to banks, which entails their destruction or cancellation. The banks' ability to issue debts stems from the value or purchasing power of their debts which embodies the certainty for all temporary holders of having a right to acquire a share of the real wealth generated by initial borrowers of those debts. This extrinsic value of money is sustained by the banks' own accumulation of wealth, which is the proof of their ability to allow borrowers to generate real wealth. The State enforces the banks' debt by allowing holders of the banks' debt to be discharged of their legal debts or debts to the State, taxes and judicial compensations, by payment in banks' debt. State endorsement is a necessary condition for the existence of money but it is not sufficient because holders of money must remain convinced that the State was right to endorse the banks' debts and therefore bank loans. In the long run, the extrinsic value of money must be sustained by the certainty that banks are truly able to engineer the growth of real

wealth by their loans. To maintain this conviction, the State targets some rate of growth of the banks' own net wealth, which explains the origin of banks' rather unchecked power to determine the effective rate of interest and the rate of mark-up firms have to attain (Parguez 1996, 2000a). At the onset, banks and State are intertwined. The power of banks is always a power bestowed on them by the State. The State therefore must impose financial constraints if it wants to maintain the value of money.

Since the State allows the banks' debts to become money, it has the power to create money at will for its own account to undertake its desired outlays. The endorsement of bank debt means that it is convertible into State money. In the modern economy, State creates money through the relationship between its banking department, the central bank, and its spending department, the treasury. State money is created as deposits or debts are issued on itself by the central bank. State money obviously has the same value than bank deposits because of the financial constraints banks imposed on borrowers and therefore on employment, which includes the rate of interest and the rate of mark-up. The power of banks to issue debts on themselves is the outcome of evolution of debtor–creditor relationship (Innes 1913). As soon as a society escapes from the despotic command stage, production is sustained by a set of debt relationships. Debts of the credit-worthiest units begin to be accepted as means of settling debts resulting from acquisitions. Soon there are units, which are so credit worthy that their debts are universally accepted as means of acquisition, at least within a given space. When they specialize into the issue of debts on themselves, it is tantamount to deem them banks. There is now a new major question: how could modern banks evolve out of a complex debt structure, which is Victoria Chick's 'mystery'? Answering this question is to explain how the banks' own debts can be homogeneous by being denominated in the 'right' units, in which real wealth is accounted. There are only two alternatives: the first is the solution of Menger (1892), according to whom the banks' existence would spontaneously evolve out of a pure market process without any State intervention; the second is to explain the banks' existence by the State intervention (Parguez and Seccareccia 2000).

The Mengerian alternative is irrelevant because it is tantamount to some Walrasian *tâtonnement*. The second alternative imposes that money cannot exist without the support of the State as the sole source of legitimacy. It is the State which bestows on the banks' debts the nature of money by allowing banks to denominate in the legal universal unit, in which its own money is denominated. State money is universally accepted by sellers to the State and firms because they are certain of the ability of the State to increase real wealth by its expenditures.

Ultimately, all money can be deemed both 'State money' and 'symbolic money'. It is 'State money' either directly or indirectly because banks create money by delegation of the State. It is 'symbolic money' because for all temporary holders it is the symbol of the access to the real wealth generated by initial expenditures financed by the creation of money.

3. Money is ephemeral but it is not insignificant

The creation of money is the outcome of two debt relationships:

- R₁: between banks and State on one side, and future debtors on the other side;
- R₂: between money recipients (acquisitors) and sellers.

Money is injected into the economy by R₂ to allow the payment of the future debt entailed by R₁ when it will be due. Money is only created or exists to allow debtors to pay their debts in the future. The payment of this debt therefore entails the destruction of money, which proves that money is created because it will be destroyed. The future debt is due when it can be paid out of proceeds or income generated by initial expenditures undertaken through R₂. In the case of firms, the future debt is due when the sale of output has generated the receipts, which are the proof of the effective creation of wealth initiated by the creation of money. Assuming that proceeds are equal to the payable debt, all the money recouped by firms is destroyed. In the case of the State, the future debt is due when the private sector, or rather households as the ultimate bearers of the tax debt, has earned its gross income out of initial money creation for both State and firms. Tax payments entail an equal destruction of money, which explains why the State cannot accumulate money in the form of a surplus (Parguez 2000b).

Money exists only in the interval between initial expenditures and payment of the future debt, which is their counterpart. Money cannot therefore be logically accumulated. Contrary to the core assumptions of both neoclassical and Keynesian economics, there cannot be a demand-for-money function because money cannot be a reserve of wealth. Let us assume that some private sector units want to accumulate money over time to enjoy a liquid reserve of wealth. Money created through R₁/R₂ only has a purchasing power on the real output generated by outlays resulting from R₂. As soon as production has been realized, money has lost its value, it has no more use and must be destroyed. Hoarded money does not have a value. If hoarders decide to spend it, hoarded money would crowd out newly created money, and the outcome would be inflation leading to a rise in the rate of mark-up above its targeted level. The so-called ‘reserve of value’ characteristic contradicts the nature of money. It could only refer to some imaginary ‘commodity money’.

A desire for accumulating money is the mark of an anomaly that could jeopardize the stability of the economy. In any period, an increase in the desired stock of hoarded money reflects a share of *ex post* saving which is itself a share of income accruing to the private sector; it is just, according to the very accurate definition of Lavoie (1992), a ‘residual of a residual’ that ought to be nil.

The existence of desired hoarding leads to two alternative models: either there is no compensation and an unforeseen debt to banks is forced on firms, or the thirst for hoarding is quenched by the increase in the stock of State money provided by the State deficit. Therefore, I can spell out the rigorous proof of a proposition of the neo-Chartalist school (Wray 1998): the minimum deficit the State

has to run is equal to the foreseen rise in the desired stock of money. The ephemerality of money does not mean that money is insignificant. It is the proof of its essentiality because, without the process of creation and of destruction of money, the modern economy would not exist. I think that is some logical contradiction in Victoria Chick's critique. Money would not be ephemeral if it could survive over time without jeopardizing the stability of the economy. This would be the case only if a normal demand for money function in the like of Keynes's own functions would exist. Only then would the desired stock of money adjust itself to the scarce supply of money. Unlike most post-Keynesians, Victoria Chick herself rejects such a function. Herein lies the contradiction, which cannot be solved by the dubious notion of 'acceptance' of money because, according to Victoria Chick, it is not a demand for money as such.

4. Money is created to pay production costs and to finance components of effective demand

Money creation obviously finances all firms' production costs accounting for outlays that firms must undertake to meet their production plans. They include wages, income paid to holders of claims on firms, stocks or bonds, and interest due to banks on new loans. Since payment of interest is the prerequisite for credit (which is the existence condition of production), it is a production cost which banks must finance by their loans. Banks advance their own gross income to firms, which must pay this debt out of their future proceeds. In the absence of compensating profits induced by the State deficit and households' net indebtedness, firms could only meet their debt by selling securities, stocks or bonds, to banks.

In her investment model, Victoria Chick rightly distinguishes between the finance of production of equipment goods and the finance of their acquisition. Both cannot be conflated (Parguez 1996). Escaping from the Ricardian corn economy means that the value of newly available equipment goods must be realized by acquisition expenditures financed by a specific money creation. The sale of equipment goods generates profits for their producers while incomes they paid (also financed by a specific creation of money) contribute to profits of consumption-goods producers. Ultimately, aggregate profits can be just equal to the debt incurred to acquire the new equipment goods. Acquisitors are discharged of their debt, which extinguishes an equal amount of money. In previous publications, I qualified aggregate profits as the final finance of investment initially financed by credit. I am now convinced of the infelicitous nature of the distinction between initial and final finance. There is only one phase of finance, the so-called 'initial phase of finance', while the postulated second phase is nothing but the payment of a debt initiated by the loans providing money for acquisition.

All State outlays are and must be financed by the creation of State money. Neither taxes nor bond issues are alternative sources of finances because they cannot exist when the State has to spend. Taxes and bonds sales will be a part of

future gross income generated by initial expenditures of the State, firms and households incurring a new debt to banks. Taxes are imposed to create a future debt of income earners of which they are discharged by tax payments entailing, as it has been shown, an equal destruction of money. Victoria Chick seems to limit the role of money creation to deficit finance. Since deficit is the *ex post* discrepancy between outlays and taxes, it is already financed and reflects the net increase in the private sector stock of State money, which is also its net saving or its net increase in net wealth. An *ex post* surplus has the opposite impact – it is a net decrease in the private sector net wealth, which is not compensated by the State hoarding because all the money collected by taxes is destroyed. The Circuit Theory leads to the conclusion that there is no budget constraint imposed on the State because the State is not constrained by a predetermined equilibrium fund generated by forced saving (taxes) or voluntary saving (bond sales) (Parguez 2000b).

In the modern economy, a large share of consumption (including the so-called ‘households’ investment’) is financed by bank loans. The creation of money entails debt, which can only be paid out of a deduction from future income. To prevent the crowding out of future consumption by payment of the debt (including interest), households’ income must grow at a rate high enough to allow debtors to be discharged of their debt while maintaining the same growth of their expenditures. The debt payment extinguishes an equal amount of money while the new debt is a source of receipts. The excess of new debt over reimbursement – i.e. households’ net new debt – reflects the net contribution of households to profits.

State deficit and households’ new debts are the sole sources of firms’ net profits accounting for the excess of profits over firms’ payable debt. Since the required growth of wages is not warranted, the desired net profits should be provided by the State deficit.

The Circuit Theory ultimately sets the record straight on the endogeneity debate. According to the third proposition, money is perfectly endogenous because it is always created to finance desired expenditures by the State, firms and households. In the case of the State, the quantity of money which is created reflects State desired expenditures. In the case of firms and households, banks are imposing constraints fitting their targeted accumulation endorsed by the State. For firms, those constraints include the rate of interest and the rate of mark-up firms must target by including it in prices. The imposed rate of mark-up is the ratio of profits to aggregate production costs banks desire, because it should reflect firms’ efficiency or profitability (Parguez 1996). Since both constraints impinge on firms’ desired expenditures, their effective demand for loans is automatically met by banks. A corollary of money endogeneity is that the rate of interest is exogenous because it is not determined by an equilibrium condition. It is therefore straightforward that there are three cases of exogenous money, in each of them money creation is either impossible or independent from expenditures.

The Keynesian case seems to fit Case II, and possibly Case III, but apparently Case I prevailed because money is dealt with as if it were a pure commodity. Cases I, II and III are set out in Table 6.1.

Table 6.1 Cases I, II and III

<i>I</i> <i>Pure classical and neoclassical case</i>	<i>II</i> <i>Monetarist case</i>	<i>III</i> <i>Neoclassical portfolio theory</i>
Commodity money	The supply is fixed by the central bank	The supply of money is determined by the desired allocation of wealth
No creation of money	No creation of money without the fiat decree of the central bank	Money creation reflects changes in the composition of wealth induced by financial innovations
Material scarcity of money	Institutional scarcity of money	Choices-imposed scarcity of money (Parguez 2001)

5. The Keynesian multiplier does not hold

The multiplier relied on three assumptions: any increase in a component of effective demand (ΔD_E) determines an automatic transfer of money to the following period, the sole leakage being imposed by the saving function so that the induced increase in the money supply is

$$\Delta M_{t+1} = (1 - s) \Delta D_t. \quad (1)$$

The induced increase in the money supply determines an equal increase in aggregate income, which allows an induced increase in aggregate demand, constrained by the saving function.

$$\begin{aligned} \Delta Y_{t+1} &= \Delta M_{t+1}, \\ \Delta D_{t+1} &= (1 - s) \Delta Y_{t+1}. \end{aligned}$$

This transfers an equal amount of money to the following period:

$$\Delta M_{t+2} = \Delta D_{t+1}. \quad (2)$$

The process converges on a final equilibrium state defined by the equality of cumulated induced savings to the initial injection of money, so that ΔS account for the total increase in the stock of savings in period t :

$$\Delta D_t = \Delta S_t = (1 - s) \Delta Y_T \text{ or } \Delta Y_T = 1/s \Delta D_t. \quad (3)$$

ΔY_T accounts for the total increase in aggregate income, which is a stable multiple of the initial injection.

Assumption (1) is false because the amount of money transmitted by the following period is just equal to firms' net profits created by the State deficit and households' new debt. Assumption (2) is false because induced expenditures depend upon firms' reaction to their net profits. Assumption (3) is false because it is an equilibrium condition, in the like of the infamous *IS-LM* model, imposing the equality of initial injection to voluntary saving. Initial injection is the share of newly created money directly financing effective demand. It is the sum of firms' investment, State deficit and households' net new debt. Assumption (3) contradicts the identity of injections and aggregate savings including firms' profits.

6. A new evolutionary theory

It is true that in its early stage, contributors to the TMC were no more interested in the history of money than the overwhelming majority of post-Keynesians. Ultimately, *money is one, and its essence or nature cannot change over time*. Money has always consisted of claims on real resources denominated in a unit, which is determined by the State because it symbolizes the creation of real wealth generated by expenditures. Those claims are embodied or inscribed into various supports, each of which is a form of 'abstract money': clay tablets, coins of gold or silver or copper, paper notes, banks' and central banks' liabilities issued on themselves. The creation of new pieces of a given form of money allows expenditures that generate new real wealth and therefore sustain the extrinsic value of money. Commodity money never existed because the value of coins was not the reflection of their intrinsic scarcity; it was purely extrinsic stemming from the use of coins by the State, which issued them. Coins, most of the time, coexisted with banks, which from the start were free from saving constraint because they existed by delegation of the State. Deposits have never made loans, regardless of the historical stage of capitalism. Money has therefore always been endogenous because central banks were created to support the liquidity of banks.

I summarize the new evolutionary theory as follows: a fundamental distinction must be drawn between non-monetary economies and monetary economies. History reveals two major models of economies ignoring money. None is a neoclassical barter economy.

The first model is the pure command or despotic economy that existed in China under the Chang dynasty (2000–1300 BC), in the Mycenaean civilization (Greece, 2000–1300 BC), in Egypt at the time of the old Empire (2100–1300 BC), and in the Mexican and Andean Empire (1000 BC – Spanish Conquest). It has three characteristics which explain why money cannot exist:

- 1 The State owns all real resources and has the power to conscript labour to work on infrastructure, building, etc.
- 2 The State raises a real tribute on farmers and craftsmen, which is the surplus split between the consumption of the ruling class and the consumption of conscripted workers. Real surplus out of labour force is divided between

productive investment, State consumption (army) and consumption of the ruling elite.

- 3 Since consumption of requisitioned labour is real investment, the classical Smith-Ricardo theory rules. The real *ex ante* saving constraint is absolute.

The model was restored in the USSR in the wake of collectivization and authoritarian planning. The so-called ‘socialist economies’ were not dependent upon the existence of money.

- 1 The State is the unique owner of real resources (land, real capital). It is the unique producer determining both the volume of real output and its structures.
- 2 Free labour does not exist. The State decrees the distribution of the labour force, real wages and working conditions. It also controls a huge pool of slave labour. The State exacts a real surplus out of the labour force.
- 3 The classical real *ex ante* saving constraint rules again. Banks do not exist as the source of credits generating money. The economy is not a monetary circuit.

The modern capitalist economy is the model of the monetary economy, which is explained by its major characteristics:

- 1 The State has no more the power to raise a real surplus. It is neither the sole owner of real resources nor the unique producer. Labour is free. The State can neither requisition it nor decree the real wage.
- 2 Money creation is the existence condition of outlays generating real wealth. Money has been substituted for forced accumulation.
- 3 The State has to issue money to finance its outlays and raise taxes to extinguish it. Banks exist to finance the private sector. The classical saving constraint is now irrelevant. Whatever can be the stage of capitalism, banks are not constrained by *ex ante* savings. The TMC is relevant.²

Conventional economists dallying with history have always been wrong. They confuse the essential nature of money with its contingent temporal form or support.

Victoria Chick has started an enlightening debate for which she must be praised. Heterodox economists are plagued by the temptation of isolation and contempt leading to unceasing insider debates and the search for spurious legacies of old masters. In retrospect, Victoria Chick and I agree on three major propositions: money is endogenous because it is created to finance expenditures; there is no demand-for-money function; money cannot be submitted to a Ricardian theory of value, while the second proposition denies the neoclassical theory of value. All those propositions are derived from a general theory of money, TMC, whose logical core is the twin propositions: money is the existence condition of the economy (essentiality); there is no objective (or natural) scarcity

ensconced in some saving or surplus law, there is only a self-imposed scarcity. Most contemporary post-Keynesians do not seem to grasp the scarcity law when they dally with profits as a source of finance for investment or when they accept the postulate of a given and unexplained mark-up. Herein is the proof that TMC maybe the sole safe haven for post-Keynesians like Victoria Chick, wishing to escape from the stalemate of post-Keynesian monetary theory.

According to Louis-Philippe Rochon (1999), Joan Robinson (1956) is the unique precursor of TMC. It is true with a qualification: Joan Robinson's circuit model is an income circuit model, which fits into a neo-Ricardian law of value. In the future, Victoria Chick will appear as another true precursor of the monetary circuit approach in its generalized aspect. Maybe then many post-Keynesians will join her!

Notes

- 1 I am indebted to Guiseppe Fontana, Joseph Halevi, Mario Seccareccia, Henri Sader and Randy Wray for helpful discussions. The usual disclaimer applies.
- 2 There have been 'intermediary' societies that could be deemed 'monetary command economies', in which money coexisted with many characteristics of the command economy. A good example is given by the Roman Empire (de Ste-Croix 1981) from Augustus onwards. Money helps the realization of an enormous surplus shared between the 'land propertied oligarchy' and the State, which is controlled by the ruling class. Taxes and rent are mostly paid *in natura*. Credit exists but it is monopolized by the ruling oligarchy (for instance, to finance the slave trade). The Theory of the Monetary Circuit is just partly relevant.

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KEYNES, MONEY AND MODERN MACROECONOMICS

Colin Rogers

1. Introduction

In a recent review of developments in macroeconomics since the Second World War, Oliver Blanchard (2000) asks what we know about macroeconomics that Fisher and Wicksell did not. In answering this question, the remainder of Blanchard's survey proceeds on the tacit assumption that modern macroeconomists have resolved all the issues raised by Wicksell, Fisher and Keynes. Any confusion inherent in their work has been resolved by the consolidation of macroeconomics that took place post the 1940s.

In this chapter I want to take issue with this reading of the history of macroeconomics. In particular I challenge the view that the consolidation of macroeconomics that took place post the 1940s resolved some inherent confusion embedded in the notion of the real rate of interest in Wicksell and Fisher. Keynes (1936) proposed a solution to that confusion but his proposal was treated as semantic rather than substantive. Consequently, the confusion inherent in Wicksell and Fisher remains in the modern literature.

I make use of Krugman's (1998a,b,c, 1999) analysis of Japan's liquidity trap to illustrate how the conceptual confusion inherent in Fisherian and Wicksellian concepts of real rates of interest leads to simplistic and potentially misleading policy advice. The story that Krugman is trying to tell about Japan's liquidity trap is distorted by reliance on the Fisherian and Wicksellian concepts. Clarity of thought on these matters is enhanced by replacing the Fisher–Wicksell concepts of real rates with Keynes's distinction between the real cost of capital and the real marginal efficiency of capital. Contra Blanchard (2000: 6), the distinction is fundamental, and not semantic.

The remainder of the chapter is arranged as follows. Section 2 briefly outlines the concepts of the natural and real rates of interest developed by Wicksell and Fisher. Section 3 then outlines Keynes's objection to Fisher and Wicksell. Section 4 examines Krugman's analysis of Japan's liquidity trap and outlines how Krugman's application of the Fisherian and Wicksellian real rates

of interest leads to the sort of conceptual confusion identified by Keynes. If Krugman's policy proposals are to succeed, it will be because they increase the marginal efficiency of capital relative to the rate of interest, and not because they produce a negative real rate of interest as he argues.

2. Wicksell and Fisher on real rates of interest

Wicksell's lasting contribution to macroeconomics was the distinction between natural and market rates of interest while Fisher's was the distinction between real (inflation adjusted) and nominal rates of interest. Wicksell's contribution to macroeconomics was the realisation that looking at nominal or real interest rates in isolation was not very revealing. What mattered was an interest rate as a measure of the cost of borrowing *relative* to the rate of return on the use to which those borrowed funds might be put. Wicksell attempted to capture this relationship by the distinction between the natural rate of interest – the return on invested funds – and the market rate of interest – the cost of funds. Unfortunately Wicksell treated the natural rate of interest as a real or commodity rate, as if borrowing and lending could be undertaken in kind. His Swedish followers soon recognised that this was not an operational concept (Myrdal 1939), but the implications of that insight have not been acknowledged by modern macroeconomists. The marginal productivity of capital and rates of time preference, together or separately, are still treated in the modern literature as determinants of the real rate of interest. But Wicksell's concept of a real or natural rate of interest is not applicable to a monetary economy. In a monetary economy all rates of interest and rates of return must be determined using nominal values – prices quoted in the monetary unit. Expected changes in the purchasing power of that monetary unit will then impact on all rates of interest to a greater or lesser extent.

Fisher's enduring contribution to macroeconomics is a method for dealing with expected changes in the purchasing power of money. In Fisher's world if the purchasing power of money is expected to be constant, the nominal rate of interest is said to equal the real rate of interest. If the purchasing power of money is expected to fall, then Fisher argued that the nominal rate of interest would be adjusted upwards to compensate, leaving the real rate of interest unchanged. In the modern literature these two concepts of the real rate of interest are often conflated. But the real rate as a commodity rate *à la* Wicksell must be distinguished from the real rate, as an inflation-adjusted nominal rate, *à la* Fisher.

The Fisherian meaning of a real rate comes from adjusting the nominal rate of interest to compensate for the falling purchasing power of money to maintain the purchasing power of interest income intact. In that sense the purchasing-power-adjusted nominal rate is a real rate. But if that is all that is proposed, it abandons Wicksell's insight that two rates of interest, the cost of capital relative to the return on capital, are required for any useful analysis. The Fisher adjustment produces only a nominal rate of interest adjusted for the expected change in the purchasing power of money. Any notion of equilibrium is lost if there is no

role for the return on capital – the role Wicksell allotted to the natural rate of interest.

Hence the Wicksellian meaning of the real rate of interest is often introduced at this point by interpreting the real rate in the Fisher parity condition as a rate determined by the forces of productivity and/or time preference (thrift). But if this is done, the equilibrium real rate of return on funds is treated as something that can be determined without any reference to nominal magnitudes as if barter determines real magnitudes. On this interpretation, the real rate of interest in Fisher's analysis becomes nothing more than Wicksell's natural rate. In that case it is entirely independent of changes in the purchasing power of money. In terms of the familiar Fisher parity relationship, this means that all the adjustment for expected changes in the purchasing power of money falls on the nominal rate of interest.

This seems to be a fair characterisation of how the distinction between nominal and real rates of interest is treated in modern macroeconomics, although the distinction between the two meanings of 'real' is often not made and that, as we will see below, may in itself lead to confusion. Keynes (1936) in particular raised objections to the use of Wicksell's natural rate of interest in the Fisher parity relationship and to Fisher's use of that relationship. Modern macroeconomists have tended to follow Fisher on this but by so doing they are easily led into error.

3. Keynes's objection to Wicksell and Fisher

In Blanchard's survey, Keynes gets a mention as someone who made an important methodological contribution by thinking in general equilibrium terms about the relationship between three crucial markets: the goods, the financial and the labour markets. Blanchard (2000: 6) also notes in passing that Keynes called Wicksell's natural rate of interest the marginal efficiency of capital. But the marginal efficiency of capital is an operational concept while the natural rate of interest is not (Myrdal 1939).

In the *Treatise on Money*, Keynes made use of Wicksell's distinction between natural and nominal market rates to drive his Fundamental equations. However, in the *General Theory* Keynes's abandoned the natural rate of interest and replaced it with the marginal efficiency of capital. This change is more than semantic because the marginal efficiency of capital plays the role in a monetary economy that Wicksell intended for the natural rate. In other words the marginal efficiency of capital renders operational, in a monetary economy, the important insight behind Wicksell's notion of the natural rate of interest.

The important advance offered by the concept of the marginal efficiency of capital is that it makes it clear that the marginal efficiency of any investment proposal is a function of expected nominal prices. Hence it is a function of the expected purchasing power of money (the expected rate of inflation). It also clarifies the relationship between the marginal productivity of capital and the marginal efficiency of capital. The marginal productivity of capital plays a role in

determining the marginal efficiency of capital but there is no simple relationship between the two. For example, the marginal efficiency of capital may be negative when the marginal productivity of capital is positive.

Keynes's Marshallian intertemporal perspective on these issues has been well documented in the literature by Davidson (1978) and Chick (1983) among others. Here I will concentrate only on those aspects necessary to illuminate some characteristics of modern macroeconomics. In particular the relationship between the rate of interest and the marginal efficiency of capital will be applied to examine:

- 1 Keynes's objection to Fisher's analysis of inflationary expectations, and
- 2 A contango in the capital goods market.

Keynes and Fisher on expected inflation

As a workable approximation, the usual presentation of Fisher's analysis runs something like expression (1) where i = the nominal rate of interest, r = the real rate of interest and π = expected inflation.

$$i = r + \pi. \tag{1}$$

If expected inflation is zero, the nominal rate of interest equals the real rate. With non-zero inflationary expectations the nominal rate adjusts to maintain the real rate, r . The real rate is thus independent of changes to nominal magnitudes. Of course, if r is interpreted as the Wicksellian natural rate, then it may change but that change would be in response to changes in the forces of productivity and thrift and not nominal magnitudes.

Keynes (1936: 142–4) objected to the usefulness of Fisher's interpretation of expression (1). To begin with, he doubted that lenders who were existing asset-holders could protect their wealth by raising the nominal rate of interest to compensate for expectations of changes in the purchasing power of money.¹ Be that as it may, the belief that interest rates react positively to inflationary expectations is built-in to modern financial markets. From the perspective of this chapter, the substantive element of Keynes's objection is that in a monetary economy, expectations of inflation would impact also on the marginal efficiency of capital. In a monetary economy r is redefined as the marginal efficiency of capital and expectations of inflation will impact both sides of the equality. Hence the Wicksell–Fisherian relationship should be written as

$$i(\pi) = r(\pi). \tag{2}$$

And even if agents act in Fisherian fashion and $i'(\pi) > 0$, Keynes argues that, in the case of demand inflation, $r'(\pi) > 0$ so there may be no stimulus to output.

As Keynes puts it:

If the rate of interest were to rise *pari passu* with the marginal efficiency of capital, there would be no stimulating effect from the expectation of rising prices.

(Keynes 1936: 143)

To see this more formally, consider Chick's (1983: 120) definition of the marginal efficiency of capital. The marginal efficiency of capital, r , can be defined as that rate of discount which equates the expected profit stream, Ω , from a proposed capital investment to the supply price or cost of that capital, P_k^s . That is,

$$P_k^s = \sum_{j=1}^n \frac{\Omega_j}{(1+r)^j}. \quad (3)$$

Given P_k^s and Ω , the marginal efficiency of capital, r , is the rate which establishes equality in expression (3). Clearly Ω is a function of expected prices and r cannot be determined without them. It is also apparent from (3) that a sufficiently large P_k^s relative to Ω would render the marginal efficiency of capital negative. For example, a cost inflation that reduces Ω and increases P_k^s may result in a negative marginal efficiency of capital but leave its marginal productivity unchanged. Hence, although Ω is a function of expected inflation, the impact of expected inflation on the marginal efficiency depends on the type of inflation expected—cost push or demand-pull. The key point, of course, is that the marginal efficiency of capital is a function of expected inflation.

Another way to see this is to discount the expected profit stream using the rate of interest to determine the demand price of capital as in expression (4):

$$P_k^d = \sum_{j=1}^n \frac{\Omega_j}{(1+i)^j}. \quad (4)$$

From expressions (3) and (4) it is apparent that when demand price equals supply price, the marginal efficiency of capital equals the rate of interest. A rate of interest greater than the marginal efficiency of capital means the demand price of capital goods falls below the flow supply price. In such circumstances it is not profitable to install capital goods.

To bring this all together, an equilibrium position can be described in the following terms:

$$P_k^d = \sum_{j=1}^n \frac{\Omega_j}{(1+i)^j} = \sum_{j=1}^n \frac{\Omega_j}{(1+r)^j} = P_k^s. \quad (5)$$

Equilibrium can be described in terms of equality between the demand and supply prices of capital, $P_k^d = P_k^s$, or in terms of equality between the rate of interest and

the marginal efficiency of capital, $i = r$. Now introduce expected inflation after a period of price stability. How will the changed environment impact on this equilibrium? There appears to be no simple answer to this question. As suggested above-it depends on the nature of the inflation shock. For example, if we take the case of a consumer-led boom that results in an increase in the net profit stream, Ω_j , as consumer goods prices rise relative to costs. If agents act in Fisherian fashion, the nominal rate of interest will be increased to maintain the purchasing power of interest income. The net effect of these two changes on the demand price of capital is indeterminate a priori. Similarly, the impact of inflationary expectations on the marginal efficiency of capital in the same circumstances suggests that r will also rise. Given no change to P_k^s , a rise in Ω_j means that r must be higher. A priori, it is not clear that equilibrium will be disturbed. This is Keynes's (1936: 143) point.

Once that is recognised, one of the limitations of Fisher's analysis of inflationary expectations is apparent. The Fisherian parity condition accounts for the impact of expected inflation on nominal interest rates but ignores the consequences for the marginal efficiency of capital.

A contango in the capital goods market

A contango exists in the capital goods market when the demand price of capital goods lies below the flow supply price (Davidson 1978, chapter 4). In other words, a contango is a situation in which the marginal efficiency of capital is less than the rate of interest. With reference to expression (4) a contango occurs because, given the flow supply price of capital goods and expected profits, Ω , the rate of interest exceeds the marginal efficiency of capital. To take an extreme example of a contango, consider the case where the nominal rate of interest has fallen to its lower bound of zero but the marginal efficiency of capital is negative.

Krugman (1998a,b,c, 1999) describes this situation as a liquidity trap.² Hence it is worth examining this case from Keynes's perspective. I am not here suggesting that Keynes considered this case or that it is equivalent to his understanding of what a liquidity trap might be.³ Nor am I concerned with the question of whether Japan is in a liquidity trap or not. Here I am concerned only with Krugman's concept of the liquidity trap from the perspective of the concepts employed in the *General Theory*.

Clearly, if the nominal rate of interest is zero, then the demand price of capital goods hits its ceiling. The demand price has a positive upper bound given by the discount factor of unity when the nominal rate of interest hits its lower bound of zero. The marginal efficiency of capital has no lower bound, however, because r can be negative. If, for any given flow supply price of capital, the marginal efficiency of capital can become negative, a contango in the capital goods market is possible. This is the essence of Keynes's principle of effective demand. Keynes was concerned that the cost of capital would persistently exceed the return on capital resulting in persistent unemployment. For the post-1940s period, Keynes's pessimism turned out to be unfounded, at least until now in the case of Japan.

In the particular case of a contango with a zero nominal rate of interest (which implies a negative marginal efficiency of capital) there are, in principle, three ways to restore equilibrium. Assuming that profits are at least positive, these are: (i) to render the nominal rate of interest negative by money stamping *à la* Gesell, (ii) to raise the profit stream Ω_j , and (iii) to reduce the flow supply price of capital goods. Krugman does not raise option (i) but it has been proposed elsewhere by Buiter and Panigirtzoglou (1999) as a possible solution to a liquidity trap. Nor does he consider option (iii). That leaves option (ii) as the mechanism through which Krugman's proposal for escaping from the liquidity trap must work.

4. Krugman's use of Fisher and Wicksell to analyse Japan's liquidity trap

In this section I explain how Krugman's analysis of Japan's liquidity trap reflects the confusion inherent in the Wicksellian and Fisherian concepts of the real rate of interest as interpreted by modern macroeconomists. I then show how that confusion can be eliminated when Wicksell's natural rate is replaced with Keynes's marginal efficiency of capital and expected inflation impacts both the nominal rate of interest and the nominal marginal efficiency of capital.

The theoretical analysis of Japan's liquidity trap is developed by Krugman (1998c, 1999) in terms of both an 'intertemporal maximization' framework and an '... absolutely conventional open economy *IS-LM* model'. In this chapter I will examine only the closed economy aspects of the latter version of the analysis. The final version of this analysis is presented in Krugman (1989c, 1999) and the essence of the *IS-LM* version runs as follows.

The *IS* and *LM* curves are defined by distinguishing between the nominal rate of interest i and the real rate of interest r . Following Fisher, the nominal rate is defined as the real rate plus expected inflation as in expression (1) above. The *IS* and *LM* curves are written as

$$S(r, y) = I(r, y) \quad (6)$$

and

$$M/P = L(y, i). \quad (7)$$

From Krugman's definition, a liquidity trap occurs when $i = 0$ and $r < 0$ which implies that even when $r = 0$, the economy has a surplus of saving over investment at full employment; $S(0, y_f) > I(0, y_f)$. Krugman's liquidity trap is illustrated in Fig. 7.1. Krugman then argues that this reveals:

... that the full employment real interest rate is negative [$r_0 < 0$]. And monetary policy therefore cannot get the economy to full employment unless the central bank can convince the public that the future inflation rate will be sufficiently high to *permit that negative real interest rate*.

That's all there is to it. You may wonder why savings are so high and investment demand so low, but the conclusion that an economy which is in a liquidity trap is *an economy that as currently constituted needs expected inflation* is not the least exotic: it is a direct implication of the most conventional macroeconomic framework imaginable.

Krugman (1998c: 2, italics added)

It is clear from the highlighted sections that Krugman is arguing that if the real rate of interest (the rate of return on capital) is negative, the economy needs an inflation adjusted nominal interest rate that is also negative. In terms of Fig. 7.1, a literal reading of Krugman suggests that expected inflation will shift the *LM* curve down to intersect the *IS* curve at E_0 . In terms of expression (1), Krugman is suggesting that a negative real rate [$r_0 < 0$] can be offset by inflationary expectations of an equal magnitude. In other words we can think of (1) as $i = 0 = r + \pi$ because $r < 0 = \pi > 0$, or $i - \pi = r_0$. But this line of reasoning is flawed – for several reasons.

First, it involves confusion between the real rate of interest in the sense of Wicksell (the natural rate r_0 in Fig. 7.1) and the inflation adjusted nominal rate – a real rate in the sense of Fisher. As outlined in Section 2, the Fisherian real rate is the nominal rate adjusted for expected inflation. In the simple case of zero expected inflation $i_0 = r_f$, where the subscript indicates that we are dealing with

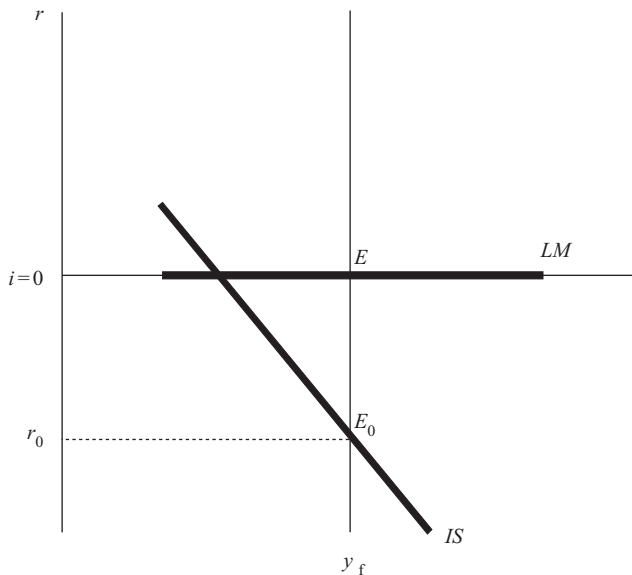


Figure 7.1 Krugman's liquidity trap

Fisher's real rate of interest. If expectations of inflation (positive) are introduced, then the position adjusts to $i_1 = r_F + \pi$. But this is obviously no more than $i_1 = i_0 + \pi$ which makes Fisher's intention clear. Lenders will attempt to protect the purchasing power of their interest income by increasing the nominal rate of interest to compensate for any fall in the purchasing power of money.⁴ In a Fisherian world inducing inflationary expectations would cause the nominal rate of interest rate to rise rather than fall – the *LM* curve would shift upwards – the cost of capital would increase making the situation worse! If, however, we are in a non-Fisherian world or one in which the monetary authorities pegged the nominal interest rate at zero, then clearly the Fisherian real rate can become negative and with the appropriate expected rate of inflation can be brought to equality with the negative Wicksellian natural rate. That is, $r_F = -\pi = r_0$. But this obviously begs the question – why would we want to make the cost of capital negative? Surely the problem lies with the negative real rate of return on capital?

Second, the real rate of return in Krugman's *IS-LM* version of the analysis is clearly Wicksell's natural rate – determined by the forces of productivity and thrift (*S* and *I*). As such it is a commodity or own rate, which is independent of nominal prices and expected inflation. But as outlined in Section 4 above the distinction between the marginal productivity and the marginal efficiency of capital is fundamental to clarity of analysis of the liquidity trap. In that respect we know that the marginal efficiency of capital can be negative even if its marginal productivity is positive. To his credit, Krugman (1998b: 16) acknowledges this point, when he notes that although the marginal productivity of capital can be low, it can hardly be negative. To deal with this problem Krugman introduces Tobin's *q* and argues that in an economy in which Tobin's *q* is expected to decline, investors could face a negative real rate of return. This is a step in the right direction because Tobin's *q* can be interpreted in a fashion that is consistent with Keynes's concept of the marginal efficiency of capital.

Tobin's *q* can be defined as the ratio of the market value of a firm relative to its replacement cost – and both can be calculated in Fisherian real terms. In Keynes's terminology, the equity valuation is a proxy for the demand price of capital and the replacement cost is the flow supply price of capital. In equilibrium the demand price equals the flow supply price. That is, when $P_k^d = P_k^s$ then $q = P_k^d / P_k^s = 1$ Hence if Tobin's *q* is expected to decline, this suggests that the demand price of capital is expected to fall relative to the flow supply price. With a sticky flow supply price and/or expectations of lower profits, the marginal efficiency of capital can indeed become negative. The point here is that to provide a rationale for the negative real rate of return on capital Krugman ultimately has to fall back on what is essentially Keynes's analysis. Hence I want to stress that to make sense of Krugman's argument, Keynes's concept of the marginal efficiency of capital is required (or Fisher's rate of return over cost). But if we fall back on Keynes to explain a negative marginal efficiency of capital, would inducing inflationary expectations enable an economy to escape from Krugman's liquidity trap?

The analysis in Section 3 above suggests that inflation may work to lift Japan out of its liquidity trap; but only if inflation increases the marginal efficiency of capital relative to the rate of interest. However, as Keynes noted if the nominal rate of interest rises *pari passu*, there is no effect on output – the point of effective demand is unchanged. In addition, if, as a useful approximation, wages are sticky, supply prices will be sticky also. Hence, if the expectations of inflation arise because the Bank of Japan adopts a positive inflation target, as Krugman (1999) suggests, then this may produce a situation in which expected profits increase sufficiently, given the flow supply price of capital, to restore a positive marginal efficiency of capital. What happens then depends on the behaviour of the nominal rate of interest. If we follow the new horizontalist analysis sketched by David Romer (2000), the Bank of Japan is required to hold the nominal interest rate at zero (or at least below a positive marginal efficiency of capital). With the rate of interest below the now positive marginal efficiency of capital the *IS* curve will shift to the right until full employment is reached. (The *IS* curve shifts because investment increases when the cost of capital is below the return on capital, *ceteris paribus*.) Once there, the inflation targeting regime kicks in to restrain the *IS* curve by raising the nominal rate in terms of some form of Taylor rule. Most economists reading Krugman's analysis are in fact forced to make some adjustment along these lines to extract the possible element of sense in his argument. For example, this is how Hutchinson (2000) interprets Krugman's analysis – as a proposal to stimulate spending.

Krugman's prescription of expected inflation can, under a special set of circumstances, produce the desired outcome.⁵ But if the medicine he prescribes works, under the conditions outlined above, it works because the marginal efficiency of capital is increased relative to the rate of interest; not because the Fisherian real rate of interest becomes negative. Accepting for the sake of argument, that inflationary expectations can be engendered by the Bank of Japan, the point I want to stress here is that Krugman's intentions can be made coherent – but only if we abandon his use of Wicksell and Fisher and employ Keynes's distinction between the rate of interest and the marginal efficiency of capital.

5. Concluding remarks

Based on what he calls orthodox macroeconomics, Krugman's analysis suggests that Japan can inflate its way out of a liquidity trap. The argument he presents is based on Fisher and Wicksell and implies that all that the Japanese economy needs is a negative real (inflation adjusted) rate of interest to equate with the negative real rate of interest determined by the forces of productivity and thrift (Wicksell's real rate). But this makes no economic sense at all. In an economy with a negative marginal efficiency of capital, inflationary expectations will not stimulate output unless they raise the marginal efficiency of capital *relative* to the rate of interest. Krugman's use of orthodox macroeconomics, based on

Wicksell and Fisher, fails to make this clear and leads to the nonsensical implication that equilibrium can exist with a negative real cost and marginal efficiency of capital.

Keynes's analysis makes it clear that the solution to Japan's liquidity trap is not to reduce the cost of capital to the negative marginal efficiency of capital, but to generate a positive marginal efficiency of capital. Krugman's proposal for an inflation target to generate inflationary expectations might just work – not because it produces a negative real rate of interest *à la* Fisher – but because it raises the real marginal efficiency of capital relative to the real rate of interest, *à la* Keynes.

Hence, when answering Blanchard's (2000) question, an honest macroeconomists in 2000 would have to concede that in some respects the profession has not clarified the ambiguities inherent in Wicksell and Fisher. Krugman's analysis is a clear example of the contortions required by the reader when Fisherian and Wicksellian concepts are applied. Wouldn't it be more efficient to employ Keynes's concepts to begin with?

Notes

- 1 Kregel (2000: 5) argues that existing bond holders will suffer capital losses when nominal interest rates rise. Hence the Fisher effect goes the wrong way for existing bond holders as the capital losses swamp the increased interest earnings from the higher nominal rates required to maintain the Fisherian real yields. As Kregel notes: '... in general it is impossible for a simple adjustment in the interest rate to keep purchasing power unchanged once the impact of the interest rate on the value of existing stocks of assets is taken into account. Thus there is no reason to expect the Fisher relation to hold, as has indeed turned out to be the case empirically.' This problem becomes particularly acute at low interest rates.
- 2 Krugman (1998b: 5) defines a liquidity trap... as a situation in which conventional monetary policies have become impotent, because nominal interest rates are at or near zero – so that injecting monetary base into the economy has no effect, because base and bonds are viewed by the private sector as perfect substitutes.'
- 3 Kregel (2000) examines the relationship between Krugman's and Keynes's concepts of the liquidity trap.
- 4 Recall note 1.
- 5 Kregel (2000: 6) is sceptical on the grounds that the Bank of Japan would be unable to guarantee that short-term interest rates would not rise and that the yield curve would remain stationary.

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‘THE STAGES’ OF FINANCIAL DEVELOPMENT, FINANCIAL LIBERALIZATION AND GROWTH IN DEVELOPING ECONOMIES: IN TRIBUTE TO VICTORIA CHICK

*Rogério Studart*¹

1. Introduction

Victoria Chick is by character a controversial and thought-provoking intellectual. For instance, in several parts of her work she reaffirms what now has become a post-Keynesian tenet: the investment–saving nexus proposed by Keynes (1936) is a logical consequence of the principle of effective demand, whereby investment is the *causa causans* in the determination of aggregate income, and saving.² And yet, in a paper written originally in 1984 she claims that

the reversal of causality of the saving–investment nexus proposed by Keynes (1936) should not be seen as the correct theory in triumph over error but as a change in what constituted correct theory due to the development of the banking system.

(1992: 193–4)

The provocation is not meant to generate controversy in vain. It seems much more a restatement of a methodological approach that this leading post-Keynesian economist has developed throughout the years – the best characterization of which seems to be that made by Arestis and Dow (1992: xi):

Although Victoria Chick’s own methodological approach has much in common with that of Keynes, she has an emphasis which he left largely implicit: the historical particularity of theories, i.e., the fact that different types of abstraction may be better suited to some historical periods than others.

This approach is an important political-economy tool for the analysis of the effects of institutional change on the potential macroeconomic economic performance of monetary production economies. And this chapter aims at demonstrating this point.

In this chapter, we explore further Chick's approach to speculate on and to compare the potential effects of some important changes in financial markets (financial opening and domestic financial deregulation) on the financing of investment in developed and developing economies. It is organized as follows. Section 2 discusses the fundamental problem of financing investment in a market economy – the problem of managing maturity mismatching in an environment of fundamental uncertainty. Even though this is a problem faced by all market economies alike, how the problem is dealt with depends on the particular financial structure that has evolved in different nations at different periods of time. Thus, in Section 3 we compare the finance-investment-saving-funding circuit in three different institutional settings: the capital-market-based system, the private credit-bank-based system and the public credit-based system. We specifically explore the strengths and weaknesses of these distinct institutional arrangements. In Section 4 we go even further in showing the potential of Chick's methodological approach by using it to raise some issues concerning the possible consequences of recent developments, related to domestic financial deregulation and financial opening, on the financing of investment in developed and developing economies. Section 5 summarizes our findings and concludes the chapter.

2. Maturity mismatching, finance and funding

Financing investment in the context of fundamental uncertainty

The problem of maturity mismatching (in the process of investment finance in monetary production economies) can be described by stylizing the basic objective functions of the two agents at either end of the process of financing productive investment:

- 1 *Productive investors* are defined as entrepreneurs prepared to assume the risks involved in making a long-term commitment of resources (investment), in the expectation that when the investment matures, the demand for the additional output capacity will be enough to generate at least normal (positive) quasi-rents.
- 2 *Individual surplus units* (wealth holders) hold assets of different types for different reasons. They hold liquid assets, for transactions and speculative reasons;² less liquid assets, for (i) speculative purposes or (ii) to provide a flow of income after a certain period of time (pension policies, for instance) or due to actuarially expected events (such as insurance policies). Whatever the reason for holding assets, they will attempt to maximize their return, and the liquidity of their portfolio, since part of future expenditures is uncertain

and/or because they do not want to risk severe declines in wealth due to unexpected changes in asset prices.

These objective functions are symmetrical, both in terms of liquidity and remuneration (a return for the surplus unit and a cost for the productive investor) of their assets and liabilities. Thus the separation of acts of saving and of investing in such economies leads to two risks associated with maturity mismatching. The first risk involved is that the issuer of the financial asset ceases to be able to repay – the default risk – which is specific to each different company and economic sector, but is also highly related to the macroeconomic environment.³

The second risk lies in the possibility that, within the period before the maturity, the asset holder will need to sell the asset due to unforeseen expenditures – the liquidity risk. This risk is associated with the degree of organization of the markets of the assets held by the asset holder. Finally, the market value of the asset can change in an unexpected way, rendering the total return on the asset (quasi-rents plus capital gain) negative. This is the capital risk faced by the asset holders.

This basic problem of maturity mismatching seems to me to be at the heart of Keynes's, and the post-Keynesian, view on the process of investment finance: the finance-investment-saving-funding circuit.

Finance and funding

Most neoclassical economists after Wicksell would perfectly agree that banks were capable of *creating* the additional money necessary for the expansion of investment – so that *ex ante savings* cannot be a constraint on the growth of investment. Thus Keynes's idea that 'the banks hold the key position in the transition from a lower to a higher scale of activity' or that *finance* was a 'revolving fund of credit' – that is, that a rise of investment financed by credit expansion increases income and the transactions demand for money (Keynes 1937) – was unlikely to be seen as a revolutionary view by their contemporary Wicksellian economists.

But for loanable funds economists, this was a disequilibrium situation for banks. An expansion of credit would lead to a reduction of cash reserves below their equilibrium level, exposing the banks to the risk of bankruptcy. Banks would thus be forced to issue bonds in order to reestablish the equilibrium of the portfolio allocation – causing a rise in interest rates, until aggregate saving and investment were brought into equilibrium again.

Keynes's response to such an equilibrium approach was to apply his liquidity preference theory to the behavior of the banking firm. Banks' liquidity preference was not determined by probabilistic actuarial calculus of the risk involved in the processed intermediation, but mainly by their uncertain expectations. Thus, in the context of improved entrepreneurial long-term expectations, a positive expectation on the part of banks (and thus a lower liquidity preference) would allow growth to take place. Therefore 'the banks hold the key position in the transition from a lower to a higher scale of activity' (Keynes 1936: 222).

But the concept of finance did not fully address the problem of maturity mismatching from the productive investor's perspective: due to the liability structure of commercial banks, even if banks reduced their 'liquidity preference' and agreed to extend credit to productive investors, these credits would be short term.⁴ This fact puts the long-term productive investor in a situation of high financial exposure – any change in short-term rates of interest could lead to an unsustainable financial burden, and in the limit would turn once sound and profitable investment opportunities into unprofitable investment projects. 'Thus', concluded Keynes, 'it is convenient to regard the twofold process [of investment finance and funding] as the characteristic one' (Keynes 1937: 217).

The question of the need for *funding* did force Keynes to make explicit two important interrelated issues barely touched on in the *General Theory*. On the one hand, the existence of mechanisms to finance, and in particular to fund investment, was a condition for sustained growth of investment. On the other hand, this conclusion forced him to make explicit the importance of the institutional setting (financial institutions and markets) for macroeconomic performance – a question that was only appropriately dealt with in the 'Treatise on Money'. That is our next topic.

3. The institutional background of Keynes's finance-funding circuit

There are two paradigmatic institutional structuring of the mechanisms of investment finance: the German universal banking, credit-based financial system (CBFS) and the US market-based financial system (MBFS) – cf. Zysman (1983). In the first case, universal banks manage maturity mismatches internally, that is they issue bonds with different maturities in order to finance assets with distinct maturities. The distinctive characteristics of the system lie in the high regulation of German universal banks in order to avoid significant maturity mismatches, and the revealed preference of the German public for bank bonds as a form of long-term savings. In the US credit-based system, maturity mismatches are mitigated by the existence of a myriad of financial institutions and markets specializing in bonds and securities of different maturities and risks. As discussed in Studart (1995–6), these institutional arrangements were the result of long historical processes, often led by government policies, direct intervention or regulation.⁵

Even though MBFS is the institutional benchmark normally used to explain the *finance-funding* circuit, there is no reason why other types of *investment finance schemas* in distinct financial structures cannot be as macroeconomically efficient. Indeed, distinct investment finance schemas present different advantages and vulnerabilities.⁶ Table 8.1, based on Zysman (1983), presents three paradigmatic cases.

It is quite clear that the US capital-market-based financial system is an inadequate picture of financial structures in most developing economies. As a matter of fact, capital-market based systems are exceptions, rather than the norm, in the developed as well as developing economies – restricted mainly to the USA and

Table 8.1 Patterns of development finance in different financial structures

	<i>Capital-market-based financial systems</i>	<i>Private credit-based financial systems</i>	<i>Public credit-based financial systems</i>
Sources of long-term funds	Direct	Indirect	Indirect
Instruments	Securities	Bank loans	Bank loans
Nature of the financial institutions	Private	Private	Public
Structure of the financial system	Segmented	Concentrated	Concentrated

the UK. Most economies which industrialized successfully (Japan and Germany, to mention two of the most prominent cases⁷) did not possess developed capital markets.

Credit-based financial systems (CBFS hereafter) can also be quite functional in financing accumulation and sustaining growth, but they also do tend to have vulnerabilities. In order to understand these, we must remember that, due to the structure of the liabilities of deposit-tanking institutions (commercial banks, mainly), they are usually suppliers of short-term loans. And, unless there are no significant technical indivisibilities and the maturity of investment is very short, expanding investment leads to higher levels of outstanding debt of the corporate sector.⁸

In most developing countries, the typical investment finance mechanism comprises public institutions using public funds and forced savings financing long-term undertakings. Thus development banks and other public financial institutions were historically the institutional arrangements found to overcome market failures in financial systems of such economies, failures which otherwise would prevent them from achieving the levels of investment compatible with high levels of economic growth. Such systems can also be highly *functional* in boosting growth and promoting development, but, like any other systems, their *robustness*⁹ depends on certain important conditions. First of all, because investment finance is mainly based on bank credit, banks tend to be highly leveraged – especially in periods of sustained growth. The maintenance of stable (not necessarily negative) borrowing rates is a condition for stability of the mechanisms to finance. Second, in those economies where investment is financed mainly through the transfers of fiscal resources, sustained growth is a condition for the stability of the *funding* mechanisms too.

In sum, the existence of investment financing mechanisms (institutions and market) for dealing with the problem of maturity mismatching in the context of uncertainty is evidently a precondition for (financially) sustained economic growth. Financial systems are a myriad of institutions and markets through which such risks can be socialized. Their efficiency in sustaining growth has to do with

the *existence* and *robustness* of their mechanisms to finance and fund investment. The *existence* is a direct result of institutional development, a by-product of the economic history of specific countries, that is:

markets are institutions, they are not natural phenomena. When they are created, rules are set, standards are defined, acceptable behaviours and procedures are established.

(Carvalho 1992: 86–7)

The *robustness* of such mechanisms depends on the stability of the main variables affecting the cost and supply of finance and funding in distinct financial structures. These issues of course can only be discussed by the analysis of specific financial structures, which evolve through time. This seems exactly to be the spirit of the methodological approach put forth by Chick, and we now want to explore this methodology further to speculate on the potential effects of recent changes on financial systems in developed and developing economies on their mechanisms to finance investment and growth.

4. Recent changes in the financial systems and their effects on financing investment

Financial systems in both developed and developing economies have changed dramatically in the 1980s and 1990s, as a consequence of domestic deregulation and external financial liberalization:

- 1 The borderline between banking and non-banking activities has been blurred in many mature economies, and the process of banking conglomeration (via mergers and acquisitions) has been intense.
- 2 The growth of capital and derivatives markets has been astonishing.
- 3 Deregulation and growth of institutional investors – in special pension funds and insurance companies – have made their role in the provision of loanable funds more prominent.
- 4 External liberalization and significant improvements in information technology have increased cross-border dealings in securities, and the internationalization of financial business.¹⁰

From these changes, it seems that in several ways the institutional setting on which the traditional post-Keynesian story is told is ceasing to exist. The role of banks in the provision of finance is changing in a fundamental way: not only have traditional banking institutions been transformed into new financial services firms – including those of institutional securities firms, insurance companies and asset managers – but also non-bank financial institutions – such as mutual funds, investment banks, pension funds and insurance companies – now actively compete with banks both on the asset and liability sides of banks' balance sheets.¹¹

The growth of capital markets and the institutional investors playing in them has provided new sources of finance to the corporate sector, a trend that has been highly leveraged by the use of financial derivatives to unbundle risks and securitize. This means the sources of *funding* to corporate investors have expanded extraordinarily, at the same time that the means of administering maturity mismatching has increased significantly for both financial institutions and corporations. The process of integration of financial markets among developed economies has expanded this access to long-term funding even more significantly.

Of course, the other side of this coin is related to increasing financial fragility of both the corporate sector and financial institutions. On the one hand, because of the process of intermediation, the supply of finance is less dependent on changes in the banks' liquidity preference and more on the liquidity preference of financial investors – particularly institutional investors. Changes in the expectations of such investors can create significant shifts in overall portfolio allocation, and abrupt changes in asset prices. Furthermore, given the tendency for high levels of leverage, changes in asset prices (and interest rates) may lead to declines in expenditures of consumers and companies, creating a Minskian-type process of financial instability.

As for developing economies, the main change has been associated with *financial integration* and *foreign financial liberalization*. Financial opening in this context of financial underdevelopment (here defined as a lack of appropriate mechanisms to finance accumulation) is in effect the integration of unequals: that is, it represents the integration of financial systems with little diversification of sources and maturity of finance and relatively small securities markets.

Two consequences normally follow such integration of unequals: First, integration can lead to processes of overborrowing from international credit and capital markets, and overlending to domestic markets. This means, given the lack of private long-term financing mechanisms, financial opening provides domestic agents with the opportunity to swap maturity mismatching for exchange-rate mismatching. Thus in a financially closed economy with underdeveloped finance mechanisms, financial stability is vulnerable to changes in the domestic interest rate. And in a financially open developing economy with the same characteristics, financial instability can be triggered by changes in international interest rates and/or shifts in the exchange rate.

Second, capital flows from developed economies tend to move in large waves (in relation to the size of domestic asset markets). Sharp growth of capital flows into developing economies tend to generate bubbles in asset markets – in some economies in securities markets and in other in real state and land markets – as well as credit markets. In the specific case of the region, such bubbles in capital markets have occurred, and they did not occur more violently due to the privatization programs and the growth of domestic public debt, which permitted a significant capacity to absorb such flows. In what concerns credit markets, in many economies financial opening has led to rapid credit expansion, mostly directed to consumption rather than capital accumulation.

All in all, such flows did not contribute substantially to the sustained development of primary capital markets – which could indeed provide additional sources of financing and funding of investing domestic companies – and created dangerous levels of exchange-rate exposure of public and private borrowers. In addition, such foreign capital flows led to bubbles in capital markets. These bubbles tend to be counterproductive in the process of financial development: that is, evidence shows that highly volatile thin capital markets tend to scare off the long-term savers (such as institutional investors) which could be the basis for the development of private long-term sources of investment financing.

Concerning *domestic financial liberalization*, the effects on the mechanisms to finance and fund investment in developing economies seem to be quite worrisome. As mentioned above, in most developing countries, the typical investment finance mechanism comprises public institutions using public funds and forced savings financing long-term undertakings. Thus development banks and other public financial institutions were historically the institutional arrangements found to overcome market failures in financial systems of development countries, failures which otherwise would prevent them from achieving the levels of investment compatible with high levels of economic growth.

In the 1980s and 1990s, many of these institutional arrangements in developing economies in the region have been dismantled, or significantly reduced. This process of dismantling was led by at least two different forces: (i) increasing fiscal difficulties during the 1980s, which forced fiscal entrenchment and the reduction of fiscal and parafiscal funds available for productive investment; (ii) the prominent view that financial opening and deregulation would increase the sources of foreign and private domestic funds to investment respectively.

The difficulties of financing accumulation and development in general lie in the fact that the pre-existing mechanisms of investment finance do not exist anymore, whereas there is little indication that private domestic markets will naturally fill this gap. It is true that the abundant supply of foreign capital until recently has widened the access of certain domestic investors (especially the large national and multinational enterprises) to international markets. But at least three problems have emerged from this substitution of domestic mechanisms to finance investment for foreign capital flows:

- 1 most domestic companies (especially small and medium-sized ones) never had access to such international markets;
- 2 the supply of capital flows has been shown to be volatile, and after the Asian crises it has been subsequently reduced;
- 3 those companies that manage to finance their investments with foreign bank loans and issues in the international bond markets have in effect increased their exposure to shifts in exchange rates and interest rates abroad – a point which we will discuss below.

In such circumstances, it seems clear that the financing constraints to growth in the economies in the region have increased in the 1980s. Furthermore, if investment

levels do rise, growth will almost certainly be followed by high levels of financial fragility – unless institutional mechanisms to finance investment are developed.

5. Conclusion

Keynes's investment–saving nexus is obviously a logical by-product of his principle of effective demand, but his finance–funding circuit is deeply rooted in the UK–US capital-market-based systems. This institutional setting, as usual, is a result of the historical particularities of these two economies. Keynes's own views on the potential disrupting effects of speculation seem to be directly related to the way investment is financed and funded in such economies. In other economies, different institutional settings evolve in order to deal with the risks related to maturity mismatching in a context of fundamental uncertainty. Certainly these systems are also potentially vulnerable to abrupt changes of liquidity preferences – not so much of wealth holders, but of banks.

Using Chick's methodological approach described in the introduction of this chapter, important issues can be raised in what concerns the effects of financial domestic deregulation and financial integration on the mechanisms to finance and fund investment. Contrary to what was expected by defenders of financial liberalization and integration, in most developing economies there has been no significant development of long-term financing mechanisms – such as a rise in long-term lending from the indigenous banks or sustainable growth of primary capital markets. On the contrary, the increase in volatility of the secondary securities markets is likely to exacerbate the *short-termist* drive prevailing in developing countries.

Another consequence of financial liberalization has been the dismantling of traditional mechanisms for financing investment – such as development banks. The long-term consequence is obviously an important institutional incompleteness that leaves these economies with few instruments to raise and allocate funds to productive investment. Two consequences will follow from that: either (1) investment will be strongly constrained by the lack of sound financing mechanisms; and/or (2) the financing of investment will be increasingly dependent on the access of (mainly large) domestic and foreign companies to more developed international financial markets. In the first case, investment and saving – and thus growth – are bound to be much lower than potentially they could be. In the second case, growth will tend to raise foreign indebtedness and vulnerability.

If our analysis is correct, the resulting policy conclusion is that there is an urgent need to reconstruct sound domestic development mechanisms in developing economies. Institutions need to be rebuilt, and others need to be created. But of course the development of such conclusions must wait for another article.

Notes

- 1 The author is grateful to Philip Arestis for his comments and gratefully acknowledges the financial support of CNPq, Brazil's Council for Research. The usual caveats obviously apply.

- 2 See e.g. Chick (1984: 175).
- 3 Almost by definition, the overall default risk is likely to be higher in a stagnant or contracting economy than in a growing economy.
- 4 In one way or another, growth will be followed by an increase in what Minsky (e.g. 1982) named systemic financial fragility.
- 5 A paradigmatic case is the development of the market for mortgage-based assets in the United States. On this, see Helleiner (1994).
- 6 For instance, after confirming the importance of capital markets as suppliers of long-term finance to investment, Keynes described the disadvantages of investment finance scheme in CBFS as follows: 'The spectacle of modern investment markets has sometimes moved me towards the conclusion that to make the purchase of an investment permanent and indissoluble, like marriage, except by reason of death or other grave cause, might be a useful remedy for our contemporary evils.' (Keynes 1936: 160).
- 7 For a detailed description of the functioning of the financial systems in these countries, see Mayer (1988) on Germany, Sommel (1992) on Japan and Amsden and Euh (1990) on South Korea.
- 8 This leads us to two important characteristics of investment finance schemas in CBFS: *first*, in these systems, medium- and long-term credit, especially coming from private banks, may be rationed in moments of growth. This also explains (i) why in the successful German private CBFS, there is a close interrelation between *universal banks* and the industrial conglomerates in which they participate, including significant shareholdings and participation in the board of corporations; (ii) why in economies with underdeveloped capital markets, where German-type private universal banks never flourished, institutions such as development banks emerged, not rarely accompanied by selective credit policies; and (iii) the existence of *curb credit markets* in many developing economies, markets which tend to grow rapidly in periods of expansion. In addition, investing firms that do not have access to rationed middle and long-term credit must self-finance their investments, or simply borrow short to finance long-term positions. Hence, a *second*, interrelated, characteristic of CBFS is that growth, especially rapid growth, is usually accompanied by increasing financial vulnerability of the banking sector as well as the investing corporate sectors. Investment finance schemas in such an institutional environment are thus very vulnerable to change in financial asset prices, and especially interest rates.
- 9 More on this concept below.
- 10 For more detailed description of the changes in the financial systems of mature economies, see *inter alia* Franklin (1993), Feeney (1994), OECD (1995), Bloomenstein (1995) and Dimsky (2000).
- 11 Paradoxically, both in the international experience, *disintermediation* has not necessarily meant a decline in the role, and even size of banks. On this see Blommestein (1995: 17).

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ON KEYNES'S CONCEPT OF THE REVOLVING FUND OF FINANCE

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1. Introduction

Keynesian monetary theorists of all stripes have always stressed the importance of considering the specific channels through which new money is injected into an economy. The Keynesian general argument is that money creation generates income and wealth effects that cannot be neglected in the analysis of the impacts of monetary policy. To a large extent, these income and wealth effects justify the Keynesian assumption of money non-neutrality, in opposition to all sorts of 'classical' views.

Victoria Chick has certainly been among the leading post-Keynesian economist to champion this view. In a 1978 paper entitled 'Keynesians, Monetarists and Keynes: The End of the Debate – or a Beginning?' (reprinted as chapter 6 in Chick 1992), Chick took up the issue of contrasting Keynesian, Monetarist and Keynes's own views on the subject. Among the most important ideas advanced in that paper was certainly the proposition that for Keynes money created to finance fiscal deficits was received by the general public as *income*, in contrast to money injected through open market operations. The inability to realize this difference and to work out its implications may probably explain much of the conceptual confusion that lies behind much of the 'horizontalist controversy' among post-Keynesian monetary theorists.

An equally important distinction was brought to light by Chick in her 1981 paper, 'On the Structure of the Theory of Monetary Policy' (chapter 7 in Chick 1992). In this paper, she showed that while portfolio theories (ranging from Tobin's 'q' to the 'New' Quantity Theory of Milton Friedman) modeled money as 'money held', old classical views modeled it as 'money circulating'. A novelty of Keynes's own treatment was to consider both views, although, according to Chick, he left many problems unsolved.

Both sets of arguments were combined in a very important paper published in 1984, 'Monetary Increases and their Consequences: Streams, Backwaters and Floods' (chapter 10 in Chick 1992), a paper that still waits for the recognition it deserves. This work is actually divided into two parts. The first takes up Keynes's

finance motive, relating money creation to planned investment expenditures. The second, which will not be discussed in this chapter, examines the potential inflationary effects of money creation. Although in the second part of her paper Chick produces one of the clearest presentations available of the arguments showing why money creation *per se* is not necessarily inflationary, space constraints require that only the first be discussed on this occasion.

It is well known that Keynes's identification of a *finance motive to demand money* in his post-*General Theory* debates with Ohlin has become the source of apparently unending controversies. The meaning of *finance*, how it is created and allocated, what is its role in the investment process, etc., opposed Keynes to Ohlin and Robertson first, and, later, to scores of other economists to this day. The debate ended up involving many issues and at this point it probably cannot be presented properly in just one paper. In fact, many new ideas were introduced in this discussion, a large number of which are still surrounded by misunderstandings. A particularly difficult new concept to grasp, presented in these debates by Keynes, was that of the *revolving fund of finance*. Although Chick (1992, chapter 10) brilliantly contrasts Keynes's ideas to Robertson's as to the general character of the finance motive problem, little attention is actually given to this concept. To exploit it more fully is the intent of this chapter.

The revolving fund of finance was a key concept both in the debate between Keynes to Ohlin and, in particular, Robertson, in the late 1930s and in the lively exchange between Asimakopulos and Kregel, among others, and Chick in another context in the 1980s. In fact, both Robertson, in the first round of debates, and Asimakopulos, in the latter, were incensed by Keynes's statement that the mere act of spending could replenish the 'fund of finance' available to investment. Keynes, on the other hand, insisted that, as long as the desired rate of investment did not increase, spending *per se* would restore the pool of finance necessary to support its actual realization.

It was also a characteristic of both rounds of debates that arguments were often made at cross purposes, not only because the authors involved entertained different views as to how the economy works, but also because they disagreed about the meaning of some of the main concepts they employed. Keynes seemed to be aware of this problem when he pointed out that part of the disagreements between him and Robertson were due to the different meanings the word 'finance' evoked to each of them. Liquidity was also an ambiguous concept in this debate. Finance, and the related idea of finance motive, meant completely different things for Keynes and Robertson, and, under these conditions, it should not be surprising that so much confusion should be created around the notion of a 'revolving fund of finance'.

This chapter has a very modest goal: to shed some light on those debates by identifying the precise meaning and implications of the concepts of finance and the revolving fund of finance used by Keynes. In Section 2, we try to contrast the two different meanings of the word 'finance', adopted by Keynes and by Robertson, respectively. To do it, we also highlight their different definitions of the term 'liquidity', in relation to which each one of them derived his own

concept of finance. The following sections are devoted to deciphering Keynes's novel ideas on this subject. Section 3 explores the definition of finance motive to demand money and the revolving fund of finance under stationary conditions. Section 4 is dedicated to an examination of the changes Keynes's framework has to suffer to deal with growing investment. A summing up section closes the paper.

2. The two meanings of finance

Among the many reviews, discussions and criticisms of *The General Theory* published in the late 1930s, Ohlin's lengthy examination of the liquidity preference theory of interest rates and its relation to the theory of investment and saving certainly stands out, not least because it was one of the only two critical reviews that generated a direct reply by Keynes himself.² In his paper, published in two parts in *The Economic Journal* in 1937, Ohlin criticized Keynes's proposition of a purely monetary theory of the rate of interest. Ohlin agreed that the rate of interest could not be seen as being the price that equates investment to saving, since, as he believed Keynes had shown, investment is *always* equal to saving. Ohlin, however, interpreted Keynes as having stated that *realized* investment is always equal to *realized* saving. These are, in fact, definitionally identical. Ohlin argued, though, that the interest rate is *not* the price that equates the demand for *money* to the supply of *money*, but rather the demand for *credit* to the supply of *credit*. In addition, he contended that the demand for credit was ultimately dependent on *desired* investment, as much as the supply of credit was ultimately determined by *desired* saving, contrarily to Keynes's view.

Ohlin's position was generally shared by Dennis Robertson, in England, as well as by other Swedish economists that viewed themselves as followers of Wicksell. The theory of the rate of interest as the regulator between the demand for and supply of credit, ultimately dependent on desired, or *ex ante*, investment and saving, became known as the loanable funds theory of the interest rate, liquidity preference theory's main competitor as an explanation for that variable.

Keynes rejected Ohlin's approach, particularly the idea that somehow the loanable funds theory could be seen as an extension of, and an improvement on, his own liquidity preference theory. In his reply, however, Keynes conceded that he had overlooked the influence that planned investment could have on the *demand for money* and, thus, on the interest rate. An investor-to-be, since investment is nothing but the purchase of a certain category of goods, needs money as any other spender-to-be. The quantity of money necessary to actually perform the act of purchasing something was called by Keynes *finance*.³ In order to invest, an individual has to get hold of cash (or something convertible on demand at fixed rates on cash), since to buy is to exchange money for a good. *To finance a purchase, for Keynes, means to get hold of the required amount of money to perform the operation.*

Finance, for Robertson, on the other hand, as well as for Asimakopulos later, meant something else. It referred to the act of issuing debt to acquire financial resources. To finance a purchase meant, thus, to accept a certain type of contractual

obligation to be discharged at a future date. Until that date came, the individual who issued the debt would be constrained in his/her choices by the impending obligation to the creditor.

The difference between the two views may be subtle but they are very important to the ensuing analysis of the process of investment, its requirements and implications. In Keynes's view, to finance a purchase is to be able to withdraw a certain value from monetary circulation in anticipation of a given expenditure. A given amount of money, thus, is temporarily withdrawn from active circulation, to be kept as idle balances until the moment comes to make the intended purchase. When the spending is made, the amount of money that was held idle comes back into circulation, and *liquidity* in the Keynesian sense is restored.⁴ It is, thus, obviously a problem of *money* supply and demand. For Robertson, to finance a purchase means to sell a debt to a bank in order to get the means to purchase a given item. It generates a lasting obligation for the debtor and reduces the spending capacity of the creditor. Only when this obligation is extinguished, by the settlement of the debt, *liquidity*, in the Robertsonian sense, is restored to its previous position.⁵

For Keynes, thus, the liquidity position of the economy was restored when money held idle returned to active circulation. For Robertson, in contrast, liquidity was restored when debts were settled. Naturally, the equilibrating processes conceived by each of them had to be different too. The diverse nature of the two concepts, and their role in causing so much debate among the participants of this exchange, was clearly observed by Keynes:

A large part of the outstanding confusion is due, I think, to Mr. Robertson's thinking of 'finance' as consisting in bank loans; whereas in the article under discussion I introduced this term to mean the cash temporarily held by entrepreneurs to provide against the outgoings in respect of an impending new activity.

(CWJMK 14: 229)

3. The finance motive to demand money and the revolving fund of finance

For whatever reasons, Robertson's meaning of finance was accepted by perhaps the majority of economists. It is our contention that ignoring the special sense given by Keynes to the word has been responsible for much of the confusion created around the idea of *revolving fund of finance*, initiated in the Keynes/Robertson debate but that lasted up to the debate between Asimakopulos and his critics. In this section and in the next, we try to explore Keynes's original ideas, to dispel the conceptual confusion that surrounds them and to examine the analytical opportunities opened by his approach.

Keynes's admission of a new motive to demand money, related to planned investment expenditures, denominated the *finance motive*, in addition to the three

other motives listed in *The General Theory*, was received by many as an awkward and roundabout way of recognizing the inadequacy of liquidity preference theory.⁶ For his critics, it amounted to accepting that, ultimately, productivity and thrift were the determinants of the interest rate, no matter how complicated and indirect could be the channels through which the former determined the latter. The distinction between money and credit was largely immaterial, since the creation of new bank credit is usually accomplished through the creation of bank deposits, which is an element of the money supply.

The story told by Keynes was, however, a different one. He insisted that his finance motive to demand money had the same nature as the transactions demand for money. Both of them refer to the need to get hold of money balances in anticipation of a planned act of expenditure.⁷ The finance motive to demand money was destined to cover the interregnum ‘between the date when the entrepreneur arranges his *finance* and the date when he actually makes his investment’ (Keynes 1937b: 665, my emphasis).

We already saw that Keynes means by finance a given amount of *money*, not necessarily of *bank loans*. If we substitute the word *expenditure* for the word *investment* in the preceding quote, and the word *individual* for the word *entrepreneur*, this definition would exactly apply to the transaction motive. Keynes was at pains later to deny that there was anything essential opposing the finance motive to the other motives for holding money. The interest rate was determined by *total* money demand and *total* money supply:

... the conception of the rate of interest as being determined by liquidity preference emphasises the fact that *all* demands for liquid funds compete on an equal basis for the available supply; whereas the conception of a *separate* pool of ‘funds available for investment’ suggests that the rate of interest is determined by the interaction of investment demand with a segregated supply of funds earmarked for that special purpose irrespective of other demands and other releases of funds.

(Keynes 1939: 573/4, Keynes’s emphases)⁸

Why, then, was it necessary to coin a fourth motive to demand money? The answer given by Keynes has to do with the special behavior he expected the finance demand for money would exhibit:

Investment finance in this sense is, of course, only a special case of the finance required by any productive process; *but since it is subject to fluctuations of its own*, I should... have done well to have emphasized it when I analysed the various sources of the demand for money.

(Keynes 1937a: 247, my emphasis)

While the transactions demand for money would behave as regularly as overall planned expenditures, the finance demand for money would exhibit the fluctuating nature of planned investments. Thus, to understand Keynes’s notion of a

revolving fund of finance correctly, one cannot lose sight of the fact that finance means money⁹ in his arguments, as we argued above.

Finance, in Keynes's sense, can be obtained by an individual in two ways: by selling a good or service; by selling a debt. While in the Robertson/Asimakopulos approach only the latter is considered, it is the former that is critical to understanding the revolving nature of the fund of finance in Keynes's theory. In fact, all that is necessary is to recognize that, for a given income velocity of money, a certain number of transactions can be executed with a given quantity of money. The act of spending transfers money from the buyer of goods to the seller, allowing the latter to execute his/her own expenditure plans. If velocity is given and the total value of planned transactions per period of time remains constant, there is a *revolving fund of money in circulation*, as Keynes himself referred to the revolving fund of finance in at least one occasion,¹⁰ that supports these transactions:

A given stock of cash provides a revolving fund for a steady flow of activity; but an increased rate of flow needs an increased stock to keep the channels filled.

(CWJMK 14: 230)

In other words, if planned transactions do not change, each individual agent can execute his/her planned expenditures when he/she sells something to another agent, getting hold of money to be spent afterwards. There is a superposition of two concepts here: income and money, but it is the latter that matters directly for the determination of the interest rate. Each person's expenditure is the next person's income, but it is not income creation *per se* that matters for this discussion but the fact that *income creation* is accomplished through *money circulation*. That this is what Keynes had in mind is clear from the following concise but very telling statement, which relates the finance motive, the revolving fund of finance and income creation:

The 'finance', or cash, which is tied up in the interval between planning and execution, is released in due course after it has been paid out in the *shape of income* ...

(CWJMK 14: 233, my emphasis)

If the value of transactions is constant, which means, in the context of the Keynes/Robertson debate, if planned discretionary expenditures like investment do not change, each agent that plans to purchase an item has to withdraw money from active circulation in advance. For a given money supply, this represents a subtraction from the quantity of money available for the normal level of transactions a given community wants to execute. If, somehow, this additional demand for money is satisfied by the banking system, the finance motive to demand money can be satisfied without creating any pressure on the current interest rate. Once the time comes for the planned purchase to be performed, money that was being held idle returns to circulation, allowing the next agent in line to withdraw it again

in anticipation of his/her own discretionary spending plans, and so on. The fund of finance, after it was originally created, needed no new creation of money to support new transactions. It is replenished every time idle balances become active, through the actual purchase of the desired commodity, just to become idle again, when the next spender-to-be withdraws it from active circulation.

It was the understanding that finance meant bank loans that led Robertson and Asimakopulos to object that spending was not enough to replenish the fund of finance. For them, only the repayment of debts could allow banks to make *new* loans, that is, to lend money to aspiring investors. In Keynes's model, in contrast, *no new loans are needed, because once money is created, all that is necessary to support new acts of expenditure is that it circulates in the economy.* As Kregel correctly insisted in his debate with Asimakopulos, the replenishment of the revolving fund of finance has absolutely nothing to do with the multiplier or with desired savings. It is a purely monetary concept, having to do with money circulation, and with the transformation of active balances into idle balances and conversely. Keynes's own words, in this context, can be easily understood:

If investment is proceeding at a steady rate, the finance (or the commitments to finance) required can be supplied from a revolving fund of a more or less constant amount, one entrepreneur having his finance replenished for the purpose of a projected investment as another exhausts his on paying for his completed investment.

(Keynes 1937a: 247)¹¹

Robertson, in contrast, never accepted or understood the precise meaning the concepts of finance, finance motive and the revolving fund were given by Keynes, as is made clear in the following quotation:

I cannot see that any revolving fund is released, any willingness to undergo illiquidity set free for further employment, by the act of the borrowing entrepreneur in spending his loan. The bank has become a debtor to other entrepreneurs, workpeople etc. instead of to the borrowing entrepreneur, that is all. The borrowing entrepreneur remains a debtor to the bank: and the bank's assets have not been altered either in amount or in liquidity.

(CWJMK 14: 228/9)¹²

One can probe the proposed mechanism a little deeper. When an expenditure is made, and money (cash or a bank deposit) is transferred to the seller, the latter may use it basically in three ways: he/she can hold it for a while until the moment comes to effect a planned expenditure; one can use it to settle debts with other individuals or with the banking system; and one can hold it idle for precautionary or speculative reasons. Keynes's concept of the revolving fund of finance evokes at once the first possibility: having got hold of money, the seller can now buy consumption goods (in which case, a transactions demand for money was

being met) or investment goods (the case of the finance motive to demand money). In these two cases, we are talking about the active circulation of money.¹³ Here, the ‘efficiency’ of the revolving fund of finance in sustaining investment expenditures (or, rather, discretionary expenditure in general) does not depend on anybody’s savings propensity or on the existence of Kaldorian speculators, or what else. It does depend, on the other hand, on the institutions that define the *payments systems* of the economy, how rapidly and safely (against disruptions) can they process payments and make money circulate.

This is a very important subject, curiously overlooked by most economic theories, at least until recently. The ‘quicker’ money circulates, the greater the value of expenditures that can be supported by a given amount of money. Knowing how the system of payments operates is critical to this discussion in at least two major respects: it defines the modalities of purchases that can be effected at least partially without the actual use of money;¹⁴ it also has to do with the speed with which money reaches those individuals who do entertain a discretionary expenditure plan. By the latter we mean the situation in which the seller who receives money does not intend to effect any discretionary spending. The story told by Keynes about spending replenishing the fund of finance and allowing the next investor in line to implement his/her plans depends on money in circulation actually reaching that aspiring investor, which is not necessarily the case for a variable succession of acts of spending.

If individuals use the money they received to pay debts, one of two situations may arise. Money is used to settle debts to other individuals. In this case, the preceding discussion applies in that we have to consider what the once-creditor will do with the money he/she received. This case is not restricted to transactions between individual persons, concerning also those transactions between firms or any other institutions that do not actually *create* money. It is also possible, however, that individuals use money to settle debts to banks. Then, its immediate consequence is the destruction of money.¹⁵ But, debt settlement also restores the bank’s previous capacity to lend, so an equal amount of money can be recreated, reinitiating the cycle.

The third possibility is potentially, but not necessarily, more destructive. If the individual who receives the sales revenues decides to hoard it, because of, say, an increase in his/her liquidity preference, money will be accumulated as idle balances for an indefinite period of time. In this case, getting it back into active circulation may require an increase in the interest rate, which may have a negative impact on planned investment. Alternatively, liquid assets may be created by financial intermediaries to replace money in those individuals’ portfolios bringing it back to active circulation.¹⁶ In this case, as in the preceding one, the actual institutional organization of the financial system may be important to define the efficiency of the revolving fund of finance in supporting a given rate of discretionary expenditures.

In sum, if the rate of investment is not changing, given the velocity of money, a revolving fund of finance can support a given flow of aggregate expenditures. Money flows out of active circulation in anticipation of planned expenditures and

returns to it when the actual expenditures take place. It is in this sense that spending replenishes the fund of finance. Money circulates in the economy allowing each individual to execute his/her spending plans at a time. It obviously does not mean that banks restore their lending capacity when money is spent. But this is not a necessary condition for the replenishment of the pool of finance because new expenditure does not require new money to be created. All that it takes is that the deposits that were created at the beginning of the cycle keep changing hands, allowing each agent in line to use them to buy the goods she wants. The revolving fund of finance is actually the revolving fund of money in circulation.

4. Growing investment

The situation changes if investment is growing. In this case, a given stock of money could only support an increasing flow of aggregate expenditures if liquidity preferences were being reduced or velocity was increasing for other reasons. As Keynes stated:

... in general, the banks hold the key position in the transition from a lower to a higher scale of activity.

(Keynes 1937b: 668)

A revolving fund of finance is no longer sufficient to support an increasing rate of expenditures, if liquidity preferences remain unchanged, but the fundamental theory behind it does not change. The money stock has to grow to avoid pressures on the interest rate to rise. Increased savings are neither necessary nor sufficient to relieve the pressure on the interest rate because:

[t]he *ex-ante* saver has no cash, but it is cash which the *ex-ante* investor requires ... For finance ... employs no savings.

(Keynes 1937b: 665/6)¹⁷

Money is created when the monetary authority creates reserves for banks or when the liquidity preference of banks is reduced, leading them to supply more active balances even if the authority does not validate their decisions by increasing the supply of reserves. The concept of revolving fund of finance has a reduced relevance in this case, since one is no longer concerned with the reproduction of a given situation. The Keynesian monetary theory of the interest rate, however, is maintained.

5. Summing up

Victoria Chick, in her 1984 paper, focused on the contrasting views of Keynes and Robertson on how a new investment would be financed. In her view:

Where Robertson distinguished two stages – obtaining the finance to start the process off and the eventual (equilibrium) finance by saving – Keynes

- distinguishes three stages: 1. Obtaining a loan *before* making the investment expenditure. 2. Expenditure of the proceeds of the loan. 3. Establishing the permanent holding of the investment in question.

(Chick 1992: 171, emphasis in the original)

Obtaining loans is, in fact, as we saw, a requirement for the process to work only in the case of a growing rate of investment, according to Keynes. Of course, it is much more important nowadays, if not necessarily in Keynes's times, to deal with growing economies, so Chick's emphasis is certainly appropriate. The concept of the revolving fund of finance, however, is useful to allow to make the distinction to be drawn between credit creation and money circulation, a distinction that agrees with Chick's stress on the similar distinction between 'money held' and 'money circulating'.

The main proposition made in this chapter is, in fact, that a critical concept in both rounds of debates between loanable funds and liquidity preference theorists was the revolving fund of finance. This concept was interpreted in drastically different ways by each school of thought, leading them to argue at cross purposes and making it impossible to arrive at any generally accepted conclusion. The goal of this note is not to assert the superiority of Keynes's ideas over his opponents or the converse, but to make clear the conceptual frameworks within which each approach is advanced. In this sense, it serves as a qualification to Chick's approach to the opposing views of Keynes and Robertson, quoted above.

Keynes employed the term *finance* to mean the amount of money held in anticipation of a given expenditure. The revolving fund of finance refers to the pool of money available in an economy at a given moment, from which agents withdraw balances to be held temporarily idle only to return them back into active circulation when spending is made. In this sense, this pool of money is replenished when spending is made.

Why did so simple a point generate so heated, messy and inconclusive debates? Our view is that the debate was messy because Keynes, in his attempt to defend his monetary theory of *the* interest rate, was gradually drawn into an increasingly distinct argument centered on the features of what he later called 'the process of capital formation'. The latter subject is, obviously, very important, but it goes far beyond Keynes's original concerns and arguments. The liquidity preference theory of *the* interest rate does not dispose, *per se*, of the subject of the possible theoretical influence of saving on investment. It is also insufficient in itself to address the role of financial systems, markets and instruments. It is clear from Keynes's writings, however, that these are questions to be addressed in a different, or larger, theoretical framework.

Robertsonian concerns with the creation and settling of debts are valid and have to be addressed. Keynes advanced the idea that the entrepreneur had to expect that short-term debts could be funded into long-term obligations if investment plans were actually to be implemented. The consideration of short- and long-term debt, however, is a related but different subject. Loanable funds

theories and liquidity preference theories are alternative explanations of *the* interest rate, that is, a representative *index* of the basket of interest rates being charged in a given economy. The question of funding short-term debts into long-term liabilities has to do with the *structure* of interest rates, a different theoretical problem. Of course, a complete theory of investment finance has to deal with all those problems, but recognizing their differences and specificities may be a useful starting point.¹⁸

Notes

- 1 Financial support from the National Research Council of Brazil (CNPq) is gratefully acknowledged.
- 2 We have no intention of giving a fair (or even a biased) rendition of the whole debate in these pages. The two rounds of debates, in the 1930s and in the 1980s, were examined by this author in Carvalho (1996a) and (1996b), where bibliographical references to the debates are given.
- 3 For example: To avoid confusion with Professor Ohlin's sense of the word, *let us call the advance provision of cash the "finance" required by the current decisions to invest.*' (Keynes 1937a: 247, my emphases).
- 4 The Keynesian sense of liquidity employed in this discussion refers to the relation between aggregate supply of and demand for money.
- 5 Liquidity in the Robertsonian sense means to be free of debt obligations.
- 6 Cf., for instance, Tsiang (1956).
- 7 Replying to Robertson's comments in 1938, Keynes made clear his view about the similar nature of the transactions and finance motives to demand money: the first is the demand for money 'due to the time lags between the receipt and the disposal of income by the public and also between the receipt by entrepreneurs of their sale proceeds and the payment by them of wages, etc.; the finance motive is "due to the time lag between the inception and the execution of the entrepreneurs' decisions"' (CWJMK 14, p. 230).
- 8 'The fact that *any* increase in employment tends to increase the demand for liquid resources, and hence, if other factors are kept unchanged, raises the rate of interest, has always played an important part in my theory. If this effect is to be offset, there must be an increase in the quantity of *money*.' (CWJMK 14, p. 231, Keynes's emphases).
- 9 Keynes frequently uses the term *cash*, which is even more precise if unnecessarily restrictive.
- 10 Cf. CWJMK (14, p. 232): 'It is Mr Robertson's incorrigible confusion between the *revolving fund of money in circulation* and the flow of new savings ...' (my emphases).
- 11 Keynes raised the possibility 'that confusion has arisen between credit in the sense of "finance", credit in the sense of "bank loans" and credit in the sense of "saving". I have not attempted to deal here with the second. (...) If by "credit" we mean "finance", I have no objection at all to admitting the demand for finance as one of the factors influencing the rate of interest.' (Keynes 1937a: 247/8). We should keep in mind how Keynes defined finance, as shown above.
- 12 While Robertson seemed to have thought that the problem was one of faulty logic on Keynes's part, Asimakopulos interpreted the idea of the revolving fund being replenished by spending as a special result of Keynes's (and Kalecki's) model: 'Keynes is assuming implicitly that the full multiplier operates instantaneously, with a new situation of short-period equilibrium being attained as soon as the investment expenditure is made. Such a situation is a necessary, even though not a sufficient, condition for the *initial liquidity position* to be restored.' (Asimakopulos 1983: 227, my emphasis).

- According to Asimakopulos, the instantaneous multiplier was necessary to make sure that all saving was voluntarily held and used to buy the long-term liabilities issued by the investing firm so as to allow it to settle its debts with the bank. It is not the same story as Robertson's, but it shares the same concept of finance and liquidity.
- 13 Actually, the finance motive is considered by Keynes as a borderline case between active and idle balances. They are active balances because they are related to a definite expenditure plan in a definite date. They are also, in a sense, idle balances because they will be withdrawn from active circulation for typically longer periods than those considered in the active circulation.
 - 14 For instance, through clearing arrangements where netting is accomplished.
 - 15 'In our economy money is created as bankers acquire assets and is destroyed as debtors to banks fulfill their obligations.' (Minsky 1982: 17).
 - 16 Also, Kaldorian speculators could be brought into this picture to help money to circulate toward aspiring investors.
 - 17 Again, Keynes insisted all the time that the barrier to be overcome for investment expenditures to be made was the provision of money. See, for instance: 'Increased investment will always be accompanied by increased savings, but it can never precede it. Disharding and credit expansion provides not an *alternative* to increased saving but a necessary preparation for it. It is the parent, not the twin of increased saving.' (Keynes 1939: 572, emphasis in the original). To put it more bluntly: 'The investment market can become congested through the shortage of cash. It can never become congested through the shortage of saving. *This is the most fundamental of my conclusions within this field.*' (Keynes 1937b: 669, my emphasis).
 - 18 The author outlines such a theory in Carvalho (1997).

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ON A POST-KEYNESIAN STREAM FROM FRANCE AND ITALY: THE *CIRCUIT* APPROACH

Joseph Halevi and Rédouane Taouil

1. Introduction

A major aspect of the theoretical contributions of Victoria Chick consists in tying the principle of effective demand to the monetary financing of investment seen not only as dependent on long-term expectations but also on bank credit. This approach relies upon the endogeneity of money implying the autonomy of investment from saving. Indeed the causal links run from the former to the latter (Chick 1992). In this context, the works by Graziani (1985–1994) and Parguez (1984–1996) constitute another – specifically Franco-Italian – stream where the concept of effective demand is developed within a framework which emphasizes the primacy of credit and of the creation of bank money prior to any form of saving. This group of studies – henceforth called the *post-Keynesian Circuit* approach (PKC) – differs from other French writings on the subject (Schmitt 1984) because of its affinity with many aspects of post-Keynesian theory. These are outlined in Section 2. Post-Keynesian theory is defined here in terms of that set of ideas which describes the behaviour of capitalism on the basis of non-probabilistic uncertainty (Dow 1985). In this context, prices are not constrained within the straightjacket of instant and timeless flexibility in relation to demand. Thus mark-up practices rather than smooth substitution are likely to prevail. In turn, and because of the non-probabilistic uncertainty mentioned hitherto, an act of savings does not constitute a decision to invest or to substitute future for present consumption. Such a point of view implies, as shown in Section 3, that workers’ or households’ savings are a leakage from the level of profits attainable in the consumption goods sector. Section 4 will compare the PKC approach to some ideas put forward by Nicholas Kaldor, while Section 5 will establish the connections with the structuralist component of post-Keynesian theories. Section 6 will highlight the cleavage between finance, profits and wages.

2. The post-Keynesian *Circuitistes*: Some general features

Methodologically the PKC approach rejects the view that macroeconomics ought to be based on the principles of market equilibria altered by occasional imperfections. Instead money is viewed as the factor which gives a global dimension to economic relations enabling the determination of output as whole (Kregel 1981). In the case of both Graziani and Parguez, the circuit appears as ‘a complex of well defined monetary flows whose evolution reflects the hierarchical relations between different groups of agents. It is the existence of these monetary flows which allows firms to realise the level of profits corresponding to their production decisions which, in turn, are taken on the basis of a system of expectations.’ (Parguez 1980: 430, translated from French). The economy is activated by capitalists’ expenditures which – when it comes to investment spending – are the expression of their bets on the future. Firms must obtain credit lines in order to undertake production well ahead of sales. Banks are, therefore, the institutions which validate or negate the demand for credit stemming from firms’ bets on the future. By lending to firms, banks create money and in so doing they link production flows to monetary flows. Bank-created money becomes the very condition for the existence of a production economy. This is due to the fact that money (lending) must be issued in anticipation of future output. Such a view of the monetary circuit is in sharp contrast with the idea that ‘money only comes into existence the moment a payment is made’ (Graziani 1990: 11).

It follows that production firms and credit institutions are two different sets of agents. The former demand access to credit in order to hire labour and produce commodities; the latter produce – as it were – money and as such enjoy a privileged position in the distribution of national wealth (Graziani 1990). By virtue of financing their production plans through credit money, firms always face a financial constraint. Furthermore, given that firms’ collaterals are their capital values, credit institutions can always require firms to attain higher capital values in order to grant them credit. As it will be argued in Section 6, this creates a new type of inverse relation between the rate of profit needed to attain the required capital values, and the wage rate.

3. The Kaleckian aspects

The separation between banks and firms is a most important conceptual clarification. The fact that firms are required to pursue a policy aimed at a rate of return consistent with the evaluation made by financial institutions introduces a new aspect to the formation of money prices. As will be discussed in the last section of the chapter, mark-ups can be imposed on firms because of banks’ role as renters. However this result is obtained without keeping the traditional functions of oligopolistic structures. In the PKC approach the formation of entrepreneurial profits is based entirely on Kaleckian macroeconomic criteria. If firms start spending – by borrowing – in order to carry out production, they must earn back

what they spent and be able to pay an interest on the borrowed principal. This is possible if revenues exceed costs but it also shows that profits cannot exist prior to a spending decision. Clearly if no profits are consumed by capitalists, this is tantamount to saying that Savings cannot precede Investment. Hence the Kalecki accounting relation

$$P = I + C - W, \quad (1)$$

where P is the level of profits, I is gross investment, C total consumption and W is the wage bill (total costs) with a zero propensity to save. Total profits are thus equal to capitalists' investment decisions plus their consumption expenditures. Capitalists' (firms) spending, by determining the level of employment, also guides the position of the workers in production process (wage relation).

According to the Franco-Italian post-Keynesians, households do not have direct access to credit money as they must first earn a wage. Firms by contrast do have direct access to credit money, by virtue of their ownership of capital goods. Therefore households' level of income and spending depends upon firms' spending decisions. The wage relation has a hierarchical character which is fashioned by entrepreneurs' production and investment plans. As a consequence for the PKC, a labour market cannot exist since it would imply the symmetric working of the forces of demand and supply of labour with agents having identical status. The primacy of spending also governs the relation between savings and investment in the same way as in Kalecki's case.

As Parguez (1986) has pointed out, there are two types of savings, internal and external. The former are created within the system of firms and they are nothing but the bulk of profits. The latter are households' savings. Assume that all profits are saved, with a positive propensity to save out of wages we have the Kaleckian equality

$$S = P + S_w = (C + I - W) + (W - C), \quad (2)$$

$$S = I, \quad (3)$$

where S are savings and S_w the level of savings out of wages. Savings emerge as a result of a monetary evaluation of output; therefore they cannot but appear after investment and production have taken place. The equality between savings and investment does not stem from some kind of adjustment process regulated by the rate of interest. The equalization between savings and investment does not depend on the existence of a prior amount of loanable funds, being rather the outcome of the Kaleckian principle where, in order for profits to arise, prior spending is required. In the Kalecki and PKC approaches the idea that prior spending is a prerequisite for the creation of profits is independent from a particular historical stage of capitalism. More specifically, once a monetary economy of production is established – even if made up of artisans or farmers – production decisions

require credit and investment generates profits. Here there is a significant difference with Chick's approach; for her the separation of savings from investment arises at a later, more developed, stage of capitalism (Chick 1998). This stage is characterized by the formation of joint stock companies, whereas the earlier one is centred on the savings of the individual capitalist.

The principle that economic activity is propelled by a prior act of spending and not by the accumulation of savings brings the PKC contributions to sharpen Kalecki's point that the government deficit is a positive factor in the formation of aggregate profits. The budget deficit is nothing else but a prior act of spending. It is therefore bound to increase profits by the same amount:

$$P^* = I - S_w + G, \quad (4)$$

where P^* is the new level of profits with a government deficit G so that:

$$P^* - P = \Delta P = G. \quad (5)$$

The profit equation of both Kalecki and the PKC is strictly of a macroeconomic nature. An individual firm cannot increase its profits by expanding its spending. The single firm fixes the level of its own expenditures based on the bets and guesses on the monetary volume of its output. Also the equality between savings and investment is, according to the PKC authors, a macroeconomic condition. It is the outcome of the global working of the system linked to income and expenditure flows.

The Kalecki–Graziani–Parguez approach can be viewed as a macroeconomic theory of asymmetry. In fact, firms and banks face each other through a set of hierarchical relations, while firms exercise a command over the wage relation. As such, this approach not only rejects the notion of equilibrium, but also the fiction represented by the idea of a representative agent. This is because the behaviour of the economy as a whole is not equivalent to that of a maximizing agent.

4. The post-Keynesian *Circuitistes* and classical post-Keynesianism

The previous section has attempted to show the Kaleckian underpinnings of the PKC contributions, especially in relation to the formation of profits. The PKC methodology goes a step farther by highlighting the hierarchical links between banks and firms and between firms and wage labour. The other side of the coin in the process of profit generation is that any savings out of wages (or any reduction of the budget deficit) reduces profits. This is as much a Kaleckian as a Kaldorian condition. As Kaldor himself pointed out, the condition that the share of investment over output has to be greater than the propensity to save out of wages is a crucial requirement for profits to exist (Kaldor 1989, chapter 1; 1996; Pasinetti 1974). If this were not the case, the share of profits will be zero or negative. Capital

outlay must therefore be larger than personal savings, while savings out of profits must be a strong component of both total investment expenditure and total profits.

The idea that savings out of wages subtract from business profits is indeed the hallmark of the kind of *circuitiste* approach independently developed by Graziani (1990, 1994) and Parguez (1996a,b). The difference in relation to the Kaldorian strand consists in the absence of a distributive mechanism aimed at keeping the system on a full employment path. In the PKC approach, just as in Kalecki, investment is undertaken in a context where aggregate profits are independent from the share of profits. Firms have the power to impose, through their mark-up policies, a certain share of profits, but their aggregate level is predetermined by investment expenditures. The distribution of income reflects firms' strategies but does not act as an adjustment factor relative to the full employment growth rate.

The existence of savings out of wages, while reducing the level of profits, generates also an increase in the stock of money. Indeed if firms pay wages by borrowing from the banking system, and if the propensity to spend out of wages is equal to unity, firms' debts will be repaid and money will consequently be destroyed. By contrast with a positive S_w , if the money is kept in bank deposits, it will not be destroyed. If banks' credits to firms do not change, the stock of money in existence will rise just by $S_w W$, equal to firms' outstanding debt. Strictly speaking, firms' profits must also include the interest payments on the amount borrowed for the financing of wages. This conclusion is similar to the classical economists' notion of *capital advanced*.

In relation to investment financing a difference in analysis exists between Graziani (1990) and Parguez (1996a). The latter has maintained that the whole of investment is financed by borrowing whereas, for the former, 'investment finance is supplied by final finance and not by bank advances' (Graziani 1990: 16). A simple two-sector example will clarify the issue and will also introduce us to the structural aspects of the PKC approach.

Assume that the process of investment is started by an initiative coming from the consumption goods sector. Firms operating there will borrow a certain amount, W_c , to pay for workers' wages. Furthermore, they will borrow to pay for additional capital goods and/or replacement equipment. This amount will be deposited in the accounts of the capital goods producers. The latter do not need credit lines to pay for their own investment since they already possess the technical self-reproducing capacity needed to expand capital goods output. Firms in the capital goods sector, however, will need money to pay wages. This money will come from the money deposited by the firms operating in the consumption goods sector. Thus, looking at the circular flow of funds from the consumption goods sector's perspective, the amount borrowed is equal to the sum of the two wage bills, whereas investment in the capital goods sector is self-financed.

If the capital goods sector is the starting point and, for whatever reason, its firms decide to expand output, they will need credit to pay for the wage bill. The money total of these wages will (gradually) be deposited in the accounts of the firms producing consumption goods. This sum will be used to pay for the purchase of

equipment from the capital goods sector. Consequently, the consumption goods sector will still have to borrow in order to finance its own wage bill. Investment is therefore self-financed because it automatically generates the required savings.

It becomes clear now that the structural factor which regulates the flow of funds between investment and consumption is the clearance of the output produced by the consumption goods sector (Parguez 1996b). We encounter here again another Kaleckian – and indeed Robinsonian – feature of the PKC approach which has the additional merit of showing the dependence of money prices upon the endogeneity of money.

5. Money prices and structure of production

Two parallel routes are now open before us. One would be to follow Graziani (1990, 1994, 1995) and construct a single-sector model in which the price level comes out to depend on the reciprocal of the productivity of labour multiplied by the ratio between wage earners' propensity to consume and the fraction of total output not purchased by firms, all multiplied by the sum of the money wage and the ratio between total interests paid on bonds and the physical level of output (Graziani 1995: 529). Hence, writing N for total employment, p for the price level, z for the productivity of labour, c for the propensity to consume, w for the wage rate, i for the interest rate on bonds, B for the total amount of bonds issued by firms, x for the percentage of output that firms have decided to buy (investment), we have

$$zpN = cwN + ciB + xpn.$$

Solving for p , Graziani obtains the price level as

$$p = (1-s)/(1-x)[(w/z) + (iB/zN)].$$

In this context, the price level emerges as totally independent from the money stock which, as an endogenous variable, cannot enter into the determination of money prices. Similar results can be obtained by following a second route based on dividing the economy into capital and consumption goods sectors. In relation to our purpose of discussing the connections and differences between the PKC approach and the main post-Keynesian strands, the structural approach seems to us more useful.

Writing C for the output of consumption goods, q for its money price, N_i and N_c for the levels of employment in the capital and in the consumption goods sector at a money wage rate w , we have

$$qC = w(N_i + N_c), \tag{6}$$

$$C = bN_c, \tag{7}$$

where b is the productivity of labour in the consumption goods sector.

Substituting (7) into (6) we have

$$q = (n + 1)w/b \quad \text{where } n = (N_i/N_c). \quad (8)$$

Thus, the ratio n between the employment levels of the capital and the consumption goods sectors emerges as the mark-up of the consumption goods' price. Prices are defined wholly in monetary terms thanks to the money wage rate w . Equations (2) and (3) hold also at below full capacity output, provided that all the, lesser, output produced is actually sold (Halevi 1985).

Similarly we obtain the price of capital goods on the assumption that all profits are saved. Monetary profits P_c earned by the consumption goods sector are

$$P_c = (qb - w)N_c = wN_i. \quad (9)$$

Therefore an amount wN_i will be spent by the consumption goods sector to purchase capital goods. Such purchases will represent only a certain share v of the output of capital goods M , hence

$$pvM = wN_i, \quad (10)$$

where p is the money price of produced capital goods.

$$M = aN_i, \quad (11)$$

where a is the productivity of labour in the capital goods sector.

Substituting into (10) we obtain

$$p = (w/av) = (m + 1)w/a, \quad (12)$$

where m is the sector's mark-up.

Solving (12) for m we get

$$m = (1 - v)/v. \quad (13)$$

Equation (12) tells us that the money price of capital goods is determined by the ratio of the money wage to labour productivity multiplied by the ratio of total capital goods' output to the capital goods allocated to the consumption goods sector. The capital goods sector's mark-up, m , is nothing but the physical ratio of the capital goods reinvested in the capital goods sector and those purchased by the consumption goods sector. Parguez (1996b) has called this ratio the sectoral rate of return, but in fact it is the structural mark-up.

Sidney Weintraub (1959) and Geoff Harcourt (1963) are among the few economists of the original post-Keynesian tradition to have used Marxian circular flows to express the links existing between prices and the structure of production.

Weintraub took the aggregate mark-up as an empirically determined constant. Then by using Joan Robinson's model of reproduction put forward in *The Accumulation of Capital*, he derived the sectors' size. Finally by introducing Kaldorian saving propensities, Weintraub obtained a sectoral model of growth and income distribution. The major weakness in Weintraub's approach lies in the constancy of the mark-up, at that time a widely believed 'fact'. In his system there is no possibility of expanding employment through higher wages as firms will immediately react by raising prices. Weintraub's system is therefore closed by the assumption of a constant mark-up. Geoff Harcourt took a different approach. He anchored his model to full employment and derived the appropriate sectoral relations including the mark-ups appearing in eqns (8) and (13). Harcourt's system is therefore closed by the assumption of full employment. Both cases are acceptable as didactic exercises but no more. In Harcourt's case, however, we obtain important information which is not tied to the full employment assumption.

Let us look at eqn (8), that is at the price of consumption goods. What determines the mark-up $n = (N_i/N_c)$? If capitalist production requires that profits be obtained from economic activity, as opposed to pure financial transactions, then profits in the consumption goods sector depend upon the level of employment prevailing in the capital goods sector. Given a uniform wage rate – but the argument is valid also under unequal wage rates (Dixon 1988) – the higher the N_i/N_c ratio, the higher the level of profitability in the consumption goods sector. Furthermore firms operating in the consumption goods sector cannot build machines, they must demand them instead. It is up to the firms operating in the capital goods sector to decide whether the production of machines for the consumption goods sector should take place by raising, lowering or stabilizing the value of v , that is, of the share of M going to feed capital accumulation in the consumption goods sector. It is therefore not difficult to see that the time path of N_i/N_c (that is, of the mark-up, n) is determined by $(1-v)/v$. Hence, in the model, the mark-up in the capital goods sector determines over time the mark-up of the consumption goods sector. Machine producers decide how much to reinvest and how much to leave for the productive requirements of the consumption goods sector. The latter cannot set the mark-up but can only adjust prices as prescribed by eqn (8).

The Harcourt mark-up is more meaningful than the Kalecki mark-up which is unconnected to the structural features of the economy. Both Parguez and Graziani have followed routes closer to the approach taken by Harcourt. Now, if the economy is not anchored to full employment by assumption, and if the mark-up is not taken as empirically constant, what determines the value of $(1-v)/v$? It is in this context that the PKC contributions appear to be of particular interest.

6. Not just production

Parguez (1996b) constructed a two-sector model similar to that presented hitherto, entailing the same conclusions as those arrived at by looking at eqn (13)

(Parguez 1996b: 165). Without financial constraints imposed by rentier-like institutions upon firms, producers in the consumption goods sector would quickly learn the rules of the game and realize that their money profits depend on the wage bill in the capital goods sector. This situation is called a state of profit consistency.

Banks however belong to the rentier group. The rentier class ‘includes banks as long as they are private corporations striving to increase their net profits that they invest in financial assets. Banks are thus, on the one hand, credit dispensing institutions and, on the other, merely rentiers fearing the possibility of losses due to inflation.’ (Parguez 1996a: 174n.). The introduction of the rentier element means that firms’ profits are now equal to the value of total output minus the wage bill and rentiers’ income. The latter because of its systematic propensity to save detracts from the level of effective demand of the economy. We now reformulate Parguez’s model by assuming *à la* Kaldor and Kalecki that the propensity to save of the rentiers is higher than that of wage earners.

$$Y = jY + (1 - h)R + (1 - s)W, \quad h > s \quad (14)$$

$$I = jY, \quad (15)$$

where Y is total output, I investment, R rentiers’ income and h is their propensity to save, W the wage bill and s wage earners saving propensity. Writing now

$$k = R/W, \quad (16)$$

so that $R + W = (1 + k)W$, substituting into (14) and solving for Y we get

$$Y = [(1 + k - hk - s)/(1 - j)]W. \quad (17)$$

Equation (17) defines the Parguez-PKC multiplier whereby the higher the wage bill and/or the propensity to invest, the higher the level of income and, given the technical conditions of production, the level of employment as well. For firms to recoup their costs, the expression $(1 + k)W$ has to be multiplied by a rate of return r which equates $(1 + k)W$ to the level of income Y :

$$Y = (1 + r)(1 + k)W. \quad (18)$$

Substituting (18) into (17), solving for r and taking the derivative (dr/dk) , we get

$$dr/dk < 0 \quad \text{for } (s - h) < 0. \quad (19)$$

Thus any increase in rentiers’ income reduces firms’ rate of return. The share of investment over total income remains the same but the higher average propensity to save generates a deflationary tendency. Moreover, in the PKC approach

firms face a financial constraint imposed by credit institutions who monitor their performance in terms of capital values. Therefore a fall in the rate of return will tighten the financial constraint. Firms will then be compelled to increase their rate of return under non-inflationary conditions given the rentier-like nature of banks. Equation (18) can be rewritten as

$$pX = (1 + k)(1 + r)wN, \quad (20)$$

which reduces to

$$p = (1 + k)(1 + r)w/a, \quad (21)$$

where a is labour productivity.

An increase in k will lead to a fall in r not to a rise in p which has to remain stable in order to guarantee rentiers' real incomes. Monitored by banks, firms have to increase r in order to avoid a stiffer financial constraint. Yet, given p , the restoring of the rate of return r can occur only at the expense of the money wage rate w . The fall in wages at a given price level reduces the level of effective demand for consumption goods generating unused capacity.

7. Conclusions

In the PKC approach, structural relations are not used to evince possible accumulation paths. In order to do so Traverse-type considerations must explicitly be introduced (Halevi *et al.* 1992; Lavoie and Ramirez 1997). The lack of hypothetical accumulation paths may not however be a bad thing since a theory of growth, as opposed to a set of conditions enabling growth to happen, would have to overcome the insurmountable hurdle represented by chapter 12 of Keynes's *General Theory*. In fact, once we understand the 'non-ergodic' nature of the uncertainty related to the formulation of long-run expectations, it becomes impossible to conceive of a theory of growth without bringing in institutions and social relations in actual historical time.

In this context Victoria Chick's endeavour has contributed to furthering the view that, at a certain stage of development, money is endogenously generated. A scarcity of money as such does not exist unless it is socially imposed upon society by a particular set of power relations. The Franco-Italian post-Keynesian approach has linked the endogeneity of money to mark-up pricing and to a basic sectoral structure of the economy where the cleavage between the owners of the means of production and the accumulators of financial wealth is singled out. The fact that this conflict is 'resolved' through a new form of pressure on wages brings back the issue of class relations in a capitalist setting. The artificial scarcity of money is the source of the power of rentier-like institutions. At the same time it may be useful to inquire whether such a scarcity is also related to capital goods being kept scarce in the sense given to the term by Keynes (1936,

chapter 16). In this way it may be possible to avoid the one-dimensional determinism implicit in making firms' mark-up policies respond exclusively to the financial evaluation pressures coming from banks and other rentier-like institutions. By attempting this route it may be possible to construct a modern theory of finance capital which, unlike that of Hilferding (1981), leaves open the fact that – through uncertainty – capitalists, while having and exercising power, do not control the future.

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IS–LM AND MACROECONOMICS AFTER KEYNES

*Peter Kriesler and John Nevile*¹

1. Introduction

This paper reflects Victoria Chick’s deeply held belief ‘that the macroeconomics which has followed the *General Theory* in time has not followed it in spirit’ (1983: v). This type of complaint is widespread in post-Keynesian literature and centres on the simultaneous equation equilibrium nature of the ‘Keynesian’ part of the neoclassical synthesis.

For in a world that is always in equilibrium there is no difference between the future and the past and there is no need for Keynes.

(Robinson 1974: 128)

The authors of the present chapter share the view that Walrasian simultaneous general equilibrium macroeconomic models are not macroeconomics ‘after Keynes’ and are more often misleading than helpful. Many, e.g. Pasinetti (1974), have laid the blame on the *IS–LM* model set out in Hicks’s 1937 article, for the divergence of orthodox ‘Keynesian’ macroeconomics from the economics of the *General Theory*. Recently Ingo Barends (1999) has put an alternative view, arguing that, despite what may have happened later, the model in ‘Mr Keynes and the “Classics”’ was a valid representation of the model summarized in chapter 18 of the *General Theory*. In the present chapter we discuss this issue and also the wider question of whether *IS–LM* analysis has any role to play in macroeconomics in the spirit of Keynes. To help answer the latter question we look at what Chick herself has said about *IS–LM*.

In Section 2 we attempt to identify the ‘essence’ of Keynes’s central message and in Section 3 examine Keynes’s reaction to various formulations of the *IS–LM* to see what he thought important if an *IS–LM* framework was to be a good summary of the *General Theory*. We then consider whether Hicks’s *IS–LM* framework was an important step in the eventual distortion of Keynes’s message. Finally, we use the work of Chick to consider the degree to which the *IS–LM* framework can yield insights into actual economies.

2. What is macroeconomics after Keynes?

The *General Theory* was written as a ‘long struggle of escape’ from what Keynes called ‘classical economics’ (1936a: viii). Like the first expression of many radical innovations in economic theory it was not a lucid consistent whole. This has given rise to many interpretations about Keynes’s essential message. Nevertheless, there are some things that so permeate the *General Theory* that all agree that they are essential components of macroeconomics done in the spirit of Keynes. There are three we would pick out as the most important. The first is Keynes’s central message that in a capitalist economy employment, and hence unemployment, is determined by effective demand and that there is no mechanism which automatically moves the economy towards a position in which there is no involuntary unemployment. The second is Keynes’s emphasis that, since production takes time and many capital goods have long lives, decisions about production and investment are made on the basis of expectations. Moreover, given the nature of our knowledge of ‘future’ events, sometimes called ‘fundamental uncertainty’, these expectations cannot be rational in the sense of the modern phrase ‘rational expectations’. Third, in the *General Theory* money is not a veil; monetary variables influence real variables such as output and employment, and real variables, in turn, influence monetary ones.

We consider a fourth characteristic is also very important, namely Keynes’s understanding of the concept of equilibrium and the role of equilibrium analysis in the *General Theory*. However, many who call themselves Keynesian would disagree with us on this and our view is stated and supported in the following paragraphs.

Keynes claimed to have shown ‘what determines the volume of employment at any time’ (1936a: 313), i.e. in both equilibrium and disequilibrium situations. This claim highlights the difference between the *General Theory* and the Walrasian general equilibrium models used in the neoclassical synthesis. These general equilibrium models provide information about the necessary and sufficient conditions which must be fulfilled if an economy is to be in equilibrium. They can be used in comparative static analysis, but they can provide no information about an economy, which is not in equilibrium. This is the nub of Joan Robinson’s complaint about equilibrium models.² It is possible to put the point slightly differently by noting the lack of causality in simultaneous equation models. When everything is determined simultaneously, it is not possible to argue that variable ‘a’ causes variable ‘b’. On the other hand the *General Theory* is full of statements about causation, e.g. ‘the propensity to consume and the rate of new investment determine between them the volume of employment’ (p. 30). Keynes was concerned to show that it was possible for an economy to be in equilibrium with involuntary unemployment, but he argued in terms of a causal process in which the economy moved to an equilibrium situation.³

Keynes was, of course, a good enough mathematician to realize that the equilibrium position reached could be described by a system of simultaneous equations,⁴ but showed little interest in doing this. He was more interested in determining the

level of output and employment at any time whether or not the economy was in equilibrium. Indeed in the preface to the *General Theory* he states that it 'has evolved into what is primarily a study of the forces which determine changes in the scale of output and employment as a whole' (1936a: vii). This emphasis on an evolving interest in changes suggests a declining concern with equilibrium. It is interesting that chapter 18 in the published version of the *General Theory* was entitled 'The Equilibrium of the Economic System' in drafts, but 'The General Theory of Employment Re-Stated' in the published book (1973: 502).

Moreover, a Marshallian particular equilibrium approach distinguishes Keynes's approach from neoclassical general equilibrium analysis.⁵ The latter treats all variables not determined by the model as exogenous and one can be changed without affecting the others. On the other hand, Marshallian particular equilibrium analysis proceeds on the basis that the values of a set of particular variables can be assumed to be constant, or approximately constant, for the purpose in hand, locked 'for the time being in a pound called *ceteris paribus*' (Marshall 1920: 366). In many places in the *General Theory* Keynes showed that he thought of variables not determined by the model as being in Marshall's pound. The significance of this will be discussed in a later section.

3. Keynes's reaction to IS-LM

Keynes's lukewarm reaction to Hicks's original paper is too well known to quote. What is less well known is Keynes's enthusiastic reaction to a paper Harrod gave at the same conference at which Hicks's paper was delivered.⁶ He described it as 'instructive and illuminating' (1936c [1973]: 84) in a letter to Harrod and 'extraordinarily good' (1936d [1973]: 88) in one to Robertson. The mathematical equations Harrod gives as a summary of his interpretation of the *General Theory* are formally the same as those Hicks uses to produce his IS-LM diagram for the Keynesian theory. However, differences between the way the equations are presented and the discussion of them by the two authors may give insights into whether, and if so how, Hicks's article diverted Keynesian economics from the direction in which Keynes tried to head it in the *General Theory*.

The equation linking investment and the rate of interest is a good example of this. Harrod uses the same symbol for the rate of interest and the marginal productivity of capital⁷ 'since both the traditional theory and Mr Keynes hold that investment is undertaken up to the point at which the marginal productivity of capital is equal to the rate of interest' (1937: 76). His equation is Hicks's investment equation transposed. Harrod presents this equation as one for the marginal efficiency of capital. This leads naturally to a discussion of what determines the marginal efficiency of capital. Harrod makes the point that

Mr Keynes makes an exhaustive and interesting analysis of this marginal efficiency and demonstrates that its value depends on entrepreneurial

expectations. The stress he lays on expectations is sound, and constitutes a great improvement in the definition of marginal productivity.

(1937: 77)

Hicks, on the other hand, presents his equation as a simple statement that the volume of investment depends on the rate of interest and suggested no differences between the way Keynes and the classical economists understood this statement. Emphasis on expectations is one significant difference between Hicks and Harrod.

A second notable difference between the papers of Hicks and Harrod is the method of analysis used. Hicks's exposition of *IS-LM* reads like the exposition of a small Walrasian general equilibrium model. It was certainly taken that way by both neoclassical and post-Keynesian economists. Hicks himself stated later that 'the idea of the *IS-LM* diagram came to me as a result of the work I had been doing on three-way exchange, conceived in a Walrasian manner' (1982: 32). In contrast Harrod considered Keynes's theory as a particular equilibrium model, a 'short-cut' method that kept changes in a number of things out of consideration, for the purpose in hand, through the *ceteris paribus* assumption (1937: 75).

A third difference between Harrod and Hicks lies in what they see as the most important innovation in the *General Theory*. Hicks claimed that liquidity preference is the important difference between Keynes and the classics and stated that the equation embodying the consumption function and the multiplier 'is a mere simplification and ultimately insignificant' (1937: 152). On the other hand, Harrod focuses attention on the multiplier using it as the basis of his claim that

the most important single point in Mr Keynes's analysis is that it is illegitimate to assume that the level of income in the community is independent of the amount of investment decided upon.

(1937: 76)

Another difference is the amount of attention given to the supply side. Hicks had virtually no discussion on this, just making two assumptions. One was that wage rates were constant. In the 1937 article, he assumed that price equalled marginal cost, but this causes difficulties with his diagram, though not the more general form of the model set out in the equations. In later life Hicks realized this and added an assumption that product prices 'are derived from the wage rate by a markup rule' (1982: 323). In contrast, in Harrod's model the level of activity determined the money cost of production and this in turn determined prices through marginal cost pricing 'with suitable modifications for imperfect competition' (1937: 82). Due to diminishing returns and an increasing proportion of wages paid at overtime rates, the general price level rose as the level of real output increased.

In his review of the *General Theory* published in the *Economic Record* in 1936, Reddaway also had the same equations as Hicks and Harrod. Keynes's comments on this article lay between those on Hicks and those on Harrod. In a letter to Reddaway he said 'I enjoyed your review of my book in the *Economic Record*,

and thought it well done.’ (1936b [1973]: 70). However, this was the concluding sentence of a long letter in which he had discussed specific points raised by Reddaway, some of which went beyond the discussion in his review. Keynes’s comment could be interpreted as just a cordial conclusion to a letter to a former student for whose ability Keynes had a high regard. Nevertheless, it is interesting to see how Reddaway treats the issues that distinguish Harrod’s exposition from that of Hicks. Any aspects of Reddaway’s discussion which mirror features of Harrod’s article that are lacking in Hicks’s may point to things that Keynes thought important in the new direction he was trying to point economics.

Reddaway emphasizes expectations even more than Harrod, discussing uncertainty and risk (1936: 32–3). His exposition can be read as consistent with either a Marshallian or Walrasian approach, although he consistently uses the term mutual determination, which does not necessarily imply simultaneous determination (e.g. 1936: 33n, 34, 35). He agrees with Hicks in pointing to liquidity preference as the big innovation (1936: 33) and like Hicks suggests the inclusion of current income in the equation for investment. Unlike Hicks he gives an economic reason for this: the effect of current income on investor confidence (1936: 33n). If there is anything that stands out in Reddaway’s review which makes his approach more akin to Harrod’s than to Hicks’s, it is the extended discussion of expectations or ‘the state of confidence’.⁸ The lack of any explicit discussion of expectations on Hicks’s 1937 article is in stark contrast to the discussion in both Harrod’s and Reddaway’s articles.

4. Was ‘Mr Keynes and the Classics’ guilty?

Both the lack of attention paid to expectations and the Walrasian nature of Hicks’s 1937 article suggest that the answer should be yes. These two characteristics were major features of the *IS-LM* model which was the dominant form of macroeconomics in the second half of the 1950s and 1960s. Since expectations are exogenous variables, outside the *IS-LM* model, they are usually overlooked. The word expectations does not appear in the index of perhaps the most successful macroeconomic textbook of the 1960s, Ackley’s *Macroeconomic Theory*. In the 1950s and 1960s the Walrasian simultaneous equation general equilibrium nature of *IS-LM* was taken for granted and pointed out in the textbooks.⁹ This simultaneous equation general equilibrium theory was then used to show the result of a policy change or a change in one of the parameters such as the marginal propensity to consume, although strictly speaking the theory could say nothing about what happened when the economy was thrown out of equilibrium.

The way these two things created macroeconomics that was definitely not in the spirit of Keynes can be neatly illustrated by looking at the way each type of macroeconomics treats an increase in the quantity of money. The textbook analysis is well known. The quantity of money is an exogenous variable, which can be changed without affecting other exogenous variables, and when it is increased output increases. Keynes, however, considered the quantity of money as one thing

in Marshall's *ceteris paribus* pound and had no assumption that it could be changed without affecting other variables in that pound. He concluded that an increase in the quantity of money could easily have little effect on output or even a perverse effect.

a moderate increase in the quantity of money may exert an inadequate influence over the long-term rate of interest, whilst an immoderate increase may offset its other advantages by its disturbing effect on confidence.

(1936a: 266–7)

For those pursuing economics in the spirit of Keynes, the typical textbook presentation is likely to lead to incorrect policy advice. Expectations are an important set of variables, assumed constant under the *ceteris paribus* assumption, whose values are likely to change if there are changes in the values of other variables assumed to be constant. They are not in fact exogenous variables unaffected by changes in other exogenous variables. Macroeconomics is important, at least to those working in the spirit of Keynes, as a basis for policy advice which can reliably predict the effect of changes in this or that policy variable. Hicks himself, in his post-Keynesian phase as John Hicks, argued that *IS–LM* could not be used to analyse policy change because of its assumption of constant expectations (1982: 331). In the terminology Hicks used elsewhere ‘there is always the problem of the traverse’.

Pasinetti (1974: 47) also accuses Hicks's 1937 article of badly distorting Keynes by elevating liquidity preference to the position of the major theoretical innovation in the *General Theory*. This accusation seems a bit harsh. Hicks's point is essentially that unless $M = f(Y)$ is replaced by another equation, in Keynes's case by $M = L(i)$, the model is still very close to the classical position, e.g. it would provide theoretical underpinning for the ‘Treasury View’. Hicks's stress on the importance of liquidity preference does not contradict the fundamental principle that it is effective demand that determines the level of income.

The meager discussion of the supply side in Hicks's 1937 article and in later *IS–LM* analysis was certainly unfortunate, but it is paralleled by a meager discussion of supply in the *General Theory*. Although more attention to aggregate supply would have enabled macroeconomics to cope better with the supply shocks of the 1970s, and although Keynes thought it important, one can hardly blame Hicks for following the *General Theory* and giving little attention to it in an article designed to elucidate the differences between Mr Keynes and the classics.

Nevertheless, the most important weaknesses in the Keynesian part of the neo-classical synthesis did flow naturally from Hicks's *IS–LM* analysis. The typical post-Keynesian view that Hicks's 1937 article was the reason the development of macroeconomics was diverted from the path Keynes marked out in the *General Theory* is correct. It can only be used in comparative static analysis and not to analyse policy changes. Only one question needs to be answered to make the case complete. Why did Keynes give it his cautious approval in 1937?

The major reason is certainly the clear-cut position in *IS-LM* that it is effective demand that determines the level of employment not the balancing, at the margin, of the utility of wages against the disutility of work. It rejects Pigou's theory of employment and Say's law, against which Keynes was crusading. A second reason is probably that it showed the effects of changes in the quantity of money on the real economy. Keynes argued strongly that the rate of interest, which had a key impact on output and employment, was a monetary phenomenon (1936a, chapter 13; 1973: 80). He would surely have welcomed support for this in *IS-LM*.

5. Chick and *IS-LM*

It is important to note that Chick's position on the *IS-LM* framework is typically individualistic, in that she neither wholly rejects it, as other post-Keynesian economists do, nor does she criticize it on the same grounds. As pointed out above, for most post-Keynesian economists, led by Joan Robinson, the main problem with the *IS-LM* framework is its static equilibrium nature. Chick, on the other hand, attacks the model on the basis of its internal logic, showing that it is not capable of incorporating features which would be regarded as basic to any actual economy, such as the price level or a reasonable financial structure.

In her book *The Theory of Monetary Policy*, after distinguishing between internal and external criticism of the model, she clearly opts for the former:

The *IS-LM* model can be criticised on two very different grounds: one can question its relevance to a money economy because it is static and it ignores the changes in expectations that are the driving force of the economy in, for example, Keynes's model, or one can accept its formal structure but question its usefulness in analysing the problems at hand. Since it is so widely used in the monetary policy debate it can better be evaluated in its own terms.

(1977: 53)

Chick goes on to analyse the weaknesses of the *IS-LM* framework in its handling of price change and of its inadequacy in dealing with the interrelationship between fiscal and monetary policy.

With respect to price changes, the *IS-LM* framework focuses on the demand side of the economy. As a result, as Chick argues, in order to make price endogenous the model would need to be extended to incorporate supply, especially labour supply, as well as the degree of capacity utilization. Even if price changes are treated as exogenous, there are serious problems as the *IS* and *LM* framework does not treat prices symmetrically. The demand for money is a nominal demand, such that increases in the price level, *per se*, will increase the demand for money, and, hence cause shifts in the *LM* curve, but the *IS* curve is in deflated variables, therefore 'price-fixity is an essential assumption' (Chick 1977: 55). Chick is also dismissive of the implied separation of fiscal and monetary policy within the *IS-LM* framework, arguing that

'attempts to incorporate their interactions into the *IS-LM* framework opens the model to serious question, to say the least' (1977: 57; see also p. 132).

Despite the hesitant acceptance of the role of the *IS-LM* framework, Chick's subsequent rejection of it was to play an important role in the development of her economic thought. In 'Financial counterparts of saving and investment and inconsistency in some simple macro model's,¹⁰ Chick provides one of the earliest critiques of the internal logic of *IS-LM* analysis (Chick 1992: xii). It is from this paper and particularly from its critique of the *IS-LM* framework, that Chick turned fully from conventional neoclassical macroeconomics and started her fundamental contributions to post-Keynesian theory:

Writing this paper ... I saw standard macroeconomics crumble and run through my hand ... I turned back to the *General Theory* as a result of my disillusionment, and my career thus changed its course.

(1992: 81)

In 'financial counterparts', Chick incorporates financial assets into the *IS-LM* framework. With such markets, saving represents the purchase of a durable asset, either real or financial, with the latter consisting of (at least) money holdings and bonds. Firms finance investment either from current income, or by the issue and sale of financial assets (bonds). Within this framework, Chick derives the condition for equilibrium which requires an interest rate where 'all new saving flows into the bond markets' (p. 87). Clearly there are problems with this, as it requires all additional saving to go into bonds, with, at the same time, bond prices/rate of interest remaining constant. However, the larger the holding of bonds within any portfolio, *ceteris paribus*, the less attractive will further holding be. This suggests, in contradiction to the equilibrium condition, that for firms to be willing to lend more to banks, i.e. to take up more and more bonds, the return to bonds needs to rise (or their price fall).

The equilibrium solution generated by the *IS-LM* model, in contrast, suggests either that there exists some rate of interest at which savers are prepared to continue indefinitely to extend finance to firms, being satiated with money holdings, or that equilibrium is reached at that rate of interest just high enough to drive net new investment to zero.

It is not usually assumed that the only solution to the *IS-LM* model is that of the stationary state. For there to exist an equilibrium with positive rates of saving and investment, savers must at some interest rate exhibit absolute 'illiquidity preference'. In the *IS-LM* model, the existence of such a rate and the plausibility of the demand-for-bonds function which would ensure such a rate has simply been assumed.

(p. 88)

This conclusion represents a powerful critique of the framework. Previously, it was thought that the *IS-LM* framework was useful as a static model, investigating

static equilibrium conditions, but that it could apply to an economy at any stage of growth. The ‘financial counterparts’ paper shows that this view is incorrect.

It is not surprising that Chick subsequently turned her attention to the *General Theory*, for, in fact, the basis of her critique can be found there. An increase in saving in the *General Theory* will reduce effective demand, and therefore increase unemployment. In neoclassical theory, the increase in saving, via the loanable funds model, generates an equal increase in investment, so there is no change in aggregate demand. Chick has shown the limitations of the neoclassical model, and the generality of the Keynesian one. For investment to increase by the same amount as saving, all new saving must go into bonds, which are used to finance the new investment, and none into money holding, which do not. Further, ‘for the firms to get the money, they must make new issues at exactly the same time as new saving comes on to the market’.¹¹ In other words, Chick has exposed a further fundamental flaw in the loanable funds story, which goes beyond her critique of the IS-LM framework. The ‘saving’ variable in that model does not, in fact, represent total saving, rather it represents that saving which is in the form of bonds, excluding saving which may go into money holdings. To the extent that any new saving is in money, it cannot be converted into investment, and so the equilibrium of the system will be disturbed, and the model will not hold.

In ‘A Comment on *ISLM* an Explanation’ Chick concentrates on the length of the period in Keynes’s analysis and in that of Hicks. For Keynes it is the period for which production (and employment) decisions are made and it takes more than one period to reach equilibrium. In contrast, in *ISLM* the period is long enough for equilibrium to be established, so must comprise several production periods. This produces problems for liquidity preference. There is also the problem of what happens to liquidity preference at the end of the period. Chick is critical of Hicks’s solution to this problem and suggests an alternative which also accommodates the fix price assumption in *ISLM*. She suggests that *ISLM* be interpreted as applying in the situation where the economy is in equilibrium in Keynes’s production period and the set of variables will repeat itself until something surprising happens. Although expectations are fulfilled, liquidity is warranted in case something surprising happens. It is not necessary to assume a horizontal aggregate supply curve as is usually done. Prices are only fixed in the sense that they are appropriate to an ongoing equilibrium situation. In this situation *ISLM* determines what the level of aggregate income will be.

In *Macroeconomics after Keynes*, Chick was much more dismissive of the IS-LM model. She retains her criticism of the model’s inability to deal with price changes. She is also critical of the ‘framework of simultaneous equations – a method only suitable to the analysis of exchange’ (Chick 1983: 4). Nevertheless, she is not totally dismissive:

There has been much criticism of IS-LM in recent years. My present view is that it doesn’t have to be as misleading as it sometimes is – it is

perfectly possible, for example, to include long-term expectations ... but it still leaves out the all-important aspect of producers' output decisions and the short-run expectations on which they are based.

(1983: 247)

Interestingly, despite the specific criticisms of the *IS-LM* framework discussed above, Chick does not raise two fundamental issues, which have been identified as major themes of her writings. In particular, the editors of her *Selected Essays* have identified the endogeneity of credit creation and 'the significance of historical time for economic process' (1992: ii). Both of these have been used to dismiss the *IS-LM* framework as not having any operational significance. Although rejecting the framework, Chick does so mainly because of problems with its logic, rather than due to these 'external' critiques.

6. Conclusion

Traditionally, post-Keynesian economists have rejected the *IS-LM* framework as being neither a valid simplification of the arguments in the *General Theory* nor a reliable model for analysing macroeconomic issues. This rejection has centred on the static equilibrium nature of the *IS-LM* model. Hicks's 1937 article is usually blamed for diverting mainstream 'Keynesian' macroeconomics from the direction in which the *General Theory* was pointing it. Recently, it has been argued that the Hicks 1937 version of *IS-LM* is a valid simplification of the *General Theory*. This paper accepts the traditional views about the importance of factors lacking in *IS-LM*, but recognizes that Keynes did use an equilibrium concept in the *General Theory*, although one very different from the Walrasian general equilibrium in *IS-LM*. After looking at Keynes's own views on *IS-LM*, it comes to the conclusion that Hicks's 1937 article did have the faults that post-Keynesians typically ascribe to *IS-LM*.

Moreover, an examination of the writings of Chick on *IS-LM* suggested further problems with *IS-LM*. Chick argues that *IS-LM* is not internally consistent. There are two prongs to her argument. The first is that it is not enough to assume prices are determined exogenously. *IS-LM* can only be applied if the general level of prices is assumed to be constant. The second focuses on the implied assumptions about financial markets. Chick argues that 'for there to exist an equilibrium with positive rates of savings and investment savers must at some interest rate exhibit absolute "illiquidity" preference'. This must continue as long as the equilibrium continues. Except in the case of a stationary state this requires that an *IS-LM* is a short-term equilibrium. However, inasmuch as comparative static analysis is useful, it is useful for comparisons of different states of the economy or long-period equilibrium situations. Given Chick's analysis there seems nothing left for *IS-LM* to do. Our final evaluation is more damning than that of Chick herself.

Notes

- 1 We wish to thank Victoria Chick for discussions over the years which have improved the authors' understanding of the issues discussed in this chapter.
- 2 Chick's distinction between equilibrium theory (i.e. this type of theory) and theory which has an equilibrium position is helpful at this point (Chick and Caserta 1997).
- 3 See e.g. Nevile and Rao (1996: 193) for a description of this process.
- 4 Ingo Barends (1999: 85) has pointed out that on p. 229 of the *General Theory*, Keynes commented 'Nevertheless if we have all the facts before us we shall have enough simultaneous equations to give us a determinate result.' (Keynes 1936a: 229).
- 5 The old-fashioned term particular equilibrium is preferred because it emphasized that the equilibrium holds for particular values of particular variables that are outside the model.
- 6 In a discussion of the priority of five early interpretations of the *General Theory*, with similar sets of equations, Young (1987) demonstrates that Hicks knew of Harrod's paper before writing his own.
- 7 Harrod is clearly interpreting the marginal productivity of capital in nominal terms and as a variable equivalent to Keynes's marginal efficiency of capital.
- 8 In his letter to Keynes he goes so far as to argue that, on occasion, not enough weight was given to expectations in the *General Theory* (Reddaway 1936 [Keynes 1973]: 67). Keynes replied that, if so, it was due to inadvertence (1936b [1973]: 70).
- 9 See e.g. Ackley (1961: 370).
- 10 Hereafter cited as 'financial counterparts'. Originally published in 1973, although early drafts were written by 1968 (Chick 1992: 55). A condensed version is reprinted as Paper 5 in Chick (1992).
- 11 Chick in correspondence with the authors.

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ON KEYNES AND CHICK ON PRICES IN MODERN CAPITALISM¹

G. C. Harcourt

David Champernowne once told me that to introduce prices into a macroeconomic model requires that you choose the simplest possible model of pricing which still retained a link with reality, with real world practice. Only then could you hope to avoid the whole model becoming too complicated for you to be able to understand what was going on. I thought of this advice, by which I was most struck at the time and have remembered ever since, when I started to think about the present chapter on Keynes and Chick on prices in modern capitalism for Vicky's *Festschrift*.

May I pay a tribute to Vicky herself? The more I read what she writes on Keynes, money and the operation of modern capitalism, the more struck I am by her deep understanding, wisdom and brilliant economic intuition. Not for Vicky the quickly written technical piece – have model, will travel – in order to build up a c.v. Instead, she thinks deeply about fundamentals and then shares her thought processes and her findings with us rather in the manner of John Hicks (always one of her favourites). Moreover, Vicky's writings grow out of and are, first and foremost, integral to her teaching. Not only she is a gifted economist, she is also that rare person, especially nowadays, a devoted and gifted teacher, from whom we other teachers have much to learn. Most of all, Vicky is a loyal, loving and caring friend. It is a privilege to contribute to this collection of essays in her honour.

Before the *Treatise on Money* and *The General Theory*, Keynes, as we know, was a critical quantity theory of money person in his discussions of the general price level and inflation and deflation, and a Marshallian, pure and simple, in his understanding of the formation of relative prices in general, and individual prices in firms and industries in particular. Thus, he declared himself to be a quantity theory person in the *Tract*, taking acceptance or not of it to be the litmus paper test of whether or not the person concerned was an economist (and intelligent) (Keynes 1923 [1971a]: 61). Of course, he gave cheek to his teacher Alfred Marshall concerning the long run and 'the too easy, too useless a task' (p. 65) which the long-period version of the theory set. And he directed his then recommendations on monetary policy mainly towards reducing the amplitude of fluctuations in the

short-period velocity of circulation in order to achieve and sustain as stable a general level of prices as possible.

In Keynes's biographical essay of Marshall (Keynes 1933 [1972]: 161–231), he described very clearly how Marshall tried to tackle time by using his three-period – market, short, long – analysis with its lock-up and subsequent release of different variables from the *ceteris paribus* pound. This time period analysis was used by Keynes in his analysis of sectoral price formation – the fundamental equations of the *Treatise on Money*. There, he analysed sectoral price formation, short period by short period, with quantities given each period but changing between them in response to prices set and profits (windfalls) made or not made. He told a story of convergence, short period by short period, on the Marshallian long-period, stock and flow, equilibrium position at which Marshall's form of the quantity theory and Keynes's new equations for prices coincided. (Convergence was required to occur either because of a shock to the system which took it away from its long-period equilibrium position, or because a new equilibrium had come into being as a result of changes in the underlying fundamental determinants of the position – tastes or techniques or endowments.)

For Keynes this was still quantity theory. But for Richard Kahn, who had always been sceptical of the quantity theory *as a causal process*, the fundamental equations were relations which brought into play cost-push and demand-pull factors, as we would say now, without need for the quantity of money and its velocity to be mentioned at all. This was a significant insight that Keynes absorbed when writing *The General Theory* (see his statement at the beginning of chapter 21 where his emancipation from the traditional quantity theory is virtually complete).² Moreover, some years after *The General Theory* was published, he was beginning to question whether long-period analysis and especially the concept of long-period equilibrium had any part at all to play in economy-wide descriptive analysis.³ This viewpoint has been lost sight of in modern macroeconomic analysis but it was a characteristic of the writings of those closest to Keynes either in person and/or in spirit, for example, Joan Robinson, Tom Asimakopulos, Richard Goodwin, and it was a characteristic reached independently, as ever, by Michal Kalecki and Josef Steindl.

Many scholars have been puzzled about why Keynes, when developing his new theory, took so little notice of the prior 'revolution' in the theory of value associated, especially in Cambridge, with Piero Sraffa, Richard Kahn, Austin and Joan Robinson and Gerald Shove. (There was also, of course, Edward Chamberlin in the other Cambridge but I doubt if his version impinged much on Keynes's consciousness.) When taxed on this, Keynes expressed himself perplexed as to its relevance *for his purposes*, see, for example, his reply to Ohlin in April 1937 about Joan Robinson reading the proofs and 'not discovering any connection' (Keynes 1937 [1973b]: 190). Not that Keynes was unappreciative of the writings of Kahn and Joan Robinson (let alone those of Piero Sraffa, Austin and Shove), it was just that he did not accept their particular relevance for his own context, in which Champernowne's maxim to which I referred above may have played a part.

(I do not mean that Champernowne explicitly put it to Keynes, only that they applied the same methodological principle.) After all, Keynes did put in the appropriate provisos about imperfect competition when stating the two classical postulates in chapter 2 of *The General Theory* (pp. 5–6), but wrote as though they were but minor modifications, of no essential importance for his central argument and results. Similarly, when he responded to the findings of Michal Kalecki (1938), John Dunlop (1938) and Lorie Tarshis (1939b) in the late 1930s, he pointed out that accepting non-freely competitive pricing helped the *policy* applications of the new theory in that expansion from a slump without inflationary worries was now a greater possibility (Keynes 1939 [1973a, appendix 3], pp. 394–412).

Be that as it may, Keynes used Marshallian competitive analysis in his new macroeconomic context in order to derive the aggregate supply curve and the aggregate proceeds, which needed a model of prices, of the function. By Marshallian competitive analysis I mean free competition in a realistic setting of actual firms of a viable size and an environment characterised by uncertainty in which all major economic decisions have to be made. The modern literature associated, for example, with Martin Weitzman's 1982 *Economic Journal* paper whereby involuntary unemployment is argued to be impossible with modern perfect competition, would have seemed to Keynes (and I suspect to Vicky as well) as silly-cleverness of a most extreme form. (It is argued that if people were sacked, they could borrow freely on a perfect capital market at a given rate of interest and because of complete divisibility, could set up a minute, one-person firm selling a product for which it is a price-taker.)

When Keynes told his story of the role of prices in the determination of the point of effective demand, he chose those ingredients that most easily allowed plausible aggregation of individual decisions. In effect, he asked: What is it reasonable to expect a business person in an uncertain, competitive environment to know when making daily or weekly production and employment decisions? Here the assumption of price-taking implied that the *expected* price for the product of the industry in which the firm operated was currently known, implicitly determined by the interaction of appropriate short-period supply and demand curves. On the basis of this, which provides the information for what the price is expected *to be*, and from knowledge of existing short-period marginal cost curves (user cost is a complication with which Keynes and others after him, for example, Lorie Tarshis, James Tobin and Christopher Torr, have grappled), the decisions on production and employment could be made. It fitted in with the assumption that what motivated business people was the desire to maximise short-period *expected* profits.

Since it is reasonable to assume that the behaviour was representative (there is a further puzzle to be dealt with in the capital goods trades), aggregate supply and aggregate demand could be determined. Whether individual expectations about prices were correct or not would be determined by the overall outcome of all these individual actions – here the so-called impersonal forces of the market were supposed to do their thing in determining actual prices. If, overall, prices turned out

to be different than what was expected, there is an implication in Keynes's argument that, with reasonable behavioural assumptions, people would so respond to non-realisation as to move the economy itself closer to the point of effective demand where aggregate demand and supply matched and expectations were fulfilled.

In telling this story, both Keynes and Vicky distinguished between two versions or, rather, two concepts of aggregate demand. The first related to what is in the minds of business people themselves – what *they* expect their prices and sales to be. It is the role of the onlooking (macro) economist to add these up and relate the resulting totals to the corresponding values of production and employment. The other concept, which alone seems to have made it to the textbooks, short-circuits the actual decision makers in firms and shows what levels of planned expenditure on consumption and capital goods may be expected (planned) *in a given situation* to be associated with each possible level of production and employment. Here the Keynesian consumption function (with its $mpc < 1$) makes an explicit entrance along with, as a first approximation, a given level of overall *planned* investment expenditure.

In Keynes's story it is the non-realisation of the expected prices of individual products which sets in motion the groping process, the changes in production and employment initiated by individual business people, which takes the economy eventually to the point of effective demand. There is a crucial assumption that the immediate non-realisation of short-term expectations does not affect – feed back on – long-term expectations so that planned investment and the consumption function remain stable while the convergent process occurs. This is the second of Keynes's three models of reality that Kregel identified for us in 1976.

With this assumption, the convergence process is a simple one and follows logically. If prices turn out to be greater than expected – we could think of actual prices being those which clear the given stock of supplies on Marshall's market day – short-period flow production is adjusted upwards as individual producers move up short-period marginal cost curves to the new points of marginal cost equals expected price which maximise short-period expected profits.⁴ Because the mpc is less than unity, supplies will increase more than demands and the point of effective demand will be reached, or, at least, the economy will be brought closer to it. A similar story may be told if prices turn out to be less than expected, so that aggregate supply is momentarily outrunning aggregate demand (version 2). In Keynes's story there is no place for unintended changes in inventories (because prices do the task of unintended changes in inventories in a fixed-price model), with the consequence that planned investment expenditure, including planned changes in stocks, is achieved. Nevertheless, the market signals that ensue are stabilising.

In a fixed-price model, in which business people have in mind expected sales at given unchanging prices, the non-realisation of expectations shows itself in unexpected, unintended changes in inventories (or lengthening or shortening queues if the products concerned are not available in stock). If these are interpreted as a

misreading of what sales are and the immediate non-realisation of *planned* changes in inventories is not allowed to affect current investment plans, the accompanying induced changes in output and employment again bring the economy closer to the point of effective demand. In this case it is obvious that, because changes in supply are greater than changes in demand because the *mpc* is less than unity, convergence is occurring. As this case may be interpreted as either one of price-setting behaviour by individual firms or price-following of a leader by some firms, or both, it shows clearly *why* Keynes did not think the degree of competition mattered for his purposes. It was taken ‘as given’ though not constant – ‘merely that, in this ... context, [Keynes was] not considering or taking into account the effects and consequences of changes in [it]’ (Keynes 1936 [1973a]: 245). In the modern developments of imperfect competition and Keynesian theory, in which many participants argue that only imperfectly competitive market structures allow Keynes-type results to occur, I sometimes think this simple but profound point is overlooked – but see Nina Shapiro (1997) for an exception and Robin Marris (1997) for a typical counter-argument.

It is true that, though Keynes had marvellous intuition about the nature of inter-related economic processes, each of a different length, in *The General Theory* as opposed to the *Treatise on Money*, he despaired of finding a common or determinate time unit to which all of them could be reduced. So he settled for setting out his crucial ideas in *The General Theory* in terms of establishing existence as we would say now – the factors responsible for the point of effective demand. He told us after the book was published (he had Ralph Hawtrey’s responses especially in mind) that he wished he had made his exposition more clear-cut, concentrating on these fundamental issues and then discussing the process of achievement of unemployment equilibrium, including discussing whether the factors responsible for the fundamental process of groping by entrepreneurs for the rest state were or were not interrelated with those responsible for the point of effective demand itself and whether there was or was not feedback from one to the other.⁵

As far as prices are concerned in this context, what Keynes needed to establish was that *at any moment of time* individual business people could reasonably be expected to have in mind what price would be expected for his or her product for the relevant production time period. Then, in Keynes’s exposition, knowledge of their respective marginal cost curves would allow them to decide on output and employment. At the level of the firm, the known marginal cost included their estimates of user cost, even though user costs net out in the aggregate; so that their prices and the overall price level (and expected changes in both) were influenced by user cost and the important factors involved in its determination. Provided this was a reasonable assumption about what was possible in reality, aggregation to obtain Keynes’s aggregate supply and demand functions and ultimately to determine the general price level should be possible in principle, as it should be also if the same approach is taken to non-Marshallian free competition.

This argument may also bear on the disagreement between Tom Asimakopulos and Joan Robinson on the nature of the short period and, in particular, on its

length in macroeconomic analysis. Asimakopulos (1988: 195–7) thought it had to be finite – a definite stretch of time – not a point, ‘the position at a moment of time’, Robinson (1978: 13), as Joan Robinson was ultimately to insist. I think I see what Joan had in mind. In particular, it does allow us to avoid the puzzle with Tom Asimakopulos’s approach of how to handle different short periods of different firms and industries which have to be abstracted from, rather artificially and arbitrarily, in order to coherently aggregate to the economy as a whole.

Keynes himself never systematically investigated this aspect of the analysis. Some post-Keynesian economists, especially Tom Asimakopulos, have investigated in great, precise detail, the nature of these aggregations, see, for example, Asimakopulos (1988, chapter 5). A classic paper on the same issues is Tarshis’s chapter in the *Festschrift* for Tibor Scitovsky, Boskin (1979), on the aggregate supply function and both Marris (1991, 1997) and Solow (1998) have recently written about it. It is, moreover, in Lorie Tarshis’s unpublished Ph.D. dissertation (1939a) that we find one of the fullest discussions of the role of user cost in the determination of prices at the level of the firm, industry and economy, as well as an extremely subtle discussion of different planning time periods and their corresponding marginal costs.

I think the arguments above reflect the common-sense meaning of Champernowne’s remark. The principal point I want to make here is that Keynes’s intuition about the irrelevance of market structure and the exact nature of price setting for his immediate purposes was spot on.

I hope I am right in saying that when I read Vicky on these issues, I detect that her approach and judgement are the same as those I claim to have detected in Keynes. It is true that she takes the analysis of the time periods associated with various interrelated economic processes, including those related to price setting, much further than Keynes did. As with Keynes she is insistent that we have to analyse the role of money and its accompanying institutions right from the start, that the real and monetary aspects of the economy cannot be separated in either the short or the long period. When it comes to a discussion of the determination of the prices of financial assets and the roles which they play in the determination of overall employment, as well as her own original insights, she also draws on Keynes and his astute pupil Hugh Townshend for inspiration (see Chick 1987). Her findings on these issues affect her discussion of the determination of the prices of capital goods (new and second hand), just as similar matters affected the discussion on the same issues by another of her mentors, Hy Minsky.

This is principally because, as with the setting of prices of financial assets, we are dealing with markets where existing stocks as well as new flows have a major impact on prices, as do speculative expectations about the future course of prices by both producers and purchasers. Indeed, stocks usually dominate flows in the process. In the case of durable capital goods there are two major factors – the demand for the services of existing capital goods and the relative importance of these for the determination of the prices of the new flow production of them. The feedback from the determination of the prices of financial assets, where some of

the latter are associated with the original creation of the stocks of durable goods, affects the demand for their services and their valuation overall. But there is also a role for the conditions of production and the prices of the services of the variable factors, especially labour services, in determining the supply prices of capital goods. This analysis is common ground for Keynes, Vicky and Paul Davidson.

Vicky is also very careful to make explicit the two concepts of aggregate demand which we mentioned above and to discuss their different but indispensable roles. Once it has been granted that Keynes was escaping from the economic theory of certainty, the first concept of aggregate demand, the summation of business people's expectations about prices and sales in a given situation, is especially crucial. For while it is necessary to move onto the second concept in order to determine the point of effective demand, the move would not be possible unless there had been the prior account of how production, income and employment came to be created in the first place.⁶ And, as we have seen, this account must be accompanied by some account of price setting and what prices are doing in the process. For this affects both the point of effective demand and what happens if it is not found first time around, as it were. It is on these issues, in which the determination of output and employment has top priority yet prices too have an indispensable role, that Vicky, as ever, has written clearly and decisively (see, for example, Chick 1983).

Notes

- 1 I am most grateful to Stephanie Blankenburg, Prue Kerr and the editors for their comments on a draft of the chapter.
- 2 'So long as economists are concerned with ... the theory of value, they ... teach that prices are governed by supply and demand ... in particular, changes in marginal cost and the elasticity of short-period supply [play] a prominent part. But when they pass ... to the theory of money and prices, we hear no more of these homely but intelligible concepts and move into a world where prices are governed by the quantity of money, by its income-velocity, by the velocity of circulation relatively to the volume of transactions, by hoarding, by forced saving, by inflation and deflation *et hoc genus omne* ... One of the objects of the foregoing chapters has been to ... bring the theory of prices as a whole back to close contact with the theory of value.' (Keynes 1936 [1973a]: 292–3).
- 3 'I should, I think, be prepared to argue that, in a world ruled by uncertainty with an uncertain future linked to an actual present, a final position of equilibrium, such as one deals with in static economics, does not properly exist.' (Keynes 1936b [1979]: 222). Incidentally on the previous page (221), Keynes gives some credence to my pedantic insistence that we should distinguish between runs (actual history) and periods (analytical devices in which the economist controls what changes and what does not). He wrote (to Hubert Henderson, 28 May 1936): '... the above deals with what happens in the long run, i.e. after the lapse of a considerable period of time rather than in the long period in a technical sense.'
- 4 I once had a brawl with Don Patinkin about all this. He wanted to expunge from p. 25 of *The General Theory*, the assumption of maximisation of short-period expected profits as the motivating force behind the behaviour of business people. I used Lorie Tarshis's arguments from his classic 1979 paper on the aggregate supply function to argue, I hope persuasively, against literary vandalism, see Harcourt (1977: 567–8).

- 5 '[I]f I were writing the book again I should begin by setting forth my theory on the assumption that short-period expectations were always fulfilled; and then have a subsequent chapter showing what difference it makes when short-period expectations are disappointed.' (Keynes 1937 [1973b]: 181). 'The main point is to distinguish the forces determining the position of equilibrium from the technique of trial and error by means of which the entrepreneur discovers what the position is.' (Keynes 1937 [1973b]: 182).
- 6 Joan Robinson once told me that the following, which arises from the distinction between the two concepts of aggregate demand, was 'a very subtle point'! In Australia we write the aggregate demand for imports as a function of aggregate demand, not aggregate income. The argument is that in a given situation, business people will demand those imports needed for the production they plan to match their expected sales. In the short period the amount of imports per unit of output needed to match sales is pretty much a given. This implies that aggregate import demand is a function of the first concept of aggregate demand – what sales are expected to be – not the second – what will be demanded overall at each level of demand and income. At the point of effective demand, the amount of imports will be the same as that which would be predicted by relating the demand for them to *either* concept of aggregate demand. But away from the equilibrium position, the predictions differ. If we assume that prices are given, the differences between the two predictions correspond to the import contents of the *unintended* changes in inventories associated with the corresponding excess demand or supply situations.

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AGGREGATE DEMAND POLICY IN THE LONG RUN

Peter Skott

1. Introduction

My thesis is that a root cause of the current inflation is a misapplication of a policy prescription of the *General Theory*; a policy designed as a short-run remedy has been turned into a long-run stimulus to growth, without examining its long-run implications.

(Chick 1983: 338)

The principle of effective demand is at the center of Keynes's theory. For all the developments, extensions and, in some cases, outright distortions of Keynes's ideas, most 'Keynesians' still view the level of aggregate demand as a critical and independent determinant of economic activity in the short run. When it comes to the long run, however, positions differ.

New Keynesians – like the traditional neoclassical synthesis – see aggregate demand as an accommodating variable in the long run. Price and wage stickiness may prevent equilibrium in the labour market in the short run but although the adjustment may be slow, market forces will gradually reestablish labour market equilibrium. This convergence process is mediated by the effects of changes in prices and wages on both aggregate demand and aggregate supply. Ultimately, however, aggregate demand will have to match the level of aggregate supply that is forthcoming when employment is at its equilibrium level.

The post-Keynesian position on the role of demand in the long run is less clear. Some post-Keynesians view the demand side as a critical influence, not just on the *level* of income and employment but on the long-run rate of *growth*. One can also, however, find post-Keynesians who take a more negative position on the role of aggregate demand. As indicated by the opening quotation, Victoria Chick is among those who have expressed scepticism concerning the use of traditional Keynesian policy to address long-run problems.

The long-run issues are analysed in the last two chapters of *Macroeconomics after Keynes (MAK)*. Inflation, it is argued, 'is best understood as the culmination

of a process which began at the end of the Second World War' (p. 338). At the center of this process was a misapplication of Keynesian policies: 'The simple message taken from the *General Theory* was that to raise income one must invest. Hence postwar policy has offered direct or indirect encouragement to investment' (p. 338). This, Chick points out, overlooked Keynes's own warning that 'each time we secure to-day's equilibrium by increased investment we are aggravating the difficulty of securing equilibrium tomorrow' (*GT*, p. 105; *MAK*, p. 338). As a result of these increased difficulties, 'the long-term effect of semi-continuous expansionary policy is bound to be inflationary' and 'inflation since the war can be looked upon as the result of attempting to forestall the inevitable consequences of an increasing capital stock' (p. 339).

These claims are based on assumptions of a stable population and a slackening of the rate technical progress from the mid-1960s onwards (pp. 340–2). The role of 'capital inadequacy' is singled out, too. Capital inadequacy, Chick argues, is one of six key assumptions underlying the *General Theory*, possibly the most basic of the six assumptions since it is this assumption which justifies the focus on stimulating investment. If 'the social return from investment is almost bound to be positive, then almost any investment is a Good Thing: not only does it provide employment in the short run, it is also a beneficial addition to productive capacity' (p. 359). Empirically, the assumption of capital inadequacy was reasonable in Keynes's time and it also fitted well at the beginning of the post-war period when there was 'a need for massive capital accumulation for reconstruction' (p. 339). Capital accumulation, however, implies that gradually a state of inadequacy will turn into one of capital saturation, in which 'an increment to the capital stock cannot be expected to yield enough to cover replacement cost, *even* if full-employment demand is sustained throughout' (p. 359). This development, Chick argues, requires a rethinking of traditional policy.

The argument in these chapters is intriguing but perhaps it is also fair to say that the presentation remains a little sketchy and that the details are not fully spelled out. Certainly when the book appeared in 1983, I found it difficult to follow the argument despite, as I recall, several lively discussions with Victoria Chick about these issues. Rereading the chapter today, I think most of my misgivings may have been ill-founded and that the logical structure of the argument can be captured and clarified using a formal model.

2. A Harrodian benchmark

The standard setup

Consider a closed, one-sector economy with two inputs, labour and capital. Assume, moreover, that the production function has fixed coefficients and that there is no labour hoarding. If Y , K and L denote output and the inputs of capital and labour, respectively, these assumptions imply that

$$Y = \nu L \leq \sigma^{\max} K, \quad (1)$$

where the parameters ν and σ^{\max} represent labour and capital productivity when the factors are fully utilized. Unlike the level of employment, the capital stock cannot be adjusted instantaneously. The desired rate of utilization of capital therefore will be less than one if firms want the flexibility to respond to short-run fluctuations in demand; the desired output-capital ratio (σ^*) accordingly is less than the 'technical maximum' σ^{\max} . Given these assumptions, a standard Harrodian investment function relates the change in the rate of accumulation to the difference between the actual output-capital ratio (σ) and the desired ratio¹

$$\frac{d}{dt} \hat{K} = \lambda(\sigma - \sigma^*), \quad \lambda > 0, \quad (2)$$

where \hat{K} is the rate of accumulation. It should be noted perhaps that although the introduction of a separate investment function is central to the Harrodian analysis, the qualitative conclusions do not depend on this precise specification. The argument would go through substantially unchanged with a non-accelerationist specification of the form

$$\hat{K} = \mu_0 + \mu(\sigma - \sigma^*), \quad \mu > 0. \quad (2')$$

This alternative specification has a drawback, however. The sensitivity of investment to changes in utilization is likely to depend critically on the time frame: the short-run sensitivity undoubtedly is quite low (thus ensuring the stability of a short-run Keynesian equilibrium) while the long-run effects of a permanent change in utilization are likely to be very substantial. The magnitude of the adjustment parameter μ in (2') thus depends on the time frame of the application while μ_0 should include the lagged effects of past discrepancies between actual and desired utilization rates.² The accelerationist version of the investment function in (2) avoids these problems since the differential short- and long-term response is built into the specification.

In addition to investment decisions, firms make price (or output) decisions. I shall assume that output prices are set as a constant mark-up on unit labour cost. Hence, the share of gross profits in gross income is constant, that is

$$\Pi = \alpha Y, \quad (3)$$

where Π and α denote gross profits and the profit share.

Following post-Keynesian tradition let us assume that all wage income is spent while firms/capitalists save a fraction s of gross profits.³ Total saving (S) then is given by

$$S = s\Pi. \quad (4)$$

The equilibrium condition for the product market, finally, is given by

$$S = I, \quad (5)$$

where

$$I = \frac{dK}{dt} + \delta K \quad (6)$$

is gross investment and δ the rate of depreciation.

Both the capital stock and the rate of accumulation are predetermined in the short run, and the equilibrium condition (5) serves to determine the levels of output and employment. Substituting (3) and (4) into (5) and rearranging, we get

$$\sigma = \frac{\hat{K} + \delta}{s\alpha} . \quad (7)$$

The rate of accumulation and the capital stock cease to be predetermined once we move beyond the short run and the dynamics of the system can be examined by substituting eqn (7) into (2):

$$\frac{d}{dt} \hat{K} = \lambda \left(\frac{\hat{K} + \delta}{s\alpha} - \sigma^* \right) . \quad (8)$$

Equation (8) has a stationary solution given by

$$\hat{K}^* = s\alpha\sigma^* - \delta . \quad (9)$$

This stationary solution for the rate of accumulation represents the ‘warranted growth rate’. The warranted path is unstable. If, for some reason, the initial value of \hat{K} falls below the stationary solution, the resulting shortage of aggregate demand will cause the output-capital ratio to be low, and a low output-capital ratio – unwanted excess capacity – leads to further reductions in the rate of accumulation.

It is easy, of course, to think of factors that can create a ceiling to the upward instability in the rate of accumulation (the obvious one is the full-utilization ceiling, $\sigma \leq \sigma^{\max}$) but expansionary Keynesian policies may be needed to reverse a downward spiral and bring the economy out of a depression. Thus, the instability of the warranted growth path implies a role for active stabilization. But in this Harrodian setup, policy makers face an additional challenge, aside from stabilization: if the parameters s , α , δ and σ^* are independent of the forces that determine the growth rate of labour force, then the warranted rate will (almost certainly) differ from the ‘natural growth rate’ in the absence of policy intervention.

Policy intervention

Assume, for simplicity, that there is no government consumption, that transfers (or taxes) are proportional to wage income, and that the transfer is financed by

issuing government debt with a real rate of interest ρ . Algebraically

$$T = \tau W = \tau(1 - \alpha)Y, \quad (10)$$

$$B = \rho B - T, \quad (11)$$

where W , T and B denote total wage income, tax revenue and government debt. The tax rate is given by τ , a negative value of τ representing net transfers from the government to workers. By assumption workers spend what they earn. Interest income on government debt therefore accrues to firms/capitalists and I shall assume that capitalists apply the same saving rate to their combined interest and profit income. Adding together private saving and the government's budget surplus (public saving) the equilibrium condition for the product market now becomes

$$I = s(\alpha Y + \rho B) + (T - \rho B). \quad (12)$$

Consider first the long-run equality of natural and warranted rates of growth. Substituting (6) and (10) into (12) and using $\sigma = \sigma^*$, this equalization requires that

$$g_n = \hat{K}^* = s(\alpha\sigma^* + \rho b) + \tau(1 - \alpha)\sigma^* - \rho b - \delta, \quad (13)$$

where $b = B/K$ is the ratio of government debt to the stock of capital and g_n is the natural rate of growth. Solving for the tax rate, we get

$$\tau^* = \frac{g_n + \delta - s\alpha\sigma^*}{(1 - \alpha)\sigma^*} + \frac{(1 - s)\rho}{(1 - \alpha)\sigma^*} b. \quad (14)$$

This precise choice of the tax rate ensures the equality between the warranted and the natural growth rates.

Stabilization may dictate deviations from the equilibrium level in (14). With the introduction of a public sector, the short-run equilibrium solution for σ , eqn (7), is replaced by

$$\sigma = \frac{\hat{K} + \delta + (1 - s)\rho b}{s\alpha + (1 - \alpha)\tau}. \quad (15)$$

This equation reflects the standard short-run result in Keynesian models that output is inversely related to the tax rate.⁴ Equation (15) in combination with (2) imply that policy makers need to reduce (raise) the value of τ if the initial rate of accumulation is below (above) the warranted rate. The reduction (increase) should be large enough to raise σ above (reduce σ below) σ^* . The investment dynamics then causes accumulation rates – and hence the short-run solution for

σ – to be rising, and the tax rate can be returned to its equilibrium level once the actual rate of accumulation has become equal to the natural growth rate. By construction the natural, the actual and the warranted rates now coincide and the economy follows a steady growth path with a constant rate of employment. If this constant rate of employment is below full employment, a temporary tax cut can be used to speed up accumulation and raise employment growth above the natural rate until full employment has been reached.

Sustainability

Overall, the manipulation of tax rates would appear to provide a solution to both of the problems identified by Harrod. Stabilization, however, involves only *temporary* variations in tax rates while the equalization of the natural and warranted growth rates requires *permanent* intervention. This difference is central to Chick's argument. Thus:

Keynes's policy prescription was designed for a specific illness – unemployment and excess capital capacity in a world in which there was still considerable gain from further capital accumulation. The prescription, furthermore, was for a limited dose, designed to shock the patient into sustained self-recovery. It was not designed to sustain him over a long period.

(MAK, p. 338)

Can tax policies sustain the patient in the long run? The solution for τ^* depends positively on the debt ratio b , and this ratio changes endogenously over time. Sustainability of the policy therefore requires – as a necessary condition – that the movements in b be bounded asymptotically.

Let us assume that perfect stabilization along the full-employment growth path is being achieved. Then, substituting (10) and (14) into (11), we get

$$\frac{d}{dt}B = s\rho B - (g_n + \delta - s\alpha\sigma^*)K \quad (16)$$

and

$$\begin{aligned} \frac{d}{dt}b &= (d/dt)\frac{B}{K} - b\hat{K} \\ &= (s\rho - g_n)b - (g_n + \delta - s\alpha\sigma^*). \end{aligned} \quad (17)$$

This differential equation has a stationary solution at

$$b^* = \frac{g_n + \delta - s\alpha\sigma^*}{s\rho - g_n}. \quad (18)$$

The solution will be unstable if $s\rho > g_n$ and stable if the inequality is reversed.

Recall that a stable labour supply was one of the key assumptions listed in *MAK*. If we take this to mean a value of zero for the natural growth rate g_n , then the instability condition is met, assuming that the rate of interest is positive. More generally, the smaller the growth rate g_n , the more likely it is that the stationary solution becomes unstable and that, consequently, the sustainability condition fails to be satisfied. The misapplication of Keynesian policies, in other words, leads to an unsustainable buildup of public debt and ever-increasing tax rates to cover the interest payments. This development, as argued in *MAK*, is a recipe for stagflation.

It may not be plausible to assume, as we have done so far, that the interest rate remains constant in the face of large movements in the debt ratio b . Portfolio considerations would suggest a positive relation between the debt ratio and the interest rate: in order to persuade capitalists to hold an increasing share of their wealth in government bonds, the return on these bonds will have to increase relative to the return on the other asset in the portfolio. The (net) rate of return on real capital, however, is constant along a warranted growth path (it is given by $\alpha\sigma^* - \delta$), so these considerations suggest a functional relation between the debt ratio and the interest rate:

$$\rho = \varphi(b), \quad \varphi' \geq 0. \quad (19)$$

Substituting (19) into (17) leaves us with a non-linear differential equation. Since φ' is positive, however, this extension merely reinforces the instability conclusion.

3. Factor substitution

The short run

The Harroddian benchmark model in Section 2 lends support to Chick's warning: the application of aggregate demand policy to the long-term equalization of warranted and natural growth rates may run into trouble. The formalization, however, misrepresented her analysis in at least one respect: the analysis in *MAK* assumes diminishing returns to capital and some scope for substitution between capital and labour. The model, by contrast, stipulated a fixed-coefficient production function, and it is commonly believed that the Harroddian analysis becomes irrelevant if factor substitution is possible.

Let us assume that the production function is Cobb–Douglas. This assumption may exaggerate the degree of substitutability, even in the long run.⁵ I shall be extremely neoclassical, however, and assume that the Cobb–Douglas specification applies not just to the long run, but to the short run too. Thus, it is assumed that one can move along the production function in the short run and that the capital stock will always be fully utilized. For present purposes these neoclassical assumptions do little harm and they are very convenient analytically. Equation (1), then, is replaced by

$$Y = K^\alpha L^{1-\alpha}, \quad 0 < \alpha < 1. \quad (20)$$

Equation (20) together with a saving function are standard elements of a simple Solow model. The normal closure for this model is to impose a full employment condition. Alternatively, one may add a Keynesian element in the form of a separate investment function, but the specification in (2) needs amendment. By assumption the predetermined capital stock is now fully utilized at all times and a low level of aggregate demand will be reflected in low rates of return, rather than in low rates of utilization. The natural extension of the investment function to the case with substitution therefore becomes

$$\frac{d}{dt} \hat{K} = \lambda(\pi - \pi^*), \quad \lambda > 0, \quad (21)$$

where π is the rate of (gross) profits.

Equation (21) says that the rate of accumulation increases if the rate of profits exceeds the 'required return' π^* . I shall assume that the required return is determined by the cost of finance (ρ), the risk premium (ε) and the rate of depreciation (δ):

$$\pi^* = \rho + \varepsilon + \delta, \quad (22)$$

where, for simplicity, the cost of finance is given by a unique real rate of interest, ρ .

In the short run both the capital stock and the rate of accumulation are predetermined (cf. eqn (21)) and, leaving out the public sector, the equilibrium condition for the product market can be written as

$$s\pi - \delta = \hat{K}. \quad (23)$$

The first-order conditions for profit maximization in atomistic markets imply that⁶

$$\frac{w}{p} = (1 - \alpha) K^\alpha L^{-\alpha} = (1 - \alpha) \frac{Y}{L} \quad (24)$$

and

$$\pi = \alpha \frac{Y}{K} = \alpha \sigma. \quad (25)$$

Substituting (20) and (25) into (23), we get

$$L = \left(\frac{\hat{K} + \delta}{s\alpha} \right)^{1/(1-\alpha)} K \quad (26)$$

and

$$Y = \frac{\hat{K} + \delta}{s\alpha} K. \quad (27)$$

Equations (26) and (27) capture the short-run determination of employment and output by aggregate demand. An increase in the saving propensity s reduces

employment while increases in K or \hat{K} (which raise investment) lead to a rise in employment. With arbitrary values of the capital stock and the rate of accumulation there is no reason for the labour market to clear. Unemployment may lead to a decline in the money wage rate but no Keynes effect or other stabilizing influences of changes in the price level have been included⁷. Investment, by assumption, is predetermined, saving is proportional to income, and since output and employment are determined by the equilibrium condition for the product market, they are unaffected by changes in money wages. The system exhibits ‘money wage neutrality’.

From capital inadequacy to saturation

Moving beyond the short run, eqn (21) describes the change in the capital stock, and substituting (27) and (25) into (21) we get

$$\frac{d}{dt} \hat{K} = \lambda \left(\frac{\hat{K} + \delta}{s} - \pi^* \right). \quad (28)$$

The stationary solution – the warranted rate of growth – is given by

$$\hat{K}^* = s\pi^* - \delta \quad (29)$$

and it is readily seen that Harrod’s two problems – the instability of the warranted growth path and the discrepancy between the warranted and natural growth rates – both reappear in this setup if the required rate of return is taken as exogenously given.

Since the required return π^* depends on the interest rate, it is natural to consider the rate of interest as a possible policy instrument. To simplify the analytics I shall focus on a pure case of monetary policy. In terms of the model in the subsection ‘Policy intervention’, this pure case arises if the tax rate and the government debt are equal to zero and if it is assumed that capitalists wish to hold a portfolio consisting exclusively of real capital (i.e. $\varphi'(0) = \infty$ in eqn (19)).

The steady-state, full-employment requirements follow directly from (29) by setting the accumulation rate equal to the natural rate of growth:

$$\hat{K}^* = s\pi^* - \delta = g_n \quad (30)$$

or

$$\rho = \frac{g_n + \delta}{s} - \varepsilon - \delta. \quad (31)$$

The stabilization of the economy at the warranted path associated with this particular value of π^* ensures the equality between the growth rate of employment and the growth rate of the labour supply. But the initial position of the economy may be off this steady state. As pointed out in *MAK* (p. 339), the ‘postwar boom

began with a need for massive capital accumulation for reconstruction in Europe'. A low capital stock implies that the rate of accumulation and the rate of profits will be high if – as a result of appropriate aggregate demand policy – the economy operates at full employment (cf. (26) and (27)) and, as indicated by (29), the warranted rate of growth associated with a high rate of profits is also high. Putting it differently, at the beginning of the postwar period the output-capital ratio at full employment generated a warranted rate that exceeded the natural rate of growth.

Given these initial conditions, the maintenance of full-employment growth requires the manipulation of policy so as to achieve a gradual shift in the warranted path itself as well as the continuous stabilization of the economy *vis-à-vis* this moving equilibrium. Let us assume, for the time being, that policy makers accomplish this tricky task and that they successfully manipulate interest rates (and thereby aggregate demand) so as to maintain full employment.⁸ The implications of the model for output and the capital stock can now be analysed without any reference to the investment function.⁹ From eqns (20), (23) and (25) and the full employment assumption, we get a standard dynamic equation for the evolution of the capital-labour ratio,

$$\frac{d}{dt}k = s\alpha k^\alpha - (g_n + \delta)k, \quad (32)$$

where $k = K/L = K/N$ is the capital-labour ratio at full employment. It follows that

$$k \rightarrow \left(\frac{s\alpha}{g_n + \delta} \right)^{1/(1-\alpha)} = k^* \quad (33)$$

and that k will be increasing monotonically if the initial capital intensity is below the long-run equilibrium k^* . Having assumed full employment and determined the time paths for the capital-labour ratio, the time path for output can be derived. Thus, the Keynesian elements play no role in the determination of output, employment and the capital stock. Instead, they determine the time path of real rate of interest.

Using (21) and (23) we have

$$\frac{d}{dt}(s\pi - \delta) = \frac{d}{dt}\hat{K} = \lambda(\pi - \pi^*) \quad (34)$$

or, using (32) and (34),

$$\begin{aligned} \pi^* &= \pi - \frac{1}{\lambda} \frac{d}{dt}(s\pi - \delta) \\ &= \alpha k^{-(1-\alpha)} - \frac{1}{\lambda} \frac{d}{dt}(s\alpha k^{-(1-\alpha)}) \\ &= [\alpha k^{-(1-\alpha)}] \left[1 + \frac{s(1-\alpha)}{\lambda} (s\alpha k^{-(1-\alpha)} - g_n - \delta) \right]. \end{aligned} \quad (35)$$

By assumption the initial value of the capital–labour ratio is below k^* . Hence, the two terms in square brackets on the right-hand side of (35) are both positive and decreasing in k . It follows that the required rate of return, π^* , will also be positive and decreasing in k , and since – from (33) – the capital intensity increases monotonically towards its equilibrium value k^* , the required rate of return will be decreasing over time. Asymptotically,

$$\pi^* \rightarrow \alpha k^{*-(1-\alpha)} = \frac{g_n + \delta}{s} > 0. \quad (36)$$

In order to reduce the required return, the real rate of interest also has to decrease. From (37) it follows that

$$\rho = \pi^* - \varepsilon - \delta \rightarrow \frac{g_n + \delta}{s} - \varepsilon - \delta \cong 0. \quad (37)$$

A negative real rate of interest does not necessarily imply a negative social return to investment if the risk premium is positive. In the case where $\varepsilon = 0$ and $\rho < 0$, however, the long-run equilibrium is characterized by ‘dynamic inefficiency’ or, in other words, the initial position of capital inadequacy changes into one of capital saturation in which ‘an increment to the capital stock cannot be expected to yield enough to cover replacement cost’ (MAK, p. 359).

Whether or not the risk premium is positive, a negative real rate of interest implies positive rates of inflation (\hat{p}) if the nominal rate of interest is bounded above some lower limit, $i \geq i_0 > 0$. Thus, at the long-run equilibrium,

$$\hat{p} = i - \rho \geq i_0 + \varepsilon + \delta - \frac{g_n + \delta}{s} = \hat{p}^{\min}. \quad (38)$$

Equation (38) defines a lower limit on the asymptotic rate of inflation. In the classical case with $s = 1$,¹⁰ the expression for the lower limit on the asymptotic rate of inflation reduces to

$$\hat{p} \geq i_0 + \varepsilon - g_n. \quad (39)$$

By assumption, population is roughly stable (one of the six ‘key assumptions’) and ‘the general picture is one in which technical change has slackened’ (MAK, p. 340). Given these assumptions, ‘the vision of growth as normal, which marked the 1960s, should be abandoned’ (MAK, p. 358–9) and if the natural rate of growth is low or negligible, $g_n \approx 0$, the lower limit on inflation is unambiguously positive. Inflation, in other words, can

be looked upon as the result of attempting to forestall the inevitable consequences of an increasing capital stock. It is both the concomitant of the fiscal and monetary policies designed to promote growth – indeed to maintain the viability of corporate enterprise as we know it – and a

useful instrument in its own right, for it drives down the real of interest and reduces the burden of corporate and public dept.

(*MAK*, p. 339)

The expression for the required return suggests a possible solution: reduce the saving rate. This adjustment happens automatically in models with full employment and infinitely lived representative agents who engage in Ramsey-type optimization but the relevance of these models for most purposes seems questionable.¹¹ The saving rate could be reduced, instead, through fiscal policy but as indicated in the subsection ‘Sustainability’ this path may run into problems of its own, as tax reductions and persistent public deficits develop their own troublesome dynamics.

4. Selectivity

The limitations of Keynesian aggregate demand policies present a challenge, both theoretically and at the level of practical policy. For Chick ‘greater selectivity and planning of investment’ (p. 351) is an important part of the answer. Thus, one of the main conclusions of *MAK* is that (p. 360)

the bland assumption implicit in usual macroeconomic theory and policy advice, that one investment is as good as any other, is an anachronism and a costly one. Is it not time to ask the question posed in the previous chapter: could we gain more employment for a lower inflation-cost by attending to the careful *direction* of policy-encouraged investment rather than by giving a stimulus, indiscriminately, to investment as a whole?

A one-sector model of the kind we have used so far is unable to address this question. A simple extension of the model, however, may illustrate the potential importance of selectivity. Retain the homogeneity of output but assume that there are two techniques of production and that total output is given by

$$Y = Y^1 + Y^2 = K_1^\alpha L_1^{1-\alpha} + BK_2^\alpha L_2^{1-\alpha}. \quad (40)$$

From the point of view of individual producers, both techniques exhibit constant returns to scale. The parameter B , however, is determined by the total amount of capital that is employed using the second technique:

$$B = \bar{K}_2^\gamma, \quad 1 - \alpha > \gamma > 0. \quad (41)$$

Thus, the second technique includes a positive externality and yields increasing returns to scale at the aggregate level (but diminishing returns to capital; the knife-edge case of $\gamma = 1 - \alpha$ would give endogenous growth while $\gamma > 1 - \alpha$ would lead to rapidly increasing growth rates).

It is readily seen that if K_1 and K_2 are predetermined and wages are equalized across sectors, then the returns to capital will be different unless $B = K_2 = 1$. If the initial capital stock using technique two falls below this threshold, technique one will be the most profitable. In the absence of a spontaneous coordination of investment decisions, it will therefore be optimal for individual firms to concentrate all investment in technique one. Policy intervention, however, may shift investment to technique two, and as soon as the capital stock using this technique has reached the threshold, the concentration of all investment in technique two becomes self-reinforcing. This policy-induced shift raises output in the long run and more importantly, from the present perspective, it may solve the long-run inflationary problem by raising the rate of growth.

Using technique one, the steady-state rate of accumulation is equal to the rate of growth of the labour supply in efficiency units, $K^* = g_n$. Technique two, on the other hand, implies that the steady growth rate will be given by

$$\hat{K}^* = \frac{1 - \alpha}{1 - \alpha - \gamma} g_n > g_n \quad (42)$$

and the minimum inflation rate now becomes

$$\hat{p} = i_0 + \varepsilon - \frac{1 - \alpha}{1 - \alpha - \gamma} g_n. \quad (43)$$

Comparing (39) and (43) it follows that the long-run inflation constraint has been relaxed. The same goes for the sustainability constraint on taxes and subsidies in the subsection ‘Sustainability’ which requires that $sp < \hat{K}^*$. This conclusion supports Chick’s emphasis on selectivity and planning as a way to overcome the problems. The model, however, is exceedingly simple and one should not underestimate the practical problems and pitfalls involved in political intervention to ‘pick winners’. Nor should one forget – as pointed out in *MAK* – that the ideological and political obstacles to active intervention can be formidable.

5. Conclusions

It is striking that the analysis of long-term policy in *MAK* makes little reference to labour market issues. This absence stands in sharp contrast to the dominance of the *NAIRU* concept in most discussions of medium- and long-run behaviour.

Post-Keynesians have criticized *NAIRU* theory and its influence on Western governments and central banks (e.g. Arestis and Sawyer 1998; Davidson 1998; Galbraith 1997). There are good reasons to be critical. The empirical evidence in favour of the theory is weak and at a theoretical level it is easy to set up models with multiple equilibria, rather than a unique *NAIRU*. Perhaps the most direct route is the one chosen by Akerlof *et al.* (1996) and Shafir *et al.* (1997) who point out that most people suffer from some form of ‘money illusion’. Hysteresis

models, whether based on duration and insider–outsider considerations or on my own favourite, aspirational hysteresis, is another possibility (e.g. Blanchard and Summers 1987; Skott 1999). It should also be noted that even very mainstream models with policy games between unions and central banks can give rise to a traditional long-run trade-off between inflation and unemployment (e.g. Cubitt 1992; Skott 1997; Cukierman and Lippi 1999). The introduction of externalities and increasing returns opens yet further possibilities (Krugman (1987), for instance, considers a simple case in which aggregate demand policy has permanent effects on real income).

Chick does not raise any of these issues concerning the existence and determination of the *NAIRU*. Implicitly, in fact, the analysis in *MAK* presumes a well-defined and unique level of full employment and, in Keynesian terms, a *NAIRU* is a position of full employment (whatever unemployment may exist at a *NAIRU* equilibrium will be voluntary in Keynes's sense). Thus, in this particular respect *MAK* shares a key presumption of *NAIRU* theory. But there are crucial differences between *MAK* and *NAIRU* theory.

NAIRU theory, which focuses exclusively on the labour market, suggests that any level or time-path of fully anticipated inflation will be consistent with long-run equilibrium at the *NAIRU*. Putting it differently, from a labour-market perspective the rate of inflation is indeterminate when the economy is at the *NAIRU* (at full employment). The analysis in *MAK* demonstrates that this standard indeterminacy presumption may be wrong when aggregate-demand issues are included in the analysis: the mere existence of a well-defined full employment position (a well-defined *NAIRU*) does not ensure that the level of aggregate demand will be consistent with full employment (with the *NAIRU*). Building directly on the *General Theory*, Chick shows that the maintenance of sufficient aggregate demand to keep the economy at full employment (at the *NAIRU*) may constrain the feasible time-paths of inflation. More specifically – and contrary to the standard presumption – high inflation may be necessary in the long run in order to keep the economy at full employment.

At an empirical level the analysis in *MAK* made sense of the increasing inflation rates, negative real rates of interest, falling profitability and rising unemployment in the 1970s. Inflation has since come down again, real interest rates increased in the early 1980s and have remained positive, profitability has recovered and unemployment – although still very high in most of continental Europe – has also come down, most notably in the US, the UK and some of the smaller European countries. Although these developments, which took place after the publication of *MAK*, may appear to contradict the analysis, they may in fact be explicable within the framework of *MAK*. Relief has come from several sources. US saving rates, in particular, fell dramatically in the 1980s and the rate of technical progress also appears to have recovered slightly in recent years. Both of these changes help alleviate the inflationary constraint. Neither of them may be permanent, however, and it is too early to dismiss Chick's concerns over the limitations of aggregate-demand policy.

Notes

- 1 Gross investment cannot be negative so the specification of the investment function (2) should be seen as an approximation. In a permanent depression with $\sigma < \sigma^*$, the rate of accumulation will converge to some finite lower bound.
- 2 The perspective of the present analysis is predominantly long term which would suggest a high value of μ .
- 3 The argument would go through substantially unchanged with a single saving rate out of total income.
- 4 Stability of the short-run equilibrium requires that the parameter τ is chosen such that the denominator (and hence the short-run multiplier) is positive. Since gross output and consumption cannot be negative, the expression in (15) also requires a non-negative numerator; that is, the linear specification of the saving function only applies within a range of values that satisfy this non-negativity constraint.
- 5 Harrod undoubtedly would have thought so. In Harrod (1973: 172), he commented that 'the rate of interest and the MARC [the minimum acceptable rate of return] do not often have a big effect on the method chosen'. This led him to conclude that an attempt to derive a rate of interest 'which brought the warranted growth rate into equality with the natural rate ... really makes no sense'.
- 6 Imperfect competition and a constant mark-up on marginal (labour) cost leads to a trivial modification. In this case the real wage rate and the rate of profits become

$$\frac{w}{p} = \frac{1 - \alpha}{m} \frac{Y}{L}$$

$$\pi = 1 - \frac{1 - \alpha}{m}$$

where $m \geq 1$ is the mark-up factor.

- 7 A more elaborate model will contain both stabilizing and destabilizing effects of falling wages and prices and, as argued in *GT* (chapter 19) and *MAK* (chapter 7), the net effects are uncertain.
- 8 I shall use monetary policy as a shorthand for policies 'that have offered direct or indirect encouragement to investment. Tax concessions to retain earnings and capital gains, investment allowances and grants, and accelerated depreciation allowances have been used fairly continuously; monetary policy aimed at lower interest rates and fiscal policy designed to raise demand have been used episodically.' (*MAK*, p. 338).
- 9 This was Solow's (1956) justification for leaving out Keynesian complications. In the concluding section he notes that '[a]ll the difficulties and rigidities which go into modern Keynesian income analysis have been shunted aside. It is not my contention that these problems don't exist, nor that they are of no significance in the long run' (p. 91); in fact, '[i]t may take deliberate action to maintain full employment' (p. 93).
- 10 The saving rate out of profits is likely to be below one. Since the profit share is constant, however, the saving function (4) can be obtained as a reduced-form equation from a specification that allows for saving out of wages. Thus, if

$$S = s_w W + s_p \Pi$$

it follows, using $\Pi/Y = \alpha$, that

$$S = \left(s_w \frac{1 - \alpha}{\alpha} + s_p \right) \Pi = s \Pi, \quad s \leq 1.$$

- 11 This is not to say that stock market booms and declining saving rates have had no influence on developments in the 1980s and 1990s.

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THE INVESTMENT DECISION IN KEYNES'S THOUGHT¹

Augusto Graziani

1. Introduction

The decision to invest, 'namely the purchase of a capital asset of any kind out of income' (Keynes 1936 [1973a]: 75), is a key element in the Keynesian model. But who exactly is the Keynesian investor? Namely, who is the agent who decides to acquire a new capital good thus making it possible to increase the capital stock available for production?

2. A variety of agents

Keynes himself uses different terms in order to indicate the possible agents who, directly or indirectly, may be responsible for the final decision to invest. Four of them, the *producer*, the *manufacturer*, the *entrepreneur* and the *employer*, presumably indicate agents active in the labour and goods markets. Three more terms, the *saver*, the *investor* and the *speculator*, seem to indicate agents active in the financial market.²

In chapter 3 of the *General Theory*, Keynes mentions the entrepreneur as the one who decides 'the employment of a given volume of labour ...' (Keynes 1936 [1973a]: 23). Here by entrepreneur Keynes means something very close to the manager of the firm. On the following page, he is even more precise: the entrepreneur is the one who 'has to reach practical decisions as to his scale of production' (ibid., p. 24, footnote 3). Later on, the same decisions are attributed to 'employers' (ibid., p. 27).

In chapter 5, a partial change in terminology takes place. Here Keynes makes clear that, when mentioning the entrepreneur, he includes 'both the producer and the investor in this description ...' (Keynes 1936 [1973a]: 46). It seems clear, in this case, that by producer he means the agent who takes decisions concerning production and by investor the agent who invests his money and takes the risk. Entrepreneur is used here as a general term covering both the management and the ownership of the firm.

On the following page, a new change is introduced. By entrepreneur here Keynes clearly refers to an agent who acquires a capital good for the sake of earning a profit: ‘The second type [of expectations] is concerned with what the entrepreneur can hope to earn in the shape of future returns if he purchases (or, perhaps, manufactures) “finished” output as an addition to his capital equipment’ (ibid., p. 47). Here an entrepreneur is no longer a manager, nor a mixed figure, but clearly an investor. (Something similar already appears on page 26, where ‘competition among entrepreneurs’ is mentioned, which means that an entrepreneur is an investor earning a profit and not a manager being paid a salary.)

3. The role of the single agents in the *General Theory*

While an investor is an agent who takes the risk by acquiring a capital asset out of income (Keynes 1936 [1973a]: 75), this does not mean that the investor is necessarily using *his own income*. An investment can be made by using one’s own income or by borrowing money. The separation between ownership and management of which Keynes himself makes so much (ibid., p. 150) and the consequent well-known Keynesian distinction between borrower’s risk and lender’s risk (ibid., p. 144) make this absolutely clear.

In the wake of the separation between ownership and management, as a first approximation, we might be induced to consider the borrower as a producer, and therefore as a manager who runs the firm and takes the investment decision. On the other hand, an investor might appear as a rentier who lends the money without having any influence on the management.

In principle, when analysing the relationship between ownership and management, a distinction could be made between two possible cases:

- 1 The first is the case of a pure lender, the typical Keynesian rentier, who lends money at interest and consciously disregards management, his only care being that his yearly income is regularly paid. In this case, the investment decision is taken by the manager (or producer, or manufacturer) and by no one else.
- 2 A second possible case is the one in which finance is supplied by a stockholder who, directly or indirectly, runs the firm or at least takes care of the management and to whom the final investment choices are due.

Keynes seems to reject a clear distinction between the two cases. In his mind, the distinction between a pure lender, or rentier, and a stockholder is not so relevant. Anyhow in both cases the final investment decision rests more with the agent who provides finance, be it a rentier or a stockholder, and much less with the producer. The key to this solution, which brings to the foreground the world of finance and pushes to the back of the stage the world of enterprise, lies both in the way finance is supplied and in the way expectations are formed.³

4. Finance and investment

Let us start by finance. Keynes has clearly in mind the procedures to be followed by a producer in order to get the necessary supply of finance. The first step, when taking the decision to produce a new capital good, is of getting short-term liquidity covering the cost of production. So far, the producer of a new capital good is just a manufacturer like any other, and is by no means an investor.

The second step is to sell the new capital good to a producer who will use it in production. The buyer of the capital good, the actual investor, can be a producer who pays for the capital good out of profits. But the buyer can be as well, and in most cases actually is, a saver who buys newly floated stock. In both cases, he who supplies finance becomes, directly or indirectly, the owner of the new capital good and must be considered the true investor.

The rationale of the two-step procedure of getting finance, for first producing and then making use of a capital good in production, is made clear by Keynes himself:

When the entrepreneur decides to invest, [Keynes writes] he has to be satisfied on two points: firstly that he can obtain short-term finance during the period of producing investment; and secondly, that he can eventually fund his short-term obligations by a long-term issue on satisfactory conditions.

(Keynes 1937b: 664 [1973c: 217–8])

A few more words concerning the way Keynes describes how finance is provided for investment. In fact, if one considers the case of a single firm, the subdivision in two phases of the process of financing investment (an initial provision of short-term finance followed by a subsequent funding of the debt) might seem unjustified. A single firm might well start by issuing securities on the financial market, skip the initial provision of short-term finance and get long-term finance before investment is started. However, what is true of a single firm is not necessarily true of the economy as a whole.

If the whole of investors, avoiding any initial bank loan, were to try to float newly issued securities on the stock exchange, they could only count on pre-existing liquidity. At the same time, new investment would produce an increase in income that could only be made possible by an increase in the velocity of circulation of money. But it is difficult to imagine that the velocity of circulation can increase without limit as the economy expands. When considering a process of expansion, the reasonable assumption is to consider the velocity of circulation as constant and the increase in income as being made possible by an increase in the stock of money.

If a similar assumption is adopted, the growth of income has to be described in such a way that any time income increases, the money stock also increases. The two-step provision of finance envisaged by Keynes is exactly the required device.

The initial provision of bank credit makes the production of new capital goods possible, and at the same time increases the money stock. When investment has been carried out with the consequent increase in income and saving, new securities can be issued on the stock exchange.

We can conclude therefore that the Keynesian two-step provision of finance is fully justified in the framework of a macroeconomic analysis.

5. The role of expectations

Let us go back to the investment decision proper. It might seem that the two agents involved in the process (the producer who intends to make use of the new capital good and the stockholder who supplies long-term finance and makes it possible for the producer to buy the new capital good) both take part on equal terms in the investment decision. It seems however that Keynes's view on this point is different in that he considers the agent supplying finance, be it a stockholder or a simple lender at fixed interest, as having a dominant role in the whole process. This depends on the way expectations are formed.

When an investment decision is considered, the relevant expectations are long-run expectations. Now it is Keynes's precise feeling that: '... in the case of durable goods, the producer's short term expectations are based on the current long-term expectations of the investor' (Keynes 1936 [1973a]: 51). This judgement is emphasised when Keynes deals with the separation between ownership and management: '... certain classes of investment are governed by expectations of those who deal on the stock exchange ... rather than by the genuine expectations of professional entrepreneurs' (*ibid.*, p. 150). The same idea is recalled once more later on in the book:

... although the private investor is seldom himself directly responsible for new investment, nevertheless the entrepreneurs, who are directly responsible, will find it financially advantageous, and often unavoidable, to fall in with the ideas of the market, even though they themselves are better instructed.

(*ibid.*, p. 316, footnote 1)

A long, and well-known, analysis follows. Here Keynes explains how the development of the stock exchange has made investment liquid for the single individual, with the consequence that 'investors are concerned not with what an investment is worth but with what the market will value it' (*ibid.*, p. 154).

6. A digression. The *Treatise on Money*

Keynes's ideas as to the decision to invest have not always been those appearing in the *General Theory*. A comparison with the *Treatise on Money* shows considerable discrepancies.

In the *General Theory* attention is drawn to the ill-working of the stock exchange and to the damage that speculation on the stock exchange produces for the decision to invest. The insistence of the *rentier* on a high rate of interest may impose a vital constraint on investment, while the typical short-terminism of the speculator can seriously deviate investment away from the best long-term projects. In the *Treatise* the presence of the stock exchange, the influence of which is viewed as the by-product of a casino, is far less heavy. The discussion here revolves around the behaviour of three main agents: the entrepreneur, the banks and the central bank.

The choice of terms in the *Treatise* is as variable and uncertain as in the *General Theory*. Keynes himself is conscious of the ambiguity of his own language:

... [a man] can own wealth by holding it either in the form of money ... or in other forms of loan or real capital. This second decision might be conveniently described as the choice between 'hoarding' and 'investing', or, alternatively, as the choice between 'bank deposits' and 'securities'.

(Keynes 1930a: 141 [1971b: 127])

And he adds in a footnote:

It is difficult to decide what is the most convenient exploitation of existing non-technical language for exact technical meanings. ... I have defined 'hoards' to mean stocks of liquid consumption-goods, and 'investing' to mean, not the purchase of securities by members of the public, but the act of the entrepreneur when he makes an addition to the capital of the community.

(Keynes 1930a: 141, footnote [1971b: 127, footnote])

If we abstract from problems of terminology, in the *Treatise* Keynes inclines to think that the entrepreneur as such is responsible for the decision to invest. When writing the *Treatise*, Keynes was especially interested in the macroeconomic analysis of a number of authors of German language (wide references to the German literature are contained in chapters 12 and 27 of the *Treatise*).

The property asset that Keynes seems to have in mind in the *Treatise* is one in which the entrepreneur enjoys a maximum of independence. This happens when the entrepreneur collects finance in the form of bank credit or by issuing securities at fixed interest. Since it can be assumed that lenders, with the exception of few special situations, do not enter into the management of the firm, this can be assumed as the paradigmatic case considered in the *Treatise*.

Several statements appearing in the *Treatise* seem to justify this conclusion:

... the alteration [in the terms of lending] affects the attractiveness of producing capital-goods, which disturbs the rate of investment relatively

to that of saving, which upsets the rate of profit for producers of consumption-goods, thus causing entrepreneurs to modify the average level of their offers to the factors of production . . .

(Keynes 1930a: 158 [1971b: 142])

The development of an investment boom certainly does not mean that the entrepreneurs who initiate it have deliberately decided that the public are going to save out of their incomes on a larger scale than before. Nor is an investment slump to be explained by entrepreneurs having decided beforehand that the public's savings are going to fall off. . . . [I]t is the facilities allowed by the banks which are the marginal factor determining the precise degree to which entrepreneurs will be in a position to carry out their enterprises

(Keynes 1930a: 279 [1971b: 250–1]).

Entrepreneurs are induced to embark on the production of fixed capital or deterred from doing so by their expectations of the profit to be made . . . Professor Schumpeter's explanation of the major movements may be unreservedly accepted. He points to 'the innovations made from time to time by the relatively small number of exceptionally energetic business men . . .

(Keynes 1930b: 95–6 [1971c: 85])

... [T]he history of this period [1891–6] is a perfect example of a prolonged Commodity Deflation . . . There has been no other case where one can trace so clearly the effects of a prolonged withdrawal of entrepreneurs from undertaking the production of new fixed capital on a scale commensurate with current savings.

(Keynes 1930b: 169 [1971c: 150])

It seems therefore clear that, in the model Keynes has in mind in the *Treatise*, the investment decisions are taken by the producer in his capacity of manager of the firm. At the same time, finance is supplied either by the banks or by other lenders (buyers of securities) who do not interfere in management.

At the same time, investment decisions are taken on the basis of expected profits. This means that investors consider the soundness of the firm and its prospects on the market; they are not led by expectations concerning the performance of the stock exchange: 'It is by altering the rate of profits in particular directions that entrepreneurs can be induced to produce this rather than that . . .' (Keynes 1930a: 141 [1971b: 126]).

As already mentioned, in the *General Theory* the stage is set in a totally different way. The figures of entrepreneurs and competent bankers fade out at the back of the stage, while the foreground is occupied by stockholders, rentiers and speculators.

7. The investment function and the demand for money function

The investment function usually connected to the *General Theory* makes investment dependent on the expected profit rate and the rate of interest: $I = I(j, i)$, where I is investment, j the marginal efficiency of investment, and i the rate of interest considered as a cost.⁴

This formulation seems to fit perfectly the case previously considered of finance provided by a 'pure lender', namely by a saver who lends at fixed interest, obviously negotiates the rate of interest, but does not interfere in how the firm is run. In this case, the investment decision is taken by the producer and to him the yield of an investment is the source of his profit while interest is a cost.

The same can be said of the usual formulation of the demand for money balances, which is made to depend on income and on the rate of interest: $L = L(Y, i)$. The demand for liquid balances comes from the savers, who can place their money saving in securities yielding a fixed interest or keep it as a liquid balance. To them interest is a revenue, if securities are bought, an opportunity cost if liquid balances are preferred. A similar definition fits the case of the 'pure lender', who only cares about the level of the interest rate while the way the firm is run lies beyond his control.

Things look different if, instead of considering the case in which finance is supplied by a 'pure lender' who does not interfere with management, we consider the case in which finance is supplied by stockholders who follow closely the management of the firm. An extreme case might be a firm run by a manager who is just an employee and is not entitled to take long-term decisions. Let us make the further assumption that stockholders are not speculators but savers who have invested in the firm having long-term perspectives and are interested in the success of their placement with a view of entrepreneurs not of speculators.

For a similar investor, the yield of the investment is given by the profit of the firm while the cost he incurs is the loss of liquidity.⁵ A remark made by Keynes in writing in 1937 is illuminating: 'The function of the rate of interest is to modify the money prices of other capital assets in such a way as to equalise the attraction of holding them and of holding cash.' (Keynes 1937a: 250; [1973c: 213]). This is no more than a definition of equilibrium in the composition of wealth. It however makes clear that an investor tries to equalise the yield of capital goods with liquidity preference. This last magnitude measures the opportunity cost of an investment when the investor is a saver willing to control how his money is spent and not an entrepreneur who borrows money at interest.

8. The investor in current handbooks

Most handbooks in macroeconomics ignore the Keynesian question of who (the manager or the stockholder?) takes the investment decision.

The more rational and irreproachable handbooks consider a sort of pure model in which the two roles are split: the manager appears as a decision maker and

nothing else while the supplier of finance is no more than a financing body. If the manager needs external finance, the assumption is that he borrows money on the financial market at a fixed interest rate. In this case, the typical form of the investment function, $I = I(j, i)$, fits perfectly. Similarly, if finance is supplied by a pure lender, not interested in management, the traditional formulation of the demand for money, $L = L(Y, i)$, is perfectly adequate.

As examples of authors following a similar approach, the names of Chick ('If the firm proposes to finance its investment by borrowing, the interest rate represents the cost of the funds', Chick 1983: 121) and Gärtner ('Investment is financed via credit from banks or credit markets in general', Gärtner 1997: 10, 50) should be mentioned.

Other authors, instead of defining the figures of a pure manager and of a pure lender, introduce some sort of mixed figure, thus complicating the model. Abel and Bernanke, for instance, start by assuming a pure manager who goes into debt in order to acquire new capital goods. But immediately after they add that the manager can also dispose of finance of his own. In this case he 'has a choice between investing and lending at interest on the market' (Abel and Bernanke 1992: 88).

A similar approach can be found in Burda and Wyplosz's text.⁶ Also Romer, after considering the case of 'a firm that can rent capital at a price of r_k ', adds that 'most capital is not rented but owned by the firms that use it'; which means that, by using capital, 'the firm foregoes the interest it could receive if it sold the capital and saved the proceeds' (Romer 1996: 345, 346). In this case, the owner of the firm is at the same time a decision maker and an investor.

Stiglitz places on the same footing three possible cases (Stiglitz 1993, chapter 13). The first is the case of an investor intending to become interested in the management of the firm and in earning profits. To him any change in interest alters the discount factor and modifies the present value of the expected earnings.⁷ The second case is the one of a pure manager who needs external finance. To him interest is a cost. The third one is the case of a pure lender who owns liquidity and can choose among a variety of placements. To him an increase in interest on the money market makes lending more attractive as compared to becoming engaged in a real investment.

Finally, Dornbusch and Fischer consider only the second and third of the three cases envisaged by Stiglitz (namely the cases of the pure manager and of the pure lender) (Dornbusch and Fischer 1990, chapter 9).

If this is the case, the manager, being at the same time a potential rentier, will equate the marginal efficiency of capital, the rate of interest and his own rate of liquidity preference. As a consequence, it remains debatable whether the traditional formulation of the investment function, $I = I(j, i)$, is still valid. The same is true of the demand for money. If the lender is a mixed figure, the opportunity cost of lending money is not only the loss of liquidity but also the loss of potential profits. The expected profit, or marginal efficiency of investment, should therefore appear in the demand for money function.

Notes

- 1 The topic of the present article was discussed in a paper for the conference on 'Financial Circuits and the Monetary Production Economy' held in April 1996 at the University of Paris-Sud. Victoria Chick was present and took part in the debate. The present paper is somehow a continuation of that debate.
- 2 Keynes had already introduced the distinction between savers and entrepreneurs in *A Tract on Monetary Reform*. There a saver typically lends a sum of money against a fixed interest and is not involved in the management of the firm (Keynes 1923 [1971a], chapter 1).
- 3 Keynes regrets the 'former times, when enterprises were mainly owned by those who undertook them' (Keynes 1936 [1973a]: 150). He thinks that ever since the investment decision has passed from the entrepreneur to the supplier of finance, the very essence of the decision has been altered against sound enterprise and in favour of speculation. Those who consider Keynes in many respects close to Marx (Catephores 2000: 16) call attention to the fact that Marx held a similar view, namely that the investment decision is distorted when the decision maker is not risking his own capital (Marx 1894 [1971], chapter 27). In some sense, Marx and Keynes would both consider as ideal the situation in which the entrepreneur is a manager providing at the same time the necessary finance out of his own fortune.
- 4 It might be debated whether the relevant interest rate is the short- or the long-term rate. However, this point is of no great relevance in the present context. Moreover the two rates, as Keynes himself emphasised, are mutually connected (Keynes 1930a [1971b], chapter 37, p. ii).
- 5 Of course he might well lend at the prevailing interest rate by buying a fixed interest securities. It might appear therefore that the prevailing interest rate should be considered an opportunity cost. In this view, the rational agent should equalise at the margin the yields of stock, of fixed interest securities, of liquidity preference (Robertson's threefold margin). However, if the agent takes into consideration such a threefold possibility, this means that he allows for the possibility of being a pure lender, a case ruled out in the present context.
- 6 Burda and Wyplosz (1993: 47). The same authors, at a later stage, seem to consider as implicit the fact that a manager has no alternative other than to borrow money in order to finance investment. In that case, as in the standard presentation, the market rate of interest clearly measures the cost of investment.
- 7 It may be worth noting that Sachs and Larrain (1995, chapter V) consider only this case.

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AGGREGATE DEMAND, EFFECTIVE DEMAND, AND AGGREGATE SUPPLY IN THE OPEN ECONOMY

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1. Introduction

This paper has three objectives. First, it will briefly review the evolution of aggregate demand and supply analysis in the economics textbooks since these concepts were first introduced by Keynes (1936). Second, it will suggest a variation on this theme as applied to the small open economy (SOE). Third, it will speculate how the same analysis might work in the case of an SOE which retains sufficient sovereignty to be considered a separate economic entity, but is nonetheless deprived of a standard adjustment mechanism via real exchange rate changes. A historical example would be a jurisdiction committed to the nineteenth century gold standard. A contemporary version might be an individual nation-state that is part of the Euro-zone in the European Union (EU).

Concepts of aggregate demand and supply have been a persistent theme in the work of Victoria Chick (e.g. 1983, 2000). For example, there is a definitive exposition of Keynes's (1936) use of demand and supply analysis in Chick (1983: 62–81). The author makes it clear that there is an important distinction to be made between aggregate demand as such and 'effective demand'. She writes: '*Effective demand, in contrast to aggregate demand, is not a schedule – it is the point on the schedule of firms' anticipations of aggregate demand which is 'made effective' by firms' production decisions*' (Chick 1983: 65, original emphasis). A corollary of this is that the principle of effective demand really plays no role in the standard presentation of aggregate demand and supply in P, Y (price/output) space in most textbooks. There is an aggregate demand schedule in these constructions, derived in its most basic form simply by rearranging the equation of exchange, $MV = PY$. However, demand plays no role in determining the actual level of output, which depends only on supply-side factors involving technology and the labour market (Chick 2000: 124). The conditions under which demand can be reinstated to play at least an equal role with supply in the determination of output and employment is therefore one of the main issues to be addressed in what follows.

2. The evolution of aggregate demand and supply analysis

Keynes's (1936: 23–34) aggregate supply and demand functions were upward-sloping in Z, N space, where Z is the expected proceeds from each level of employment which would just make it worthwhile for entrepreneurs to offer that level of employment, and N is the level of employment. In equilibrium, Z is equal to D , with D defined as the proceeds which the entrepreneurs actually expect to receive from the employment of N workers. Strangely enough, Keynes never actually drew the schedules which he defined verbally. This was left to his Post Keynesian followers such as Davidson and Smolensky (1964), Chick (1983), and Davidson (1994). In these expositions, the Z (supply) function cuts the D (demand) function from below, thus defining the point of effective demand.

The next step in the evolution of aggregate demand and supply analysis was Samuelson's simplification of the Keynesian analysis in the famous 'Keynesian Cross' diagram. This appears, for example, in Samuelson and Scott (1966: 235–71). The aggregate demand function is still upward-sloping, this time in E, Y (expenditure/income) space, and it can still be claimed that output is determined by the principle of effective demand. However, as is well known, the role of aggregate supply is obscured. Keynes's aggregate supply function disappears, to be replaced by a '45° line' illustrating the national income identity, $E = Y$.

Graphical constructions with upward-sloping aggregate demand schedules are quite different in spirit from the alternative expositions of aggregate demand and supply in P, Y space. In particular, in the latter framework the aggregate demand curve is downward-sloping rather than upward-sloping. However, by the 1970s the P, Y version of aggregate demand and supply had become firmly entrenched in the intermediate level textbooks, for example in Dornbusch and Fischer (1978: 338–67). One reason for this was the obvious deficiency in the treatment of aggregate supply in the Keynesian Cross. However, it was certainly productive of much confusion for subsequent generations of beginning students. In 'Economics 101' the old upward-sloping version of aggregate demand continues to be taught to first-year students to this day. In the second year, however, the downward-sloping version of aggregate demand rules the roost, and it is a major challenge for the students to grasp the connection between the two.

On the slope of the aggregate demand curve, Chick (2000: 124) makes quite explicit what has often been left implicit. This is that in Keynesian or Post Keynesian treatments the assumption is made, or perhaps *should have been* made (in the case of Keynes), that increases in demand are always accompanied by endogenous increases in the money supply. On the other hand, the neoclassical version of an aggregate demand curve is definitely predicated on a fixed nominal money supply. In that case, demand must be negatively related to the price level.

In addition, even though it may not logically be entailed simply by the change of axes, use of the neoclassical P, Y construct is usually supplemented by the assumption that, in principle, the aggregate supply function is vertical. This is the

polar opposite of Samuelson's wholesale neglect of supply, but at the same time this assumption now rules out any serious discussion of the principal of effective demand, except in the ill-defined short-run.

It would be fair to say that the aggregate demand and supply diagram in P, Y space remains the staple of the textbooks to this day. However, there is still another version, which made its first appearance in the intermediate level text by Barro (1984). This changed the coordinates of the diagram yet again, and made aggregate demand and supply schedules appear in r, Y space, where r is the real rate of interest (Barro 1984: 128). This latest version of aggregate demand and supply is discussed in more detail in Section 3.

3. Aggregate demand and supply in r, Y Space

The relevant version of an aggregate demand and supply diagram in r, Y space is illustrated in Fig. 15.1. In the figure, the C^d (demand for commodities) or aggregate demand schedule is negatively-sloped with respect to the real rate of interest, and the supply curve, Y^s , is positively-sloped. It should be stressed that this formulation has little to do with Hicks's (1937) *IS/LM* model, which deals only with the demand side. There is an analogy between a standard *IS* curve and the C^d schedule. However, the C^d, Y^s construct omits any discussion of money, and there is no analogue to the *LM* curve. The model exhibits a purely 'real theory of the real rate of interest' as opposed to a 'monetary theory of the real rate of interest' (Burstein 1995). The upward slope of the aggregate supply function emerges as a result of the new classical intertemporal substitution theory of labour supply, whereby a higher interest rate supposedly stimulates more work effort.

In the present context, the most interesting feature of the re-labelling of the axes, given that neither of the schedules has a vertical slope, is that (at least in principle) there now appears to be some scope once again for effective demand

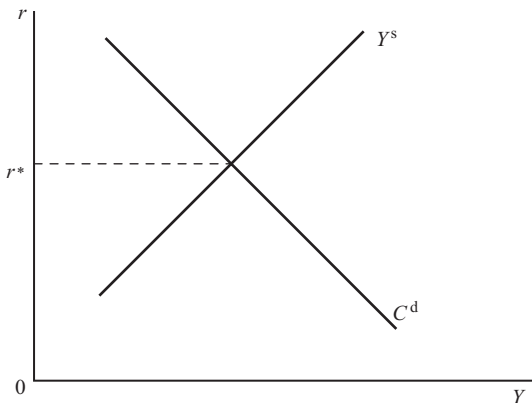


Figure 15.1 An aggregate demand and supply diagram in r, Y space

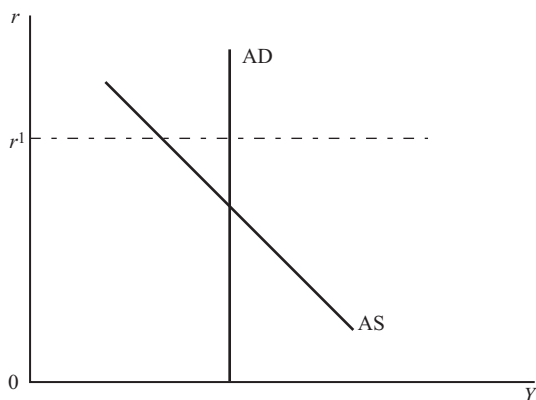


Figure 15.2 Alternative presentation of aggregate demand and supply in r, Y space

as one of the factors determining output and employment. In other words, an increase in demand, which is not offset by a compensating shift in supply, will now cause an increase in output and employment.

Presumably, this was hardly the intention of the originators of the 'market-clearing' model (Barro 1984: 11), and if the C^d, Y^s schedules do indeed represent only different facets of the same optimization problem of a representative agent, things may not work out this way, as the shifts in the schedules will not be independent of one another.² However, changing the domain of the exercise to r, Y space does raise the issue of whether *further* consideration of the relationship between aggregate demand, aggregate supply and the interest rate, not necessarily based solely on the representative agent optimization framework, might recover some of the insights regarding the impact of changes in effective demand found in the earlier literature.

Figure 15.2 suggests an alternative presentation of aggregate demand and supply in r, Y space, reverting to the traditional notation of AD for aggregate demand and AS for aggregate supply.

There are three important differences between the model presented in Fig. 15.2 and that in Fig. 15.1. First, it is insisted that the aggregate supply function should slope downwards with respect to the real interest rate rather than upwards. This is based on arguments made previously by Smithin (1986, 1997), MacKinnon and Smithin (1993) and Paschakis and Smithin (1998), that, in a realistic description of a production process, in which production takes time, the real interest rate must enter as a key element of the costs of production. Therefore an increase in the real interest rate should reduce the *demand* for labour whatever its impact on supply.³ This is further assumed to offset any substitution effect on labour supply, giving rise to the downward-sloping function as illustrated. The rationale is that the intertemporal substitution argument is implausible as a description of the behaviour likely to be found in any real economy, and hence can be neglected in practice.

Second, the aggregate demand function is assumed to be *less* sensitive to the interest rate than is aggregate supply, and hence the AD schedule cuts the AS from above. The relative insensitivity of aggregate demand to interest rate changes was, of course, a staple of the ‘Old Keynesian’ literature (and was implicit in the Keynesian Cross). However, in that context it was not combined with a palpable degree of interest sensitivity of supply, as is done here. For simplicity, the AD schedule in Fig. 15.2 is shown as completely interest insensitive. However, clearly nothing would be changed by allowing some interest elasticity, as long as this is less than on the supply side.

The third important point is that in Fig. 15.2 the (real) rate of interest is taken to be a financial variable determined essentially by the monetary policy of the central bank. It is determined outside the aggregate demand and supply nexus itself, and in the diagram shows up as a horizontal line across the page, at a pre-determined level, r' . The underlying monetary theory is therefore that of the Post Keynesian ‘horizontalist’ school, in which the interest rate (including the real rate) is effectively a policy instrument, and the money supply is endogenous. This is contrasted with Barro’s version in Fig. 15.1, in which there is no theory of money and the interest rate is taken literally to be a real (non-monetary) variable.

Victoria Chick (e.g. 1984, 1986, 1991, 1995) has written extensively on Post Keynesian monetary theory, endogenous money, the theory of banking and alternative views on interest rate determination. She has indeed described horizontalism (e.g. that of Moore 1979)⁴ as an ‘extreme’ position (Chick 1986: 116), while nonetheless making it clear that as a first approximation this is still a far more reasonable assumption than the alternative (neoclassical) extreme. The main objection to treating the interest rate as a purely policy-determined variable would be the extent to which this neglects Keynes’s insights about liquidity preference and the role of speculation in financial markets (Chick 1995: 31). The practical implication would be that there can be occasions in which the monetary authorities may not get their way in setting the interest rate.⁵ Keynes himself had argued this way in the *General Theory* (Keynes 1936: 202–4), although elsewhere (even as late as 1945) he had stated that ‘The monetary authorities can have any interest rate they like ... Historically ... (they) ... have always determined the rate at their own sweet will ...’ (as quoted by Moore 1988b: 128).

For our present purposes, however, the debate about the precise degree of control of interest rates by central bankers may perhaps be set on one side. There would clearly be general agreement that the stance of monetary policy is at least a major influence on the real interest rate. Moreover, from the perspective of the principle of effective demand, the main point at issue is not exactly how the rate is set, but rather that it is *not* taken to be determined by demand and supply in barter capital markets, as in the neoclassical model, and is exogenous to the ‘real economy’ in that sense.⁶

Note, however, that if we do proceed to take the interest rate as either an exogenous or directly policy-determined variable, the issue immediately arises as to how demand and supply could ever come into equilibrium. In neoclassical or new

classical theory, interest rate adjustment itself is supposed to be the equilibrating mechanism, but that is ruled out in any horizontalist approach. However, it can be suggested here that for the SOE an obvious equilibrating mechanism does exist, namely changes in the real exchange rate. Or, it would be more accurate to say, a combination of real exchange rate changes and output adjustment. This issue is taken up below.

4. A simple aggregate demand and supply model for the small open economy

Consider the following simple aggregate demand and supply ‘curves’ (they are actually linear) for the SOE:

$$Y^d(t) = \alpha(0) + \alpha(1)A(t) + \alpha(2)Q(t), \quad (1)$$

$$Y^s(t) = \beta(0) - \beta(1)r(t) - \beta(2)Q(t). \quad (2)$$

Equation (1) represents the aggregate demand schedule. The demand for output depends positively on autonomous spending, $A(t)$, as in traditional Keynesian models, and positively on $Q(t)$, where $Q(t)$ is the real exchange rate. The nominal rate is defined as the domestic currency price of one unit of foreign exchange, so an increase in $Q(t)$ represents a real depreciation. The argument is therefore that a real depreciation increases the demand for net exports and hence total aggregate demand. As discussed, for the sake of argument there is assumed to be no interest rate term in eqn (1), which is an extreme instance of the view that the demand schedule is insensitive to interest rate changes.

Equation (2) is the aggregate supply schedule. This is assumed to be negatively sloped, not positively sloped, for the reasons discussed above. Also, a real depreciation is taken to have a negative impact on supply. This arises as the result of real wage resistance on the part of the labour force, and/or because of an increase in the real costs of imported raw materials.

We can rearrange eqn (1) to yield

$$Q(t) = Y^d(t)/\alpha(2) - \alpha(0)/\alpha(2) - [\alpha(1)/\alpha(2)]A(t). \quad (3)$$

Then use (3) in (2) and set aggregate demand equal to aggregate supply:

$$\begin{aligned} Y(t) &= \beta(0) - \beta(1)r(t) - [\beta(2)/\alpha(2)]Y(t) + [\alpha(0)\beta(2)]/\alpha(2) \\ &\quad + \{[\alpha(1)\beta(2)]/\alpha(2)\}A(t). \end{aligned} \quad (4)$$

Now solve for $Y(t)$:

$$\begin{aligned} Y(t) &= [\alpha(0)\beta(2) + \alpha(2)\beta(0)]/[\alpha(2) + \beta(2)] \\ &\quad + \{[\alpha(1)\beta(2)]/[\alpha(2) + \beta(2)]\}A(t) - \{\alpha(2)\beta(1)/[\alpha(2) + \beta(2)]\}r(t) \end{aligned} \quad (5)$$

It is immediately apparent that eqn (5) yields very ‘Keynesian’ results on the determination of output and employment, meaning literally by this the kind of policy views that J. M. Keynes put forward at various points during his career. Specifically, an increase in effective demand will *permanently* increase the level of output, as will a cheap money policy in the sense of lower real rates of interest.

The real exchange rate is also an endogenous variable in the SOE context. From eqns (1) and (2) we obtain

$$\alpha(0) + \alpha(1)A(t) + \alpha(2)Q(t) = \beta(0) - \beta(1)r(t) - \beta(2)Q(t). \quad (6)$$

Then solving for $Q(t)$:

$$Q(t) = [\beta(0) - \alpha(0)]/[\alpha(2) + \beta(2)] - \{\alpha(1)/[\alpha(2) + \beta(2)]\} A(t) - \{\beta(1)/\alpha(2) + \beta(2)\} r(t). \quad (7)$$

According to eqn (7) a cheap money policy will cause a real depreciation. On the other hand, a demand expansion actually seems to cause a real appreciation. This latter result is consistent with Mundell–Fleming type models of the SOE, although in this case the logic is not confined only to the short-run. However, it should also be pointed out that the result seems to negate traditional concerns about how a Keynesian-type demand expansion impacts the balance of payments. For example, Smithin and Wolf (1993), and Smithin (2001), argue that a demand expansion will lead to a real depreciation, but (in effect) that this should be tolerated as the expansion will also increase output and employment. In the present framework, however, an increase in effective demand causes *both* an increase in output and a real appreciation, so that this implicit trade-off is not a problem. This is clearly an issue requiring further detailed research.

Figures 15.3 and 15.4 provide further intuition on the impact of lower interest rates and a demand expansion, respectively.

Figure 15.3 illustrates the adjustment to a lower real rate of interest. The lower interest rate increases aggregate supply along the AS curve, but at the same time causes a real depreciation of the exchange rate. This has two effects: first a reduction in aggregate supply (a leftward shift of the AS curve), and also an increase in aggregate demand because of the stimulative effect on net exports. The net impact (at point b) is higher output and employment, and a permanent real depreciation.

Figure 15.4 shows that an increase in effective demand also causes an increase in output and employment. An increase in autonomous expenditures causes a rightward shift of the AD schedule, but also a real appreciation of the exchange rate. This then offsets the initial increase in demand to some extent, but also causes an outward shift in supply. The final effect (at point b) is an overall increase in output and employment. In this sense, the principle of effective demand is reinstated.

AGGREGATE DEMAND

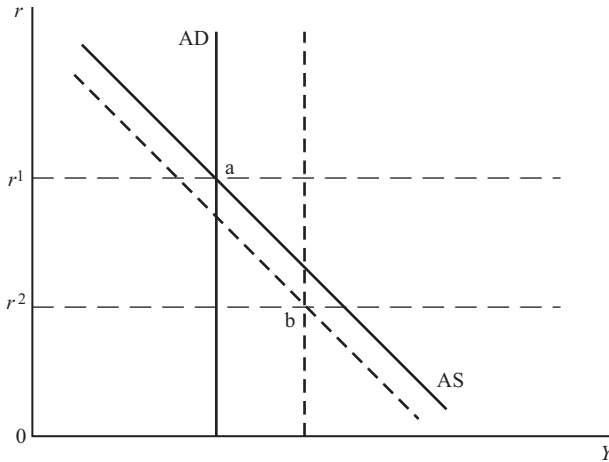


Figure 15.3 Adjustment to a lower real rate of interest

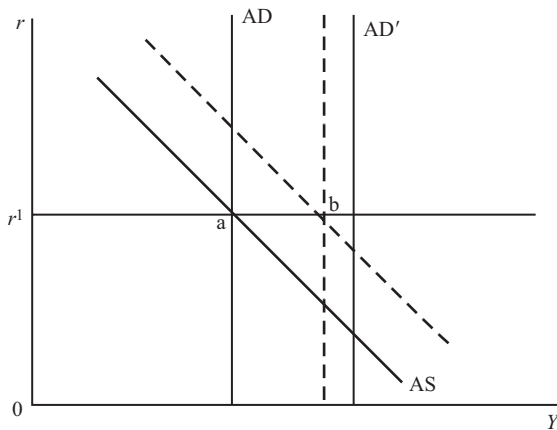


Figure 15.4 Effect of a change in demand on output and employment

5. Demand and supply constraints in currency unions

An interesting application of the above analysis is to the case mentioned in the introduction where an SOE which is a member of a currency union is deprived of the adjustment mechanism via real exchange rates. The obvious point to be made in these circumstances is that monetary (interest rate) policy is now the prerogative of the union-wide central bank rather than the individual national central banks.

Presumably, the analysis of relations with the rest of the world, outside the union, would be similar to that illustrated in Fig. 15.3 above. A tight money (high

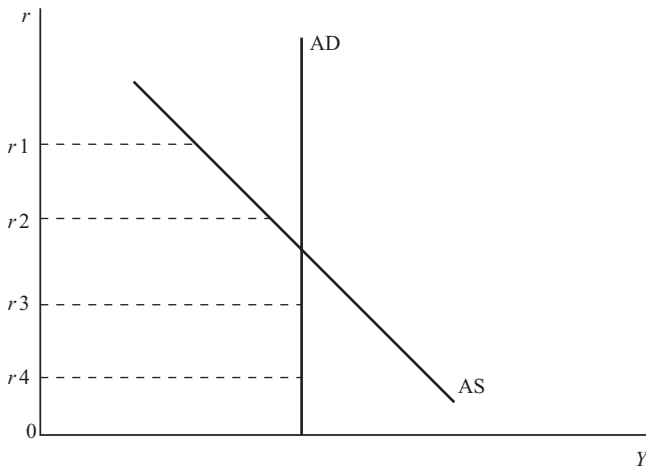


Figure 15.5 Impact of cheap money on the individual member-state

interest rate) policy would tend to reduce output and employment, but cause a real appreciation of the external exchange rate. Similarly, a cheap money policy would tend to increase output and employment, and depreciate the external exchange rate. In the actual case of the contemporary Euro-zone, however, given the trade diversion activities of the last several decades leading up to the establishment of the single currency, there may be some reason to doubt how much benefit the region as a whole would actually obtain from a depreciation.

The impact of cheap money on the individual member-state, meanwhile, is illustrated in Fig. 15.5.

Figure 15.5 suggests that the domestic economy which is embedded in the currency union may be supply constrained at the relatively high real rates of interest, but then demand constrained at lower real interest rates. By hypothesis we have eliminated the mechanism by which demand and supply were previously brought into equilibrium, and, at least in the present simple example, have not suggested any other. This does not a priori rule out the possibility that some alternative equilibrating mechanism might eventually be discovered, but it does place the onus on the supporters of these currency arrangements to give some hint as to what this might be.⁷

If no equilibrating mechanism can be found, the following result seems to apply. A cheap money policy by the union-wide central bank, assuming that they can be persuaded to take such action, would succeed in increasing output and reducing unemployment up to a point. However, once real interest rates are already 'low', any further increases in output would need to come about by demand expansion (such as an expansionary fiscal policy by the domestic government). In light of the model presented here, an interesting 'catch 22' of the practical situation in the contemporary EU is that this is explicitly ruled out for

the formerly sovereign national governments by the *Pact for Stability and Growth*. Comparing Fig. 15.5 with Figs 15.3 and 15.4, it therefore seems that there is a range of output levels which would formerly have been attainable given certain policy choices under the old currency arrangements, but which are now no longer attainable.

6. Capital flows and the potential for interest rate autonomy for the small open economy

A gap in the argument of the present chapter is that it has not presented, even in the benchmark flexible exchange rate case, a complete analysis of international flows of funds and their impact on the interest rate and exchange rate changes under discussion. A common counter-argument to the above would be that, under modern conditions, and particularly as a result of greatly increased capital mobility, the contemporary SOE would not have a great deal of interest rate autonomy even prior to accession to a monetary union. Hence, implicitly, the loss of the ability to conduct monetary policy is not all that significant.

This argument has been dealt with in some detail, however, in earlier work by (e.g.) Paraskevopoulos *et al.* (1996), Paschakis and Smithin (1998) and Smithin (1999). In these contributions it is argued that even under modern conditions, the SOE with a floating exchange rate may still have considerable interest rate autonomy, *provided* that the local authorities have the necessary political will. If so, then the discussion (of monetary policy in particular) in the previous section would retain some relevance.

The main point is that globalization, increased capital flows, and technical change do move the world ever closer to the textbook case of *perfect capital mobility*, but, as long as there are separate monetary systems and exchange rates are free to change, this does not necessarily imply that there will be *perfect asset substitutability*. In other words a currency risk premium will continue to exist and this can insert a wedge between domestic and foreign real interest rates, allowing for some degree of domestic interest rate autonomy. Under certain conditions, as discussed in the literature cited above, the domestic authorities may be able to manipulate the risk premium in their favour.

Of course, any type of interest rate autonomy disappears entirely in the case of fixed exchange rate regimes, currency boards and currency unions, and this may be precisely why these arrangements are advocated in certain quarters. In any event, these remarks do indicate the type of arguments that need to be made to defend the foregoing analysis against some standard objections.

7. Conclusion

The policy lessons which might have been learnt from so-called 'Keynesian economics' are the importance of (a) a high level of effective demand, and (b) low real rates of interest, for the healthy functioning of a capitalist economy. However,

Keynesian economics is now in eclipse and a main concern of orthodox or neo-classical economics for the past thirty-five years has been to construct a theoretical apparatus which denies these propositions and aggressively asserts the opposite. Some part of this process has been illustrated by the discussion in this paper of the evolution of aggregate demand and supply analysis in the economics textbooks.

Moreover, certain contemporary institutional changes, among them certainly the European single currency project in the form shaped by the *Treaty of Maastricht* and the *Pact for Stability and Growth*, actually seem to take the form of imposing neoclassical scarcity economics by fiat (cf. Parguez 1999). The sketch above of the supply and demand constrained SOE in a currency union provides at least a potential starting point for a more detailed examination of this kind of issue.

Victoria Chick is, of course, a very distinguished academic economist who has held out courageously against the anti-Keynesian tide in the academy in our times, and in her writings has provided many of the necessary theoretical building blocks for a coherent alternative approach with which to 'complete the Keynesian revolution' (Chick 1995: 20). The present contribution is offered in a similar spirit.

Notes

- 1 The author would like to thank Sheila Dow, Markus Marterbauer, Hana Smithin, and conference participants at the annual meetings of the Eastern Economic Association (Washington DC, March 2000), for helpful comments and suggestions which have improved this chapter.
- 2 Snowdon and Vane (1997: 18–20) also stress that the demand and supply schedules in the real business cycle model are 'long-run' constructs (in the textbook sense of not depending on such assumptions as sticky nominal wages, etc.), as opposed to orthodox Keynesian or new Keynesian 'short-run' analysis. However, the analysis below shows that Keynesian-type results, including the impact of demand on employment, do not depend at all on the textbook assumptions.
- 3 See also the discussion by Palley (1996, chapter 5).
- 4 The expression itself appears in the title of Moore's (1988a) subsequent book.
- 5 Particularly if we are thinking of the real rate and particularly in a downward direction. On this point, see also the discussion in Smithin (2000) regarding recent Japanese experience.
- 6 See Lavoie (1996) and Rochon (1999) for more detailed discussion of the debate between Post Keynesian horizontalists and structuralists, from a horizontalist perspective. Dow (1996) provides a critique of horizontalism. For Victoria Chick's current reading of the debate, see Chick (2000).
- 7 In the endogenous money setting, it is clearly impossible to appeal to real balance effects and the like.

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SOME MYTHS ABOUT PHILLIPS'S CURVE¹

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Some economists have had theorems, models, a statistic or statistical plot or something or other named after them. To take a few examples, listed alphabetically to avoid any suggestion of ranking them, we have Arrow's impossibility theorem, the Cournot point, Gibrat distributions, the Harrod–Domar growth model, Lorenz curves, the Lucas critique, the Modigliani–Miller theorem, Nash equilibrium, Pareto optimality, the Samuelson–Stolper theorem, Solow's growth model, Tobin's 'q', Walrasian equilibrium, and so on. But today I think it is fair to say that among the better, if not best known, is the Phillips curve.² Any student that has taken a basic economics course will have heard (even read!) a reference to that curve. Yet there are numerous accounts of, among other things, what it means, where it comes from, what theoretical and or statistical support it has, the policy implications of it, and yet more.

In my contribution to this volume honouring Victoria Chick, I want to look at what I call 'myths' about the Phillips curve. Vicky herself has been one of those instrumental in trying to separate out the 'myths' surrounding Keynes's economics from what goes under the heading 'Keynesian' in the popular economics literature (Chick 1983). Here I wish to make a contribution to the economics of A. W. Phillips versus the literature ('myths') labelled 'the Phillips curve'. I want to contrast what Bill Phillips actually did in his famous paper – what I shall call Phillips's curve – from what has grown up to be 'the Phillips curve'. I also want to emphasise the point made by scholars of Phillips's work that his famous curve was not at all his important contribution to economic inquiry.³ Does it matter that the myths remain with us for students to pick up from popular textbooks, read by millions, rather than get the truth from esoteric journals and monographs read by hundreds? Well perhaps it does not.⁴ Does it make us worse economists by believing in these myths? No, probably not, but I think we do owe a duty to the past contributors to our discipline to 'get the record straight' where this is possible. And indeed it may sometimes be the case that the original version offers much more insight into the actual working of the real world than the modified versions that have usurped the originals.

Now what do I mean by myths? Not necessarily falsehoods, that is statements that can be shown or ‘proved’(?) to be false, but allegations, rumours, memories about an idea, or person, that are now stated but which may not represent ‘what actually’ happened, or was meant, or what was actually said or intended by a certain individual or group. We all have experience of these myths; perhaps it is inevitable and there is not much we can do about it. These myths arise for various reasons. Sometimes there is little or no documentation from the past and memories of the participants have been used – and, as we all know, memory is very rarely reliable evidence.

May I take a brief example from my own experience; reference is often made in the literature to the seminar at LSE in the late 1950s and early 1960s which went under the name MMT (methodology, measurement and testing). Several different accounts are given of its membership, its aims, its work, etc. – as a member of that group I have to say that some of the accounts do not at all accord with my memories of it. This does not mean that these accounts are incorrect. It may be, and probably is, my memory that is at fault! Myths are also sometimes used to bolster or attack a position in academic debate. When I was a student (in the late 1940s and early 1950s) ‘Hayekian’, ‘Austrian’, ‘Classical’ were dirty words, ‘Keynesian’ of course was good. Today we have almost complete role reversal in the use of these adjectives! Now in many cases the use of these adjectives had little or nothing to do with the actual purveyors of these ideas. Of course scholars who have researched these particular myths will know them for what they are – at best half truths and at the limit downright falsehoods.⁵

So what are the main myths about the Phillips curve that I want to look at in this paper? I must emphasise that I am here going to contrast what Phillips set out to do and did in his original paper with the spate of literature that is prepared to call anything relating inflation and unemployment as ‘the Phillips curve’! One story – what may be termed the ‘populist’ version – goes as follows. Keynes wrote an important book in the mid-1930s; it did, however, have several (fatal?) lacunae, one of which was its assumption of a constant general level of prices or – equally flawed – the assumption that prices were constant until full employment, after which output was constant and prices rose proportionally to money national income. So there was no period when output and prices were rising together. Therefore, ‘full employment’ policy was comparatively easy. Output had to be expanded via demand management to the point where prices were just about to rise. Economics had given the world the gift of full employment without inflation.

The Phillips curve filled this gap in Keynes’s analysis and demonstrated that there was a negative non-linear trade-off between unemployment (as a proxy for real output changes) and inflation. Albert Rees (1970: 227) put this point of view as follows. ‘A major reason for the importance of Professor A. W. Phillips’ article ... is that it seems to offer the policy maker a menu of choices between employment and inflation’.⁶ With the aid of social indifference curves showing the subjective trade-off between inflation and unemployment, countries could achieve a social optimum by finding the tangency point between the social

indifference curve and the 'objective' Phillips curve. Further improvement could be obtained by measures to shift or twist the Phillips curve. In such a world the economist was God, and indeed it is probably true to say that in that era the prestige of economists was as high as it has ever been. The arrival of stagflation in the 1960s put an end to all this trade-off nonsense! As a typical example, Matyas (1985) writes of the impact of stagnation, '(t)his meant a complete bankruptcy of the Phillips curve' (p. 540). In any case researchers began to doubt whether the Phillips, 'trade-off' curve had ever been there in the first place.

Another – and I believe more plausible – story goes as follows. Even in the *General Theory* Keynes acknowledged the fact that there would be upward pressure on prices as the economy approached full employment. UK – and USA – wartime discussions of the possible postwar economic scene always voiced fears that inflationary tendencies would be a major problem in a world committed to high levels of employment. Full employment was thought to be at unemployment rates of around 5 per cent. The actual postwar scene produced a much lower rate of inflation and a lower level of unemployment than the pessimists had forecast. However by the mid-1950s fears of inflationary pressures, and particularly the likely effects on the balance of payments, were the subject of governmental and academic debate.⁷ There was a great deal of debate about the actual mechanics of the inflationary process.

Now let us turn to Phillips and his curve; I shall develop my discussion in the following manner. I begin with an historical reconstruction of the state of economic debate when he did the work for his famous paper; I will then turn to Phillips and his main contribution(s) to economic inquiry before I discuss the Phillips curve itself. The questions 'had it all been said before?' and 'was it an attempt to fill a gap in Keynes?', as well as 'why was Phillips picked out?', will form the rest of the paper.

1. An historical reconstruction

By historical, as opposed to 'rational', reconstruction, I mean an attempt to look at the actual problem situation as seen by the participants at the time rather than by current investigators trying to work out what was in the minds of past researchers.⁸

A central concern of macroeconomic debate in academic and political circles in the mid-1950s, both in the UK and USA, was the cause(s) of inflation. Although comparatively mild by later standards, the rate of inflation was beginning to creep up and its interpretation revolved around what was commonly called the competing hypotheses of 'demand pull' versus 'cost push'. This debate tied in with microeconomic discussions of price determination in individual markets and the competing claims of market-forces versus cost-plus theories of price determination. So one had a permutation of commodity-market and factor-market determination along the lines of demand–demand; demand–cost; cost–demand; cost–cost.⁹ At the macro-level the main dispute ranged around the role of aggregate demand flows versus trade union push in the inflationary sequence. This led

to what may be termed the ‘spiral’ discussions and various permutations: wage–price; price–wage; price–wage–price, etc! On the factor front the main emphasis was on the role of wages in the inflationary process, although some consideration was given to the role of import prices. The central issue was the question of whether trades unions could exert an independent influence on prices other than via changes in the demand for labour triggered by changes in aggregate demand. So the relationship between aggregate demand and wage changes was in the air!

Now if we recall Merton’s principle of multiple discovery, then it should not surprise us that researchers widely scattered geographically and also in time should come up with very similar pieces of research aimed at the same problem. The history of economics is evidence of this principle. There is of course the interesting question of why, out of the several similar contributions, it is usually the case that one particular account should dominate the academic debate and become known as ‘the’ contribution. Sometimes the answer lies in the personalities of those who get the glory, those economists who are born conscious revolutionaries – Smith, Ricardo, Marx, Jevons, Keynes, Friedman to name a few. They contrast with the more evolutionary type of personality that emphasises the continuity of their thinking rather than its ‘break with the past’. Mill (J. S.), Edgeworth, Marshall, Pareto, Robertson, Stigler, Johnson, Tobin come to mind here. Another reason why a particular contribution is singled out from its competitors is that it is seen to have the clearest implications for policy and is easily taken up by policy makers in the political arena. Undoubtedly Phillips’s curve was helped on its way by Dick Lipsey’s follow-up paper (Lipsey 1960), but to my mind the crucial push was provided by Samuelson and Solow in their famous 1960 paper. This was important for several reasons; two would suffice for our purposes. The first is that it came from two very distinguished and respected economists; secondly they switched the debate to the inflation–unemployment trade-off – using incidentally for the first time the concept of a ‘menu’ of choice between the two variables.

2. Phillips main contribution(s) to economics

Bill Phillips was trained as an electrical engineer and came to economics via his degree at LSE where he studied for the B.Sc. (Economics) (1946–9). The title of the degree was and is misleading. When he took the degree he specialised in sociology and out of his nine finals papers would have had two in economics. Textbooks available then were few. Cairncross (1944) and Benham (1938) led the UK field to which was added those recent arrivals from the USA, Boulding (1941) and Samuelson (1948). Phillips did once assert that his ideas for illustrating mechanisms for understanding and hopefully controlling economic systems made famous in his Phillips machine construction – which owed a good deal incidentally, as he acknowledged, to the economics input by Walter Newlyn – stemmed from a diagram in Boulding linking stocks and flows in the elementary

theory of price.¹⁰ From his engineering studies he was familiar with feedback mechanisms and the notion of optimal control.

Not long after graduating – in 1950 – he obtained an assistant lectureship in economics at LSE and became a member of the LSE economics research division, which was directed by Frank Paish. He then registered for a Ph.D. in economics under the supervision of James Meade. His Ph.D., ‘On the Dynamics of Economic Systems’, was successfully submitted in 1953, and a version of it was published in 1950 under the title ‘Mechanical Models in Economic Dynamics’ (Phillips 1950). Phillips’s main concern and one that remained with him throughout his economic studies was the problem of controlling economic systems when the basic structures were not too clearly understood and where the estimation of these essentially dynamic relationships posed enormous statistical difficulties. Hence for the foreseeable future for macroeconomic control the way ahead lay in automatic control mechanisms using feedback rules. We may notice here the closeness of this approach to Friedman’s ‘rules versus authority’ view of economic policy.

3. The content of Phillips’s curve

The research embodied in the 1958 paper was part of ongoing research into the inflationary process in the UK being carried out at LSE. Frank Paish had developed a view that wage increases were mainly explained by demand pressures and the best way to measure these pressures was the gap between ‘full capacity’ output and actual output. The explanatory variable was rather difficult to measure and Bill Phillips looked for a more direct measure of the pressure of demand in the labour market. To hand was a longish time series on unemployment that had been developed by Beveridge and a long series on wage rates then recently produced by Phelps Brown and Hopkins. Thus Phillips used the percentage of the labour force unemployed as his explanatory variable, his dependent variable being the percentage rate of change of wage rates. He also acknowledged the need to allow for dynamic disequilibrium so that for any given percentage unemployment rate, the effect on wage rates would differ if unemployment were rising than if it were falling. So the rate of change of unemployment was also an explanatory variable in his theoretical structure. He also included an allowance for cost influences on wages, which he thought would mainly be captured by an index of import prices. But for his curve fitting of wage rate changes against unemployment, Phillips did the following:

- To eliminate the effect of the rate of change in unemployment he averaged his data and eliminated the ‘loops’ of the raw data around his curve.¹¹
- He surmised – on theoretical grounds – that the relationship would be non-linear and thus rejected linear least squares regression in favour of ‘fitting by eye’.

His fitted relationship was fairly good for some time periods he looked at, but not for others. His own conclusion was that ‘the statistical evidence ... seems in

general to support the hypothesis that the rate of change of money wages can be explained by the level of unemployment and the rate of change of unemployment, except in or immediately after years in which there is a sufficiently rapid rise in import prices to offset the tendency for increasing productivity to reduce the cost of living' (Phillips 1958 in Leeson 2000: 258–9). This is of course a long way from a simple relationship between wage changes and unemployment, and miles away from an inflation–unemployment trade-off!

4. Had it all been said before?

Among the main contenders that have been specifically mentioned in the literature are Irving Fisher, Arthur Brown and Paul Sultan. Let us take a brief look at their work.

Irving Fisher's paper is sometimes quoted as an early and more coherent trade-off curve than Phillips. But on inspection the Fisher paper turns out to be a statistical plot of the relationship between price inflation and unemployment – not Phillips's curve – and it posits inflation as the independent variable. Of course the effect of inflation on the level of economic activity – and hence on the level of employment and unemployment – has a long history in economic thinking. There was a particularly interesting controversy during and after the Napoleonic wars.

Arthur Brown's work has a much greater claim to being a 'forerunner' of Phillips's curve as Thirlwall has cogently argued.¹² In chapter 4 of *The Great Inflation* – published in 1955 but a long time in the writing – Brown considers the 'nature and conditions of the Wage–Price Spiral'. He discusses the connection between wage/price changes and employment – hence unemployment changes. He argues that no efforts to date have been made to establish the connection empirically nor to find the level of unemployment below which the wage–price spiral comes into operation. Basically his mechanism is that demand changes – measured by unemployment levels – feed into wage changes which then feed into price changes. He also had the notion of loops and an expectational explanation of them. 'What would one expect to be the relation between the two variables during a fluctuation of effective demand? In the recovery and boom effective demand for labour is increasing, and, because it is expected to increase, it will be high relatively to the existing level of activity and employment. Labour is becoming scarcer, that ... so its bargaining power is increasing, which will be likely to mean that the *rate* at which it can raise wages is increasing.' (Brown 1955: 91). Brown (op. cit.) also considers trade union power and different types of unemployment to account for rigidities in the rate of changes of wages in the downturn. He plots unemployment against the rate of change of wages but does allow for the influence of other variables and does not find any strong relationship. Nonetheless Brown's work is clearly along the lines of Phillips's later paper. There is no reference to Arthur Brown in the Phillips paper – in fact other than statistical sources there are no references quoted in the paper. But later on in his career in a biographical note we do get an acknowledgement of A. J. Brown. Of his

famous 1958 article Phillips wrote '[I]t was a rush job. I had to go off on sabbatical leave to Melbourne; but in that case it was better for understanding to do it simply and not wait too long. A. J. Brown had almost got these results earlier, but failed to allow for the time lags.' (Bergstrom *et al.* 1978: xvi).

Our third candidate for the originator of 'Phillips's Curve' is Paul Sultan, indeed in their piece championing his cause Amid-Hozour, Dick and Lucier suggest the term 'Sultan Schedule and Phillips Curve' (Amid-Hozour *et al.* 1971: 319). But in his *Labour Economics* – on which the claim is based – we read the following description of his diagram, '(t)he vertical scale measures the annual change in the price level expressed as a percentage, while the horizontal scale measures the percentage of the work force unemployed' (Sultan 1957: 319).

As with Fisher, Sultan's work is concerned with what I have called – following accepted usage – 'the Phillips Curve', that is the relationship between the inflation rate and the percentage of the labour force unemployed. This is not Phillips's curve.

Indeed the lineage of direct discussion of the Phillips curve is a rather short one. Discussions subsequent to Phillips's paper *were* initially about the strength and theoretical basis of the relationship between wage changes and unemployment. The famous Lipsey paper clearly added great momentum to this type of research both in terms of the theoretical generating mechanism and the appropriate estimation procedures. Attempts were made to unpack the theory and others tried to find extra explanatory variables. For example Kaldor's profits theory of wage increases, or Hines's trade union variable.¹³ But soon *the* Phillips curve became the 'trade-off' curve between inflation and unemployment and as we stated earlier the *coup de grace* was (apparently) given to this by stagflation. As usual, or at least as is often the case in economics, theoretical explanation rapidly followed the uncomfortable new facts and explanation was soon at hand to demonstrate that, if only we had understood rational expectations from the start, we would not have expected to have found a Phillips curve in the first place! And indeed earlier statistics that seemed to support the then maintained hypothesis are shown (apparently!) to be suspect. The disappearing Phillips curve was never there in the first place!

5. Filling a gap in Keynes?

It depends what you think the gap in Keynes was. I referred above to the 'popular' view that Keynes really had nothing to say about the price level and its relation to the overall state of the economy. This view is a travesty of Keynes! Keynes never posited an inverted-*L* supply curve. The introduction into mainstream economics of the fixed price world was a product of the interpreters of Keynes – especially the *ISLM* analysis, and the so-called 45° approach. It did become a stick with which to beat the 'Keynesians' and to demand theoretical changes to modify 'Keynesian' economics. But among followers of Keynes – Joan Robinson, Meade and the like – an upswing was always going to drag along with it wages and prices. The issues were what was the mechanism of causality, how rapidly

would it occur and what to do about it. Unfortunately into the textbooks and standard teaching of macroeconomics came ‘Keynesian’ economics with the inevitable reaction.

6. Why was Phillips’s curve picked out?¹⁴

We have already partially discussed this issue in our remarks above about why certain ideas in economics are taken up rather than others. This is a complex issue and we do not have space here to take up the question at great length. There are many aspects to be considered and the reasons will vary from (were it true!) genuine scientific advance to the politically driven. By the latter I mean that we observe changes in political philosophy brought on for various reasons – one of which may be a temporary breakdown of the economic machine – which generate a new set of economic orthodoxies. These new economic precepts may be fished out from existing but temporarily discarded ideas or may be ‘new’. I have previously argued this notion with respect to the natural rate hypothesis (Corry 1995). Now what about Phillips’s curve? It is certainly true that it hit the headlines rapidly. Basil Yamey – the then editor of *Economica* – has related how sales of that journal leapt for that one issue (Yamey, in Leeson 2000).

It also gained by being a product of the LSE with its location in London and near the media powerhouses. Those hankering after a planned economy with a key role to government in the control of the economy saw in the Phillips curve a defence of incomes policy, of productivity geared wage increases and even regional policy. But it also gave ammunition to the free marketeers: unemployment became the key weapon in the fight against inflation (shades of Marx!) and if that sounded too harsh, then labour market flexibility was the order of the day (smash the unions!).

What is certain is that Bill Phillips himself would never have given so much importance to his tentative empirical work. The real lesson that Bill Phillips wanted economists to learn was the dangers inherent in the advocacy of economic policies when the structure of the underlying economic system was not adequately understood and was subject to unforeseen (unforeseeable?) changes in that structure. The lesson is as usual ‘Be Critical’, ‘Be Humble’ and do not be sweet-talked by politicians!

Notes

- 1 As I was near the completion of this article I received a copy of Robert Leeson’s magnificent collection of articles by Bill Phillips and commentaries by recognised experts on his work. The volume is a mine of information for all those interested in the work and career of Bill Phillips.
- 2 Of course Bill Phillips has another memorial in the economists hall of fame, namely the Phillips machine!
- 3 This point was made clear in the 1978 volume of essays in honour of the memory of A. W. H. Phillips (Bergstrom *et al.* 1978) but is made even more forcibly in the recent Leeson (ed) (2000) volume.

- 4 But perhaps it does. Some of the central concerns expressed by Keynes about the working and potential instability of capitalism without careful regulation were lost to the mainstream of the profession because of what may be termed 'crude' Keynesianism by which a bowdlerised account of his ideas entered basic economics teaching. Victoria Chick has been at the forefront of those trying to correct these tendencies.
- 5 Even among scholars, and after long years of research and debate, the interpretation of past writers and their ideas still can lead to profound disagreements and indeed animosity. Historians of economic thought will doubtless be familiar with the debate over the 'correct' interpretation of classical economics that goes on among such luminaries as Hollander, Blaug, O'Brien, Peach and co.
- 6 This was not however the view that Albert Rees took.
- 7 For an excellent account of these debates, see Hutchison (1968, especially chapter 3).
- 8 Here I am in near agreement with Blaug's (1999) remark that 'I vote for historical reconstructions as the only legitimate occupation of historians of economic thought' (p. 214).
- 9 Here an important influence was Bent Hansen's *Study in the Theory of Inflation* (Hansen 1951).
- 10 On the Boulding influence, see Walter Newlyn's contribution to the Leeson (2000) volume.
- 11 This procedure led to the criticism put forward by Desai (1975) that Phillips's curve was a long-run equilibrium relationship that could not provide any policy conclusions with respect to short-run movement along Phillips's curves.
- 12 Indeed a case can be made for referring to Brown-Phillips curves.
- 13 For an excellent survey of the early follow-up work on Phillips's curve, as opposed to the Phillips curve see Peston (1971).
- 14 For a very astute analysis of this problem, see Sawyer (1987).

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TRANSITIONAL STEADY STATES: A CONTRADICTION IN TERMS?

Maurizio Caserta

1. Introduction

Victoria Chick's interest in the use of the concept of equilibrium in economics is well known. In particular, she has always thought that the *General Theory* offers an interesting example of how equilibrium can be used in economic theorising. In her opinion, Keynes scholars and mainstream economists alike have, at times, misinterpreted Keynes's use of the concept of equilibrium.¹ In her recent work she has come to represent Keynes's equilibrium as an equilibrium of action, that is, an equilibrium 'in which the values of the variables are constant, where this constancy is maintained by the very agency of action'.² Equilibrium of action does not require expectations to be fulfilled; action can be repeated as long as expectations are not falsified. Realised results may not impinge on formed expectations, and this is precisely what Keynes believed with respect to long-period expectations. As Chick puts it, 'entrepreneurs can only act on their expectations, and as long as nothing disturbs these, they will go on acting as before'.³ The interesting implication of this view of equilibrium is that there is no finality attached to it: a state in which expectations are not fulfilled is not necessarily a state where action needs changing, but equally is not a state where action has to continue indefinitely along the same path as before.⁴

This contribution follows on from this line of thought and tries to apply these ideas to a growth context. In particular, it considers a growth model of the Harrod–Domar kind where desired capital growth and the desired capital–output ratio cannot be simultaneously realised, except by chance. In his 1939 Essay, Harrod states that 'the warranted rate of growth is taken to be that rate of growth which, if it occurs, will leave all parties satisfied that they have produced neither more nor less than the right amount' (p. 16). In this passage it is not clear whether all parties are satisfied with the current rate of growth or with the current capital–output ratio. The right amount of production is that which equates saving and investment, and there is no obvious reason why it should also imply a particular capital–output ratio. Thus a capital–output ratio different from the desired

ratio may be associated with the warranted rate of growth. This points to the possibility that, whenever both aspects of investment – its demand-generating and its capacity-creating aspects – are taken into consideration (as one must in a growth context), a failure of coordination between the two aspects may result.

I will argue here that coordination can actually be achieved if firms, that produce and invest, are assumed to be procedurally rational and to act according to a rule devised precisely to solve that coordination problem. From this behaviour an ‘equilibrium of action’ will ensue, where growth proceeds at the desired rate but where the desired capital–output ratio is not realised in the general case. Action is replicated despite the fact that realised outcomes do not support that action. The question addressed here is the sustainability of precisely this state of affairs. In what follows, the customary distinction between transitions and steady states is first reviewed. Then, the question of the possibility of a transitional steady state will be raised and a model assumed to incorporate this possibility illustrated. Finally, the requirements for a transitional steady state will be presented in terms of the adoption of a particular rule of behaviour.

2. Transitions and steady states

Standard growth theory distinguishes between transitional dynamics and steady states. A transition path is one along which relevant quantities grow at variable rates through time; conversely, a steady-state path is one where quantities grow at constant rates. Once the economy gets onto a steady-state path, the model will display that property of stability that is possible to find in some real economies. A number of conditions are generally required for an economy to find itself in a steady state. These conditions are not usually in place at any given time. As a consequence, if an economy finds itself outside the steady-state path, a problem arises as to whether a transitional path exists leading the economy from the initial conditions to the conditions supporting the steady state. A steady state, therefore, is a state in which the dynamics of the variables do not change the underlying structure of the economy, with the result that no need exists for those variables to behave differently. A transitional path, on the other hand, is designed precisely to alter the underlying structure of the economy in such a way as to produce the conditions appropriate for the steady state.

In the Ramsey model of growth,⁵ for example, the steady state can be found at the intersection of the two *loci* representing the conditions $c' = 0$ and $k' = 0$, i.e. consumption per worker and capital per worker are constant through time. Such a state of affairs is associated with a particular value of consumption per worker, c^* , and with a particular value of capital per worker, k^* . It is necessary that these variables, consumption and capital per worker, take up those particular values for the steady state to be established. Any other combination of values is not capable of reproducing itself through time, that is, it is not capable of preserving those values. In that case the economy is placed on a path that might take it away from any sensible or significant process of growth. However, given a particular value

of k , there might exist a particular value of c such that a process of adjustment is set in motion leading eventually to the steady state. In this case the economy will display the property of saddle-path stability. That the economy will, in actual fact, follow that path is guaranteed by the behaviour of optimising agents who are bound to choose that particular value of c , as any other choice violates the optimality conditions.

In standard growth theory, therefore, transitional dynamics are unambiguously associated with change and the steady state is unambiguously associated with stability. On a transition path the underlying structure of the system is being changed, on a steady-state path it is being kept constant. This means that agents will find no reason to change their behaviour on a steady-state path, while such a change will be deemed appropriate on a transition path. On a steady-state path they are acting in such a way as to reproduce the underlying conditions supporting that action, with the result that action is replicated. On a transition path they are acting in such a way as to change those conditions, with the result that action cannot be replicated. It follows that, once the steady state is reached, only an exogenous shock can displace the economy off the steady-state path. Similarly, when the economy is moving along a transition path, only an exogenous shock can wipe out the effects of individual behaviour and establish earlier than otherwise the conditions for a replica of that behaviour. This means that there is no room in this approach for stable temporary behaviour, i.e. for a path where the set of the conditions supporting behaviour over time is reproduced, but where the sheer passage of time can produce cumulative effects upon those conditions. This would be a path where behaviour is reproduced over a stretch of time, but where the circumstances are not appropriate for it to be reproduced indefinitely. The next section will address the question of whether any such path can exist.

3. Transitional steady states

The question posed at the end of the last section can be seen as emerging from the observation of facts of economic life. A fact of economic life is that decisions are not continually adjusted in the face of realised results. Rules of thumb are usually followed until some 'crucial' evidence is collected, but it might take some time before the accumulated evidence becomes crucial. This kind of behaviour is usually listed under the heading of imperfectly rational behaviour and explained in various ways.⁶ It looks then as if there must be a middle ground between the two extremes of standard growth theory, which can be called transitional steady-state theory, where the dynamics of individual behaviour leave no scope for change but where the sheer passage of time may create the conditions for change.

It is time now to sketch the model of growth mentioned in Section 1, to see whether it qualifies for the new definition of transitional steady state. Let us assume an economy where consumers' behaviour is represented by the assumption of a constant saving rate, s , and where firms produce and invest. When firms produce they respond to demand; when they invest they react to the changes in

the capital–output ratio, in the expectation of generating the right amount of productive capacity, that is, a particular capital–output ratio. By a very simple formal representation of this model, it is possible to show that the expectation of firms as to the capital–output ratio are not generally met. The model is just an extension of the Keynesian multiplier to a growth context. Investment determines output but it also determines the growth of capital. In fact, it is the growth of capital, $\Delta K/K$, that firms make a decision upon. This decision depends on how intensely capital is being used, i.e. on the output–capital ratio, X/K :

$$\frac{\Delta K}{K} = \alpha + \beta \frac{X}{K}.$$

But, since investment relative to output must equal the saving rate s ,

$$\frac{X}{K} = \frac{1}{s} \frac{\Delta K}{K}.$$

As long as the parameters are all positive and $s > \beta$, the model has a positive solution for the rate of growth of capital and for the output–capital ratio:

$$\frac{\Delta K}{K} = \frac{\alpha s}{s - \beta}, \quad \frac{X}{K} = \frac{\alpha}{s - \beta}.$$

The economy will grow at the desired rate but firms will not be achieving the desired capital–output ratio, which is the reason why they are investing at all.

The main implication of the model should not be surprising when one considers that both aspects of investment, its demand-generating and its capacity-creating aspects, figure in the model. This is another way of saying that a dynamic problem is being addressed, that is, one where the effects of individual behaviour on the underlying structure of the economy are taken into consideration. Investment raises demand, but it also enlarges capacity, which generates a new context for decision making. To rule out the above-mentioned implication of the model, two routes are available. The first is to rule out dynamics altogether: this means studying investment solely in its demand-generating role, while capital is kept constant (Keynes's choice). The other option is to set the economy straight on the steady-state path: this means studying investment in its capacity-generating role, but keeping demand, with respect to capacity, constant. This result can be obtained, for example, by means of a variable propensity to save, which has been extensively used in the theory of growth and which can be seen as a helpful device for avoiding transitional dynamics.

If this device is not adopted and the two aspects of investment are allowed to interact, a transitional dynamic is set in motion. Along the transition path investment is changing capacity, thus creating a new context for another investment decision. If the new context justifies a different investment decision, the next change in capacity will be different from the previous one. Such a change in

capacity will, in turn, support a new investment decision, and so on and so forth. This dynamic might converge to a point where the new structure of the economy is supporting precisely the same investment decision as the previous round, with the result that the economy will grow smoothly from then on. By then the economy will have reached its steady state. For this convergence to be possible, a mechanism must be in operation gradually reconciling both aspects of investment. If this mechanism exists, forward-looking firms will select the corresponding path.

This mechanism does not exist in the growth model illustrated earlier. There the new context generated by investment does not support a change in the new investment decision. Firms find themselves accumulating just as much as they were doing earlier, as the context in which investment decisions are taken is reproducing itself unaltered through time. This means that the dynamic of the system is not generating a state of affairs where firms' expectations as to the capital–output ratio are finally realised. The obvious question to ask at this point is whether any such path can ever get selected.

4. A macroeconomic rule of behaviour

The economy represented in that model is undoubtedly an unsophisticated economy, for it is an economy without an adequate mechanism of coordinating individual decisions. Firms are trying to create the appropriate amount of capacity, but by doing so they generate an outcome that in the aggregate reproduces exactly the same situation as before. No signal is conveyed in this economy showing that the reason why the capital–output ratio is different from expected lies precisely in the attempt to adjust that ratio. Indeed this is a classic example of fallacy of composition: the aggregate result of purposeful individual actions constantly frustrates the ultimate objective of those actions. There seems to be no way out of this: action brings with it constant frustration, but to avoid constant frustration, action should be called off. In this case it is very unlikely that this path could ever get selected.

However, this is an inescapable result only if we interpret this equilibrium as a steady-state equilibrium, that is, as a final equilibrium. If no finality were attached to that equilibrium, action could conceivably be replicated despite intended consequences not being forthcoming. As Chick put it, for action to be replicated expectations need not be confirmed, as long as they are not falsified. It takes a long time before long-term expectations can be confirmed or falsified.⁷ Thus investment might be repeated despite it not yet being clear whether that was the right decision to make. Therefore, firms might hold to their investment policy even if the output–capital ratio is higher or lower than expected. This is clearly an instance of rule following, that is, an instance of a behaviour whose immediate justification is adherence to a rule. However, the rule needs to be justified on different grounds. In this particular case, it should have the precise purpose of eventually adjusting capacity to demand. If that were the case, action could be replicated, but only for as long as the rule needed to be followed. The growth path so determined would become a meaningful transitional steady state.

The rule would be based on the assumption that the ultimate aim of bringing capacity to its desired level is reached by maintaining a constant rate of capital accumulation for some length of time. After this length of time the economy returns to a state where capital accumulation ceases to generate the problem it is supposed to resolve. The rule, therefore, would have a macroeconomic nature, as it would be designed to solve a problem which originates from the aggregation of individual decisions. There is obviously no reason why the state where this problem no longer exists should ever be reached: while adjustment is being carried out, what was kept constant may change, thus giving way to a new adjustment plan.

Once the content and the nature of the rule are clear, the next fundamental question to address is why it should ever become established. Why should rational investors come to hold firmly to a policy which is not producing the results it is expected to produce and why should they not change to a more effective policy? Why should they come to believe that following the rule is conducive to full adjustment?

The answer to these questions is that a more effective policy may not exist in the given circumstances. The given circumstances are those associated with the model illustrated, a model whose main adjustment mechanism is based on output. This means that the desired rate of accumulation is realised by means of changes in output and that no mechanism designed to adjust output to capacity exists. The main implication of such circumstances is that investment to adjust capacity is either carried out this way or it not carried out at all. It is not possible for each individual firm to assume that the burden of the adjustment is shifted on to others. No acceleration in the growth of capacity is possible without an increase in the relation of output to capacity. Similarly, no slowdown in the growth of capacity is possible without a decrease in output relative to capacity. A certain degree of shortage of capacity or of excess capacity is therefore required before the ultimate objective of adjusting capacity to demand can be finally achieved. If firms decided to take this course of action, they could be said to behave rationally. But what kind of rationality is associated with this course of action?

The rationality of this course of action could be compared to that of standing in a queue in order to have access to some place. If somebody tries to avoid the queue, a quicker entrance can be gained only if nobody else does the same. If everybody tries to gain that access at the same time, it is very likely that nobody manages to get in. The habit of standing in a queue emerges therefore from the recognition that sharing this procedure helps coordinate individual behaviour and makes sure that the outcome of entering the place is actually obtained. It is not a habit which could be developed in isolation, without expecting that everybody else behaves the same. It is only the fact that everybody else shares it that makes it worthwhile to follow the rule. The rationality associated with this decision certainly cannot be reduced to instrumental rationality. For the strategic version of instrumental rationality would require breaking the rule when everybody else is expected to follow it. A different notion of rationality must be brought into the story if that behaviour is to be described as rational.

Behaviour based on rule following is usually presented as an instance of procedural rationality. The notion of procedural rationality is normally associated with the work of Herbert Simon. However, the use of rules or procedures in Simon is explained as a course of action instrumentally rational agents follow when they run against computational difficulties. There is no implication that these procedures are shared. The notion of procedural rationality which may be of some use here is the notion which presents the following of procedures as an intrinsically social activity. Hargreaves Heap (1989) provides an effective account of how this notion differs from Simon's:

The crucial feature of these procedures is that they are shared by others, whereas Simon's shortcuts are personal affairs. This larger tradition makes procedural rationality a source of historical and social locations for individuals. It makes the individual irreducibly social in a way that is not found in the purely instrumental account because the person cannot ever be quite separated from these norms. This warrants a new sense of rationality because, unlike Simon, the following of procedure can no longer be regarded as part of the means by which one satisfies given ends. Instead, the following of shared procedures actually helps to define some of the ends which we pursue.

(p. 4)

An individual who stands in a queue is therefore an individual who follows that rule to be social. Being social means behaving in such a way as to make a social (sub)system work. Following that rule, therefore, becomes an end in itself and it is by means of that rule that the social nexus is constituted. In the case of accumulation, being social means behaving in such a way as to make overall adjustment possible. As mentioned earlier, just as some time waiting is required before entrance is gained in the example of queuing, shortage of capacity or excess capacity is required before adjustment is finally realised. Accepting this mechanism on the part of investors means accepting that, for a system to work properly, individual parts must follow certain rules. It is from this recognition that procedurally rational firms might decide to adopt that rule.

5. Concluding remarks

This contribution tries to extend Chick's notion of equilibrium of action to a growth context, that is a context where the variable supposed to be at rest is the rate of growth of capacity. As she has made clear, an equilibrium of action is a state where the constancy of variables is supported by the constancy of action. Such a notion of equilibrium is general enough to include states where action is simply replicated. As an example of equilibrium of action, Chick mentions the state where investment demand is replicated because entrepreneurs' expectations are not falsified. Similarly, an equilibrium of action can result from investors

accumulating at a constant rate because their expectations as to the capital–output ratio are not falsified.

Following Keynes, she reminds us that realised results may not be of any avail in the decision to replicate investment. Expectations are not checked in the light of realised results. Investment, therefore, may continue unchanged despite expectations not being confirmed. She has made clear on many occasions why this is the case. Realised results are not useful information in the decision whether to carry on with the same investment demand because the circumstances surrounding current investment are different from those surrounding past investment. There is no reason, therefore, why current investment should yield the same results as past investment.

The contribution offered here takes a slightly different direction as it tries to give a positive reason why investment demand, or the rate of accumulation, stays constant through time. Procedural rationality is brought into the story to explain why investors should keep investing at the same rate despite the actual capital–output ratio is different from the desired ratio. Investors are presented as following a rule which incorporates the recognition that the aggregation of individual investment decisions makes investors’ expectations constantly frustrated. Following the rule offers the opportunity to embark upon the process of adjusting capacity without being distracted from it by the temporary failing of expectations.

Notes

- 1 See, among her most recent contributions, Chick (1998a).
- 2 Chick (1998b: 20).
- 3 (Ibid., p. 21). See also Caravale (1997) for a discussion of a notion of equilibrium where no need exists to equate expected and realised results. This article was a major inspiration for Chick’s equilibrium of action.
- 4 Some of these ideas were already discussed in Caserta and Chick (1997).
- 5 For a full treatment of the Ramsey model, see, for example, Barro and Sala-I-Martin (1995, chapter 2), or Romer (1996, chapter 2).
- 6 See, for a classic example, the interesting discussion Elster (1979) provides of the traveller who, to get out of the forest, chooses a straight line instead of continually adjusting his direction.
- 7 See Chick (1983: 22).

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UNEMPLOYMENT IN A SMALL OPEN ECONOMY

Penelope Hawkins and Christopher Torr

At each curtain rise the *General Theory* shows us, not the dramatic moment of inevitable action but a tableau of posed figures. It is only after the curtain has descended again that we hear the clatter of violent scene-shifting.

(Shackle 1967: 182)

1. Setting the scene

Shackle's vivid description sets the comparative static method of the *General Theory* against the dynamic method of Keynes's earlier *Treatise on Money*. However, the analogy also leads us to distinguish between the action on the stage and the scenery in which the action takes place. There are items on the stage, and we need to know why they are there. But there are also things that we do not see that we need to know something about. For instance, knowledge of the political state of play in Denmark helps us to understand the action – or lack thereof – of the prince. And sometimes a key character (Godot) never even appears on stage. In providing insight into the behind-the-scenes orchestration, setting the context for the tableau of posed figures and highlighting the influence of the players left backstage, few economic theorists have been as thorough or successful as Victoria Chick. Vicky often resists the temptation to proceed straight to the action. The reader must first get used to the scenery, and must know what institutions – visible and invisible – are in place. Thereafter we are introduced to economic activity and theoretical considerations. In setting the scene, Chick has made the message of the *General Theory* both accessible and vital.

Another way of viewing this particular contribution of Chick is to make use of what Searle (1994) refers to as the background. The background is that with which we understand the meaning of a sentence. Searle indicates that when we ask somebody to cut the cake, we do not expect her or him to perform the operation with a lawnmower. When we ask somebody to cut the lawn, we would be surprised if the person attempted to do so with a knife. Searle argues that the background against which the sentence is being used provides the information necessary to understand

in what sense the verb ‘cut’ is being employed. In helping generations of students and teachers to understand the meaning of the *General Theory*, Chick (1983b) has sought to provide us with the requisite background.

While we obviously obtain a better understanding of an economic theory if we know the background against which it is presented, a theory may, however, be robust enough to be applicable in another environment. Chick (1983a) realises that the world of today is not the world of 1936 but this does not prevent her from arguing convincingly that the *General Theory* remains relevant:

I believe that the *General Theory* still contains much that is useful to us: the idea of aggregating expenditure according to the degree of autonomy from current income (though we may wish to draw the line elsewhere); Keynes’s restoration (from classical authors) of the periodic importance of speculation and his recognition of its displacement to the financial sphere; the integration of the consequence of asset-holding with the flows of production and investment – these ideas still hold.

(ibid.: p 404)

The chapter aims to explore these ideas singled out by Chick in a small open economy where unemployment is the norm. In Section 2 we look at the line between exogenous and endogenous expenditure. In Section 3 we look at the financial sphere. In Section 4 we look at the integration of the real and financial spheres in terms of monetary policy.

2. Autonomous and endogenous expenditure in a small open economy

In undergraduate textbooks, students are introduced to macroeconomics via a two-sector model incorporating consumption, investment and saving. We may refer to this as the wheat and tractor model (mark I).

In the case of a small open economy, we suggest starting with a wheat and cloth model, namely

$$Y = C + X \quad \text{and} \quad Y = C + M.$$

Here C refers to expenditure on domestic goods and services (wheat). X refers to the exports of this small open economy (also wheat). M is expenditure on imports (cloth). Neither wheat nor cloth is an investment item.

If we make the Kaleckian assumption that workers in the domestic economy spend their entire income on wheat, domestic entrepreneurs will make no profit if they sell only to domestic workers, since total expenditure (wages) will be equal to total costs (wages). For the sake of simplicity we are ignoring the consumption of entrepreneurs. The exogenous component of expenditure (exports) opens up the possibility of profit. The state of rest for the economy will be dictated by the extent of export demand.

While it is unlikely that a modern-day student would embark on her macro-economic career with a model that contains an international sector, but no government sector and no investment, we should like to suggest that it is the most appropriate stage on which to start analysing the South African economy. It was on such a stage that the principle of effective demand first saw the light of day in book form (Harrod 1933). In reminding us of Harrod's contribution, Kaldor (1983) bemoans the fact that Keynes sought to present the *General Theory* in closed economy format. In the *General Theory* investment rather than exports is allotted the key role. Milberg (forthcoming: 7) suggests that Keynes was acutely aware of the likelihood of persistent unemployment in an open economy, and in order to demonstrate the broad applicability of the *General Theory*, he sought to prove the possibility of chronic unemployment in an economy *without* unbalanced international transactions. We, however, wish to point out the possibility of chronic unemployment in an economy with international transactions, without (for the moment) taking investment and saving into account.

As in the case of Keynes's closed economy model, the equilibrium level of employment is arrived at independently of events on the labour market.

Nearly half a century after Harrod's exposition, Thirlwall (1979) took Harrod's foreign trade multiplier model and investigated at what rate income would have to grow if the equality of exports and imports were to be maintained over time. He established that it would have to grow at a rate of $y = x/d$, where y is the growth in income, x is the growth in exports and d is the income elasticity of imports. This equation has been referred to as Thirlwall's (fundamental) equation and reflects the idea that an open economy faces a balance of trade constraint. If exports grow at 8 per cent and if the income elasticity of demand for imports is 2, the equation suggests that the economy must grow by at 4 per cent if the current account is to be held in balance.

The wheat and cloth model has been presented to show the possibility of unemployment in a small open economy in which there is no investment. Sooner or later, however, investment must be brought into the picture. As an open economy grows, imports will increase. In the case of South Africa, such imports are for the most part investment items. Our wheat and cloth model should therefore give way to a wheat and tractor model (mark II). In the mark II version, all tractors are imported. The equilibrium level of employment is once more dictated by exogenous expenditure (exports of wheat) and investment assumes the role of an endogenous item, which in Kaldor's (1983: 11) eyes is entirely appropriate.

The very growth in exports and income may make the balance of payments constraint less restrictive insofar as it creates a climate conducive to long-term capital inflows. Sooner or later, however, the monetary authorities will act to do something about a worsening balance of payments situation. And that action would normally be associated with interest rate policy.

Thirlwall's law is intended to be a long-run growth equation, and reflects only current account activity. Subsequent developments of this growth model have investigated how the situation would be altered if a country were in a position to

attract long-term capital (McCombie and Thirlwall 1994). Nonetheless, Thirlwall's model maintains the convention in both traditional trade theory and Keynesian (but not Keynes himself) macroeconomics of explaining balance of payments adjustments in terms of the price and cost fluctuations of current account items. This has tended to obscure the importance of capital movements in cushioning, stimulating and even dominating the balance of payments (Triffin 1969: 43).

3. The liquidity preference of foreign and local financial investors

An analysis of a small open economy that takes the financial account into consideration allows the introduction of Keynes's liquidity preference schedule in an international setting. In the closed economy of the *General Theory*, the existence of liquid assets allows for both precautionary and speculative holdings of liquid assets which siphon off purchasing power from productive activity (Chick 1983a: 395). This reduces investment and output and employment. It is because of the preference for liquidity that unemployment is the norm in a monetary economy with uncertainty.

In an open economy, liquidity preference applies to the full range of foreign and domestic assets. Whereas in a closed economy, the national currency, as the most stable and liquid of assets, is money, in an international setting, there are many 'moneys' (Dow 1999: 154). If the value of national currency is unstable, investors may prefer to hold a more stable foreign money. The currency held in order to satisfy the liquidity preference of investors will be a matter of the relative liquidity and stability of the currency, as well as a matter of convention, in terms of what is acceptable (if not legal) tender. Holdings of reserve currencies or assets denominated in reserve currencies will be referred to as centre assets. The broad range of traders and trades for centre assets contributes to the thickness of the market with the associated pooling of more information and lower transaction costs (Chick 1992: 155). This, in turn, contributes to the relative liquidity and stability of centre assets. The liquidity preference for centre assets exacerbates the domestic effects of preference for liquid assets and contributes to the unemployment norm of a small open economy.

The discussion of the financial account requires an examination of the composition of capital flows and the motives that lie behind them. The fifth edition of the IMF's Balance of Payments Manual reclassified the old capital account as the financial account. The financial account consists of direct investment, portfolio investment and other investment flows. Given the association of productive investment with foreign direct investment (FDI), the investor who invests long term is generally preferred. FDI can be viewed as 'lasting' management interest in a firm. It is seen as longer term and hence more sustained, and less likely to sudden reversal than portfolio flows. FDI is associated not only with capital inflows, but also with imports of technology, management know-how and access to markets otherwise denied to small open economies (Dunning 1997).

With FDI – far more than with portfolio flows – the pull factors of a particular country are important. FDI flows tend to be cumulative, further enhancing the competitive advantages of the relatively more developed countries, whereas less developed countries continue to be bypassed and constrained. However, while direct investment is associated with committed investment, the categorisation of flows is based on quantitative criteria, rather than any knowledge of motive on the part of the investor.

By contrast with the commitment generally associated with direct investment, portfolio investment flows are associated with short-term gains and are seen to respond to potential yield (Maxfield 1998: 72). Portfolio flows are usually classified in terms of debt or equity flows. The former usually refer to funds raised on the international bond market, the latter to purchases of shares, either directly or indirectly (in country funds, say) of the recipient stock markets. In evaluating the vulnerability of the capital-importing country to rapid withdrawal of portfolio flows, the maturity of bonds is an important issue. If most bonds have a short maturity, the country is potentially vulnerable to the stock of bonds rapidly dissipating in the face of a domestic crisis or external shock (Griffith-Jones 1995: 68).

The strong connection between the equity market and the exchange rate in small open economies makes the stock market sensitive to capital inflows and outflows. Foreign capital inflows into the equity market are likely to push up share prices and the value of the currency. While foreign participation in the stock market of a small open economy may lead to considerable benefits for locals, substantial inflows could also bring about capital market inflation. The best possible return from capital market inflation appears to be had by adding to that inflation (Toporowski 2000: 6), so while capital continues to flow inward, speculative profits may be made. This process will continue until demand drops off for some reason, with the bull market then becoming a bear market. Hence foreign participation may add to the volatility of the stock market and the currency of the small open economy.

A large-scale equity sell-off by foreigners in a small open economy is likely to set off a cumulative process of sharp price declines in equities and continued downward pressure on the exchange rate, if foreigners sell their holdings to residents. The fall in equity prices has a negative effect on the marginal efficiency of capital of new investment and hence the rate of new investment is also likely to fall (Keynes 1936: 151). The net outward flow of capital or the sharp decline in equity prices that results is likely to affect current income, through the wealth effect and may also have an impact on future income. This is likely to affect consumption demand negatively and the propensity to consume is depressed when it is most needed (Keynes 1936: 320). Hence a sharp outflow of capital from a small open economy is likely to have both immediate and longer-term real negative effects on output and employment. In addition, the domestic banking sector may be jeopardised if companies affected by the sharp decline in equity prices are large borrowers of the banking system, which may lead to a process of debt deflation.

The process of portfolio investment, based on speculative activity, is likely to encourage capital flows based on superficial, rather than extensive, knowledge of

the economies concerned. Speculative activity is about forecasting the psychology of the market, and hence is focused on assessing what average opinion expects average opinion to be (Keynes 1936: 157–8). Indeed, speculative activity is easier than forecasting the prospective yield of an asset over its whole life. Investors who are yield oriented are more likely to be driven by comparative returns in OECD countries than the economic policy of a recipient country (Maxfield 1998: 71). Hence small countries are more likely to be subject to decisions being made in far-removed centres, on the basis of superficial or incomplete knowledge. From the perspective of a speculative investor interested in short-term gains through outguessing the market, rather than engaging in an evaluation of *real* returns, this information is superfluous. Where the returns to investment are not judged to be high, peripheral nations will be subject to investors erring on the side of caution, and reducing their holdings of a weakening currency as a precautionary measure (Davidson 1982: 112).

Wyplosz (1999: 242) compares capital inflows to chocolate – it is good for you – but too much makes you sick. Speculative capital inflows should, however, be regarded as temporary. No one knows how flighty, though, with external conditions essentially dominating the sustainability of the flows (Calvo *et al.* 1996: 137). For this reason, although interest rate shocks and cyclical instability may account for some of the variability of capital flows in small open economies (Eichengreen 1991: 22), we could also argue the other way around – that it is the variability of capital flows that accounts for cyclical instability and interest rate volatility in small open economies. When interest rate shocks, leading to capital outflows from small open economies are accompanied by a slump in export prices, and possible bank fragility, the creditworthiness of these economies may come into question. In spite of defensive raising of interest rates and depreciation of the currency, capital outflows may result in the small open economy defaulting. There are real negative consequences for output and employment associated with reversal of capital inflows. Awareness of the vulnerability of the small open economy to capital reversal and credit withdrawal may contribute to the negative attitude of domestic investors and exacerbate the unemployment problem.

The liquidity preference of domestic financial investors for centre assets may be divided into two. Where locals choose to hold centre assets in order to take advantage of the *opportunities* they offer, this is seen as normal capital outflow. On the other hand, where the choice of domestic investors is based on motivation to *flee* domestic conditions, the capital outflows are referred to as capital flight (Lessard and Williamson 1987: 202). Hence the capital used by Japanese households to buy assets in the US is regarded as normal capital outflow, while Argentineans buying those same assets are seen as contributing to capital flight (*ibid.*: pp 201–2).

Whatever the motivation, capital outflows from residents generally exacerbate the constraints of the small open economy. Where a small open economy is experiencing pressure on the balance of payments, associated with capital outflows to service debt repayments, additional resident capital outflow will further

exacerbate the need for expenditure switching and reduction in expenditure-absorption adjustment, so as to balance the capital outflows with a current account surplus. With upward pressure on interest rates and likely depreciation of the currency, the production of a surplus on the current account is often achieved via a contraction in domestic investment expenditure, especially in small open economies reliant on imported capital goods (Hawkins 1996). Hence the combined outflow of capital from domestic as well as foreign investors will serve to constrain employment-enhancing production in the short term, and is likely to have negative long-term consequences for the rate of growth of the small open economy (Lessard and Williamson 1987: 224).

Resident capital outflows also contribute to a vicious cycle – if outflows continue on a large scale for a considerable period of time, such as occurred in Latin America in the 1980s, transnationalisation of domestic capital will take place. This may lead to the departure not only of capital, but of entrepreneurs too, which is likely to have devastating effects on local investment and hence development and growth in these economies (Rodriguez 1987: 141–2).

The preference of domestic investors for international assets is likely to continue in spite of the economic return to domestic assets exceeding those of foreign assets (Lessard and Williamson 1987: 225). This may be seen as the result of the difference between the financial return accruing to the private investor and the economic return that accrues to society. Driven by financial returns, a private investor is likely to flee currency devaluation, inflation, fiscal deficits, low growth and a debt overhang. In addition, where there is a discriminatory treatment of residential capital, on a taxation basis, for example, resident capital outflows may coincide with foreign capital inflows.

Following the *General Theory*, the demand for liquid assets may be viewed in terms of the transactions, speculative and precautionary motives. In an open economy, demand for the means to enable international payments for goods and services and other assets to take place is regarded as a stable function of world trade and capital flows, respectively (Dow 1999: 156). Given that the turnover in foreign exchange markets exceeds world trade by a substantial amount, there is more to international liquidity preference than transactions demand. It is these other motives for holding foreign currency, which, in Davidson's opinion (1982: 120–2), disturb Friedman's assertion that a flexible exchange rate creates the circumstances for independent monetary policy. Because currencies may be held for reasons other than meeting contractual obligations, changes in liquidity preference between currencies are likely to result in management of the exchange rate, and hence a monetary policy which is no longer independent. This occurs as domestic and foreign currencies can be seen as substitutes in several ways.

Speculative demand arises from the desire to take advantage of speculative opportunities. A speculator believes she has outguessed the market, and hence holds money, as holding other assets would imply certain loss. In an open economy, this can involve holding foreign, rather than domestic, currency.

An investor who holds liquid assets for precautionary motives is unsure of the probability of outcomes. In the face of strong precautionary demand, the monetary authorities may seek to hold reserves of foreign currency in order to deal with unforeseen capital outflows. The size of a country's official reserves could reflect the strength of the anticipated outflow. The private sector may also hold precautionary balances in terms of long-term loans in foreign currency.

From the perspective of investors in peripheral countries, long subject to the vagaries of capital flows, ownership of foreign assets is likely to be seen as more liquid than domestic assets (Dow 1993: 167). Hence the most liquid assets for small open economies are likely to be assets of the financial centres. Ownership of centre assets can be seen as a rational response in an unpredictable world (Lessard and Williamson 1987: 102). A flight of domestic capital away from domestic borders can hence be interpreted as greater liquidity preference for foreign assets. Domestic investors perceive the small open economy to be vulnerable to shocks in a way that financial centres are not. We can interpret the demand of nationals for foreign assets as precautionary, as well as speculative, demand. Residents of a country may believe that the value of their currency is likely to decline and may take speculative positions, or they may take speculative positions against the currency, which unroll as certain crucial trading levels are reached.

Precautionary holdings of foreign assets by domestic investors occur when the future is uncertain and instability is expected. Since the timing of the volatility is unknown, the opportunities for speculative gain are as yet unperceived (Runde 1994: 134). Holding foreign centre assets may be seen as an expression of liquidity preference of the precautionary kind and an expression of risk aversion by domestic investors. For this reason, resident capital outflows are likely to continue even if returns to domestic assets are perceived to be greater than those of financial centres. Capital flight may be seen as that proportion of resident capital that flees borders in spite of greater expected returns to domestic than centre assets.

The discussion above has highlighted the significance of capital flows, as represented on the financial account. In this view, the financial account is not merely seen as the inverse of the current account. Rather, movements on the financial account are influenced by different motives, and may potentially affect the real economy. While capital inflows are generally seen as good for a small open economy, reversal of speculative flows can be disruptive to the real economy, subduing investment and employment. In the context of uncertainty, those assets that are considered most liquid are held. These are unlikely to be the assets of a small open economy. The volatility of the thin currency and equity markets of small open economies, together with preference for centre assets, may mean that the small open economy may not be deemed creditworthy when it most requires international liquidity.

4. Unemployment and monetary policy

In section 2 we examined the real scene, whereas the financial scene came under scrutiny in 3. It was, of course, Keynes's conviction that the financial and real

sectors could not be treated independently of each other, and the title of his 1932 lectures – *A monetary theory of production* – attests to this.

If the Kaldor–Thirlwall model is expanded to include the financial account, the implication of the central bank's interest rate policy to address an imbalance on the external account takes on new dimensions. The interest rate policy applied by the central bank may be seen as a policy designed to bring about a better relationship between exports and imports, or as an attempt to attract the capital inflows which may support the imbalance. The way it addresses the trade account imbalance is by curbing growth in order to curb imports. In the light of anticipated speculative and precautionary capital flight, the central bank may preemptively raise interest rates. Here the interest rate policy adopted affects GDP growth. Mainstream economic theory, however, maintains that the monetary policy of the central bank has no lasting effect on real output and hence employment.

The policy of inflation targeting is conventionally based on the premise that there is a natural rate of unemployment (Carvalho 1995/6). In the interest of transparency, citizens should be informed what this natural rate is considered to be. If one ascribes to the notion of a natural rate of unemployment, one would presumably have to argue that the natural rate of unemployment in South Africa lies somewhere between 20 and 30 per cent. Since it has been there for ages, it seems that South Africa has been in a depression since the great depression.

Inflation targeting is not necessarily a bad policy option. It would be foolish, for example, not to adopt targeting if the rest of the kids on the block are adopting it. That could generate speculative behaviour against your currency. However, if a central bank of a small open economy uses interest rates to make sure that the relationship between exports and imports is not out of line with the state of the business cycle, it can surely not at the same time argue that its actions have no bearing on real output.

5. Conclusion

In setting the scene of the *General Theory*, Chick alerts us to its context and complexities. Much macroeconomic theory has been conducted against the background of a closed economy. Since the background and the model are intertwined, changing the scene to a small open economy highlights different factors which 'exercise a dominant influence' (Keynes 1936: 247). Chick's exposition of the *General Theory* has not only made Keynes's work more accessible, it also demands of us that we re-examine its relevance to current macroeconomic debates. Our discussion suggests that in a small open economy, where both trade and financial openness are woven into the model, the lesson of the closed economy model that persistent unemployment is possible, becomes even more likely.

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WHY DO MACROECONOMISTS DISAGREE ON THE CONSEQUENCES OF THE EURO?

Jesper Jespersen

1. New dividing lines

I take my point of departure from a lecture that Victoria Chick gave in London at the Heterodox Conference in June 2000 (Chick 2000, 2001). She pointed out that the traditional dividing line in the Euro debate had obtained a new dimension. With regard to the creation of the single European Market, the arguments pro and contra had hitherto followed the conventional left–right distinction. The parties on the left were hesitant about a European Union (EU) based on free market principles because employment would be at risk. In contrast, right-wing parties were in favour of giving priority to the market and to low inflation rather than low unemployment. This new configuration is set out in Table 19.1, with summary characteristics listed for each of the four positions.

Table 19.1 New dividing lines in EU policy attitudes

<i>Left</i>	<i>Right</i>
<i>Positive</i>	
1 Defence against globalisation	1 Gains from foreign trade
2 Pooling national sovereignty	2 ECB secures low inflation
	3 Increased market power
	4 A modern project
<i>Sceptic</i>	
1 Democratic deficit	1 Loss of sovereignty
2 Centralisation	2 National currency = symbol of state power
3 EU bureaucracy	3 Euro = first step to United States of Europe
4 ECB = monetarist project	4 The European labour market is unfit for fixed exchange rates
5 Deflationary bias	
6 Stability Pact too restrictive	
7 Regional differences	

In Britain, unlike Continental Europe, a Euro-sceptic wing developed from within the Conservative party at a rather early stage. The EU seemed to them to imply more centralisation and regulative power in Brussels. Within the Conservative rhetoric Brussels came close to a social democratic project which involved too much market regulation, whereas New Labour started to see Brussels representing a possible solution to some of the problems related to increasing globalisation. A European currency might match the dollar and yen on equal terms. Brussels might negotiate international trade agreements with the US as equal partners. Brussels might even match the biggest transnational companies. Pooling the waning, national sovereignty within the EU might imply regaining some European sovereignty in a world which was becoming increasingly globalised. Consequently, New Labour has adapted an increasingly positive attitude towards the EU and the Euro. One of Tony Blair's first actions after gaining office in 1997 was to go to Brussels and sign the Social Charter. Different attitudes towards the implication of and the right answer to the challenges of *Global capitalism* have thus unveiled the affinity between macro-economic schools and ideology.

The comparatively free movements of financial capital and enterprises together with (nearly) free trade have to some extent undermined the economic (and political) sovereignty of the nation state. The 'positive' economists applaud this development. They agree that gains from increased international competition are beneficial for all countries and should unconditionally be welcomed. Then it is up to the decision makers in Brussels to correct possible negative regional side effects. On the other hand Left and Right disagree on how to correct, and on the necessity of correcting, these side effects. The Left points to *fiscal federalism* as a possible corrective instrument whereas the Right is against handing more power to Brussels and look instead to the market for stabilising factors. The 'sceptics' are, of course, sceptical about the unconditioned positive effect of increased globalisation in a number of economic areas (e.g. unrestricted financial flows).

It is no wonder that the public firmly believe that economists always disagree. In relation to the Danish referendum in 2000, this state of confusion led to the conclusion that the economic consequences of the Euro were not decisive.

In Chick's taxonomy I found a thought-provoking pattern between the leading macroeconomic schools and the four different political attitudes towards European monetary integration, as set out in Table 19.2.

Really hard-boiled market economists – the *New Classical* economists – say that the only thing that matters in a rational economic world is competition. Avoid

Table 19.2 EMU attitudes and the political spectrum

	<i>Left</i>	<i>Right</i>
<i>EMU-positive:</i>	New Keynesians	Moderate EU-monetarists
<i>EMU-sceptic:</i>	Post-Keynesians	Orthodox (Anglo-Saxon) monetarists

regulations (i.e. intervention from Brussels), secure a steady rate of money supply growth and leave the rest to the market and the rational actors.

Monetarists are in fact divided. The European wing that is the *moderate monetarists* (close to the opinion of the EU Commission and the European Central Bank (ECB)) favour a monetary union. This is because, if anything, a fixed exchange rate and a firm monetary rule (maximum 2 per cent inflation) will force European labour markets to be more flexible with regard to cross-border mobility and wage reduction.

The other wing is led by the orthodox (mainly Anglo-Saxon) monetarists (Milton Friedman, Martin Feldstein, Patric Minford). They were among others supported by 155 German economists who in an open letter to the *Financial Times* in February 1998 voiced their disagreement with the European monetarists with regard to the benevolent consequences of fixed exchange rates within the EU. They consider the Euro an obstruction to free market forces, which will inevitably cause increased tension between the participating countries due to lack of labour market integration.

New Keynesians are neoclassical economists in disguise. They have developed their theory around labour market rigidities (Layard *et al.* 1991). Within an institutional framework of rational agents, reasonable arguments can be made for removing any labour market inflexibilities. They are considered as, mainly, structural barriers to full employment. The inflexibilities dominate the different European labour markets. But the 'rational' rigidities might also impede the adjustment to shorter-term business cycle unemployment. The New Keynesian answer to these different kinds of unemployment is to establish a case for short-run demand management to overcome the business cycle part of unemployment. According to the New Keynesian economists, it is strongly recommended that the demand side of labour market policies is restricted to only the short period and always supplemented by intensified labour market structural reforms. Coordination of economic policies within the EU is needed for small open economies because, according to New Keynesians, national sovereignty has been lost to global market forces. There is only one actor (the EU) left which might stand up to global pressure. That is the reason why new, modernised Labour, Social Democratic governments in both Continental Europe and Scandinavia look to Brussels as the crusader against roaring unrestricted international competition and big transnational firms.

To *post-Keynesians*, the differences among European countries are seen as much more pronounced and the economies less integrated both at regional and global levels. According to them, European countries are able to pursue different goals in macroeconomic and welfare policies. They consider real demand shocks as the most likely source of future disturbances for which reason traditional economic policy instruments are needed to keep unemployment low. On the other hand, structural problems in the labour market are accepted as a possible cause of macroeconomic imbalances which might cause inflation, should they not be taken seriously. But concerted actions under EU leadership are considered the best

remedy against *symmetric* demand shocks. But the correlation of business cycles within the EU is still rather weak, so that *asymmetric* shocks are more likely. This leaves each country with rather wide scope to pursue independent national economic strategies as long as the country maintains full command over the traditional economic political instruments (fiscal, monetary and exchange rate policies). Furthermore, post-Keynesian economists favour the argument that some national sovereignty could be regained by controlling international *financial* capital flows and the activities of transnational firms. Within these areas they call for intensified collaboration between independent sovereign nations and give a high priority to redistributive national policies (on the basis of traditional Social Democratic values).

2. The Maastricht Treaty was inspired by the Euro-monetarists

According to the Maastricht Treaty, the overriding aim for the central bank is to secure price stability within the Euro-zone. This has been defined as price changes in a medium-term perspective ranging between 0 and 2 per cent. The ECB is explicitly required to decide its policy independently of any external (political) interference and with priority given to keeping inflation low.

This part of the Maastricht Treaty is inspired by monetarist/new classical thinking. Obviously, the *quantity theory of money and price determination* must be the theoretical source of this paragraph in the Treaty – otherwise it would not be meaningful to give the central bank the sole responsibility for price stability without mentioning employment. Furthermore, the explicit exclusion of any political interference demonstrates a view of politicians as impeding the smooth functioning of the market system.

One should not forget that the Treaty was negotiated in 1991 by twelve governments of which ten were conservative. The two so-called socialist governments, Spain and Greece, were headed by prime ministers who held view points quite similar to New Labour and were even more enthusiastic towards further European integration.

Of importance for EU economic development during the 1990s was the fulfilment of the financial convergence criteria (low inflation, low rate of interest, a public deficit not exceeding 3 per cent of GDP and a falling public debt) whose satisfaction qualifies countries for membership of the monetary union. These criteria were all taken directly from any monetarist textbook. Inflation is determined by changes in the money stock with no serious consideration of a possible trade-off between financial curtailment and increasing unemployment.

But the European record on unemployment during the convergence period 1991–9 did not confirm the monetarist textbook results. In fact, it grew to a post-war peak in all major European countries who wanted to join the single currency by 1999. In early 1997, German unemployment stood at 3.5 million – France, Italy and Spain had even higher rates.

That development, of course, created difficulties when negotiations for the new Amsterdam Treaty were started. Furthermore, the political landscape had changed, with the European Council now being dominated by social democrats – except for Germany where Chancellor Helmut Kohl was still in power. Although a German election was due within a year, no one dared to reopen negotiations concerning the chapter in the Treaty on monetary union. Instead a new, separate, chapter on employment considerations was added to the new (Amsterdam) Treaty. This chapter was met with fierce resistance from the German conservatives. In fact, they managed to water down the national commitments to the labour chapter and to prevent any recommendation to improve the employment situation becoming mandatory.

3. Different views on the unstable Euro exchange rate

The ECB started to function when the Euro was launched on 1 January 1999. During its first year of existence the central bank had no difficulties in fulfilling the inflation goal, because the Euro-zone was still in recession due to the tough convergence process. Hence, inflation was suppressed and reduced further by falling oil prices in the wake of the South East Asian Crisis. When the business cycles in Europe normalised, the central bank immediately ran into difficulties because the economic performance of the Euro-zone does not behave in accordance with the monetarist textbook:

- 1 The money supply exceeded the target zone, which created worries in the ECB that even higher inflation was already in the pipeline.
- 2 The actual rate of inflation is outside the announced range of 0–2 per cent (which, the bank now says, only apply in the medium term).
- 3 Although the rate of interest has been raised from 2.5 per cent in November 1999 to 4.75 per cent in September 2000, these two trends of overshooting targets have not yet been broken. Hence, there might be further rises in the pipeline, disregarding the weakening of the business cycle in the Euro-zone.

When the Euro was launched, there were great expectations related to it as a likely future reserve currency which could, at least to some extent, substitute for the dollar in that function. That seems not to be the case. Since its launch the international value of the Euro has been unstable and fallen by approximately 20 per cent.

Different schools have different explanations of the causes of this development. The EU monetarists cling to the different business cycles in the US and the Euro-zone, together with an excessive growth in the money supply, an unfavourable difference in interest rates, and ‘irrational’ speculation which has moved the dollar/Euro exchange rate far away from the ‘law of one price’. In fact, they argue (on the same lines as some of the New Keynesians, see Buiters 2000) that the Euro is substantially undervalued and will regain its proper international value ‘sooner or later’.

In contrast, Milton Friedman could not have been surprised by the fall of the Euro exchange rate. When he was interviewed in February 1996 by Snowden and Vane (1999) *on the desirability of forming a single currency in Europe*, he answered as follows:

It seems to me political unification has to come first. How many times do we have to see the same phenomenon repeat itself? After the war there was the Bretton Woods system and it broke down, in the 1970s the 'Snake' broke down and so on. How many times do you have to repeat an experience before you realize that there must be some real problem in having fixed exchange rates among countries that are independent. There is a sense in which a single currency is desirable, but what does it mean to say something unachievable is desirable?

(Snowden and Vane 1999: 141)

Post-Keynesians (e.g. Arestis and Sawyer 2000) have been equally sceptical with regard to the stability of the Euro from a structural and political perspective. According to them macroeconomic stability requires a political structure which is able to stabilise the economic performance of the whole area under consideration (the Euro-zone). At the same time, the central authorities should be empowered to provide special packages supporting regions that run into specific difficulties. They argue that a necessary condition for the monetary union to function is some kind of fiscal federalism which may balance the varying developments in different regions. This is, of course, of particular importance as long as national labour markets are not integrated within the EU. Here, Europe is very different from the US: people speak different languages, have different social rights and, most important, different cultural backgrounds. Without having these institutional arrangements written into the Treaty, international investors might consider the Euro-zone as potentially economically unstable, thus adding to the uncertainty about the future value of the Euro.

Looking at the empirical evidence then it becomes obvious that the Euro has not only fallen against the dollar, but against any other currency of any importance. Against the yen, the fall has been even bigger and has happened although the Japanese economy has been in a deeper recession than the Euro-zone.

Reality has not supported the Euro-monetarists' arguments:

- 1 that the convergence criteria during the transition period would leave the real economy untouched,
- 2 that the ECB could control the rate of inflation, and
- 3 that the Euro could match the dollar and the yen in international financial markets as equal partners.

Unemployment in the Euro-zone is still close to 10 per cent, inflation is above the target of 2 per cent and the Euro exchange rate has fallen by more than 20 per cent against a world index of currencies!

4. Small open European economies – employment and foreign debt

Introductory remarks

The macroeconomic performance of small open economies is dependent on labour market reactions and the balance of payments. The current account measures the impact on real income and, equally important, the change in foreign debt. It is much too often said that the balance of payments loses its macroeconomic importance when a small country joins a monetary union. The argument is that foreign debt becomes similar to domestic debt because the currency is the same. Further, exchange rate uncertainty disappears. The latter is, of course, correct. But the main difference between domestic and foreign debt still stands: that interest payments on foreign debt reduce national disposable income and thereby the tax base of the economy.

Therefore, it is important to separate the analysis between external and internal real (demand and supply) shocks. A negative external shock (for instance like the one the Finnish economy experienced in the wake of the Soviet collapse) sparks off a negative cycle where unemployment and foreign debt rise steeply. Or one could point to the actual situation in Portugal, which is running a deficit on her current foreign account of close to 10 per cent of GDP.

The theme of this chapter is to give an explanation of why macroeconomic schools give different answers to whether such vast macroeconomic imbalances can be corrected more effectively inside or outside a monetary union.

A Euro-positive view

Buiter (2000) played a prominent role in the Danish debate about the pros and cons of joining the (un)stable Euro-zone. He was one of the major sources which the Danish Central Bank (Danmarks Nationalbank 2000) and the committee of economic experts (Hoffmeyer *et al.* 2000) drew upon when arguing against the Chairman of the Economic Council (Økonomiske Råd 2000) and in favour of Denmark joining the Euro-zone for economic reasons.

Buiter is an archtypical Euro-positive economist: ‘I [Buiter] do however, maintain the assumption that money is neutral in the long run. For practical purposes, we can take the long run to be two years.’ (Buiter 2000: 15). Given this standpoint, Buiter’s conclusion that the choice between exchange rate systems does not matter much from a *macroeconomic stabilization* point of view is not surprising. However, he acknowledges that within the short-run period (under two years!) monetary policy might have a beneficial effect if the exchange rate is either over- or undervalued due to nominal rigidities.

Having said this he rejects the conventional *optimal currency area (OCA) theory* as a relevant framework for the analysis of a small open economy being a member of a larger monetary union. He has two main arguments for this

rejection:

The first failure of OCA was not to distinguish in a consistent way between short-term nominal rigidities and long-term real rigidities The second fatal flaw in the OCA literature is its failure to allow properly for international mobility of financial capital ... The result of these two flaws, which continue to distort the analysis and discussion of currency union issues, is ... the use of an intellectual apparatus which is out of date, misleading and a dangerous guide to policy.

(Buiter 2000: 15–16)

I favour a ‘financial integration approach to optimal currency areas’, according to which, from a technical economic point of view, all regions or nations linked by unrestricted international mobility of financial capital form an optimal currency area. [In addition] there should be a minimal degree of political integration. [That] is present in the EU.

(Buiter 2000: ii)

This makes him draw the – to him – logical conclusion, that ‘economic arguments for immediate UK membership in EMU, at an appropriate entry rate, are overwhelming’ (Buiter 2000: ii).

To me the distinction between Euro-monetarists and New Keynesians is not important with regard to their views on the EMU. Both schools have a firm belief that over a relatively short period of time, the Phillips Curve is vertical and (un)employment is determined by structural/supply factors such as labour market organisation, the generosity of the welfare state (together with rent control and state subsidies).

Given this view on the functioning of the economy, demand management policies are characterised as being caused by a ‘fine-tuning delusion’ (Buiter 2000: i). Instead, the politicians should let the markets work and any shock will be corrected within two years. The only exception from this general assumption is international financial markets which, according to him, are characterised by: herd behaviour, bandwagon effects, noise trading, carry trading, panic trading, trading by agents caught in liquidity squeezes in other financial markets and myriad manifestations of irrational behaviour which make him conclude that *under a high degree of international financial integration, market-determined exchange rates are primarily a source of shocks and instability*. Having made this assumption Buiter has made an easy case for himself.

Nominal cost and price rigidities – what does Buiter know?

As mentioned above, the assumptions of short-lasting nominal cost (wage) and price rigidities are the theoretical background for the mainstream conclusion that demand shocks have no lasting effect on the economy.

I find Buiter's own words quite illuminating:

There is no deep theory of nominal rigidities worth the name (p. 17). This leaves the economic profession in an uncomfortable position. We believe the numéraire matters, although we cannot explain why. We believe that nominal wage and price rigidities are common and that they matter for real economic performance, but we do not know how to measure these rigidities, nor how stable they are likely to be under the kind of policy regime changes that are under discussion. The answer to this key question therefore is: *we don't know much*.

(Buiter 2000: 18)

When he knows so little, how can he firmly assume that cost and price rigidities only last for two years?

Anyhow, he assumes that if the traded goods sector is large and wages in that sector are linked to an index of import prices in a common currency, then, of course, the exchange rate does not matter for the international competitive position. That comes close to a tautology. But, how can 'the market-determined exchange rates (be) the primary source of shocks and instability'?

Yes, the UK is a small open economy and as such it is vulnerable to lasting exchange rate volatility due to cost rigidities in the trade sector. I come to that now.

5. A Euro-sceptic view – the post-Keynesian perspective

Imagine alternatively that the small open economy does not adjust to a vertical Phillips curve within two years, or even worse (from the Buiter view) it does not necessarily converge to anything like a structural (un)employment equilibrium due to permanent disturbances on the demand (and supply) side – not only caused by nominal rigidities, but also due to lack of effective demand.

Let us look a little closer at the policy conclusion with regard to the choice of exchange rate regime if the adjustment process is sluggish due to (1) more stubborn nominal rigidities especially with regard to downward pressure on nominal wages than assumed by Buiter, and (2) the possibility of a permanent lack of effective demand (e.g. caused by the requirement of a balanced budget constraint as in the Stability Pact).

The point of departure for post-Keynesian economics is an acknowledgement that any macroeconomic adjustment process is long-lasting and has an uncertain outcome with regard to unemployment, international competitiveness and foreign debt. Therefore, the theory of optimal currency areas is in no way obsolete due to international financial market liberalisation. The turning point is still the sluggish adjustment in the domestic labour market and even more pronounced in the international labour market. On the other hand, it is recognised that international capital flows have grown enormously and dominate many financial markets today. That has increased the instability of the global economy in general and more

Table 19.3 Shocks and ‘optimal policies’
(in an imperfect economy)

<i>Shocks:</i> <i>Real</i>	<i>Optimal Policies:</i> <i>Nominal</i>
<i>A. Foreign</i>	
Exchange rate	Exchange rate
+	
Fiscal policy	
<i>B. Domestic</i>	
Fiscal policy	Monetary policy
+	+
Monetary policy	(exchange rate)

specifically those countries which have an underdeveloped financial sector. (Examples are numerous, South America, Mexico, Russia, Southeast Asia, etc.) In this post-Keynesian perspective, macroeconomic shocks can be divided into four different categories which call for different ‘optimal’ policies. On the one hand we have the distinction between foreign and domestic shocks, and on the other hand we have the distinction between real and nominal shocks, as set out in Table 19.3, along with the appropriate, corrective policy tools.

Foreign shocks work through the balance of payments. The real foreign shock may either be a shift in foreign demand or supply changing the current account (and by that the foreign debt) which spills over into the labour market. These twin imbalances arising from external shocks ideally call for two policy instruments to be corrected: exchange rate policy and fiscal policy.

A foreign shock might alternatively be of nominal kind – either caused by imported cost inflation or excessive capital flows. The first kind of shock is most easily corrected through the exchange rate. The second shock is more tricky if international investors are as irrational and myopic as Buiters assumed; then it is difficult to protect the real economy in any case. If investors, as a compromise, were assumed to be semi (ir)rational, then the exchange rate may over- or undershoot for a while, but in a longer perspective it cannot deviate from (or better cannot avoid crossing) a rate that makes the foreign debt grow. But, in the case of a reserve currency like the dollar, yen, Euro and even the pound, the adjustment process will be interrupted by more change in speculative sentiments. The smaller currencies are less volatile and the Scandinavian countries have during the 1990s experienced a supportive development in the exchange rate with regard to macroeconomic stability.

Domestic real shocks work through the effective demand for goods and services and affect the labour market and the balance of payments in opposite directions. In that case fiscal policy is the straightforward instrument to use. The Stability Pact puts a ceiling of 3 per cent of GDP on the size of the public sector deficit to prevent public debt growing too fast. As a recognition of the stabilising effect of fiscal instruments, the Pact allows for short-term excesses if the economy runs into a genuine recession.

The domestic sector could also be hit by a real supply shock, for example if Danish pig production was caught by an export ban due to some animal disease. That would be a blow to agricultural production and thereby to the foreign current account. In that case a combination of exchange rate adjustment and structural support would be a necessary policy, especially as long as Bruxelles is not obliged to give support in such cases.

A *Domestic* nominal shock could be a rise in wage costs above those of trading partners. An actual case is Ireland where wage increases have been well above 5 per cent. The straight textbook recommended policy would be to restrict monetary growth and thereby dampen expectations of further excessive wage increases. In that case unemployment would go up until costs have been adjusted which may take a considerable period of time. When expectations of further excess wage increases have evaporated, the labour market situation could be softened by exchange rate policy.

What Table 19.3 tells is that, if the small open country under consideration does not conform to an OCA and agents are not guided by rational macro-expectations, there is room for discretionary policies when the economy is hit by a shock. Depending on the character of the shock different policies are 'optimal'. Only in the case of a real domestic shock, does it not matter whether the country has an independent exchange rate. One could perhaps argue that in that case an unchangeable exchange rate would make the fiscal policy more effective, if it is not restricted by the criteria expressed in the Stability Pact. The other three cases demonstrated that an active national policy involving the exchange rate and monetary policy would be better to protect the economy against shocks. Pursuing these policies would prevent unemployment and foreign debt rising unduly and thereby avoid a reduction in welfare today and in the future.

6. Summing up the discussion

Macroeconomists disagree because they have different *normative* assumptions about the consequences of macroeconomic adjustment.

It has been illuminating to demonstrate the correlation between the position in the political spectrum and the kind of macroeconomic theory which supports it. The less one cares about unemployment the more easy it is politically to assume that the almost perfect labour market mechanism and rational macro-expectations give a relevant framework for your analysis. If the assumptions turn out to be wrong, then it is not the right-wing voters who will be hit the hardest.

This old fashioned picture of the basic dividing line within macroeconomics has been disturbed in the EMU debate. The right-wing economists have divided on whether the Euro-market economy or the national currency as a symbol of national pride and sovereignty should come first. Similarly, the left wing has become divided into the 'modernists' and the 'anti-nationalists' on one side (New Labour and New Keynesian economists) and on the other side those economist who still think that the national state can take care (Britain) and will take care

(Scandinavia) of agents squeezed by unadjusted market forces ('Old' Labour and post-Keynesian economists).

From an empirical point of view it seems to me that the Euro-positive economists have run into difficulties when they are asked to explain the differences in unemployment during the 1990s in (1) the Euro-zone and (2) the Scandinavian countries and Great Britain – not to mention the unstable and falling exchange rate of the Euro.

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THE FATE OF KEY CURRENCIES: DM, STERLING AND THE EURO

Stephen F. Frowen and Elias Karakitsos

1. Introduction

This chapter aims to examine the prospects of the Euro by drawing on the experience of two key currencies, the Deutsche Mark (DM) and the pound sterling. Difficult and complex as it is to compare the history and destiny of the ancient pound sterling with the young DM, now abandoned after only fifty years in favour of the Euro, it is certainly an interesting and challenging, perhaps even an important, task at the present crucial point of European monetary developments.

Sterling is generally considered as a currency that was in long-term decline for most of the twentieth century. It may be that sterling has bottomed, but it is certainly premature to conclude that it is now on an uptrend. What are the reasons for this long-term decline? If sterling has bottomed and should now really be on an uptrend, what are the reasons? Can the Euro learn from that experience?

On the other side of the spectrum lies the DM. In its fifty-year history, the Deutsche Mark witnessed an increasing success. What are the reasons for its ascendance? If the objective of the Euro is to be a strong currency, can it avoid the mistakes of sterling and adopt the successful model of the DM?

An attempt is made in this chapter to answer some of these questions. It is organized as follows: The second section examines the emergence of the DM, while the third looks into the origins and development of sterling. The importance of the 1948 currency reform in the Federal Republic of Germany for the ascendancy of the DM is analysed in the fourth section. The prospects of the Euro are investigated in the fifth section, while some conclusions are drawn in the final section.

2. The emergence of the Deutsche Mark

The DM was Western Europe's youngest and most successful currency with a lifespan of just half a century. It was replaced by the Euro in January 1999. Created by the Western Allies in collaboration with German monetary experts, the DM took the place of the discredited Reichsmark on 20 June 1948. It is indeed fascinating to follow the DM's ascendancy from a newly created currency to the

world's leading international currency, second only to the US dollar (see Deutsche Bundesbank 1999). One often hears references to the German economic miracle, the German 'Wirtschaftswunder'. But with regard to the DM, it would be more appropriate to speak of a 'Währungswunder'. And yet, the success of the DM, with all its ups and downs, can easily be explained in rational terms.

The cradle of the DM was the Fritz-Erler-Kaserne in Rothwesten near Kassel, where eleven German financial experts met from 21 April to 8 June 1948 under the chairmanship of the US officer Edward Tennenbaum. A leading member of the German team was the monetary economist Otto Pfleiderer, later one of Norbert Kloten's predecessors as President of the Land Central Bank in Baden-Württemberg, Stuttgart. Pfleiderer later described Tennenbaum as the father of the DM. It was on the basis of the so-called Colm-Dodge-Goldsmith Plan that these experts, in collaboration with representatives of the American, British and French military governments, prepared the three 'Laws for the Reorganisation of the German Monetary System' and a whole range of guiding principles.

It is remarkable that as early as ten years after its introduction, the DM had become one of the first European currencies, together with the Swiss franc, to be made fully convertible, not only externally but also for residents. By the 1980s the DM's role as a leading investment and reserve currency had become undisputed. In Europe it subsequently became the key and anchor currency within the European Monetary System (EMS).

It was as a result of a severe quantitative restriction of the DM that, after the emergence of initial economic problems in 1950–1, it remained a very strong currency despite the fact that it started as a paper currency without reserves and certainly without any international reputation. It was no doubt the combination of the wise and farsighted economic policy of Ludwig Erhard, the first post-Currency-Reform Minister of Economics and later Chancellor of the Federal Republic of Germany, plus the constructive policy of West Germany's decentralized independent central banking system, which achieved the amazing rapidity of German economic recovery.

However, this widely accepted judgement certainly had its critics, especially among post-Keynesian economists. Jens Hölscher, for example, stated his views clearly and at least in part convincingly in his highly acclaimed book *Entwicklungsmodell Westdeutschland: Aspekte der Akkumulation in der Geldwirtschaft* (1994) and again in a more recent joint contribution (Hölscher *et al.* 2000). The view expressed is that, thanks to a continuous undervaluation of the DM, West Germany achieved a self-sustaining economic expansion. This expansion was due not only to West Germany's export competitiveness, but also to the monetary consequences of the then prevailing monetary policy. By ruling out devaluation, the acceptability of DM assets was enhanced and permitted a stable evaluation of investment opportunities.

For the central bank one of the main problems was how to sterilize the inflationary effect of the inflow of money resulting from persistent export surpluses and capital inflows. This problem was foremost for the Deutsche Bundesbank

throughout the 1960s, as the DM for most of the time remained undervalued despite the DM revaluation of 1961. Thus, Hölscher, Owen Smith and Pugh (2001) explain the so-called German economic miracle by the undervaluation of the DM, which precariously they present as a deliberate Bundesbank policy.

It would probably be more correct to ascribe the economic miracle as being initially due to the ingenious combination of the well-designed Currency Reform of 1948 and the immediate abolition of all rationing and price controls, which formed the basis for the German economic miracle. This was Ludwig Erhard's decisive contribution to the economic recovery of West Germany. The undervaluation of the DM then ensured a persistently high level of exports and with it high economic growth rates.

Erhard's policy was assisted throughout the 1950s by a restrictive monetary policy aimed principally at controlling consumption. Thus, the export surpluses became the main motor of non-inflationary economic growth. However, the restrictive monetary policy aiming at price stability was bound, under the prevailing fixed exchange rate system which lasted until the breakdown of the Bretton Woods system in 1973, to result in an undervaluation of the DM. It is indeed the latter which at least contributed to the strong economic expansion of West Germany until 1973.

The British government at the time of the creation of the DM in 1948, being dominated more by Keynesian thinking, saw the greatest danger in a possible European-wide inflation and would have preferred West Germany to follow the British example of an adjustment inflation, eliminating suppressed inflation through a gradual increase in the price level. But the magnitude of the German suppressed inflation was such that it would have been virtually impossible to follow the British example. In retrospect, the decision to simply replace the Reichsmark by a new currency adjusted in quantity to the production potential was certainly right.

3. The origin and development of sterling

The history of the English pound is an ancient one. It began with the English penny, of which the earliest were issued about 775. They became the accepted medium of exchange throughout the Saxon kingdoms, with 240 pennies being called one pound. It was not until the twelfth century that the penny was called 'sterling', and sterling silver penny coins soon enjoyed a high reputation throughout the Continent, and 'sterling silver' became the silver of international commerce. In fact, until the eighteenth century the pound was based on a silver standard, to be replaced eventually by the old-style gold standard.

Sterling before the First World War was the major international currency. This was the inevitable result of Britain's mercantile supremacy at the time arising from her position as an imperial power as well as her industrial leadership. Britain, as the initiator of merchandized mass-production, provided the means of capital accumulation necessary for the stimulation of international trade. This in

turn required the creation of essential financial instruments, such as the London Bill of Exchange, and with it a complex system of financial intermediaries. Thus London became the world centre for short- and long-term finance, and the gold standard – played so well by the Bank of England – became an important source of profit and activity for the City of London. It also contributed decisively to maintaining the British balance of payments.

The sterling area, created in the late 1930s, could not have been formed had it not been for the existence of relevant financial institutions and previously developed habits of cooperation. These developments can be subdivided into the period before 1931 and the period from 1931 to 1939. Before 1931, sterling was a widely accepted international currency because of its high reputation as a medium of exchange in international trade and as a means of holding reserves in a readily available form. The breakdown of the gold standard in 1931 then led to the emergence of the sterling exchange standard. Instead of gold as the monetary standard, the international values of other currencies were based on sterling. This system worked reasonably well and lasted until the outbreak of the Second World War in 1939.

The monetary history of the UK and Germany during the Second World War followed similar lines in some respect but differed in others. Thus, both countries suffered from suppressed inflation, but to a different degree, as the UK war effort could be financed by the delivery of goods from the rest of the British Commonwealth and paid for in sterling. This led to a rapid rise in the sterling reserves held in London by the rest of the Commonwealth. The wartime rise in the UK money supply was therefore moderate in comparison to Germany's and suppressed inflation in the UK at the end of the war was manageable and did not require a drastic Currency Reform.

In Germany, monetary expansion had been phenomenal, starting in 1936 when a price stop was introduced that lasted until the introduction of the DM in June 1948. In fact, the predecessor of the DM, the Reichsmark, only functioned reasonably well until 1945 because of the suppression of black market operations by means of severe penalties; towards the end of the war even death sentences were imposed for relatively minor offences. The breakdown in 1945 brought total economic chaos, with the Reichsmark being replaced by a cigarette currency, and barter became the trading method of the day.

The postwar UK monetary history is far from being as consistent as the German one. In fact, stop-go monetary policies caused considerable damage to the smooth functioning of the economy. It was only from the 1970s onwards that attempts were made towards a gradual shift from Keynesian to monetarist policy-making. Grave mistakes were made at times, not least entering the ERM at an overvalued exchange rate and at the worst timing – at the peak of the divergence of the UK and German business cycles. The UK being in recession required a weak currency, while Germany required a strong currency as inflation had not yet been beaten. The German side quite rightly pleaded for a lower exchange rate. Had the UK listened to Hans Tietmeyer at the time who himself (as he wrote to Stephen Frowen on 2 February 2000) repeatedly drew attention to the fact that he

regarded the suggested UK entry rate as overvalued (Tietmeyer 2000), the fiasco on Black Wednesday in September 1992 leading to the UK exit from the ERM could almost certainly have been avoided. As a result the European monetary scene today might well have quite a different look.

Most surprising in the UK was the decision of the newly elected Labour Government granting independence over interest-rate setting to the Bank of England almost immediately after the election victory in May 1997. This step towards central bank independence was generally interpreted by many as a sign of the new government wishing to work towards eventually joining the Euro. The Treasury retaining the right to set an inflation target itself curbed the impact of this move on interest rate determination, however. The latter then has to be achieved through the policy measures of the newly established Monetary Policy Committee of the Bank of England.

4. The German Currency Reform and its aftermath

By 1948 the introduction of a new currency was widely expected in West Germany, and yet when the great day came, it was a surprise. Businesses had been storing goods they had been unwilling to sell for a valueless currency, the Reichsmark. It seemed like a miracle that, on the day of the introduction of the DM, hitherto virtually empty shop windows were filled with goods, the likes of which the public had not seen since prewar days. Shopkeepers were only too anxious to sell against the precious new currency, the DM. The Currency Reform of 1948 also wiped out most of Germany's national debt, which had reached phenomenal proportions. Thus, West Germany had the chance of making an entirely new start, unburdened by colossal war debts.

Britain, the victor, was not in so advantageous a position. True, a currency reform for the UK was not a necessity as it certainly had been for Germany. But more important, Britain had to honour her debt *vis-à-vis* Commonwealth countries. The accumulated sterling balances held by them in London could not simply be written off. The way Britain actually handled the immediate postwar years, burdened with a considerable national debt and huge overseas sterling balances, and being faced with the task of eliminating the wartime suppressed inflation, is truly remarkable. The ups and downs of the UK economy and the damaging stop-go policies in later years by successive UK governments are a different story.

West Germany had another advantage in the form of an independent central banking system, created in conjunction with the DM by the Allies at the time of the 1948 Currency Reform. That was the Bank deutscher Länder, the forerunner of the Deutsche Bundesbank, which itself came into being by way of the Act of the Deutsche Bundesbank of 1957. Thus, from day one of the introduction of the DM, German monetary policy was conducted consistently by a central bank totally independent of political influences and aiming solely at maintaining the stability of the DM. In fact, the 1957 Bundesbank Law imposed this objective as the principal mandate upon the Bundesbank.

The Bundesbank's view and conviction that monetary stability *in the long run* is a vital prerequisite to achieve sustained growth and a high level of employment has been given strong support by the success of its policies in this respect throughout the greater part of the postwar period (Tietmeyer 1993). Yet, the vital question now is whether applying the same medicine can cure the present Europe-wide unemployment, which is of a structural nature. The situation of West Germany during earlier periods as the main supplier of the rest of Europe and the world at large, especially with capital and durable consumer goods, and helped by her competitive advantage, was quite different.

During the early postwar period it seemed unlikely that the DM would within a short time gain the status of one of the world's leading international and reserve currencies. And yet when it did, the chief mandate of the Bundesbank remained directed towards maintaining internal price stability with little concession to either the achievement *in the short run* of alternative macroeconomic objectives such as full employment and growth or to the external responsibilities subsequently arising from the DM position as an international trading and reserve currency. Her EU partners expected this of Germany. In all fairness it must be admitted that the Bundesbank did at times of crises frequently adopt a more pragmatic approach even at the expense of not meeting its money supply target.

The crisis of the European Exchange Rate Mechanism (ERM) in September 1992 clearly demonstrated some of the inherent conflicts and the Bundesbank came under strong criticisms by her EU partners, in particular the UK, for its behaviour. Both John Major and Norman Lamont put the blame for the UK having to suspend ERM membership on the Bundesbank and especially on the then Bundesbank President Helmut Schlesinger (Major 1999; Lamont 1999). The main points of accusation were the Bundesbank's refusal to reduce interest rates and 'unhelpful' remarks by Helmut Schlesinger and other members of the Bundesbank's Central Bank Council at the height of the ERM crisis. Even the then Deputy President and later President of the Bundesbank, Hans Tietmeyer, with all his political expertise was attacked by John Major for his alleged remark at the time that lower German interest rates 'would send the wrong signal', a remark that was taken as evidence that the Bundesbank 'was not too concerned about the wider implications of high German rates' (Major 1999: 337). In answer to this accusation Professor Tietmeyer pointed out in an attachment to a letter to Stephen Frowen that he is at loss to understand what the remark by John Major refers to and that he himself has no recollection whatsoever of having made a remark in public expressing doubt about the position of sterling. He continued: 'My discussions have taken place exclusively in the *forum internum* of the Monetary Commission or in Basle respectively' (Tietmeyer 2000).¹ These comments were forwarded to John Major by Stephen Frowen hoping for an explanation, but there was no reply – not even the courtesy of an acknowledgement.

Until the late 1960s sterling still counted, together with the US dollar, as the world's major international currency for private transactions, as a medium of exchange, as a unit of account and as a store of value, with the DM, the Swiss

and French francs and the yen playing a minor role. Official transactions were largely dominated by the US dollar, gold, the IMF reserve positions and SDR's, with sterling taking second place. However, West Germany, having emerged as a major capital exporter arising from her impressive trade surpluses, soon saw the DM being placed ahead of sterling as an international currency for both private and official transactions. While not replacing the supremacy of the dollar, the DM now ranked second only to the dollar.

It is obvious that the way the Bundesbank has been able to use her independence in conducting monetary policy, achieving her aim of relative price stability and an average inflation rate well below those of competing countries, including the UK, has much to do with Germany's external surpluses and the external reputation of the DM. After the breakdown of the Bretton Woods System in 1973, the Bundesbank was able to deal skilfully with the ever-present danger of imported inflation. The oil price shocks of the 1970s did not for long interrupt the achievement of visible trade surpluses, which again rose persistently and quite dramatically until the German reunification of 1990. But even this greater shock to the West German economy did not wipe out the trade surpluses for long – even taking the reunited Germany as a whole. They again began to rise almost continuously from a low in 1991 to new post-reunification record levels in the late 1990s. Nor did the reunification weaken the DM's position as an international investment and reserve currency (see König and Willeke 1998). The foremost external position of the DM was maintained thanks to the Bundesbank's credible and consistent policy towards monetary stability.

Since the end of the Bretton Woods system in 1973, the DM had become the world's second most important reserve currency – after the US dollar, accounting for 15.3 per cent of total world reserves. In fact, the international role of the DM started with its role as a reserve currency. By the beginning of the 1970s, the DM had replaced the pound sterling in that capacity. This was long before the DM became the anchor currency in the ERM and a leading investment currency.

Not surprisingly, the industrialized countries were the major holders of foreign exchange reserves in DM, holding just under three-fifths of the total, while oil exporting countries' DM reserves declined from a high of 30 per cent in 1970 to only 2.5 per cent in 1994; non-oil developing countries held their share of DM reserves fairly stable, fluctuating between 25 and 30 per cent.

5. The role of the Euro

It is too soon to predict the future of the Euro, which has now replaced the DM. There are many difficulties ahead of the Euro-zone, with some member countries still suffering from a lack of sustained convergence having been admitted initially against the implied advice of the Bundesbank. Yet, once the political decision had been taken, every effort should now concentrate on making the Euro as much a success as is possible under present conditions. The alternative would be utter chaos.

The European Central Bank (ECB) has been modeled on the Deutsche Bundesbank. Thus, the goal of price stability has by necessity and in accordance with the Maastricht Treaty been given priority. Although this should help the Euro to gain credibility, it would be too much to hope that the Bundesbank's credibility, worked-for hard and enjoyed for so long, will simply be transferred to the ECB. However, the approach to the ECB's monetary policy may have to be more pragmatic than the one the Bundesbank used to pursue.

Thus, a crucial element of the ECB's strategy consists of a 'reference value' for money growth – the first pillar of its two-pillar monetary policy strategy – rather than a Bundesbank type of monetary target. The first pillar is meant to provide a vital benchmark for the analysis of risks to price stability arising from monetary developments. The ECB has also attempted to be more aware of a wide range of indicators other than money in its second pillar. In the words of Otmar Issing, Member of the Executive Board and Chief Economist of the ECB: "Our strategy ... is the appropriate one for us. It has served us very well in taking the right monetary policy decisions and more and more people are starting to recognise this" (see Frowen, 2001, p. 27). With at present twelve member states and probably more to come, the Euro-zone requires a flexible approach and the ECB might well run into difficulties if it tried to follow the more rigid Bundesbank type of monetary policy. Furthermore, to achieve a key currency status, the ECB will also have to assist the Euro-zone in achieving a sustainable external creditor position through current account surpluses.

Alternatives for the Euro are often stated as either a strong Euro and more unemployment, or a weaker Euro as a way to, if not full employment, at least high employment levels. Thus, the ECB's policy makers with around 35 million unemployed in the Euro-zone indeed face considerable ethical issues.

There is at least a danger that the ECB may not in the end prove to be as independent as the Deutsche Bundesbank because of mounting political pressures, and therefore there might at some stage be the temptation to give in to the alternative of a weaker Euro. However, the current phase of monetary tightening since the end of 1999 makes such accusations unfounded.

In any case, since its introduction in January 1999 the Euro's external performance has been unimpressive and quite worrying falling heavily below parity with respect to the US dollar despite the rate hikes by the ECB. The latter's generally skilful handling of monetary policy and even interventions in favour of the Euro involving the ECB and G-7 countries did achieve a minor alas temporary strengthening. Global financial flows being guided by the strong growth differential in favour of the US are said to have played a major part in the downward trend. But the differential has narrowed since the second half of 1999 as growth in the Euro-zone has gathered pace. Yet the Euro has weakened further. Another possible reason put forward for the Euro weakness is assumed to consist of foreign portfolio investment in the US. But the US bond market collapsed in 1999 and still the US dollar gained strength. In any case, such explanations represent *ex post* correlations rather than *ex ante* causation and therefore have little

predictive power. More revealing would be a strategic approach providing a framework in which the value of the currency is the outcome of equilibrium within a policy game (see Frowen and Karakitsos 2000). To know what drives the Euro, more knowledge of the way expectations are formed will be required. And one way this could be achieved is on the basis of an explicit model of the game pursued by policy makers, that is a strategic approach. The weakness of the Euro reflects the absolute strength of the US economy rather than the differential with Europe. The US still needs a strong currency to contain the inflationary pressures arising from the oil price surge. The rate hikes by the ECB are counterproductive as they weaken Euro-zone growth. However, the surge in the price of oil is transient rather than permanent. If the price of oil were to decline towards \$20 per barrel and the US economy enjoyed a second soft landing, the dollar would weaken, as inflation would subside. The weak dollar and slower growth would allow for a gradual reduction of the huge US current account deficit that amounts to more than 4 per cent of GDP.

With so many uncertain exogenous factors of an economic and political nature, it is impossible to forecast the exact future of the Euro, except that it is unlikely ever to be allowed to collapse. With the political determination of the Eurozone's member countries and the expertise of the ECB, the chances are that the at present heavily undervalued Euro will gain sufficient strength in the longer run to make it a currency able to compete successfully with the US dollar. The opinion of some eurosceptics that the autonomy over incomes policy and especially over fiscal and wage policies will counter any strong price-level-centred monetary policy stabilization should not be overestimated (Riese 2000). Martin Donnelly, the Deputy Head of the European Secretariat of the UK Cabinet Office, raised the vital question: 'Does the underlying political and moral commitment to what ... [the Maastricht] Treaty calls "a broader and deeper community" exist today? If it does, then EMU is right and will succeed. If it does not, then EMU is likely to falter with serious consequences for the future of the wider European construction'. (Donnelly 2000: 224). It is these questions, among others, which have induced Victoria Chick and others to stand in opposition to the UK joining the single European currency. While sharing some of Victoria Chick's views, it is our belief that ultimately only a United Europe will be able to fully achieve its political, economic and cultural aims, and that to realize a United Europe the European Economic and Monetary Union with its single currency will act as an effective catalyst.

6. Conclusions

Two factors have contributed to the long-term decline of sterling in the post Second World War era. First, the accumulation of sterling reserves by Commonwealth countries during the war period. Once these countries started to liquidate their reserves, in view of the ascendancy of the dollar and the debt burden of

the UK, the pound sterling went into a long-term decline. This problem could have been at least mitigated, if not resolved, had the policy makers adopted policies to control inflation rather than aiming at full employment. Hence, the second reason for the long-term decline of sterling in the post-war era was the objective function of the policy makers with their priority on jobs and growth instead of inflation. The stop-go policies in the 1950s and 1960s aggravated the problem.

In the post Second World War era Germany started with the same initial conditions as the UK, namely with an excess supply of money and a huge domestic and external debt. The West German success is due to an alternative handling by the policy makers of these two factors. First, the West German currency reform of 1948 introduced an entirely new currency, the Deutsche Mark, drastically reduced in quantity compared with the previous Reichsmark, and virtually wiped out the public debt. Second, the currency reform also enabled West Germany to lift price and other controls much sooner than the UK, accompanied by price stabilization policies consistently pursued by her newly established independent central banking system. Due to the then prevailing fixed exchange rate regime, combined with persistent balance of trade surpluses from 1951 onwards, the DM exchange rate was subjected to a continuous upward pressure and the DM tended to be undervalued for much of the time until the breakdown of the Bretton Woods system in 1973.

Thus it transpires from the above that price stability proved a prerequisite for West Germany's strong currency. Initial conditions do matter. But in the case of a legacy of debt and excess supply of money, price stability becomes even more important.

The hypothesis that sterling has bottomed out and that it may be on a long-term upward trend arises from the change in the objective function of the UK policy makers. The priority of the now independent Bank of England is the control of inflation, namely the adoption of the Bundesbank model. Hence, the case that sterling may now be on a long-term upward trend might be more than just a hypothesis, although the recent strength of sterling has been partly a reflection of the weakness of the Euro.

The Euro did start from unfavourable initial conditions. The adoption of anti-inflation policies by the ECB is reinforcing the view that the currency would be strong in the long run. However, in the short run the value of the currency depends on the game structure of the two policy makers, namely the Fed and the ECB (see Frowen and Karakitsos 2000). The Euro is currently weak because the US is a leader in a Stackelberg game, Europe is more vulnerable to supply and demand shocks (beggar-thy-neighbour policies) and because the ECB is trying to defend the currency by hiking rates. This reduces growth and the Euro weakens instead of strengthening. This is not always true, but it is the case when both economies are overheated, that is when they are growing faster than potential output.

Note

- 1 For a critical review of the events of Black Wednesday in September 1992 justifying both Helmut Schlesinger and the Bundesbank, see Frowen (2000a,b); for comments on the first paper, see Lamont (2000).

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