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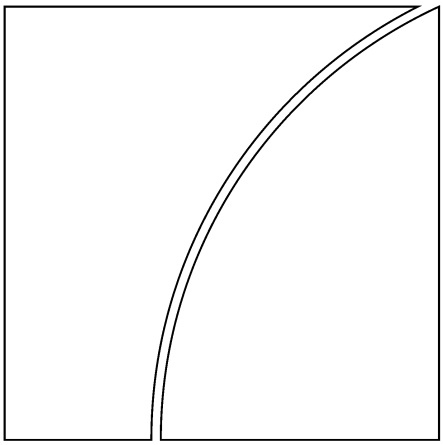

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The price level, relative prices and economic stability: aspects of the interwar debate

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Abstract

Recent financial instability has called into question the sufficiency of low inflation as a goal for monetary policy. This paper discusses interwar literature bearing on this question. It begins with theories of the cycle based on the quantity theory, and their policy prescription of price stability supported by lender of last resort activities in the event of crises, arguing that their neglect of fluctuations in investment was a weakness. Other approaches are then taken up, particularly Austrian theory, which stressed the banking system's capacity to generate relative price distortions and forced saving. This theory was discredited by its association with nihilistic policy prescriptions during the Great Depression. Nevertheless, its core insights were worthwhile, and also played an important part in Robertson's more eclectic account of the cycle. The latter, however, yielded activist policy prescriptions of a sort that were discredited in the postwar period. Whether these now need re-examination, or whether a low-inflation regime, in which the authorities stand ready to resort to vigorous monetary expansion in the aftermath of asset market problems, is adequate to maintain economic stability is still an open question.

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Foreword

On 28-29 March 2003, the BIS held a conference on “Monetary stability, financial stability and the business cycle”. This event brought together central bankers, academics and market participants to exchange views on this issue (see the conference programme and list of participants in this document). This paper was presented at the conference. Also included in this publication are the comments by the discussants. The views expressed are those of the author(s) and not those of the BIS. The opening speech at the conference by the BIS General Manager and the prepared remarks of the four participants on the policy panel are being published in a single volume in the BIS Papers series.

Conference on
"Monetary stability,financial stability and the business cycle"
28-29 March 2003, Basel

Conference programme

Opening keynote remarks

Andrew Crockett (Bank for International Settlements)

Session I: The lessons from history

Chair: William White (Bank for International Settlements)

Paper 1: The price level, relative prices and economic stability: aspects of the interwar debate

Author: David Laidler (University of Western Ontario)

Discussants: Olivier Blanchard (Massachusetts Institute of Technology)
Nobuhiro Kiyotaki (London School of Economics)

Paper 2: The Great Depression as a credit boom gone wrong

Authors: Barry Eichengreen (University of California, Berkeley)
Kris Mitchener (Santa Clara University)

Discussants: Michael Bordo (Rutgers University)
Charles Goodhart (London School of Economics)

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Chair: John Moore (London School of Economics)

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Authors: Jeffery Amato (Bank for International Settlements)
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Discussants: Marvin Goodfriend (Federal Reserve Bank of Richmond)
Lars Svensson (Princeton University)

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Simon Gilchrist (Boston University)
Fabio Natalucci (Board of Governors of the Federal Reserve System)

Discussants: Philippe Bacchetta (Study Center Gerzensee)
Philip Lowe (Reserve Bank of Australia)

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Chair: Charles Freedman (Bank of Canada)

Paper 5: Asset prices, financial imbalances and monetary policy: are inflation targets enough?

Author: Charles Bean (Bank of England)

Discussants: Ignazio Visco (Bank of Italy)
Sushil Wadhwani (Wadhwani Asset Management LLP)

Paper 6: Financial strains and the zero lower bound: the Japanese experience

Author: Mitsuhiro Fukao (Keio University)

Discussants: Ignazio Angeloni (European Central Bank)
Jürgen von Hagen (University of Bonn)

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Chair: Andrew Crockett (Bank for International Settlements)

Panellists: Roger Ferguson (Board of Governors of the Federal Reserve System)
Otmar Issing (European Central Bank)
Michael Mussa (Institute for International Economics)
Yutaka Yamaguchi (formerly Bank of Japan)

Conference on
"Monetary stability,financial stability and the business cycle"
28-29 March 2003, Basel

Participants in the conference

Ignazio Angeloni	European Central Bank
Philippe Bacchetta	Study Center Gerzensee
Armando Baqueiro Cãrdenas	Bank of Mexico
Charles Bean	Bank of England
Olivier J Blanchard	Massachusetts Institute of Technology
Michael Bordo	Rutgers University
Barry Eichengreen	University of California, Berkeley
Charles Freedman	Bank of Canada
Mitsuhiro Fukao	Keio University
Simon Gilchrist	Boston University
Marvin Goodfriend	Federal Reserve Bank of Richmond
Charles Goodhart	London School of Economics
Otmar Issing	European Central Bank
Nigel Jenkinson	Bank of England
Thomas J Jordan	Swiss National Bank
Nobuhiro Kiyotaki	London School of Economics
David E Laidler	University of Western Ontario
Flemming Larsen	International Monetary Fund
Philip Lowe	Reserve Bank of Australia
Kris J Mitchener	Santa Clara University
John Moore	London School of Economics
Michael Mussa	Institute for International Economics
Fabio M Natalucci	Board of Governors of the Federal Reserve System
Peter Praet	National Bank of Belgium

Jan F Qvigstad	Central Bank of Norway
Hermann Remsperger	Deutsche Bundesbank
Hyun Song Shin	London School of Economics
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Lars E O Svensson	Princeton University
Giovanni Toniolo	University of Rome Tor Vergata
José Viñals	Bank of Spain
Ignazio Visco	Bank of Italy
Jürgen von Hagen	University of Bonn
Sushil B Wadhwani	Wadhwani Asset Management LLP
Charles Wyplosz	Graduate Institute of International Studies
Yutaka Yamaguchi	formerly Bank of Japan
Gang Yi	The People's Bank of China
Andrew Crockett André Icard William White Renato Filosa Claudio Borio Gabriele Galati Jeffery Amato William English Andrew Filardo Ben Fung (Representative Office for Asia and the Pacific)	Bank for International Settlements

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Low inflation and economic stability[1]

The 1990s saw low and stable inflation in many countries. It turned out, however, that, in and of itself, this was not a sufficient condition for financial stability more broadly defined, nor for stability in the real economy. To be sure, the most dramatic problems, those experienced in Asia during 1997-98 or Argentina in 2001, arose in economies where low inflation had been held in place by exchange rate pegs – more or less formal, depending upon the specific economy – that proved unsustainable, and this was hardly a novel occurrence. Furthermore, asset market problems and subsequent slowdowns in real activity have frequently been associated with contractionary monetary policy designed to bring general inflationary pressures, themselves the visible consequences of earlier monetary overexpansion, under control. For an example here, we need look no further than the late 1980s, when general economic expansion and incipient upward pressure on inflation were accompanied in a number of countries by bubbles in real estate markets, whose subsequent collapse was one of the most visible features of the recession with which that decade ended.

Policy issues, now and then

But even at the end of the 1980s, real estate bubbles occurred in some economies without being accompanied by any obvious general inflationary pressures. The Nordic countries provide a notable example here. Furthermore, the high-tech bubble that shocked North American and European markets in the late 1990s occurred in markets where monetary policy was aimed at domestic goals and inflation remained low. It also had consequences well beyond financial markets, involving as it did considerable overinvestment in computing and communications equipment of all sorts. And in its aftermath, there are fears in a number of countries that bubbles are now developing in markets for residential real estate, not least in the United Kingdom.

This experience at the very least raises questions about the adequacy of low inflation as a sufficient goal for monetary policy, whether pursued in the context of formal inflation targets, which, beginning with New Zealand and Canada, were adopted by an increasing number of countries in the 1990s, or less formally, as in the case of Japan in the 1980s or the United States in the 1990s. Perhaps economic performance might be better if, instead of focusing only on the behaviour of the general price level, monetary policy also pays attention to countering rapid increases in asset prices, even those occurring while, overall, inflation remains well under control.

Questions bearing on this issue were much analysed by economists before the Keynesian revolution, and in this essay I shall discuss some highlights of the literature that their debates generated.[2] In those years, a body of theory dealing with fluctuations that took the influence of monetary factors on the general price level as its starting point vied with others that stressed monetary effects on relative prices, and on asset prices in particular, and yet others that downplayed the role of the monetary system in generating the cycle. These competing views yielded sometimes contradictory positions on the sufficiency of price level stability in particular, and even monetary measures in general, as a means of avoiding fluctuations. There are, nevertheless, certain important differences between the policy problems and approaches of the inter-war years and those which dominate present-day debates, and these have influenced my choice of topics to be discussed below.

To begin with, policies aimed at domestic goals, such as low inflation, or economic stability more generally, are nowadays self-consciously implemented against a background of exchange rate flexibility. In the interwar years, matters were not so clear cut, and international monetary considerations were never too far in the background. But interwar macroeconomic theory nevertheless

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[1] Paper presented on March 28 2003 at a conference on “Monetary stability, financial stability and the business cycle” at the Bank for International Settlements”, Basel, Switzerland. I am grateful to Bill White and Claudio Borio for suggesting that I write this paper, to them, as well as Jeff Amato, Joe Bisignano, Andy Filardo and Gabriele Galati, for many interesting discussions of its contents, and to the BIS for providing the congenial environment where much preliminary work on it was done. Claudio Borio also subsequently provided extremely helpful comments on a first complete draft of this essay, as did Roger Garrison and Roger Sandilands. This version of the paper has benefited from discussions with Olivier Blanchard and Nobuhiro Kiyotaki, who acted a formal discussants at the conference, and also with Barry Eichengreen. The views expressed are those of the author and not those of the BIS.

[2] In what follows, I draw on my own earlier work on this material, in particular Laidler (1999).

did have a good deal to say that can be applied to illuminating the policy choices that nowadays face monetary authorities that have already opted to pursue domestic goals. I shall emphasise these aspects of the literature in what follows. As a corollary, I shall have relatively little to say about how it treated international monetary arrangements, notably the gold standard, which were matters of central policy importance in many countries in the 1920s and 1930s, and therefore were extensively discussed.[3]

Furthermore, present-day economics largely takes it for granted that activity in the real economy is well coordinated by market mechanisms, and as a result discussions tend to focus on instability within the financial system. The economic theory of the interwar years, on the other hand, took very seriously the possibility that the real economy was subject to chronic coordination failures, particularly as far as the allocation of resources over time was concerned. It therefore paid considerable attention to fluctuations in investment and imbalances in the capital stock, and by and large treated financial instability, not as a problem in and of itself, but as a reflection of these deeper phenomena. In this case, I have chosen to follow the emphasis of these earlier discussions, because I believe that there are perhaps a few valuable insights into modern policy problems that the later literature has been inclined to neglect.

An outline of the paper

This paper begins with an account of theories of the cycle and stabilisation policy that started from the quantity theory of money. These are the direct intellectual ancestors of the modern view that monetary policy should be aimed at maintaining low and stable inflation. Their exponents argued that stabilisation of the general price level was not only the right goal for monetary policy but one whose successful pursuit would, in and of itself, eliminate, or at least markedly reduce, the likelihood of real instability. But some of these exponents, particularly those who favoured discretionary rather than rule-bound monetary policy, were also strong advocates of the monetary authorities making rapid and vigorous use of their lender of last resort powers should things nevertheless go wrong, as of course they did with a vengeance in 1929.

Accounting for the stylised facts about fluctuations in investment has always been an awkward corner for traditional monetary accounts of the cycle. In what follows, therefore, some brief comments on attempts by Cambridge economists to extend the traditional monetary theory of the cycle to deal with these facts will precede discussion of an alternative real tradition in cycle theory, Marxist in origin, that faces them squarely, and indeed takes their explanation as being the central goal of cycle theory. Many interwar cycle theorists were acutely aware of the challenge that this Marxist tradition posed, and a selection of their responses to it will then be examined.

Here, I shall begin with Austrian theory, which self-consciously defended the neoclassical vision of a stable market economy against the socialist critique. This theory stressed the role of the monetary system in creating, not fluctuations in the general price level, but distortions in relative prices that led directly to destabilising imbalances in the structure of the capital stock. It will be argued that, though this specific theory's logical structure was deeply flawed, the phenomenon to which it drew attention, *forced saving*, has considerable appeal as one possible means of explaining how asset market imbalances can arise against the background of stable prices. However, as will also be shown, when Dennis Robertson incorporated forced saving into a more eclectic framework than the neoclassical general equilibrium approach adopted by the Austrians, his overall analysis led him to join other Cambridge economists in recommending exactly the kind of policy regime whose collapse in the 1970s and 1980s provides the background for current preoccupations with confining monetary policy to the pursuit of low and stable inflation, and denying any significant stabilising role to fiscal policy.

In conclusion, it will be suggested that experience in the aftermath of the recent high-tech bubble might well provide evidence that will help us to decide whether we need to re-examine recommendations such as those of Robertson, or whether the quantity theory-inspired advocates of discretionary monetary policy were right that a speedy deployment of the central bank's powers to

[3] Bernard and Bisignano (2002) provide an account of interwar debates that is in many respects complementary to this one, inasmuch as it pays particular attention to international monetary factors as sources of domestic policy problems, both then and more recently.

create liquidity is adequate to cope with the consequences of crises that arise under monetary policy regimes that are aimed at low and stable inflation.

The quantity theory tradition in cycle theory

The quantity theory of money had its modern origins in the great gold inflation that marked the 16th and 17th centuries. It was, and remains, in the first instance a theory about the relationship between the quantity of money and the price level, which in its most basic formulation has it that causation runs from money to prices, rather than in the opposite direction, and that the price level will move in proportion to money, provided that velocity and real output are assumed to be constant. Since the first half of the 19th century, however, a particular extension of the quantity theory tradition has emphasised the potential for interactions between the supply of and demand for money to create systematic fluctuations in the price level, and/or the aggregate demand for goods and services, which in turn seem to be central features of what was once called the *credit cycle*, but which is nowadays more usually referred to as the *business cycle*.

This approach lays particular stress on recursive patterns of two-way causation that link the price level and the quantity of money within the cycle, a feature which distinguishes it sharply from the quantity theory itself, and which has prompted some commentators to refer to it as *quantity theoretic*, rather than to characterise it as a straightforward application of the quantity theory. Even though this approach to the cycle has evolved over time, it displays considerable continuity, from its first appearances in early 19th century debates about the workings of the British monetary system, right down to the *monetarism* of the 1960s and 1970s which provided many of the intellectual foundations for contemporary inflation targeting regimes.

The 19th century background

Money credit and commerce (Marshall (1923)) was a work of its author's old age, and was by no means the most up-to-date work on monetary issues then available, but it would still have been of more than antiquarian interest to its intended readers. There is no better evidence of the essential continuity of earlier work on the quantity theoretic approach to the cycle than Marshall's exposition of it. He begins by quoting Samuel Jones Loyd's (later Lord Overstone) 1837 characterisation of the cycle: "It has been well said that 'the state of trade revolves apparently in an established cycle. First we find it in a state of quiescence – next, improvement – growing confidence – prosperity – excitement – overtrading – convulsion – pressure – stagnation – distress – ending again in quiescence'" (p 243) and soon proceeds to an account of "*The ordinary course of a fluctuation in commercial credit*" that relies heavily on a long passage transcribed from Marshall and Marshall (1879, pp 154-6), which in turn is clearly related to a similar account given by John Stuart Mill in his *Principles of political economy* (1848, 1871, pp 542-3).

This particular account of the cycle is typical of the literature it represents. It is vague about just what kind of disturbance might initially shift the economy from a state of quiescence to improvement, but it emphasises that, once begun, economic expansion will be amplified by the recursive interactions of expanding money and credit, rising prices and the profits made by borrowers. This expansion in turn will go on until "trade is in a dangerous condition" (Marshall (1923), p 250) and distrust that creates incentives for lenders to tighten credit begins to set in. Given the precarious state of the market after a long bout of speculation, such tightening is sufficient to persuade some speculators to begin selling their holdings of goods and set in motion a collapse of prices.[4] Thereafter, "As credit by growing makes itself grow, so when distrust has taken the place of confidence, failure and panic breed panic and failure"(p 250). The essential features of the upswing and downswing of the cycle according to this monetary approach were, then, rising and falling prices driven by cumulative expansions and contractions of credit and bank money. Furthermore, the development of "overtrading" – what we would now call speculative bubbles – was seen as an integral feature of the final stages of the

[4] In 19th century accounts of the cycle, the role of an adverse balance of payments in draining gold from the banking system was often accorded an important role in precipitating a downturn. This matter is mentioned by neither Mill nor Marshall in the passages referred to here, though both pay considerable attention to it elsewhere in their writings.

upswing, while its collapse – the bursting of the bubbles in question – was a key characteristic of the onset of the downswing.[5]

This vision led naturally to the view that policies capable of stabilising the cycle would also eliminate speculative bubbles, not to mention their real consequences. From the very beginning, the quantity theoretic literature contained an important strand that advocated legally enforced monetary rules of one sort or another as a means of ensuring stability. Even by the 1830s, when Overstone wrote the description quoted by Marshall, it had become clear from experience that the mere legal requirement that the liabilities of the banking system, or more specifically of the Bank of England, be convertible on demand into gold was not a sufficient rule to eliminate cycles and their accompanying crises, and the Bank Charter Act of 1844, of which Overstone was a major architect, attempted to solve this problem by tightening the legal restrictions under which the Bank of England operated. The Act established the Bank's note-issuing department as what we would now call a currency board, based on gold, in the expectation that this would eliminate the monetary system's capacity to generate the fluctuations in money and credit that were necessary for the cycle to persist as a regular feature of economic life. This rule too proved inadequate, however, as its Banking School opponents had predicted, and as subsequent crises in 1847, 1853 and 1865 soon demonstrated, because its framers had paid insufficient attention to the role of bank deposits, including Bank of England deposits, in the monetary system.

By the 1870s, therefore, it was widely taken for granted that short-run discretionary policy (though always conducted against the background of gold convertibility) was required to cope with problems created by cycles. The policy envisaged, however, was not of the countercyclical type that later came to be associated with the exercise of such discretion. Rather, the *British monetary orthodoxy*, encapsulated in Walter Bagehot's (1873) precepts for central banking, recommended no more than that the Bank of England should always be ready to act as a lender of last resort to any and all solvent institutions whose survival was threatened by the contagious crises which had marked the upper turning point of cycles from 1825 onwards.[6] As it came to be adopted in the last quarter of the 19th century, this orthodoxy was a considerable success in its own terms. Gold convertibility was never in question, and though financial crises still occurred from time to time, notably that created by the near failure of Baring Brothers in 1890, and fraud aside, bank failures were a thing of the past in Britain from the 1870s onwards. This British experience was well known to observers in the United States, where crises involving bank failures were a regular feature of the financial landscape until 1907, and provided an important impetus to the founding of the Federal Reserve System.[7]

Price stability as a policy goal

As I have argued in greater detail in Laidler (1991, 2002), even as Bagehot's policy orthodoxy was becoming established in central bank practice, developments in economic theory that would ultimately render it obsolete were already getting under way. Marshall himself presented a key refinement of the standard monetary account of the cycle in 1887. He linked the expansion and contraction of money and credit to rising and falling prices by noting that nominal interest rates failed fully to adjust to inflation and deflation, and, like Marshall and Marshall (1879), he attributed variations in output and employment to countercyclical movements in real wages that in turn were the result of the interaction of sticky nominal money wages with more flexible output prices. Evidently, both of these sources of trouble could be avoided either by ensuring price level stability or by linking debt and wage contracts to a suitable price index. Marshall in fact recommended the latter, but this proposal got nowhere in

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[5] I know of no better evidence of this than a cartoon, probably drawn about 1857, of "the Overstone Cycle", reproduced in O'Brien (1971). "Excitement" is depicted with bustle around a building bearing the sign of the "South Pole Warming Company", and "Convulsion" with an exploding "Royal Bubble Bank". I am grateful to Denis O'Brien for advice about the date of this cartoon, and to Walter Eltis for first drawing my attention to the significance of its content.

[6] The italicised phrase is, of course, taken from the title of Frank Fetter's still indispensable 1964 history of British monetary economics over the years 1797-1875.

[7] For an influential contemporary account of financial crises in the United States, and the effect that the absence of a lender of last resort had on their course, see Sprague (1910).

practice.[8] In the longer run, however, his 1887 work remained important because it provided arguments implying that price level stabilisation was the key to achieving more general financial and economic stability.

Even before the outbreak of World War I, Irving Fisher, who was well aware of Marshall's contribution, began to advocate his "compensated dollar" scheme as a means of automatically stabilising prices, and to campaign for legislation that would subject the newly founded Federal Reserve System to a legislated price stability rule. Since the cycle was, in Fisher's eyes, largely a "dance of the dollar", he confidently expected that the enactment and observance of such a rule would eliminate it.[9] This campaign continued with varying degrees of intensity, though no legislative success, throughout the 1920s, and Henry Simons preserved its basic message in a now classic 1936 paper, which would be much cited in postwar monetarist literature.

In the interwar years, however, legislated monetary policy rules were a minority taste, as indeed they are now. Even by the mid-1920s, European economies were already facing what seemed to be unprecedented policy problems of apparently secular stagnation and mass unemployment created by botched attempts to restore the gold standard after the end of World War I, and discussions of countercyclical monetary policy seemed barely relevant in this context. Even in the United States, where before 1929 the debate was dominated by more traditional questions, discretionary stabilisation policy, "credit control" as it was usually called, attracted more support than did legislated rules, while advocates of both found themselves in an ongoing debate with exponents of Banking School ideas inherited from 19th century Britain.

Hawtrey on 1928-32

The case for discretionary policy aimed at stabilising prices, and hence the cycle, has roots in the late 19th century literature, where an early and eloquent case for using discount rate policy for this purpose was made by the Swedish economist Knut Wicksell as early as 1898. As Thomas Humphrey (2002) has recently reminded us, Wicksell's positive analysis of inflation was taken up (without acknowledgement) by Gustav Cassel (eg 1928). However, Wicksell derived his proposals from a theory of secular inflation, not of the cycle, and Cassel's variation on his theme was deployed in the course of, and probably in support of, one of Fisher's campaigns for subjecting the Federal Reserve System to a price stability rule.[10] In the 1920s, the best known exponent of the quantity theoretic approach to cycle theory, and of the discretionary stabilisation policy that it seemed to support, was Ralph Hawtrey, an official of the UK Treasury. His works were widely read in the United States, and greatly admired too, not least by Allyn Young of Harvard, probably the most influential teacher of monetary economics in the country at that time.[11]

In Hawtrey's view, the cycle resulted from what he called the "inherent instability of credit" which arose from essentially the same interest rate mechanism that Marshall had identified in 1887, although he laid more stress on the role played in that mechanism by inflation expectations in his first (1913) exposition of it than in subsequent accounts. To this he added, first of all, an analysis of the endogenous cyclical behaviour of what we would now call the public's currency deposit ratio that ensured that an internal drain (inflow) of cash from (into) the banks' reserves that came late in the upswing (downswing) would curtail (enhance) their willingness to lend, hence precipitating the cycle's turning points. And second, he proposed a different role for wage stickiness in the cycle. Where Marshall had sticky wages interacting with flexible prices to produce perverse fluctuations in real

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[8] It seems to have been Jevons (1875) who first suggested indexation, but only for credit market contracts. Marshall extended the proposal to the labour market.

[9] The "compensated dollar" involved varying the gold content of the dollar to offset changes in the price of gold relative to a general price index. It seems to have been first discussed as a logical possibility in a footnote in Marshall (1887). Initially, Fisher proposed to have this scheme imposed upon the Federal Reserve System, but it was dropped from his later campaigns for a price stability rule.

[10] For documentation of Cassel's support of price stability legislation in the United States in 1928, see Charles Hardy's discussion of this episode (1932, pp 199-206).

[11] I have given an account of Hawtrey's views in Laidler (1999, pp 112-28). For a recent discussion of his influence on Young, and of Young's own views, see Mehrling (1996, 1997).

wages, Hawtrey saw their main role as being to induce stickiness in price level behaviour by way of a markup mechanism, hence making output, rather than the price level, the variable that adjusted to variations in the money supply and, in turn, provoked further variations in the latter.

According to Hawtrey, even under an international gold standard, the cycle could in principle be ironed out by the judicious use of discount rate policy on the part of central banks acting in concert, though, to his credit, he doubted the practical feasibility of doing so completely. Nevertheless he believed that stabilisation policy, even imperfectly executed, could improve matters, and as early as 1913 he entertained the logical possibility of an individual central bank attempting such a policy under a flexible exchange rate. The Federal Reserve System's cautious attempts during the 1920s at "credit control", when the scale of US gold holdings insulated domestic monetary policy from any international constraints, were very much along the lines that he, as well as Young and others under his influence, advocated.

As we now know, despite the Fed's success in maintaining a non-inflationary environment in the 1920s, an asset market bubble developed whose collapse in October 1929 ushered in the Great Depression. Hawtrey's (1932) essay on *The art of central banking*, written in the aftermath of these events, throws light on the general question of whether price level stability is a sufficient indicator of the success of monetary policy, and discusses in some detail how a central bank should respond to a collapsed asset market bubble.

One important feature of the traditional monetary theory of the cycle was clearly discredited by the events of the 1920s: namely, that theory's presumption that the swelling of a speculative bubble in asset markets required a prior period of general price level inflation driven by the overexpansion of bank credit and money to bring it about. Hawtrey (1932) himself conceded as much when he asserted explicitly that "the speculation which trebled the average market values of shares in the American market between 1923 and 1929 was not due to inflation", and, consistent with this view, he did not blame the market's collapse in October 1929 for the severe reduction in aggregate demand that followed.

> "That spending power did shrink is beyond dispute, but the cause was not the Wall Street crisis. The shrinkage of spending power and the Wall Street crisis were both the effects of a common cause, the credit contraction towards which the Federal Reserve System and the Bank of England had been directing their combined efforts. The Wall Street crisis only intensified the depression through its psychological effects" (p 80).

Here, it is worth noting explicitly that, in the case of the United States, the Fed's tightening of policy had been intended to damp down speculative tendencies that were developing in the economy even against a background of overall price level stability, and that some contemporary commentators, for example Lauchlin Currie (1931), who was Young's student and also Hawtrey's assistant during the latter's visit to Harvard in 1928-29, not to mention later ones such as Friedman and Schwartz (1963), have suggested that the reduction in money growth this attempt brought about may in turn have been responsible for the downturn in real activity that began in the summer of 1929.[12]

After the crash, according to Hawtrey (1932), the Fed's efforts to counter the economy's contraction had been inadequate. Interest rates did fall, "but the process was deplorably slow" (p 213), while the open market operations undertaken in 1930 were "half-hearted", so much so that, by the middle of 1930, what Hawtrey usually termed a "credit deadlock" had developed. Such a deadlock was a state of affairs in which there was a general reluctance on the part of the business community to borrow from the banking system on any terms offered. "When that happens, it seems to be the extreme of paradox to say that there is a shortage of money..." (p 172) but that was indeed what ailed the economy. For Hawtrey, "The central bank is the *lender of last resort*. That is the true source of its responsibility for the currency" (p 116, Hawtrey's italics), and "The essential duty of the central bank as the lender of last resort is to make good a shortage of cash among the competitive banks" (p 126). Therefore, what

[12] Currie's 1931 PhD thesis, referred to here, was heavily influenced by Hawtrey's ideas. On this, see Laidler (1999, pp 233-6).

was always required in the face of a credit deadlock was open market purchases of securities on whatever scale was needed to bring about a resumption of spending by the public.[13]

Two points should be made about Hawtrey's credit deadlock concept. First, it must not be confused with the *liquidity trap* doctrine, which sees a *high*, and in the limit infinite, interest elasticity of demand for *money* as an obstacle to effective monetary policy, rather than a *low*, and in the limit zero, interest elasticity of demand for *credit*.[14] Second it also differs from the modern concept of a *credit crunch*. It locates the principal source of credit market difficulties in the public's unwillingness to *borrow* from the banking system rather than in the latter's unwillingness, or inability, to *lend* to the public. Nevertheless, the concepts are not totally unrelated: a deadlock in credit relations between the central bank and commercial banks stemming from their unwillingness to borrow new reserves can coexist with a general unwillingness on their part to lend to the public at large, and Hawtrey's insistence on the importance of the central bank providing cash to commercial banks seems partially to recognise this.

Be that as it may, with reference to the specific situation in the United States in 1930, Hawtrey argued explicitly that "demand could have been revived by a *sufficient* surplus of idle money" (p 242) but pointed out that the Fed had failed to provide such a surplus. Writing as he was in 1932, however, he noted that "Much may be hoped from this policy [open market purchases started in March 1932], if it is persisted in" (p 242). In the event, the 1932 initiative also proved inadequate, perhaps because the operations were carried out on too small a scale, and were brought to an end prematurely. This was certainly the retrospective opinion of Friedman and Schwartz (1963), and it was also the contemporary view of Currie, who in 1934 succinctly summed up the lessons of the 1929-32 period in the following terms:

> "Much of the current belief in the powerlessness of the reserve banks appears to arise from a complete misreading of the monetary history of 1929-32. It is generally held that the reserve administration strove energetically to bring about expansion throughout the depression but that contraction continued despite its efforts. Actually the reserve administration's policy was one of almost complete passivity and quiescence" (Currie (1934, p 147)).

This is not the place to debate the adequacy of an essentially monetary interpretation of the Great Contraction.[15] For the purposes of this essay it is sufficient to summarise the following salient characteristics of the body of economic doctrine of which it came to form so important a part. First, and above all, that doctrine treated the cycle as an essentially monetary phenomenon, not in the sense that it always had its origins in an exogenous monetary impulse, but in the sense that its upswing and downswing represented a process in which expanding (contracting) money and credit interacted recursively with rising (falling) prices and demand, and in which turning points were initiated by changes in the willingness of the banking system to lend, and hence create money. Second, and closely related, that doctrine argued that the cycle could be stabilised by measures that would prevent cumulative expansions and contractions of money and credit getting under way in the first place. Some of its exponents, for example Fisher, Simons and, in the postwar years, Friedman thought that

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[13] It is worth noting explicitly that there are two elements to the lender of last resort doctrine in 19th century discussions, as Humphrey and Keleher (1984) have carefully documented. The first stresses the central bank's role as a provider of liquidity to the market. The second sees it as providing liquidity to specific institutions, which though solvent, are in difficulties. Hawtrey stressed the former element. Laidler (2002) also discusses this issue. Hawtrey, it should be noted, was willing to countenance government expenditure financed by money creation should open market operations fail, though he did not think this eventuality very likely. See Laidler (1999, pp 125-6) on this point.

[14] A credit deadlock prevents money being created. In a *liquidity trap,* money lies idle after it has been created. Keynes did much to refine the latter concept in the *General Theory*, though it is not clear that he believed in its empirical relevance (See Laidler 1999, pp 258-9). However, a primitive version of the doctrine, which carried with it a warning that surplus balances might suddenly be spent, thus creating inflationary instability, was a commonplace throughout the 1930s. For example, Hardy (1932, p 92) argued as follows: "The result of open market purchases during a depression might be simply to pile up idle reserves in banks, and idle balances in the hands of individuals, until the load gets so great that confidence in the currency suddenly disappears – with the usual accompaniments – an accentuated decline of business confidence, budget disorganisation, gold hoarding, flight to foreign currencies, and finally the complete collapse of the currency system".

[15] The idea that a monetary interpretation of the Great Contraction and proposals for a monetary cure for it were the unique product of a *Chicago Tradition* was once widely entertained, but is quite insupportable. Some Chicago economists, for example Jacob Viner and Henry Simons, did indeed support such a viewpoint, but it neither originated at, nor was confined to, Chicago. For a fuller discussion, See Laidler (1999 pp 231-9).

this could be achieved by imposing legally binding rules of various kinds on the central bank.[16] Others were more cautious, and like Hawtrey, preferred a discretionary approach to stabilisation policy, regarded price level stability as a sign of its success, but also thought of the central bank's lender of last resort powers, and more specifically its powers to inject liquidity into the banking system, as being a vital second line of defence should things nevertheless begin to go wrong, as they did in 1929.[17]

The vision that has dominated monetary policy since the beginning of the 1990s is clearly the latest incarnation of this approach. Its immediate intellectual roots lie in the monetarist doctrines of the 1960s and 1970s which did so much to breathe new life into these older ideas, and the main factor separating it from these roots has been its replacement of the legislated money growth rule favoured by the academic exponents of monetarism with more practically oriented inflation targets as anchors for monetary policy. This shift of emphasis has provided policymakers with what they would defend as a much needed degree of discretion in their choice of policy instruments and in their ability to manipulate them.

And yet, just as things went wrong in the United States in 1929, even though the price level seemed to be behaving well, so they went wrong in Japan at the beginning of the 1990s under similar circumstances, and again in the United States, and to a lesser degree in Europe too, in 2001. In each case an asset market bubble seems to have developed and collapsed without this event being preceded by any general upsurge of inflation. With the passage of time, it has become tempting to treat the boom of the late 1920s that ended with the bursting of the stock market bubble in 1929 as an outlier, but the recent occurrence of two apparently similar episodes suggests that there are forces at work in the economy that are not properly integrated into those explanations of the cycle and doctrines about macroeconomic stabilisation that derive from the quantity theory of money. That was precisely the opinion of a large number of economists writing in the interwar period, as we shall now see.

Investment and real explanations the cycle

The monetary theories of the cycle discussed above have, formally speaking, no special place for investment expenditure. Within them, it is simply one component of aggregate demand that is affected by monetary impulses. And yet no exponent of this approach would have denied that asset market bubbles were financial market manifestations of deeper imbalances that had arisen within the structure of the economy's capital stock, or that their collapses had been accompanied by the recognition of these real imbalances and an associated cessation, or at least a dramatic slowdown, of investment activity.

Even in the early 1860s, when economists first began to recognise that the cycle involved systematic fluctuations in real variables, it was known that investment activity was particularly prone to large swings. Thus, Jevons (1863) conjectured that the fundamental causes of "great commercial fluctuations, completing their course in some 10 years" seemed to lie "in the *varying proportion which the capital devoted to permanent and remote investment bears to that which is but temporarily invested soon to reproduce itself*" (p 27, Jevons's italics), and he further noted that "It is the peculiarity ... of great and permanent works ... to be multiplied at particular periods" (p 28). Monetary theorists of the cycle were just as aware of these facts as anyone else. In 1879 Marshall and Marshall had singled out for special mention "... companies [that] ... have borrowed vast sums with which they have begun to build docks and ships and ironworks and factories" and whose projects were not yet complete as the crisis phase of the cycle approached, and in 1923 Marshall himself still found this passage sufficiently important to quote, as we have already seen.

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[16] Fisher always favoured a price stability rule, and Friedman a money growth rule. Simons vacillated between the two, but in 1936 opted for price level stability. On this latter point, see Laidler (1999, pp 241-2).

[17] It should be noted explicitly that, in the early 1930s as the Great Contraction gathered momentum, Fisher was an energetic advocate of monetary expansion aimed at restoring the price level to its 1929 level. His well known "debt deflation theory of great depressions" (Fisher 1932, 1933) should be seen as an extension of a quantity theoretic analysis of events that focused on the consequences of rapidly falling prices. That theory added both strength and, more importantly, urgency to Fisher's longstanding claims on behalf of the virtues of price level stability.

Hawtrey too was conscious of the empirical importance of fluctuations in fixed investment, and, in his first book, *Good and bad trade* (1913, p 207) he went so far as to outline a simple accelerator mechanism as an explanation of the phenomenon. But it is one thing to recognise and attempt to explain what we would now call a *stylised fact*, and another to incorporate that explanation systematically into the logical structure of a model, and this he failed to do. In 1913, the accelerator was tacked on to Hawtrey's analysis, and it disappeared altogether from *Currency and credit* (1919), the book that would nowadays be regarded as containing the definitive exposition of his theory of the cycle.

Marshall's Cambridge successors

But Hawtrey, though a Cambridge graduate, and despite the similarities between his cycle theory and Marshall's, is not usually regarded as his intellectual heir, at least within academic economics. Credit for developing Marshall's thought at Cambridge in the 1920s and 1930s is usually allocated, according to the commentator's taste, among Arthur C. Pigou, Frederick W Lavington and of course John Maynard Keynes, and in the interwar years all of these made serious and systematic efforts to incorporate the behaviour of investment into the Cambridge cycle theory which Marshall had built on quantity theoretic foundations.[18]

Pigou and Lavington overlaid Marshall's account of the cumulative nature of upswings and downswings with what was often characterised as a *psychological* theory, in which *errors* of *optimism* and of *pessimism* drove business decisions, errors which were correlated across agents and tended to be amplified with the passage of time. Furthermore,

> "Inasmuch as optimism or pessimism naturally has greater influence on business judgments the less certain the basis on which those judgments rest, it is only to be expected that this influence should be most marked, and maladjustments of resources consequently most evident, in the output of new capital plant designed to produce goods for very far-ahead and uncertain markets." (Lavington, 1922, p 91).

Cambridge theorists thus brought swings in investment into the explanation of the cycle as a supplement to the recursive interactions among money, credit and prices that had dominated Marshall's account. As a corollary, they no longer regarded stabilisation of the price level as sufficient to eliminate the cycle. Pigou (1929) opined as follows: "I hold that, if a policy of price stabilisation were successfully carried through, the amplitude of industrial fluctuations would be substantially reduced – it might be cut down to half of what it is at present – but considerable fluctuations would still remain" (p 219). He advocated activist monetary policy, supplemented by public works expenditure if need be, an approach to macroeconomic policy which was widely implemented in the postwar years, only to be discredited by the inflation of the 1970s and 1980s, which ushered in the era of inflation targeting.

At one time it was usual to credit (or debit) Keynes (1936) with originating the case for such policies, but it is by now uncontroversial that the major contribution of the *General Theory* to interwar policy controversy was to provide a more rigorous theoretical rationalisation than had previously existed for an already widely accepted activism. Indeed Keynes was rather a late-comer to that position. The *Tract on monetary reform* (1923) starts just as clearly from the quantity theory as anything that Hawtrey produced in the 1920s.[19] As to the *Treatise on money* (1930), though it located the key to cyclical swings in the influence of the long rate of interest on savings and investment, its formal analysis (as opposed to informal discussion) extended only to cyclical swings in the price level. Its policy advice for dealing with the then just beginning Great Contraction – "open market operations à *outrance*" – was, moreover, no different from Hawtrey's, though its theoretical basis was different. It was only after the publication of the *Treatise* that Keynes began to move decisively towards the policy

[18] I have discussed the work of Pigou and Lavington in Laidler (1999, pp 83-90) and Keynes' *Tract* and *Treatise* on pages 106-12 and pages 130-54, respectively, of the same work.

[19] Large parts of the *Tract* should be read as constructive comments about the practicalities of the Genoa Resolutions of 1923, whose principle architect was Hawtrey, offered by a critic who completely accepted their analytic basis. See Laidler (1999, pp 106-7, pp 122-3). Those resolutions sought to re-establish the gold standard as a basis for internationally coordinated monetary stabilisation policy, and Keynes's proposals for a heavily managed float between sterling and the US dollar amounted to a modification of this recommendation.

positions later associated with his name and, not entirely coincidentally, to adopt an explanation of fluctuations in investment that, focusing as it did on the role of *animal spirits*, differed from that offered earlier by Lavington and Pigou more in vocabulary than in substance.

We shall return to the matter of generalised macroeconomic activism below, but first we need to look at approaches to explaining the cycle that paid even closer attention to the role of investment in economic fluctuations than did anything developed at Cambridge, and therefore deviated much more radically from the quantity theory tradition.

The influence of Marx and Wicksell

The quantity theory of money was far from providing the only starting point for thinking about the cycle in the 19th century. Karl Marx's *Capital* (1867) set out an alternative and very different view of the workings of the market economy. Rather than present capitalism as a system which, if left to itself, tended to converge on some sort of full-employment equilibrium in the wake of monetary disturbances, Marx identified a process of inherently unstable cyclical economic growth as its central feature, and he expressed contempt for any purely monetary explanation of fluctuations: "The superficiality of political economy shows itself in the fact that it looks upon the expansion and contraction of credit, which is a mere symptom of the periodic changes of the industrial cycle, as their cause" (p 633).

For Marx, the cycle was not the outcome of a series of shocks that created fluctuations around an equilibrium growth path. Rather it was the essential characteristic of that growth path, the inevitable consequence of the relentless pursuit of profit by the capitalist class. In the expansion phase, individual capitalists pursued *relative surplus value* by investing in ever more efficient labour saving machinery, but from the viewpoint of their class as a whole, this was self-defeating. In a competitive market economy, the value of goods was determined by the labour *socially* necessary to produce them, and the very process of widespread investment in innovative technology reduced this. Thus the economy-wide rate of profit was also driven down, bringing about a crisis and a halt to the economy's expansion. Labour was then released into the reserve army of the unemployed and would provide cannon fodder for the next expansion. A succession of ever more violent cycles would culminate in a crisis severe enough to provoke revolution.

Now, many more economists were influenced by this vision of the cycle than adopted the revolutionary Socialist doctrines that Marx believed it to imply. Indeed, in the period that is the focus of this paper, theories that emphasised the role of innovation as the main impetus driving cyclical growth were probably a majority taste among continental economists. A large literature noted the challenges posed to the stability of the growth process by the time lags inherent in the construction of capital goods, and their indivisibility and durability once they were in place. It is impossible to do justice to the non-quantity theoretic, but nevertheless monetary, analyses of the cycle to which the next section of this paper is devoted without understanding that they are the outcome of attempts to reconcile these ideas, which may here conveniently be labelled as representing a *real* tradition in business cycle analysis, to neoclassical doctrines which placed more emphasis on *monetary* factors.[20]

A crucial link between these two traditions lies in the work of Wicksell, who, though apparently little known among economists writing in English until the late 1920s, was influential elsewhere from a much earlier date.[21] His now well known *cumulative process* analysis focused on the interaction of the *market* rate of interest, set by banks, with the *natural* rate, which in various places, and inconsistently, he defined as the marginal product of capital, the rate of interest at which saving and investment would be equal in a frictionless barter economy, and the rate of interest to which the market rate had to be

[20] Much of the relevant literature was written in German, and it is one of the many virtues of Harald Hagemann's (2002) four-volume collection of key papers in the development of business cycle analysis that several critical contributions are made available in English for the first time.

[21] The question of Wicksell's influence on English language economics is a thorny one. It is usually accepted that, before the considerable attention given to it by Keynes in the *Treatise*, his work was largely unknown, and certainly it was not cited before then in England. In the United States Fisher (1911, pp 59-60) did acknowledge his work, however, and a key paper summarising his theory of inflation (Wicksell (1907)) was presented at the meetings of the British Association for the Advancement of Science and published in the *Economic Journal*.

equated to stabilise the price level.[22] Wicksell himself thought of this analysis as extending the quantity theory of money to a world dominated by banks, and saw it as a tool for explaining secular movements in the price level rather than cyclical fluctuations. It was also his view that, in the 19th century at least, such movements had mainly originated on the real side of the economy as productivity shocks drove the natural rate of interest away from the market rate.

Consistent with this, Wicksell's few sketchy writings on the cycle show him to have been close to the real business cycle tradition, more particularly that branch of it that is particularly associated with Marx and, later, Joseph Schumpeter in emphasising the role of technical change as the fundamental source of economic fluctuations, and sceptical about attributing any important causative role to the monetary sector.[23] Small wonder then, that Wicksell's successors saw the potential for his cumulative process to become a starting point for cycle theories based on the idea that the monetary sector interacts with the real economy by way of the influence of the interest rate on savings and investment, and used it as such, thus providing an alternative to monetary theories that began from the influence of the quantity of money on prices.

Forced saving, relative prices and the cycle

Real cycle theory and Wicksellian monetary economics crucially influenced, on the one hand, the work of the so-called Austrians – Ludwig von Mises, Friedrich von Hayek and Lionel Robbins among others – and of Dennis Robertson on the other.[24] The first these, exponents of a self-consciously individualist economics that was closely allied to political liberalism, reacted strongly against any presumption that market economies were inherently unstable, and their work should be seen as an attempt to refute this postulate, while reconciling the basic facts of the cycle, including those concerning investment activity, with neo-classical orthodoxy. In contrast, Robertson's earliest book, *A study of industrial fluctuation* (1915) was heavily empirical, located firmly and sympathetically in the tradition of explaining the cycle in terms of waves of fixed investment driven by innovation, and it acknowledged the specific influence of the work of Michael Tugan-Baranowski and Albert Aftalion.[25] It was only in the 1920s, under the influence of Keynes, that Robertson broadened his analysis to accord a significant role to monetary factors in the cycle.

Though they proceeded independently of one another, and initially in ignorance of each others' work too, the Austrians and Robertson developed views of the role of the monetary system in the economy that had many analytic properties in common. Critically for the matters under discussion in this paper, these views led them to be sceptical about the sufficiency of price level stability for the overall stability of the economy, and to propose price deflation at the economy's rate of productivity growth as a defence against the development of imbalances in financial markets and, more fundamentally, in the underlying structure of the real capital stock.[26] But Robertson also differed sharply from the Austrians on some important matters. In particular, his scepticism about the capacity of market mechanisms to function smoothly without help from policymakers led him to be much more activist in his advice than were they.

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[22] The inconsistency between defining the natural rate in terms of its capacity to generate price level stability and equilibrium between savings and investment will be discussed below. The very real problems inherent as treating it as the marginal product of capital per unit of capital in a world of heterogeneous capital goods are not quite central to this paper, and will not be discussed. For my own views on this contentious issue, see Laidler (1999, pp 33-4, pp 53-7).

[23] Schumpeter's definitive contribution to this tradition, which amply justifies the coupling of his name with that of Marx in defining it, was not published until 1939 and therefore lies beyond the scope of this paper. On his interesting, but hardly central, contributions to the debates of the early 1930s, see Laidler (1999, pp 216-18).

[24] I have discussed the Austrians' work in Laidler (1999, pp 27-50) and that of Robertson as well (pp 90-9).

[25] Samples of the work of both of these are available in volume II of Hagemann's collection.

[26] George Selgin (1997) has recently restated the case for aiming monetary policy at a rate of deflation equal to the economy's rate of productivity growth, arguing that, relative to price level stability, such a goal "(1) is likely to involve lower 'menu' costs of price adjustment; (2) is less likely to invite monetary misperception effects; (3) is more conducive to the achievement of efficient outcomes using fixed nominal contracts; and (4) generally keeps the money stock closer to its 'optimum' level" (p 70).

Forced saving in Austrian analysis

As Hagemann (1994) has pointed out, though Hayek's *Monetary theory and the trade cycle* did not appear in English until 1933, its German version was written in 1928, initially as a response to the socialist economist Adolf Loewe (later Adolph Lowe). Loewe (1926) had challenged not just a particular approach to cycle theory, but the entire paradigm of neoclassical theory as it was then represented by general equilibrium analysis. He had argued that the basic claim that the economic system had a tendency always to return towards equilibrium after an exogenous disturbance was inconsistent with the obvious fact that actual economies continuously moved over time in a series of cyclical swings that never showed any sign of coming to rest, let alone in any state that remotely resembled such an equilibrium. This observation was, in his view, more consistent with a vision of an essentially unstable system driven by an open-ended process of capital accumulation than anything offered by neoclassical theory.[27]

It is easy to forget nowadays that, perhaps especially in the German-speaking world of the late 1920s, a challenge like this was of more than merely academic significance. What was required to meet it in the eyes of committed liberals like the Austrians was, first, a model inhabited by maximising agents, initially in general equilibrium, which when subjected to a certain type of disturbance would move along a time path that for a while led cumulatively away from the initial equilibrium, and then reversed direction only to overshoot that same equilibrium, and, second, some insight into how these tendencies could be curbed. Hayek attempted to rebut Loewe by arguing that a business cycle theory such as that already sketched by Ludwig von Mises in (1912, 1924) would do just this. Many of his contemporaries agreed with him, and Hayek's own elaboration of this theory in his LSE lectures *Prices and production* (1931) for a while looked set to create a revolution in macroeconomic thought of a magnitude achieved a little later by Keynes.

Mises's original insight had come in response to a puzzle posed by Wicksell's cumulative process analysis. In an economy that used currency as well as bank deposits as money, and in which the banks held reserves, a shortfall of the market from the natural rate of interest could not persist. The inflation that it generated would increase the public's demand for currency, and the resulting drain of reserves from the banks would cause them to raise the market rate so that it equalled the natural rate, thus restoring equilibrium to both the real economy and its monetary sector. But Wicksell had also analysed the theoretically limiting case of a *pure credit* economy, in which there was no currency, and all transactions were carried out using deposits. Here, if a shortfall of the market from the natural rate of interest led only to inflation, there would be no mechanism to bring the market rate back into equilibrium with the natural rate, and disequilibrium could apparently persist for ever. Mises found the conclusion deeply discomfiting, and in order to meet the challenge it presented, he introduced the process now known as *forced saving* into the Wicksellian framework.[28]

This mechanism depends crucially upon three special assumptions, the first two of which Mises, Hayek and most other exponents of forced saving usually left unstated. The first is that the newly created bank deposits that enter circulation when the natural rate of interest exceeds the market rate do so by way of loans to firms; in modern terminology, for forced saving to occur there must be *limited participation* in the market for bank credit. The second is that any effects on the general price level that arise from money creation leave the real consumption plans of the general public unaffected; in modern equilibrium models of inflation, money holders vary their consumption in order to maintain their real balances in equilibrium as the inflation rate varies, thus paying seigniorage to the creators of nominal balances, but for the forced saving mechanism to work along Austrian lines, the effects of nominal money creation must be *unanticipated*. Finally, and Hayek would elevate this assumption to a

[27] Translations of two important papers by Loewe (1926-29 and 1926) are now available in Hagemann (2002, vols III and IV respectively), while a translation of Hayek's original (1928) reply appears in vol III.

[28] It should be noted that the Austrians did not originate the idea of forced saving and that Wicksell was aware of it though he did not explore its implications for his cumulative process. The idea can be traced back to the very beginning of the 19th century. Hayek (1932) provides the still standard account of the doctrine's development from its origins in comments by Jeremy Bentham and Henry Thornton.

methodological principle, in Austrian analysis any conceptual experiment involving variations in the rate of money creation had to begin with the economy in full general equilibrium at full employment.[29]

On these three assumptions, money creation following the opening-up of a discrepancy between the natural and market rates of interest can have certain effects beyond those on the general price level that Wicksell analysed. This money goes, in the first instance, into the hands of firms for whom the expected return on new investments (the natural rate) is now higher than the rate of interest at which they are borrowing (the market rate). The demand for investment goods thus increases, and the firms that produce them are able to bid resources away from the consumption goods sector. Households, who have anticipated none of this, are in effect forced to reduce their consumption, and therefore to increase their saving in real terms.

In the Austrian way of putting these matters, a voluntary decision to save by households is simultaneously a decision to consume at some time in the future, while a decision to invest by firms is simultaneously a decision to supply consumption goods in the future, and the rate of interest is the crucial relative price that coordinates these choices. Only so long as the market rate of interest is equal to the natural rate does it accomplish this, and create a state of what was usually called *monetary neutrality*. Another way of looking at the process of forced saving, then, is to observe that a shortfall of the market rate of interest below its natural value involves firms receiving a signal that the price of future consumption goods has risen relative to that of present consumption goods, and that they should switch the production of such goods from the present to the future, without households having transmitted any such signal. The latter reduce current consumption because the operations of the monetary system compel them to do so, and not because they want to raise their future consumption.

In short, forced saving is the outcome of a coordination failure with respect to the intertemporal allocation of resources. It occurs because a relative price is set at a disequilibrium value by the banking system. The longer it continues, the greater is the imbalance created between firms' capacity to provide consumer goods in the future, and households' desire to purchase them, an imbalance that is matched by a shortfall in firms' ability to meet households' current demand for consumer goods. But continue it will, so long as the crucial intertemporal relative price remains at the wrong level.

Crises as the inevitable result of forced saving

Up to this point, given the assumptions underlying the analysis, the conclusions follow. It is indeed the case that the banking system's power to make loans with newly created deposits that have no counterpart in savings decisions by households can be a source of disturbances to investment and saving, that these can persist for a while, and that this can cause trouble. But the conclusions that Mises, and after him, Hayek, Robbins and others, went on to draw from this insight were, when considered in the light of the criticism to which they were subsequently subjected, highly speculative, to say the least.

In particular the assumption that it begins at full employment is critical to the forced saving process. If resources are not fully utilised when firms receive a signal to increase investment, then they can clearly do so without forcing a decrease in consumption. Indeed, there is room for both investment and consumption to increase together. Since cyclical upswings typically begin from a trough that is characterised by unemployment generated during a previous downswing, forced saving cannot be a feature of the whole cycle, but only, at most, of the later stages of its upswing when resource constraints have begun to bite.

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[29] The limited participation assumption presumably reflects the characteristics of *universal banking* as practised on the continent in the 1920s. The distinction between anticipated and unanticipated inflation was simply not part of the infrastructure of macroeconomic theory in the 1920s, even though certain ideas that we now know to depend crucially upon it – the Fisher effect and the inflation tax – were current. As to assuming full employment, it seemed only proper that an explanation of unemployment should begin at full employment and show how unemployment could then develop. As it happened, the task of assuming, without explanation, the existence of unemployment, and then showing how its level could change, proved much more tractable, and its results much more illuminating too, as Brinley Thomas (1936), who built on foundations provided by the Stockholm School, would note. See Laidler (1999, pp 63-4).

This insight, however, was not available to the Austrians in the late 1920s, and they argued that, once an expansion was under way whose central feature was always, in their view, a process of forced saving, a crisis was inevitably in the making. It would involve the excess demand for current consumption goods making itself felt before new investment goods had been completed and brought into production. More by a leap of intuition than careful analysis, the Austrians identified the disruption associated with attempts to unwind the imbalances created by forced saving with the onset of the downswing and subsequent depression, and they suggested that analysis along these lines "leads ultimately to a theory of business cycles" (Mises (1924), p 365). According to that theory, as elaborated, for example by Hayek (1931), crises could be staved off temporarily by keeping the market rate of interest below the natural rate, but this would be at the cost of making them more severe when they arrived. And arrive they eventually would, for a side effect of prolonging the process of forced saving by ever more credit creation would be an inflation rate that would rise to ultimately intolerable levels. As Lionel Robbins put it in 1934:

> "Once costs have begun to rise it would require a continuous increase in the rate of increase of credit to prevent the thing coming to disaster. But that itself, as we have seen in the great postwar inflations, would eventually generate panic. Sooner or later the initial errors are discovered. And then starts a reverse rush for liquidity. The Stock Exchange collapses. There is a stoppage of new issues. Production in the industries producing capital goods slows down. The boom is at an end" (pp 41-2).

This is not the place to embark on a detailed critique of Austrian cycle theory. Suffice it to suggest that its exponents took logical *possibilities* implicit in the analysis of forced saving, and treated them as logical *necessities*.[30] As one sympathetic modern commentator has remarked, "the Austrian theory is not a theory of depression *per se*, but rather a theory of the unsustainable boom" (Garrison (2001), p 240). Given the Austrians' underlying agenda, however, which was to produce a theory of the cycle that was compatible with a general equilibrium theory strongly tinged with methodological individualism, and could be used to counter socialist critiques of a liberal capitalist society, and given that the great hyperinflations were a recent memory, one can see how they were led into their overgeneralisations.

Forced saving without price inflation

For all its weaknesses, however, one feature of Austrian analysis remains particularly relevant to the topic of this paper: namely, the insight that forced saving can nevertheless take place and create trouble against a background of stable, or even falling prices. This possibility, which sets Austrian theory apart from a more traditional quantity theoretic approach to the cycle, as Garrison (2001, p 242) stresses, arises when the effects of economic growth, particularly that which arises from productivity improvements as opposed to mere increases in population, are brought into the picture.[31]

Wicksell had defined the natural rate of interest as that which would equate saving and investment at full employment, hence implying zero credit creation by the banking system, but he had also defined it as the interest rate which, if it ruled in the marketplace, would generate stable prices. In a stationary economy, where savings and investment are equal to zero, these two definitions are compatible, but not in a growing economy. There, on the assumption that the velocity of circulation is constant, zero credit creation implies deflation at the economy's rate of growth. Given this, and the assumption that

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[30] See Laidler (1999), pages 45-6, pages 51-75 and pages 63-7, for accounts of and references to contemporary treatments of forced saving that suggested that an initial excess of investment over saving might generate an equilibrating response on the part of savers. Among the possibilities that the Austrians did not notice, but were raised by their contemporaries, were that changes in the distribution of income from wages to profits during the upswing might cause an increase in voluntary saving and eliminate disequilibrium between saving and investment, that the creation of an appropriate amount of new bank credit by way of consumer loans (at that time a new phenomenon, largely confined to the United States) could enable households to hold their own in competition with firms, and that, as inflation became anticipated, agents would increase their saving in order to maintain their holdings of real balances. The last effect will be discussed below, in the context of Robertson's work.

[31] The literature associated with the forced saving concept sometimes encountered extremely heavy weather in dealing with this distinction between the sources of economic growth. Dennis Robertson (1926, 1928a and b), whose variation on the forced saving theme will be discussed below, dealt extensively with this matter, but the space available in this paper does not permit to do full justice to the topic.

its effects on the price level are unanticipated, forced saving is always implicit in positive credit creation in conditions of full employment, and will occur in a growing economy whenever the rate of price level change lies above that rate of deflation.[32] The potential significance of this conclusion for the behaviour of the US economy in the 1920s was not lost on the Austrians, and it formed the basis of their interpretation of the Great Contraction and its aftermath.

But to explain 1929 and its aftermath as a crisis created by a prior process of forced saving required them to argue that disequilibria in the intertemporal allocation of resources sufficient to have provoked it had built up even without the onset of general inflation. On Hayek's treatment of this specific point, Gottfried von Haberler, himself an ardent exponent of Austrian theory in 1932, would later remark "the reasoning is not ... altogether convincing" (1937, p 52), and his more general conclusion was:

> "... that the present theory does not prove, as it claims to do, that a credit expansion which does not lead to a rise in prices but only prevents a fall in prices must have the same evil effect as the more violent type which brings about a rise in the absolute price level" (p 51).

Once again, we see the Austrians criticised for claiming that a logically possible outcome was logically necessary. But we should also note that, as far as the sufficiency of price level stability for general economic stability is concerned, the mere logical possibility that forced saving can cause trouble under such a regime is of some significance.

Austrian policy prescriptions

Be that as it may, what seems to have undermined the reputation of Austrian cycle theory as the 1930s progressed was not so much doubts about its coherence as a positive theory of the cycle, but some of the normative implications that were claimed to follow from it. These reversed the assignment of priorities between prevention and cure for financial and real instability implicit in quantity theoretic reasoning. Where Hawtrey, for example, advocated stabilising the price level, and meeting the consequences of any crises that might nevertheless occur with vigorous money creation after the event, the Austrians argued that the central policy problem was to prevent crises happening in the first place. This was to be accomplished by avoiding any net credit creation by the banking system, or, if the velocity of circulation could not be relied upon to remain stable, by varying credit creation so as to stabilise the rate of flow of money expenditure.

Where prevention had failed, as they thought it was very likely to do, the Austrians further, and crucially, argued that expansionary monetary policy, and/or fiscal measures designed to increase investment and consumption expenditures, would make matters worse rather than better, and were to be avoided.[33] In the aftermath of a crisis that had been brought about by excessive credit expansion, and excessive investment, and had been characterised by a demand for consumption goods in excess of the economy's capacity to supply them, such measures were likely to lead to another and greater crisis rather than to provide a useful remedy for what ailed the economy.

It was for this reason that, in the early 1930s, the Austrians urged governments to remain passive and allow the passage of time to unwind the imbalances in the capital stock that they thought lay at the root of the depression. In so doing, they lent considerable academic respectability to similar views, based on the so-called *needs of trade* or *real bills* doctrine, which at that time had wide currency in banking circles in general, and at the Federal Reserve Board in particular. Exponents of the latter doctrine argued that, in the late 1920s, credit creation in the United States had gone beyond meeting the needs of firms for working capital and had fuelled an "artificial" investment boom. As a corollary they argued that, after 1929, any monetary expansion that did not await the revival of economic

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[32] Let it be noted explicitly that modern analysis would tell us that any rate of inflation is compatible with monetary equilibrium and therefore the absence of disequilibrium forced saving, just so long as it is properly anticipated in the term structure of nominal interest rates, a result stated by Eric Lindahl in 1930, though its significance would not penetrate the literature beyond that written in Sweden till much later. Deflation at the rate of productivity growth remains of some analytic significance, however, because at that rate, when it is fully anticipated, the revenue accruing to the monetary system from seigniorage - what Robertson (1926) called "induced lacking" is zero. See below for further discussion.

[33] For a more detailed discussion of Austrian policy proposals, See Laidler (1999, pp 46-9).

activity ran the risk of reigniting inflationary speculation.[34] With the implementation of the New Deal, such views became increasingly unpopular, and Austrian cycle theory began to suffer from guilt by association, as, for example, Friedman (1974) would later note.[35]

Lionel Robbins's (1971) retrospective verdict on Austrian theory is worth quoting at some length. On the policy nihilism which he himself had supported in the early 1930s, he commented as follows:

> "On the assumption that the original diagnosis of excessive financial ease and mistaken real investment was correct – which is certainly not a settled matter – to treat what developed subsequently in the way which I then thought valid was as unsuitable as denying blankets and stimulants to a drunk who has fallen into an icy pond, on the grounds that his original problem was overheating. I shall always regard this aspect of my dispute with Keynes as the greatest mistake of my professional career, and the book *The great depression*, which I subsequently wrote, partly in justification of this attitude, as something which I would willingly see forgotten" (p 154).

But he was somewhat kinder to the positive aspects of the theory:

> "Now I still think that there is much in this theory as an explanation of a *possible* generation of boom and crisis. I suspect that there are some episodes in economic history, the railway crisis of 1847 and the American crisis of 1907 for instance, on which it can cast valuable light. I am strengthened in this view that something like it, although with a different terminology and a different derivation, figures largely in one of Dennis Robertson's models. But, as an explanation of what was going on in the early thirties, I now think it was misleading. Whatever the genetic factors of the pre-1929 boom, their *sequelae*, in the sense of inappropriate investments fostered by wrong expectations, were completely swamped by vast deflationary forces sweeping away all those elements of constancy in the situation which otherwise might have provided a framework for an explanation in my terms. The theory was inadequate to the facts " (p 154, Robbins's italics).

Robbins's mention of Robertson in this context is telling. Forced saving (often under the label "involuntary lacking") does indeed figure prominently in the latter's interwar work, but not as an explanation in and of itself of the crisis phase of the cycle. Rather, as we shall now see, it appears as one element in an altogether more eclectic story.

Robertson's approach

Just as certain political preconceptions underlay Austrian cycle theory, so was it with Robertson's work. Nowadays he is mainly remembered as an effective critic of Keynes's (1936) rejection of what the latter called "classical economics" and hence as something of a scientific conservative, but his work is in fact marked by the same scepticism about the self-regulating nature of the market economy and faith in the abilities of well informed policymakers to remedy this state of affairs as was Keynes's. If he expressed these attitudes with less self-confidence, this had more to do with his personal style than with the depth of his convictions about these matters.

Robertson's cycle theory had continental, and ultimately Marxist, roots. He stressed waves of innovation as the basic source of fluctuations, and unlike those Cambridge economists more closely wedded to the quantity theory, he entertained the possibility that to this extent they were "appropriate" phenomena, whose stabilisation might do more harm than good.

> "I do not feel confident that a policy which, in the pursuit of stability of prices, output and employment, had nipped in the bud the English railway boom of the forties, or the

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[34] And the influence of such views had a great deal to do with the indecisiveness of Fed policy during the Great Contraction, as both Currie (1934), and Friedman and Schwartz (1963) argued. For a contemporary example of such analysis, see Willis (1932). It is also worth noting that, partly under the influence of Joseph Schumpeter's own distinctive brand of Austrian analysis, a number of Harvard economists adopted a confused and sceptical attitude to activist policies intended to counter the contraction. See Brown et al (1934).

[35] See Friedman (1974, pp 163-5). Unfortunately, in this passage, Friedman describes the Austrian view as an "atrophied and rigid caricature" of the quantity theory, thus displaying an extremely uncertain grasp of its intellectual origins.

> American railway boom of 1869-71, or the German electrical boom of the nineties, would have been on the balance beneficial to the populations concerned" (1926, p 22).

But in practice, Robertson thought it all too likely that "inappropriate" fluctuations in output would be overlaid upon the appropriate ones by the malfunctioning of the monetary system, and it was in this context that he deployed his analysis of forced saving. He developed this idea quite independently of Mises and Hayek, and indeed a little before the latter took it up, but his approach had much in common with theirs, as Robbins noted. Even so, in the context of this paper, it is the differences between the two versions of the doctrine that merit particular attention.

As we have seen, forced saving occurs when an economy operating at full employment is disturbed by the opening-up of a discrepancy between Wicksellian natural and market rates of interest. Although the Austrians recognised that shocks to the system could arise in principle from either the real or monetary side of the equation, in practice they treated the banking system as the main source of disturbances. Not so Robertson, for whom inappropriate fluctuations in output were usually the result of market interest rates failing to catch up with the effects of innovation on the expected returns to investment. Quite unlike the Austrians, moreover, he was even willing to contemplate the possibility that forced saving, though usually destructive, might in some circumstances have a beneficial effect. Specifically, he lacked confidence in the capacity of the short end of the market automatically to provide the working capital needed to bring plant and equipment into production once it had been created, and looked to the banking system to provide firms with the means of acquiring it.[36]

> "I am not sure that a little forced saving now and again may not be the necessary price we have to pay for what we call progress, and that a doctrinaire application of the principle of price-stabilisation in all circumstances might not be inimical to the rapid growth of economic welfare." (1928b, p 145).

Evidently, then, Robertson did not regard forced saving as an *inevitable* harbinger of crisis in the way that the Austrian did. In part, this open-mindedness stemmed from greater analytic sophistication on Robertson's part. Unlike Mises, Hayek, Robbins or anyone else in that camp, he understood that, because rising prices would reduce the real value of the public's cash holdings, "it is at least possible that some of them will seek to restore this real value towards its old level, and to that end to refrain from consumption ..." (1928b, p 134) This effect, which in 1926 he had labelled "induced lacking", is the very one that lies at the heart of analyses of the extraction of seigniorage in modern models of fully anticipated inflation, and in principle it would ensure that the banking system could continuously transfer resources from the public at large to firms without the process breaking down. The saving needed to finance the extra investment would be voluntary, in the sense that it would arise from the payment of what we now call *the inflation tax*.[37]

Even so, Robertson understood just as well as did the Austrians that forced saving could occur in a growing economy without prices having to rise, and he also believed, as did they, that it had considerable potential to do harm. That is why, in 1928, he expressed trepidation at the way events were unfolding in the United States: "... insofar as the Federal System [sic] has not gone all out for stabilising the price of *labour*, it cannot, I think, be wholly absolved from the charge of having burgled from the public in these years of rapidly advancing productivity" (1928b, p 144, Robertson's italics). He particularly feared for the consequences "if that great country *should* ever become even temporarily saturated with 50-storey buildings and motor cars" (p 146 Robertson's italics), noting that:

> "The out-and-out price-stabiliser claims that he can always check a fall in prices and cure unemployment by monetary means ... I think the difficulties experienced by the Federal

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[36] Robertson's particular stress on the provision of short-term capital by way of forced saving reflects the practices of the British and American *commercial banking* systems. Any careful comparison of Austrian and Robertsonian treatments of forced saving needs to pay attention to the different assumptions about the nature of banking institutions that were usually left implicit in their analysis.

[37] In this context, Robertson's acknowledgement that the analysis of induced lacking was suggested to him by Keynes is worth noting, since the latter had already set out a treatment of the inflation tax in the *Tract* (1923) .On this, see Laidler (1999, pp 95-6, pp 110-11). Harry Johnson (1974) pointed out the relationship between the analysis of forced saving as developed by Robertson in the 1920s, and that of the inflation tax, seigniorage and the revenue from money creation (the three terms are synonymous). The latter topic was much discussed among monetary theorists for two decades following the work of Martin Bailey (1956), and a key contribution which either avoided or cleared up the many analytic confusions that permeated much earlier work was Alvin Marty (1976).

> Reserve system even in times of raging prosperity should make us pause before admitting such extreme claims" (1928b, p 146).

Not that Robertson came anywhere near to Austrian nihilism in his prescriptions for policy in the event of a crisis. On the contrary, he was just as much an activist as any of the Cambridge economists discussed earlier in this paper.[38]

> "... the ideal banking policy might be one which was founded on the principle of price-stabilisation as a norm, but which was ready to see the fruits of a prolonged and general increase in individual productivity shared in the form of lower prices, and perhaps to acquiesce in moderate price-rises in order that advantage might be taken of discontinuous leaps in industrial technique. And it would be a policy that did not claim omnipotence, or feel competent of its ability to cure the evils of uncertainty except in alliance with a much more comprehensive attempt to control and stabilise the desires and activities of the community than most monetary reformers – even I think, the most thorough-going Socialists – have yet visualised" (1928b, p 146).

Robertson's avoidance of Austrian policy conclusions about how to deal with crisis and the depression which would inevitable follow it, despite his belief in the capacity of forced saving to generate excessive investment, has a very simple and down-to-earth explanation, namely that he invariably associated such investment with the overexpansion of particular sectors of the economy, rather than with the creation of an economy-wide imbalance in the capital stock. He therefore believed that there was always scope to fill any void in demand stemming from a private sector collapse, as his following comment on the desirability of deploying countercyclical public expenditure policies makes clear:

> "What, after all, can be more sensible than that the Central government should organise a collective demand for telephone equipment, or the local governments a collective demand for municipal lavatories, to take the place of an individual demand for ships or steel rails, which has rightly and reasonably fallen temporarily away?" (1928a, p 178).

Some tentative lessons

To draw conclusions from an earlier literature about current monetary policy is always risky. No matter what some might claim about the universality of the laws of economic science, it has often been observed that monetary economics in particular evolves along with monetary institutions, and the possibility that conclusions drawn at an earlier time might have lost their validity with the passage of time is ever present.[39] But recent bouts of asset market instability and associated problems in the real economy do seem to present puzzles that contemporary economic theory has trouble getting to grips with, and they do bear more than a passing resemblance to earlier episodes, so perhaps the literature discussed in this paper might have something to tell us about our present problems.

Continuity and discontinuity in economic ideas

As we saw above, there is considerable continuity in what has here been called the quantity theoretic approach to the cycle in general, and asset market instability in particular. Its current exponents still argue that monetary policy cannot be expected to do more than influence the price level, and the differences between their advocacy of targets for low inflation and the preferences of, say, Marshall, Hawtrey or the Keynes of the *Tract* for outright price level stability are surely of minor significance to anyone who believes that the virtues of such policy goals should be analysed on the assumption that the inflation rate is fully anticipated. Furthermore, they are every bit as insistent on the rapid

[38] It should be noted that, just as Pigou came to pay increasing attention to forced saving as the 1920s progressed, so did Robertson appreciate the potential significance of error. See Laidler (1999, pp 89-90, pp 98-9).

[39] This was a constant theme in the later writings of Sir John Hicks, right down to his final book (1989), and it permeates the post-Keynesian writings of Victoria Chick: eg (1992).

deployment of the central bank's powers of money creation, should things nevertheless go wrong, as their interwar predecessors.

There is less continuity between the ideas of interwar and contemporary critics of the quantity theoretic tradition. Like their predecessors, of course, the latter are still concerned with the apparent inability of a monetary policy geared solely to the general price level to forestall instability in asset markets, and they also suggest that monetary policy should try to deal with this phenomenon. But beyond this point, differences begin to appear. Nowadays, the case that monetary policy should concern itself with asset prices is mainly justified by the possibility that banking systems can cease to function efficiently as providers of credit to the private sector once asset market instability turns into outright crisis. Interwar economists did not neglect instability in asset markets or the banking system in particular, or indeed financial markets more generally, but dissenters from quantity theoretic analysis among them paid far more attention to the possibility that such difficulties reflected altogether deeper problems with the structure of the real economy. The Austrians aside, moreover, they adopted a far more activist approach to macroeconomic policy than anything that is to be found among critics of current policy orthodoxy, whose main concern seems to be that monetary policy should look beyond stabilising the inflation rate, and pay special attention to asset prices.

Coordination failures

I conjecture that the reason for this latter difference, and also for our current perplexity about how monetary policy should be configured in the light of the experience of Japan, or more recently the United States, to mention but two examples, stems from the fact that much of economics as it is now widely taught has tried to settle an old debate about a matter of real substance by methodological fiat. That old debate, whose importance Axel Leijonhufvud (eg 1981, 1999) has long stressed, reached a peak in the interwar years. It was about whether, and, if not, the extent to which, the institutions of a market economy were up to the task of harmoniously coordinating the maximising decisions of self-interested individual agents. Nowadays, this debate is short-circuited by the widely held belief that good scientific practice requires us to assume that markets always clear, unless specific reasons rooted in maximising behaviour conditioned on all relevant and available information can be given for assuming otherwise.[40] This belief has led much economic theory to take it for granted that the interest rate, or the term structure thereof, successfully coordinates the allocation of resources over time, even though this assumption makes it very hard to understand such phenomena as canals and railways that lead to nowhere, see-through office buildings, mile upon mile of redundant fibre-optic cable, etc.

In earlier times, when, by and large, economists started with facts to be explained and worked backwards to more and more general explanations, it was regarded as methodologically legitimate to postulate coordination failures to account for observations without first of all having to rationalise these in terms of some set of deeper (and allegedly first) principles. And given the facts of 19th century fluctuations, let alone those of the interwar years, this seemed like a reasonable procedure. The key positive question underlying the literature discussed in this paper was, that is to say, what sort of coordination failure was responsible for observed fluctuations, and the key normative question was what policy should do about it. These seem to me to remain interesting questions, even if the current rules of the game make it embarrassing to pose them in respectable academic circles.

Exponents of a quantity theoretic approach to fluctuations located coordination failures in the slowness of interest rates and money wages to respond to swings in the price level, an argument implying that the maintenance of price stability would prevent their occurrence. Some of these exponents, for example Fisher, were sufficiently confident of this way of looking at things that they argued that a price stability rule would be sufficient to guarantee overall economic stability. Others, for example Hawtrey and those whom he influenced, were more cautious and were willing to settle for discretionary policy.

[40] But not by everyone: I have already mentioned Victoria Chick's contribution to the post-Keynesian literature and Axel Leijonhufvud's constant and eloquent insistence of the importance on coordination issues and to the rich interwar literature dealing with them. Garrison (2001), to which I have also referred above, represents a recent and refreshingly unorthodox attempt to blend insights culled from quantity theoretic and Austrian approaches to the cycle into an account of the phenomenon that places coordination failures at the centre of things. But students trained in mainstream modern macroeconomics find it hard to come to grips with such contributions because they are not susceptible to the equilibrium modelling techniques in which they are so well drilled.

Furthermore, after the events of 1928-30 had confirmed that things could nevertheless go badly wrong against a background of apparently stable inflation, they continued to argue that vigorous monetary expansion would suffice to prevent a cyclical downturn getting out of hand. Austrian theorists, on the other hand, stressed the capacity of any monetary expansion to generate forced saving, urged that the authorities should try to stabilise the level of money expenditure to prevent this happening, and took a fatalistic attitude to the consequences of failure. Quantity theorists and Austrians nevertheless had an important belief in common, namely that malfunctions of the monetary system, rather than any deeper flaw in the workings of market mechanisms, underlay coordination failures, and that appropriate (albeit very different) monetary measures could in principle prevent them.

In this these two groups differed strongly from those who argued that the very process of economic growth in a market economy was inherently prone to such failures. These arguments came in many disguises, ranging from the Pigou-Lavington hypothesis that investment behaviour was systematically subject to error, to an altogether more thoroughgoing Marxist belief, as represented, say, by Loewe, in the instability of capitalism. Commensurate with their playing down the importance of the monetary system itself as a source of instability, these economists cast doubt on the sufficiency of any purely monetary cure for such problems, and many of them, for example the Cambridge economists, including Robertson and eventually Keynes, advocated an activist stabilisation policy with a strong fiscal component aimed in particular at dealing with the consequences of instability in investment.

Implications for present-day monetary policy

Certain facts of economic history can help us to make tentative choices among these competing views. To begin with, in their light, it seems unlikely that traditional quantity theoretic explanations of the cycle tell the whole story. One episode of serious financial instability occurring without a prior burst of general price inflation, such as that which preceded the Great Depression, might be written off as an anomaly, but, as was noted at the outset of this paper, we have seen too much of this recently not to take seriously the possibility that price stability alone is not a sufficient condition for more general stability. But it seems even less likely that Austrian analysis tells the whole story either. As was noted earlier, the account of the cycle given by Mises, Hayek, Robbins et al treated logical possibilities as logical necessities and seriously oversold its central message.

But, that being said, intertemporal coordination failures aided and abetted by the monetary system are both logically possible, and they do seem to happen. Quantity theoretic models of the cycle certainly have long had room for them to occur when nominal interest rates fail to keep up with inflation, and hence permit the real market rate of interest to fall short of the real natural rate. Most speculative bubbles and subsequent collapses do seem to be accompanied by price level instability. But coordination failures also sometimes happen without a burst of inflation giving prior warning that something is amiss: how else does one account for all that surplus office space in the early 1990s, and all that surplus fibre-optic cable in the wake of the high-tech bubble? When all the overgeneralisations are stripped away from Austrian theory, there still remains a hard core of insight: namely, that discrepancies between the market and natural rates of interest with a capacity for damaging the real economy can arise even in the absence of inflation. This insight seems to be valid far beyond Austrian theory's own narrow and ideologically drawn boundaries, as Robertson's work clearly showed, as Robbins later acknowledged, and as Garrison has more recently reaffirmed. Nor, incidentally, is it obviously incompatible with a quantity theoretic analysis that is constructed broadly enough to allow productivity shocks and/or what the Cambridge economists called errors of optimism, to happen against a tranquil monetary background and independently of the activities of the banking system.

At first glance, it is hard to resist the conclusion that a monetary regime geared solely towards generating low inflation is not in and of itself sufficient to guarantee economic stability, to allow that monetary policy needs to become more ambitious, and perhaps even to concede that a more generally activist approach to macrostabilisation needs to be reconsidered. Some of us, who remember where policies like that led from the 1960s to the 1980s, however, are bound to resist this last step, and perhaps even the one that precedes it too, and for the present, we can take some comfort from certain other facts. After all, vigorous monetary expansion, based on the central bank's lender of last resort powers, was not tried after the stock market collapsed in 1929, nor was such a policy implemented after the Japanese "bubble economy" came to grief in 1991. Thus, it is not clear from these episodes that a traditional quantity theoretic approach to monetary policy is inadequate.

At the time of writing, moreover, after the collapse of the high-tech bubble of the late 1990s, the Federal Reserve System does seem to be taking the advice of Hawtrey, Currie, Friedman and

Schwartz et al to heart. Perhaps, then, timely monetary expansion will succeed in staving off stagnation in the United States, and if it does, then the systematic pursuit of low inflation by central banks which are also ready to be lenders of last resort when things go wrong in asset markets will be a defensible monetary policy regime after all. If it does not, then we shall indeed have to consider something more ambitious. Here, it is worth recalling that regulatory frameworks for financial markets that we take for granted nowadays are mainly products of the 1930s and after, and would surely have looked like the creations of "thorough-going Socialists" to most of Robertson's readers in 1928. There may be room to deploy these more actively than has been done in the recent past to stabilise asset markets, when the latter threaten to create dislocations in the real economy, while continuing to rely on low inflation as the centrepiece of monetary policy. This would certainly be worth trying, because, if the more generalised activism that Robertson and his colleagues so confidently recommended were ever again to re-emerge as the alternative of choice to current policies, we could not be nearly as sure as they were that it would end up doing more good than harm this time around.

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Discussion of "The price level, relative prices and economic stability: aspects of the interwar debate", by David Laidler

Olivier Blanchard[1]

I am happy that the conference starts with a session on the history of economic thought on the topic. Contrary to what we might have dreamed, macroeconomics is not a Markov process, in which truth remains and becomes part of the core, and the rest is discarded. Often, ideas indeed get discarded because they are wrong. But sometimes they get discarded because they do not fit the then prevailing paradigm. Rummaging through old books can have high returns, especially when it is done by an economist with the wisdom and the knowledge of David Laidler.

This being said, I am happy he did it and not I. Reading old classics, I often feel like Benjy Compson, the idiot in *The sound and the fury*. I think I understand the pieces, but I do not understand how and whether they fit. And I am never quite sure whether this is my problem, or theirs.

Even with the help of David, I have somewhat the same feeling this time. I am not sure I see a coherent set of answers, or any forgotten pearl of wisdom. But I find a number of themes which are very much worth revisiting.

One in particular keeps coming back throughout David's review: namely, that there is a tight connection between expansions in bank credit, increases in prices (inflation), increases in asset prices, and increases in activity; that they all come together, going one way in booms, the other way in troughs.

Today, I believe, we see these movements as often connected, but conceptually separate. That is, as a matter of logic and as a matter of fact, we believe they may but need not happen together. Are we wrong, and should we re-examine some of these connections? This is what I shall do in my comments. I shall focus on four subthemes.

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I Is inflation causal? Increases in prices as a cause of increased activity

There are two ways of thinking about the relation between inflation, expected inflation and activity.

The first is that inflation, or at least unexpected inflation, affects output. It is clear from David's paper that this is the dominant prewar view of the link between inflation and output. In that view, increases in prices "excite" producers in various ways, leading them to produce more, invest more, and altogether create a boom. A modern version of this story is the Lucas island paradigm, in which misperceptions of relative prices induced by inflation lead suppliers to mistakenly increase their output, at least for a while.

The second is that, given expected inflation, an increase in activity leads to an increase in inflation. Under this interpretation, the causality runs from output to inflation. This is the standard interpretation of the Phillips curve relation, in which low unemployment "puts pressure" on inflation. It is also the causal story underlying modern staggered price-setting and wage-setting models, from Fischer to Taylor to Calvo.

These two ways of thinking have very different implications for the way we think about policy, and in particular about the implications of stable inflation.

Under the first, stable inflation directly leads to stable output. By stabilising inflation, macroeconomic policy provides a stable and reliable environment, which in turn leads firms to make fewer mistakes, and thus stabilises output directly.

Under the second interpretation, stable inflation per se does not lead to stable output. But in trying to stabilise inflation, macroeconomic policy takes policy measures which end up stabilising output as well.

Most economists today subscribe to the second interpretation: inflation is not causal, but caused. Trying to stabilise output by stabilising inflation is trying to stabilise the dog by stabilising the tail, not an obvious task. And so, as desirable as stable inflation is, few economists today believe that it will by itself lead to stable output.

Is the modern view the right one?

The empirical evidence shows that inflation substantially lags rather than leads output. This appears hard to reconcile with the notion that higher inflation is what leads to the increase in output in the first place. Inflation surely makes it harder to assess relative prices and take the right decision and so leads to serious micro inefficiencies; but this by itself does not seem to easily explain fluctuations in aggregate output.

At the same time, there is a fact upon which others and I have stumbled (eg, Blanchard and Simon (2001)), and which gives me some pause: in the United States, both the variance of output and the variance of inflation have considerably declined, and have done so very much in lockstep, over the last 40 years. This is shown in Figure 1, which plots the rolling standard deviations of output growth and inflation since 1955. The strong correlation remains there even after controlling for movements in the price of oil, the price of materials and a number of other observables. I would not have expected such close movements in the two series, and this fact makes me suspect that there is perhaps a tighter underlying connection between stable inflation and stable output than I thought earlier.

II Inflation and asset prices/bubbles

In the prewar literature, goods price increases and asset price increases are often linked, both seen as "exciting" production and demand.

The modern view is that there is not much connection between the two.

Inflation is seen as the result of pressure on prices from too high a level of activity (this is the view of inflation as caused rather than causal, discussed in the previous point).

Asset price movements on the other hand are due to changes in expectations about the future, rational or the result of waves of excessive optimism and pessimism.

Other things equal, an increase in asset prices will increase activity, and thus lead to higher goods prices. But the connection is seen as no tighter than that.

Is the modern view right? I think the answer is yes. Historically, as David emphasises, there is no close link between inflation and large asset increases. The rise of stock prices before the Great Depression was not associated with high inflation. Nor was the increase in stock prices in the late 1990s in the United States. Indeed, there is considerable evidence that stock prices are adversely affected by inflation, unexpected or expected.

But the prewar literature, with its focus on business cycles and asset bubbles, raises what I find to be an interesting and unanswered question.

The current dominant approach to business cycles is to think of fluctuations as coming from a number of fundamental shocks, interacting with nominal rigidities and other imperfections to lead to fluctuations in output. Given these shocks, and the relevant market imperfections, firms and consumers have rational expectations and take rational decisions.

An alternative approach, more in the spirit of this older literature, is to think instead of business cycles as being driven by waves of optimism and pessimism on the part of consumers

and firms. In that interpretation, the shocks are deviations from rationality (of expectations) by consumers and firms, and large asset movements are a natural side product of cycles.

That alternative approach feels potentially quite relevant. (What the fundamental shocks are in the dominant approach remains rather mysterious. Calling them taste and technology shocks represents only limited progress.) It would be fun to explore whether and how this alternative approach can be tested against the dominant approach. To the extent that it is right, it appears to imply a rather different welfare analysis of cycles, and maybe different policy recommendations. We should definitely explore it.

III What is the relation between booms, bubbles and bank credit? What about forced saving?

David Laidler describes the importance given by the prewar literature to bank credit, both in generating booms and asset bubbles.

But as I listen to the arguments summarised by David, I am sceptical that the prewar literature makes a convincing case that bank credit indeed plays such a central role. I see the emphasis on bank credit as coming out of an intellectual puzzle faced by the pre-Keynesian literature. If investment demand increases — say in response to increases in prices "exciting" firms — what is then the mechanism that insures that saving also increases?

In trying to answer this question, it was logical for the economists of the time to look at bank credit. After all, this is how firms largely financed the additional investment. But this only raised the next question: how were banks able to increase the amount of bank credit? Who was saving more?

This is where the concept of forced saving conveniently came in. Banks were able in some way to force more saving out of consumers, went the answer. I see this as basically the wrong answer. The right answer was, I believe, given by Keynes: the increase in output is what generates the additional saving in response to higher investment. There is no such thing as forced saving. I know David disagrees, but I do not see what wisdom can be saved here.

IV Imbalances and implications

Another major theme of the prewar literature is that cycles come with fundamental imbalances, especially between investment and consumption. David reviews a number of theories, from Marx to Robertson, in which investment plays the central role in generating as well as ending booms.

The evidence is not kind to the idea of such systematic imbalances. True, most cycles are unbalanced, but there does not appear to be any stable pattern of imbalances across cycles. Witness the recession of 1990-91, where the proximate cause of the recession was a drop in consumption, versus the current recession/slowdown, in which the primary factor is instead the drop in investment. In that respect, each expansion, each recession, seems to be sui generis.

Still, there is an important point here, and one often ignored in discussions of inflation targeting today. To the extent that most expansions are likely to have some form of imbalance, either too much consumption, or too much business fixed investment, or too much housing investment (as appears to be the case in the United Kingdom currently), policy indeed faces potentially difficult trade-offs:

Take, for example, an investment-driven boom. And suppose that monetary policy works by reducing all components of aggregate demand proportionally. Should policy aim at stabilising output, resulting in too much investment and too little consumption? Or should it aim at stabilising investment, resulting in the right amount of investment, but too low a level of output. Replace "investment" and "asset bubble" and the trade-off remains the same. And the questions apply on the way down as well. If investment comes to a halt — if the asset bubble collapses — should the monetary authority aim at stabilising output, or at stabilising investment? (I think the answer here is: output.) These questions were central in the prewar literature; they deserve indeed more attention today.

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Discussion of "Price level, relative prices and economic stability: aspects of the interwar debate" by David Laidler

Nobuhiro Kiyotaki[1]

While reading Professor Laidler's paper about interwar debates, I wondered how people several decades from now will consider the current debates we are engaging in. When we look into how people in the interwar period viewed the contemporary world and chose from alternative public policies, we get some idea why certain people managed to grasp the essential problems while others were misled by inappropriate perceptions. People were misled sometimes because they chose the wrong conceptual framework, and sometimes because a suitable framework had not been developed at that time. In this comment, I would first like to summarise Professor Laidler's arguments from a monetary theorist's point of view, taking the risk of oversimplification. Then I would like to express my opinion about the implications of this paper for the current debates on monetary policy: is low and stable inflation, together with an occasional lender of last resort, sufficient as a goal of monetary policy?

Quantity theory tradition

The first framework Professor Laidler discusses for analysing monetary policy is the quantity theory of money. As theory, the quantity theory exogenously adds a quantity equation, such as $M\ v = p\ Y$, (where M is money stock, v is velocity of money, p is price level and Y is aggregate output) to a standard price theory. As guidance for monetary policy, the quantity theory is often associated with British monetary orthodoxy. The orthodoxy usually consists of three principles: the principle of gold standard, the principle of price stability, and the principle of lender of last resort. The principle of gold standard serves as the long-term commitment of the government not to default on its nominal liabilities. It is argued that the British government managed to sustain debt as high as 300% of annual GDP after the Napoleonic War because it had a commitment not to devalue against gold for more than 100 years before as well as after the war, except for a temporary departure from gold. But the gold standard does not automatically lead to price level stability, because the interaction between credit and aggregate economic activities can be inherently unstable over business cycles. Thus, the principle of price stability calls for short-run discretionary monetary policy aimed at stabilising the price level. In addition to these principles in the long run and the short run, the principle of lender of last resort demands that the central bank provides enough liquidity to the market in the event of financial strain.

During the interwar period, there were some important additions to the quantity theory. One was made by Hawtrey (1932), who argued that asset price inflation during the 1920s, followed by its collapse, lead to "credit deadlock" in the United States. There, the public did not want to borrow, which reduced the ratio of deposits to currency. Also, banks did not want to lend, which reduced the ratio of deposits to reserves. These decreases in deposit-currency ratio and deposit-reserve ratio reduced the money multiplier, (the ratio of money supply to base money). Hawtrey's analysis looks similar to Friedman and Schwartz (1963), who state that the Federal Reserve Bank did not provide enough base money against the fall of the money multiplier in order to prevent the money supply from falling.

Wicksell-Austrian tradition

The Austrian school and Wicksell extended the basic price theory into an intertemporal general equilibrium model, the first real model without money. Then Wicksell (1898) and Hayek (1931) developed a monetary version in which money is added in the spirit of a limited participation cash-in-

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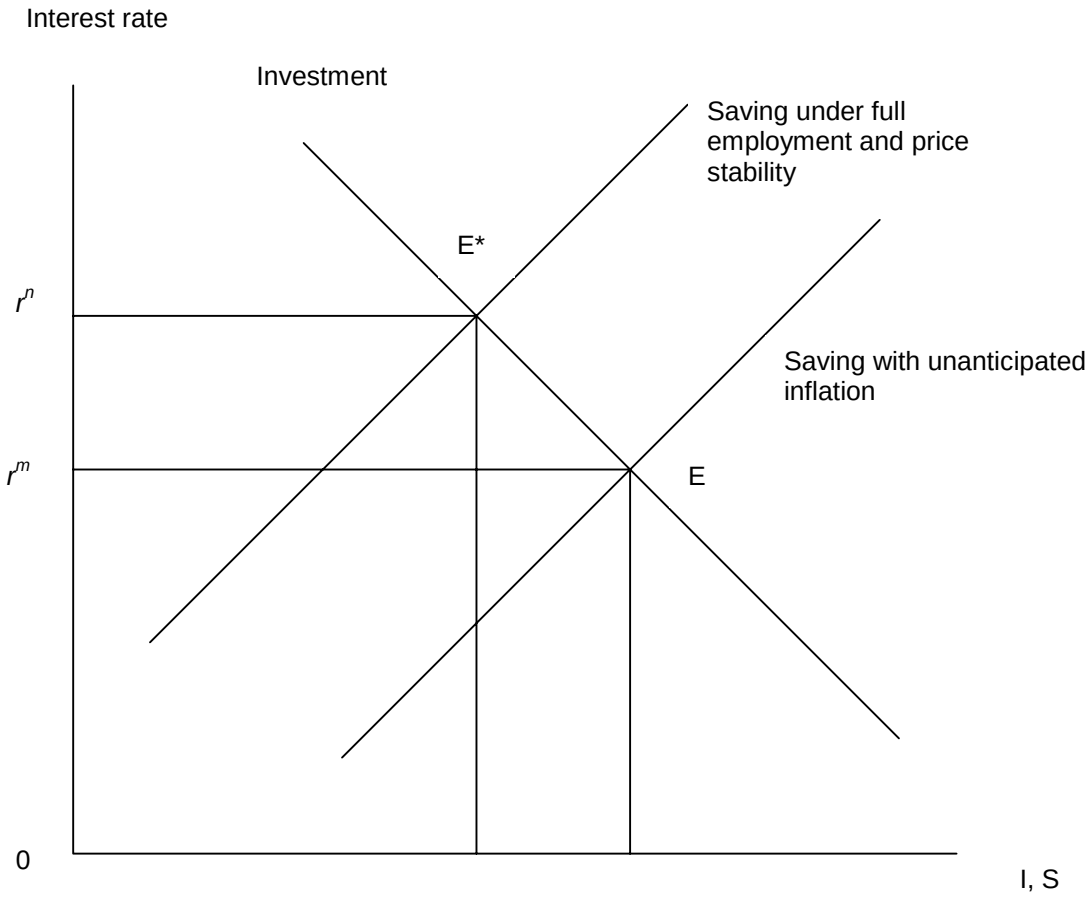
advance constraint model. In their framework, the interest rate in the market for the outstanding stock of bonds under the influence of monetary policy (r^m) need not be equal to the natural rate of interest (r^n, the interest rate which equates investment and saving under full employment and price stability). If the market rate of interest is lower than the natural rate of interest, then inflation will be higher than expected, which increases the saving to equate investment. (The equilibrium is point E in the Figure.)



This mechanism is called forced saving. (In a Keynesian model with a sticky price level, the output level instead of the price level would adjust to equate saving to investment.) Because the intertemporal general equilibrium of real economy was disturbed by monetary factors, the Austrian school thought the boom associated with forced saving might lead to overproduction in the future. Many economists in the Austrian tradition considered the depression of the 1930s as a correction of the overexpansion of the 1920s, and advocated a passive policy. It turns out that this passive policy tended to deepen the recession during the interwar period.

Dennis Robertson

Dennis Robertson stands at the intersection of the quantity theory tradition and the Wicksell-Austrian tradition. Reading Robertson (1928), I am very much impressed by his intuition and healthy scepticism in the middle of the great boom of the United States. Robertson argues that if technological innovation is the main cause of fluctuation, forced saving can be beneficial, and that rigid price stabilisation in the short-run can be harmful. Also, during a deep recession, monetary policy may not be enough to stimulate the economy. Thus, Robertson advocates that the ideal monetary policy would be to regard price stability as the norm; and this norm is complemented by occasional forced saving to

accommodate a sudden real shock and also by coordination with the other public policies during deep recession.

Critical comments

From a theoretical point of view, I think that we need a better theoretical framework with which to analyse the monetary economy than the existing frameworks. The quantity theory may be a useful shortcut for monetary policy analysis, but the standard general equilibrium model does not have a role of money and is not consistent with the quantity theory of money. The intertemporal general equilibrium model with cash-in-advance constraints provides a consistent and convenient framework for the analysis of a monetary economy, but in this model money is disturbing the efficient allocation rather than lubricating exchange and production.

I think we need a canonical framework in which money plays an essential role in achieving better allocation. Under what environment is money essential? One possibility is a situation in which borrowing and lending, or the exchange of present goods and future goods, is not as easy as the exchange of apples and oranges. Suppose that person A exchanges present goods for the claim to future goods with person B. After A provides present goods to B, how can A make sure that B will provide goods in the future? Without the full commitment of B under the perfect enforcement of the auctioneer (which the standard intertemporal general equilibrium model assumes), B may default on his promise. This problem of limited commitment naturally leads to a role of money for lubricating intertemporal exchange. At the same time, the limited commitment has other implications for prices and allocations. Thus, unlike the Austrian school, we cannot take the allocation of a non-monetary economy as the natural equilibrium. We need to explore the implications of the limited commitment systematically.

Concerning the policy debate, we may need another policy instrument besides monetary policy in order to cope with the instability of the banking system against asset price fluctuation. Monetary policy has essentially one independent instrument, such as the short-term interest rate. Thus, according to the standard policy assignment argument along the line of Mundell (1962), it is best to assign monetary policy to a target which monetary policy is good at achieving. We normally consider such a target as price stability, at least in the medium run. Thus, if the asset price boom associated with large credit expansions might endanger the banking system if asset prices collapse, then we need another instrument. Anna Schwartz (2002) proposes to introduce a capital requirement of banks that is an increasing function of a fraction of the loans collateralised by real estate and equities. I think we need more exploration of the feasibility and effectiveness of such alternative policies.

Professor Laidler's paper reminds me of a sense of tradition of economic analysis. It reminds us of the value of the caution of Dennis Robertson, and stimulates us to think about the direction in which we may make durable contributions to economic analysis.

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