

## **THE ROLE OF MONEY AND CREDIT ON BUSINESS CYCLES**

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This study is basically constructed on four articles which represent an overview of a particular school of thought about business cycles and the role which money and/or credit play in these cycles. The articles are:

- 1- B.S. Bernanke (1983), «Nonmonetary Effects of the Financial crisis in the Propagation of the Great Depression».
- 2- J.B. Long and C. Plosser (1983), «Real Business Cycles».
- 3- R. Lucas (1977), «Understanding Business Cycles».
- 4- A. Wojnilower (1980), «The Central Role of Credit Crunches in Recent Financial History».

For each reading, first we tried to summarize the approach taken to modelling business cycles paying particular attention to:

- i) The origin of business cycles (the impulse mechanism),
- ii) The way in which business cycles are generated over time (the propagation mechanism),
- iii) The role of money and credit markets in the cyclical process.

Then tried to compare and contrast the approach to the modelling of business cycles taken in:

A-Reading 2 compared to that in reading 3,

B-Reading 1 compared to that in reading 4.

**BERNANKE : Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression.**

In this paper, Bernanke analyses the relative importance of monetary versus financial factors in the Great Depression with particular emphasis on the possible links between financial sector and aggregate output in 1930's. His central conclusion is that the financial collapse of the early 1930's had real effects on the macro-economy, other than through monetary channels and determined the depression's depth and persistence.

In his view, monetary forces alone are «quantitatively insufficient» to explain these phenomena. Building on the Friedman-Schwartz work which stresses that decline in bank liabilities was the main disrupting factor resulting from banking/financial crisis and the monetary tightening provided the basic impulse for this type of propagator mechanism. His paper considers an alternative hypothesis for the link between financial sector and real macro-economic effects. Though the basic monetary impulse mechanism of Friedman-Schwartz goes unquestioned, the proposed propagation mechanism contrasts with that of Friedman and Schwartz, by underlining the importance of disrupted credit markets and associated declines in bank assets to the collapse in real activity.

In a nutshell, the main thesis of the paper is that, the disruptions of 1930-1933 reduced the effectiveness of the financial sector in performing its intermediary functions and increased the real costs of intermediation which resulted in credit squeeze. Credit squeeze, on the other hand, had an adverse impact on household and small firm borrowing and consequently, reduced their demands for current period goods and services. In other words, the financial crisis propagated the initial shock to the system through its impact on aggregate demand and helped convert the severe downturn into a protracted depression.

In order to test the relative importance of the monetary and non-monetary effects of the financial crisis on the propagation of output collapse; Bernanke estimates Barro model of unanticipated money and output, modified to include proxies for financial distress. He finds that the financial variables add considerable explanatory power to the output equations, providing confirmation to the view that non-monetary effects of the financial crisis augmented monetary effects in the short-run determination of output.

His theory strives to achieve a reconciliation of the suboptimality of this period with the postulate of rational, market constrained agents, by recognising that financial institutions, rather than being a «veil» over real activity, can effect real economic allocations.

### **LONG AND PLOSSER : Real Business Cycles**

The classical / REH macro models of the 1970's are the forerunners of the Real Business Cycles models (RBC) as presented in this article. Unlike these models which emphasise the role of exogenous monetary shocks in generating business cycles, RBC models focus exclusively on the exogenous real output shocks as the impulse mechanism for business cycles. The benchmark model demonstrates how optimal equilibrium responses of economic agents propagate such shocks through time and across sectors, leading to regularities associated with business cycles -namely persistence of deviations from the trend and comovement in major macro aggregates.

The paper takes a microfoundations approach to business cycles within a general equilibrium framework and identifies the unexpected serially uncorrelated and crosssectionally independent shocks impinging on the production sphere as the major impulse mechanism for the cyclical behaviour. These real productivity shocks within the system are transformed and amplified into output series that exhibit positive serial (persistence) and cross sectional correlation (comovements). Consumer preferences, especially the irreversible nature of Labor/Leisure decisions, production technology and most importantly, existence of commodities with many productive uses play a central role in the propagation mechanism of the model. Specifically, consumers, in equilibrium choose to spread any unanticipated increment in any particular output over both time and commodities and in so doing, increase both current and future consumption of a variety of goods. Production technology, on the other hand, provides large range of real substitution possibilities which limit the size of relative price changes required to clear markets when shocks occur. These ensure the existence of comovements as well as persistence in consumption, input and output time series in the model.

At the beginning of each period optimal consumption and production plan involves commodity bundle to be consumed during

the period. The leisure and labor decisions and commodity inputs that will be used in production processes. Since any given commodity may be used as an input in the production of other commodities and all commodities are perishable. Commodity stocks available at the beginning of the next period consist entirely of «new units» produced during the previous period. Given these assumptions and the optimal decision rules in the dynamic competitive economy, if the output of the commodity is unexpectedly high at time  $t$  (due to a random productivity shock which itself is unexplained), then inputs of commodity  $i$  in all of its productive employments becomes also unexpectedly high at time  $t$ . Since commodity  $i$  could be used in several other production processes, its high level at time  $t$ , not only propagates the output shock forward in time, it also spreads the future effect of the shock across sectors of the economy. This type of propagation mechanism is the primary reason for the observed persistence and comovements in economic time series. The model is capable of generating damped oscillations in the expected output path even though common shocks across sectors and/or serially correlated exogenous shocks are non-existent in the economy.

The real business cycle paradigm proceeds under the hypothesis that financial structure is irrelevant or simply a «veil» over the real economic activity and hence financial aspects of real macroeconomic behaviour are totally ignored. Since money and financial markets do not exist in this artificial economy, they play no role in the generation of cyclical processes attributed to business cycles. moreover, these business cycle fluctuations arise from the optimal equilibrium responses of economic agents to random production shocks and hence are not considered to be welfare reducing deviation from «natural rate» paths of an efficient Walrasian economy. The equilibria are Pareto optimal and efforts to stabilise the economy to make consumers worse off.

### **LUCAS : Understanding Business Cycles**

In this paper, Lucas considers the prospects of accounting for cyclical phenomena by an equilibrium theory. In his view, there is nothing inherently unstable in the workings of market economies and business cycles are not inevitable. The paper proceeds under the Rational Expectations Hypothesis (REH) and full employment market clearing equilibrium assumptions, searching for a theory

which accounts for the observed cyclical movements in quantities as an optimizing response to observed movements in prices. Money is neutral and monetary changes are the only source of general price movements whereas relative prices are determined in the real sphere of the economy.

In such a framework, only unanticipated exogenous monetary shocks lead to real effects by creating a confusion between relative and general price movements on the part of rational, optimising agents. In other words, unless the economy is perturbed from its initial steady state path through such shocks, it never displays cyclical behaviour. Exogenous monetary shocks are identified as the major impulse mechanism for the violent fluctuations in macro aggregates.

Obviously, unexpected monetary changes which create serially uncorrelated forecast errors on the part of the agents can not account for the serial correlation (persistence) associated with the business cycles. The theory is in need of a propagation mechanism which transforms serially uncorrelated forecast errors into serial correlation among major macro aggregates. Lucas proposes an explanation for such a propagation mechanism, focusing on the capacity creation effect of current investment decisions.

More specifically, unexpected monetary shocks distort investment decisions as well as employment in the same direction as the responses induced by relative price movements. Current investment decisions, unlike employment, however add to future capacity and hence affect future relative prices. This added capacity, on the other hand, retards price increases, postponing the recognition of the initial shock. In this way, unsystematic short-term shocks to prices can lead to much longer swings in prices and serial correlation in economic aggregates:

This type of propagation mechanism, clearly does not satisfactorily explain violent fluctuations commonly associated with business cycles, since investment is a long-term commitment and responds to permanent changes in relative prices. Lucas argues that in an informationally imperfect environment, agents perceive these «weak» price signals as key to successful investment and respond optimally by altering their real decisions. In this way, stochastic shocks to the system, creating misconception and

changing long-term real allocations generate persistent cyclical behaviour.

In rational expectations models; financial structure and money/credit markets are totally irrelevant to real economic activity and except through stochastic shocks, money has no real effects. Similarly, credit markets play no role in the propagation and/or impulse mechanisms of business cycles.

### **WOJNIIOWER : The Central Role of Credit Crunches in Recent Financial History**

Wojnilower, in this paper, addresses from a non-academic perspective, the key aspects of the interactions between financial markets and the real economy in US with particular emphasis on the role of credit crunches in initiating severe business downturns. His scenario rests on the proposition that the main driving force of all real activity is the availability of credit and hence any interruption in the supply of credit, i.e credit crunches trigger real output declines. In effect, these crunches, by providing the necessary «speed limits» to the excessive expansion of credit and severe inflationary pressures, play a constructive role in precipitating cyclical downturns ahead of more serious endogenous bankruptcy crises that otherwise would ensue and before the high inflation rates characteristic of business cycle peaks could become deeply embedded.

His analysis rests on the following central propositions. First of all, potentially credit demand is unbounded at all possible interest rates and it plays a crucial role in determining the economy's aggregate demand for good and services. Hence, actual growth of credit and real activity are essentially supply-determined. Secondly, what matters for real spending is not just the deposits held (money) but potential access to deposit through the credit market. Hence credit market rather than money market is genuinely important in determining spending.

In this scenario, there exists no equilibrium for the economic system and its potential for excessive expansion could only come to a halt by credit crunches. These interruptions in the supply of credit are prompted by the destruction of lenders incentives through regulatory rigidities and elimination of these rigidities and other market imperfections to avoid recessions intensifies

the propensity of the economy to excessive credit expansion and inflation. Subsequent cyclical increases in credit, interest rates, inflation and general business continue longer and reach greater extremes, resulting in even bigger crunch. In a nutshell, expansions and contractions are basically brought about by the rise and ebb in the availability of credit and once credit starts expanding only a credit crunch can effectively bring a halt to it. Output expansion and only credit crunches trigger business downturns by severely restraining borrower's ability to get credit.

Wojnilower portrays a disequilibrium model of an economy with boundedly rational agents. His analysis attaches a great deal of importance to the interrelations between credit markets and real activity. He identifies credit crunches as the main impulse mechanism for business cycle downturns. Since what matters for real economic activity is the availability of credit, a reduction in the perceived borrowing capacity of firms and collapses in the distribution of expectations toward unanimity propagate these interruptions through time, leading to a severe and persistent business downturns.

## **COMPARE AND CONTRAST THE APPROACH TO MODELLING BUSINESS CYCLES**

### **Real Business Cycles and Rational Expectations Models (Readings 2 and 3)**

Both of these theories provide explanations for business cycles within an equilibrium framework in which optimal responses of economic agents in a fully articulated artificial economy lead to cyclical regularities. In rational expectations model, unexpected monetary shocks or disturbances are the primary source of persistent fluctuations in macro aggregates which are propagated through time by distortions in long-term investment decisions. The real economic sphere has no inherent ability to generate cyclical behaviour. In other words, unless the economy is perturbed from its steady state path due to price misconceptions on the part of private agents, no business cycle behaviour could be observed.

Though it takes the same equilibrium approach to modelling business cycles, RBC theory develops a general equilibrium model in which money plays no explicit role and monetary changes have

no impact as an impulse mechanism. The model differs from the previous analysis in its explicit consideration of random productivity shocks which influence the real production sphere of economic activity. Even though, the origin of these shocks are left unexplained, Unlike REH models, economic system is inherently subject to fluctuations and these serially uncorrelated exogenous output shocks provide the main impulse mechanism for the generation of business cycles.

Though the analysis is consistent with rational expectations hypothesis and the general equilibrium framework of these theories and could easily incorporate the role of monetary disturbances in business cycle episodes, equilibrium real business cycle model focus exclusively on the ability of real production sphere to generate persistent cycles. The model demonstrates that economic activity is subject to random productivity shocks and fluctuations and there is nothing in the nature of the system which requires that when perturbed from a steady state, the expected output path be characterised by an immediate return to its steady state. As a result, business cycles are inevitable future of capitalist economies.

Both models draw similar policy conclusions with respect to the role of government's counter-cyclical stabilisation policies. For RBC models, business cycles represent equilibria which are Pareto optimal and there is no room for government intervention or stabilisation policies. The REH models have no real impulse mechanism and blame the monetary disturbances of the government as the main cause of cyclical behaviour. In Lucas' view, Business cycles are not Pareto optimal and could be eliminated if the government reduces its disruptive role in the economy. In both models, monetary and financial factors play virtually no role in real economic decisions. Except through unsystematic monetary changes which lead to forecast errors and distortions in real allocations, money is neutral and has no real effects. Financial structure is irrelevant to any discussion of business cycles.

### **Bernanke's and Wojnilower's Articles (Readings 1 and 4)**

Although both of these authors emphasise the importance of financial institutions for the real economic activity, their analytical



approaches to business cycle phenomena are quite different. For Bernanke, financial markets and institutions mainly propagate the initial shocks (whatever their causes are) to the system through monetary and non-monetary channels, namely through credit squeezes. Financial collapses determine the persistence and severity of depressions, rather than being the original cause of the initial downturn. A distinctive feature of his analysis is an emphasis on the role of intermediaries in the credit supply process as opposed to the money supply process. In his view, financial disintermediation resulting from the business downturns, through its impact on credit supply and hence on aggregate demand, could convert a severe downturn into a protected depression. In short, disruption of credit markets are important to the collapse in real activity and they are among the main propagatory factors of business cycles.

For Wojnilower, on the other hand, real activity is determined by the availability of credit. Hence, any interruption in the supply of credit could initiate business downturns. In his view, only credit crunches could be the main impulse mechanism for business cycles. This approach, clearly, brings the credit markets in the forefront of any analysis related to real activity. This view differs quite markedly with that of Bernanke's, even though both of them stress that financial/credit markets' collapse could have real effects. Moreover, Wojnilower points out to the inherent instability of financial markets and the vulnerability of the real activity to severe and violent fluctuations, where as Bernanke tries to reconcile the obvious suboptimality of the depression period with the market clearing equilibrium and rationality postulates by providing an additional channel through which financial markets could lead to the persistence of such suboptimal outcomes.

Their views also differ with respect to the propagation mechanism of business cycle downturns. For Bernanke, credit squeeze restricts aggregate demand and reinforces the decline in real output. On the other hand, Wojnilower emphasises the impact of credit stringency on business and household expectations as well as on aggregate demand.

## REFERENCES

- BERNANKE, Ben S. : «Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression», *The American Economic Review*, V. 73, N. 3, June 1983.
- LONG, Jhon B. and C. Plosser : «Real Business Cycles», *Journal of Political Economy*, February 1983.
- LUCAS, Robert E. : «Understanding Business Cycles», In *Carnegie-Rochester Conference Series on Public Policy* 5. 1977.
- WOJNILOWER, Albert M. : «The Central Role of Credit Crunches in Recent Financial History», *Brookings Papers on Economic Activity*, 2. 1980.