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**Comment on
Ben Bernanke
Credit in the Macroeconomy**

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prepared for a colloquium on
**The Role of the Credit Crunch in the Recent Recession Federal Reserve Bank of New
York
February 12, 1993.**

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The views expressed, the analysis and the policy recommendations are those of the author and not necessarily the views of the directors, advisors and staff of the Jerome Levy Economics Institute

I. Introduction

a. The paradigm

As ^{Ben}Bernanke points out the dominant microeconomic paradigm is an equilibrium construct in which initial endowments of agents, preference systems and production relations, along with maximizing behavior, determine relative prices, outputs and an allocation of outputs to agents. Money and financial interrelations are not relevant to the determination of these equilibrium variables. The dominant macroeconomic paradigm builds upon this microeconomic paradigm, so that "real" factors determine "real" variables.

These constructs imply that in both the dominant microeconomics and the core of the dominant macroeconomics money and finance are neutral. The essential problem is whether any macroeconomic theory, that is constructed upon a set of assumptions from which the proposition that money (and finance) ^{are} is neutral is derived, can be a serious guide to understanding our economy and to the development of policies for our economy. For such a theory to be made relevant it is necessary to add transitory factors to the core model which make money (and finance) not neutral for the time that the transitory factors are operative even though
in the long run money and finance are neutral

b. The veil of money

In these dominant models money is a veil. Jack Gurley put the standard monetarist model away when he remarked, anent one of Milton Friedman's works, that "Money is a veil, but when the veil flutters the economy stutters." ⁽¹⁾ Robert Lucas, realizing that money has to be more than a veil for the conclusions he preferred to be acceptable, structured the game that became monetarism Mark 2 when he postulated that initially agents were unable to discriminate between own market (relative price) and general market (price level) price changes. He achieved a transitory non-neutrality of money by assuming that in each episode agents are initially confused but they ~~eventually~~ ^{quite quickly} learn ^{which} interpretation of the price change was true, ~~and~~ ^{either} those who erred, change their behavior ~~or do not survive~~

c. Private Information

Macroeconomic model building since Lucas' day has largely consisted of first accepting that a "real system" determines equilibrium and then inventing *imperfections* in the economic structure, money system or financial markets so that non-neutrality results. Such a model is New Keynesian, if the result is the existence of a number of equilibria, which are not necessarily at full employment, and if policy is effective. Such a model is New Classical, if the result

is that a unique real equilibrium exists and ~~if~~ policy is ineffective.

A popular way to generate non-neutrality of monetary or financial factors is to assume that information is asymmetric: that each agent has some private information. Furthermore each agent knows that the others know something that he does not know, even as he has some informational advantages. Information asymmetry implies that the foresight of each agent is imperfect.

But if the basic microeconomic model is opened to include yesterdays, todays and tomorrows then the demonstration that equilibrium exists depends upon assuming that ~~the~~ agents have perfect foresight. On the one hand we assume perfect foresight to demonstrate the existence of an equilibrium and on the other hand we assume that asymmetries of information (imperfect foresight) prevent that equilibrium from being achieved. There seems to be a logical flaw in the asymmetric information argument, for perfect foresight is first postulated to obtain an equilibrium and then repudiated in order to get meaningful results. If information asymmetries are pervasive, significant and inevitable ^{then} once we accept that ^{we are} interested in the course of events in historic time then ^{the} ~~the~~ ^{! This is} ~~the~~ ^{which} ~~construction~~ ^{means not the program of} of a macroeconomics on the foundation of an equilibrium microeconomics must be abandoned.

d. An Alternative Paradigm

The conventional economic paradigm is not the only way economic interrelations can be modeled. Every capitalist economy can be described in terms of sets of interrelated balance sheets. Except for two sets of entries - those which allocate the real capital assets of the economy to particular balance sheets and those which allocate the net worth of the economy to households - every asset is a liability in another balance sheet and every liability is an asset in other balance sheets. Balance sheets balance.

The entries on balance sheets can be ^{transferred into} ~~read as~~ payment commitments (liabilities) and expected payment receipts (assets): both denominated in a common unit. The essential content of any set of interrelated balance sheets are the payment commitments or ^{receipt} expectations ~~(cash flows)~~ they represent. These payment commitments and expected receipts are demand, (dated) and contingent ~~cash flows~~.

An economy consists of households, nonfinancial firms, financial institutions and governments. At every reading of the balance sheet the financial instruments, ^{terms entered} can be interpreted as generating two time series: the liabilities generate payment commitments and the assets generate expected cash receipts. In addition to the time series of cash flows due to the financial structure, household have a time series of expected cash receipts in the form of wages and transfer payments and firms have a time series of

expected cash receipts due to expected gross sales. The gross sales receipts of firms over a period of time are, in turn, paid out to workers as wages, to suppliers as payments for purchases, to government as taxes and to the owners as gross profits, part of the gross profits are retained and the rest paid out as interest, payment of principal on debts and dividends.¹

Balance sheet relations link yesterdays, today and tomorrows: payment commitments entered in the past lead to cash payments now and expected future cash payments even as balance sheet commitments undertaken today commit future cash flows. In this structure the real and the financial dimensions of the economy are not separable: there is no so called real economy whose behavior can be studied by abstracting from financial considerations. Wages and profits earned in current production are in part or in whole committed to fulfill obligations arising from liabilities, even as the cash received now, in exchange for commitments to pay in the future, finance portions of the current demand for investment output, consumption output and government demand.

In addition liabilities are issued when ^{and retained} a restructuring ^{over} of the ~~liabilities~~ ^{balance sheet} of holders of inherited capital takes place: the contractual cash payments ^{due} from debtors are modified when ^a refinancing takes place.

1. This abstracts from timing problems such as wages being paid before cash is received for goods sold etc.

This system, linking yesterdays, todays, and tomorrows, both financially and in terms of the demand for and supply of goods and services, is not a well behaved linear system. Furthermore the presumption that this system has an equilibrium cannot be sustained. This modelling of the economy leads to a process in time which generates a path that can fly off to deep depressions and open ended inflations even in the absence of exogenous shocks or strange displacements. In this model money is never neutral.

In the General Theory Keynes sought to create a model of the economy in which money is never neutral. He did this by creating a model of the capitalist economy in which the price level of financial and real assets is determined in markets where the price of money, taken as a financial instrument with the special properties (1) that debts are denominated in it and (2) that its price for fulfilling contracts is always 1? i.e. money is the asset whose value is derived from its liquidity.

Recall that for Keynes each capital and financial asset yields an income stream, has carrying costs and possesses some degree of liquidity, i.e. it could be transformed at a cost into money: the cost depends upon the nature of the asset and the properties of the market in which it is sold or pledged. X The price level of assets is determined by the relative value that units placed upon income in the future and liquidity now. Thus the greater the value placed

upon liquidity, the lower the price of those assets that are mainly valued for their expected income. Note that any disruption of the market in which a particular asset can be sold or pledged lowers its liquidity and therefor its price.

The price level of current output is determined by the labor costs and the mark up per unit of output ^{for} consumption goods ^{As} a first approximation the aggregate mark reflects the ~~ratio of the~~ wage bill in investment goods, the governments deficit and the international trade balance ~~to the wage bill in the production of consumption goods.~~ ^{achieved} ^{up} These aggregate relations determine the mass of gross profits and the competition of interest is that among firms for ^{their profits & the} profits. In this perspective ~~the~~ prices carry profits - the cash flows that enable firms to meet their payment commitments on their liabilities.

The non-neutrality of money in this version of Keynesian economics is due to the difference in how money enters into the determination of the price level of capital assets and ^{that} of current output, i.e. ^{the price of} consumption goods and investment goods ^{are determined in different ways} ~~in the simplest case,~~ ~~It strikes me that~~ ^{this} Keynes non-neutrality reflects an essential aspect of capitalism, in that it recognizes that capital and non monetary financial assets exist and that they not only yield income streams but they also can be sold or be pledged in order to get control over money. Furthermore capital assets can be newly produced and the decision to order such new production of capital depends upon the relation between the

price level of investment goods, the price level of capital assets, the flows of retained earnings of firms and the conditions for external finance.²

It strikes me that this way of modelling non-neutrality is superior to the asymmetric information way in which non-neutrality depend upon borrowers being smart and bankers being dumb. While asymmetric or private information is a pervasive fact of life and decision in historic time, it is not necessary to non-neutrality, for even if information was symmetric and no private information existed, the prices of capital assets and current output are determined in quite different market and the dominant proximate determinants of the two differ.

Note that this way of modeling capitalism emphasizes decisions to invest and the determinants of ~~the structure of~~ portfolios. ~~The~~ Decision makers are both rational and maximizers, but they know that their well being rests upon the performance of markets which are subject to both evolution and breakdowns. Furthermore they know that they do not have the gift ^{of} ~~by~~ perfect foresight. For economics the appropriate question is how do rational individuals behave in an irrational world, i.e. a world they do not fully understand.

2. See Hyman P. Minsky, Stabilizing an Unstable Economy, Yale University Press, 1986.

John Maynard KEYNES, Columbia University press, 1975

II. Balance Sheets and Cash Flows:
Robust and Fragile Financial Structures.

Every capitalist economy is characterized by a system of borrowing and lending based upon margins of safety. The fundamental borrowing and lending act in this system is an exchange of "money" now for "money" in the future. This exchange takes place in the aftermath of a negotiation in which the borrower demonstrates, to the satisfaction of the lender, that the money of the future part of the contract will be forthcoming. The result of this negotiation, including what happens when the debtor fails to fulfill the commitments to make payments, are stated in a contract. The money in the future is to cover both interest and the repayment of the principle of the contract.

a. Hedge, speculative and Ponzi finance

For a particular balance sheet, whether it be of a household, non-financial firm, bank, other financial institution or government unit, the liabilities call for payments to be made now or at specified dates in the future or when specified contingencies arise: *liabilities transform into time loans* The assets transform into current and expected receipts: *assets also transform into a time loan* If the assets owned by ~~and~~ unit fail to generate the funds needed to meet the payments on liabilities then someplace in the economy there are ~~non-performing~~ assets *which are not performing up to what had been expected*

If, for an economic unit, the current and expected flow of funds that result from the normal functioning of the assets it owns (together with the flows of cash due to wages for households) are sufficient to fulfill current and future expected payment commitments due to liabilities then the unit is in a ^{hedge} financing posture, ~~that I labeled hedge~~. For example during the heyday of the fixed interest fully amortized mortgage the monthly payments were, for most such contracts, an allocation of expected wage incomes, which it was expected would be sufficient to meet all payment commitments. It should be noted that the paper which the real bills doctrine held to be appropriate for banks restricted bank financing to transactions that corresponded to the definition of hedge financing.

As payments of dividends are conditioned upon the performance of the company, the greater the risk of
 If we consider a partially amortized five year balloon mortgage, wages can be the expected source of the funds to honor the contract for five years. A refinancing - replacing maturing debts with new debts - will be the source of funds at the end of the five years. Balloon mortgage financing introduces an element of uncertainty in financial relations, in that the terms of the refinancing depend upon market conditions when the refinancing takes place. I called ~~this~~ this type of financing, speculative financing.

Speculative financing covers all financing ^{arrangement} which involves refunding at market terms that rule at the refunding date. Banks ~~are~~ always engaged in speculative financing. The floating debts of companies and governments

*equities
 in the
 liabilities
 of a
 firm to
 fund the
 liability
 but it
 is hedge
 financing
 unit*

are speculative financing arrangements. I am not sure but I believe that Olympic and York used commercial paper to finance at least part of their holdings of real estate: *Olympic and York were speculation of financing units*

If the cash flow of a highly indebted operation - firm, household, government, or financial institution - is less than the interest part of its debts that fall due during a relevant period, then new debt needs to be issued if the interest is in all or in part ^{is} to be paid. ~~Long ago I labeled~~ ^{is} such "payment in kind" financing Ponzi financing. (I would have been better served if I had labeled the situation as the capitalizing of interest.) If units which are engaged in speculative financing are confronted with sharply rising interest rates, and if they cannot adjust the income their assets earn to the interest their liabilities carry, then they become Ponzi financing operations. The S&L's were in this position during the high interest rate period of the late 70's early 80's. ^{There} was an implicit contract in the financing arrangements of housing that the New Deal introduced: the S&L's would make long term fixed interest rate mortgages and the "government" would keep their funding rates within the bounds of their long term assets. Monetarism, whether full blown or practical, did not acknowledge ^{that} this implicit contract ^{existed.}

For a private operation engaged in Ponzi finance, net worth is debited by the amount that indebtedness increases. Thus the margin of safety provided to lenders by the excess of the book value of assets over indebtedness ~~shrinks~~ ^{shrinks} or by the excess ^{of cash receipts over cash payment commitments} ~~shrinks~~.

Furthermore ^{the} income shortfall of a run of Ponzi finance ^{is a property} throws the book value of assets into question. As the equity diminishes the ability to continue capitalizing interest vanishes: ^{For} private units there are limits to Ponzi financing.

Note that construction financing is almost always a pre arranged Ponzi financing scheme. Delays in transforming a non-performing construction asset into a performing real estate asset can be deadly to the thin equity projects which ^{and} ~~characterize~~ ^{common disease} a property boom.

It is worth noting that the current income and expenses posture of the United States can be viewed as a case of Ponzi finance: interest on the public debt accounts for a large measure of the deficit. As long as this goes on the burden of the debt (current carrying costs) is increasing with no corresponding increase in the nation's productive capacity.

b. Robust and Fragile Finance

The place of an economy on a financial robustness-fragility scale is determined by

1. the weight of hedge, speculative and Ponzi finance units in the economy,
2. the willingness and ability of the authorities to refinance units at concessionary terms when current market rates transform units into Ponzi Units and
3. the in place power of the authorities to sustain

aggregate profits (cash flows to business) and aggregate wages when current market rates turn a large number of ^{private} units into Ponzi financing units. ^{A large number of Ponzi units. To increase that} and when the ~~current~~ flow of profits and wages ~~could~~ slow down because the failure of financial contracts and real assets to perform leads ^{only} to a decline in the willingness and the ability of financial institutions to finance activity.

The above is quite general. The special assumption of the financial instability way of looking at the world is that over a run of good times the ^{distribution} ~~structure~~ of units among hedge, speculative and Ponzi financing changes, so that the weight of hedge financing decreases and the weight of speculative and Ponzi financing increases. This happens because during a period dominated by hedge financing the structure of financing terms and the performance of markets and institutions which trade in assets and refinance debts lead ~~to~~ profit seeking clients of banks and markets and the operators of banks and in markets to ^{use debt} ~~substitute debt~~ for equity and short term debts for long term debts. This substitution operated from both demand and the supply side: bankers, both commercial and investment, are liquid or know organizations that are liquid and seek borrowers.

Given a ^{large enough} ~~sufficient~~ weight of speculative units, a not abnormal event can lead to an increase in Ponzi financing units and then trigger a debt deflation process. The course of events after the triggering occurs depends upon the strengths of both generalized lender of last resort

interventions and the ability of governments to sustain income and employment by running deficits.

The gist of the argument is that the Smithian invisible hand proposition does not necessarily hold in a world where the financial structure has the characteristics of our financial structure. Each agent maximizing income or wealth in the world we live may, in a way that is not intended, lead to the emergence of a situation where the inefficiency of a debt deflation and a deep depression is the outcome. *The inefficiency of a debt deflation and a deep depression is to react that the small inefficiency of regulation can 'fund deals'.*

c. The determinants of the basic cash flows

I will not repeat here the straight forward Levy-Kalecki formulation of how the structure of aggregate demand determines the distribution of incomes.³ It is enough to say that in an economy where government is a large percentage of gross national product a collapse of aggregate gross profits such as took place in the 1929-1933 period cannot occur. This means that the cash flows that validate financial contracts cannot fall as far as they did in the great depression. We need to recall that in the great contraction of 1929-33 nominal GNP fell by 50% and the price level fell by 1/3 but the Dow Jones or the Standard and Poors index of stock prices fell by 85%.

A government that is large enough to sustain profits is necessary if we to have 1) financial markets where freedom

3. M Kalecki
S, Jay and David Levy

to innovate and to finance is the rule and 2) ^{the power} an ability to avoid deep and long depressions. We also need ^{the flexibility} to be able to swing ^{the structure of government tax and spending} from periods in which the private economy dominates in the determination of gross profits ^{what is appropriate is} and periods in which public debt financed spending takes over the burden of sustaining gross profits.

III. The Dog that Didn't Bark

The main problem that the experience of the past several years poses for the endogenous instability view is that the thrust towards a deep depression was contained. The so called bail out of the S&L's and banks together with the huge government deficit explain what happened.

In an earlier work Bernanke concluded that the taking out of much of the financial institutional world - the destruction of banks, building and loan associations and brokerage houses - ^{that occurred between 1930 and 1933} delayed the recovery from the great contraction.⁴ ~~We should~~ ^{we should} On the basis of our current understanding ^{we should} reconsider the stagnation hypothesis of A.Hansen and R. A. Gordon.⁵ ~~The Hansen - Gordon version of~~ the stagnation hypotheses held that an exhaustion of investment opportunities was responsible for the protracted stagnation or the incomplete recovery from the bottom of the

4 Ben Bernanke
5 A Hansen
R A Gordon

holding 1933

great depression. An alternative ^{experiments} ~~version~~ of the stagnation hypothesis [~] would be that ~~stagnation occurred~~ because the financial system was smashed in 1929-33 and therefor there was no system in place that could translate improved profit prospects into financed investment. ~~that would translate~~

If we think of "normal prosperity" as being powered by private demands, a hypothesis can be advanced to the effect that the great stagnation lasted through the Second World War and beyond. Prosperity led by private demand did not reappear until after the demobilization from the war was completed. Furthermore the initial conditions for postwar prosperity included households, nonfinancial businesses, and banks and other financial institutions that were extraordinarily rich and liquid, a government that was a much larger percentage of GDP than any prior peace time government and a system of regulated and guaranteed financial institutions. Because of the depth of the depression and the drain of resources to war, the great contraction and the ensuing ^{stagnation, as witnessed by the} absence of a private demand driven prosperity, ^{can be considered as lasting from 17-18} ~~may have lasted 16 or more years~~, from 1929 though 1946 or 1947: ^{the 17-18 years}

Our current situation is similar to that of the great depression-stagnation period in that we have had a period during which financial institutions in large number have either been hurt or disappeared. Deposit insurance prevented a pass through of the losses on asset values of S&L's and banks from being losses by depositors. ~~In this,~~

destructive with time made

our recent bout of instability was ~~un~~like the great depression. However the way the intervention that prevented the pass through was carried out has resulted in a decrease in the number of independent financing sources as well as an increase in the size of the surviving institutions. The consolidation of banks into larger units is continuing because of the relaxation of the regulatory barriers to interstate banking as well as to various "banking" functions.

There always has been a conflict between those who see banks as the operators of a safe and secure payments mechanism and those who see banks as an essential institution for the capital development of the economy. The first views banking and financial intermediation as essentially passive processes by which a pre-determined amount of savings is allocated among alternative uses. The second views banking and financial intermediation as active forces in the economy which by financing investment forces resources to be used to put investment in place, and thereby fostering the development of the economy.

This forcing of investment determines income. Income achieves that level at which savings and investment are equal. Keynes treated the forcing as a generalized income increase. Kalecki et al treated the forcing as operating through income distribution as well as through a generalized rise in income.

From this second point of view, the financial trauma of the past several years has erected a barrier to our achieving a close approximation to full employment as a result of private debt financed demand for some time in the future. Furthermore in the 1930's as well as in our recent and continuing ~~experience~~ ^{remin} major firms have achieved major losses. The bankruptcy and near bankruptcy of major firms in the past several years is reminiscent of the what happened to the blue chip railroads in the 1930's.

Both the 1930's and the current situation began as Fisher had the debt deflation begin: the initial position is what Fisher called over indebtedness, what I call heavily indebted.⁶ In Fisher's time the debt deflation was not contained: neither the ideas which rationalize containment nor the tools of a central bank free from the fetishes of the gold standard nor governments throughout the world who spend 20% or more of their full employment GDP existed.

One conclusion that follows from this interpretation of the stagnation of the 1930's is that the taking out or the wounding of so much of the financial structure in recent years indicates that tax initiatives, such as the investment tax credit, that look to inducing investment will not have the kick in the 1990's that they may have had in the 1960's when the financial system was much more robust than it is now.

6 I Fisher The Debt Deflation Theory of Great Depressions, Econometrica, 1933