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Significance of "The Crunch" for Monetary Theory

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"Money, it is well known, serves two principal purposes. By acting as a money of account it facilitates exchange without it being necessary that it should ever come into the picture as a substantive object. In this respect it is a convenience which is devoid of significance in real influence. In the second place it is a store of wealth. So we are told without a smile on the face. But in a world of the classical economy, what an insane use to which to be put it! For it is a recognized characteristic of money as a store of wealth that it is barren; whereas practically every other form of storing wealth yields some interest or profit. Why should anyone outside a lunatic asylum wish to use money as a store of wealth."

J. M. Keynes, "The General Theory of Employment"
Quarterly Journal of Economics Vol. 51,
February 1937 p. 215.

"What matters in determining the level of investment is the relation between the market values of existing reproducible assets and the supply price of new ones. These market values and the prices of fixed interest paper assets are simultaneously determined by asset preferences in relation to the stock of assets. Thus changes in the underlying situation will affect the prices of both paper assets and of real assets, but it is the latter set of prices rather than the former which is directly relevant to the determination of the volume of investment."

Ralph Turvey, "Does Interest Rule the Roost?" in
The Theory of Interest Rates, edited by F. H. Hahn
and F.P.R. Brechling, London, Macmillan & Co. p. 171.

I. Introduction

The events leading up to the crunch, the crunch itself, and what has followed constitute the only observation in well nigh forty years of something resembling a financial panic. From the birth of the Republic to the onslaught of the great depression financial panics or crises occurred with dismal regularity. From the vantage point of 1935 one of the striking characteristics of the American Economy was the regular occurrence of monetary and financial instability. From the vantage point of early 1966, such events seemed the property of a distant past. Financial stability was apparently a dominant and permanent characteristic of the economy. Today I take it we are asking, as a result of the crunch, which was a minor panic, whether our early history of financial instability or our more recent history of financial stability is a better guide to the future.

Our confidence in the proposition that a new era has been ushered in by the acceptance of the new economics has been shaken.

It is important, while the memory of late summer and early fall of 1966 is fresh and while some of its lagged consequences are still working their way through the market place to draw some inferences as to the significance of the financial tremor of 1966. We must be aware that a financial crisis is an ephemeral phenomena. In the vast array of numbers available to economists the impact of a crisis easily can be lost. This is especially true if the other things going on at the same time obscure what usually has been the major result of a financial crisis - a deep depression.1/

The basic proposition that emerges from the crunch is that for an intensely financial economy, such as that of the United States, financial interrelations are a key element in understanding system characteristics. To make a slogan "money not only matters, money is almost the only thing that matters," where money is understood to be a shorthand for financial relations.

The logical starting place for a theory within which money is well nigh all is to first investigate the relations between asset holding and investment within a financially sophisticated capitalist economy. One postulate for such a model is that both holders of inherited real and financial assets and investors in newly produced capital equipment are aware of the uncertain nature of the world. By starting with decision making under uncertainty, emphasizing the particular relevance of uncertainty for asset holding and investment, and noting the sensitivity of the assumptions made by asset holders and investors with regard to the

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1/ The chronicle of deep and mild depression cycles by Friedman and Schwartz [M. Friedman and A. J. Schwartz, "Money and Business Cycles," The Review of Economics and Statistics, Vol XLV Number 1, Part 2 Supplement: February 1963] coincides with the existence or absence of financial stability [See H. P. Minsky "Comment" The Review of Economics and Statistics, Vol XLF Number 1, Part 2 Supplement: February 1963]

future to surprises that 'nature' may cast up, a theory can be developed that is quite different from that embodied in both the classical and the conventional Keynesian (or alternatively neo-classical synthesis) models. The artificial and irrelevant nature of models that assume perfect markets and decision making under certainty equivalence is made evident once the initial focus shifts from exchange under static conditions to portfolio management and investing under uncertainty. To sloganize: "Keynes of the General Theory was the author of a Treatise on Probability" i.e., the General Theory is mainly concerned with the peculiarities of behavior under uncertainty.

The emphasis upon uncertainty - and that uncertainty leads to peculiar behavioral patterns is evident in Keynes' General Theory..[1/] both in the volume with that label and in the article that appeared in The Quarterly Journal of Economics in 1937[2/] as a rebuttal to a number of distinguished reviewers and commentators upon the volume. Most of what follows can be interpreted as an argument in the interpretation of Keynes' "General Theory..": The argument being that the conventional or text-book interpretation, building on Hicks' "Mr. Keynes and the Classics,"[3/] misinterprets Keynes. Alternatively it can be looked upon as a fragment of a model that does not have such a distinguished ancestry. In either case, the test of validity is the model's relevance to events; we must first understand so that in the future policy can be more effective.

The crunch shifts our attention to business cycles and business cycle theory from growth and growth models. The events of the past year show that the policies

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1/ J. M. Keynes, The General Theory of Employment, Interest and Money Harcourt, Brace and Company, New York, 1935.

2/ J. M. Keynes "The General Theory of Employment," Quarterly Journal of Economics Vol 51 February 1937

3/ J. R. Hicks "Mr. Keynes and the Classics," Econometrica, 1937

of the New Economics have not made the business cycle obsolete, although they have demonstrated that the repercussions of financial events that tend to contract the economy can be offset by expansionary fiscal events. In particular the feedbacks by way of expectations from steady growth will tend to transform steady growth into an explosion.

The crunch was preceded by an investment boom, the first in well nigh forty years. Although some signs of an investment boom appeared in the 1950's, fiscal drag aborted the nascent boom. A tax schedule designed to finance a government that is, in order of magnitude, 10% of the economy generates such hugh government surpluses, when private investment is dominant and traditional fiscal prudence rules, that a gap between actual and capacity output is opened. This capacity gap effectively dampens an investment boom. The tax cut of 1964 signalled a turn away from traditional fiscal maxims. Presumably it meant that tax and spending policy no longer would be so managed that excess capacity would automatically appear. As a result, for the first time since the 1920's the animal spirits of entrepreneurs and promotors were fully aroused. Thus the first question raised by the crunch is what led to the investment boom and secondly how was the investment boom financed. It may very well be that the more serious instability, from the perspective of economic policy, is the tendency for the economy to explode. Certainly we have well formulated policy guidelines for a stagnant economy. The issue may be whether modern capitalism can stand success, whether policies that effectively constrain high-level investment can be developed.

The crunch itself can be identified with a number of phenomena: the runoff of C.D.'s, the ceiling on interest rates, the vulnerable position of savings institutions with respect to changes in interest rates. Certainly the crunch gave evidence that our financial institutions are still subject to sharp stresses and strains, that institutional factors are still important, and that a part of

any analysis relevant to policy must deal with the appropriativeness of institutional arrangements. A problem of the 1930's is, so to say, resurrected by the crunch: "What is the good financial society?" Deposit insurance was tested for the first time in 1966 and on the surface it passed the test. Does this mean that we now have a financial constitution that can withstand all forseeable strains?[1/]

Most obviously the crunch was a liquidity crisis for money market financial institutions. The relevant aftermaths of the crunch are the effects upon the economy of efforts by ordinary business and financial organizations to modify their balance sheets so that they will be better protected against any financial tightness that might develop due to market or central bank pressures. The crunch and its aftermath focuses our attention on the role of balance sheets in determining system behavior. All in all it should serve to remind us that financial interrelations are an essential distinguishing characteristic of a capitalist economy and that the key to explaining peculiar behavior properties of such an economy might lay in financial interrelations. The theory that starts from money, assets and investments is only relevant to the operations of a capitalist society. This is in contrast to conventional price theory, the relevance of which is quite independent of institutional arrangements.

II A Fragment of a Model

The crunch focuses attention on the pricing of the inherited stock of financial and real assets. Each asset has two 'sources' of value, one being the time series of annuities it can be expected to yield, A, the other being the price at which it can be sold today L. Thus for any asset

1. $P_i = \delta i \quad K(A_{it}) + (1 - \delta_i) \quad K \quad (L_i)$ where P_i = price,

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[1/] Henry Simons was perhaps the most perceptive discussant of the good financial society. See "Rules Versus Authorities in Monetary Policy" Journal of Political Economy, XLIV, No. 1 (February 1936)

K is a capitalization operator, A_{it} is the stream of annuities the asset is expected to yield, and L_i is the annuity equivalent of the liquidity believed to be embodied in the asset, δi and $(1-\delta_i)$ are weights $(1 \geq \delta_i \geq 1)$, and i is an index identifying the asset.

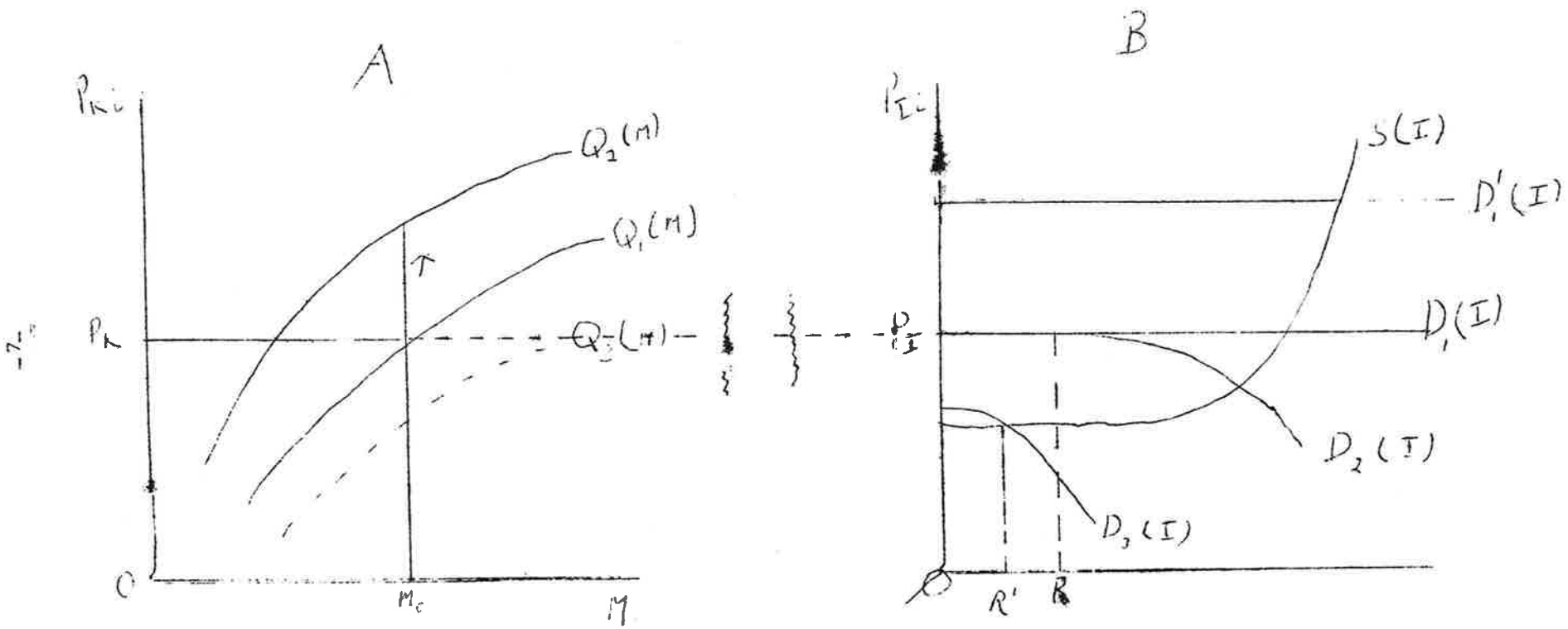
Money is the o^{th} asset, both A_o and δ_o equal o. The annuity equivalent of the value of the liquidity embodies in money is L_o. Thus the value of money is $Po = 1 \cdot {}^{Lo}/_{Lo} = 1$, with ${}^{1}/_{Lo}$ used as the capitalization rate. For any other asset, using ${}^{1}/Lo$ as the capitalization operator,

$$2. \qquad P_i = \frac{\delta i}{Lo} A_i + (1 - \delta_i) \frac{Li}{Lo}$$

The above is my interpretation of some material in Chapter 17[1/] of the General Theory. Keynes in that chapter writes in terms of longer term trends, where accumulation can affect the expected annuities and the decline in the quantity of money relative to other things can raise the discount rate due to the rise in the annuity value of liquidity. We however are free to interpret Lo as being subject to sharp cyclical revisions as events affect the confidence with which asset holders view the future.

The quantity of money, given the inventory of other assets to be owned and the expectational climate determines the annuity equivalent of liquidity and thus controls the price attached to other assets. We need to make precise how other things, in particular the liability structure, enter into the determination of the prices attached to the existing stock and the rate at which investment proceeds.

[1/] For simplicity I ignore changes in the price of assets (inflation, deflation) and carrying costs for the assets.


A
B
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S(I)
$D_1'(I)$
$D_1(I)$
$D_2(I)$
$D_3(I)$
P_I
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We can rewrite equation 1 as

3. $Pi = V_i\ (M, K, F_o, F_I, A_i, N,)$ where

P_i = price of the ith asset (real or financial), M is the money supply, K is the inventory of real or tangible capital, F_o is the inventory of outside financial assets, F_I is the inventory of inside financial assets, A_i is the annuity stream (cash flow) that the ith asset is expected to generate, and N is the state of nature.

Of immediate importance is the identification of N with uncertainty and the state of confidence. "N" represents the potentially unstable desires of asset holders as to the best composition of their portfolio's. In particular some of the F_I are financial obligations of units owning capital assets. The extent to which the cash flow to the unit represented by the annuities A is to be implicitly or explicitly hypothecated to service such financial obligations depends upon the state of confidence represented by N. In particular N responds to events, and a small change in N can lead to a large shift in V. $P_k = Q\ (M)$ of Diagram A is a two dimensional representation of Equation 3.

I take it that equation 3, and diagram A, is what liquidity preference is all about. We could develop the conventional form by relating everything to some interest rates. We can also go back to equations 1 and 2 and relate everything to the annuity equivalent of the liquidity embodied in money. A fall in Lo raises asset values. In particular continued success transformed into promises of unending success lowers the value of liquidity and thus raises P_i.

Another effect of continued success of the economy, and of the units in the economy, is to raise the ratio of cash flows committed to service financial obligations to cash flows expected from asset owned consistent with the absorption of any particular level of 'uncertainty' by asset owners; the willingness to hypothecate

the annuity stream A increases with successful functioning of the economy.

The demand price for produceable investments is related to the price of the existing stock of capital. However it would be an oversimplification to always draw an infinitely elastic demand curve for investment goods such as D_I (I). I take it there is no need to discuss S (I). The rising supply curve of investment goods as a function of the rate of investment has often been discussed in the literature.[1/]

We will assume that investment is carried out by existing firms. Thus we begin with an initial liability structure. As a shorthand we assume that the acquisition of tangible capital assets is financed by the emission of liabilities, recognizing that in reality the acquisition of assets can be financed by disposing of some other asset and that retained earnings are implicit liabilities. Liabilities set up a series of cash flows from the organization - the nature of the liability determines the penalty for not fulfilling this "commitment". The asset that is acquired is expected to yield a set of cash flows (annuities) to the firm.

The demand price of an asset, whether real or financial, depends upon weighing the expected annuities, the annuity equivalent of the assets liquidity and the difference in the balance sheet of the firm with and without the asset. When trading in the existing stock of tangible assets takes place, we can assume that no essential change results in the expected annuities, liquidity or liability structures of the set of all firms: that is the debts liquidated by the selling firm are offset by new debts assumed by the purchasing firm. However net investment, an increase in the stock of tangible assets, will be associated with significant changes in balance sheets.

[1/] J. G. Witte Jr. "The Micro Foundation of the Social Investment Function" Journal of Political Economy October 1963

An investment is mainly carried on by existing firms, it is not the cash flows to the firm, due to the investment, and the cash flows from, due to how it is to be financed that determine in isolation whether the investment is to be undertaken. The relevant cash flows to and from are the cash flows of the entire organization. The basic decisions of borrowers and lenders center around the excess of expected cash flows to the firm over the cash flows from the firm which its liability structure generates.

We can assume, perhaps heroically, that the annuities a firm can expect from an addition to its capital stock are invariant with respect to the rate at which it is investing. However the distribution of liabilities it will have to emit varies with the rate at which it is investing. Assume two liabilities-retained earnings and standard fully amortized bonds. Both retained earnings and bond emission entail pledges of cash flows from the firm, but the promise is more explicit and the penalty for not fulfilling the contract is much more serious for bonds than for retained earnings. Thus from the perspective of the firm the percentage shortfall of annuities from anticipated annuities that would result in penalties decreases as the rate of investment relative to retained earnings increases.

With a stable expectational climate, the marginal liability structure, to finance new investment, will "equal" the average financial structure used to finance ownership of the inherited stock of tangible assets. A demand curve for investment such as D_2 (I) in Diagram B results, where OR are retained earnings.

If the economy has experienced a long run of good times, and especially if this run is associated with a belief that something or other-perhaps economic policy-has changed so that good times are now to be permanent then a number of things happen. First of all the annuities associated with tangible capital are changed-'recession' annuities are replaced by 'good time' annuities. Secondly

the annuity value of liquidity decreases as cash flows from tangible assets are presumed henceforth to be more stable. Third because of the presumably greater stability of cash flows, a greater willingness on the part of firms to finance ownership of real capital by debt emerges.

The first two of the above increase the price of the stock of assets. In Diagram A, the P_k' function shifts from 1 to 2. The third means that there is unused willingness to borrow which arises from the way in which ownership of the existing stock of assets has been financed.

Although refinancing of the stock does occur, and transfers of the stock to firms that lever more do occur, the main impact of the increase in the desired debt ratio for the stock is a greater willingness to finance investment by debt emission. That is the debt investment ratio will be greater than the debt-stock of capital ratio. The demand curve for investment such as D_I (I) or D_I'(I) emerges.

Financial institutions (banks, etc.) also live in the same expectational climate as other units. They are simultaneously demanders and suppliers in different sets of financial markets. In a boom, they accept liability structures, their own and their customers, which in less enthusiastic circumstances they would have rejected. Thus an evolution in the emotional climate will have a cumulative influence on the financial structures of all units, including financial institutions.

The result of the cumulative changes during a boom are to impose ever more stringent cash flow conditions on all units. The cash flow from will become more closely articulated to the cash flow to and, with the occurrence of shortfalls in income, an increase in the reliance on position making through using the liquidity attributes of owned assets takes place.

The boom leads to ordinary firm, households and financial intermediaries accepting balance sheet structures that require closer coordination between cash flows to and cash flows from. Such closer articulation between cash flows to

and from increases the need to make position by dealing in financial assets. A 'crunch' develops when an attempt to make position by dealing in some assets yields a sharp price break in the asset.

The development of conditions conducive to the crunch depends upon marginal debt-equity ratios, associated with the financing of investment, being greater than the average ratios, associated with position in inherited capital, as well as upon some refinancing of positions in inherited capital by emitting debt. This differs from process I had emphasized when I discussed how the domain of stability of the financial system decreases when private investment rather than government debt offsets savings. The impact of the private investment-public deficit cycle remains, however the impact of boom expectations as discussed above leads to a more rapid change in the ratio of debt to income or debt to equity than is possible through the growth process. Thus the domain of stability can decrease much more rapidly than my earlier work had indicated. In particular the development in an intensely financial system can be very rapid, so that a stable expansion can be transformed into a non-sustainable process quite quickly.1/

To summarize as an investment boom progresses, the liability structure of ordinary business firms and financial institutions both evolve so that the domain of stability of the financial systems is decreased. This is not solely because of the high ratio of private investment to say the generation of outside financial assets. In addition tight money associated with an investment boom induces liquidity

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1/ See H. P. Minsky, "Longer Waves in Financial Relations: Financial Factors in the More Severe Depressions," American Economic Association Papers and Proceedings V. 54 May 1964 pp. 324-332.

"Financial Crisis, Financial Systems and the Performance of the Economy" Commission on Money and Credit, Private Capital Markets Englewood Cliffs, N. J., Prentice Hall, 1904 pp. 173-380. (C.M.C. Supporting Papers)

"Can "It" Happen Again" in D. Carson ed., Banking and Monetary Studies Homewood, Illinois, R. D. Irwin 1963, pp. 101-111.

conserving portfolio changes. Thus a cumulative process that increases the sensitivity of the economy to shocks is an essential output of a successful period for a capitalist economy.

The most interesting part of the crunch is the boom that preceded it. The actual climax of such a boom always depends upon institutional features that might very well be transitory. Certainly the Central Bank of the United States - which is broader than the Federal Reserve System - deserves high marks for its behavior last year. The unwinding of the stringency went smoothly - the crisis did evaporate.

The present situation I would characterize as a post-crisis liquidity trap. The demand for money and for the funding of short term debts into long term debts are such that high interest rates on financial investments prevail, in spite of a slowdown in the rate of growth of income and a rapid increase in the quantity of money. I suggest that the liquidity trap of stagnation is not the interesting one- the interesting liquidity trap takes place after the crunch-or crisis. It is when firms and financial institutions are trying to achieve liquid positions after the portfolio transformations of a boom that monetary policy is ineffective. For under these circumstances monetary policy, even if it provides a rapid growth in the money supply, cannot bring interest rates relevant to the financing of investment down.

An important institutional determinant of the pattern of interest rates that emerges when firms try to rectify portfolios is the absorptive capacity of financial markets. The rise in short term business debt during 1961-66 was so great that even after a massive attempt to fund this debt in 1967 by emitting long term bonds no real improvement in the liquidity of firms has taken place.

In terms of the diagrams, the crunch will result in the liquidity value of money increasing rapidly. Thus in Diagram A the curve $P_k = Q(M)$ will shift to

say position 3. Simultaneously due to the impact of the crunch on desired liability structures, the demand curve for investment will shift downward, to a position like Q_3 (I). in Diagram B. If OR remains from profits after taxes, after the crunch, OR' will be spent on investment goods and R'-R of the cash flow will be applied to 'rectify' the balance sheet.

III. How Does Tight Money Work?

Tight money, defined as rising interest rates associated with stricter other terms on financial contracts can work to restrain demand in two ways. One is the way in which it is conventionally assumed to operate, by rationing supply of 'finance' along a stable negatively sloped demand curve for 'investment'. The second is the way that was sketched above, by inducing a dramatic change in expectations,by first generating a financial crisis or at least widespread financial pressures. The way in which tight money will in fact operate depends upon the state of the economy.

In our diagram, monetary policy can have but little effect upon the price of capital goods, P_k, because the effect upon the quantity of money of current policy with respect to the quantity of money is small. However monetary policy can affect the terms upon which investment is financed. If, as seems institutionally valid, money is 'created' in the investment financing process and if variations in the quantity of money created by current policy are an appreciable ratio to current investment, then the demand for investment curve D_2(I) in Diagram B will shift up or down depending upon current monetary policy.

Thus in a period characterized by stable expectations, monetary policy operates within a framework of essentially stable relations and is effective in affecting small changes in investment. Note that under these circumstances monetary policy is reversible.

If boom, or euphoric expectations develop so that the demand curve for investment is at $D_I'(I)$ varying the rate at which the money supply changes will not affect the amount of investment. Under these circumstances the willingness and ability to engage in velocity increasing-liquidity decreasing portfolio changes is so great that monetary policy can only affect the rate at which the economizing of money is taking place to finance new investment, not the investment put into place.

In a situation characterized by $Q_2(M)$ and $D_I'(I)$ the domain of stability of the financial system is being decreased. Not only is new investment financed by marginally higher debt ratios but also the terms on the contracts become more stringent; interest rates rise.

Thus tight money means, for units which emit liabilities, a rise in cash payment commitments as positions in inherited capital are refinanced. This is true not only because interest rates are higher but also because the other terms on the borrowing contracts are affected. Positions in inherited capital are refinanced as a result of two quite distinct events. First as inherited capital changes hands, the purchaser has to pay current market terms to finance his position. Secondly many units pay debt by emitting new liabilities. Such refunding of debt can lead to a rapid rise in cash flows from a unit as liabilities are turned over. This can lead to a sharp decline in the net portion of income. This is especially acute for depositing institutions where a rise in the rate paid to any depositor is necessarily extended to all depositors.

Once the economy is in a position characterized by $Q_2(M)$ and $D_I'(I)$, the only way monetary policy can be effective is to break the boom expectation. The exact way in which the financial tremor will occur depends upon institutional arrangements and perhaps accident. The limited ability of Savings and Loan

Institutions and Savings Banks to meet rate competition was an essential element in the crunch of 1966. However in the expectational climate of 1965-6, if the weakness had not shown up in the savings institutions, the inflationary-expansionary process would have continued until some other weak point developed.

The crunch results in shifting down both the price function for capital goods and the demand curve for investment. In Diagram A the price curve shifts to $Q_3(M)$ and in Diagram B the investment demand function shifts to $D_3(I)$. As these shifts reflect deep changes in expectation, variations of the rate of growth of the money supply will not be able quickly to return the economy to a 'normal' demand for investment: this use of monetary policy to treat a boom is not easily nor quickly reversable.

IV. The Lessons from the "Crunch".

The basic lesson from the crunch is that the relevant model for understanding the functioning of American Capitalism necessarily places financial relations central stage. The relationship between investment and the price of common stocks, the financial asset which represents ownership by households of real capital needs, to be explored. Presumably, following Turvey,[1/] the rise in stock prices means a rise in the demand price for investment goods: however the specification of this relationship remains a major shortcoming of our understanding of system behavior.

The lesson from the crunch that may be most disturbing is that American Capitalism may be unstable "upward" due to the potential it has for developing boom expectations. The requirement to maintain full employment combined with this tendency to blow up may mean that direct controls on investment are a ~~necessary~~ policy tool.

1/ Ralph Turvey, op. cit. p. 172.