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The Structure of Financial Institutions and the Dynamic Behavior of the Economy

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> "...it (Mitchell's work in Business cycle theory) formulates one of the two - and there are only two - fundamentally different groups of Business Cycle theories. There is the 'theory' that the economic process is essentially non oscillatory and that the explanation of cyclical and other fluctuations must therefore be sought in peculiar circumstances which disturb the even flow. And there is the 'theory' that the economic process itself is essentially wavelike - that cycles are the form of capitalist evolution - the theory to which Mitchell was to lend the weight of his authority."
> J.A. Schumpeter[1]

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1. J.M. Schumpeter Ten Great Economists

1. Introduction

I beg to differ with Schumpeter. This is hard: I began my Ph. D. dissertation with him and just as we were getting going, he died. Nevertheless I think he would have enjoyed what follows even though it puts Walrasian economics down. In part this paper may be a homage to Schumpeter, because it returns to themes that ran through our conversations, at least as I remember them. The themes relate to capital theory and monetary theory.

There are more than "two" families of theories of business cycles. It is not necessary for a business cycle theory to conclude that the economic process yields either a non oscillatory time series (a stable state or a constant growth rate) or some self sustaining wavelike motion. In particular there is a third conclusion business cycle theory can reach, a conclusion which receives support from both modern perspectives on economic theory and recent and ongoing experience.

This third way reaches the conclusion that the economic process is neither essentially non oscillatory, so that the economic fluctuations are the result of an averaging process operating on past disturbances,[2] nor wavelike, so that

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2. These are the cycle theories of Slutsky and Frisch, which been reborn as equilibrium business cycles by modern economists.

cycles are the form which capitalist evolution takes.[3] This third way can incorporate both smooth growth and well behaved cycles as possible transitory characterizations of economic time series, but in addition it allows for the emergence of incipient incoherent behavior (chaotic or hysteric) from the ordinary interactions of agents in the economy. Whether the incipient incoherence blossoms into realized incoherence depends upon the institutions, regulations and interventions that are the attributes of a particular modern capitalist economy.

Thus this paper is an exercise in integrating insights derived from Keynesian economic theory with insights developed out of examining how financial and other institutions interact in determining what happens in market, i.e. capitalist, economies.

2. The Third Way

The third way begins with the realization that any forthright mathematical formalization of the processes of a modern capitalist economy leads to a multidimensional, non linear system which is time dependent. It links variables that relate to the past, to now and to the future. Any

It recognizes that the future exists and influences today only via the [illegible] of expectations.

3. The height of the essentially wavelike simple models was perhaps the accelerator multiplier models such as the famous Hansen Samuelson model. This paper uses a simple model of an accelerator multiplier interaction as a metaphorical example standing in for the complex interactions that lead to the various path of economies in real time.

Keynes' problem: How do today's profit deflations → tomorrow's profit inflation?

system that is so formalized will generate time series which at times are smooth and well behaved (coherent) and which at other times are chaotic or hysteretic (incoherent) if the time series of experience is determined solely by the processes encapsulated in the mathematics.[4] However the actual time series that is realized is not determined solely by the dynamics expressed in the mathematized formulation.

Whether chaos or hysteresis (incoherence) is realized depends upon whether the institutional structure allows for strong enough interventions, or contains sufficiently strong institutionalized rigidities, to contain the thrust towards incoherence and to set the initial conditions for the further development of the economy.[5] These new initial conditions may be insufficient to contain the thrust towards incoherence. This leads to either further interventions or the realization of incoherent behavior. Alternatively these

4. Richard Day, Quarterly Journal of Economics and William Baumal and -----, Journal of Economic Literature illustrate the type of mathematics that leads to apparent incoherence as the result of deterministic processes. In a complex modern economy even though each agent acts in a Smithian manner, the outcome is a not nice process through time.
5. My colleagues at the Jerome Levy Economics Institute, S.Jay Levy and David Levy have been examining the current American malaise in detail. They characterize what is happening as a contained depression. They identify two major containing factors, the impact of the government deficit (net of the costs of the refunding of the failed financial institutions) as an element sustaining the flow of business profits and the infusion of government money into the failed Savings and Loan Associations and banks which prevented the pass through of losses on assets to the holders of liabilities. Their thesis is that these two items are preventing the current prolonged recession from turning into a depression but that they are not sufficient to bring about a full recovery to a strongly expanding economy.

new initial conditions can initiate a period of tranquil expansion or contained, pendulum like, limited cyclical behavior.[6] However the generalization that the mathematical formulation of the macroeconomic interrelations of a capitalist economy leads to the expectation that the behavior of the economy will from time to time be chaotic or hysteretic does not mean that chaotic or hysteretic macroeconomic behavior will be often observed or that the economy is always on the verge of going chaotic or hysteretic.

One aspect of whether an economy is set for an hysteretic period is where the economy's financial structure sits on a robustness fragility scale. A financial system is robust when the cash flows from income can fulfill the payment commitments on liabilities, it becomes fragile as the proportion of units that need to roll over debts or even capitalize dividends increases. It seem s to be a property of capitalist economies that as good times roll on the financial system shifts from being robust to being fragile.

2.a: Non-relegation of money

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6. As long as Physics is the example for economic theorizing the analogy to the economic time series that needs to be stopped and restarted may well be the radio circuits that predict a howl and shut the radio down for a minute portion of a second so that the turbulence creating processes are halted. The radio is started again and is "on" until the feedback mechanism builds up to another howl.

In particular any forthright formalization of the economic process will not relegate money, credit and finance to a pound of details which are irrelevant for an understanding of how the economy functions.[7] The monetary and financial structures provide not only an essential set of links between the past, the present and the future of a capitalist economy but they also provide a capitalist economy with some of its most potent potential aborters of incoherence. The dominating function of central banking and deposit insurance is to intervene to contain incoherence when the economies endogenous processes tend to generate incoherence.

Recent important critical histories of economic thought by Bruna Ingrao and Georgi Israel, "The Invisible Hand" and by Philip Mirowski, "More Heat than Light"[8] emphasis the links between economic theory, especially the utility based General Equilibrium Theory, and physics. Both these admirable, though often obscure, works emphasize that General Equilibrium Theory, and even the Cambridge alternatives based upon the insights of Sraffa, relegate money to a pound of subjects to be taken up later.[9] As

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7. Find the infamous citation from Friedman of the moving Walrasian system reveals all of the essential properties of an economic system. Money sets interesting but essentially irrelevant properties.
8. Bruna Ingrao and Georgi Israel, The Invisible Hand, Cambridge Mass, The MIT Press,1990.
Philip Mirowski, More Heat Than Light, Cambridge, Cambridge University Press, 1989.
9. Piero Sraffa, Production of Commodities by Means of Commodities, Cambridge, Cambridge University Press, 1960.

Frank Hahn has remarked "The best formulated version of General Equilibrium Theory, as formulated by Arrow and Debreau, finds no place for money".[10]

If a theory finds no place for money it follows that it is of questionable relevance for an economy where money markets and banks are players in the investment process. It seems necessary to invert the orthodox research program and to formulate a research program which relegates the concerns which gave us the Utility field over commodity space as the foundation of economic theorizing to the pound of topics to be taken up later. Such a research program would promote monetary and financing concerns to the first division.

A prior for a meaningful theory of the capitalist process is the placing of money and finance at the beginning of the argument. Economists should put on hold their thinking about the trading of unexplained commodity bundles that are unexplained initial endowments of units described only by utility fields and perfect foresight. It is perfect foresight which results in time being treated as just another set of indices over commodities. This alternative formulation needs to start with asset holdings and balance sheets denominated in money and a transformation of the balance sheet entries into contractual cash flows, again denominated in current prices. In such a formulation investment is a decision to acquire assets, and because

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10. Frank Hahn

balance sheets balance, this requires offsetting adjustments in other assets or liabilities.

An effort to draw together some of the ingredients for such an argument will be undertaken in what follows. As I see it the research program that focuses first on investment, the holding of assets, and the financing of both investment and positions in assets is the program that Keynes initiated in The General Theory, but which was lost as Keynesian economics developed as a system that accepted the dominance of an outcome determined in a peculiar construct of the labor market in determining income..

2b: Incoherence and unit behavior: The Smithian assertion.

When the economy behaves in a chaotic or hysteric way, or gives signs that it is entering upon such a phase, the signals, that the rational agents in the economy - workers, business men, bankers, central bankers and government officials - receive and interpret as they try to make do in labor, product and financial markets, behave in strange ways. Furthermore each private unit behaving, in response to the signals thrown off by markets as the economy enters upon an incipient coherence, in the way that experience indicates is appropriate, leads, when aggregated to market variables, to the advancement of incoherence. Nowhere is such behavior more devastating to the coherence of the

economy than the possible behavior in financial markets, where today's views of tomorrow determine asset values even as yesterday's decisions determine payment commitments that fall due both today and tomorrow.

All economist are familiar with the Smithian assertion:

> As every individual, therefore endeavors as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it...and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Adam Smith, The Wealth of Nations, Book 4 Chapter 2,

This Smithian assertion does not hold in a model of the economic process that reduces to a multidimensional, non-linear dynamic process where yesterdays, todays and tomorrows are linked. Each agent, responding to the signals the economy sends, in a way that conforms only to the agents own views as to what is best for the agent, does not lead to the promotion of the end of "rendering the annual revenue of the society as great as he can": the end result of self interested behavior by agents may be the reduction of the economy to a chaotic situation such as ruled in the United States in the winter of 1932-3. This may be one reason why

it was long recognized that the central bank takes positions that disregards profit expectations.

A situation that reduces the world's financial markets to incoherence may be approaching as the two great financial powers of the present day, Germany and Japan, seem incapable of acting in a way that is appropriate for great creditor countries. The transition away from a dollar based international financial system to one based directly or indirectly on a bundle of currencies may be by way of an initial crisis and a closer approach to an international depression than anything we have witnessed so far in the current period of heightened uncertainty.

2c: Rational animals in an irrational world

Economic situations described by the chaotic or hysteretic behavior of macroeconomic variables are not satisfactory to the units in the economy. An agent in a modern capitalist economy is an Aristotelian rational animal, trying to do its best for itself and for those for whom it acts, in a world it does not always understand. An apt description of a rational agent during an episode of chaotic or hysteretic behavior may well be:

I alone,
a stranger and afraid
in a world
I never made. (A.E. Housman)

The question of how rational agents react in a world that quite suddenly behaves in a strange manner - to the agents in the model the world suddenly becomes irrational - comes to the fore once it is recognized that a corollary, to modeling the economy as a set of nonlinear intertemporal processes which intermittently generate chaotic and hysteretic time series, is that the macroeconomic incoherence is the result of the behavior of individual units. Rational agents reacting to strange signals thrown off by the economy are responsible for the aggregate behavior.

2 d: Institutional constraints and market rigidities

To handle such contingencies, where individual units reacting to signals that a market generates aggravate the impacting local incoherence and tend to spread incoherence to other markets, every economy has institutional constraints on unit or market behavior, as well as points of intervention into markets. Institutions, regulations and constraints reflect more or less conscious attempts to prevent initially disorderly conditions from degenerating into chaos or hysteresis. In the modern economy the interventions may aim to forestall macroeconomic conditions from deteriorating and gyrating, for a macroeconomic deterioration sends a negative signal to all markets and rapidly gyrating macroeconomic variables reduce the agents

in the economy to the "I don't know what the signals mean" stage when attempting to interpret market signals.

In effect there are institutions, regulations and constraints in a modern economy that serve as devices which stop the dynamic process which generates incoherent behavior and sets the dynamic process off again with either new initial conditions or new parameter values. Interventions may affect the behavior of markets or may affect the parameters which enter into decisions.

Thus minimum wages, set a bit below the lowest market wages, may prevent the run away wage and price cutting, which has perverse effects upon debt validation, investment and thus upon aggregate profits. Such an effect of minimum wages is best achieved if minimum wages are coupled with public full employment policies, so that even as prices and private outputs fall the decline of aggregate gross profits is contained or even reversed. Both of the above sentences make sense only in a model of the economy is used in which debt financing of positions in capital assets are integral parts of the model and in which the flow of gross profits is a function of the distribution of demands.

The prototypical intervener in markets is the central bank in all its diverse forms and varying responsibilities. In particular lender of last resort interventions and concurrent lowering of interest rates are devices which attempt to offset systemic declines in the value of the assets of banks and other intermediaries. The effect of

central bank interventions is to make asset values and the flows of incomes from being what they would have been under pure market determination of all prices and values of assets. The total effect is that units are prevented from behaving as they would have if all of the variables which enter into the determination of behavior had been as the inside dynamics of the complex system would dictate. As a result of interventions unit behavior is different than that which would follow from individuals aiming to do the best they can in their own interest as they perceive their own interest. Because of the consequences of allowing economies to degenerate into the chaotic or hysteretic state in all its dimensions no economy can afford to follow the Smithian rule.

The institutional structure of modern economies contain devises which prevent the free reign of its internal dynamics. Each particular institutional structure results in the values realized in the economy being different from those that the unconstrained internal dynamics would generate. The central bank is an institution which intervenes on an almost daily basis to prevent today's outcomes from being those which are the initial conditions for the future as the dynamic process works its ways. When the central bank of a country intervenes in the money market, to shore up an otherwise failing financial institution, or to maintain orderly conditions in the foreign exchange market, the result is that the market

determined values of interest rates, asset prices, or exchange rates will be different in the future than what the market would have indicated.

3. The Floors and Ceilings Accelerator- Multiplier Model of the Late 1950's as the Prototype of a Model of Constrained Endogenous Incoherence.

The basic theme of the third way is that business cycles or better the path of an economy through calender time cannot be understood as the playing out of a dynamic process that started way in the past. The view advanced here is that the best way to conceptualize how the path of the economy is determined is to accept that endogenous market processes determine investment, employment, income determination, consumption, the composition of portfolios, as well as the myriad of individual prices and quantities over considerable stretches of historical time, albeit this takes place within an institutional structure which limits the movement and even the values of some of the quantities and prices.

However the endogenous interactions are such that from time to time, at intervals that cannot in the abstract be determined, the economy begins to behave in an incoherent way. When this happens "stabilizers", which may be "built in" or require "actions by authorities", kick in and prevent

the economy from continuing on the path as given by the internal dynamics. When this happens the prior endogenous dynamic process is superceded by a new process, characterized by the transformation of new initial conditions and by new reaction coefficients, which now has a run. Depending upon the diagnosis of what brought about the trauma of incoherent behavior, this new process will have its run in the context of a modified institutional structure.

3a. The simple accelerator multiplier model and its interpretation

The view of how the economy behaves in normal times and how crises of incoherence change the path of the economy by interventions undertaken to contain the crisis and "legislation" designed to prevent future crises can be illustrated by referring back to accelerator multiplies interaction models of the late 1950's. The stripped version of these models had a consumption function and an accelerator investment function. The definition of income was a simple

1) $Y_t = C_t + I_t$, and the behavior of consumption and investment are given by

2) $C_t = aY_{t-1}$ and

3) $I_t = b(Y_{t-1} - Y_{t-2})$. This gives us

4) $Y_t = (a+b)Y_{t-1} - bY_{t-2}$ which tells us that if we know

the values of the reaction coefficients a and b as well as the values of Y_{t-1} and Y_{t-2} (the initial conditions) we can recurse the system to get Y_n as far in the future or in the past we like.

Equation 4 is transformed by quite simple techniques into

5) $Y_t = A_1U_1^t + A_2U_2^t$, where $A_1$and A_2 carry the information in the initial conditions, Y_{t-1} and Y_{t-2}, and U_1 and U_2 are functions of the reaction coefficients, a and b. The U1 and U2 can both be greater than 1, less than 1 or functions of signs and cosines. If they are both greater than one then in time the system will grow at the rate given by the larger root U_1, if they are both less than 1 the system will damp down to zero, and if they are oscillatory the amplitude will eventually be given by coefficients of the sines and cosines.

If what are believed to be reasonable assumptions about the magnitude of the consumption coefficient, a, and the investment factor, b, are made then the two roots, the U_1 and U_2, are both greater than one. Though the minor root may be in the neighborhood of reasonable rates for economic growth the major root, which as I mentioned above will in time dominate, is very much larger than 1. This model will in time rush off to unacceptable rates of growth or decline.

Let us assume that there is a ceiling rate of growth of the economy g and that the two roots U_1 and U_2 are such that $U_1>U_2>g>1$. Let us set the initial conditions so that

6. $Y_{t-1} = gY_{t-2}$.

In this case A_2, the coefficient of the minor root will be positive and large, and A_1, the coefficient of the major root will be small and negative. As time moves on the importance of the major root will increase: what starts out as growth at the rate that the ceiling grows falls away from the ceiling rate of growth and then begins an explosive fall into increasing and high negative rates of change. This time series, with both of the roots of the generating equation positive, exhibits one turning point: an initial modest expansion deteriorates into an explosive negative movement.

If there is a floor to where income can go, some maximum value to disinvestment, then when this maximum is achieved the realized Y_t, YR_t, will not be that which the solution equation would have generated. This YR_t, along with prior Y's generated by the then ruling solution equation, will become the determinants of a new ruling solution equation. This new equation will have a large and negative coefficient, A_2, for the minor root and a small but positive coefficient, A_1, for the major root. Once again one turning point and the explosive expansion takes place which bounces off of the ceiling.

3 b. Real and nominal expansions and contractions.

If we think of the ceiling and floor not as a value of the rate of expansion or decline of "real" income but rather as the rate of expansion or decline of nominal income which implies that inflation and deflation are continuations of the same process that leads to expansion and contraction of "real" income then the interpretation may be that the ceilings and floors reflects policies that kicks in to contain the inflation or deflation. Think of the downside implosion as unemployment, bankruptcy, financial system disarray, or what you will, that kicks in intervention or which tests the power of a set of institutions that were put in place after a prior period of incoherent behavior. Once again the structure of intervention and rigidities sets new initial conditions, once again a slow recovery, or perhaps even a slow retardation of the rate of decline sets the parameters of the dynamic interactions so that a recovery and then an acceleration towards a ceiling or other constraint takes place.

The time series that is observed is one that results from this bouncing between ceilings and floors. The time series that is observed, if one is like a well trained horse and wears blinders, so that the interventions and institutional rigidities are not admitted into the evidence, could just as well have been generated by an accelerator multiplier process that is inately damped but which is shocked from time to time. An equilibrium seeking plus exogenous disturbances system and a endogenously

disequilibrating system may yield, or account for the same time series. The difference is that the endogenous disequilibrating structure does not follow from first placing the economy into a Laplacian mode and then allowing for exceptions.

4. Some Economics.

It is not enough for an economist to set up an equation set that leads to either some polite equilibrium or to some wild incoherent behavior: we need to relate the behavior of the equations to activity in the economy. In the spirit of Keynes we will concentrate on the investment equation in our simple model: $I_t = b(Y_{t-1} - Y_{t-2})$.[11] In this form investment depends solely upon the current observation of a recent change in income. None of the financial and banking relations that are critical to the Keynesian theory of investment in a capitalist economy are overtly included. They are, presumably, buried in the accelerator coefficient, b.[12]

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11. The "accelerator" coefficient b enters into the determination of u_1 and u_2 in the equation
$u_1,u_2 = (a + b) / 2 +/- \sqrt{}[(a + b)^2 - 4b]/2$

12 As $du_2/db < 0$ any cumulative changes in the financial structure that decrease b will lead to a rise in u_2. This means that the minimum realized rate of expansion that will sustain further expansion increases. This could be taken to imply that the new initial conditions to sustain economic expansion will need to accept ever increasing rates of increase in the price level.

Furthermore if I leave my argument at this point I will not have really been true to the announced title of my talk: "The Structure of Financial Institutions and The Dynamic Behavior of the Economy".

I take as a given the existence of a capitalist economy where the material means of production are typically owned by a firm that is legally organized as a corporation: the material means of production typically were produced. As a result at the time investment outputs became capital assets there was a plus on the asset side, equal to the price paid in the market for this output and there were compensating changes in assets and liabilities to allow for the acquiring of the monies used to pay for these capital assets. Once these assets are fully integrated into the capital asset structure of the operating organization they lose their, identity except perhaps as items for sale or as scrap value. The total capital stock of the organization is now valued by the market valuations of its liabilities and of the assets that are not used in the firm's production process. On such a mark to market basis the firm's capital assets rise or fall in value as the market prices its debts and equities.

These corporations are the initial recipients of the total revenues of firm and, after allowing for current operating costs, the initial recipients of gross capital incomes. Gross capital income is distributed to claimants as determined by the firm's tax bill, liability structure and business style.

There is a modern complex financial structure which passes claims to income streams generated by capital and household and government indebtedness from the firms and financial institutions that are the initial recipients of capital income and income on account of non-firm indebtedness to the ultimate beneficiaries from and recipients of capital income.[13]

Furthermore there is a well established system of laws which not only enforce financial claims but also allow for the wiping out of claims as a result of a recognized inability to perform. Bankruptcy law is a necessary adjunct to property rights in a well structured capitalist economy. There are also various financial institutions with functions that range from those of investors of other peoples money to pure brokers who bring various classes of buyers and sellers together.

A fundamental aspect of capitalist economies is the existence of two classes of prices and two price levels: one of financial and capital assets and the other of current

13. As I have argued in Stabilizing an Unstable Economy, New Haven, Yale University Press, 1986 the fundamental concept is a gross capital income which is not linked to the productivity of capital in a production functions sense but to the scarcity of capital, as determined by the levels and composition of demand and the spending patterns of the different recipients of income. In particular interest paid by firms is a disposition of capital income as are certain types of performance compensation of managers: corporate style spending is also a disposition of gross capital income as is the internal funding of research and product development as well as advertising. Taxation at the corporate level, aside from taxes that are linked to the wage bill, are also a disposition of gross capital income.

output. I take the liquidity preference function to be the statement of the factors that enter into the determination of the price level of assets. One of the principle conceits in what I do is to assume that there is meaningful price level of assets as well as a meaningful price level of current output.

4a. Pro Formas

An investment theory for a capitalist economy needs to be grounded in the practices and institutions of financial markets and the behavior of investors. Any market needs market makers and market makers are Smithian profit seeking organizations.[14] Similarly, the private institutions that act as intermediaries, whether they function as dealers (position takers) or as brokers, are Smithian operators seeking "only his own gain". Recent experience in the United States indicates that when the complex of financial institutions that characterize modern capitalism partake of market activity, the proposition that unconstrained Smithian operators "are led by an invisible hand to promote an end (the common good) which was no part of his intention." is apparently falsified. Furthermore it is apparent that in modern financial institutions the "private agendas" of the members of the organization can lead to behavior that

14. Reference to Clower and Kregel.

deviates from that which furthers the goal of the organization.[15]

A key concept in any investment theory that aims to gather threads from practice is the pro forma, the prospectus prepared by or for a seeker of financing which makes precise the assumptions that underlay the answer the potential recipient of financing gives to the provider of financing when the provider raises the basic question "How are you going to get the monies you are promising to pay later in exchange for the monies you expect me to provide now?" These pro formas are what is on the table when negotiations between financing organizations and organizations that seek financing take place.[16] Investment

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15. James B. Stewart "A Den of Thieves" 1992

16. A cliche among bankers is "I've never seen a pro forma I did not like": that is no one seeking financing paints anything but a rosy prospect for the operation seeking financing. It is the duty of the "banker" and the other financiers to be the skeptic - to reveal the shaky or heroic assumptions and also the unwarranted inferences. All of the Crashes, Manias and Panics (I am referring to Charles Kindelberger's notorious book) of history are associated with a radical suspension of disbelief on the part of portfolio managers, asset holders, business men and bankers. If one wants an understanding of rational behavior one needs to examine the determinants of scepticism. The promotion of organizations that institutionalize scepticism has been one of the threads in the emergence of novel financial institutions and usages in the aftermath of great fiascoes.

The term junk bonds became prevalent in the 1980's. The term referred to bonds which were deemed so likely not to fulfill the contract that fiduciaries such as savings banks and pension managers were not allowed to hold such instruments in their portfolios. The subverting of legally enforced skepticism was one of the contributions of the Reagan administration to the financial troubles that are now so evident.

takes place as a result of negotiations between bankers and business men that lead to prospective internal and committed external funds being combined into a financed project.

4b. Cost Curves

The family of total, average and marginal cost curves that is the used in elementary price theory can be considered as the model of a pro forma. The finance for a project is transformed into a series of payments due each relevant time period: these payments become individual items of the constant costs of the total cost curves from which the family of average cost curves are derived. Thus bond issue A, bank loan B, rented space (or planes) C, officers salary, etc., are each entered upon the spread sheet for each period of the financing horizon as given by the term to maturity of the longest of outstanding instruments. At every date assumptions need to be made about interest rates of financing contracts: this becomes especially important if refinancing is built into the pro forma.

The sum of the spending upon maintaining productive capacity (what Keynes called user costs) and out of pocket costs for producing whatever yields the revenue need to be added to the fixed overhead and contractual costs because of the form financing has taken place to determine the pro formas. The degree of belief to be attached to the various

sets of data used in pro forma cost curves is one focus of the negotiations between bankers and businessmen.

Projections of revenues are the other focus of the negotiations which aim to arrive at a concensus about the pro formas. The negotiations about the projections of the expected revenues naturally center on three issue: the expected performance of the economy, the expected performance of the particular markets where the firm operates, and the advantages and disadvantages of the particular firm in the essential capitalist competition: that among firms for profits. Essentially business men and the financial agents need to agree that the prospects are good that the prospective revenues will fund the sum of {the prospective out of pocket costs, the prospective costs of maintaining the ability to produce profits and the committed payments on the debts} and leave a margin to spare so that funding the investment project is warranted. This margin to spare is either to be retained within the firm or dispersed as dividends to the owners of equity. Not only does current and recent performance of the economy and the firm under examination enter into financing decisions but present views about the future of the economy as a whole, the industry of the firm, the firms special attributes and the evolution of financial markets also enter into decisions to finance, to proceed with investment plans.

The above argument with respect to the pro forma for an investment decision visualized as a decision to build a

plant or extend operations to a new line of commerce is the argument that the leveraged buy out financing of the 1980's firmly implanted on the financial markets of the world. A firm, or an investment opportunity, is envisioned as a cash flow machine and the liability structure and operating costs are viewed as dispersals of the cash flow. Note that in the representations of the firm in the pro forma cost curves only the out of pocket costs for producing output and the costs of sustaining the production plant have anything at all to do with production function ideas. The payments during the period of analysis that are due on account of the liability structure as well as the tax costs reflect laws and financial market conditions at various dates.

4c. The function of current output prices.

In the structure of orthodox economic theory prices are the terms upon which alternatives are available and are generated in the process by which the equality of supply ans and demand is achieved. A conclusion of the argument in price theory is that markets work in such a manner that in regimes of perfect competition the ratios of product prices equals the ratios of marginal utilities for all agents. Such considerations are foreign to the negotiations between business men and bankers over the proper estimation of the expected cash outflows and revenues that enter the pro forma.

To bankers and business men output prices are the vehicle by which the operating costs included on the pro formas are to be recovered and the cash accumulated to meet the financing and overhead costs that were noted. Prices are the way costs are recovered and the carriers of profits.

Operating costs are largely the direct costs of labor and purchased goods and services. The costs of purchased goods and services breaks down into labor costs, material costs and the markup of the producers. Such reductions lead to the proposition that the price level for current output is keyed on wage rates and markups: any process which leads to rising wages and rising mark ups per unit of output will lead to fixing prices. The course of prices in time is made up of the course of wages, the efficiency of labor and the course mark ups. In particular events which adversely affect labor morale or which lead to a rise in mark ups will lead to a rise in the price level. Inflations that look as if they may be the result of "cost pushes" because the course of money wages may well be a reaction to a prior "push" in the form of increased mark ups.

After the fact all prices can be divided into the portion that recovered per unit operating (or production) costs and a markup that led to per unit profits. In the construction of the pro formas the costs that need to be recovered are defined by the out of pocket costs. The cost of maintaining the productive capacity of the organization, overhead costs and the commitments on account of the

liability structure are all allocations of a capital income that is defined in a very gross manner.[17]

4d. The prices of investment output and the prices of capital assets.

The supply prices of investment output are as sketched above: they are built up by expectations of labor and purchased material costs and the mark up needed to validate the financing contracts and overhead spending of the firm. These prices will move as labor costs move and as the ability of the suppliers of investment outputs to maintain discipline in determining mark ups changes.

The price of capital assets in place is determined by their ability to generate cash either by using the capital assets in production or by being sold for the scrap value of their materials. The importance of the ability to generate cash is that it leads to a valuation of the liability structure that the assets can support. As the take overs

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17. This way of looking at costs and prices means that profits in the normal accounting sense are but a part of the gross capital incomes. I believe this way of looking at prices and the allocation of the revenue of firms is consistent with the manner in which the leveraged buy outs looked at revenues and costs. The gross cash flow, which can be taken to be the total revenues minus the direct costs of producing outputs, is the cash flow concept that the leveraged buy out players had available to cover the payments due on the liability structure. The squeezing of overhead costs and the containing of direct costs - even to the extent of product deterioration - are measures that are taken to increase the cash flows available for liability servicing.

and buy out regimes of the 1980's showed the market value of a liability structure that a firm can support may be significantly higher than the market value of the existing liability structure and the "firm" can be taken over by those who are able to put together financial packages with the greatest market values based upon the expected cash flows that the firm is "expected" to generate.

4e. Time Linkages in Finance

It is worth noting that even as present views of the future affect present investment financing, financing engaged in the past is determining payment commitments that are coming due now. The willingness and the ability of banks and other financing organizations to commit to fund at any particular time depends upon the performance of the assets they own - i.e. whether commitments made in the past which are falling due today are being honored.

One reason a modern economy has to be viewed as a time dependent system is that virtually every unit in our modern economy is making financial decisions today which will come due in the future, the ability to make such decisions depends upon the performance of the economy "now", and financial decisions made in the past are maturing today which means that for almost all units a part of their spending is prior determined by their liability structure. Almost all decisions to finance and to acquire positions in

instruments are made by agents who know that they lack "perfect foresight". What happens during nay today validates strongly, barely validates or does not validate decisions made in the past.

An implication of the lack of perfect foresight and the interpretation of the rationality of agents as implying that agents always know that they may be wrong is that the acceptability of particular types of assets in portfolios or of particular types of funding of operations may be subject to quick revision. When past investment and funding decisions are on the whole strongly validated then the financiers and their clients belief in the model of the economy that guides their decisions is reenforced. When on the whole today barely validate decisions of the past, then no revision of their belief in the model that guided action may be forthcoming. When the cash flows are on the whole insufficient to validate all liabilities then various defensive steps are taken by firms, financiers and the funding institutions. The argument needs to shift to the determinants of the validation of liability structures.

5.The Determination of Profit Flows

In the aggregate the profit flows that are available to service the liabilities of firms (including dividends on common stock) and to be the source of retained earnings that may be used as the base for the financing of investment

demand are determined by the composition of aggregate demand. The basic framework is the Kalecki equation

I = Pfts with the addenda that

I -> Pfts. The theme is that investment decisions and execution being forward looking and based upon current views about the future that enable business men, bankers and asset managers to make current decisions that are presumably binding over a reasonable horizon. Therefor investment and the other variables that determine profits call the tune. In the 1930's when Kalecki first argued his case it was not too far fetched to assert that workers spent their entire income and capitalists invested their entire income so that the simple identity was valid. Because of the proliferation of various pension plans and because of the greater scope of both government as a provider of cash flows to units and a debtor on financial markets the simple 1930's Kalecki relation does not hold. In the 1980's when capital gains and incomes from the financial services industry loomed large it became evident that not all of capital income was saved and that not all of workers income was spent.

A more inclusive view of the determination of gross capital incomes GCY may well be

5.1 GCY = I + cGCY - sW + Gov Def - Bal Tr Def

where GCY is the fund available for covering all of the cash needs of firms except the cash needed to validate out of pocket operating costs. GCY is the fund, generated by the performance of the economy, that is the subject of the

competition among firms for profits, i.e. the competition among firms for the funds that will validate their liability structure.

If the items of the right hand side of equation 5.1 are leading to increases in cross capital income that exceed the increases in funds required to service debts then in the aggregate firms are finding their debt burdens lightened even as their capacity to carry debt increases. Furthermore the limits on the ability of firms to carry debt were set by the orthodox scepticism of bankers. Repeated success in achieving cash flows in excess of expectations leads to a willingness to engage in greater debt financing of the inherited stock of capital, the value of which rises with the increase of the aggregate gross capital income.

Thus the price level of capital assets is related mainly to the gross incomes earned by capital and the changing concensus about the uncertainties of committing future cash flows. The willingness to be in debt, the willingness to see bank clients highly indebted are determined by the prevailing views of the future course of gross capital income and the market valuation of capital assets as collected in firms.

A second element in determining the valuation of capital is the possibility of increasing profit flows. In the aggregate profit flows are not determined by the action of individual firms, but a general increase in "monopoly power" can lead to a rise in mark ups and if this occurs in

an expanding economy then an increase in the gross profits share can take place. Undoubtedly something like this happened in the United States in the 1980's.

If workers save then a decrease in the savings rate of workers will increase gross capital income. The huge increase in household debts over the 1980's resulted in an increase in interest incomes without any compensating increase in corporate indebtedness. The low savings ratios out of disposable income in the United States is a result of the easy availability of debt as well as a rational response to the belief in continuing prosperity.

Thus the two price level view of a capitalist economy is a way of making sense of liquidity preference and the way the willingness of agents to become illiquid and the sometimes incoherent rush to become liquid, or to adjust portfolios, calls the tune for bouts of prosperity and depressions.

6. Factors determining investment: The integration of I and L(M).

Given that P_k, the price level of capital assets and P_i, the price level of investment outputs, are based on quite different sets of variables we can expect them to behave somewhat differently through time: in particular we can expect P_k to be more volatile than P_i. Inasmuch as P_k reflects the value of the financial instruments that the

cash flows that the firms that operate the capital stock can support, the P_k that enters the investment determining relation as a determinant of the demand for investment output is a quite explicit statement to the effect that the expected cash flows from investment output can sustain the payment commitments on liabilities with an aggregate value of P_k.

For investment to take place the expected cash flows from operating the investment outputs as capital assets have to be able to carry liabilities that exceed the value of P_i with a margin of safety. $P_k > P_i$ is the condition for investment to take place. The gross expected retained earnings of firms (A sum of the individual expected retained earnings) is a constant: it is a rectangular hyperbola in P_k - I space which tells us the amount of investment that firms expect to be able to finance internally. The status of financial markets - whether robust or fragile - and the attitude towards portfolio composition that dominates in the negotiations between business men and their (investment) bankers leads to an agreed upon leveraging of the internal funds available for investment. The risk aversion of the investing units leads to the demand for external finance falling away from the P_k line, the risk aversion of bankers and portfolio managers leads to the supply price of external finance rising so that the price of investment goods as a debt financed addition to the capital stock of a unit rises from the P_i line. The intersection of the two determines

both the amount of demand for the current output I and the liability structure (leverage ratio) used to acquire the increment to capital.

During a period characterized by robust finance, the effect of the leveraging of internal funds with external funds leads to profit flows exceeding those that went into the negotiations that led to investment demand: as a result the burden of debts in terms of the cash flow allocated to debt validating is lower than expected and the amount of leveraging necessary for the financing of investment is also smaller than expected. A run of such pleasant surprises increases the willingness to lever by both sides of the bargaining table, further increasing investment and aggregate profits.

As a result over a period of good times the leverage ration of investment grows and in addition the willingness to increase the leverage with which existing inherited capital is carried increases. The indebtedness of the business sector increases at a faster rate than the cash flows. Furthermore the term structure of interest rates during periods of robust finance is such that short term money market financing of positions in capital assets is cheaper than long term debt. Smoothly functioning financial markets leads to an increase in the ratio of short to long term finance. Financial markets virtually unbeknown to the operators in the markets become fragile.

In terms of the accelerator investment function the expansion phase is one in which the accelerator coefficient b increases. This makes the minor root smaller and the major root bigger: the accelerator process may even migrate for one that generates damped cycles to one that generates explosive expansion with decreasing minimum rates of growth necessary to sustain expansion and increasing rates of growth as the "explosive" target of the process.

The increasing leverage and the increasing ratio of expected incomes that are needed to service debts lead to a system that is increasingly vulnerable to disappointments. In the ever changing competition among firms for profits some highly leveraged firms will not earn sufficient profits to fulfill their commitments. This imposed losses upon financial institutions and their diminished cash flows will hamper their participation in further leveraging of investment. Once the leveraging ratio on new investment decreases then the increases in income diminish, gross cash flows can even diminish and this will spread the inability to fulfill obligations.

The integration of liquidity preference in the form of leveraging ratios with the payment commitments on debts both as the determinant of the price of capital assets and the determinant of the robustness and fragility of the financial structure is a way of integrating monetary and financial variables and institutions of an economy with the performance of aggregate demand.

When the run of expansion eases up the simple model of the determination of profits indicates that a collapse of profits, investment, debt validation, the price of capital assets is imminent. However in modern capitalism the profit equation is complex: a decrease in private investment leads to a decline in income and profits. In an era of big government this leads to a rise in the government deficit which sustains aggregate profits.

7. Conclusion

In honor of the bonds that nearly brought the buy out of Reynolds-Nabisco to its feet we can call the model of business cycles that allows for interventions, regulations and constraints that are built into the modern market economy to contain the thrusts to the incoherent behavior of markets and individuals that lead to crises and deep depressions the reset model. This model argues that the observed coherence of market economies is not the result of the operation of some Smithian process by which there are market equilibria and the reaction in markets when out of equilibrium lead to the establishment of an equilibrium. Furthermore this Smithian equilibrium has desirable properties.

The modern view of complex, time dependent set ups is that the models that abstract from the complexity falsify in essential ways what happens. Economics is a discipline in

which heroic abstractions reign. As a result we would expect the models that rest upon these heroic assumptions to falsify the behavior of the economy in essential ways. One way the standard models abstract from reality is to allow fro only one price level. In truth there are a multitude of price levels, and we must wonder if the simplification to two, the price level of output and the price level of capital assets is also a heroic simplification that misleads. However it does allow one price level to be the reflection of a slow moving social process in democratic economies, the decline in nominal wages in reaction to unemployment, and a rapid moving set of prices in modern financial communities, the fall in asset values in response to a changer in the belief in the debt carrying ability of firms.

The fundamental aspect of the reset model is that it allows for policy and understanding to make a differenced. The invisible hand has also been an excuse for holding that socially determined relations are reflections of a higher law. The reset model is fundamentally an anti laissez faire position. but with the realization of both the power and the necessity of intervention comes a responsibility to understand the dynamics of that into which you intervene.

Diagram I: Cost Curves as Pro Formas

Diagram II: The investment diagram