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## Efficiencies, Institutions and the Contained Instability of Capitalist Economies

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EFFICIENCIES, INSTITUTIONS, AND THE CONTAINED  
INSTABILITY OF CAPITALIST ECONOMIES.

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A paper prepared for an International Joint Seminar on  
The Impact of Technology, Labor Markets, and Financial  
Structure on Economic Progress and Stability.

"But coherence doesn't mean 'equilibrium'", Alice objected.

"When I use mathematics", Humpty Dumpty said, in a rather scornful tone, "it means what I choose it to mean - neither more nor less."

The question is", said Alice, "whether you can make mathematics mean so many different things."

The question is", said Humpty Dumpty, "which is to be the master - that's all."

--A corruption of an exchange in  
Lewis Carroll's Through the Looking Glass

## I INTRODUCTION

The post world war II performance of advanced capitalist economies and successful developing countries poses a paradox for economic theory: the "successes" took place in a framework of intervention and a structure of institutions that are inconsistent with the great theorems of economics that "demonstrate" the virtues of laissez-faire. The main stream in economics has largely ignored the paradox that is posed by 1946-66 being better than 1919-39 even though the capitalism of 1946-66 deviated much more from the laissez-faire model than the capitalism of the earlier epoch.

In a hard science a gap between theory and agreed upon observations would lead to a rejection of the theory. The experience of 1919-39 and 1946-66 represents such a gap. However in the hard sciences theory is a servant of observations, in modern day economics theory determines the acceptability of observations. In economics the post world war 2 era, during which government that intervenes (regulates) and taxes and spends on a grand scale was accompanied by the most successful performance modern capitalist economies have ever achieved, witnessed the full development and sweeping success of the economic theory of how a decentralized market economy, in which government has a minimal role and where the actions of units are determined

by their own views of their own self interest, leads to an optimal or efficient result in which no unit could be better off without some other units being worse off.<sup>1</sup> It is clear that the success of the interventionist-big government economies of 1946-66 had no impact on this line of theorizing and furthermore the interventionist-big government capitalisms were efficient in a sense other than that of the economic theorist.

A rational outsider looking at the economic theory of the 1980's would be much like the little boy who noted that the emperor had no clothes. The combination of the limping success of recent years and the quasi-golden era of 1946-66 should pose serious questions for the economic theorist. In this paper I pose four problem areas that economic theory need address: the complex of efficiencies by which the performance of an economy is judged, the relation between formal theory and mathematics, conjectures that follow from appreciating that the endogenous dynamics of a capitalist economy is prone to lead to unacceptable system states, and how institutions and interventions contain the dynamics so that the economic result is acceptable.

The conclusions in what follow are tentative: the program for research that is advanced is not. The research program of economics needs to center on "How do the actual institutions of capitalism affect stability and growth,

<sup>1</sup> Arrow, DeBreau, Arrow -Hahn

given that we know that complex economic systems should by their internal dynamics degenerate into incoherence?". This program requires us to do economics without the crutch of assuming equilibrium, even as the end result of the interaction between market processes, institutional behavior, and government interventions is an absence of incoherence.

#### IV CONJECTURES THAT CAN BE TRANSFORMED INTO THEOREMS

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"anti-laissez faire theorem" and the second is a "limitations upon the attainable" theorem.

The basic "aim" of orthodox allocation theory is to establish Adam Smith's invisible hand "Theorem", that each agent "...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" [Wealth of Nations 1b bk IV, ch. 2]. This theorem, ~~much modernized~~ becomes through the intellectual history of economics the proposition that a competitive equilibrium is a Pareto optimum. The "invisible hand" proposition leads to laissez-faire - where laissez-faire does not unleash ~~successful~~ predators motivated by greed but where market conditions force powerless agents to serve a "social good".

The Anti-Laissez Faire theorem is that "In a world where the internal dynamics imply that coherence will break down (or a catastrophe will occur) a semblance of coherence can be achieved by constraints and interventions.<sup>17</sup> These constraints and intervention ~~can~~ take the form of imposing new initial conditions or affecting market reactions so that parameters change". This is of course what floors and ceilings do in the piecewise linear systems. The theorem is that analogues to floors, ceilings and frequency limitations exist in real world economies and transform the systems that generate incoherence into generators of well behaved or coherent economies.

The second, or limitation upon performance, theorem follows from the first. If the pursuit of individual gains or well being in the market leads the system to "rush off" into inflation, deflation or rapid oscillatory systems that throws off disparate signals that exceed computation capabilities, then the economy will be moving rapidly away from any well defined notion of "allocation" or "stabilization" efficiency. If there is an

To note in where ever

observation time, and less than perfect adjustment <sup>by</sup> for interventions the system can never be in an optimal <sup>allocation or stability</sup> alignment. This implies that there is a "practical best" for the economy that ~~can~~ fall short of any abstract best, and that ~~efforts to attain an abstract best will lead to results that are inferior to the~~ <sup>practical best.</sup>

These two theorems imply that any success in sustaining coherent growth depends upon the institutional structure and that because the institutional structure and the source of incoherence change or evolve, success <sup>from any structure of</sup> will be <sup>intervention</sup> transitory. A "revolution" like that of Roosevelt's or, the "Age of Keynes" <sup>(as it was from 1946 to 1967)</sup> from 1946 to 1967 will be successful, even as the seeds of future failure are ripening within the economy. There is no automatic pilot for the economy; <sup>economic success requires a sequence of revolutions.</sup>

Secondly because in each epoch the practical best ~~will~~ fall short of a theoretical best, there always seems room for improvement. All too often the "room for improvement" will be along "one" on the efficiency dimensions - and <sup>along one path</sup> success means that one or more of the other efficiencies is compromised.

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III FORMAL THEORY AND MATHEMATICS



The Gray and Gray insight opens up many issues, which I hope we will address during this week.

### II. III. The Formal Theory and the Mathematics

With many apologies to the ghosts of D.H. Robertson and Lewis Carroll, I prefaced this paper with a corruption of an exchange between Alice and Humpty Dumpty. Although we are not mainly concerned <sup>in this paper</sup> with making advances in pure theory, <sup>assert that economic</sup> we need to work within a theory in which institutional arrangements matter; <sup>in fact - we need to understand how economic</sup> ~~in which~~ the nature of the path through time of the system depends upon institutions. Because theory nowadays is often mathematical in its language - and theorems are proven in a formal way - we have to examine how <sup>mathematics</sup> the way problems are formulated affect<sup>s</sup> the theorems that are proven. The mathematical formulation constrains the theorems that are demonstrated.

An economy is a multidimensional system. It has long been known that well behaved linear  $n$ -dimensional systems will have 2 solutions. If the solution to a model is identified as an equilibrium, then the way in which the economic analysis must be pursued if the analysis is to be mathematically tractable is known. But the world is more complicated

then simple linear systems ~~would~~ allow. In order to study accumulation, the system has to be time dependent. If the system is capitalist then monetary and financial considerations cannot be ignored, ~~and~~ these introduce non-linearities. The question is "What do we know of ~~such~~ complex, multidimensional, time-dependent and non-linear systems?"

The solution system has no solution. If structured one

The basic answer is that they are in general not nice, in that the time series of the variables that endogenous processes would generate do not fall into a damped, exponential growth or well behaved cycles pattern. Such systems explode or exhibit chaotic or hysterical behavior and can be conducive

to catastrophe. Our world does not exhibit "chaos" often - there seems to be a good deal of coherence to economies and catastrophes are scarce. The problem is to ~~achieve~~ <sup>explain an observation that seems the rule</sup> an apparent coherence even though the underlying system if left to "itself" would degenerate in time to an incoherent state; ~~is~~ <sup>no variation</sup> the <sup>indicates that the</sup> underlying system <sup>is usually</sup> needs to be "dominated". We need to get observed coherence out of a system whose internal processes yield incoherence.<sup>2</sup> <sup>DAY, MINSKY.</sup>

There is a paper by Blatt<sup>3</sup> that indicates how a system whose endogenous reactions yield/incoherence - in his case explosive cycles - can be constrained to generate numbers which if analysed econometrically lead to the proposition that the endogenous relations must be "damped", i.e., tends toward an equilibrium value.

What Blatt did is set up an accelerator multiplier model whose parameters are known to yield an explosive time series. He also introduces <sup>a</sup> well behaved flows <sup>OLS</sup> and ceilings. He allowed the endogenously explosive accelerator multiplier and the ceilings and flows to generate numbers. He then used these numbers to determine the parameters of a fitted accelerator multiplier model.

Instead of recapturing the parameters that lead to the known explosive interactions, Blatt's econometrics yields a set of parameters that would make for a damped cycle. The world being analyzed is known to be endogenously explosive, with constraints that contain the tendencies to explode, to become incoherent; the econometrics say the world is an equilibrium seeking apparatus. It is the constraints that "dominate" the thrust towards endogenous incoherence, so that the system yields a "pseudo-coherence".

The system therefore consists of endogenous processes and constraints. To see what is going on we can turn to the simple accelerator-multiplier model plus constraints: a model that without the constraints is <sup>approaching its</sup> ~~approaching its~~ <sup>approaching its</sup> fiftieth birthday and with the constraints its thirtieth birthday.<sup>4</sup> As is

fiftieth birthday Sunday Jerry

well known it takes the form of

- 1)  $C_t = a_0 + \alpha Y_{t-1}$
- 2)  $I_t = b_0 + \beta(Y_{t-1} - Y_{t-2})$
- 3)  $Y_t = C_t + I_t$

so that

- 4)  $Y_t = a_0 + b_0 + (\alpha + \beta) Y_{t-1} - \beta Y_{t-2}$   
or  $Y_t - (\alpha + \beta) Y_{t-1} + \beta Y_{t-2} = a_0 + b_0$

The equilibrium value of this system where  $Y_t = Y_{t-1} = Y_{t-2} =$

$$5) \quad \bar{Y} = \frac{a_0 + b_0}{1 - \alpha}$$

The equation 4 has a solution which takes the form

$$6) \quad Y_t = \bar{Y}_t + A_1 \mu_1^t + A_2 \mu_2^t$$

where  $\mu_1$  and  $\mu_2$  are derived from the parameters  $\alpha$  and  $\beta$  and  $A_1$  and  $A_2$  are derived from the initial conditions. We assume values of  $\alpha$  and  $\beta$  such that  $\mu_1 > \mu_2 > 1$ .

[  $C, I, Y$  are consumption, investment & income.  $a_0$  and  $b_0$  are parameters whereas  $\alpha = \text{propensity to consume}$  &  $\beta = \text{multiplier coefficient}$  ]

$$\bar{y}_t = y_0 + \lambda \mu_c^t$$

If the system has a "ceiling" given by  $\bar{y}_t = y_0 + \lambda \mu_c^t$  and a floor given by  $y_t = y_0 + \lambda_f \mu_f^t$  (in 6)

$y_t = y_0 + \lambda \mu_c^t$  (0 <  $\lambda \leq 1$ ), then, if  $\mu_1 > \mu_c > \mu_2$  both  $A_1$  and  $A_2$  are positive and if  $\mu_1 > \mu_2 > \mu_c > 1$ , then  $A_1 < 0$  and  $A_2 > 0$ , but  $|A_1| < |A_2|$ . If  $\mu_c > \mu_1$ , then the ceiling never becomes operative, the time series is an unconstrained explosive accelerator model that migrates to a growth rate given by  $\mu_1$ .

If the system has real  $\mu > 1$  (i.e., 1.05 is a 5% growth rate) and if  $\mu_1 > \mu_c > \mu_2$ , then the observed "path" will be a constant rate of growth. If  $\mu_1 > \mu_2 > \mu_c > \lambda \mu_c$ , then the observed path will be a constant amplitude cycle that bounces between the ceiling and the floor.

~~It is possible~~ Therefore to get <sup>a nice</sup> an acceptable time series (monotonic growth <sup>or</sup> and a constant relative amplitude cycle) out of a process which is

will be the result

the "economy" will grow along the ceiling



endogenously "explosive" <sup>because of</sup> ~~by~~ the impact of ceilings and floors on the combined process.

The system of the accelerator multiplier process with floors and ceilings is piecewise linear with switching points when the floors and ceilings become effective. In economic terms an endogenous process that leads to unacceptable values is constrained by institutions, policy interventions, and social or technical rigidities so that acceptable values ~~are the~~ result. In terms of the formal model [recall that the solution equation  $Y_t = A_0\mu_1^t + A_2\mu_2^t$  is a transformation of a second order difference equation  $Y_t = a_1Y_{t-1} + a_2Y_{t-2}$ ] the ceilings and floors impose new initial conditions.

A word about recursive processes of solution equations and initial conditions may be in order. Given the parameters ( $\alpha$  and  $\beta$  of equation 4) two values of  $Y - Y_{t-1}$  and  $Y_{t-2}$  need to be known to set the process as given by equation 4 in motion.

In equation 6 the two initial conditions are handled as follows:

$$6.1 \quad Y_{t-2} = Y_0 = A_1\mu_1^0 + A_2\mu_2^0$$

$$Y_0 = A_1 + A_2$$

$$6.2 \quad Y_{t-1} = Y_1 = A_1\mu_1^1 + A_2\mu_2^1$$

*states of the economy. Let us allow 6.1 and 6.2 to*  
 $Y_0$  and  $Y_1$  being the initial conditions. ~~If we take two "generated" values~~ <sup>two</sup>  $Y_n$ ,

*and*  $Y_{n-1}$  ~~from equations 4 or 6~~ <sup>of</sup> and use these as initial conditions for determining  $A_1$  and  $A_2$ . ~~We would~~ get

$$6.3 \quad Y_{n-1} = \bar{A}_1\mu_1^0 + \bar{A}_2\mu_2^0$$

$$6.4 \quad Y_n = \bar{A}_1\mu_1^1 + \bar{A}_2\mu_2^1$$

and  $\bar{A}_1$  will equal  $A_1\mu_1^{n-1}$  and  $\bar{A}_2 = A_2\mu_2^{n-1}$ ; the two "sets" 6.1, 6.2 and 6.3, 6.4 will generate identical values for  $Y_{n+1}$ ,  $Y_{n+2}$ , .... \*

Footnote p 11.

If  $Y_0$  and  $Y_1$  are the initial conditions then the coefficients  $A_1 = \frac{Y_0 u_2 - Y_1}{u_2 - u_1}$  and  $A_2 = \frac{Y_0 u_1 - Y_1}{u_1 - u_2}$  and we have

$$\begin{cases} Y_n = (A_1) u_1^n + (A_2) u_2^n \\ Y_{n+1} = (A_1) u_1^{n+1} + (A_2) u_2^{n+1} \end{cases}$$

If the calculated  $Y_n, Y_{n+1}$  are used to extract new coefficients  $\bar{A}_1$  and  $\bar{A}_2$  we get

$$\bar{A}_1 = A_1 u_1^n = \frac{Y_n u_2 - Y_{n+1}}{u_2 - u_1} \quad \text{and}$$

$$\bar{A}_2 = \frac{A_2 u_2^n}{u_2} =$$

$$\bar{A}_2 = A_2 u_2^{n-1} = \frac{Y_n u_1 - Y_{n+1}}{u_1 - u_2}$$

$$\therefore \text{but } \underline{\bar{A}_1 u_1^n + \bar{A}_2 u_2^n \equiv A_1 u_1^{n+1} + A_2 u_2^{n+1}}$$

the  $n+2^{\text{nd}}$  would be identical.

$$Y_n = A_1 u_1^n + A_2 u_2^n$$

$$Y_{n+1} = A_1 u_1^{n+1} + A_2 u_2^{n+1}$$

$$Y_n = \bar{A}_1 + \bar{A}_2$$

$$Y_{n+1} = \bar{A}_1 u_1 + \bar{A}_2 u_2$$

$$Y_n u_1 = \bar{A}_1 u_1^{n+1} + \bar{A}_2 u_2^n u_1$$

$$Y_{n+1} = \bar{A}_1 u_1^{n+1} + \bar{A}_2 u_2^{n+1}$$

$$Y_n u_1 = \bar{A}_1 u_1 + \bar{A}_2 u_1 u_2$$

$$Y_{n+1} = \bar{A}_1 u_1 + \bar{A}_2 u_2$$

$$Y_n u_1 - Y_{n+1} = A_2 u_2^n u_1 - A_2 u_2^{n+1}$$

$$= A_2 u_2^n (u_1 - u_2)$$

$$Y_n u_1 - Y_{n+1} = \bar{A}_2 u_1 - \bar{A}_2 u_2$$

$$\bar{A}_2 = \frac{Y_n u_1 - Y_{n+1}}{u_1 - u_2}$$

$$\bar{A}_2 = A_2 u_2^n = \frac{Y_n u_1 - Y_{n+1}}{u_1 - u_2}$$

$$Y_n u_2 = A_1 u_1^n u_2 + A_2 u_2^{n+1}$$

$$Y_{n+1} = A_1 u_1^{n+1} + A_2 u_2^{n+1}$$

$$Y_n u_2 = \bar{A}_1 u_2 + \bar{A}_2 u_2$$

$$Y_{n+1} = \bar{A}_1 u_1 + \bar{A}_2 u_2$$

$$Y_n u_2 - Y_{n+1} = A_1 u_1^n u_2 - A_1 u_1^{n+1}$$

$$Y_n u_2 - Y_{n+1} = \bar{A}_1 (u_2 - u_1)$$

$$A_1 = \frac{Y_n u_2 - Y_{n+1}}{u_1^n u_2 - u_1^{n+1}}$$

$$\bar{A}_1 = \frac{Y_n u_2 - Y_{n+1}}{u_2 - u_1}$$

$$A_1 = \frac{Y_n u_2 - Y_{n+1}}{u_1^n (u_2 - u_1)}$$

$$A_1 u_1^n = \frac{Y_n u_2 - Y_{n+1}}{u_2 - u_1}$$

$$\bar{A}_1 = A_1 u_1^n$$

$$Y_{n+2} = \bar{A}_1 u_1^2 + \bar{A}_2 u_2^2$$

$$\bar{A}_2 = A_2 u_1^n$$

$$= Y_{n+2} = A_1 u_1^{n+2} + A_2 u_2^{n+2}$$

QED

$$Y = A_1 + A_2$$

$$Y_1 = A_1 u_1 + A_2 u_2$$

$$Y_0 u_1 = A_1 u_1 + A_2 u_1$$

$$Y_1 = A_1 u_1 + A_2 u_2$$

$$Y_0 u_1 - Y_1 = A_2 (u_1 - u_2)$$

$$A_2 = \frac{Y_0 u_1 - Y_1}{u_1 - u_2}$$

$$Y_0 u_2 = A_1 u_2 + A_2 u_2$$

$$Y_1 = A_1 u_1 + A_2 u_2$$

$$Y_0 u_2 - Y_1 = A_1 u_2 - A_1 u_1$$

$$A_1 = \frac{Y_0 u_2 - Y_1}{u_2 - u_1}$$

$$Y_0 u_2 - Y_1 = A_1 u_2 - A_1 u_1$$

$$A_1 = \frac{Y_0 u_2 - Y_1}{u_2 - u_1}$$

$$A_1 < 0$$
$$A_2 > 0$$

Thus we could "conceive" of the dynamic ~~processes~~<sup>5</sup> as "one step at a time" processes in which the recent values of the variable are initial conditions for the next value of the variable. A process can be said to be "unconstrained" when the initial conditions for the "next step" are generated by the process and "constrained" when the initial conditions for the "next step" differ from those that the process would have generated. Constrained "processes" reflect either institutions or policies which impact upon variables whose future is determined by the past in such a way that bounds are put on the variables the system realizes.

Thus in models ~~±~~<sup>that we use</sup> explored well nigh thirty years ago constraints that reflected the behavior of monetary variables or productive capacity were used to transform endogenously explosive processes into generators of acceptable time series. The monetary variables and productive capacity were modeled as imposing new initial conditions upon the process.

A more overtly non-linear process would have the parameters of the model - the  $\alpha$  and  $\beta$  of equation 4 - vary with system behavior or with some external constraint. Thus in an early model R. Goodwin had investment determined by an accelerator such as equation 2, but placed a ceiling on investment capacity, there exists an  $I_t \max$ .<sup>5</sup> Because of his lag structure  $\Delta Y$  persisted in increasing after  $I_{\max}$  was achieved, in effect reducing the realized  $\beta$ . By lowering  $\beta$  in this way the explosive process was turned into a damped process. In effect  $\beta$  became a function of  $\Delta Y$  such that if  $\Delta Y > \Delta Y$  then  $d\beta/dt < 0$ .

$\frac{dB}{dt} \rightarrow$  The problem is not in devising a "game" or a "model" that yields apparent coherence out of processes that would endogenously yield incoherence, the problem is to give economic significance to the devices that are used to get these transformations.

In a number of places Prof. Richard Day has explored <sup>by simulation</sup> properties of <sup>complex & non-solvable</sup> models that endogenously generate incoherence. These models <sup>which</sup> cannot in general be solved analytically, <sup>are studied by computer allowing</sup> ~~but~~ runs with varying parameter values and initial conditions <sup>to vary. Some</sup> ~~are possible.~~ These runs can be studied and ideas about the structures of these relations can be derived. In the case of these models - just like the piecewise linear model - a semblance of coherence can be achieved by appropriate intrusion of initial conditions or institutional arrangements that change parameters. Incoherence can be thwarted by ~~an~~ apt series of interventions.

II EFFICIENCIES

[The following text is extremely faint and largely illegible due to scan quality. It appears to be a list or series of entries, possibly numbered, but the specific content cannot be accurately transcribed.]

I II Efficiencies

In an article on multinational banking, Jean and Peter Gray distinguish between the stabilization and allocational efficiency of an economy. 2 They argued that it is possible for an economy with a particular institutional structure to be superior in its stabilization ~~efficiency~~ properties as compared to an economy with a different institutional structure, even as if inferior in its allocational ~~efficiency~~ properties. For example, within a Kaleckian framework, if business is heavily indebted ~~to~~ a big government capitalism is superior in its stabilization properties to a small government capitalism even as ~~it is~~ inferior in its allocation ~~efficiency~~. This is so because government deficits ~~will~~ stabilize profits even as taxes and spending drive "price wedges" between buyers and sellers on various markets. In a capitalist economy with a modern banking system there is a trade-off between the two efficiencies. 3

We can go beyond the Gray and Gray dichotomy of allocation and stabilization efficiency and add growth, inflation, distribution and technical dynamism to our list of "efficiencies". In the light of ~~our~~ concerns with innovations in technology and finance - with what we can call the <sup>Marx-</sup>Schumpeter connection ~~it~~ - it may very well be true that <sup>one more open a</sup> an industrial and financial structure <sup>to meet it</sup> that is conducive to innovation in technology is susceptible to debt deflations. 3 Furthermore there are compensation systems as well as shop



floor organizations that affect the costs of technical change.<sup>6</sup> The quick response of wages to rising prices in institutional structures that lead to de facto or de jure indexation of wages may affect the viability of liability structures and <sup>so adversely affect</sup> the risk-return relation for technical change.<sup>7</sup>

Perhaps the biggest failure of interventionist capitalism has been due to the lack of understanding how institutional arrangements accepted for good reasons - such as trade union power - can abet inflation and retard technical progress. Fiscal and monetary policy actions always have a structure and the structure implies a particular set of impacts that affect the various efficiencies. Thus a tax system that is progressive, so that sharp declines in revenue <sup>s</sup> occur when income and employment declines, is likely to be stabilization enhancing even as it may retard ~~the~~ risk taking associated with technical innovation.

When economists consider innovation all too often the focus is on technical change, however, innovations also occur in labor and in finance.<sup>8</sup> Innovations in labor take place in the compensation system or in the way work is organized. Because of the impact of the tax structure and the power of group insurance in lowering rates a major change in the compensation system took place in the United States <sup>in which</sup> and fringe benefits rose relative to taxable compensation. In a sense some of the fringe benefits took the form of income

in kind - the compensation system is to deliver a particular level of coverage as far as medical care is concerned. The fringe benefit innovation in compensation systems <sup>created a rising and inelastic demand for</sup> often led to a rise in the market power of the suppliers of the fringe benefit <sup>and therefore to an increase in its suppliers market power</sup> and therefore a rise in the price per unit of the fringes. <sup>more relative to other costs.</sup> The system of third party medical payments that was designed to <sup>through private insurance</sup> avoid the socialization of medicine has had <sup>a</sup> destabilizing impacts upon the

general level of prices. Market power <sup>is</sup> created with <sup>in time</sup> be exercised; innovations that create market power will have an inflationary bias and may the interpretation of government programs is that they create market power.

There is <sup>an</sup> ~~one~~ efficiency-inefficiency trade off in finance where the differences between Italy and the United States <sup>are</sup> ~~is~~ dramatic. Both countries have done rather well in the past several years, both countries are sophisticated in their financial practices. After all, even though Lombard Street is no longer the main citadel of capitalist finance, <sup>which refers to the</sup> the term, <sup>still</sup> ~~still~~ <sup>power and innovative leadership of Italian banks as seen in the Capitalist</sup> ~~epoch,~~ <sup>epoch,</sup> invokes the centrality of sophisticated financial practices in capitalist economies. However, whereas the larger or giant multi-billion dollar corporations whose shares are publically traded <sup>are</sup> ~~is~~ the backbone of the private American economy, <sup>most</sup> ~~this variety of~~ publically owned corporations <sup>are</sup> ~~is~~ not a dominant ~~perhaps not even a prominent~~ part of the Italian scheme. In part this is due to the <sup>much</sup> ~~greater~~ extent of public ownership in Italy, in part this greater extent of public ownership reflects the absence of markets and institutions which can finance a divesture of enterprises owned by state financial institutions.

In the United States about the time the second World War ended an implicit agreement on a "socially responsible" corporate form emerged. The <sup>now</sup> ~~newly~~ "legitimized" corporation was to earn substantial profits, however these profits were not to be used to support "excessive" compensation for corporate management or "large" dividends for stockholders; this corporation could be in debt, but debt is not to absorb a heavy part of the gross flow of funds to the corporation. <sup>\*</sup> ~~It~~ <sup>this</sup> socially responsible corporation was not to "sweat" its labor. Whether it was unionized or not, <sup>For maximum</sup> ~~and~~ the large cash flow retained within the firm was to go to finance technical progress and investment. Although the stock bonus arrangements made management conscious of the price of the stock in the market, operating so as to manipulate stock prices was frowned upon.

\* Footnote reference to T.N.E.L.

Over the past several years ~~and at an apparently increasing pace over~~  
~~the past several months~~ a series of leveraged "buyouts" and takeovers have  
 occurred. An ostensible aim of these <sup>transactions</sup> ~~buyouts~~ is to give the shareholders  
 "value" for their shares. The technique <sup>used to create value</sup> is to raise the indebtedness of the  
 surviving corporation. As a result ~~of the change~~ the surviving corporation is  
 so heavily in debt that a large part of its cash flow is committed to debt  
 payments. <sup>and more is very</sup> ~~The resulting corporation~~ has little in the way of ~~an~~ uncommitted  
 cash flow <sup>3/</sup> that can finance investment and innovative technologies.  
 Furthermore, because the margin between cash receipts and payment commitments  
 is much diminished any fall in revenues below anticipated will force the  
 company to try to reduce "wage costs"; <sup>can</sup> ~~the~~ financial restructuring ~~may~~ make it  
 necessary to "sweat labor". The post-war consensus about the way corporations  
 are to go about their business has broken down, and with it the question <sup>is opened</sup> as to  
 how innovative technologies that require the hazarding of large amounts <sup>are</sup> ~~is~~ to  
 be financed. A paradox may emerge in that the financial restructuring during  
 the Reagan years, during an administration that <sup>was</sup> ~~is~~ determined to diminish the  
 role of government in business, may lead to a greater government involvement  
<sup>determining</sup> in the structure of innovations and the financing of investment than has  
 hitherto been true.

Once ~~the~~ various efficiencies are identified <sup>economic theory has to address</sup> ~~then~~ the question ~~theory has~~  
~~to address~~ <sup>is</sup> is how they are related, so that <sup>light can be thrown on</sup> ~~we can~~ address the question of how  
 institutional structures affect ~~the~~ relations among ~~the~~ efficiencies. The  
 questions that theory need be concerned with changes: to address the  
 allocation vs. stabilization efficiency question the "model" need be capable  
 of generating allocational inefficiencies as well as instability, and it needs  
 to be able to evaluate the impact of alternative institutional  
 specifications <sup>upon these efficiencies</sup> ~~and~~ <sup>Similarly if</sup>  
 growth, inflation, distribution and technical dynamism are

V INSTITUTIONS AND THE BEHAVIOR OF COMPLEX SYSTEMS

15

V. Institutions and the Behavior of Complex Systems

The proposition that emerges from considering complex, non-linear ~~to~~ dependent systems is that observed coherence is due to the interaction of endogenous dynamic process, that on its own would lead to incoherent behavior and institutional structures which, at apt times, dominate the endogenous processes in determining what takes place. We know from the mathematics endogenous interactive processes will, in general, lead to incoherence. now need to pay attention to institutional structures that contain thrust toward incoherence so that fully realized breakdowns are scarce.

In the modern American economy <sup>a</sup> ~~the only~~ reduction of the system to incoherence took place in 1929-33. In <sup>some</sup> other countries breakdowns toward incoherence have been ~~mainly~~ in the form of inflations. However we may <sup>call</sup> for a reinterpretation of history. To the extent that the interpretation <sup>of</sup>

history is influenced by the theoretical priors of the economic historian, our knowledge of the past <sup>as edited by historians taking ~~away~~ <sup>away</sup> the blinder of equilibrium</sup> would minimize the extent of breakdowns and how <sup>economic</sup> institutional structures and interventions contained threatened breakdowns. Economic history through the eyes of a conventional economist is a story of shocks, disturbances and equilibrating processes. An implication of the "endogenous instability contained" view of economic processes is that economic history is a story of how institutions and interventions bring "coherence" out of a system that on its own would degenerate into incoherence.

In considering how institutional arrangements affect system behavior, it is necessary to accept that inept or inappropriate institutional arrangements or interventions can adversely affect the coherence of the economy. The various indexing arrangements - whether of transfer payments or of wages - may abet the inflationary process. The "need" to protect the dollar ~~in the aftermath~~ of Britain's <sup>went</sup> going off gold in 1931 led to monetary constraint that further destabilized the system. The recognition that the endogenous generation of instability is a deep characteristic of our economy implies that policy interventions based upon an economic theory in which endogenous processes are always equilibrium seeking can be perverse. Interventions and institutional structures need to reflect the view that policy needs to "stabilize unstable systems".

In this section I want to take up three aspects of institutional structures in the United States and how these structures and systems of intervention affected the behavior of the economy. These aspects are the Piore-Sabel conjecture with respect to Labor Markets, Market Power and Financial Structures, and Lender of last resort interventions.

#### A. Piore-Sabel Conjectures with respect to Labor Markets

In their recent book, The Second Industrial Divide, Piore and Sabel argued that the United States post World War II wage policy consensus was a significant factor in creating the era of apparent tranquil progress that ruled until the late 1960's-early 1970's. The wage policy consensus was that hourly wages should increase each year by a factor that reflected productivity gains plus realized inflation - i.e. the purchasing power of wages should increase by 3% each year. This consensus made for tranquil progress because it held "underconsumption" in check - and to Piore and Sabel underconsumption was one of the causes of the great depression; buoyant worker demand characterized this system. Piore and Sabel also intimated that this trade union settlement forced the banking system to be properly accommodating.

The productivity plus inflation rule for nominal wage changes reflected a view that it was inefficient to rely on competitive market forces to transform falling unit labor costs into lower prices. After all if money wages were constant and product markets were competitive then productivity increases would be translated into falling money prices. The argument has to draw on a proposition that market prices will not adjust to decreasing unit labor costs or that if such adjustments took place there would be adverse consequences.

In practice the wage consensus led to a rule - such as 3% plus inflation - which would transform a shortfall of productivity increase into a rise in product prices. If, for any reason, wage increases exceed the rate given by productivity and inflation in any one year, then supply conditions would make for further inflation. If inflation takes place, the consensus rule has it the banking system would be accommodative, so that "next" year the inflation plus wage increase would tend to increase.

Thus the institutional structure put in place in the General Motors contract immediately after World War II did no harm and may have done some good in the first era after World War II, but after burst of wage increases in excess of productivity plus inflation rates in 1968-69 the wage process became an engine of inflation. Escalator clauses tend to amplify the dangers of an inflationary instability being built into the system. An institutional structure may be a stability enhancing system in one set of circumstances and instability enhancing in another.

#### B. Market Power and Financial Structures

In our modern world, successful production, administration, communication distribution and transportation processes often use very expensive and long-lived capital assets. Often does not mean always. What we may call the "Emilian Way" <sup>or small sophisticated firms</sup> can coexist with and prosper alongside operations that require expensive capital because of technology or the scale of operations.

Expensive, long-lived capital assets require financing. In some capitalist economies - such as Italy - many of the industries that require expensive, long-lived capital assets are publically owned and externally financed by means of government debts. In the United States almost all such industries are private and in many cases there are alternative suppliers of the services or goods.

In the case of the Railroads - when J. P. Morgan was riding high - it was discovered that for capital intensive industries intense competition that forces price to marginal cost will not yield enough cash to validate bonds or the prices paid for building the asset. This intense competition would result from either "overinvestment" in a regime of decentralized markets or from the



impact of recessions upon the demand for ~~the industries~~ output.

The banker's interest in business is for the cash flows to be large enough to validate debts, debts <sup>added</sup> in "nominal" terms. Such debt validation is possible for productions with constant or diminishing marginal costs if and only if price exceeds marginal costs. Intense competition, in periods of excess supply, must not be allowed to push price to marginal cost. Bankers who take their responsibilities to the holders of instruments they put out or sell seriously will not finance industries which require expensive capital assets unless there is some believable guarantee that price will not fall to marginal cost.

Such a guarantee can take two forms: one is to guarantee that significant excess capacity will not arise and the second is to possess market power either because of the non-competition nature of the market (monopoly, oligopoly) or because the industry is regulated. Individual units cannot guarantee that aggregate demand will be adequate, therefore bankers insist on market power.

Thus monopoly and regulation <sup>of them</sup> ~~of industry~~ reflect bankers' needs for devices that limit their borrowing clients exposure to downside profit risks. The question is whether the financing efficiency thus gained - which facilitates capital intensive investment - more than offsets the allocational inefficiency of non-competitive industries and regulated monopolies. In Schumpeter's vision of accumulation and innovation, technical dynamism requires that bankers and business men cooperate in forcing the economy out of the path that leads to simple reproduction. In the view that ignores the processes by which accumulation is financed, the market interference of regulation and oligopoly leads to allocational inefficiency.

The market power - whether through oligopoly or regulation - solution to the problem of protecting finances against downside exposure loses some of its force when fiscal and monetary intervention succeeds in maintaining aggregate demand and aggregate profits. With demand maintained and prices stabilized through regulation or oligopoly interactions, profits are higher than anticipated and unused market power exists. As a result of the unused market power, rising costs will not decrease profits. A situation in which the unused market power can be used as a basis of wage increases is brought into being.

The American automobile and steel industries are examples of shared monopolies in which unused market power was translated into worker wages and benefits. This led to a cost structure which is untenable in a world with trade. The problem of how to meet competition when market power is eroded may require a reconsideration of the standard "<sup>real</sup> ~~force~~ trade argument". The institutional structure that emerged when the issue was the financing of capital intensive productions in a world where finance required protection through market structures against aggregate demand failures can be counterproductive in a world where such demand failures do not occur and the monopoly power that supported favorable wages is eroded.

### C. Lender of Last Resort Interventions

Both monetarism and the orthodox Keynesianism that ignores the historical period in which The General Theory was written are alike in that they emphasize the Central Bank as the creator of money rather than the Central Bank as the lender of last resort. In <sup>the 12 R 1980's</sup> ~~May of 1985~~, with the recent experience of bank and thrift institution failures that have led to various central bank

refinancing, it is not necessary to go into any abstract discussion of a lender-of-last resort intervention; we need just point to or describe what happened in Mexico, Argentina, Continental Illinois, Maryland, Ohio, etc....

What we have are financial systems whose internal dynamics and interactions, with business that needs to finance control over capital assets and households that ~~prop~~<sup>e</sup>~~ress~~<sup>R</sup> to hold indirect or protected assets, leads to situations in which a collapse of asset values, financing of activity and therefore of income and employment seems imminent. Over the years the Central Banks have developed interventions which do not permit realized values to represent the unconstrained dynamics of the system. All we have to do is recall Irving Fisher's description of a debt deflation process to recognize the way in which central banking intervenes in the process to abort extreme consequences.

If there is any part of the economic process and any period in economic experience where overt intervention, in order to prevent or dominate what market processes would generate, is accepted, it is when lender of last resort interventions occur. Even though Central Banks and lender of last resort interventions are common to our two economies, the institutions and the form the intervention takes is quite different. In particular the existence of government "holding companies" mean that intervention in Italy is often at the firm level whereas in the United States the intervention is almost always (Chrysler and the Railroads of the Northeast are the major exception) at the financial institution level. Whereas the intervention in Italy at the firm level may not have any monetary policy implications, the interventions at the financial institution or financial market level in the United States affect the reserve base of banks and the interest rate structure. At times the

Federal Reserve's reactions to what it interpreted is an incipient financial crisis led to both a refinancing of threatened organizations and a significant easing or accommodative stance in its monetary policy actions.

VI CONCLUSION

## Conclusion

From ~~my~~ <sup>the</sup> argument it follows that the "priors" that should guide ~~our~~ research are:

- 1) The interactions within a complex economic system lead to the endogenous generation of intermittent incoherence and
- 2) Incoherence is rarely observed in the economy because the thrust to incoherence is aborted or contained by institutional constraints or policy interventions, either automatic or discretionary.

These priors mean that a progressive research strategy will have both an abstract and an institutional program. The abstract program will be to show how strong or special are the assumptions that lead to the equilibrium result and how ~~my~~ <sup>economic</sup> natural ~~relaxation of these strong assumptions~~ leads to ~~the~~ <sup>the endogenous</sup> incoherence. Furthermore the Blatt findings ~~may~~ mean that econometric research in macroeconometrics ~~will~~ <sup>generating intermittent</sup> tend to validate the researchers priors, and not tell us much about the economy <sup>Side to the</sup> ~~means that~~ <sup>means that</sup> "econometrics" needs to be ~~redone in the light of the alternative view.~~ <sup>the endogenous</sup>

The institutional research program needs to study the ~~institutions of the~~ financial, labor and technology markets to see how they effectively act to constrain the incoherence breeding processes that are natural to complex systems. Innovation in technology, in finance and in labor markets are often incoherence inducing - perhaps more so in technology and finance than in labor. In order to study the impact of institutions it is necessary to ~~have~~ <sup>observe</sup> institutional differences. Thus comparative institutional studies

within a framework in which institutions differ is an essential part of a serious research agenda.

The Schumpeter vision in which finance and innovation are closely linked is especially relevant to the study of instability. Schumpeter's vision - as modified by later Keynesian and Kaleckian ideas - has a mass of profits determined by aggregate variables such as investment, government deficits and the foreign trade surplus (neo-mercantalism) and various capitals (ability to finance) that compete for shares of this mass. Innovations in technology, in finance, in the organization and compensation of labor are devices used by capitals as they compete for profits. *The aim of the*

But ~~my~~ task is to raise the curtain - not to draw final conclusions. There is a serious research program which I hope we are starting: "How do the actual institutions of capitalism affect the stability and growth of the economy, given that we know that complex systems should by their own internal dynamics <sup>gen</sup> denigrate into incoherent behavior?" To do economics without equilibrium, even as the end results of processes and constraints is a pseudo-equilibrium, is the challenge we face.

entrepreneurial thrust is to gain market power: the purpose of market power is to gain an advantage in the quest for profits. An understanding of the changing institutional structure ~~and~~ within which the unchanging capitalist phenomena - the competition among capitals for profits - is needed if we are to make progress in achieving some of the efficiencies which have been reflected in the recent search for allocational efficiency.