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1. Overview

The conference's title, "Coping with Financial Fragility: a Global Perspective," implies that financial fragility is a meaningful economic concept. Its existence, not always but from time to time, is accepted as an attribute of capitalist economies. However the structure of the dominant macro- and microeconomic theories of our time, which are built upon the modern version of Walrasian general equilibrium theory, ignores the financial dimensions of capitalist economies.[1] If economic theory is to be relevant, for the intensely financial world in which we live, then an economic theory which fully incorporates financial factors into the determination of the behavior in the economy is needed. Such a theory should not hold that financial factors are "exogenous shocks" to the economy or explain whatever malfunctioning of the economy that takes place as the result of the incompetence of central bankers.[2]

Even though modern economic theory finds no place for financial factors in the determination of the course of the economy through time, modern capitalist economies use public powers, either through the Treasury or a central bank, (1) to prevent and contain financial instability, the danger of which is presumed to increase as the fragility and complexity of the financial structure increases; and (2) to pick up the pieces and fix the financial structure after an episode of instability damages financial structures.

Thus, a consensus exists that the public wisdom needs to be applied to create institutions and conventions so that capitalist economies can cope with the economic instability that is an apparently inherent attribute of capitalism. This consensus also holds that individual exertion, as aggregated into the behavior of markets, cannot be relied upon to ensure either the stability of economies with complex financial structures or a speedy halt to and recovery after a bout of instability. The rationale for intervention lies in the association of downside financial instability with serious depressions and of upside financial instability with serious inflations.

Thus, a discord exists between the economic theory that purportedly guides policy, which finds no place for money, finance, and endogenously determined instability, and economic institutions and usages, whose purposes are to contain endogenous tendencies towards financial instability and to offset the consequences of instabilities that do occur.

In chronicles of business cycles, such as those of Schumpeter (1939) and Friedman and Schwartz (1963), the differentiating factor between (Friedman and Schwartz's) mild

(Schumpeter's Kitchen) and (Friedman and Schwartz's) deep depression (Schumpeter's Juglar) cycles is the extent of financial involvement; deep depression cycles are characterized by financial crises (Schumpeter) or a decline in the money supply (Friedman and Schwartz). A stylized interpretation of the information about the more serious business cycles of the capitalist epoch is that over a span of years characterized by minor cycles the financial structure changes so that a generalized "overindebtedness" arises. This overindebtedness cannot be sustained, and a more serious decline, accompanied by financial crises and decreases in the quantity of bank liabilities results.[3]

In capitalist economies a change from financial robustness to financial fragility happens over extended periods in which, in the aggregate, serious financial problems do not occur. Gain-seeking behavior by business men, bankers (financiers), and households is affected by the effect that success has in attenuating risk aversion.[4] The results are changes in observed portfolio compositions. Over a run of good times, the liability structures of households and firms change so that ever larger proportions of their gross cash flows (incomes) are prior committed to the fulfillment of obligations as specified in their liabilities. The evolution of household and firm liability structures during good times increases the exposure of financial intermediaries to a failure of their assets to perform.

A failure of the assets of financial institutions to perform leads to decreases in the flow of cash to, and increases the aversion to risk of, financial institutions. The result is a decrease in the financing of consumption and investment spending via financial intermediaries. This decrease in financing leads to decreases in investment and consumption spending, which, in turn, decreases the flow of profits and wages available to fulfill outstanding contracts.

Thus, financial fragility is not a characteristic of a structure of financial liabilities in isolation. It is a characteristic of an economy in which the funds available to meet payment commitments on liabilities are determined by income flows (gross profits for firms, and mainly wages for households), even as these income flows are determined by investment and consumption spending. Investment and consumption spending are "financed" by a combination of internal funds (retained earnings for firms) and borrowings.

Some statements, which are on the surface paradoxes, emerge from these interactions among firms, households, and financial units. One such statement is that "Investment takes place at any time because units expect investment to take place in the future"; another is that "the greater the investment financed by financial intermediaries, the greater is the likelihood that the assets of financial intermediaries will perform."

A decline in investment activity leads to a deterioration of profits of businesses and a decline in the wage incomes of households. In a heavily indebted economy

1. even minor declines in profits and wages can lead to increases in nonperforming assets in the portfolios of financial institutions.
2. even minor increases in interest rates can lead to increases in nonperforming assets in the portfolio of financial institutions.
3. even minor increases in wages can lead to pressure on profit flows and therefore to an increase in nonperforming assets.

As businesses, households, and financial institutions try to compensate for the shortfall in their cash flows by selling assets, i.e., as they try to make position by selling out position, a serious decline in the market price of both financial and capital assets can result. Such declines lower the mark to market net worth of economic units and adversely affect the demand for consumption and investment output.

If unconstrained, an adverse interactive process by which the path of aggregate demand is determined can lead to a collapse of income, employment, and asset prices; whereas a favorable interactive process can lead to an expansion of income, employment, and asset prices. However, in a modern big government capitalist economy, government deficits are an important determinant of aggregate profits. The relative size of government in an economy determines the sensitivity of gross profits to the pace of investment: the greater government demand and government financing of private demand, relative to the privately financed demand for investment output, the smaller the sensitivity of gross profits to the pace of private investment. If gross profits are sustained, or even increased, because government deficits, either built into tax and spending schedules or as a result of discretionary fiscal measures, increase whenever private investment declines, then the instability of financial markets is likely to be contained.[5]

Aspects of modern capitalism, such as the radical increase in the size and scope of government in the economy and the greater flexibility of central banks that are not bound by gold standard constraints, have diminshed the likelihood that financial crises will emerge and have ameliorated the severity of crises that do occur. The current much larger share of government in the advanced capitalist economies means that aggregate profits cannot fall to the low ratios to gross product that occurred in earlier times.

An integrated model of the economy which makes financial instability endogenous can be set up in terms of two submodels. One is the submodel of the financial structure, which is taken up in the next section. The financial structure submodel is formulated in terms of the interrelated set of balance sheets and income statements of the economy, and the relation between flows of cash towards a unit and the commitments to pay cash that are embodied in liabilities. In a second section that follows, a model of how income flows, in particular how aggregate profits are determined, is presented. This is followed by a section in which the characteristics of a formal model which integrates the financial structure and the determination of incomes model are presented. The final section states some conclusions.

2. The financial struture submodel

Economies are complex multidimensional systems. Robustness and resilience are two attributes which a system may possess. Robustness means that small shocks to the system are absorbed without much difficulty; resilience means that a system bounces back after a shock. Fragility negates robustness and resilience: it therefore means that the response of the system to small disturbances or small changes can be large and that after a disturbance the system does not bounce back. We can set up the problem of fragility/robustness in terms of a line which stretches from robustness on the left to fragility on the right.

On any date, every economic unit can be placed at some point on this representation of the degree of robustness and fragility of its financial structure. Where a unit is placed on the robustness/fragility line depends upon the relation between the unit's cash flows (profits, wages, taxes, and cash flows from owned assets) and its payment commitments as determined by its liability structure. The placing of the units of an economy on this line leads to a frequency distribution of financially fragile and robust units.[6]

The argument will be in terms of an economic unit, which could be a firm, household, financial institution, or government unit. It is useful to divide the cash-flows-to-payment commitment relation of economic units into three classes—namely, hedge, speculative, and Ponzi financing units.

For hedge financing units, the income cash flows are expected to be large enough so that the contractual payments on account of both interest and principal on its liabilities can be met from its income cash flows during every period over an extended horizon. Inasmuch as equity liabilities do not commit payments, the larger the equity share in the financing structure of a unit, the greater the likelihood that the unit is a hedge financing unit. Equity and long-term debt financing are attributes of hedge financing units.

For the second class of units, that of speculative financing units, the cash flow earned, either from operations or from the way its assets perform, is sufficient to pay the interest due on debts, but insufficient to meet the payments due on the principal of its maturing liabilities. To meet its payment commitments, such a unit has to refinance, i.e., roll over, maturing debts. Speculative financing units are dependent upon the "normal functioning" of financial markets and institutions. Disruption of financing channels, such as occurs when banks fail, can adversely affect speculative financing units.

For Ponzi financing units, the cash flows, from operations or from the way its assets perform, are not large enough to meet both the interest payments on their debts and all payments due on their maturing liabilities. Such units not only have to refinance or roll over maturing debts, but they have to borrow funds to pay interest. Ponzi financing units capitalize interest on debts. On the balance sheet of private units, this means that the equity account is decreased and the debt account is increased: the debt equity ratio increases for Ponzi financing units.[7] As the equity account goes towards zero for a private Ponzi unit, the ability to Ponzi finance ends.[8]

Financial fragility and robustness (in the first instance) are attributes of the balance sheet and income statement of individual business firms, households, and other economic units. For an economy, the greater the ratio of hedge financing units, the more robust its financial structure, the greater the ratio of speculative and Ponzi financing units, the more fragile its financial structure. Financial institutions which hold the liabilities of firms and households as assets are propagation and amplifying or dampening factors in an episode of financial instability; such institutions need not be, though they may be, the triggering factor in an episode of financial instability.

In an economy where the rolling over of debts is a common characteristic of business processes, the continued viability of banking and financial market intermediaries is important for the income-generating process. The real bills doctrine, the commercial loan theory of banking, rested on the critical role of short-term debt which was rolled over during the course of trade and commerce. (Viner, 1937)

However, financial institutions which are short-term debtors and hold longer term assets are especially vulnerable to increases in interest rates. Large increases in interest rates can transform speculative financing units into Ponzi units. For Ponzi units, the higher the interest rates, the quicker the exhaustion of the equity as interest is capitalized. It is also worth noting that if long-term debts have a floating rate, then a rise in interest rates can lead to a need to capitalize at least some interest that falls due. When monetary policy leads to the very high interest rates, such as those which prevailed in the early 1980s, hedge financing units can become speculative units, and speculative units can become Ponzi units. The robustness of the financial structure can be undermined by excessively high interest rates.[9]

In order to get to the financial instability hypothesis from the hedge, speculative, or Ponzi financing structure of balance sheets, particular empirical generalizations have to be posited. One is that over a course of years during which a capitalist economy does well the rate of growth of private debts exceeds the rate of growth of the underlying income that supports such debts. In particular, payment commitments due to business indebtedness outpace gross profits available to support such payments. A second assertion is that a change in the composition of debts occurs over a run of good times, in that short-term debt financing increases relative to long-term debt and equity financing. Furthermore, financial layering increases as new financial institutions, with novel balance sheet assets and liabilities, emerge in response to perceived profit opportunities.

As a result of the growth of debt relative to incomes, and short-term debts relative to long-term debts and equity, an increasing proportion of units become dependent upon the "normal functioning" of financial markets in which debts can be floated or rolled over. Disruptions in these markets, which may be the result of nominal interest rates becoming greater than those that entered into the calculations of borrowers and lenders, can have disastrous and contagious effects. As high interest rates lower the prices of long-term assets at financial institutions, the equity capital of these institutions can be impaired.

Over a period of extended good times, changes in the way investment and positions in the stock of capital assets are financed occur. This leads to the closer articulation betweeen the cash flows to businesses and households which result from the performance in the economy, and the cash flows from these sectors due to payments mandated by their liability structures. Financial innovations and changes in financial practices are part of the process that increases the fragility of financial structures over the run of good times, even as legislation and administrative decisions, after a bout of fragility and instability, try to shut the door to any future replication of the recent instability.[10]

As was argued earlier, at any moment of time the economic units can be thought of as determining a frequency distribution on the robustness/fragility axis. The stylized facts about the changes that take place in balance sheets and payment commitments of economic units over an extended period of good times mean that this frequency distribution migrates to the right, i.e., fragility increases. With such a shift to the right, the likelihood of a serious disruption in financial markets increases.

3. The economic theory of a capitalist economy:
The determination of cash flows submodel

A modern capitalist economy is a different beast from the economy envisaged by those engaged in the project of advancing general equilibrium theory. When Walras sent his classic work to Henri Poincaré, Poincaré commented that Walras makes two critical assumptions:

> . . . you regard men as infinitely selfish and infinitely farsighted. The first hypothesis may perhaps be admitted in a first approximation, the second may call for some reservations (Israel and Ingrau 1990).[11]

Poincaré was willing to grant Walras's agents infinite selfishness, i.e., the maximization of utility as their sole objective, but he was not willing to grant them infinite (perfect) foresight. The assumption of perfect foresight remains the blocking point to accepting the Arrow–Debreau proof that an intertemporal general equilibrium exists and that this result leads to relevant propositions about the behavior of a capitalist economy. That a general equilibrium exists in a pure market economy, where there are no institutions which prevent disequilibrium or contain the consequences of disequilibrium, is accepted as an article of faith.[12]

Once Walras's general equilibrium theory, or some modern variant, is accepted as the "true" representation of the economy, the neutrality of money, i.e., the quantity theory of money, follows. One postulate of general equilibrium theory is the assumption that utility functions are "over the reals," i.e., that only real variables, such as goods and services, enter the utility function (Hahn, 1985). One aspect of the Keynesian break with Walrasian theory is the recognition that preference functions are over wealth as well as the reals. This implies that in a modern capitalist economy, where financial instruments, which are often offset in part by financial liabilities, are major components of household wealth, the current prices of assets and liabilities, as well as their ratios to the prices of current outputs, are factors determining both consumption and investment demand.

The alternative to beginning one's theorizing about capitalist economies by positing utility functions over the reals and production functions with something labeled K (called capital) as a variable is to begin with the interlocking balance sheets of the economy. Within a closed economy, every financial liability of any unit shows up on the balance sheet of another unit as a financial asset; in addition any entry on a balance sheet requires an offsetting entry either on the same or the other side of the balance sheet. A basic structural characteristic of a capitalist economy is given by the cash flows that the interlocking balance sheets generate together with the cash flows generated by the production and sale of the outputs of the economy.

The units of a closed economy can be conveniently grouped into businesses, households, financial institutions, and government. Every liability is a commitment to pay some form of money as stated in the contract which sets up the instrument. A liability is a commitment to make payments on principle and interest either

1. along a time axis as stated in the contract,

2. on demand, or
3. upon the occurrence of specified contingencies.

The third, contingent payments, is of importance in the explosive emergence of a liquidity crisis because long-term debt typically becomes demand debt when any default of payment commitments happens.

In contrast to the assumption of perfect foresight, which orthodox theory needs in order to demonstrate the existence of an equilibrium, the financial instability hypothesis assumes, as Keynes does, that units live in a world with intractable uncertainty: not only is their foresight imperfect, but sensate agents know that their foresight is imperfect. When the economy is tranquil, interest rates on short-term financing are lower than on long term liabilities, because lending units with imperfect foresight believe that they have better knowledge about the short-term than about the long-term prospects of borrowing units. In tranquil times, as risk aversion attenuates, units which have established mutually profitable relations with bankers for the short-term financing of short-term positions find it feasible and prospectively profitable to introduce some short-term financing of longer term assets into their liability structures. Bankers as merchants of debt are all too willing to teach customers with whom they have profitable relations how to use short-term debt to increase their "bottom line." Middle men of the commercial paper markets also find it profitable to teach customers how to use short-term debt for longer term financing. Customers find the use of short-term debt profitable.[13]

Even in the absence of the use of short funds for long-term purposes, the continued operation of a firm requires that short-term credits such as that for inventories be refinanced: the short maturity leads to the need to finance the principle amount in order to continue or to expand operations.

By the very nature of their demand liabilities, banks need to roll over their debts. Typically, new deposits, as well as the flow of cash as their assets perform, offset the major part of banks' losses through the clearings. In addition, banks keep secondary reserve assets which they believe that they can sell in broad markets to offset transitory reserve drains losses of funds through the clearings.

Short-term financing, which requires the regular refinancing of positions, emerges from profit-seeking, cost-minimizing behavior, and portfolio preferences of risk-averse individuals. Such rolling over financing makes borrowers vulnerable to changes in financing terms, such as increases in interest rates and insistence on collateral. For heavily indebted organizations, whose incomes do not increase as short-term interest rates rise, a rise in market interest rates can lead to total interest costs exceeding the income available to pay such debts. Then, either by not spending accruing funds to maintain capital assets or by borrowing to cover such interest payments, the firm runs down its equity base: it increases its debt to equity ratio.

4. Determination of profits

Although household and government debts are significant factors in the total indebtedness of a modern capitalist economy, the debts of firms and the income of firms—the gross

profit flows—are of primary importance. In a capitalist economy, the total gross profits of firms are determined by the composition of aggregate demand. Capital assets are valuable, because aggregate demand is large enough to make them scarce; such assets are not valuable because they are productive. The values of capital assets are derived from the cash flows that are generated. The profits earned by specific capital assets as embedded in particular firms are determined by the comparative success or failure of these firms in the competition among capitals for profits and by the aggregate of profits as determined by the composition of aggregate demand. Our concern is with the determination of aggregate profits, not with the determination of the success or failure of a unit in the competition among capitals for profits.

Following Jerome Levy and M. Kalecki, we know that

$$\text{Profits} = \text{Investment} + \text{Government Deficit} - \text{Balance of Trade Deficit.}[14] \quad (1)$$

This relation is true under heroic simplifying assumptions to the effect that all wages are spent on consumption and no capital income is used to finance consumption; investment is financed internally by retained earnings and externally by selling bonds to banks; government spending is on current output, wages, and transfer payments; and the balance of trade is on goods and services.

In this equation, the government deficit is the result of taxing and spending functions in which the current level of profits and wages determines the deficit or surplus of the economy. The balance of payments, which includes receipts and spending on account of foreign investment and foreign debts, is not the relevant concept of the foreign balance for the determination of aggregate demand.

The wage bill associated with any level of aggregate profits is determined by the volume of output which needs to be produced so that, in the aggregate, the sum of the individual profits adds up to the total profits.

5. A formal model that combines the submodels

A simple recursive model, which is too complex for an analytical solution but which has been simulated, relates investment to internal cash and the ratio of capital asset prices and output prices (Delli Gatti, Gallegati, Minsky, 1994). An algebraic statement of the combined effect of the price (P) of capital relative to the price of investment output and the availability of internal cash upon investment behavior takes the form of

$$\text{Investment} = (a) \, P(\text{capital})/P(\text{investment}) + (b) \, (\text{internal funds}) \quad (2)$$

Internal funds are given by profits minus the payments on debts (interest plus payments on principle that are due).

$$\text{Internal Funds}(t) = \text{Profits}(t-1) - r\text{Debts}(t-1). \quad (3)$$

Debts grow by the difference between investment and internal funds.

$$\text{Debts}(t) = \text{Investment}(t-1) - \text{Internal Funds}(t-1) + \text{Debts}(t-1). \qquad (4)$$

Additional accounting equations, as well a simplifying assumption that all debts are to banks, that have money as their only liability, are part of the formal model.

The results of the simulations of this model depend upon the values assigned to parameters. One result using a priori acceptable parameter values is a four-phase business cycle. The phases are

1. A recover phase, where profits are increasing even as indebtedness falls;
2. A robust expansion during which profits increase as debts increase;
3. boom, in which indebtedness increases even as profits begin to fall; and
4. deflation phase in which debts and profits both fall.

Because of an assumed government deficit, which is kept constant over the cycle (for the sake of simplicity), the fall in total profits of phase 4 is contained. With somewhat different parameter values and without the support of the government deficit, the downside potential of profits and debts can become open-ended. As profits go to zero, the values of capital assets and investment go to zero. A debt deflation as described by Fisher is one of the possible results of this similar formulation.

6. Conclusion

The lesson from the modeling exercise for the understanding of financial fragility is that the overall fragility of the economy depends not just upon the course of financial commitments but also on the course of cash flows. One source of the difference between the behavior of capitalist economies in the post–World War II period and their behavior in the interwar and earlier periods is the fact that the much greater relative size of government in the postwar period than in earlier times has made it impossible for profits to collapse as completely now as in the past. In capitalist economies, stabilization policy is successful to the extent that it stabilizes profits.

Thus, the change in the importance of government has changed the fragility/resilience relations in capitalist financial structures. Earlier in the post–World War II epoch, during the era of active contracyclical fiscal policies, aggregate profits tended to rise during the recession phases of business cycles due to increase in the government's deficit. With aggregate profits stabilized and even rising, a reduction in private debts, induced by various "crunches" in financial markets, took place in an orderly fashion. Once the downside pressure on aggregate profits was reduced by the impact of the government deficit upon the aggregate of profits, the decline in financial and capital asset prices was contained. With the potential decline in asset prices contained, a regime of lower interest rates soon led to a revival of investment.[15]

The two main crises of banking in the United States since the establishment of Federal Reserve System were the breakdown of the banking and financial system over the period 1929–1933 and the crisis of thrifts and commercial banks in the late 1980s to early 1990s. In both cases the Federal Reserve was not the institution that reconstituted the key parts of the financial system which had broken down.

In 1933, the Reconstruction Finance Corporation, an agency of the Treasury, was the key institution in restarting the banking system after the bank holiday. In the recent crisis of the thrifts and of commercial banks, it was the deposit insurance facilities and ultimately the Treasury that prevented any pass-through of losses on assets to the liabilities of the depository institutions. Both of these crises were solvency crises, not liquidity crises. In the modern world, solvency crises are more dangerous than liquidity crises. The overall performance of the economy is enhanced by the ability of the Treasury to step in and sustain the solvency of critical financial institutions.

Because of the nature of the financial structures necessary for a successful capitalism, capitalism remains a flawed economic structure which is susceptible to cycles of financial expansion leading to financial fragility and therefore to the potential for debt inflations and deep depressions.

Because government needs to be big in order to contain thrusts to deep depressions, government and its institutions can do great harm, especially if their actions are based upon "Pollyanna" views of the wonders of markets and a "true faith" that markets always know best. Policy makers need to adopt a skeptical attitude toward claims that universal truths about economic policy (relevant for all economies at all times) have been derived from economic science.

The experience of the United States with the practical monetarism of the Volcker years (1979–1982) shows the error of the simplistic application of strongly maintained policy slogans. By only looking at one element of the balance sheet of banks and thrifts (the liabilities called money), the Federal Reserve during the Volcker years acquiesced in the stripping away of the equity of the thrifts. This meant that the only equity which the thrifts had was the value of the endorsement of their liabilities by deposit insurance funds.

For big government to be able to prevent great depressions, it needs to be able to stabilize aggregate profit flows by running large contra-cyclical deficits and to have sufficient muscle in financial markets so that it can refinance failed financial institutions. This requires that the credit worthiness of government be beyond question. This means that when the economy is functioning normally the government validates its debts by its income flows, i.e. there is no need to resort to inflation in order to reduce the ratio of government debt to gross domestic product. A government that is big enough to contain the depression proneness of capitalism needs a tax system which raises sufficient revenues so that over the run of good and bad years the ratio of government debt to gross domestic product remains in a comfort zone of from 25 to 50 percent of gross domestic product.

If successful capitalism requires government to be a large part of the economy, then it is important that government spending play a constructive role in the development of resources: government cannot be restricted to the financing of consumption.

Notes

1. The postulate of general equilibrium theory which ensures that money and finance are excluded from the core of the theory is that variables in preference systems are "real" goods and services.
2. As is well known, the revolution that Keynes believed he was bringing to economic theory has been transformed into special assumptions, such as price rigidity or peculiar asymmetries in information, which are added to the basic asumptions underlying the corpus of orthodox theory. In his introduction to the French edition of *The General Theory*, Keynes stated that his aim in writing the volume was to escape from the Quantity Theory of Money. As the general equilibrium theory, which dominates economic theory, has preference functions, production functions, and maximizing behavior determine outputs and relative prices, there is no place in this theory for money or finance to affect the critical variables of the economy. In Minsky (1975), Minsky (1986), and too many articles to recall, I have first interpreted Keynes's *General Theory* as setting out an investment theory of aggregate income and a financial theory of investment and then constructed what I have called a financial instability hypothesis interpretation of Keynes. This article presents and applies this hypothesis to current (1994–1995) concerns.
3. Irving Fisher started his exposition of what happens during a debt-deflation from an initial position of over indebtedness. He did not explain how overindebtedness occurs. This was an obvious weakness in his theory. Over indebtedness theories of great depression flourished in the 1930s (Hart, 1937; Clark, 1935) before Keynesian economics in the stripped forms pioneered by J.R. Hicks (1937) and A. Hansen and the econometric forecasting models took over as the dominant macroeconomic theory.
4. In this view the propensity of the agents in an economy to take risks is endogenously determined: it reflects the experience of the agents. The postulate anent the formation of risk aversion is that a run of good times (economic success) leads to an attenuation of risk aversion while any cascade of losses or a period in which asset prices fall (economic failure) leads to an increase in risk aversion. In an economy where aggregate profit flows are sustained even after a set of financial market disruptions that in themselves would tend to increase risk aversion, the increase in risk aversion seems to attenuate in a few years. The institutionalization of portfolio investments in the post-war era, as a result of the rise of pension and mutual funds in an environment characterized by shallow and short recessions, has led to the flows of funds seeking portfolio investments being sustained even during recessions. As a result financial markets are more resilient now than in earlier episodes.
5. In analyzing the impact of government deficits on aggregate profits, only that government spending that leads to the financing of domestic demand should be included on the spending side in the determination of aggregate profits. Thus the government spending caused by the refinancing of the savings and loans after their debacle cannot be considered as profit determining. In a similar way interest on the government debt that is paid to foreign owners of government debt is not part of the government spending that has a positive effect upon domestic profits.
6. This frequency distribution changes through time. A shift to the right of the frequency distribution represents an increase in the fragility of the economy.
7. We do not draw up balance sheets for governments. Within the conceptual apparatus of the financial instability hypothesis, governments can be hedge, speculative, or Ponzi financing units. A "normal" deficit by a government unit takes the form of a rise in debts that is offset or even more than offset by asset accumulation. However, for governments that are Ponzi financing there is no asset accumulation to accompany the rise in debt. In the virtual balance sheet of the government, an increase in debt brought about by the need to capitalize interest must be offset by a decrease in equity.
8. In 1995, for many governments which are Ponzi financing, the deficit is less than the total interest paid on their indebtedness. If the growth of their tax bases, in the form of GDP growth and their willingness to tax, are sufficiently great, then the situation is sustainable even though it may not be good policy. If the total debt is large enough relative to GDP and the ability to tax is constrained, then the situation is not sustainable.
9. Over the long course of their history the savings and loan associations were ostensibly speculative units, but because of the interest-rate pattern that ruled they were in fact hedge units. It can be argued that there was an implicit contract between the savings and loan associations and the government that the cost of funds was not to be such that they would lose on the carry of their assets, long-term, fully amortized fixed-rate mortgages.

10. It is worth noting that the prohibition of market-determined margin requirements for household purchases of securities is one of the regulations set in place in the aftermath of the great collapse that is still in force.
11. Henri Poincare, as cited in Israel and B. Ingrau, *The Invisible Hand*, MIT Press, 1990. The source is W. Jaffe, *The Correspondence of Leon Walras and Related Papers* (3 vols.), Amsterdam: North Holland, 1965.
12. An alternative view to the effect that the basic economic process leads to intermittent breakdowns of the equilibrating powers of markets and that a semblance of tranquility results from the impacts of institutional rigidities and policy interventions is to be found in Ferri and Minsky.
13. In turbulent periods the current financial structure can lead to a bidding up of short-term interest rates. The rise in short-term rates will often not be accompanied by an equal rise in long-term rates. In part this reflects a belief that in time tranquility will be established. In turbulent times agents in the economy are more assured about the long-run than of the short-run behavior of the economy.
14. For an explication of these relations, see chapter 8 of Minsky (1986).
15. This was especially true when the impact of crunches was concentrated on the thrift industry and housing.

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