Business Cycle Theory: A Critical Historical Survey
Selected Excerpts for Perspectives in Macro Class

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2.4 Business cycle theories: Keynesian (not Keynes!)

As is well-known in heterodox circles, what became known as "Keynesian" economics was a far cry from what had been argued by Keynes. While the latter built a system that showed how an economy characterized by fundamental uncertainty and moving through historical time would reach full employment only rarely and by coincidence, the former assumes that it is just the existence of rigidities prevents the economy from continually righting itself. Thus, while there is some superficial similarity between their policy stances, the fact that they trace the underlying problems to such different causes means that Keynesians are not very Keynes-like. This quote from a Keynesian who was once the Chair of President Barack Obama's Council of Economic Advisors is representative:

> Just as there is no regularity in the timing of business cycles, there is no reason why cycles have to occur at all. The prevailing view among economists is that there is a level of economic activity, often referred to as full employment, at which the economy could stay forever (Romer 2008).

They came to dominate post-war macroeconomics to the extent that for some years the Hicks-Hansen-Samuelson approach was almost the only game in town. In the process, a relatively wide range of views evolved some of which incorporated concepts outside of Keynesian economics. I will restrict my attention to those assuming that cycles are created by stop-go policies. These represent a common Keynesian approach wherein it is assumed that, because of rigidities, involuntary unemployment can exist; and, while the self-regulating tendencies of the economy may eventually solve the problem, this can take time. It is therefore incumbent upon us to employ monetary and fiscal policy to at least speed recovery. This is the

"go" portion. However, in doing so we may overshoot and create inflationary pressures, requiring governments to act to scale back the level of economic activity. This is the "stop" half. Note that this does not mean they do not also believe that shocks were important. They do, but how that can create a downturn is both easily explained and not so much cyclical as random.

An *American Economic Review* article from 1962 discussing the European business cycle is an excellent example of the stop-go approach (where "post-Keynesian" is meant to imply a world where Keynesian policies are employed):

> As to the recession of 1958, it was an entirely different affair from that of 1952 because it did not have its origins in any shock event, like the outbreak of the Korean War. One may say, therefore, that it was the first normal recession of post-Keynesian Europe. How and why did it come about?
>
> The years 1953, 1954, and 1955 were years of exceptional economic expansion; the rise in the real GNP for the OEEC [Organisation for European Economic Co-operation] averaged 5 ½ per cent and in 1955 it was over 6 per cent. In the course of this expansion all the industrial countries, except Italy, reached a position of excessive total demand and overfull employment, which produced inflationary pressures and, in many cases, balance-of-payments difficulties. The recession came about through the gradual efforts of the authorities to curb this excess demand situation by shifting from a policy of stimulation to one of restraint (Gilbert 1962: 97).

Consistent with the stop-go understanding of the business cycle, Gilbert goes on to say "I assume that the authorities will continue to aim actively at maintaining full employment by appropriately

managing the level of total demand" and "Experience shows that they [bouts of extreme inflation] are always caused by excessive deficits in the public finances" (Gilbert 1962: 101 and 102).

The literature is filled with examples of this sort. Duncan Foley writes in his review of a book by Arthur Burns that the latter encourages us to avoid "excessive prosperity" not only because it may lead to depression (a position Foley argues that Burns never really supports), but it may cause inflation (Foley 1970). A theme in *Are Business Cycles Obsolete?*, edited by Martin Bronfenbrenner following an international conference in 1967, was whether or not Keynesianism had solved the basic problem and it only remained to not get carried away with the upturns (Bronfenbrenner 1969).

The new classical counterrevolution put this approach on hold to an extent, with Monetarism, rational expectations, and the Lucas Critique taking center stage in the late 1970s and 1980s. But Keynesian business cycle articles still appeared, like Fisher (1977) which argued that the relevant imperfection was wage contracting and McCallum (1986) who raised serious objections to Lucas' approach while building one based on sticky product prices. In the 1990s, Keynesianism did not die but tended to drift even further away from Keynes as researchers tried to find ways to reconcile it with the new approaches. Roger Farmer writes,

> The model that I describe in this paper is a fully articulated rational expectations market clearing model. In this sense it is 'classical'. However the model is capable of replicating the price responses that one observes in the data. In this sense it is 'Keynesian'. I hope to persuade the reader that more elaborate models of this kind will provide an explanation of business fluctuations that represents a viable

> middle ground between real business cycle theory and the 'neo-Keynesian' agenda (Farmer 1991: 1369).

This effort continued into the 1990s with papers shedding even more doubt on Lucas' characterization. These, too, of course, are more Keynesian than Keynes–though this is often lost on the authors! James Holmes and Patricia Hutton, for example, take on new classical economics, but do so by trying to prove that Keynes was right about something he did not say.

> This paper has demonstrated that Keynesian involuntary unemployment and sticky wages can be the outcome of optimising decisions of rational economic agents. It has done so based upon the intertemporal optimisation decisions of monopsonistic firms which form rational expectations of the uncertain price they will receive for their product at the time they post wages, after which employment decisions are made...When unemployment occurs, all of the defining characteristics of Keynesian involuntary unemployment are satisfied (Holmes and Hutton 1996:1581-2).

Surprisingly, they support this labor market frictions story with quotes from the General Theory.

Eventually, this line of micro-foundational, rational-expectations based models with various imperfections and rigidities became known as New Keynesian economics and the focus shifted more to shocks rather than stop-go policies. History no doubt played a role in this transformation. The long non-inflationary expansion of the 1990s called into question the need to encourage a "stop" while the fact that the Financial Crisis did not coincide with a Federal Reserve interest rate hike suggested, at least from the standpoint of their theory, a non-policy exogenous event. This is not to say that the approach has been completely abandoned, however,

as it or some derivative thereof continues to influence mainstream policy discussions.

2.7 Business cycle theories: Monetarist

The Monetarists agree with the Austrians in putting the blame on misguided monetary policy. However, their logic is very different. Though Keynesianism dominated economic theory and policy in the 1950s and 1960s, Milton Friedman was arguing even then for a return to more classical principles. The inflationary problems of the 1970s gave them traction so that it is not surprising to find that Monetarism's relative peak popularity in business cycle research appears in the 1980s. Central to their model are the following:

> *(1) Prices and wages are perfectly flexible. However, perfect information does not exist.*
>
> *(2) Changes in aggregate demand do not affect real output in the long run, but they do affect real output in the short run.*
>
> *(3) Fluctuations in the money supply drive fluctuations in aggregate demand and are responsible for business cycles* (Knoop 2010: 56-57).

To understand their business cycle theory, start with the quantity theory of money:

(1) $MV=Py$

where M is the money supply, V the velocity of money, P the price level, and y real output. Expressed as rates of change, we get:

(2) $\%\Delta M + \%\Delta V = \%\Delta P + \%\Delta y$.

A key premise of the Monetarist approach is that there exists a natural rate of growth of output, $\%\Delta y^*$, that "is determined by real factors including technological growth, the growth of the labor supply, the rate of real investment, and institutional arrangements" (Hall 1990: 69). Though $\%\Delta y$ can be pushed away from $\%\Delta y^*$ in the short run, it is continually drawn back over the long run

(which may represent up to ten years; Knoop 2010: 60). It strays when workers' expectations of the price level are incorrect, which would only occur as a result of erratic (and therefore unpredictable) changes in the money supply.

Say, for example, that the central bank suddenly and without warning raises %ΔM. Assuming no change in %ΔV, this will increase %ΔP and lead firms to want to expand output. In order to attract the necessary labor, they will raise the rate of increase of nominal wages (%ΔM). Herein lies the key, for workers, since they must keep track of many more prices than firms and lack the in-house accountants of many businesses, are unaware of the fact that today's %ΔP is higher than yesterday's. Thus, the ↑%ΔW necessary to attract the needed workers is lower than the corresponding ↑%ΔP, meaning that firms are paying higher nominal wages but lower real ones. Workers come rushing back to the factory because of the perceived increase in compensation while firms are happy to hire them because they are actually paying less. The rise in employment causes %Δy to at least temporarily exceed %Δy*. Eventually, however, workers come to understand that %ΔP has accelerated, forcing firms to raise %ΔW by the same proportion. Employment returns to the natural rate, as does output growth. An analogous situation results when there is an unexpected fall in prices. Firms then lower %ΔW but workers, perceiving this as a cut in real wages, quit. Employment falls as does %Δy–at least until workers catch on once again.

It is easy to construct their business cycle from the above: unexpected fluctuations in %ΔM lead to temporary movements of %Δy above and below %Δy*. Though once such a shock occurs the market will immediately begin to adjust and pull growth back towards the natural rate, not only can this process take many years but other shocks can appear in the meantime. In other

words,

> The Monetarist model asserts that economic fluctuations are largely the result of unanticipated changes in the money supply that lead to fluctuations in aggregate demand. Expectation stickiness, not price stickiness like in the Keynesian model, means that changes in aggregate demand have real effects on ouput and unemployment. Recessionary periods in which output growth is below the natural rate are the result of money growth being lower than anticipated. Expansions, where output growth is above the natural rate, are caused by higher than anticipated money growth (Knoop 2010: 60).

It follows logically from this that,

> The monetarists' proposal to reduce the amplitude of the business cycle is to maintain stable, sustained growth of the money supply which, they contend, would minimize deviations in nominal aggregate demadn and being about a higher degree of economic stability than we have actually experienced (Hall 1990: 84).

Note, incidentally, that the above assumes that all changes in unemployment are voluntary.

Monetarism has largely fallen out of favor, in no small part because of its declining empirical validity. Theoretical developments have also played a role in the sense that those originally subscribing to this view have evolved into Real Business Cycle theorists. That approach is explained next.

2.8 Business cycle theories: Real Business Cycle theory

Real-business cycle theory views fluctuations as a consequence of external shocks. The unique feature of the model is the idea that short-term fluctuations are simply a rational reaction to long-term adjustments, usually described as changes in productivity. As one proponent writes:

> For example, one percent permanent (once and for all) change in labor productivity in the long run leads to a one percent permanent increase in the level of capital stock, consumption, output and investment once the transitory dynamics have been dissipated. These transitory dynamics are important for understanding fluctuations. They are initiated by the requirement that the economy must move to a permanently higher capital stock. To get there requires substantial increases in investment in the near term that taper off to a new higher steady state level as the economy converges to the higher capital stock. There will also be gradual increases in consumption and output towards their respective higher steady state levels. Work effort will also be temporarily high along the transition path. While wealth has increased, which discourages current work effort, productivity is also higher which encourages work effort. Productivity is higher because the desired or steady capital stock has risen. Thus in the near term real interest rates rise, which induces intertemporal substitution of current for future work effort. The responses, and thus the fluctuations that are present in the model, are the result of the same factors that generate economic growth. The Real Business Cycle model, therefore, provides an integrated approach to the theory of growth and fluctuations (Plosser 1989: 60).

The bottom line is that employment surges when there is a jump in productivity (because this will boost wages, making it rational to work now) and it falls when there is a decline (because this will lower wages, making leisure more attractive). These exogenous shocks lead to the adjustments we view as expansions and recession.

Real Business Cycles is viewed as a continuation of the return to Classical economic principles started by Monetarism. Among its premises are that markets are perfectly competitive, agents have perfect information, and the natural rate of output holds over the long and even short run (Knoop 2010: 85). The last is particularly significant as it breaks from earlier natural rate-based theories in not arguing that deviations from the short-run value are inevitably drawn toward the long-run. Rather, the former's fluctuations are instrumental in causing permanent adjustments in the latter–permanent, that is, until a new deviation occurs.[1] These deviations are a result of a result of exogenous shocks to productivity, which in turn occur as a result of a change in the price of an important input, changes in technology, changes in government taxation and regulation, wars and natural disasters, and demographics (Knoop 2010: 87-9).

These create a business cycle as follows. First, labor markets operate perfectly and all unemployment is voluntary. The latter is justified on the premise that "involuntary" unemployment exists only because out-of-work corporate CEOs are unwilling to take a job as a greeter at WalMart. Jobs exist, but people may voluntarily choose not to take them (Knoop 2010: 90). Second, wages are a direct function of labor productivity. Hence, any shock to the latter

[1]Note that though the economy may be growing at the same long-run rate in numerical terms, it is doing so from a higher base. In other words, if the long-run rate is 3.5% and we suddenly accelerate to 4.5%, we should not expect to see a decline to 2.5% to compensate. Rather, we may drop back to 3.5%, but with the lasting benefit of the momentary burst (Hall 1990: 124).

caused by one of the above will also change wages. When wages fall, unemployment rises as people exit the labor force. When wages rise, unemployment falls. In short, exogenous shocks to productivity cause the business cycle. These do not appear to be totally random to us because a) even a random coin toss will yield series of heads or tails and b) a single shock can take time to work through the economy as firms adjustments are made in capital and some firms go bankrupt while others start up (Hall 1990: 124-5).

In all of this, demand is totally irrelevant. All real fluctuations originate in the supply-side of the economy. This, as suggested above, is a return to Classical economics, and an even more significant one than reflected in Monetarism or New Classicism. One significant difference from earlier models is the focus on very specific, modern microfoundations:

> What makes these macroeconomic models and not simply well-specified microeconomic models is the assumption of *representational agents*, or the assumption that all individuals have the same preferences and act alike in every way. Likewise, all firms face the same production functions, cost curves, and budget constraints. As a result, macroeconomics behavior becomes a simply summation of microeconomic behavior (Knoop 2010: 87).

While it would be fair to say that this view has become less popular, it nevertheless remains a force in Mainstream macroeconomics. Indeed, it is second in popularity only to "interest" or "monetary" in the most recent time period (2011-6).

2.10 Business cycle theories: John Maynard Keynes

Along with Minksy's, the Financial Crisis brought with it a resurgence of interest in Keynes' work. Unlike the moderate increase in the former's overall share, however, Keynes-related business cycle work in 2011-6 jumped significantly to just over seven percent of the total share, barely behind "Keynesian." While some of this may be related to misattribution on the part of the original author (i.e., confusing Keynes and Keynesian), this seems unlikely given that "Keynesian" barely increased between 2001-10 and 2011-6.

Regarding the business cycle, he writes in the opening of chapter 22 of the *General Theory*:

> Since we claim to have shown in the preceding chapters what determines the volume of employment at any time, it follows, if we are right, that our theory must be capable of explaining the phenomena of the Trade Cycle.
>
> If we examine the details of any actual instance of the trade cycle, we shall find that it is highly complex and that every element in our analysis will be required for its complete explanation. In particular we shall find that fluctuations in the propensity to consume, in the state of liquidity-preference, and in the marginal efficiency of capital have all played a part. But I suggest that the essential character of the trade cycle and, especially, the regularity of time-sequence and of duration which justifies us in calling it a cycle, is mainly due to the way in which the marginal efficiency of capital fluctuates (Keynes 1936: 313).

Keynes' approach is unique in that it either omits or discounts many of the factors that were key in the above theories, even the heterodox ones. Interest rates may rise (see

Keynesianism, for example), however this is not only unlikely to be the precipitating cause but it is more probable *after* the crisis than before. And even though the price of capital goods increases (à la Mitchell), this is typically offset by the fact that "the later stages of the boom are characterised by optimistic expectations as to the future yield of capital-goods sufficiently strong to offset...their rising costs of production" (Keynes 1936 chapter 22). Nor is overinvestment the culprit (as in the Austrian view)–by contrast, he says that the condition we reach is generally "not one in which capital is so abundant that the community as a whole has no reasonable use for any more" (Keynes 1936 somewhere in chapter 22).

Keynes' believes the business cycle to be endogenous and marked by "the phenomenon of the *crisis*" (Keynes 1936: 314). Downturns may occur suddenly and catastrophically, while upturns emerge more slowly. Key to this behavior is the manner in which expectations are formed and the contrast that may exist between forecasts and realized results in each stage of the cycle. Dealing with the first, Keynes argues that economic agents necessarily operate in an environment of fundamental uncertainty rather than risk or perfect foresight. The latter two create a world where it is possible to create mathematically object forecasts. A ten-percent chance of winning $300 versus a ninety-percent chance of zero yields an expected value of $30. If this is known, then decisions can be made with complete probabilistic confidence. If one takes this chance and loses, the experiment's parameters (assuming it is repeatable) remain the same: the expected value is still $30. Hence, disappointment does not create panic and one can develop a logically-sound plan regarding how much to invest, how much to borrow, when to quit, etc. One might witness fluctuations in investment spending but for largely the same reason one can see patterns in random coin tosses.

Uncertainty, however, changes the game dramatically. Under these conditions, we know neither all the possibilities nor their likelihoods:

> By "uncertain" knowledge, let me explain...about these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know (Keynes 1937: 213-4).

Yet even though we cannot create expected values,

> ...the necessity for action and for decision compels us as practical men to do our best to overlook this awkward fact and to behave exactly as we should if we had behind us a good Benthamite calculation of a series of prospective advantages and disadvantages, each multiplied by its appropriate probability, waiting to be summed (Keynes 1937: 214).

It is the existence of animal spirits, or spontaneous optimism, that allows us to make the necessary leap of faith. Particularly relevant to the current discussion is the fact that agents

> ...assume that the present is a much more serviceable guide to the future than a candid examination of past experience would who it to have been hitherto. In other words we largely ignore the prospect of future changes about the actual character of which we know nothing (Keynes 1937: 214).

Profits today are predictive of profits tomorrow.

Such a world is volatile, particularly in the face of disappointment. When our expectations lack a firm foundation then panic (and euphoria) becomes a distinct possibility. Recessions are not, however, simply the result of a self-fulfilling prophecy. Indeed, the problem is not that entrepreneurs become pessimistic, but that they remain too optimistic. Consider the

early stages of an expansion. Expectations are likely to still be somewhat pessimistic in light of the recent recession (because, again, they expected those conditions to continue). Eventually, however, firms (and consumers) find it necessary to replace durable goods and equipment and inventories. Investments coming on line in this period will therefore earn higher-than-expected profits since they were conceived during the depths of the recession. In an uncertain world, this serves to feed animal spirits which leads to an upward revision of forecasts and an acceleration in investment. For a time, the optimistic expectations are justified (and reinforced) by results. The boom is well underway.

Unfortunately, this cannot continue because investment spending will necessarily decline. This is so in part because the cost of capital equipment may rise, interest rates increase, and the propensity to consume fall. All of these are secondary, however, when compared to the real culprit: the saturation of the market for capital (Harvey 2014: 392-3). As investors reach target levels of capacity, so they reduce their spending. While this makes perfect sense at the individual level, it has an unintended macro consequence: as investments come on line in late expansion, total spending has decelerated.

> By itself, this might cause the economy to slowly settle into a steady state wherein investment exactly offsets depreciation. Recall, however, the buoyed expectations of profit from investment. These will not be realized. At first, shortfalls may be perceived as temporary aberrations. Eventually, however, it will become clear that the actual profits earned by completed investment projects are consistently falling short of the forecasts that motivated entrepreneurs to undertake them in the first place. Even though these realized levels might have been acceptable under other

> circumstances, they are a disappointment. If that disappointment is sufficiently large, panic and even catastrophic collapse may result (Harvey 2014: 394).

When the disillusion comes, this expectation is replaced by a contrary 'error of pessimism'" (Keynes 1936: 321-2). The boom is over and the slump has begun.

One might conclude from this that Keynes believes the solution to be a dampening of the optimistic expectations that led to the upturn or an increase in the rate of interest sufficient to offset them. This would, however, "misinterpret my analysis" and "involve serious error" (Keynes 1936: 320). This is so because he does not believe, like the Austrians for example, that over-investment is characteristic of the expansion. It is not that all socially useful investment opportunities have been exhausted, but that entrepreneurs overestimated the profitability of those that they did undertake. Some projects may be misdirected, but "a state of full investment in the strict sense has never yet occurred, not even momentarily" (Keynes 1936: 324). Keynes sees theories that advocate raising interest rates to stifle booms as resulting from "confusion of mind" (Keynes 1936: 328). He adds:

> I can make no sense at all of these schools of thought; except, perhaps, by supplying a tacit assumption that aggregate output is incapable of change. But a theory which assumes constant output is obviously not very serviceable for explaining the trade cycle (Keynes 1936: 329).

Thus, in Keynes the business cycle results from fluctuations in investment, a key determinant of which is the fundamental uncertainty of the world in which entrepreneurs must operate. It is only because of their animal spirits that any capital formation takes place at all. Even then, there is a systemic tendency for it to fall short of the level that would satiate all

socially useful opportunities. Perhaps the most important of his conclusions in this area of inquiry is that “the duty of ordering the current volume of investment cannot be safely be left in private hands” (Keynes 1936: 320).

2.3 Business cycle theories: Michal Kalecki

Michal Kalecki published a number of important works on business cycles between 1931 and 1968. While his approach evolved over this period and included both endogenous and exogenous elements, I will focus on the former. Among the keys to his analysis was the explicit modeling of a gestation period for the creation of physical capital. In "A Theory of the Business Cycle," after establishing his well-known proposition that workers spend what they get while capitalists get what they spend, he writes:

> We wish now to state that the present investment, i.e. the value of present investment output, is a result not of *present* but *former* investment decisions, for, as we shall see immediately, a certain relatively long time is needed to complete the investment projects. This fact is of fundamental importance for the dynamics of an economic system (Kalecki 1937:80-1).

This creates two important lags: that between the initial decision and the expenditure for a given portion of the project and that between the latter and the new unit of capital coming on line and being available for use by the entrepreneur. This creates a situation like that shown below:

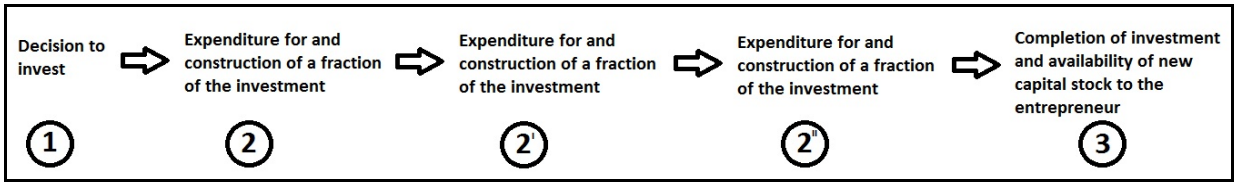

Figure 1: Kalecki's investment sequence.

Here, the starting point is the decision to invest (1), which is based on factors available to the entrepreneur at that moment in time. Next, some fraction of the project is paid for and completed (2, 2', and 2''). Assuming each of the above segments to be equal, this example has one-third

being finished per period. Finally, on the far right, the investment process ends and the life of the newly produced capital stock begins (3).

At this point in the discussion, Kalecki has already argued the central importance of investment in the economy. It determines income, output, wages, consumption, employment, and (most important for the current discussion) profits. What happens on the far left of the above sequence therefore takes on critical importance and begs the question, why do firms invest? Kalecki says firms do so up to the point that the gross rate of profit (profits divided by the value of the capital stock) is equal to the rate of interest. This fact, in combination with the events shown in Figure 1, introduces a dynamic element into the analysis. Because investment spending creates profits, this means that stages 2, 2' and 2" raise the gross rate of profit. Assuming along with Keynes that "the facts of the existing situation enter, in a sense disproportionately, into the formation of our long-term expectations" (Kalecki 1937: 84, quoting Keynes 1936: 148), this raises the marginal efficiency of capital and encourages more investment (measured as a percentage of the current capital stock; López and Assous 2010: 93-4). However, at the same time firms throughout the economy are also reaching stage 3, thereby lowering the rate of profit and consequently depressing expectations (Kalecki 1937: 89). We therefore have two opposing forces at work in Figure 1, the relative weights of which determine where we stand in the business cycle. When stages 2, 2' and 2" dominate, we expand because investment spending creates profits; eventually however, the rise in the stock of capital, which both increases the denominator in the gross rate of profit and signals the end of investment spending for a given project, will take over. Various forces create momentum in each stage.

Note the endogeneity of expectations here. He disagreed with Keynes that the state of

long-term expectations would/could remain stable over the business cycle. As suggested above, a rising rate of profit is likely to cause an optimistic revision of forecasts, and vice versa. In addition, Kalecki thought this phenomenon might be s-shaped in the sense that there may be little positive reaction at the beginning of an upturn, after which expectations become relatively elastic relative to realized results before once again becoming dulled as the upturn matures (Kalecki 1939).

To this core Kalecki added a number of innovative concepts. One of the most discussed is the principle of increasing risk. It emerged from the consideration of the following question: if rising investment tends to raise expectations even further, are there no limits to the volume of capital a firm might add during a period of optimism? Kalecki argued that the relevant constraint was related to the fact that:

> *The rate of risk of every investment is greater the larger is this investment.* If the entrepreneur builds up a factory he incurs a certain risk of unprofitable business, and these losses, if any, will be more significant for him the greater proportion the investment considered bears to his wealth. But besides this, in "sacrificing" his reserves (consisting of deposits or securities) or taking credits, he exhausts his "sources of capital," and if he should need this "capital" in the future he may be obliged to borrow at a high rate of interest because he has overdrawn the amount of credit considered by his creditors as "normal." Thus both these aspects of risk incurred by investment shot that the rate of risk must grow with the amount invested (Kalecki 1937: 84-5).

In this sense, then, entrepreneurs do not invest up to the point where the marginal efficiency of

capital equals the rate of interest, but to where the former equals the latter *plus a variable for risk*. The greater the investment relative to the stock of capital, the greater that risk and thus the faster the entrepreneur reaches her limit.

Kalecki also considered the role of profits in financing further investment and he attempted to build a model that accounted for both the cycle and trend in a capitalist economy. Though convinced that our economic system was inherently unstable, he experimented with models that included stochastic elements (like changes in technology) and various levels of internal stability. It is also significant that he believed that we rarely reach the level of full capacity, which distinguishes his from some other approaches. Perhaps most significant of all is

> the fact that he was the first economist to provide a rigorous analytical framework, alternative to the general equilibrium theory, to study the general properties, and more specifically the stability properties, of a capitalist (or decentralized, to use the parlance of the general equilibrium theory) economy. Within this analytical framework, the issue of unemployment in capitalism can be given a dynamic explanation (López and Assous 2010: 118).

2.9 Business cycle theories: Hyman Minsky

While it is true (and not surprising) that Minsky's business cycle work peaked in popularity around the Financial Crisis, its relative gain was actually quite modest. Though it has never held quite as much as a half-percent of the total, interest has been fairly constant since the 1980s (when *Can "It" Happen Again?* and *Stabilizing an Unstable Economy* were published; Minsky 1982 and 1986b). Hyman Minsky is, of course, best known for his financial instability hypothesis. It argues, in short, that during upturns economic agents become increasingly optimistic and consequently reduce margins of safety between debt repayment schedules and expected income. The financial system thus becomes increasingly fragile meaning that the magnitude of the shock necessary to cause a collapse becomes smaller and smaller. Stability creates instability.

His interest in and work on business cycles, per se, go back many decades. The Minsky Archive at the *Levy Institute* even includes his lecture notes from Oscar Lange's University of Chicago undergraduate business cycle course from spring 1942 (Minsky 1942). While Minsky's early research follows fairly standard lines, focusing on the accelerator, multiplier, and stochastic shocks and variations (see for example Minsky 1954a, 1954b, and 1954c), starting at least in 1959 one sees an increasing emphasis on the integral role of the financial sector (Minsky 1959). Interestingly, the focus in the following is much more positive than that reflected in his later financial-fragility work. It is nevertheless suggestive of the direction he would take:

> In addition if, as suggested earlier, the exploitation of an innovation in a favorable financial environment leads to capital gains for the innovator, then the payoff from the success scenarios will depend upon the nature of the financial system. A

> financial system that facilitates the exploitation of investment opportunities opened by innovation, and that protects the position of the innovator will make returns from the success scenarios larger, sooner and more secure. They will be larger because of the leverage in "other people's money" that is involved, they will be sooner because they will take the form of immediate capital gains–rather than savings out of income–, and they will be more secure, because they will enable the innovator to hedge on future possibly unfavorable second and subsequent acts by selling out a part of the position: he can realize part of his capital gains and diversify his portfolio immediately after some initial success (Minksy 1959: 25).[2]

In the following 1960 publication, however, the financial instability hypothesis is clearly visible:

> In this study the validity and implications of a number of hypotheses relating to the interaction between the financial and real sectors of the economy will be explored. The broadest hypothesis is that the behavior of an economic system with respect to the real variables is not independent of the financial structure of the economy. A hypothesis more closely related to the terms of reference of this paper is that the likelihood of a financial crisis occurring is not independent of the financial structure of an economy and the financial structure reflects the "past" of the economy. The third hypothesis is the most precise and is really a way of

[2]For materials drawn from the Minsky Archive, page numbers correspond to the scans rather than those of the original documents.

> phrasing the fundamental problem of this paper. It is that the financial changes that take place during a sustained boom generated by private demand are such that the domain within which the financial structure is stable is decreased as the boom continues, so that the likelihood that a disturbance of the financial system will lead to a financial crisis is increased as the boom lengthens (Minsky, Friend, and Andrews 1960: 3).

Indeed, almost every element appears, including the concept of a margin of safety (Minsky, Friend, and Andrews 1960: 35), the reduction thereof over the boom (Minsky, Friend, and Andrews 1960: 39), and the key role of the government as lender-of-last-resort (Minsky, Friend, and Andrews 1960: 49).

In terms of his business cycle work, "For Minsky, the modern business cycle *is* a financial cycle" (Wray 2015: 31). While this is clearly the case, there exists some controversy regarding other aspects of it. For example, though his approach definitely does not fit into the mainstream tradition wherein economies automatically seek full-employment equilibrium, "it would yet be misleading to draw from it the conclusion that Minsky's contribution to macrodynamics provides a significant example of the endogenous business cycle approach" (Arena and Raybaut 2001: 113). To understand this, consider Minsky's determinants of investment. It is premised on the existence of two prices: P_K, or the demand price of capital, and P_I, or the supply price. The former is that which the firm is willing to pay for a unit of capital and the latter is the minimum at which one will be supplied. At first estimation, the former is a horizontal line whose position in space is determined by the firm's estimation of potential profit (see Figure 2). Assuming this to be above P_I, positive investment results. The supply price will rise after a point as producers of

capital goods use equipment more intensely and find costs rising. As a consequence, investment takes place up to the point where the two curves intersect.

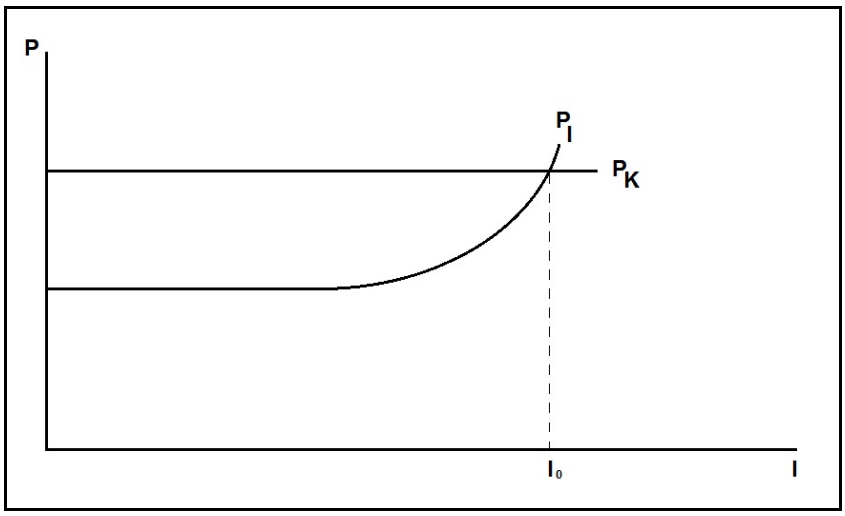

Figure 2: Minsky's investment without financing.

But this is far from the whole story. As Minsky writes:

> The above figure however has no place for financing: presumably the amount of investment designated by the intersection will be ordered independently of the financing arrangements. This is palpable nonsense. The investment producers will not undertake their activity unless there is some guarantee that the final purchaser will be able to pay for the completed investment good (Minsky 1986a: 188).

Production takes time and financing is therefore central: "A decision to invest–to acquire capital assets–is always a decision about a liability structure" (Minsky 1986a: 172).

Firms have a number of choices in this regard, but these can be reduced to using existing and anticipated internal funds and borrowing. Consideration of the former is reflected in Q on Figure 3. It is downward sloping because as I rises, the ability to fund out of expected retained

earnings declines. To invest past I_i, "it is necessary either to run down holdings of financial assets that are superfluous to operations or to engage in external finance" (Minksy 1986: 191). In either event, this reduces the firm's margin of safety and this creates both lender's risk and borrower's risk. The former is the chance the lender is taking that the borrower will be unable to repay, while the latter is the borrower's worry about the same thing. Because the latter essentially lowers the expected profit from investment, it creates the dashed portion of P_K (and it makes the solid line thereafter irrelevant). This portion of P_K slopes down as the volume of investment increases, representing the fact that the borrower's worry increases. Were this the whole story (lender's risk will be saved for Figure 4), total investment would be I' with I_i funded internally and I'-I_i externally.

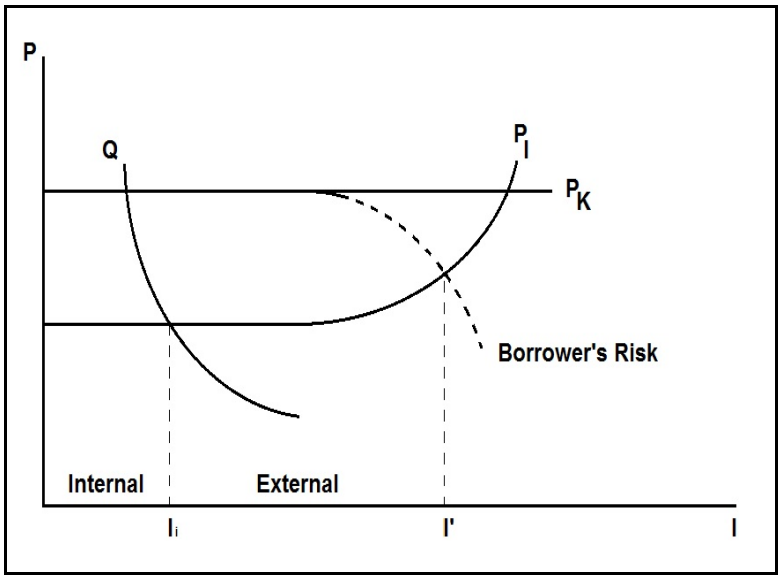

Figure 3: Minsky's investment including internal financing and borrower's risk.

This leaves only lender's risk, which is shown on Figure 4 (along with all the equilibria). This adds an implicit and potentially explicit cost (the latter in terms of the interest rate the

borrower must pay or conditions she must meet), creating the dashed line P_I' above P_I (of increasing slope since the ratio of debt to income would be rising). It is not costless to finance a $5 million purchase capital goods, meaning that the firm may have to settle for borrowing only $4.5 million. Current investment is thus determined by the intersection of P_K' and P_I' (point a). The actual cost per unit is P_{I0}, since this is what they would be charged by the producer of investment goods (point b). Total funding required is IP_{I0}, of which I_iP_{I0} is internal (point c) and the remainder is external. The gap between P_{K0} and P_{I0} is a direct function of the margin of safety jointly determined by the borrower and lender (De Antoni 2008: 9). Note how a decline in either borrower's or lender's perception of risk would shift points a and b to the right, thereby lowering this margin.

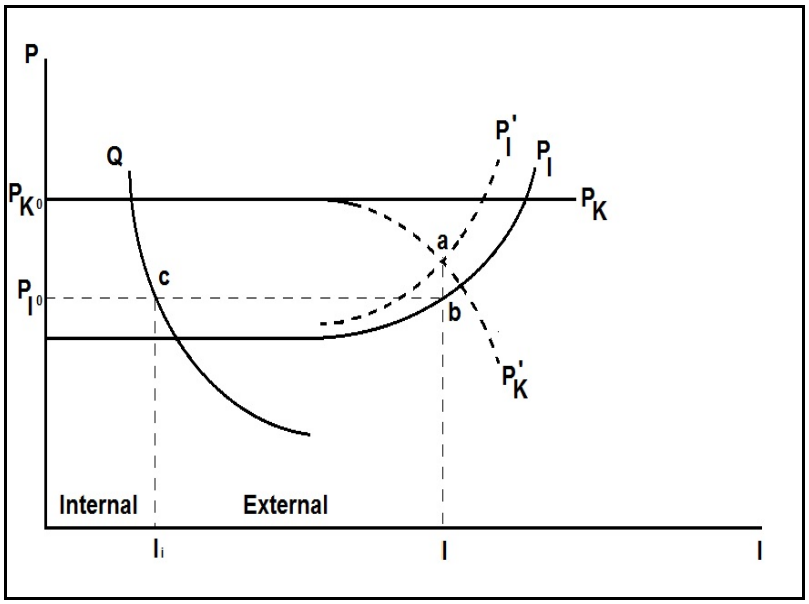

Figure 4: Minsky's investment with financing and borrower's and lender's risk.

The key to Minsky's business cycle is contained in the last sentence above. For, during

good times, both firms and banks reduce their estimates of risk. This puts both in an increasingly precarious position, which alone may be sufficient to bring on a decline since it makes it increasingly likely that a given shock could bring on default and disaster. On top of that, however, Minsky forecast that expansions lead to a rise in short-term interest rates:

> For a variety of reasons–the limited equity base of banks, internal and foreign drains of bank reserves, and, in modern times, central bank (Federal Reserve) actions to restrain the money supply–the supply of finance from banks eventually becomes less than infinitely elastic. This means that after favorable conditions for investment are sustained for some time, the cost of financing investment as it is being produced increases. Furthermore, the supply of finance can become very inelastic because of policy decisions or the internal processes of the banking and financial system. This means that short-term interest rates can become very high quite rapidly (Minsky 1986a: 195).

The consequence is that some hedge units (those which could meet all contractual obligations out of cash flow) become speculative ones (those able to cover interest payments, but not principle, out of cash flow) and some speculative units become Ponzi ones (those for whom it is necessary to continue borrowing even to meet interest payments). The last group will find it necessary to liquidate assets and those sales will cause the rate of increase in asset prices (which naturally accompanied the investment boom) to slow if not reverse. This has repercussions throughout the economy, with more Ponzi units being created and erstwhile liquid assets becoming illiquid. Capital-to-asset ratios of even conservative firms and banks become suspect. “The asset market becomes flooded and the euphoria becomes a panic, the boom becomes a slump” (Keen 1995:

612-3).

Returning to the question of whether Minsky's business cycle theory was an endogenous one, there are certainly elements of this above and there is no question that his followers have built models based on this assumption. But there is also a "and-then-something-happened" aspect in that he argues that the decline in margins of safety over booms leave us more vulnerable to "anything" that might happen. Probably the most accurate thing to say, however, is that he was not trying to create a business cycle theory in the first place, but an explanation of longer-term institutional change (Arena and Raybaut 2001). While the former clearly has an important and perhaps even vital role to play, it is the evolution of the financial system over time, especially its ability to continually find new means of liquidity creation and risk taking, that is the real story in Minsky.

2.1 Business cycle theories: Wesley Clair Mitchell

Wesley Clair Mitchell was a pioneer in the development of business cycle theory. His work was meticulously researched, empirically grounded, and intended to be practical as well as scholarly. Because the *National Bureau of Economic Research* and *Index of Leading Economic Indicators* are part of his vast legacy, he is one of the few Institutionalists whose name might be familiar to Neoclassicals. He even served as the President of the American Economics Association in 1924. And yet, despite all this, his efforts are often discounted:

> Another institutional economist who left a lasting mark on the economics profession through his leadership of the National Bureau of Economic Research was Wesley C. Mitchell, *who eschewed theory in favor of meticulous empirical investigation* (emphasis added; Williamson 1996:391).

This, of course, is code for a lack of sophistication or structure. It implies that Mitchell had no model, he just looked for correlations in the data (albeit meticulously).

Before examining this charge further, Mitchell's approach will be reviewed. A useful starting point is his definition of "business cycle." Arthur Burns' characterizes his then recently deceased colleague's view thusly:

> Business cycles are not merely fluctuations in aggregate economic activity. The critical feature that distinguishes them from the commercial convulsions of earlier centuries or from the seasonal and other short-term variations of our own age is that the fluctuations are widely diffused over the economy — its industry, its commercial dealings, and its tangles of finance. The economy of the western world is a system of closely interrelated parts. He who would understand business

> cycles must master the workings of an economic system organized largely in a network of free enterprises searching for profit. The problem of how business cycles come about is therefore inseparable from the problem of how a capitalist economy functions (Burns 1951: 3).

Two things stand out. First, for Mitchell a distinguishing feature of business cycles is that they are widespread, crossing not only over many industries and enterprises, but including finance as well as commerce. It represents a general downturn and not simply a crisis in one sector or another. Second, the common bond among all those affected is monetary: "the industrial process of making and the commercial process of distributing goods are thoroughly subordinated to the business process of making money" (Mitchell 1913: 570). Ultimately, every business, regardless of specialization, must worry about the bottom line.

Given these premises, it is little surprise that Mitchell's focal points were profits, prices, and finance–but especially profits. Particularly important to him was how these were affected by the pressures created by expansion and recession. Take, for example, what happens in an the opening phases of an upturn. Businesses start to buy again and while at first this may be confined, the need for "materials, wares, and current supplies from other enterprises" means it soon spreads (Mitchell 1913: 571). Banks are loaning money again, too, and "all this while, the revival of activity is instilling a feeling of optimism among business men, and this feeling both justifies itself and heightens the forces which engendered it by making everyone readier to buy with freedom" (Mitchell 1913: 571).

Along with the rise in output and employment comes a rise in prices. But, they do not do so equally or at the same time or speed, and therein lies the key:

> In the great majority of enterprises, larger profits result from these divergent price fluctuations coupled with the greater physical volume of sales. For, while the prices of raw materials and of wares bought for resale usually, and the prices of bank loans often, rise faster than selling prices, the prices of labor lag far behind, and the prices which make up supplementary costs are mainly sterotyped for a time by old agreements regarding salaries, leases, and bonds (Mitchell 1913: 572).

In other words, though non-labor costs for firms may rise at a rate faster than their selling prices and volume, labor and other overheads lag behind. Profits are thus high as is optimism and all the various positive effects reinforce one another. Orders of capital equipment also increase.

However, a number of forces–all a function of the expansion–come to weigh heavily. First, once contracts and other agreements expire, labor and supplemental costs *do* begin to rise under the pressure of increased demand. Second is the

> stress is the accumulating tension of the investment and money markets. The supply of funds available at the old rates of interest for the purchase of bonds, for lending on mortgages, and the like, fails to keep pace with the rapidly swelling demand. It becomes difficult to negotiate new issues of securities except on onerous terms, and men of affairs complain of the "scarcity of capital." Nor does the supply of bank loans grow fast enough to keep up with the demand. For the supply is limited by the reserves which bankers hold against their expanding demand liabilities. Full employment and active retail trade cause such a large amount of money to remain suspended in active circulation that the cash left in the banks increases rather slowly, even when the gold output is rising most rapidly

(Mitchell 1913: 573-4).

Note that when this was written, the US was still on a gold standard and would remain so until 1933.

Third, Mitchell believed that the industries dependent on the demand for industrial equipment would add disproportionately to the rising costs. Because of the expenses involved, their capacity is generally geared only toward "repairs and renewals." However,

> ...when to this regular work of maintaining the efficiency of the existing equipment and to these odd contracts for new construction there is added the rush of orders from the many enterprises which see their own trade outrunning their facilities and from the numerous new projects launched on the rising tide of prosperity, then the construction trades have a season of activity which few of the industries for which they are working can match (Mitchell 1913: 484).

This, too, contributes to the squeezing of profits that occurs as the expansion matures.

In summary then, in early expansion profits are rising because sales and output are going up while all other costs save raw materials are stable. This is true of labor and overhead because they are contracted; in finance and industrial equipment, the mounting pressure has simply not yet had an impact. But, as contracts expire, reserves dwindle, and capacities are strained, so profits begin to be squeezed. It is not necessary for this to be universal or even widespread. Indeed, it will likely only be a minority of firms who find themselves in trouble. But, just as the upturn is marked by feedback and multipliers, so is the slow down. Interestingly and in stark contrast to mainstream approaches, Mitchell points to the financial market in explaining the path by which the contagion occurs:

> Now such a decline of profits threatens worse consequences than the failure to realise expected dividends. For it arouses doubt concerning the security of outstanding credits. Business credit is based primarily upon the capitalized value of present and prospective profits, and the volume of credits outstanding at the zenith of prosperity is adjusted to the great expectations which prevail when the volume of trade is enormous, when prices are high, and when men of affairs are optimistic. The rise of interest rates has already narrowed the margins of security behind credits by reducing the capitalized value of given profits. When profits themselves begin to waver the case becomes worse. Cautious creditors fear lest the shrinkage in the market rating of the business enterprises which owe them money will leave no adequate security for repayment. Hence they begin to refuse renewals of old loans to the enterprises which cannot stave off a decline of profits, and to press for a settlement of outstanding accounts.
>
> Thus prosperity ultimately brings on conditions which start a liquidation of the huge credits which it has piled up. And in the course of this liquidation prosperity merges into crisis (Mitchell 1913: 575-6).

This causes a significant shift in priorities as "the problem of making profits on current transactions, is subordinated to the more vital problem of maintaining solvency" (Mitchell 1913: 576).

The dismal state of affairs can be expected to continue, but not indefinitely. First, the same differential rate of change of prices now works in favor of economic recovery. Raw materials prices can be expected to fall more rapidly than those of final sales, mitigating if not

reversing the decline in profits. Second and more significantly, demand eventually recovers. Stocks accumulated during the expansion are run down and so new orders are placed; consumers and businesses find it increasingly necessary to replace durable items; new tastes emerge; and the demand for capital equipment is resurgent as credit is easy, untapped technological advances exist, "and contracts can be let on most favorable conditions as to cost and prompt execution" (Mitchell 1913: 579). The cycle begins again.

This, in a nutshell, is Mitchell's view of business cycles. Profits are squeezed in the upturn and inflated during the slump. During each stage, momentum gathers quickly as prosperity or depression multiplies. Both the expansion and the recession are marked by changes in the level of economic activity that occur across sectors and industries and ultimately center on pecuniary, not "real," forces. This is so because, as quoted above, "the industrial process of making and the commercial process of distributing goods are thoroughly subordinated to the business process of making money" (Mitchell 1913: 570). One can find comparisons to Keynes, Kalecki, Minsky, and Marx in his discussion.

Returning to the question raised at the opening of this section, is this a theory or just empiricism? If it is the latter, it is certainly not casual. Even his greatest detractors readily admit that his work was precise and exhaustive. What he refused to do, however–and what makes it difficult for Neoclassicals to recognize as "theoretical"–was deduce a priori a set of abstract behavioral principles drawn primarily from his intuitive sense of the phenomenon and then apply these "as practicable to the real world" (Klein 1983: 874). Philip Klein continues, "While theory must perforce simplify reality, it is essential to have accurate information about reality, as an essential precondition for developing sound theory" (Klein 1983: 874).

More than this, it is difficult to imagine how anyone undertakes an empirical study in the absence of a theory. Indeed, such an accusation is nonsense. Theory defines which phenomena are of importance and what the relationships are among those phenomena. Mitchell did not include every known time series in his study, he selected only those deemed relevant by his (and those of prominent contenders) hypotheses. Furthermore, those hypotheses were based on clearly-developed premises drawn from his Institutionalist roots, particularly that economies are characterized by process rather than equilibrium and that business is ultimately about money, not production. These very clearly informed his empirical work.

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	Key
Mitchell	Despite rapid increase in raw material costs, lagged response of labor and overhead allow profits to surge until the latter two start recontracting. Added to that are tighter credit conditions and rising costs in capital equipment industry. The profit squeeze raises doubts regarding borrowers' ability to repay. Loans are not renewed and terms become more severe. Assets are liquidated, panic results, and the business of business shifts from earning profits to maintaining solvency.
Interest/ Monetary	Endogenous version: increase in economic activity drives up borrowing costs, leading to recession. Exogenous version: central banks offer too low interest rates which encourages bad investments; these either fail on their own or do so when the central bank corrects its mistake.
Kalecki	The cycle is a function of several interrelated elements. First, expectations of profit are dependent on current profits. Second, current profits are created by current investment. Third, capital projects have a gestation period. Fourth, the more investment a firm undertakes, the greater the risk. So long as the current period is characterized by more by spending for construction of projects than those projects coming online, the economy expands. However, inevitably there will arrive a point when projects coming online will outweigh construction. Profits fall, expectations of profit are revised downward, and the economy contracts.
Keynesian	Government fine tuning intentionally initiates a stop period when the go period has created an unacceptable rate of inflation.
Austrian	Well-intentioned central bank policy creates an easy-money policy that encourages a level of investment that is higher than that actually preferred by consumers. Eventually, the competition between the consumption-goods industry and the artificially stimulated investment-goods industry leads to a rise in interest rates that then cause the poorly-considered investments to go bankrupt.
Marx	As the economy expands, money becomes too easily available (and outright fraud is perpetrated) while the share of income going to labor falls. Investment profits are disappointed and the economy contracts.

Monetarist	Unexpected changes in the money supply and therefore prices lead to confusion on the part of workers regarding the actual real wage. When prices are lower than workers' believed, they quit and unemployment rises above the natural rate until workers catch on. When prices are higher than they believed, there are new entrants into the work force and unemployment falls below the natural rate until workers catch on.
RBC	Changes in productivity cause the business cycle. When productivity rises, wages go up and unemployment falls. When productivity falls, wages fall and workers quit.
Minsky	In good times, agents lower the margin of safety between their debt repayment schedule and expected income. Since this process is progressive, eventually there are those who put themselves into a position where it is necessary to liquidate assets to make payments. This blunts or even reverses the asset price inflation that had accompanied/encouraged the upturn, reducing the solvency of other firms who are also in turn forced to sell assets. Panic selling and collapse follows.
Keynes	The expectations upon which investment spending depends are highly volatile due to the environment of uncertainty within which agents must operate. In late expansion, when firms are reaching their target capacities and reducing investment spending, this lowers profits. Because this was unexpected, entrepreneurs panic and the error of optimism is replaced by an error of pessimism.