
UNIT 11 TRADITIONAL THEORIES OF BUSINESS CYCLES

Structure

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11.0 OBJECTIVES

After going through this Unit you should be in a position to:

- outline the views of Schumpeter on economic fluctuations;
- analyse the ideas developed by Goodwin in terms of business cycles as an outcome of class conflict;
- explain the three-departmental schema and political business cycle expounded by Kalecki; and
- explain the process of business cycles viewed as an outcome of transitions in financial optimism as suggested by Hyman Minsky.

11.1 INTRODUCTION

Two different theses about cycles in economic activity in the developed world currently exist. One is the real business cycle (RBC) approach (to which you will be introduced in Unit 12) and the other is generically referred to the classical business cycle (CBC) orientation as an umbrella for all methodologies other than the RBC. The first approach (RBC) proposes that fluctuations in economic activity are driven by real shocks, while the latter body of work (CBC) suggests that a modern economy is a monetary and financial system and, therefore, cycles are generated as economic agents take positions in financial markets. For our purposes, it is sufficient to observe that by quantitative testing, which is not necessarily theory-driven, the CBC approaches are not inferior as explanations of fluctuations in the developed world. In other words, it is not illegitimate to explain business cycles without recourse to so-called first principles. This means that it is unnecessary to conduct the enquiry solely on the basis of infinitely-lived agents optimising their intertemporal objective functions. Secondly, the dichotomy between real sector and financial sector may not apply. Note that business cycle is a feature of the capitalist economy. It turns out that aggregate investment contributes to most of the fluctuations of GDP in most developed economies.

A stylised fact is that both a long and a short cycle in aggregate output can be discerned for both the prewar and the postwar period. The long cycle, of a length of

six to nine years, is most pronounced for the structure of fixed investment. The short cycle, of a duration of three to four years, dominates the cyclical structure of inventory investment. The relative strength of these cycles is explained by the speed with which the associated capital stock can be adjusted. The speed is naturally greatest for inventories, intermediate for equipment and machinery, and the longest for building and structures. The term business cycle here is taken to mean the irregular periodic movement brought about by a first-order difference or differential equation.

The traditional approach to business cycles by and large emphasized real factors. Few and far between were the classical economists who satisfactorily (even to themselves!) integrated monetary and financial factors into their study of the rhythmic waves of activity that characterised capitalist economies. Thus, we record below three important moments in the evolution of thought on business cycles associated with landmarks in the subject. First is the seminal contributions of Richard Goodwin who pioneered the tools and techniques of dynamic economic analysis. Modern work in complex economic dynamics can be traced back to one or other of his papers. His models were cast entirely in real terms. Secondly, springing from the same Marxian stock, although developing his trade cycle by first grounding his framework in the monopoly capitalism of his time, is the theory of Michal Kalecki. We should note that Kelecki, the Polish economist-mathematical statistician, is one of the founding fathers of modern macroeconomics. His long-term dynamics, then, follows from his short-term dynamics. The rudimentary inclusion of monetary elements are to be found here in the accommodating stance of the Central Bank to any lead provided by the investment plans of businessmen. Finally, the veil of money is completely torn asunder in the work of Hyman Minsky for whom the capitalist economy is a financially layered entity prone to fluctuations in connected financial and real activities. The list is, by no means, exhaustive. For example, the set of non-RBC approaches to business fluctuations is dense. Dennis Robertson, for instance, emphasised monetary factors in the genesis and propagation of cycles. Another illustrious member of that tradition was Ralph Hawtrey who underscored the importance of bank credit which is indispensable for carrying inventories. Reductions in interest rates induce businessmen to carry larger inventories. Greater orders, in their turn, encourage increased investment and, with a lag, investment in fixed capital.

11.2 SCHUMPETER'S VIEWS

The work of Schumpeter, perhaps, best embodies the difficulty of moving from an evenly rotating economy adequately described by the tools of the theory of value to a punctuation of general equilibrium by innovation/by the heroic entrepreneur. Schumpeter assumed a private enterprise economy in which there is freedom of contract. The individual is assumed to constitute the unit of analysis. The theory of marginal utility is the demonstration that the fulcrum of wants and thereby the utility character of commodities determine all aggregate phenomena. The theory of imputation explains the values of all individual commodities. Quantities of commodities and their values mutually determine one another (see MEC-001: Microeconomic Analysis, particularly Block 6 on general equilibrium). Thus, theorems about complements and substitutes and ratios of exchange, prices and the law of supply and demand can be proved. The grand achievement of Walras was to derive the conditions of general equilibrium. The system of exchange relationships renews itself from period to period. Sellers of commodities reappear as buyers with the wherewithal to purchase the commodities which would maintain their consumption and capital intact in the subsequent period at the current level and so on. The economy is dynamic in this sense. Each period is the basis of the next in that it generates data that enable workers and capitalists to repeat the same process in the next time interval. The economic system is thus stable.

Money can be incorporated into the capitalist dynamic. As with the means of production, there is no need to construct an independent exchange value of money as it is no more than a temporary abode of purchasing power. Money is valued according to the value of consumption goods which it commands. Walras' analysis is carried out for the case of a given quantity of fiat money. Money is no more than an additional item in the initial endowment of households and firms. It has a price by virtue of its marginal utility functions. The price, emerging in the capital market, equates the demand for money with the available stock (of money).

Banking plays no role in this "circular flow". "Development", on the other hand, is the emergence of surprises from within the "industrial and commercial" life of the economy. Schumpeter, it is well known, laid stress on the institution of "new combinations" by means of the creation of purchasing power by banks. All the same, the annual growth of savings which is the resultant of previous "development" is no less important. There are upper bounds to the possibility of financing entrepreneurs with no prior savings. Schumpeter examines the case of a gold standard and the institution of central banking. New commodities financed by the creation of fresh purchasing power will flow after a time lag. In the short run, prices will rise and the value of gold contained in the gold coin will exceed the value of the monetary unit. Bank IOUs will be presented for redemption. The solvency of banks will be threatened. If, in addition, there are constraints to the commodity complement of the freshly-minted notes coming to the market on time, banks must intervene with the savings of depositors. Thus, reserves are important both for commercial banks as well as central banks.

11.3 RICHARD GOODWIN

Richard Goodwin developed the Marxian conception that the power of the working class varies inversely with the size of the reserve army of labour. A militant working class will agitate for and succeed in gaining an increasing share of wages in income. However, the rise in wages has an adverse effect on the rate of accumulation and thereby on the employment rate. A cycle is generated by the interaction between the reserve army of labour, the distribution of income and the rate of accumulation. Class conflict, thus, is homeostatic and distributive shares remain more or less constant over the long run.

Goodwin invoked a predator-prey model involving distributive conflict between capitalists and workers. He assumed full utilization of capacity and investment determined by savings. The following account is drawn from Lance Taylor's text referred to in Section 11.7. Let $K = \kappa X$, with κ as the capital-output ratio. The symbol X stands for real output, a measure of production inclusive of intermediate inputs and K stands for the aggregate capital stock. The employed labour force is $L = bX$. Let the total population be denoted by N and the growth rate of N is n . The

employment ratio λ is $\lambda = \frac{L}{N} = \frac{b(K/\kappa)}{N}$. The wage share is ψ and on the assumption that all profits are saved, the growth rate g of the capital stock becomes $g = (1 - \psi) X/K = (1 - \psi)/\kappa$.

In the long run, the growth in the employment ratio is a function of the growth in output and employment, dots on variables denoting time derivatives

$$\dot{\lambda} = \lambda(g - n) = \lambda\left\{\left[\frac{1 - \psi}{\kappa}\right] - n\right\}$$

Along the Phillips curve lines (to be discussed in Block 6), the wage share is assumed to rise in response to the employment ratio

$$\dot{\lambda} = \psi(-A + B\lambda)$$

At a stationary point, $\dot{\lambda} = \dot{\psi} = 0$, the Jacobian of the above system takes the form

$$J = \begin{bmatrix} 0 & -\lambda/\kappa \\ \beta\psi & 0 \end{bmatrix}$$

The two state variables dampen fluctuations in one another with no intrinsic dynamics of their own. They chase each other around a closed orbit in the (λ, ψ) plane which encircles the stationary point (λ^*, ψ^*) . The workers are the predators since the labour share rises with λ . Economic activity and employment are the prey since a higher value of ψ squeezes profits and reduces accumulation and growth.

The literature developing Goodwin's insight has developed his idea that class struggle takes place in the labour market. Investment is an accommodating variable which adapts to the flow of saving. Saving is determined by income distribution which is determined in the labour market. The weakness of his model (and the strength of Kalecki's as we will see later in the next Section) is paying no attention to effective demand problems or, in Marx's terms, the realisation problem. Relatedly, Goodwin's models are classics in the genre of completely real dynamical systems in which money and finance play no role. From a financial perspective, it might be felt that the conflict between workers and capitalists is misspecified. Rentiers are owners of capital and the stock market needs to figure in any analytical description of a financially complex economy. The traditional class conflict might apply to the conflict between workers and the managers of firms. Besides, the parameters that generate Goodwin-type and real models are 'slow-moving'. The pace of changes in variables such as real wages, and their inverse profits, is slow. The effective labour force that feeds the reserve army grows steadily over time. These models cannot explain the manias, panics, and crashes, to use the evocative title of Charles Kindleberger's remarkable precursor to the next section, that distinguish the ebb and flow of activity in a modern capitalist economy.

Check Your Progress 1

- 1) Describe Schumpeter's account of the traverse from dynamics to development as the outcome of the interaction of the entrepreneur and the bank.

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- 2) Report on any later elaborations of Goodwin's predator-prey model of the cycle.

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1.4 MICHAL KALECKI

The innovation associated with methodologies close to Keynes like that of Michal Kalecki is to begin with the postulate that an oligopolistic market structure is an adequate characterisation of a modern economy. Therefore, the price of the product of an industry is the outcome of firms imposing a mark-up on average prime costs which are assumed to be approximately constant up to full capacity. The mark-up, synonymous with the degree of monopoly of the industry, determines the profit margin and the share of profits in aggregate income. The level of profits is determined by the level of investment that entrepreneurs implement. In other words, pricing and investment behaviour determine the level of employment and output. The mark-up rate is believed to be relatively insensitive to the state of demand. Fluctuations in economic activity flow mainly from fluctuations in investment expenditures.

11.4.1 A Three-Departmental Schema

Kalecki announces his Marxian pedigree by subdividing the economy into three Departments; Department I producing investment goods, Department II producing consumption goods for capitalists and Department III producing consumption goods for workers. Suppose that in a certain period, the annual wage bill increases as a result of increasing wage rates. Let the pre-change wage bills in the first two Departments be denoted by w_I and w_{II} and the fraction by which wages change by α . Thus the increment in the wage bill in the first two Departments is $\alpha(w_I + w_{II})$. Profits in these Departments decline correspondingly. However, the increment in the wage bill of these Departments means an equal rise in profits of Department III. Either output or prices or both will rise there. Total profits remain unaltered.

In the above framework the effect of a rise in wages is the rise in the prices of investment goods and capitalist consumption goods. Since the volume of capitalist investment and consumption is maintained in the short run, profits in the first two Departments rise by $1+\alpha$. The production and consumption of wage goods remain unchanged. As a result, profits in the third Department also rise by $(1+\alpha)$. Thus the volume of production in all three Departments remains unaltered while the value in each increases by $(1+\alpha)$.

Higher markups will encourage trade unions to bargain with their employers for higher wages since firms can 'afford' to pay them. If their demands are granted but other things remain the same, prices will also increase. A fresh round of demands for higher wages would emanate and a price-wage spiral would ensue. However, businessmen would be averse to making their goods more and more expensive. Thus, trade union power restrains the magnitude of markups. If working class action is

powerful, a redistribution of national income from profits to wages could take place. In our example, profits in Department III increase in the same proportion as wage rates. However, if there is a redistribution as a result of the reduction in markups there, the wage bill in the third Department increases more than the wage rates. There is a rise in output and employment there but not in the first two Departments.

11.4.2 The Political Business Cycle

The setting for the regime is parliamentary democracy. In such a milieu, the government is sensitive to the electoral process. The elections are the outcomes of business, working class and other group interests. The thrust of Kalecki's theory is: of whose interests does the government consider in making policy choices?

A government spending program could ensure full employment in a capitalist regime if sufficient unutilised capacity to employ the labour force existed. However, business would be averse to government intervention designed to deliver full employment. The opposition to government intervention by the capitalist class is not comprehensible at first glance. Because profits rise with full employment output. Additional government spending is unaccompanied by increased taxation. However, the fear of strengthening worker voice and of inflationary pressures is overpowering. Under a capitalist system, business has an edge over government because private investment, and the level of employment it determines, depends on the state of confidence. However, once the government establishes itself as an employer of last resort, it can be indifferent to investor optimism and pessimism. Thus, budget deficits are viewed with hostility by the capitalist class. There is no complaint against policies that strengthen profit-making activity like protectionist tariffs, regulation of trade unions and so on. Short-lived and moderate cycles would emerge from a situation where the government would stimulate the economy only to withdraw at the first signs of an upswing under the guise of an unviable financial position and then re-enter when unemployment approached alarming levels. Thus, there would be a swing between combating employment and inflation.

The cycle is related to politics. Consider a party, earlier in opposition that is elected to clamp down on a wage-price spiral. The new party in power implements a deflationary package. The effects of the stance become eventually evident in growing unemployment. Discontent resurfaces and the possibility of defeat at the next election looms large. A sharp policy reversal is the result. In sum, the stop-go cycle consists of two moments: overacting too late as a consequence of doing too little earlier.

Kalecki foresaw increasing government encroachment in the areas traditionally devoted to private enterprise. Initially, the government would enter spheres that did not impinge on private activities like physical and social infrastructure. There would be no protests from businessmen as the returns on private investments would not be affected. However, the capitalist class feared that the next step would be the takeover or nationalisation of transport and public utilities. Again, businessmen would not be averse to government support of consumption by means of family allowances, price subsidies for basics, children's allowances and so on. Private enterprise is not affected. However, a regime of permanent full employment would be resisted strenuously. The confidence and demand of the working class would grow. While it is true that with full employment, profits would rise, Kalecki believed that the capitalist class would take a cut in profits in favour of power over the working class. An additional reason is tacit: A purposeful stance towards full employment might entail a redistribution of income. Income policies, then, would be energetically opposed.

Can stimulating business optimism be adequate for pulling an economy out of a recession? Kalecki thought not. While pro-cyclical interest rate policies might blunt the duration and amplitude of the cycle, full employment will not be attained even in

the boom although the level of employment will fluctuate less. If the measure is repeated period after period, a situation can be envisaged when the rate of interest is negative and a corporate income tax is transformed into a subsidy. None of these have any bearing on the mood of businessmen whose behaviour is coloured by their expectations of the future founded on the data of the present. During a particularly severe downturn, investment plans would be immune to any fall in the interest rate. Tax stimuli might be ineffective as the shift in the investment schedule is larger than any movement along the curve. Consequently, it is not inconsistent with encouraging private investment to induce public investment as well. The capitalist class would not resist public investment financed by borrowing. What they would strenuously resist is output generation by subsidising consumption and a regime of full employment.

Check Your Progress 2

- 1) Specify, in detail, the various components that, put together, generate the cycle according to Michal Kalecki.

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11.5 HYMAN MINSKY

A fruitful transition from the short-run dynamics of a macroeconomic model and the real-financial fluctuations associated with Hyman Minsky would be the probe of a benchmark macroeconomic model offered by him below.

Minsky considers the following equations:

$$Y = C + I$$

$$C = C(Y)$$

$$I = I(P_{IS}, \bar{W})$$

$$P_K = L(M, \bar{K})$$

$$P_{ID} = P_K$$

$$P_{IS} = P_{ID}$$

$$M_D = M_S$$

The model is certainly familiar from introductory macroeconomics where the exogenous variable M is money, and the subscripts D and S against it denote demand and supply of money in the money market equilibrium condition. \bar{K} and \bar{W} are the given capital stock and wage bill respectively, which are given. The ‘price’ of money $P_M = 1$. P_{IS} is the supply price of a unit of investment, P_K is the market price of existing real capital and P_{ID} is the demand price of a unit of investment. The explanatory sequence is as follows: The portfolio balance equation or the liquidity

preference relation above yields a value of P_K for every quantity of M . Given W , I adjusts so that $P_{IS} = P_K$. Once I is given, C and Y are determined.

However, productivity of capital takes the form of expected future earnings (gross profits after taxes) of an assembly of capital goods within a producing unit. Recall the arithmetical relation from basic macroeconomics that the value of the capital stock will necessarily equal the discounted value of a stream of future returns. The discussion of the marginal efficiency of capital MEC is relevant here and can be substituted for the equation for P_K . Hence, this one is the unstable equation in the system and shifts downwards whenever a wave of pessimism overcomes investors. Changes in investors' confidence can lead to potentially destabilising macroeconomic cycles even when the interest rate is relatively stable in the face of aggregate demand shocks. Building upon Keynes, Minsky argued that the explanation for the level of aggregate demand must be sought in the financial markets, in the financing of investment plans. Disequilibria therein affect the valuation of capital assets relative to the price of current output and this price ratio determines investment activity. Keynes' *General Theory*, Minsky explained, was concerned with how these two sets of prices (capital and financial assets, on the one hand, and current output and wages, on the other) were determined in different markets by different explanatory variables which gave rise to fluctuations in economic activity.

In order to understand a modern economy from an appropriate Wall Street perspective rather than through the metaphor of a village fair, the cash flows and related balance sheets of categories of economic agents must be displayed. The flow of funds accounts will depict consistent interlocking asset and liability positions of different classes of receipts and payments. Positions held here determine the flows of goods and services. Balance sheets for a Minsky-type financial instability model are as follows where the details will be found in Lance Taylor's text mentioned in section 11.7.

	Households		Firms		Banking System		Government
M	Ω_h		qPK	L_h	T	M	T
L_h				L_b	L_b		
P_vV			P_vV				
			Ω_f				

Corporate net worth Ω_f is not restricted to be null and emerges as an endogenous variable in the model. Government debt T is held only by the banking system. The money supply rule is, therefore $M = \zeta T$ where ζ is the money multiplier and the supply of bank loans to firms is $L_b = (\zeta - 1)T$. The economy-wide wealth constraint is $\Omega_b + \Omega_f = qPK + T$, where PK is the "replacement cost" of the capital stock and q is Tobin's q . Thus qPK would be the asset value of the capital stock. Given the shares v and λ_h^s of their wealth Ω_h that households hold in the form of equity and loans to firms respectively, their balance sheet identity can be used to scale their net worth to the money supply. Note that rentiers and workers can be distinguished (recall the remarks made in connection with the appraisal of Goodwin) in the equity value P_vV of rentiers. We have

$$\Omega_b = M / (1 - v - \lambda_h^s) = M / \mu$$

where μ is the share of Ω_h held as money. The loan market equilibrium condition is

$$\lambda^d qZ - [(\lambda_h^s / \mu)\zeta + (\zeta - 1)] = 0$$

where $Z = PK/T$ is the capital-debt ratio, the state variable.

Minsky suggested that the arguments of the loan demand function λ^d are the interest rate i and the expected profit rate $r^e = r + \rho$, where r is the observed rate of profit and ρ is an indicator of business confidence. The share of money and loans in household wealth are assumed to depend on the same explanatory variables and u , the capital-output ratio as an indicator of the level of economic activity. The expected profit rate also determines the capital asset valuation ratio q . The latter is set equal to r^e capitalized by borrowing costs, $q = (r + \rho)/i$. When businessmen are optimistic, the investing community ratifies their confidence by increasing its estimates of corporate wealth. From their balance sheet, the net worth of firms $\Omega_f = qPK - L_h - L_b - P_vV$ follows endogenously from the level of q and loan and equity market clearing. For given levels of ζ and Z , the excess demand for loans (the loan market equilibrium condition above) will be a decreasing function of the interest rate. An increase in Z steps up the demand for loans, thereby driving up i . Conversely, an increase in the supply of loans, a higher ζ , lowers the interest rate.

Potential effects of changes in ρ or r on excess loan demand are more interesting. The basic assumption here is that liquidity preference is high in conditions of fundamental uncertainty. During a boom, the speculative demand for money decreases more than the transactions demand goes up. This portfolio switch bids up equity prices P_v in the equilibrium condition of that market

$$(v/\mu)\zeta T - P_vV = 0$$

The relative supply of loans goes up. Excess loan demand becomes less sensitive to changes in actual and anticipated profit rates. The slope of the “loan market” curve, or the LM curve so to speak, in the (r,i) plane becomes more shallow at higher levels of r . If investment demand depends on q , then the IS or “commodity market” curve determines macroeconomic equilibrium. A higher level of confidence shifts the LM schedule upward and the IS rightward, leading to a new equilibrium with higher values of r and i . The shift in liquidity preference, however, means that the increase in i relative to r will be greater at a low initial profit rate than at a high one.

In order to generate an oscillatory response, note that Z will evolve over time according to

$$\dot{Z} = Z(g - \gamma_g Z)$$

where g is the rate of growth of the capital stock from the IS-LM model and γ_g is the share of the fiscal deficit in the value of the capital stock. Since a higher value of Z raises the interest rate, $\partial g/\partial Z < 0$. Therefore, $\partial \dot{Z}/\partial Z < 0$.

The other state variable is the state of confidence which, through positive feedbacks, can generate cycles. A higher value leads to an increase in investment and the growth rate. Thus, $\partial \dot{Z}/\partial \rho > 0$. Changes in ρ , as well, depend on the state of the economy. For instance, confidence might increase when the actual profit rate r is high or the interest rate i is low. Thus,

$$\dot{\rho} = f(r/i)$$

where f is an increasing function.

The two equations above can generate a clockwise cycle. The system is potentially unstable because a higher value of ρ can make the r/i ratio go up, $\partial \dot{\rho}/\partial \rho > 0$. A higher Z raises the interest rate and reduces the level of economic activity and profits. That is, $\partial \dot{Z}/\partial Z < 0$. A sudden loss of confidence at an initial steady state means that ρ jumps downwards. Consider the stable case when the Jacobian of the system above is positive. The “confidence” schedule, $\dot{\rho} = 0$, must be steeper than

the “velocity” schedule, $Z' = 0$. It continues to decline, with Z also falling because the interest rate is relatively high and investment is decreasing. After some time, Z may fall far enough to reduce pressure on the loan market and permit the r/i ratio to rise. When the trajectory crosses the “confidence” schedule, ρ will begin to rise, finally stimulating growth enough to allow $Z' > 0$. The upswing might last some time, until the trajectory crosses the flattened “confidence” schedule at high values of Z and ρ . Depending on the strength of the positive feedback to confidence, the system may oscillate back to the original steady state, orbit it forever, or diverge on a spiral path.

The swings in confidence might be dampened by the interventions of central banks. Here ρ would be affected by shifting the interest rate through changes in the credit multiplier. However, if the authorities step in to support confidence, ρ itself may move upward over time leading to increasingly fragile financial positions.

Hyman Minsky’s cycle moves through the following stages: “Hedge financing” best describes the tranquil period when the anticipated cash flows from operations are adequate to meet future commitments on debts. Over a few such years, confidence and optimism build to generate “speculative financing” wherein the present value of cash flows over a finite horizon are not expected to meet payments commitment. As a run of good years continues, “Ponzi financing” schemes are generated which are outright pyramidal swindles where a subclass of individuals roll over their debt by emitting fresh debt in a never-ending spiral. It is worth observing, as a footnote here, that the standard infinite-horizon optimisation exercise includes the well-known “No Ponzi Games condition” that excludes these schemes on the grounds of the rationality of borrowers and lenders. At the euphoric peak of the cycle, as both short-term and long-term interest rates drive speculative and Ponzi behaviour, the present values of some Charles Ponzi-type investors will turn negative. Reneging on their commitments will lead to the distress of their lenders who will encash other financial assets. The prices of assets across the board will plummet precipitously impacting on investment plans and profits. While the upper point of the cycle, then, is characterised by a Keynes-type evaporation of the wave of optimism or animal spirits, the lower turning point is a process of debt deflation leading to a stable system with modest hedge funding of projects.

Check Your Progress 3

- 1) Provide the details of the movement of financial arrangements in a capitalist economy from hedge to speculative to Ponzi financing in the theory of Hyman Minsky.

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- 2) Write a Keynesian macroeconomic model with the key price ratios associated with Hyman Minsky. Discuss the stability properties of the model.

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11.6 LET US SUM UP

In this unit we discussed some of the early works on business cycles. Economic fluctuations have been explained by economists from various schools of thought. Some of the early works include that of Schumpeter, Goodwin, Kelecki and Minsky. Schumpeter's work based on innovations as a cause of business cycle, as you will observe in the next unit, laid foundation for recent models such as real business cycles. The political business cycle of Kalecki, which divides the economy into three departments, analyses the process of ups and downs in economic activity. The model by Minsky, through rigorous mathematical analysis, shows the oscillation around a steady state by invoking the inconsistencies in real and financial sectors.

11.7 KEY WORDS

- Downswing** : It refers to contractionary phase of business cycle.
- Endogenous** : A characteristic emanating from within the system.
- Exogenous** : A characteristic decided outside the system and taken as given for the model.
- Ponzi Financing** : The method of financing where in order to repay previous debt households take recourse to fresh borrowing.
- Upswing** : It refers to the expansionary phase of business cycle.

11.8 SOME USEFUL BOOKS

Kalecki, Michal, 1953, *Theory of Economic Dynamics*, London: Allen and Unwin

Kalecki, Michal, 1971, *Selected Essays on the Dynamics of the Capitalist Economy: 1933-1970*, Cambridge: Cambridge University Press

Schumpeter, J.A., 1951, *The Theory of Economic Development*, Cambridge: Harvard University Press.

Skott, Peter, 1989, *Conflict and effective demand in economic growth*, Cambridge: Cambridge University Press

Taylor, Lance, 2004, *Reconstructing Macroeconomics*, Cambridge, Massachusetts: Harvard University Press

Despite the proliferation of work building on Minsky's insights, you can do worse than refer to some of his books. For example, the following are representative

Minsky, Hyman, 1975, *John Maynard Keynes*, New York: Columbia University Press

_____, 1986, *Stabilizing an Unstable Economy*, New Haven: Yale University Press.

For a business cycle model that connects the real and the financial sectors see

Boyd, Ian and John M. Blatt, 1988, *Investment Confidence and Business Cycles*, Berlin: Springer-Verlag.

11.9 ANSWERS/HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Your answer should be based on Section 11.2.
- 2) Read Section 11. 3 and answer.

Check Your Progress 2

- 1) Note that the expectation is that you fill in the equations and combine them and deliver an unstable difference-differential equation.

Check Your Progress 3

- 1) Go through Section 11. 5 and answer.
- 2) Go through Section 11. 5 and answer.