In the previous chapter, we presented two opposite arguments which analyse the linkages between distribution and growth within the broader Kaleckian framework. While the stagnationists argue that an increase in concentration of capital leads to the distribution of income in favour of the capitalists and thereby, a decline in consumption because the capitalists have a lower propensity to consume than the workers. The exhilarationists argue that such a shift of income boosts investment demand through the route of profit. We have shown that both these arguments fail to adequately explain the linkages between growth and increase in concentration witnessed in the US since the early 80s.

Let us recapitulate certain trends within the US economy which would help us identify the crux of the problem with both these theories. The US economy has witnessed two huge merger waves in the 1980s and 1990s respectively, along with a rapid increase in income and wealth inequality. The growth rate for the 1980s and the first half of the 1990s was quite low but picked up dramatically since the mid-90s and continued till early 2007 (interspersed with a DotCom recession at the turn of the century). It is now facing a crisis of potentially larger proportions which could have repercussions for the entire world economy.

Neither of the above mentioned theories, in their existing form, can explain what the US has witnessed since the early 80s, even though it is a perfect period to put the theories on distribution and growth to test. Contrary to the underconsumptionist view, what the US has witnessed can be termed 'overconsumption', since the proportion of consumption to GDP has increased from 62 percent in 1980 to 71 percent in 2000 even while inequality and the profit share were increasing. Despite this overconsumption, the growth rate in the US was quite low for the 1980s till the mid-90s. Contrary to the exhilarationist view in this context, we find that despite an increase in the profit share since the early 80s, growth rate remained low for about a decade and a half. It was only since the mid-90s that the growth rate picked up. This was because of the faster rate of increase in consumption and not due to an independent profit-push increase in investment, as argued by the exhilarationists.

We present a model where these aberrations, especially vis-à-vis the stagnationist school, can be reconciled. Our contention is that concentration, if accompanied
by financialisation and easy credit, gives rise to two opposite tendencies. Buoyant stock markets could result in an increase in the *nominal* value of corporate wealth held by the shareholders. This, in turn, could lead to an injection of consumption demand *independent* of the level of present income. This has been termed as the 'wealth effect'. The wealth effect could easily act as a counter pressure to the tendency of underconsumption. There is another route through which there can be an increase in consumption i.e. the dividend effect. With the immense pressure of the takeover market, the corporations have been forced to distribute more dividends as a proportion of their after tax profits to show their performance to the shareholders. This pressure has further increased with the advent of institutional investors which has increased the bargaining power of small shareholders. This increase in the dividend pay-out ratio gives further impetus to the consumption demand. In the absence of the higher pay-out, this amount would have been counted as undistributed profit which need not necessarily have been invested.

There is a third route through which consumption demand could increase. Even the bottom 40 percent of the population, who, otherwise, have no access to corporate wealth, can also increase their consumption levels beyond their incomes through debt financed consumption. While it is true that the amount of debt that one can take from the market is itself limited by one's income, this limit can be relaxed in the presence of what is now being called the *sub-prime* market in the US. This in itself is a counteracting tendency to underconsumption, even though level of incomes might be declining.

We believe that these three routes could lead to overconsumption, as opposed to underconsumption, even as concentration grows, provided the stock markets remain buoyant or there is a possibility of debt or there is an increase in the dividend pay-out ratio.

Despite the overconsumption, as seen in the US, even in the wake of increasing inequality, why is it that the US economy *still* did not witness a high growth during the 1980s and the first half of the 1990s? This is an important question, wherein, according to us, lies the key to understanding the macroeconomic impact of concentration and financialisation. We argue that there could be underinvestment simultaneous to overconsumption in an economy.

Investment, in our model, is dependent on the level of aggregate demand in the economy and except for the smaller firms, it is not constrained by finance. In such a situation, the investment can be shown to depend primarily on the difference between the actual and the desired rate of capacity utilisation along with a term equivalent to Tobin's q, which signifies that a favourable movement
in the stock market could ease the pressure of finance for the smaller firms. As Steindl had argued, the desired rate of excess capacity would decrease with increasing concentration because the competitive reasons for which it is maintained decline in importance. This increase in the desired rate of capacity utilisation (or, equivalently a decline in desired excess capacity) leads to a decline in investment in our model.

There is another route of underinvestment in the presence of financialisation. Since the firms choose to invest either in real capital goods or financial assets, an increase in the rate of return on financial assets would increase the desired rate of return on capital goods. In that case, there would be no investment in those projects which fetch a lower rate of profit than the rate of return on financial assets. Therefore, the increase in the rate of return on financial assets would lead to rejection of projects on the margin which the firms would have otherwise invested in.

There are, thus, two opposite forces working at investment. On the one hand, Tobin’s q has a positive effect on investment through the finance route for smaller firms. On the other hand, there is an increase in the desired rate of capacity utilisation as a result of increased oligopolisation. The final response of investment would depend on which effect dominates. At any rate, with increasing concentration, the positive effect of q keeps declining because the overall investment function would increasingly become less responsive to the funds effect if the proportion of smaller firms is declining in the population.

Thus, one could argue that, there are independent tendencies towards underinvestment and overconsumption as a result of concentration and financialisation. The overall effect on growth would depend on which effect dominates in a given period. Accordingly, it is because the underinvestment effect dominated the overconsumption effect during the 1980s till the mid-90s that the growth was low despite an increase in the average propensity to consume. Since mid-90s, especially after the massive boom in the stock market in the late 90s, the overconsumption effect got a further impetus and dominated the underinvestment effect leading to a spurt in the growth rate.

In this chapter, we present these arguments in a theoretical model. It is only recently that the underconsumptionist school has recognised the effect of debt and wealth (Dutt (2006)). In section 3.1, we present the basic arguments of these models within the Kaleckian tradition. These models provide valuable insights and flexibility to incorporate new realities, just as we attempt in our own model. Section 3.2 presents the basic assumptions that we have made for our model. Before presenting the dynamic macroeconomic model in section 3.5,
3.1 MODELS OF OVERCONSUMPTION AND UNDERINVESTMENT

we present, in some detail, the two components of our model—consumption and investment. We show in section 3.3, how in the presence of the wealth, dividend and debt effect, the underconsumptionist tendency can be tackled. Section 3.4 presents our argument about the determinants of underinvestment. We present the complete model without the government and the external sector in section 3.5. When we discuss the government sector in section 3.6, we restrict its role to deciding the monetary policy, especially, since it has played a key role in sustaining and prolonging the boom created by the wealth generated in the stock market. With an increase in the power of the corporations and a possible increase in the markup, there is also a possibility of an increase in inflation, if, one assumes a conflict type inflation model (Rowthorn (1977)). The last section concludes this chapter.

3.1 MODELS OF OVERCONSUMPTION AND UNDERINVESTMENT

In our model we argue that, concentration, in the presence of debt and financialisation, can have two opposite effects on the growth of the economy. On the one hand, there could be an overconsumption as a result of the wealth, debt and dividend effect despite an increase in the markups. On the other hand, there could be underinvestment in the economy due to an increase in the opportunity cost of keeping idle capacity in response to the increasing rates of returns from the financial assets.

But, before we present our own model, it would be interesting to analyse some recent work explaining overconsumption or underinvestment. While Dutt (2006) and Bhaduri, Laski, and Riese (2006) look at the possibility of overconsumption, Stockhammer (2006) focuses on both these phenomena in his model. As we show later, the model of Stockhammer (2006) is heavily dependent on an assumption of a concave profit function which is very difficult to justify. The model presented by Dutt (2006) is of critical importance even though it lacks the route of underinvestment and the wealth or the dividend effect but the consumption function in his model can easily be improvised upon to incorporate these two effects. We develop our own model based on these basic structures provided by these models, in particular Dutt's model. We divide the presentation of these models in two subsections, one dealing with the overconsumption and the other with underinvestment.
3.1 MODELS OF OVERCONSUMPTION AND UNDERINVESTMENT

3.1.1 Models of Overconsumption

We have shown in the previous chapter that the problem with the stagnationist school is that they underestimated the counteracting tendencies to underconsumption. But of late there have been a few exceptions to this trend. This issue has been addressed within the Kaleckian perspective acknowledging these counteracting forces (Bhaduri, Laski, and Riese (2006); Dutt (2006)). We would first present their basic arguments and then improvise on the basic structure of these models to incorporate our own arguments.

Bhaduri, Laski, and Riese (2006) argue that the stock markets play a crucial role in capitalist systems, as we understand them today. They make the indivisible and illiquid capital goods divisible and liquid even though the creation of wealth in the process is virtual in nature. It is virtual in nature because it is only the notional value of the stocks that increases in a stock market boom which can be encashed at the margin by a proportionately small number of investors at a given point of time. If a substantial number of shareholders decide to encash the gains, the stock market would crash. 'Thus, virtual wealth has to remain largely virtual by the very logic of its existence!' (P.413, Bhaduri, Laski, and Riese (2006))

This virtual wealth can, however, have a direct effect on the real economy through what is well known as the wealth effect. Thus, just like in the case of investment, which is funded by overdraft facilities to the capitalists, the virtual wealth created in the stock market provides overdraft facilities to the consumers. Bhaduri, Laski, and Riese (2006) also argue that this virtual economy could have a positive effect on investment directly, though this does is not central to their argument. The positive effect of a stock market boom on investment is due to two reasons. First, real investment can be financed by equity, especially in the wake of the takeover market. Second, according to the argument given by Tobin, an increase in $q$ (ratio of market value of an asset to its book value) makes replacement of physical capital easy. In a simplified way, their argument can be presented as follows,

\[
\begin{align*}
I \left( O, \omega \right) + A &= S \left( O, \omega \right) \\
\frac{dO}{d\omega} &= \frac{I_\omega - S_\omega}{S_0 - I_0} > 0 \\
\therefore I_0, S_0, I_\omega > 0, S_\omega < 0, \quad S_0 - I_0 > 0
\end{align*}
\]
where,

\[ \omega = \text{Nominal Wealth} \]

\[ A = \text{Government's Net Expenditure and the Current Account Balance} \]

However, such a growth path, beyond a certain level, would become financially unstable precisely because of its nature. The increase in consumption demand would have to be met by increases in the debt-income ratio, especially because the wealth based on which consumption is being increased is *virtual* in nature. If the debt-income ratio increases beyond a certain level, it could result in a 'double squeeze' on the consumption demand. While this would increase the burden of servicing the debt, it could also decrease the creditworthiness of the borrowers. This could eventually lead to a decline in consumption and, thus, in growth. One could find that even with booming stock markets, the growth rate declines due to a decline in the consumption demand.

Another interesting work which looks into this question in the Kaleckian framework, is by Dutt (2006). This article, however, does not concentrate on the wealth effect *per se*. Instead, it focuses upon the credit-driven consumption demand. In this model, Dutt allows the distribution of income to vary exogenously, thus, specifically addressing the stagnationist argument. He finds that the unequivocal argument of the stagnationist school that concentration leads to stagnation is contingent on the fact the consumption demand is *limited* by the present incomes of the participants. As soon as this assumption is relaxed in favour of debt-financed consumption, it is possible that stagnation could disappear, at least in the short run. Since we would be improvising on Dutt’s model, it is worthwhile to discuss this model in some detail.

Dutt (2006) divides his analysis into the short and the long run. In the short run, the tendency towards underconsumption would disappear if the possibility of borrowing is opened up because the workers can exceed their budget constraint by taking a consumer debt based on their net income (income net of interest payments). Since in the short run, investment is autonomous, any increase in the borrowing increases the consumption demand and hence capacity utilisation.

In the long run, however, the effects of increased borrowing on growth could be ambiguous because an increase in borrowing also increases the debt burden on the workers. With the increase in the debt-capital ratio, net income of the workers would decline which could further depress their capacity to borrow. The increased interest payment is nothing else but a shift of income away from
borrowers (workers) to the lenders (capitalists). In the long run, the undercon­sumptionist tendency might resurface precisely because of the very nature of borrowing. It could overshadow the increase in consumption that results from borrowing. This would especially be so if the autonomous investment demand is particularly weak.

Let us suggest some possible extensions of Dutt’s Model which would incor­porate the contemporary reality of the US economy. First, one could allow for the effect of wealth on the consumption of capitalists. We believe that this aspect has played a central role in explaining the increase in consumption demand in the US economy, especially since it is in the richest 20 percent of the population that consumption has increased manifold between 1991-2001 (Maki and Palumbo (2001); Pollin (2005)). In our consumption function, we incorporate the wealth effect which is funded by borrowing.

Second, his investment function does not play a central role in explaining the stagnationist tendencies. It is primarily the consumption function that acts as the force behind stagnation. Therefore, even the stagnationist tendency, that he discusses in the long run, despite borrowing, is basically underconsumptionist in nature. We argue that there could exist an independent tendency towards underinvestment, whether or not there is underconsumption. Thus, in our model, we try to explain the slow investment in real capital that occurred between the early 1980s till the mid-90s, even while consumption was increasing. We change the investment function to incorporate this possibility. In other words, in terms of eq 3.1, the reversal in the sign of the derivative of income with respect to wealth need not necessarily be due to an increase in the savings rate in the numerator but a decline in the investment rate, even as savings rate decreases.

Third, even for the workers, the borrowing is limited by the current income, which implicitly assumes a constant rate of risk premium. There is a possibility that the financial corporations could lure the customers by camouflaging the actual risk premium and thereby increase the borrowing by the customers especially in the context of the sub-prime markets. This was translated into extension of consumer credit to individuals with questionable creditworthiness. Since the sub-prime markets have played a crucial role in maintaining the most recent boom in the US and are also the architect of the present crisis in the US economy, it would be worthwhile to discuss this possibility.

---

1 He argues, as noted above, that in the long run, the stagnationist tendency could raise its head again because the consumption demand could decline even in the presence of borrowing. This happens because of the shift of income, through interest payments accruing on the debt, from the workers to the capitalists.
3.1 MODELS OF OVERCONSUMPTION AND UNDERINVESTMENT

3.1.2 The Underinvestment Proposition in the Existing Literature

Before coming to our own theory of investment, we would like to briefly explore the existing explanations of underinvestment that have been developed in the post-Keynesian tradition. We will present a critique of these formulations after presenting their arguments. Stockhammer (2006) presents a comprehensive overview of the theory of the firm and its investment objectives in the post-Keynesian tradition. He argues that the basis of the firm's behaviour, in terms of investment plans, has been the separation of ownership and control, just like in the corporate finance literature. This separation gives the management the power to take decisions. The conflict of interests between the managers and the owners was reflected in myriad ways— with managers pursuing long term survival goals (Gordon (1992)) or pursuing goals of safety rather than profit maximisation (Crotty (1992)). Implicit in these theories of investment is a contradiction between profit and growth, which has been justified on the lines of the concave profit function (Stockhammer (2006); Stockhammer (2004)).

Stockhammer (2006) argues that since both growth and profit enter into the objective function of the managers, the firm will 'over invest' compared to the profit maximising level of growth. In other words, the firm would always operate on that portion of the profit function where there is a trade off between growth and profits (similar to the growth-safety trade off of Crotty (1992)). His system of maximisation problem can be shown as follows:

\[
\max_{\Pi, I} u = l^{1-\lambda} \Pi^\lambda \\
\text{s.t.,} \\
\Pi = I_{\Pi} - ml, \quad m \text{ is a constant} \\
\text{where,} \\
I_{\Pi} = \text{Profit-Maximising Investment}
\]

(3.2)

Though he uses a profit function that is linear for purposes of simplification, he presents a profit function in a typical 'microeconomic textbook' fashion. In other models, instead of an objective function, like the one mentioned above, the pursuit of growth has been limited by the access to finance.

It is easily verifiable from fig. 3.1 that any increase in the shareholder power (\(\lambda\)) due to financialisation would lead to a decline in investment and an increase in the profits. He attempts to justify the decline in investment, despite an increase in the profit share in the US during the 1980s and 1990s, through this formulation.
3.1 MODELS OF OVERCONSUMPTION AND UNDERINVESTMENT

According to his model, for a given level of aggregate demand there would be underinvestment due to an increase in the power of the shareholders who force the managers, say through the market of takeovers, to adhere to the objective of profit maximisation instead of growth maximisation.

This can be shown formally in the following manner:

\[ I^* = \frac{(1 - \lambda)I\Pi}{m} \]

\[ \frac{\partial I^*}{\partial \lambda} = -\frac{I\Pi}{m} < 0, \quad \frac{\partial I^*}{\partial m} = -\frac{(1 - \lambda)}{m^2} < 0 \]

and,

\[ \Pi^* = \lambda I\Pi \]

\[ \frac{\partial \Pi^*}{\partial \lambda} = I\Pi > 0 \]

This is how he explains the negative relationship between shareholder power (denoted by an increase in \( \lambda \)) and investment at the level of a firm. For the investment function of the economy as a whole, he aggregates the investment function...
of ‘n’ identical individual firms. The macroeconomic system of equations result in the following in his case,

\[ I = n \frac{1 - \lambda}{m} \gamma Y \]
\[ S = shY - c_0 \]

where,
\[ \gamma = \frac{\partial I}{\partial Y} \]
\[ c_0 = \text{Autonomous consumption} \]

The equilibrium output is arrived at by equating the investment and saving equations. This equilibrium level of output, he argues, is inversely proportional to the increase in the shareholder power, as shown below,

\[ \gamma^{IS} = \frac{c_0}{sh - n(1 - \lambda)\gamma/m} \]
\[ \frac{\partial Y^{IS}}{\partial \lambda} = \frac{-(c_0/m)n\gamma}{[sh - n(1 - \lambda)\gamma/m]^2} < 0 \]  

An increase in the shareholder power, which means a preference for profit over growth in his model, would result in a decline in investment and thus of output for the economy as a whole. He goes on to prove further that this increase in shareholder power would increase the profit-investment ratio in the following manner. From the optimal level of investment and profit for a firm, we can arrive at their ratio, which, according to him, would be valid for the economy as well.

\[ \frac{I^*}{\Pi^*} = \frac{1 - \lambda}{m\lambda} \]
\[ \frac{\partial I^*/\Pi^*}{\lambda} = -\frac{1}{m\lambda^2} < 0 \]  

2 He arrives at the investment function for the economy in the following manner. The profit maximising investment, according to him, is dependent on the level of aggregate demand in the accelerator type fashion. Therefore, if we differentiate partially the optimal investment of a firm with respect to output, we get the following,

\[ \frac{\partial I^*}{\partial Y} = \left(1 - \frac{\lambda}{m}\right) \frac{\partial I}{\partial Y} = \frac{1 - \lambda}{m} \gamma \]  

This function gives a relation between investment and income at the level of one firm. Integrating this function and adding it n times would result in the investment function for the economy as noted above.
3.1 MODELS OF OVERCONSUMPTION AND UNDERINVESTMENT

He extends his model to include the wealth effect, which would result from an increase in the profits which enhance the asset prices. In such a scenario, there would be two opposite effects in the economy with the advent of the shareholder value ‘revolution’, a depressing investment due to the growth-profit tradeoff and an increasing consumption due to the wealth effect. Since the wealth effect is relatively small, the shareholder revolution has a negative effect on the growth of the economy. He endorses his argument based on the stylised facts of the US economy over the 1980s and 90s. While the profit share has increased in the 80s and 90s, the investment rate has declined, both of which he claims can be explained through this model.

There are other arguments in the existing literature as to why the new financial structure has led to a decline in the rate of investment in the US economy. Orhangazi (2008) presents a detailed review of such literature. The arguments have broadly been that the market for corporate control forces the firms to increase dividend and interest payments or stock buybacks in order to cater to the shareholders’ and rentiers’ interests. But such a high payout decreases the finance available for the firms to retain and reinvest for real investment projects (Dumenil and Levy (2004); Aglietta and Breton. (2001)). Crotty (2005) has argued that financialisation has led to shortening of planning horizons of the corporations. This has negatively affected the long-term real investments. Based on these arguments, Orhangazi (2008) proposes that there could be two separate routes through which real investment could decline as a result of financialisation (p.1),

Two channels can help explain this negative relationship: first, increased financial investment and increased financial profit opportunities may have crowded out real investment by changing the incentives of firm managers and directing funds away from real investment. Second, increased payments to the financial markets may have impeded real investment by decreasing available internal funds, shortening the planning horizons of the firm management and increasing uncertainty. [emphasis added]

We believe that there are certain fundamental problems with these arguments. First, contrary to the claims made by these models that investment of firms is limited by funds, investment is limited more by the demand conditions in the market rather than the internal funds that are available. It is only the smaller firms whose investment might be limited by internal funds, who anyway do not dominate the total investment of the economy. That the investment would be
limited by funds is essentially a supply side argument which we do not agree with.

Second, and more importantly, Stockhammer’s argument of underinvestment is critically dependent on the assumption of a profit–growth tradeoff, which we believe is incorrect, especially for the economy as a whole. In microeconomic theory, there can be a concave profit function because of the presence of decreasing returns to a factor. For a theory of growth, surely this is not true because in the long run, the scale itself can be changed. And there can be little economic logic to justify decreasing returns to scale (Kalecki (1937)). We believe that the relation between investment and profits, far from being inversely related, is at least a constant function, if not an increasing one. However, it is possible that for an individual firm, there is an inverse relation between profits and investment in the presence of imperfect competition. In that case, a firm can only sell more than its due share by undercutting the prices which could result in a decline in profits provided demand is elastic. But such a scenario is also implausible because the firms hardly ever indulge in price–cutting to increase their sales especially when they are aware that it would lead to a price war which is detrimental to the interests of all. Thus, the growth of firms is tethered to the growth rate of the industry and the only form of competition is in the sales effort. More realistically, if we assume the existence of increasing returns to scale, then the profit–growth relation increases with the scale. It can be easily seen that in case of either an increasing or a constant returns to scale, there would not be any equilibrium between the objective function and the profit function, except a minima in the case of IRS.

Moreover, what is true for a firm would not be true for the economy as a whole. From macroeconomic theory we know that the ‘capitalists get what they spend’. So, there is no reason why an increase in investment would lead to a decline in profits. Then, why does Stockhammer not encounter this contradiction in his model? The fact is that his model does result in such a contradiction even though he does not explicitly encounter it. If we look at the savings investment equality, we would get the following,

\[ I^* = s\Pi^* - c_0 \]

\[ \frac{I^*}{\Pi^*} = s - \frac{c_0}{\Pi^*} \]  

(3.8)

It is easy to verify that equations 3.7 and 3.8 are mutually contradictory in so far as the savings rate and the autonomous consumption are constant. Thus,
3.2 ASSUMPTIONS

the route through which Stockhammer explains the decline in investment seems implausible to us. This is not to say that the possibility of underinvestment does not exist. On the contrary, it does exist but not through the route outlined by him.

Having laid down the grounds for further enquiry, we will proceed to build our own arguments, which at certain places might just be a qualification of what others have said (especially Dutt's model). Before we go into the details of our argument, we present the assumptions that are made for the following analysis.

3.2 ASSUMPTIONS

We make the following assumptions for the next three sections:

1. We work with a one good model to avoid complicating matters unnecessarily.

2. The economy is closed with no government sector. This assumption is made to clearly expose the functioning of the investment-consumption dynamics in the context of growing concentration, the wealth effect and financialisation. Moreover, for the period under present study i.e. 1980s and 1990s, fiscal deficit has hardly played a role in boosting the demand of the economy. In fact, for a greater part of the 1990s, there was even a government budget surplus resulting from the 1993 budget agreement of Clinton, which argued for higher taxes and lower government expenditure. Similarly, the external sector, too, did not play any significant role in boosting demand during this period. Instead, there was an increase in trade deficit of the US over this period. Therefore, leaving out these two factors from our story does not alter our conclusions.

3. The economy is divided into two classes: workers and capitalists. While the workers do not save, the capitalists consume a part of the distributed profits that they get from the corporations. Since the workers do not save, they do not own any capital and are entirely dependent on their income. Capitalists are the only class which has the capacity to lend to workers. Demand for debt of the capitalists is fulfilled from within their own class. So, their debt as a class gets cancelled out.

4. Since the theory of pricing is important for our model, we use the conflict model to arrive at the pricing behaviour in the economy. However, till section 3.6, we keep the problem of inflation under the cover to explain the
adjustment through quantity traverse. Thus, any increase in the markup would get adjusted through an automatic decline in the wage share.

5. We assume the depreciation level to be zero which is unrealistic but this simplifies the analysis to some extent without compromising on the basic ideas from it.

6. We assume the credit market to be demand constrained so the interest rates are given from outside. As a result, the economy is on the horizontal portion of the inverse–L shaped supply curve of credit.

3.3 WHATEVER HAPPENED TO UNDERCONSUMPTION?

Unlike the stagnationist model, where borrowing was not possible, we introduce the possibility of borrowing, where the capitalists act as the lenders while the workers act as borrowers. The consumption function can be derived for both these classes in the following manner.

3.3.1 Workers’ Consumption:

The consumption function that we have used in the last chapter would have to be improvised to incorporate the possibility of debt financed consumption. We can recall that the source of underconsumption is the shift of income away from workers towards the capitalists. This leads to a decline in consumption in the economy. But this would be true only in so far as there is a decline in consumption of the workers as a result of such a shift. If, however, the budget constraints of the workers are relaxed through access to debt, then there is a possibility that this underconsumption might get compensated by debt-financed consumption. This the consumption function that Dutt has used. The only qualification that we make in this regard is to find the reasons as to why the coefficient of debt changes.

Dutt assumes that the amount of debt that a worker can incur would depend on the existing ‘real’ rate of interest and the risk premium that is attached to the debt. If either the rate of interest or the risk declines, workers would want to take more debt (there is an implicit assumption that the credit market is a demand constrained one so the credit is not limited by supply\textsuperscript{3}).

\textsuperscript{3} This would seem implausible but if we look at the reality of contemporary capitalism driven by credit at a large scale, it would not seem as an exaggeration. In any case, one can reach a similar conclusion from the lender’s point of view if we assume that they also keep a margin of risk.
3.3 whatsoever happened to underconsumption?

One factor which has played an important role in debt-financed consumption is the sub prime market. Therefore, we have dealt with the issue of sub prime lending in the appendix with a simple mathematical argument to explain the role of the sub prime market. Let us see how the possibility of debt for workers affects their consumption function. Workers, apart from consuming their entire net income, consume goods bought with the debt. In every period, therefore, the consumption would also increase with the rate of increase of the debt.

\[ C_w = W - rD + \dot{D} \]

where,

\[ r = \text{Real Rate of Interest} \]
\[ D = \text{Debt taken by workers} \]

The rate of growth of debt in a given period could be taken as a proportion of the net-income where the proportion is dependent on the risk function and the expectation of capital gains, say in the housing market.

\[ \dot{D} = a(\rho, p_H/p_H)(W - rD), \quad a_1 < 0, a_2 > 0 \]

\[ p_H = \text{Housing Prices} \]

Thus the workers' consumption function becomes,

\[ C_w = (1 + a(\cdot))(W - rD) \]

It can be seen from eq. 3.11 that a decline in the risk premium or a booming housing market could lead to an increase in the debt-financed consumption even when the income is given.

---

4 For details of what determines how much debt would be taken, please see appendix. Here, we simply mention what determines the coefficient of debt \(a\) without deriving it. We have chosen housing prices as a proxy for any asset price that the workers feel worth investing in because of the capital gains that can be earned while at the same time they can be used as a collateral.

5 It is to be noted that this consumption function is no different from the function used by Dutt (2006) except that we have made the rate at which debt increases dependent on the risk function and the price appreciation of houses. In his consumption function, the risk function is implicit and constant. We have relaxed this assumption in light of the growing sub prime markets as argued above.
3.3 WHATEVER HAPPENED TO UNDERCONSUMPTION?

3.3.2 Capitalists’ Consumption:

Since the capitalists, unlike the workers, own corporate stocks, their consumption is affected not only by their present income but also by the level of their wealth. In the traditional stagnationist arguments the wealth effect was not included. We believe that it was due to the exclusion of wealth as an independent determinant of capitalists’ consumption that the underconsumptionists could unequivocally argue for a decline in consumption due to increasing concentration.

Let us first define the wealth of the capitalists, which, in our case, is equivalent to the total wealth of the economy since they are the only wealth holders. The real wealth of the economy is defined by the real capital stock \( K \) that exists in the economy at any given point of time. The book value of wealth can be defined as \( pK \) where \( p \) is the production price of capital goods (which, in one good model, is the general price level). The capitalists hold their entitlements to this capital stock in the form of equities \( E \). Let \( p_E \) be the price of the equities. In the presence of bullish speculation, the value of wealth \( (\omega) \) in the form of equities \( (p_E E) \) can differ from its book value which gives rise to a virtual increase in the wealth of the capitalists. We assume that a constant proportion \( \alpha \) is consumed out of the virtual wealth. The relation between virtual wealth and its book value is given by a proportion \( q \).

\[
q = \frac{\omega}{pK} = \frac{p_E E}{pK} \tag{3.12}
\]

It can be easily seen that the virtual wealth can deviate from its book value (the denominator) because of a relative increase in the price of equities, i.e., the \( q \)-ratio can be different from one. In the presence of highly speculative markets, this ratio would tend to be higher because higher demand for equities would push the prices of the existing equities up.

The capitalists base a portion of their consumption demand on the anticipation of wealth increases \( (\omega^f) \) in the future. It is to be noted here that the definition of wealth that would enter their consumption function is their liquid wealth. This is because the information of their wealth level is conveyed by the value of the equities instead of any book value of the capital stock that they hold. In fact, most of the time, shareholders are not even aware of the value of the real capital stock that these corporations hold on their behalf. The wealth induced consumption demand is, however, not met by any actual increase in the realisable wealth because
the value of this form of wealth is virtual, i.e., only on paper (Bhaduri, Laski, and Riese (2006)). Therefore, to fund this portion of their consumption, the capitalists take credit from the market. This debt is taken from other capitalists through financial intermediaries. Thereby, these debts cancel out when we take the total credit of the capitalist class as a whole into consideration. This can be understood if we assume that the capitalists keep deposits in the bank which the bank uses to provide credit either to the workers or the other capitalists. In that case, the interest payment of those capitalists who have taken the debt would get cancelled out by an equivalent amount of interest income of the capitalists who have extended it. However, the interest income from the debt incurred by the workers gets added to the income of the capitalists.

The other portion of capitalists' consumption derived from the profits received from the corporations in the form of dividends. Since the corporations do not distribute the entire profits to the shareholders, the distributed portion of profit would always be less than one. In such a situation, their consumption function can be written as,

\[ pC_c = c\pi(p\gamma\Pi + rpD) + a\omega^e \quad \alpha > 0 \]

where,

\[ \gamma = \text{Payout ratio} = \frac{\text{Dividends}}{\text{Profits}} < 1 \]  

Since the future is uncertain, in a very fundamental manner, it would really be difficult for the capitalists to accurately anticipate the future. In such a case, their expectations about the future movement of equity prices is heavily driven by the past experience. Thus, we substitute the present value of liquid wealth instead of the expected value. Thus, the consumption function can be written as,

\[ C_c = c\pi(\gamma\Pi + rD) + a\frac{\omega}{p} = qK \]  

Consumption of the capitalists, under these conditions, can increase in two different ways, even if the total profits remain constant. First, it could increase due to an increase in the payout ratio because a higher payout means a lower saving for the economy, as corporations save their entire undistributed profits. It is possible to argue that this extra dividend, that is distributed to the shareholders might lead to a decline in investment, which is another source of demand, because firms' investment depend heavily on their internal savings. In such a case this would nullify the increase in consumption. But we disagree with this proposition because it assumes that internal savings are necessarily invested or that investment of firms is constrained by internal savings. However, in a strictly demand constrained system, as we assume in our analysis, investment can not be constrained by
3.3 WHATEVER HAPPENED TO UNDERCONSUMPTION?

Second, capitalists' consumption can also increase if there is an increase in their liquid wealth due to a favourable run in the price of the equities relative to the general price level in the economy. This would lead to an increase in the $q$-ratio and increase the demand accordingly. These two sources of consumption demand are central to our argument made in this chapter later.

3.3.3 Total Consumption Function:

Now that we have defined the consumption functions of the capitalists and the workers, we can arrive at the consumption function of the economy as a whole by adding the two components from eqs. 3.11 and 3.14.

\[ C = [1 + a(\cdot)](W - rD) + c_n(\gamma \Pi + rD) + aqK \]

If we express this function as a proportion of the capital stock, we get the following,

\[ \frac{C}{K} = [(1 + (1 - h)a(\cdot) - s_\pi \gamma h - (1 - \gamma)h]u\bar{\beta} - [a(\cdot) + s_\pi]r\delta + aq, \text{ where } \delta = \frac{D}{K} \]

One can see that the consumption function\(^7\) undergoes a dramatic transformation as compared to the basic function used by Steindl and the others had used. The first term on the left hand side shows the extra amount that the workers consume as a result of borrowing $(1 - h)a(\rho)$ less the savings that the capitalists make $s_\pi \gamma h$ and the savings of the corporations $(1 - \gamma)h$. The second term is the savings of the capitalists and the last term is the wealth effect that the capitalists add to the economy's consumption demand.

It is evident from the consumption function above that an increase in the interest rates would unequivocally depress the consumption-capital ratio. It would not be difficult to understand why this is the case. Any increase in the interest rates means an increased interest burden on the workers even though it increases the income of the capitalists by the exact same amount. Since we have assumed different propensities to consume for workers and capitalists, with a higher propensity for workers, this shift of income inevitably leads to a decline in the share of consumption for the economy as a whole. This is a very crucial point, especially if we see the interest rates as a variable that is largely influenced

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\(^7\) This function is only partially different from what Dutt (2006) uses except that we have introduced a wealth effect and a dividend effect for the capitalists.

savings, including the internal savings of the firms. We elaborate on this point when we discuss investment.
by the policy of the government and the role that the monetary policy could possibly play in sustaining the credit-driven consumption. We would elaborate this point when we discuss the government sector in detail.

Though an underconsumptionist tendency might still exist in the economy in the wake of an increase in the profit share, there are ways through which this tendency can be suppressed. In fact, not only is it possible for the underconsumption to disappear but these forces could also result in what we call overconsumption.

The possibility of linkage of consumption to the volatile stock market through the wealth effect and the debt-driven consumption adds another source of instability into the system, apart from the instability that already exists due to the investment decisions. Though the investment process has been extensively studies because it contained the key to understanding the business cycles, consumption has always been a passive player. But with the consumption function defined in the manner as above, it has an equal potential, if not more, in contributing to the volatility of the system. We would see this in the section where we discuss the long run.

3.4 THE POSSIBILITY OF UNDERINVESTMENT

Having explained the possibility of overconsumption, the question that comes to one's mind is—would it avert the possibility of stagnation or are there other forces linked to the process of concentration and financialisation that might still dominate and lead to stagnation. This is a particularly interesting question, especially with reference to the US economy. While the US economy had been progressively witnessing overconsumption since the early 80s (see fig. 2.9), the rate of growth remained quite low during the entire decade of the 80s till the first half of the 90s. A related question that needs to be answered is why has the average rate of capacity utilisation decreased in these two decades, including in the the late 90s, from its high level witnessed during the Golden Age (see fig. 2.10). The answer to these key questions lie in the possibility of underinvestment that the process of concentration and financialisation might bring in. We present the investment function used in our model, followed by a discussion of how this function is affected by an increase in concentration in the economy.

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8 As we shall show in our model later, compared to Dutt's model, there are far stronger counteracting tendencies to underconsumption. This is because we allow for the wealth and the dividend effect over and above the debt effect. We will show in the next chapter how important the roles of the wealth and the dividend have been in the growing proportion of consumption out of GDP since the early 1980s.
3.4.1 The Investment Function:

Before we explain the possibilities of underinvestment, let us first present the investment function based on which the firms take their decisions. Unlike the investment models with a representative firm, we distinguish between two different kinds of firms—small and large. In an oligopolistic set up, we can argue that, the investment of both the category of firms is limited by the level of demand that they face. The size of the firms in an industry is limited by their entrepreneurial capital.

Level of demand enters into the investment through the degree of capacity utilisation. Capitalists want to maintain a desired rate of capacity utilisation \( u_0 \) for competitive reasons, so as to deal with the uncertainty in future. Any increase (decrease) in the actual rate of capacity utilisation above (below) the desired level increases (decreases) the investment demand of the firms. Another factor that affects the investment function, as argued by Kalecki, is the rate at which innovations \((e)\) are introduced which acts as an exogenous stimulus for investment. This results in the following form of an investment function\(^9\) \( (g = 1/K) \) where the coefficients represent the weighted average of the respective coefficients of the two categories of firms:

\[
g = b(u - u_0)g + e \quad b > 0 \tag{3.17}
\]

Let us also define the level of concentration formally. It can be defined as the share of capital stock that the larger firms own as a proportion to the total capital stock of the economy. The subscripts denote the respective categories.

\[
\frac{I}{K} = g = \frac{I_s + I_l}{K_s + K_l} = g_s + \kappa(g_l - g_s)
\]

---

\(^9\) This is a unique form of an investment function which incorporates the essence of both Steindl and Kalecki. Notably the difference between the actual and the desired rate of capacity utilisation is multiplied by the existing growth rate. This functional form specially tackles the problem that the latest Steindlian models (Dutt (1995); Flaschel and Skott (2006)) have experienced. In these models, capacity utilisation is directly used as an argument into the investment function whereas the degree of capacity utilisation is merely a ratio and does not have the same units of measurements as the investment function. This results in making the higher rate of growth too high to be true. A solution to this problem in the existing post-Keynesian literature, as Flaschel and Skott (2006) propose, makes the investment function itself a linear function. The present form of investment function, which has been taken from Patnaik (1997), solves the Steindlian problem without sacrificing the non-linearity, which is the cornerstone of Kalecki's growth model.
3.4 THE POSSIBILITY OF UNDERINVESTMENT

where,

$$\kappa = \frac{K_i}{K} \text{ (Measure of concentration)}$$

Now, let us evaluate how the investment behaves in the presence of increasing concentration. We would argue that concentration affects the investment function by affecting the desired rate of capacity utilisation and the rate of technological innovations.

3.4.2 Concentration and Underinvestment:

The linkage between concentration and underinvestment can be established at two different levels. First, as Steindl had argued, an increase in concentration in an industry increases the 'fear of excess capacity' for the individual firms because the possibility of expansion at the cost of other firms declines. Such an increase in the planned degree of capacity utilisation, according to the investment function that we use, leads to a decline in investment. Second, increasing concentration also dampens the need for innovations, as we show below. Both these factors lead to a decline in investment. Let us evaluate these two factors in detail.

Increase in the desired rate of capacity utilisation:

The effect of increased concentration on the desired rate of capacity utilisation can be understood if we analyse its determinants. Steindl (1952) (p.9) makes the following remark about the concept of idle capacity which throws some light on its determinants.

It is surprising that this equilibrium excess capacity should never have been dealt with in the same way as other forms of idle reserves, for example, stock of commodities, or balances of money. It would then have to be explained as a reserve held in anticipation of future events, or in view of some existing uncertainty. [emphasis added]

Steindl had enumerated the reasons for why capitalists maintain some desired rate of capacity utilisation independent of the changes in the capacity utilisation as a result of demand. First, desired excess capacity always helps the firms guard against unexpected increase in demand in the future. In a situation of unexpected spurt in demand in the industry, those firms that do not hold adequate idle capacity would lose out to their opponents who do hold such idle capacity. This
loss of market share in an oligopolistic setup is often long lasting because it is very difficult to win the lost share back.

Second, any firm that establishes a new plant in a new market would expect to get only a small share of output in the initial period but eventually, goodwill develops and customer attachment increases. So, it would be prudent for the new entrant to keep an adequate margin of capacity, so that later expansion does not suffer. This is so because capital goods have an indivisibility which makes it impossible for the plant to be installed in bits and pieces. Both these reasons indicate that the firms maintain desirable excess capacity so that they can, as Steindl would say, 'build ahead of demand'.

Third, a higher excess capacity helps the firms to capture the market share of their competitors, if the need so arises. If the market share of a competitor can be captured by a stronger firm, say through aggressive sales effort or aggressive price war, then the aggressor must have enough spare capacity to capture the market left by its competitor. Moreover, excess capacity signifies a higher barrier to entry into any industry. The established firms in an industry always try to maintain just enough idle capacity to scare the new entrants from entering their market. Thus, the industries where the firms are running close to capacity have a higher probability of entry at the time of a boom.

Steindl argued that with increasing concentration there is a tendency for the desired excess capacity to decline (or, the desired rate of capacity utilisation ($\mu_0$) to increase). Any desired excess capacity also has a cost involved because it is a portion of the capital stock that is going waste at any given point of time. Therefore, with the decline in competition, firms would try to reduce their desired excess capacity. With the elimination of firms becoming even more difficult with increasing concentration, some of the reasons for maintaining excess capacity decline in importance. First, increasing concentration in an industry decreases the possibility of the expansion of a firm at the cost of others. As Steindl (1952) argues, ‘the individual entrepreneur has much less chance (or perhaps often practically no chance) to expand at the expense of his competitors’. Second, firms also fear holding excess capacity because in the event of an unexpected decline in demand in the industry, elimination of excess capacity through exits becomes less likely. Third, increased concentration further insulates the industry from new entrants because it raises the minimum scale of entry. The existing firms would, therefore, have less fear of new entrants.

All these reasons put together lead to a decline in the desired excess capacity maintained by the firms. In other words, the desired rate of capacity utilisation increases with increasing concentration. Therefore, instead of the desired rate of
capacity utilisation \( (u_0) \) remaining exogenous to the investment function, it is dependent on the level of concentration \( (\kappa) \).

Decline in innovations:

There is another factor that is affected with increase in concentration. The exogenous stimulus in the form of innovations in the investment function can also be adversely affected by an increase in concentration beyond a certain level.

The relationship between concentration and innovations has been a matter of debate ever since Schumpeter (1942) proposed the theory of creative destruction. Schumpeter had argued that monopoly is a better form of market system than perfect competition as far as innovations are concerned. He had said (p.101),

\[ \text{[T]here are advantages [of innovations] which, though not strictly unattainable on the competitive level of enterprise, are as a matter of fact secured only on the monopoly level.} \]

He believed that it is monopoly which provides the incentive to innovate because of the possibility of monopoly rent that the firms can earn for a considerable period of time. This would be especially true when there are huge costs involved in introducing new technologies.

This linkage of monopoly (or even concentration) and innovations has, however, been questioned, or at least modified by later empirical works (Kamien and Schwartz (1976); Scherer (1967); Kelly (1970); Williamson (1965); Mansfield (1963)). These empirical studies found that the relationship between concentration and innovation is not linear. According to Kelly (1970) (p.247),

\[ \text{[T]he rate of innovative activity increases with the intensity of rivalry up to a point, peaks, and declines thereafter with further increase in the competitiveness of the industry.} \]

The empirical studies have tried to find that optimum level or range of concentration where the possibility of innovation is the highest. Scherer (1967) finds that,

\[ \text{[T]echnological vigor appears to increase with concentration mainly at relatively low levels of concentration. When the four-firm concentration ratio exceeds 50 to 55 percent, additional market power is probably not conducive to more vigorous technological efforts...} \]

Some recent studies have also sought a linkage between concentration and innovations. Acs and Audretsch (1988) make an attempt to find the effects of
both size and concentration on innovations. Based on their empirical analysis, they find that while there are economies of scale in innovation, concentration has a significant negative effect on innovations. This is an interesting empirical result. Geroski (1990) finds an even stronger negative relation between monopoly and innovations, when he writes,

The calculations revealed that monopoly appears to inhibit the response to a given level of post-innovation returns, and that the indirect effects on innovativeness are relatively small. There is, in short, almost no support in the data for popular Schumpeterian assertions about the role of actual monopoly in stimulating progressiveness.

Empirical studies have also found that the market for mergers and acquisitions provide an extra opportunity for the corporations to depend on 'external' innovations rather than developing 'internal' innovations on their own (Hitt, Hoskisson, Johnson, and Moesel (1996)). In other words, mergers make the effort to innovate internally more time consuming and risky while making acquisition of an innovative firm easy. They also find that after the takeover, the capacity to innovate by the acquired firm declines over time because of the lack of synergy between the acquirer and the target. While from the point of view of the acquirer, acquiring a firm which is innovating might increase the rate of innovations, for the economy as a whole, there is no net addition of innovations in this process.

There are certain other studies that find an inverted-U relationship between concentration and innovations (Scott (1984); Levin, Cohen, and Mowery (1985)). Levin, Cohen, and Mowery (1985) regress two different measures of innovations—research and development (R&D) expenditure and innovative output—on the concentration ratio, its square and a constant term. The usage of the square term is to unravel the non-linear relationship between concentration and innovations. They perform both an OLS and 2SLS regressions to present robust results. They find that there is indeed an inverse U relationship between the two variables with R&D expenditure peaking at a concentration level of 54 percent while innovation output peaking at 58 percent and 54 percent with and without industry fixed effects respectively.
All of the above-mentioned studies\textsuperscript{10} seek to qualify Schumpeter’s thesis by arguing that while it is true that a certain degree of concentration is conducive and necessary for concentration, very high levels of concentration often impede the process of innovations. Schumpeter’s argument that a concentrated market is more conducive to innovations was broadly based on two aspects. First, it provides greater incentive for retaining the returns of innovation. Second, since the costs involved in innovations are quite high, larger firms are better placed to introduce these innovations because they have better access to finance. There have also been counter arguments that innovation is driven by rivalry and, therefore, monopoly introduces inertia in firms, thereby, discouraging innovations. Let us look at the reasons for the inverted-U shaped relationship between concentration and innovation.

The reasons for this ‘hump’ in the concentration–innovation relationship can be enumerated as follows. First, since innovations are primarily driven by rivalry, diminution of rivals with the increase in concentration diminishes the urge to innovate. At lower levels of concentration, elimination of some competitors would still leave a large number of rivals. So, this factor takes effect only at higher levels of concentration. Moreover, at higher levels of concentration, the possibility of direct collusion and even surety of market share rises which increases the complacency of firms. Innovations are, by nature, risky with often very low rates of return. So, it is only the compulsions of the struggle for survival and not their own volition, that persuade the firms to invest in it. Since an increase in concentration dampens the struggle for survival, it reduces the pressure on innovation.

Second, innovations being highly uncertain in nature, if there are more firms searching for innovations, the probability of its fruition is higher (Geroski (1990)). This could be so for a variety of reasons. More the number of firms searching for innovations, the more intense is each firm’s activity or the more likely it is for some of them to ‘stumble’ at it by a given time.

\textsuperscript{10} There are empirical studies that have argued in favour of the Schumpeterian insight. But such studies have primarily tried to show that the R&D expenditure varies positively with size (Cohen and Klepper (1996)). There are other studies which try to find a linkage between the size of a firm and its innovative capacity. But such studies, we believe, do not address the question of concentration \textit{per se}. A study on the linkage between size and innovations would essentially be addressing the question of returns to scale which, no doubt, might exist in the case of R&D just as it exists in production. But economies of scale in R&D does not preclude the possibility of a negative effect of high concentration levels on innovations. It is more important to study the linkage of innovations to the market structure rather than looking for evidence of returns to scale in the case of innovations. Therefore, we concentrate only on those studies that have sought to find the relationship between the level of concentration and innovations.
Third, since firms witness economies of scale, it results in a higher profit margin for the bigger firms. Those firms who are at the margin, in the sense that their cost structure is the highest in the industry, would always want to join the club of intra-marginal firms who have higher profit margins and greater resilience to tide over rough weather. This is because these smaller, high-cost, marginal firms would be more vulnerable to takeover or elimination in the event of a fierce competition. Therefore, for any given level of demand, the marginal firms would always be interested in adopting the next best technology available, which would give them a higher profit margin and would ensure that they move away from the margin and join the category of bigger firms. The smaller firms are at an advantage in adopting a new technology compared to the bigger firms. They always have the option, subject to the availability of finance, of adopting the next best technology used by their larger counterparts. So, they do not have to spend on some uncertain technology which the larger firms, who are experimenting with new technology, have to. As a result the smaller firms have a higher return and less risk in spending on advancement of their technology, as compared to a bigger firm. Elimination of such marginal firms through concentration diminishes this demand for continual adoption of new technologies.

Fourth, since capital stock is not malleable, an established monopolist, compared to a new entrant, would be more reluctant to introduce a new technological innovation even though it might be available\footnote{This was particularly visible in the case of the American tyre industry where the manufacturers were reluctant to introduce the radial tyres (Rajan, Volpin, and Zingales (2000)). The cartel of car manufacturers in the US showed great aversion to the attempt by Goodrich to launch radials in 1965 because such an introduction would have required a new suspension system for the cars. This was the time of the oil crisis of the 1970s which led to a setback for the car industry in general and for the tyre industry. There was a great pressure on the tyre companies to consolidate in the wake of bad prospects of long term growth. At the same time, the international car manufacturers had made inroads into the US domestic markets in a big way which increased the demand for radials. These pressures, which had brought the US tyre industry to the brink of collapse, led to massive merger activity which finally resulted in the adoption of the new technology.}. This is because the monopolist would always want to maximise his returns from the existing capital stock that was used in the earlier form of technology (Geroski (1990)).

Based on the arguments that an increase in concentration affects the desired rate of capacity utilisation and the urge to innovate adversely, we can make these two factors depend on the concentration level. This would change our investment in the following manner,

\[ \dot{g} = b(u - u_0(\kappa))g + e(\kappa) \quad b > 0, e' < 0, u_0' > 0 \]  

\hfill (3.18)
In view of this discussion on innovations, we would like to mention that the negative effect of concentration comes into play only at high levels of concentration. Incidentally, as shown in chapter 1, a number of industries in the US have crossed the threshold level of concentration beyond which it could have a negative effect on innovations.

3.4.3 Financialisation and Underinvestment:

There is another possibility of underinvestment that coexists with rapid financialisation, such as we encounter today. Suppose the firms invest in two kinds of assets—financial and real assets. In that case, the respective rates of return net of risks should be equal for these two assets. In the event of an increase in the rate of return due to booming stock markets, the desired rate of profit on real investment increases. This could lead to underinvestment because all those projects which fetch a lower rate of profit rather than a higher rate of return on financial assets would not be undertaken any more.

The increase in the rate of return on financial assets might be a result of high speculative returns in the stock market. We would like to now show that the increasing size of corporations gives them an advantage in the stock markets in cornering most of these speculative gains. If the rates of return on financial assets are higher for the larger firms, then the possibility of underinvestment through this route increases even further. Let us now evaluate if there are size advantages in the financial markets.

It can be argued that with increased financialisation, there has been an increase in the profits from financial investment while massive financial innovations have decreased the risk premium on these investments. So, the net profits from financial investments have increased, especially for larger firms. Let us see how the speculative market favours the bigger firms and increases their opportunity cost vis-à-vis real investment.
First, with concentration\textsuperscript{12}, it is possible to spread out the risks involved in financial investment while reaping almost the entire benefit of short-term high returns. This can be done by spreading the risks of the volatile financial markets on to the smaller firms and the smaller shareholders in general. This is quite evident from the corporate frauds that have taken place after the financial deregulation. Owing to a formidable advance in the methods of financial trading, say through future or derivatives markets or the hedge funds, bigger firms are able to gain in proportion higher than their size. Owing to their sheer size, the bigger firms can influence the price of assets in these future markets, as happened in the case of JP Morgan a few years ago. These firms time the buying and selling of assets strategically and thereby, corner maximum gains from speculation. The risks of such speculation are borne by the smaller firms or the individual investors who either do not have the capacity to influence the prices of the assets or do not have the correct information on when to get out of the market. This process could be called the \textit{monopolization of gain} and \textit{democratization of risk} by the bigger firms.

Second, these bigger firms have the advantage of ease with which they can go abroad and buy up the national assets of the developing countries in the form of Public Sector Undertakings (PSU), which were built during an earlier era of protectionism. Now, under the aegis of the World Bank and the IMF, these countries are being forced to sell these PSUs for a song. These PSUs are, in themselves, massive in size and can not be bought by just any firm. These are being bought by the bigger corporations.

Third, the bigger firms can package their stocks better than a smaller firm because of their goodwill and history. Thus, there could exist some form of product differentiation even in the stock markets. In the case of financial assets, the investors, more often than not, would prefer the financial assets of a more established, bigger firm rather than of a smaller firm, even though the smaller

\textsuperscript{12} It is interesting to note that the basic conflict between the rentiers and the entrepreneurs disappears as concentration increases because the entrepreneurs can simultaneously play the role of rentiers owing to their disproportionately high internal funds. What is in the interest of the rentiers is also in the interest of the entrepreneurs. The conflict between the two classes existed precisely because the benefit for one (financial gains) were costs for the other. But this conflict is premised on the limitation of wealth in the hands of entrepreneurs since it was assumed that the capitalists have to borrow money to finance real investment. In the event where the corporations have enough money to perform both the tasks simultaneously, there is no such conflict, at least for the bigger firms. This is precisely what we see in today’s big firms where the non-financial corporations are increasingly gaining from entrepreneurial as well as rentier tasks. This grand alliance between the rentier and the entrepreneurial interests is one of the key features of today’s capitalism and it has increasingly become possible because of massive concentration in the hands of a few.
firm might be more efficient. This gives the bigger firms an added advantage of mobilising funds through equity which is seldom available to smaller firms.

Fourth, the role of the government in today's financial markets is unequivocally in favour of the larger players. This has been made possible by two opposite policies of the government; facilitating deregulation of the financial markets and rescuing the larger players when the market crashes. As far as regulation is concerned, it has become increasingly difficult to regulate any one national financial market by a single government, including that of the US, due to the sheer size and scope of these corporations, which have transcended the narrow confines of national boundaries. On the other hand, the size of these firms makes them so important that no government could afford to turn its back on them during crises. This was evident when, recently, a large firm like the Bear Sterns was bailed out by the Fed to prevent a further precipitation of financial crisis. A collapse of these companies would create a colossal problem for the entire world capitalist economy because of the spiraling effect. As a result, these bigger firms are better insulated from both sides, in terms of unbridled rights to speculate and the sharing of burden of risk by the government in the event of collapse.

3.5 Ttwo Models of Concentration: Overconsumption and Underinvestment

Now that we have specified both the investment and the consumption functions for the economy, in this section, we present the short term as well as the long term analysis of such a system. We have discussed the consumption and the investment functions for an economy which is witnessing concentration of capital at a rapid pace. We will approach the issues of overconsumption and underinvestment in two stages. In the first stage, Model 1 will show that in the presence of the wealth effect, the growth rate has a tendency to rise.
3.5 TWO MODELS OF CONCENTRATION: OVERCONSUMPTION AND UNDERINVESTMENT

In the second stage, we allow the workers to borrow from the capitalists. We attempt to show that in the presence of easy consumer credit for workers and wealth effect for capitalists, consumption of the workers and the capitalists could both rise simultaneously. This is a more generalised form of Model 1 but we assume away the dividend effect to keep the matter simple\textsuperscript{14}. Here also, we attempt to show that there could be a tendency towards slow growth or stagnation because of underinvestment and only if the overconsumption overcompensates the underinvestment would the economy reach a higher growth plane. There is a greater possibility of a higher growth in this model because there are two simultaneous injections of consumption demand through debt taken by workers and wealth of the capitalists. This growth plane, however, would also be financially fragile because an increase in the debt–capital ratio beyond a point and dependence on the movements in the asset markets could threaten the stability of the system.

3.5.1 Model 1: Underinvestment and the Wealth Effect

We assume that workers do not have access to credit at this stage. We would relax this assumption in the next model. By assuming away the possibility of workers' credit, we can show clearly the role of the wealth and the effect of a higher dividend payout ratio on the growth of the economy in general and consumption of the capitalists in particular. Consumption of the capitalists is affected both by the current income as well as the wealth that they accumulate. But the increase in wealth, whether in stocks or real estate, is primarily a non–redeemable value because if all, or even a substantial number of the wealth holders decide to encash their increased wealth, the value itself would come down (Bhaduri, Laski, and Riese (2006)). Therefore, the increase in consumption, as a result of the \textit{virtual} increase in wealth, has to be financed by debt. Some capitalists become creditors and the others debtors in this process which makes the total debt cancel out for the capitalists as a class. We divide the analysis between the short and the long run wherein investment\textsuperscript{15} is autonomous in the short run.

\textsuperscript{14} Bringing in all the three elements together complicates the matter without adding any fresh insight into the model. That is also a reason why we have broken the analysis in two stages.

\textsuperscript{15} We have assumed away depreciation to simplify the analysis.

141
3.5 TWO MODELS OF CONCENTRATION: OVERCONSUMPTION AND UNDERINVESTMENT

Model 1:

\[ C = W + (1 - s_\pi)\gamma \Pi + aqK \]  
\[ \dot{g} = b(u - u_0(\kappa))g + e(\kappa) \]  
\[ O = C + I = W + \Pi \]  

(3.19)  
(3.20)  
(3.21)

Short Run Equilibrium:

In the short run, investment is autonomous and savings adjust to it through the movement of capacity utilisation in the following manner. Assuming the investment level to be given, we solve for short run equilibrium by equating the aggregate demand to aggregate supply. This would give us a short-term equilibrium level of capacity utilisation. By solving for capacity utilisation from the consumption and the output equation from above, we would get the following,

\[ u^* = \frac{g + aq}{\beta \Gamma} \]  
where,

\[ \Gamma = (1 - \gamma)h + s_\pi \gamma h > 0 \]  

(3.22)

This result is a static analysis of the Keynesian variety. The RHS above shows that the level of demand in the economy is decided by the level of investment and consumption of the capitalists out of their wealth. The overall increase in demand is much higher than the sum of these two components because of the presence of the income multiplier given in the denominator. Before going into a dynamic analysis, it would be worthwhile to see what effect do changes in parameters have on the single period equilibrium. To show the effect of changes in various parameters or exogenously given variables, we need to partially differentiate the equilibrium level of capacity utilisation with respect to those parameters or variables.

The Wealth Effect

\[ \frac{\partial u^*}{\partial q} = \frac{\alpha}{\beta \Gamma} > 0 \]  

(3.23)

The Dividend Effect

\[ \frac{\partial u^*}{\partial \gamma} = \frac{(g + aq)(1 - s_\pi)h}{\beta \Gamma^2} > 0 \]
3.5 TWO MODELS OF CONCENTRATION: OVERCONSUMPTION AND UNDERINVESTMENT

The Underconsumption Effect

\[ \frac{\partial u^*}{\partial h} = \frac{(g + aq)(1 - (1 - s)\gamma)}{\beta r^2} < 0 \]

The Overall Effect

\[ du^* = \frac{\alpha}{\beta r} dq + \frac{(g + aq)(1 - s)h}{\beta r^2} d\gamma - \frac{(g + aq)(1 - (1 - s)\gamma)}{\beta r^2} dh \geq 0 \]

It is clear that the wealth effect has a positive role on the consumption of the capitalists. Apart from the wealth effect, another important factor that increases the short-run capacity utilisation is the dividend payout ratio. This is an important factor in today's capitalism where the dividend payout ratios have increased for the firms at a drastic rate especially with the shareholder revolution unleashed by the predatory takeover markets of the 1980s and 90s. This would again be easy to interpret since any increase in the dividend payout ratio\(^{16}\) increases the consumption propensity of the economy due to the sheer fact that the dividend holders consume at least some portion of their income whereas the corporations do not necessarily consume or invest it.

It is clear from above that underconsumption (due to an increase in the profit share \(h\)) could be overcompensated by an increase in the wealth of and higher distribution of dividends to the capitalists. It is more likely in a situation where the increase in the stock market wealth (change in \(q\)) and the increase in the dividend payout ratio by the corporations are higher whereas the change in the profit share is smaller\(^{17}\). Now let us proceed to the long run analysis of this model.

---

16 This route of positive effect of the dividend payout ratio on increase in output should be seen in sharp contrast to the efficiency route of the financial economists. While Jensen and others argued the positive effect of higher dividend payout in terms of the increase in efficiency because the shareholders would be free to save this money where they get the highest return in the share market as opposed to the firms who were wasting it in spending on projects of negative NPVs. Our argument is exactly the opposite that the output would increase in so far as the higher dividend that they get is not saved, say in higher return assets, and consumed instead.

17 The underconsumption could also be lower if the difference between the consumption propensities of the workers and the capitalists is less.
Long Run Dynamics:

In the long run, investment is not autonomous any more. By substituting the equilibrium level of capacity utilisation into the investment equation, we would get the following dynamic equation of growth rate.

\[
\dot{g} = \frac{bg^2 - b[Tu_0(\kappa) \bar{\beta} - aq]g + e(\kappa) \Gamma \bar{\beta}}{\Gamma \bar{\beta}} = \alpha q - g \delta, \quad \delta = D / K
\]  

This equation can easily be solved for the equilibrium level(s) of growth rate by setting \( \dot{g} \) equal to zero. Since the growth equation is in quadratic form, it results in two solutions as shown in fig 3.2. The phase diagram clearly shows that the lower of the two steady state growth rates is stable. This growth rate is exactly analogous to Kalecki's lower growth rate and entails the presence of undesired excess capacity even in the long run, which is not at variance with what even most of the advanced capitalist countries face except during exceptional circumstances of war.

![Diagram](image-url)

Figure 3.2: Underinvestment and the Dynamics of Growth
One could perform a comparative static analysis of this long run equilibrium rate of growth. Solving from the quadratic equation above, the stable growth rate can be calculated as follows,

\[
g^* = \frac{1}{2b} \left[ b(\Gamma u_0(\kappa)\bar{\beta} - aq) - \sqrt{b(\Gamma u_0(\kappa)\bar{\beta} - aq)^2 - 4ae(\kappa)b\Gamma\bar{\beta}b}} \right]
\]

(3.25)

To find out the effect of concentration, accompanied by stock market boom, on the growth rate, we need to differentiate the equilibrium rate of growth \(g^*\) with respect to the profit share, the \(q\)-ratio, level of concentration and the dividend payout ratio.

\[
2bdg^* = \frac{\text{Wealth Effect}}{b\alpha\Delta dq} + \frac{\text{Dividend Effect}}{bu_0\bar{\beta}\Delta - 2be\bar{\beta} \left( \frac{1+\Delta}{B} \right) (1-s\pi)hd\gamma} \\
- \frac{\text{Underconsumption}}{bu_0\bar{\beta}\Delta - 2be\bar{\beta} \left( \frac{1+\Delta}{B} \right) (1 - \gamma + s\pi\gamma)dh} \\
- \frac{\text{Underinvestment}}{b\Gamma\bar{\beta}u_0\Delta - 2b\Gamma\bar{\beta}e' \left( \frac{1+\Delta}{B} \right) dx \geq 0}
\]

(3.26)

\[u'_0 > 0, e' < 0\]

where,

\[
\Delta = \frac{B}{\sqrt{B^2 - 4bC}} - 1 > 0 \]

\[ B = b(\Gamma u_0(\kappa)\bar{\beta} - aq) \]

\[ C = \Gamma\bar{\beta}e(\kappa) \]

The steady state growth rate would increase or decrease depending on whether the underinvestment effect is stronger than the wealth and dividend effects. This is an interesting result of our model which is not found in Dutt’s model, where the source of stagnation in the long-run ultimately comes through the route of underconsumption. In his model, in the long run, the interest payment by workers to the capitalists acts as a source of income transfer which dampens consumption because the workers have a high propensity to consume. We have showed here that even in the absence of such an underconsumption in the long run, there is a possibility of stagnation in the economy, despite high wealth.
3.5 Two Models of Concentration: Overconsumption and Underinvestment

effect, through the route of underinvestment. Underinvestment does not find a mention in his model because the investment function only plays a passive role in explaining stagnation.

We have shown in the fig. 3.2, the possibility where the underinvestment effect dominates the other two effects. In that case, the \( g \) curve shifts below and leads to a decrease in the equilibrium growth rate. An increase in \( q \) leads to an increase in wealth induced consumption of the capitalists. But this increase in consumption is canceled by a decline in investment which leads to a decline in the rate of growth of capital.

The most interesting aspect of this model is its dependence on the \( q \)-ratio. A closer look at the comparative statics performed above shows that in the case where the wealth and distribution effects overcompensate the underconsumption and underinvestment effect, the higher growth rate so generated would be dependent on the magnitude of change in the \( q \)-ratio and the dividend-payout ratio. The dividend-payout ratio has an upper bound, so, it can not act as an instrument to counter underinvestment for an extended period of time. The \( q \)-ratio, on the other hand, is primarily dependent on the divergence between the stock market value and the book value of the capital stock (see eq. 3.12). If the P/E ratio is increasing in the stock market, it leads to an increase in the value of wealth of the capitalists. This induces a higher wealth effect and therefore, an extra impetus to growth in the economy. But such high growth in the P/E ratios generally reflects a speculative bubble where stock prices are driven higher just by sheer speculative trading. Such booming stock markets would be necessary for this wealth effect to provide extra impetus to growth in the economy. If, however, there is a meltdown in the stock market, for any reason, it would dampen the wealth effect and have an adverse effect on the consumption of the capitalists. A dependence of growth on the stock market increases the instability of the growth process.

The wealth of the capitalists does not consist of corporate stocks alone but other forms of wealth, especially the assets in the real estate. If artificial booms can be generated vis-à-vis these other assets, then the wealth effect can possibly be maintained, like in the case of the real estate boom that followed the DotCom bubble of the 1990s. In essence, the growth rate would entirely become dependent on the vagaries of the stock market or the speculative price appreciation of some asset in the balance sheet of the household sector.

This abstract model can help us explain what was happening in the US economy in the 80s and first half of the 90s. We propose to show in the next chapter that while there was a continuous increase in the share of consumption
as a proportion of the GDP during the 1980s, either due to the Reagan tax cut or due to the stock market boom of the late 80s, the growth rate was significantly low. In fact, consumption was already going so high that the major explanation, provided by the neoclassical economists, of the slow down of the US economy from the 1980s till first half of the 90s was in terms of lower savings rate of the household sector\(^{18}\). It is only after 1995 or so that the growth rate picked up coterminously with the stock market boom that lasted well into 2000. Contrary to the neoclassical explanation, we believe that the lower growth rate of the 1980s and the first half of the 90s was a result of the dominance of the underinvestment effect over the tendencies of overconsumption. After the mid-90s, the wealth effect dominated due to the sheer quantum of increase in wealth as a result of the unprecedented boom in the stock market. This would explain the higher growth rate in this period. Now let us generalise this model to include the possibility of debt driven consumption by workers.

### 3.5.2 Model 2: Underinvestment and Workers’ Debt

Now we relax the assumption made in the model 1 that workers can not borrow. However, to keep the matters simple, we assume that the dividend payout ratio is given. This assumption would not change the analysis, but since we have explored its effect in model 1, we would like to concentrate on the possibility of debt for the the workers along with the wealth effect of the capitalists. We allow the workers to take debt to finance consumption much in the same way as we have described in the workers’ consumption function in eq. 3.11. In this manner, one could look at the role of the sub prime markets on the consumption of workers and growth of the economy. We divide the analysis again between the short and the long run.

In the short run, the economy has a given rate of autonomous investment and the output reacts to it in the normal Keynesian manner. Level of debt and capital stock remain constant in the short run. After presenting the equilibrium in the

\(^{18}\)Summers and Carroll (1987) argue precisely on these lines. It goes without saying that we do not adhere to this supply-side argument for explaining the decline in growth during this period. We are arguing for an independent decline in the investment urge of the capitalists with deregulation and financialisation.
short run, we would attempt to show how the short-run equilibrium changes as different parameters of the system change.

Model 2:

\[ C = (1 + a(\rho))(W - rD) + c_\pi(\Pi + rD) + aqK \]

\[ g = b(u - u_0(\kappa))g + e(\kappa) \]

\[ O = C + I \]

\[ D = a(\rho)(W - rD) \]

Short Run Equilibrium:

As before, the investment is autonomous in the short run, so we can solve for the equilibrium level of output in a partial equilibrium framework. It would be interesting to note that the profits of the capitalists are not just the sum of their consumption and investment any more. In the presence of the wealth and the possibility of debt for workers, the profits of capitalists increase by the amount that the workers consume out of debt, and the consumption of the capitalists that is generated out of wealth.

\[ O = W + \Pi = (1 + a(\rho))(W - rD) + c_\pi(\Pi + rD) + aqK + I \]

\[ \Pi = \frac{1}{s_\pi} [I + aqK + a(W - rD) - s_\pi rD] \]

(3.28)

The second term denotes the increase in consumption of the capitalists as a result of the wealth effect, while the third term denotes the increase in consumption of the workers due to the debt effect. The last term denotes the decrease in consumption of the economy due to a shift of interest income away from the workers to the capitalists. Similarly, the short-term equilibrium rate of capacity utilisation, given the level of investment, would be given as,

\[ u^* = \frac{g + aq - [a(\rho) + s_\pi]r\delta}{\Gamma \beta} \]

where,

\[ \Gamma = s_\pi h - (1 - h)a(\rho) > 0 \]

\[ \delta = D/K \]

(3.29)

This is similar to Dutt’s short run equilibrium, except that we have improvised his model of consumption to include the wealth effect and the margin of risk.
effect. How does one interpret the $\Gamma$ function? This function corresponds to the $\Gamma$ function of model 1, except that it now includes the dissaving of workers due to the access to debt. In other words, this function measures the total savings as a share of current output of the economy, where $s_n h$ is the savings of the capitalists while $-(1-h)a(\rho)$ is the (dis)saving by the workers who spend more than what they get\textsuperscript{19}. An assumption of a positive savings by the economy as a whole would be plausible, which means that $\Gamma$ is positive, just as Dutt assumes. For the economy to have a positive rate of capacity utilisation, the numerator would have to be positive too, which requires the sum of growth rate and the wealth effect to be higher than the sum of savings of the capitalists out of the debt repayment by workers and the increase in debt by workers $(g + aq > (a(\rho) + s_n)r\delta)\textsuperscript{20}$.

What would the effects of changing different parameters in the short-run equilibrium be? Dutt (2006) has already shown the effects of different parameters on the short run equilibrium rate of capacity utilisation. In most of the cases, our results would only partially qualify his analysis, except for variables that we have introduced anew in our analysis. Let us look at the results of partial differentiation with respect to the workers’ debt–capital ratio ($\delta$), the $q$–ratio, the risk premium of workers ($\rho$), the investment capital ratio ($g$).

With respect to risk premium,
\[ \Gamma \beta \frac{\partial u^*}{\partial \rho} = (1-h)u^* \beta a' - r[a' + (a(\rho) + s_n)\delta] \leq 0 \]

With respect to wealth,
\[ \Gamma \beta \frac{\partial u^*}{\partial q} = \alpha > 0 \] (3.30)

With respect to workers’ debt–capital ratio,
\[ \Gamma \beta \frac{\partial u^*}{\partial \delta} = -[a(\rho) + s_n]r < 0 \]

With respect to growth,
\[ \Gamma \beta \frac{\partial u^*}{\partial g} = 1 > 0 \]

\textsuperscript{19} In that sense it qualifies Kalecki’s dictum that ‘workers spend what they get’ at least in the short run.

\textsuperscript{20} In the opposite case, where we might assume that the workers’ dissaving is higher than the savings of the capitalists i.e $\Gamma < 0$, then a positive capacity utilisation can occur only if the debt by workers grows at a faster rate than the growth rate of the economy and the wealth effect $(g + aq < (a(\rho) + s_n)r\delta)$. This would be a very unrealistic scenario but, theoretically, it is possible that the economy grows through the perpetual increase at an increasing rate in the debt by workers.
It is interesting to interpret these results. Let us first evaluate the effect of sub prime lending since it is germane to the explanation of growth, at least, in the present decade and it would also help in understanding the flip side of this lending. The effect of the sub prime market on the short run output is reflected in the first function. There are two opposite effects of borrowing by workers on output. On the one hand, it relaxes their budget constraint and allows them to spend more than they get. We call this the workers' debt effect. On the other hand, this increase in borrowing increases their interest burden too. We call this the interest effect. This second effect would not have existed for the economy as a whole if the consumption propensities of workers and capitalists had been same. The overall effect of a decline in the risk premium would depend on the relative strength of these two effects. It should be noted that with an increase in the interest rates at some later date, as often happened in the case of sub prime lending, the second effect starts dominating the first and the output would start declining as consumption of workers fall. This happens because net income of the workers starts falling. In the extreme case, this leads to bankruptcy and seizure of collateral by the lenders.

While an increase in borrowing by workers might or might not increase the capacity utilisation\(^{21}\), an increase in the wealth of the capitalists unequivocally leads to an increase in the capacity utilisation. It would not be difficult to see why this is the case. While the decline in consumption of capitalists as a result of increase in their debt gets canceled by an exact same increase in the consumption of the other capitalists who are lenders (their consumption propensities being same), the decline in consumption of workers as a result of increase in debt is less than compensated by the increase in consumption of capitalists.

The other effects are the same as Dutt's so we do not go into further details. Let us now see what happens in the long run where the growth rates, the debt-capital ratio are not constant but vary with time. It is here that we differ with Dutt the most because we have adopted a different investment function which makes it a key player in the long-run story just as in Model 1.

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\(^{21}\) Here our results differ from Dutt's where he finds an unequivocal increase in capacity utilisation in the short run as a result of increase in borrowing by workers. The reason behind this discrepancy is that Dutt seems to have overestimated the borrowing effect of workers, even in the short run, because he does not consider the effect of the increasing payment as interest on the increased borrowing.
3.5 Two Models of Concentration: Overconsumption and Underinvestment

Long Run Equilibria

We define the debt-capital ratio of the workers in the following manner:

Workers' Debt-Capital Ratio

\[ \delta = \delta \left( \frac{D}{D - \frac{K}{K}} \right) = a(\rho) [(1 - h)u\beta - r\delta] - g\delta \quad (3.31) \]

The long run dynamics of this system can be depicted by the following two equations:

The Growth Equation

\[ \dot{g} = \frac{1}{\Gamma\beta} \left[ b\{g + aq - (a(\cdot) + s_\pi)\r_\delta - \Gamma\beta u_\phi(\kappa)\}g + e(\kappa)\Gamma\beta \right] \quad (3.32) \]

Workers' Debt Equation

\[ \delta = \frac{1}{\Gamma} [a(\cdot)\{(1 - h)(g + aq - (a(\cdot) + s_\pi)\r_\delta) - r\delta\Gamma\} - g\delta\Gamma] \]

Let us first look at the isocline of the debt equation. Unlike Dutt, it is uncertain whether the relationship between workers' debt-capital ratio would be positively related to the growth rate on the isocline. It depends on the difference between the increase in consumption of capitalists out of the wealth and the ratio of savings out of the interest income of the capitalists to the net savings rate of the economy. If the wealth effect is stronger, i.e., \( aq > \frac{s_\pi r}{1} \), the decline in consumption of workers, due to interest payments, is more than compensated for in the economy as a whole by an independent increase in the consumption of the capitalists. Thus, the capacity utilisation does not decline on this count. But if the savings effect is stronger, then the debt-capital ratio would increase with an increase in the growth rate, just as in the case that Dutt explains.

Let us first look at the effects of changes in the various parameters on this curve. An increase in the \( q \)-ratio shifts the curve to the right. A decrease in the risk premium (an increase in \( a \)) would also shift the curve to the right because for every growth rate, the debt-capital ratio increases with an increase in the borrowing by workers.

Let us now look at the growth rate isocline. After simplifying the function, it comes out to be a hyperbola (see appendix). The combination of these two curves would give us the equilibrium rate of growth and workers' debt-capital ratio (as in fig. 3.3). This system has two non-negative solutions (see appendix) of the growth rate just as we got in the previous model. The only difference
now is that the growth rate and the debt-capital ratio of workers are determined simultaneously by the first and the second equation. Within these two rates of growth, the higher one (shown by point B) is unstable just as in the case of Kalecki's 'ephemeral' rate of growth. We concentrate on the stable rate of growth (point A) for further analysis. The phase diagram shows that there would be cycles produced around the stable rate of growth.

Figure 3.3: Model 2: Long Run Equilibria in the Presence of Debt and Wealth Effect

What would be the effects of changes in the parameters of the system? Let us evaluate the changes of the stock market driven q ratio and the increase in concentration in the economy. The stock market has a positive effect of increasing the consumption of the capitalists which pushes the growth isocline to the right. On the other hand, an increase in the concentration level leads to an increase in the desired rate of capacity utilisation (\( u_0 \)) as well as a decline in technological innovations (\( e \)) as explained above which forces the growth isocline to move to the left. If the wealth effect dominates the underinvestment effect then the growth isocline shifts to the right (see appendix for explanation). An increase in the q ratio would also shift the workers’ debt isocline to the right as explained above. The overall effect would be an increase in both the growth rate and workers' debt-capital ratio (see panel (a) in fig. 3.4). This increased rate of growth, however, is entirely driven by an increase in the q-ratio so any sudden decline in
it would also affect the growth rate in a similarly abrupt manner. In other words, the growth rate produced through stock market wealth induced consumption is bound to be affected by vagaries of the stock market. It should be noted that it is possible that an increase in the wealth of the capitalists does not lead to an increase in the rate of growth due to the dominance of the underinvestment effect both as a result of increasing concentration as well as financialisation as explained earlier (panel (b) in fig. 3.4). In that case, the growth isocline would shift to the left leading to a decline in both growth rate and workers’ debt-capital ratio.

Let us now evaluate the effect of a decrease in the risk premium, say as a result of the sub prime lending. This results in a downward shift in the $\delta$ curve but it cuts the x-axis at the same point (see appendix). It would also lead to an upward shift in the $g$ curve. The new equilibrium would have a higher workers’ debt-capital ratio with an ambiguous effect on the growth rate because an increase in borrowing also leads to a shift of income from workers towards the capitalists. This is what Dutt uses to explain the possibility of stagnation in the long run even in the presence of borrowing by workers. We would like to stress that the route to stagnation in the long-run in such an economy need not necessarily come through the underconsumption effect. It could well be true that the increase in consumption of the workers through the borrowing is more than compensated by the underinvestment effect which could be a result of concentration. In that case, growth would eventually decline, independent of the underconsumption effect. In fact, the possibility of a slow growth even in the absence of underconsumption is most clearly visible if we assume, for expository purposes, that income distribution does not affect the overall consumption. Even in such a situation the underinvestment effect would be at work.

We have shown above the various possible changes in and the effect of the parameters on growth rate and workers’ the debt-capital ratio. With an increase in the wealth effect, the economy shifts to a higher growth plane provided the underinvestment effect is low. A decrease in the risk premium leads to an increase in the workers’ debt-capital ratio but has an ambiguous effect on the growth rate. These conclusions can be used to understand the US economy since the early 1980s. We argue that the low growth rate regime of the 1980s till the mid-90s despite the high growth in the share of consumption can be understood from panel (b) of fig. 3.4 where the underinvestment effect dominates the overconsumption effect. Panel(a) of fig. 3.4 explains the second half of the 90s. Here the consumption started to increase at a much faster rate due to the massive stock market boom of the late 90s. This wealth induced consumption might
3.5 TWO MODELS OF CONCENTRATION: OVERCONSUMPTION AND UNDERINVESTMENT

Figure 3.4: The Long Run Effect of the Stock Market on the Growth Rate
have overcompensated the underinvestment effect for the late 90s. Decrease in the risk premium depicts the boom of the present decade in the US which was dominated by the effects of easy credit in the sub prime market. Thus, while the 1990s boom got busted with the decline in the stock market, the boom of the present decade has come to a halt after the sub prime lending started leading to large scale bankruptcies.

3.6 PRICE STABILITY AND MONETARY POLICY

So far we have assumed the price level to be given but we relax this assumption now and attempt to endogenise inflation. This is very important for our analysis for two reasons. First, since we are dealing with an increase in markup, the resulting changes in the rate of inflation should be an integral part of our study. Second, the rate of inflation also determines the real rate of interest which till now we have assumed to be exogenously given by the government. But in reality the government can only fix the nominal interest as a part of their monetary policy. Therefore, to study the effects of monetary policy of the government, it is necessary to incorporate the analysis of inflation.

3.6.1 Price Stability

In an economic system based on class conflict, such as capitalism, the genesis of inflation can be located by posing the basic question of how prices are formed and what do these prices represent. To understand this process, we first assume away the 'myth of perfect competition', as Kalecki would call it. In a world of price makers, the concept of inflation can be understood22, if we look at the total output produced in a country as a cake, and the determination of prices as a struggle over the distribution of the cake among different social groups based on their ex ante claim. It should be obvious that both of these are dependent on the relative as well as absolute strength of the stakeholders. For a simple analysis we can locate two such stakeholders; the workers and the capitalists23. They stake their ex ante claims through money wages, markups, interest rates, taxes and the terms of trade respectively and weight of their stake is decided by the relative and absolute strength vis-à-vis each other.

22 This section heavily draws upon an excellent analysis in Patnaik (1997) which itself is built upon the classic analysis of Rowthorn (1977).
23 As far as the third claimants, i.e., the rentiers, are concerned, we find that the conflict between rentiers and capitalists is crucially dependent on the impossibility of an entrepreneur simultane-
Workers' Claim

The weapon of the workers in this struggle is the *ex ante* money wages which, as argued by Marx, in his theory of the reserve army of labour and later by Phillips in his famous Phillips' Curve, is dependent on the rate of unemployment 'ν'. If the pool of unemployed is small then the labour unions have a higher bargaining power because of the lesser likelihood of defaulters to the wage negotiated between the union and the capitalists. The unions bargain for a money wage rate commensurate with an expected price level of the goods, which itself is based on the past rate of inflation. In other words, they bargain in such a manner that the real wages of today is equal to the real bundle of goods that they are aiming at. Since the price level of next period is not known, the unions make an expectation about it based on their existing experience. In such a situation where the *ex ante* money wage rate is being negotiated on a yearly basis, the rate of increase of wages in the long run would depend both on the rate of increase in prices and the rate of unemployment (along with the change in labour productivity (1)²⁴).

Capitalists' Claim

Capitalists stake their claim on the output through the markups (μ) that they set in the product market. The markup has generally been assumed to depend on the rate of capacity utilisation. But we would argue that it should be dependent on the extent of concentration in the industry, as we have shown in the first chapter. This is because with oligopolistic enterprises, the possibility of a price war even...
3.6 PRICE STABILITY AND MONETARY POLICY

in the wake of low capacity utilisation seems quite dim, i.e., the markups are downwardly rigid in such market structures.

The Price Equation and its Dynamics

Based on these two claimants to the output we can write the price equation for such an economy,

\[ p = \mu w l \]

Now let us form the dynamic price equation of this system by combining the price equation and workers' *ex-ante* claim of money wage. We would get the following form of price equation,

\[ \dot{p} = F(\mu, v) \quad F_1 > 0, F_2 < 0 \tag{3.34} \]

Price stability in such a system would mean a constant rate of inflation in the economy because in so far as the inflation rate is constant, it does not affect the participants' share in the total output. For that to happen, the sum of the demanded shares of the workers and the capitalists has to add up to one. If any of the two claimants have a higher claim than what the cake can accommodate, there will be accelerating inflation (as shown in eq. 3.34). It can be seen, therefore, that the price equation would solve for one unemployment rate where the demands of the two participants just equals the total output. This is what is called the non-accelerating inflationary rate of unemployment (NAIRU). Thus, *ceteris paribus*, an increase in the markup would require a decline in the unemployment rate to maintain the inflation rate.

The Effect on Investment and Financial Assets

Price stability is important not only for the various claimants' share but also because it affects the prices of capital assets. Any increase in prices decreases the relative value of the financial assets that one holds as wealth in the stock market. This would be clear if we look at the \( q \)-ratio as defined above where the price level of the goods are in the denominator and any increase in it would automatically decrease the value of the financial assets.

Another important role of accelerating inflation has been suggested by Patnaik (1997), where investment decisions are affected adversely both by accelerating or decelerating inflation. He argues that investment decisions are made by the capitalists about an uncertain future based on certain expectations. In situations of either accelerating or decelerating inflation, the estimations about the future
state becomes even more difficult and risky. This dampens the urge of the capitalists to invest in such situations. Patnaik incorporates this factor in the investment function in the following manner,

\[ g = b(u - u_0)g - e\pi^2g + e \]  

(3.35)

We would replace the growth equation of model 2 with this investment function in the context of inflationary conditions.

3.6.2 The Role of Monetary Policy

We have so far assumed that the real interest rates are given from outside but we would now like to relax this stringent assumption. First, the nominal rate of interest, not the ‘real’ interest rate, that is fixed by the monetary authorities. Second, when we are accounting for the possibility of inflation in the economy, it is but obvious that the real interest rate, just as the price of other financial assets, would get affected.

This would mean that the interest rates mentioned in the above models are to be interpreted as the real interest rates where the real interest rates are defined as follows,

\[ r = r^n - \frac{\dot{p}}{p} \]  

(3.36)

It should be clear by now that we are assuming endogenous money in the sense that the government sets the nominal interest rates (and not the money stock). At the going interest rates, the demand for money is met in entirety. If the government has to follow a tighter/looser money policy it increases/decreases the nominal interest rates rather than affecting the money stock (Kaldor (1956)). We have assumed that the investment is not affected by the interest rates and we maintain this assumption because a number of empirical studies have shown that interest rates do not matter much to the investment decisions of the firms, especially of the larger firms (Fazzari (1993), Fazzari and Mott (1986)). In our model, consumption is affected by the interest rates because it enters into the consumption function of the workers through the debt repayment to the capitalists. It also enters the consumption function of the capitalists but gets cancelled by an equivalent amount of increase in the consumption of the capitalists.

Thus, in the present model, we can show that the monetary policy, through its role in determining the nominal rates of interest, can affect the consumption of the workers, which is not equally compensated by that of the capitalists. So, for the
economy as a whole, the monetary policy can play a role in affecting the demand. It is important that any monetary policy step taken by the Fed would be most effective when the inflation rate remains stable. Otherwise an increase/decrease in the nominal rate of interest might not lead to an increase/decrease in the real interest rates and thus not affect the state of demand of the economy to the desired level.

Let us now look at the effect of these changes in model 2.

3.6.3 Dynamics in Model 2 with the Price Equation

The system of dynamic equations in 3.27 can now be rewritten as,

The Growth Equation

\[ g = \frac{1}{\Gamma} \left[ b \{ g + aq - (a(p) + s_\pi)r\delta - \Gamma \beta u_\varphi(q) - e\Gamma \beta \rho^2 \} g + e(q)\Gamma \beta \} \right] \]

Workers' Debt Equation

\[ \delta = \frac{1}{\Gamma} \left[ a(p) \{ (1 - h)(g + aq - (a(p) + s_\pi)r\delta) - r\delta \} - g\delta \} \right] \]

The Price Equation

\[ \bar{p} = F(\mu, \nu) \]

The steady state of such a system can be evaluated where \( g, \delta, \bar{p} = 0 \). It is to be noted that unlike the other equations, the price equation's stability demands that the rate of inflation remain constant and the second derivative of price be zero. This is because inflation is a normal feature of capitalism. It is only when it accelerates or decelerates that it causes problems for the economy. It should also be noted that now the interest rate or q-ratio in the first three equations would be determined for a given rate of inflation. Any increase in the rate of inflation would lead to a decline in both the real interest rates as well as the q-ratio.

This system, in its present form, would not have a steady state solution because the price equation would yield a specific NAIRU, at which inflation is stable. This may not be, except by coincidence, the unemployment rate generated through the equilibrium of the first three equation that we reached at in the previous section. In other words, as Patnaik argues, the system would not have simultaneous price and output stability. How does one solve this puzzle? This apparent problem

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25 Patnaik suggests that both the price and output stability in advanced capitalist countries is ensured through the presence of pre-capitalist sectors in the periphery which can both act as a potential market and as a cushion for absorbing the inflationary pressures because of the
can be solved both by active monetary policy and by allowing the NAIRU to shift inter temporally.

As argued above, the shape and position of the inflation augmented Phillips' curve depends on the bargaining strength of the workers. Much has been written about the conditions of the working class in the US from all sides of the spectrum, by neoliberal economists like Greenspan to Marxist economists like Pollin (2005, 2002). There is one point of consensus among them that there has been a decline in the power of the trade unions since the 1990s.

Pollin (2005), while discussing the weakened tradeoff between unemployment and inflation in the 1990s, poses a very important question that even though the economists have been trying to talk about the weakened tradeoff between inflation and unemployment for the 90s through time-varying NAIRU, there is still no clarity on the reasons behind it. In an attempt to answer this question Pollin (2005) (p.52) says,

[I]t is the changes in the balance of forces between capital and labour, and the growing integration of the US into the global economy—which has increased the difficulty of the US firms raising prices and US workers getting wage increases—that have been the main forces that have weakened the pressure for inflation to accelerate even at low unemployment rates. [emphasis added]

Pollin writes quite categorically that, it is not the actual shifting away of the base of the corporations and, thereby, the jobs from the US to other economies abroad, but the credible threat that the capitalists can brandish to their workers and their unions that, the corporations stand to lose in this era of international competition because the wages abroad are cheaper. He quotes two different studies by Brofenbrenner (2001) and Choi (2001) to substantiate this claim. Brofenbrenner (2001) argues,

Throughout the last decade, the increasingly rapid pace of global capital mobility, and the job dislocation and corporate restructuring that follows in its wake, has fostered a climate of intense economic insecurity among the US workers. This rising sense of economic insecurity has effectively served to hold down wage demands and wage increases even during the period of economic expansion, low unemployment and tight labour market. [quoted in Pollin (2005)(p.55)]

presence of unorganised labour in the periphery whose wage claims can be compressed unlike the workers of the core.
We would like to argue that the massive merger waves, which have led to the consolidation of corporations, have strengthened the capitalists to a significant extent while the workers' bargaining power has simultaneously declined. Both these processes can lead to 'flattening' of the Phillips' curve. In fact, it could have led to a special shape of this curve which is horizontal for a big range of unemployment rates. There could thus be a kink in this curve where the inflationary tendencies would increase only at close to full employment. If this curve actually becomes horizontal for a range of unemployment rates, then this system has the potential of getting a steady state because, now, there is no longer a single NAIRU. Instead, there is a band of unemployment rates all of which are compatible with a constant rate of inflation. This possibility and the steady state associated with it are shown in fig. 3.5.

If inflation can be controlled in this manner, then even the monetary policy would be very effective since the Fed can target a real interest rate by setting the nominal rate of interest. The Fed, in a situation where inflation is stabilised, can set the nominal interests in such a manner that the debt-driven consumption of the workers keeps the economy afloat even as the debt-capital ratio has gone beyond the normal limit. In other words, the Fed can delay the crash that the economy might have to face as a result of either the stock market volatility or high debt-capital ratio. If the Fed can prolong such booms which are heavily dependent on the real interest rates, it could postpone the recession as long
3.7 Conclusion

as possible. But such a strategy carries the seeds of its own destruction. This is because a looser monetary policy, when the debt-capital ratios are already high, would only increase the financial vulnerability of the system even though it prolongs the boom. We would study this aspect of the monetary policy in the next chapter when we discuss the DotCom and the real estate booms.

3.7 Conclusion

The pattern of growth and concentration in the US since the 1980s has posed certain challenges to the extant theories that link concentration to growth. While the underconsumptionist school unequivocally argues that concentration leads to stagnation, the US economy has witnessed one of the most spectacular booms in the late 90s, comparable to the 60s, even while concentration was increasing. Similarly, the exhilarationist explanation falls flat if one looks at the 80s and the early 90s when the profit share was increasing but the growth rate was dismal. There have been attempts within the stagnationist school to incorporate the possibilities of counteracting tendencies to underconsumption as the possibility of credit-driven consumption increases or the wealth effect increases. But in an attempt to explain the possibility of high growth, even as concentration is going on, these new models have got entangled in the possibilities of underconsumption itself as an explanation for stagnation in the long run.

We have attempted here to break from this tradition and introduce an independent route of underinvestment to explain the possibility of a slowdown as concentration and financialisation increase. We argue in the form of two macroeconomic models that there are two counteracting tendencies in the economy in the wake of concentration and financialisation. On the one hand, there is an increase in consumption as a result of wealth effect or an increased dividend effect or an increase in debt-financing. On the other hand, an increase in concentration leads to a decline in the excess capacity that the firms want to maintain. This occurs because the competitive reasons for which excess capacity is maintained decline in importance with rise in concentration. The overall effect on growth would be dependent on the interaction between these two factors. Monetary policy of the government can also tilt the tide in favour of overconsumption by keeping the interest rates low which could both give a boost to the credit driven consumption and help increase the speculation in the stock market or the housing market. Moreover, the monetary policy would have higher potency depending on how the Phillips’ curve cooperates.
3.7 CONCLUSION

Our conjecture is that the period of slow growth in the 1980s and early 1990s can be understood as a period where underinvestment effect was more dominant. In sharp contrast to this, the period since mid-1990s has witnessed a higher overconsumption effect either due to booming stock market in the late 1990s or the booming housing market in the present decade. One can, therefore, explain these stylised facts about the US economy through the help of the present model.
3.A APPENDIX

3.A.1 Workers' Debt and the Sub prime lending

One could argue that the sub prime lending, through financial innovations and outright violation of lending norms, increased the debt–income ratio. Let us see how the sub prime market worked at increasing the consumption\(^{26}\) of the workers. After the stock market crash of 2000, speculative finance shifted to the real estate market to earn speculative returns (Pollin (2005)). This led to an increase in the prices of the real estate. Apart from buying homes to live, they were being bought for pure speculative reasons with many customers buying more than two houses only to sell it later at a higher price. This increase in demand for homes fed into the price rise in the real estate market which further gave rise to speculation. In such a situation easy loan for home purchase, through the sub prime lending acted as a catalyst to this speculation. In so far as the home prices were rising, the expectations to fulfill the debt obligation at a future date were also very high. This upward mobility in home prices could have led to elastic expectations which further led to price appreciation.

In the midst of booming real estate market, the mortgage institutions were packaging different forms of loans for the consumers. A new practice of predatory lending was innovated, according to which those consumers who would eventually become defaulters were targeted. This was done with two different purposes in mind. First, adjustable rate of mortgages (ARMs) were introduced, according to which the initial rates of interests on loans would be comparatively low but the rates increase as one goes in the future. At times, these rates were not even disclosed to the consumers which duped them about the real costs of the loan. The ARMs ensured that the return on the loans would keep increasing for the lending institutions even as the consumers struggle to meet the repayment requirements. Second, in the eventuality of a default, the collateral, which would be the home itself, would be by these institutions. Since the home prices were increasing, these institutions would expect to make a handsome profit at the margin by selling the homes they would have acquired through foreclosure. A common perception developed during those days that, unlike equity, home prices can only increase because the demand for a real asset like homes can never fall behind its supply.

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\(^{26}\) Consumption, here, should be taken in a broader sense which includes the residential investment. This is so because the pattern of expenditure on residential structures by the households is quite similar to their consumption pattern which are both driven by their existing income and wealth.
Ever increasing home prices and financial innovations, like ARMs, which made availability of loans easy, led to a dramatic increase in residential investment in the US. This can be understood if we present a simplified model of investment in housing by the workers. Since they were buying houses both with the purpose of living as well as making speculative gains by selling them later at higher prices, the rate of return on housing could be calculated as the sum of the implicit rate of return plus its price appreciation. Assuming that the amount invested in buying a house is more than the income that is left after consumption of goods and services, they need to finance it by taking debt. They would be interested in getting a rate of return on their own income that is invested in housing. This can be shown as follows,

\[
\pi W = \left( \pi_H + \frac{p_H}{p_H} \right) H - r(H - \theta W)
\]

where,
\[
\pi = \text{Rates of return on own income} \\
\pi_H = \text{Rates of return on total investment in housing} \\
p_H = \text{Price of house} \\
H = \text{Amount invested in housing per period} \\
r = \text{Rate of interest} \\
\theta = \text{Portion of wages left after consumption of goods and services}
\]

(3.38)

Now, both the implicit rate of return and the price appreciation are held with some expectation about the future which is fundamentally uncertain in nature. These expectations, therefore, can only be held with a reasonable degree of probability which gives rise to risk in the situation of non-fulfillment of the expectations. Following Steindl (1945), we can arrive at a risk function in the following manner. Suppose the prospective home owners predict the rate of return inclusive of capital gains as \( \varepsilon_1, \varepsilon_2, \ldots \) but the actual (ex post) returns are \( \varepsilon'_1, \varepsilon'_2, \ldots \). The errors i.e. difference between the expected and the actual rate of return would occur with different frequencies. From this, one can get a frequency distribution of errors and their standard deviation, \( \sigma_0 \), would denote the risk. The rates of return and the risk are measured as percentages of the actual cost of buying a house. The risk measures the extent to which the amount invested in housing is endangered in the event of an error in prediction of the rate of return in future. But the borrowers would be most interested in the amount by
3A Appendix

which their own income is endangered, the risk on which can be measured in the following manner,

\[ \sigma = \sigma_0 \frac{H}{W} \]

Therefore, the risk increases with an increase in the investment to income ratio. This is similar to the gearing ratio of the firms. As Steindl argues, the risk premium would be an increasing function of the risk. If the investment in housing is doubled, it doubles the net rate of return \( \pi_H + \frac{\dot{p}_H}{p_H} - r \) too and so does each possible error. In other words, an error greater than the net rate of return would endanger worker's income twice as much which would mean that the risk premium should be an increasing function of risk in order to prevent endangering of worker's income. The risk premium \( \rho \) can be written as,

\[ \rho = f \left( \frac{H}{W} \sigma_0 \right) \]

In such a situation, the prospective gain function for the workers, which incorporates the risk premium along with the profit equation, would be the following,

\[ G = \left( \pi_H + \frac{\dot{p}_H}{p_H} \right) \frac{H}{W} - r \left( \frac{H}{W} - \theta \right) - \rho \]

Maximising the gain function with respect to the amount invested in housing, we get the following condition,

\[ \frac{\partial G}{\partial H} = \frac{1}{W} \left( \pi_H + \frac{\dot{p}_H}{p_H} - r - \sigma_0 f'(\cdot) \right) = 0 \]

\[ \therefore \pi_H + \frac{\dot{p}_H}{p_H} = r + \sigma_0 f'(\cdot) \] (3.39)

The equilibrium condition above shows that the amount of capital invested in housing is dependent on three factors: its implicit rate of return inclusive of the capital gain, the interest rate and the risk premium attached to it. If the prices of housing are sky-rocketing, there would be a higher investment in housing, other things remaining the same. A decline in the interest rate (mortgage rates in specific) would also have a similar effect. If the risk premium falls, say due to financial innovations where risky assets are packaged as less risky through securitisation, then that also leads to an increase in the investment on housing.

We can possibly locate the effects of the sub prime credit markets in this setup. A sub prime credit market is one where borrowers with 'questionable' credit
history are also given credit by the sub prime lenders\(^{27}\). The name sub prime itself suggests that it is inferior to the prime market. The prime credit market is defined by certain credit norms, which are defined by the Federal National Mortgage Association (Fannie Mae) in the United States. These norms include a permissible debt-income ratio not exceeding 75 percent and a minimum down payment of 10 percent of the loan amount. These norms are relaxed in the sub prime market which makes credit accessible even to those who would otherwise not have been able to avail of this facility. Accordingly, the possibility of default is also higher in the sub prime market. Since the sub prime loans are by definition riskier than the prime loans, their higher costs are reflected in the form of higher interest rates. But high interest rates could dissuade the sub prime borrowers, so, these loans are made lucrative through the adjustable-rate mortgages (ARMs), according to which the initial interest payments might be low but they increase in future to cover the extra cost. There have even been cases of ‘hidden’ interest costs which are not disclosed to the borrowers which make these loans even more lucrative. The sub-prime lending market, therefore, leads to an increase in the access to credit to the workers in excess of what they would have otherwise been able to obtain in the prime markets.

It is also clear from the equilibrium condition above that an increase in the interest rate or a decline in the prices of housing would have a dampening effect on the investment in housing. This is precisely what has started to happen of late in the US which has resulted in the crisis that the US is fighting with at present.

3. A. 2 Dynamics of Model 1

Let us look closely at Model 1. The dynamic equations of model 1 are the following,

\[
\dot{g} = \frac{b g^2 - b [\Gamma u_0(\kappa) \bar{\beta} - a q] g + e(\kappa) \Gamma \bar{\beta}}{\Gamma \bar{\beta}} \tag{3.40}
\]

The dynamic growth equation is quadratic. We can easily solve this equation to find the roots based on the quadratic equation formula, which is what we

\(^{27}\) It is to be noted that the sub prime lending should not be understood as catering to the poorest within the US. Even the middle class within the US can be the target of the sub prime lending because the terms and conditions for sub prime lending are relative in nature. For eg. a majority of the real estate purchases that were being made in the US were surely not done by the poorer people in the US but by the middle class and the richer sections of the society. The sub prime credit market could have helped the middle class customers on the margin who would not have been able to draw such amounts of credit from the prime markets. This is an important point because the sub prime market, by definition, has come to be identified with people who do not have the means even though the definition of means itself is relative to the amount of credit one is seeking.
do graphically in the text of this chapter. We assume that the parameters of the equations are such that the roots of the quadratic equation are positive. For that to be the case, the term within the parentheses has to be positive. In other words, the condition would be $\Gamma_{u_0}(\kappa)\beta > aq$. But what is the economic explanation of this condition? $\Gamma_{u_0}(\kappa)\beta - aq$ is nothing else but the growth rate of the economy at the desired rate of capacity utilisation in the absence of innovations. One can check this by assuming $e = 0$ in the growth equation, which gives us two growth rates which is either zero or $\Gamma_{u_0}(\kappa)\beta - aq$. This is precisely the replication of Kaleckian growth rates, where, in the absence of innovations, the economy functions at zero trend rate of growth. The condition requires that the higher rate of growth can not be negative which is not a strict assumption at all. It would be interesting to note that the higher rates of growth, which become unstable in Kaleckian models are basically the neoclassical rates of growth which assumes full employment but hardly ever do they prove why this would be a stable state of affairs for a capitalist economy, especially which is affected by uncertainty.

3.A.3 Dynamics of Model 2

Let us look at the differential equation system of Model 2.

The Growth Equation

$$\dot{g} = \frac{1}{\Gamma\beta} \left[ b\{g + aq - (a(\cdot) + s_n)r_\delta - \Gamma\beta u_0(\kappa)\}g + e(\kappa)\Gamma\beta \right]$$

(3.41)

Workers' Debt Equation

$$\dot{h} = \frac{1}{\Gamma} \left[ a(\cdot)\{(1 - h)(g + aq - (a(\cdot) + s_n)r_\delta) - r_\delta \Gamma\} - g_0 \Gamma \right]$$

We will derive the shape of each of these functions one by one.

**GROWTH EQUATION:** Let us first look at the growth equation. Since the form of the growth equation is a general version of a quadratic function, we need to change its axes to find the actual form of the underlying function.

$$\frac{\Gamma\beta}{b} \dot{g} = g^2 + A\delta g + Bg + C = 0$$

(3.42)
for, $\frac{\Gamma \bar{\delta}}{b} \delta = 0$

we get,

$$\frac{(\delta + \frac{B}{A})^2}{(2\sqrt{C}/A)^2} - \frac{(g + \frac{A}{2}\delta + \frac{B}{2})^2}{(\sqrt{C})^2} = 1$$

where,

$$A = -(a + s_n)r < 0$$
$$B = aq - \Gamma u_0 \bar{\beta} < 0$$
$$C = e\Gamma \bar{\beta} / b$$

While it is evident why $A$ would be negative, we need some justification for why $B$ is negative too. $B$ is nothing else but the negative of the growth rate at desired capacity utilisation in the absence of innovations (as derived in the previous section of the appendix). Therefore, $B$ has to be negative to have a meaningful higher rate of growth.

It is clear that this is an equation is that of hyperbola and its characteristics are given by the following,

Transverse Axis: $g = -\frac{B}{2} - \frac{A}{2}\delta$

Conjugate Axis: $\delta = -\frac{B}{A}$

Centre: $\left(-\frac{B}{A}, 0\right)$

Vertices: $\left(-\frac{B - 2\sqrt{C}}{A}, \sqrt{C}\right)$ and $\left(-\frac{B + 2\sqrt{C}}{A}, -\sqrt{C}\right)$

Asymptotes: $g + \frac{A}{2}\delta + \frac{B}{2} = \pm \frac{\sqrt{C}}{2\sqrt{C}/A} \left(\delta + \frac{B}{A}\right)$

$\Rightarrow g = 0$ and, $g = -B - A\delta$

It can be seen that the axes as well as the vertices would be affected by changes in the parameters of the system. Based on the change of axes, we draw the growth function where $g = 0$.

Now let us look at the changes in the parameters of the growth equation (see eq 3.42). An increase in the desired rate of capacity utilisation would decrease $B$. While a decrease in innovations would increase $C$. Both these factors lead to
underinvestment. So let us see how the growth curve behaves to these changes. A decrease in B would shift both the conjugate and the transverse axes to the left. A decrease in C moves the vertices closer to the centre. In effect, the hyperbola shifts to the left. Since we are only interested in the positive quadrant of the growth and workers’ debt-capital ratio, we only show the shifts in that quadrant.

If, on the other hand, we want to check the wealth effect, then we need to change the parameter q. If q increases, it leads to an increase in B. Thus, it has an exactly opposite effect to that of an increase in the desired rate of capacity utilisation. If both underinvestment and wealth effect are taking place at the same time, the net change in the growth equation would depend on the relative strength of these two factors. In fig. 3.4, we show both these possibilities.

We can draw a phase diagram based on the dynamic growth equation. Any point inside the curve would lead to a decline in growth because, for any given growth rate, the debt-capital ratio inside the curve is always higher than what is required for $\dot{g} = 0$. It can be seen from the dynamic equation that an increase in the debt-capital ratio means $\dot{g} < 0$ or a downward arrow as shown in the figure. On the contrary, any point outside the curve would have a debt–capital ratio lower than what is required for $\dot{g} = 0$. The dynamic equation suggests that for
any point outside the curve, the growth rate should increase i.e. $\dot{g} > 0$ and thus, an upward arrow.

**WORKERS' DEBT EQUATION:**

$$\delta = \frac{1}{\Gamma} [a(\cdot)\{(1-h)(g + aq - (a(\cdot) + s\pi)r\delta) - r\delta\Gamma\}] - g\delta$$

for $\delta = 0$, we get,

$$\left(g + \frac{ra(\cdot)s\pi}{\Gamma}\right) \left(\delta - \frac{a(\cdot)(1-h)}{\Gamma}\right) = \frac{a(\cdot)(1-h)}{\Gamma} \left[ aq - \frac{ra(\cdot)s\pi}{\Gamma}\right]$$

(3.43)

This is a rectangular hyperbola, the slope of which would be dependent on sign of the term on the RHS. If $aq < \frac{ra(\cdot)s\pi}{\Gamma}$, which means that the increase in the consumption of the capitalists due to wealth effect is less than the proportion of savings of the capitalists from the interest income out of the total saving in the economy, then the growth rate is positively related to the workers' debt-capital ratio. If, however, the consumption of the capitalists out of wealth overcompensates the increase in their savings out of interest income, then the growth rate would be negatively related to the workers' debt-capital ratio. It would not be very difficult to find the reason for this behaviour. With every increase in borrowing by workers, ceteris paribus, the growth rate increases by less than the increase in the borrowing because the workers have to also pay an interest on the debt which is not entirely consumed by the capitalists. Therefore, the debt-capital ratio increases along with the increase in the growth rate. But in the situation where the capitalists have a very high wealth effect, the growth rate increases faster than the debt of the workers because the decline in consumption due to a shift of interest income from workers to capitalists is more than compensated by the wealth effect of the capitalists. This leads to a decline in the debt-capital ratio even as growth increases. Both these cases are depicted in fig. 3.7.

It can be seen from the equation that any increase in the wealth effect ($aq$) would lead to a rightward shift in the debt curve as we had shown in fig. 3.4.

For there to be a solution to this system of equations, we assume in the text that the parameters of the system are such that the two curves cut each other.

The dynamic equation of the capitalists is very straightforward as it does not need any transformations. It is a rectangular hyperbola. So, we do not go into the details of this equation. The comparative statics performed in model 2 are on the basis of the above-mentioned structures of the various curves which change their shape and position as explained above.
Figure 3.7: The Dynamic Workers' Debt Equation of Model 2