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MARKET IMPERFECTION AND MACRO ECONOMIC PERFORMANCE

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Abstract: A significant amount of economic activity is conducted on markets characterized as differentiated oligopolies. One of the macroeconomic consequences is the emergence of cyclical behavior around a stable trend. A synthetic view, in contrast to the existing macroeconomic theory, is presented. In general, excess supply results from the expectations of firms regarding the demand they can generate. Demand-oriented policies will only aggravate cyclical behavior. Self-correcting mechanisms specific to such markets and regulatory policies have been outlined.

Keywords: Differentiated Oligopoly, Demand and Market shares, Cyclical Behavior, Economic Policy

JEL Classification: D21, E12, E60

> *"Scientists are increasingly seeing … bursts of activity in a larger system, intelligible only when studied in the context of many examples of the same phenomenon. They are turning their attention to how and why the parts fit together and to rules that govern interconnection and coherence."*
>
> – Christakis and Fowler (2009, p. 304).

I. THE ISSUES

Several firms operating in every industrial market offer differentiated but substitutable products. This is valid even in the context of the money and financial markets. Thus, in general,most relevant economic activities are conducted on markets characterized as a differentiated oligopoly. The microeconomic theory made significant progress in examining the behavior of firms in such markets. Their influence on macroeconomic behavior has been investigated as well.

Most studies of the macroeconomic performance of imperfect markets utilize the classical labor market hypothesis, the Keynesian aggregate demand approach,

or the asymmetric information paradigm. The following salient observations may be recorded. (1) Tracing the influence of market imperfection on capital investment has been controversial. Several viewpoints emerged. (a) The managers of firms tend to utilize investments in intangible capital like R&D and software to consolidate their market power andcontinuance in business. These investments are generally oriented to increasing the productivity of the existing physical capital, quality of products, and the market shares of firms. Such strategies displace physical capital investments. Theyalso tend to be barriers to entry and increase market concentration. (b) The competitive nature of firms makes their stability (and, by inference, that of their managers) overtime uncertain, and as a result, their management will place a lower value on physical capital investments and long-run growth. (c) Imperfection in the product markets renders the marginal revenue product of physical capital lower. Such markets also tend to increase interest rates. Both these tendencies account for a lower investment. (d) Potential competitors have an incentive to enter such markets due to the higher rates of profit and influence on markets. This mayincrease the total capital investments in imperfect markets. (e) Incumbent firms may undertake investments to gain advantages, even if temporarily, over rival firms. It would be fair to expect significant variations in the investments in physical capital across firms in an industry and different industries. Macroeconomic policies to increase investments in physical capital may turn out to be counterproductive if firms can reorient their efforts to augment investments in intangibles and increase market imperfection. (2) Consider the effect of differentiated oligopoly markets on consumer expenditure. The general expectation is that the availability of a few products of better quality and higher value to the consumers will have the effect of reducing aggregate consumption. In effect, they may be substituting the services, afforded by non-price strategies revealing the value of products to them, in place of consumption of goods. However, consumers value different dimensions of such products. An increase in the available variety may induce some consumers to enter the market even if they did not do so earlier. This tends to increase consumer expenditure. The net effect cannot be predicted. Hence, considering the various components of aggregate demand together, there has been a change in the composition of aggregate demand with the emergence of markets classified as a differentiated oligopoly[1]. (3) Several studies concentrate on the higher product prices implied by imperfect markets. In turn, such prices increase profits. They will also increase real wages and lower employment. Let the government tax the firm's profits. Suppose they use tax revenues to increase government employment. This will reduce the effective level of concentration and the market power of the private labor market. A decrease in real wages and an increase in employment can be achieved. Azar and Vives (2018) examined these Kalekian type effects in a general equilibriumframework. Such classical approaches of labor market behavior are outside the Keynesian aggregate demand framework. (4) The large variety of

differentiated products gives rise to information asymmetry, to both the consumers and the firms, about the relationship between the values and prices of different products. As a result, there may be an adverse selection as well as a moral hazard in their choices. The resulting market equilibrium may not correspond to the classically defined welfare maximum. Studies of this nature do not generally have much to say about the macroeconomic aggregates.

In general, most studies consider the effects on aggregate investment, the share of wages in the gross domestic product, the availability and cost of finances, and so on. The basic emphasis was on the market power and its consequences for macroeconomic behavior. Syverson (2019) offered a comprehensive survey of the issues involved.

The convention in all these studies was to consider the inefficiency of the markets and their relationship to the steady-state trend of the macroeconomy. In general, cyclical fluctuations experienced in such economies have been attributed to sporadic and transient changes in the behavior of economic agents.However, Hicks (1965) suggested that both the stable trend and cyclical behavior in markets are a result of their intrinsic nature and the behavior of firms within it. That is, both the trends and cycles are due to the internal dynamics of the market.There is no attempt to utilize market imperfection to explain cyclical behavior[2].

Note that the expenditure on non-price activities of firms, expenditure on services, and intangible capital investments have been increasing and perhaps crowding out the conventionally defined Keynesian aggregates. These increases may exceed the reduction experienced in the conventional aggregates. This accounts for the substantial gains in the gross domestic product. Note further that such strategic choices are dynamic and some of them may create stability of the macroeconomic system while others may give rise to cyclical effects. Such phenomena must be properly integrated into macroeconomic analysis[3].

The present study proposes a synthetic view based on the mechanics of such markets. The following sequence of arguments provides the basis for such an analysis. First, the intrinsic differences in the value of products to the consumer determine the steady and stable trends in the demand for the products of each firm and the corresponding steady macroeconomic trend. Second, the consumers and the firms experience information asymmetry w.r.to the differences in the value of products on offer. Third, due to this asymmetry, firms utilize non-price strategies to distinguish them from others. In the process, each firm attempts to obtain a market share greater than that indicated by the intrinsic value of its products to the consumers. This will be primarilydue to the higher returns they expect to obtain relative to the cost of utilizing the non-price strategies. Fourth, the frequent changes in the strategies of firms and the associated changes in the demand for the product of each firm constitute the primary reason for the cyclical macroeconomic behavior. Fifth, following Posner (2001), the elimination of the

cyclical fluctuations due to competitive rivalry[4] is expected. However, increases are more likely since firms expect consumers to develop loyalty to their products due to the transaction costs of switching between products. Such loyalties cannot be eliminated once they have taken root. Cyclical behavior will be eliminated when each firm acknowledges the intrinsic value of the products of other firms and targets the corresponding demand or market shares. Alternately, it will cease to exist only in the unlikely event that a single firm remains in the market. Sixth, the cyclical fluctuations are not due to a lack of aggregate demand. As such, Keynesian policies will have to be supplemented so that they do not lose their efficacy. In particular, policies should be oriented to bring the non-price strategies to align with the intrinsic values of the products.

It is necessary to reiterate that the alternative source of trends and cycles resulting from market imperfection will not be due to the lack of aggregate demand. However, it will be an important addition to the explanation of the observed cyclical behavior.

The rest of the study is organized as follows. Section II highlights the importance of the shifts in the demand curves that firms seek and implement using non-price strategies. The fluctuations in the position of demand curves, arising either from the rival strategic reactions or the adjustments that consumers bring about when they discover the differences in the value of products, are the central forces accounting for the cyclical fluctuations in the economy. Section III sets out both the stabilizing forces inherent in the operation of such markets and the macroeconomic policies that can bring about stability in such markets. Section IV summarizes the achievements of the analysis and highlights some further work necessary to consolidate the viewpoint presented in this study.

II. THE BASIC LOGIC

Two distinct aspects of the emergence of cyclical behavior in such markets should be acknowledged. They can be detailed as follows.

II.1. Profit Maximization

Consider a market consisting of n firms offering distinct, but substitutable, products on the market. Consumers attribute a specific value to each of these products. Such a valuation determines the demand for each of the products. The resulting demand curve for thei^{th} firm can be represented by

p_i = price per unit of $y_i = p_i (y_i)$, where

y_i = quantity sold by firm i

assuming that both the position and the slope are determined by the intrinsic value of the product.

Let

$C_i = C_i (y_i)$

be the cost of production. The market can be defined to be in full employment equilibrium if y_i^* chosen by each of the firms is a result of its maximizing profit. However, given the nature of the market, the i^{th}firm may attempt to increase its demand to $p_i = p_i (y_i, d_i)$, where d_i is a parallel displacement

This results in threeconsequences[5]. First, unexpected shifts in demand necessitate increasing supply and sales. Firms may hold inventory to stabilize the net cost of catering to markets while cushioning possible lossesif they cannot satisfy the demand as it arises. The optimal inventory will depend on the expected increases in demand. Second, firms expect to stabilize their demand at a higher level if the consumers develop brand loyaltythat may be primarily a result of the transaction costs of switching between products. Third, the level of output that maximizes profit given the resulting demand curve may indicate a tradeoff of profits to market shares if the market is reset to di = 0. Firms may be inclined to tradeoff profits to achieve other objectives. In either case, the i^{th} firm experiences an increase iny_i^*. Generally, loyalties of consumers, workers, and marketing agents are difficult to dislodge once they have taken root. That is, a positive shift in d_i may persist over time. However, it would be realistic to suggest that rival reactions may disturb such persistence and cyclical behavior ensues[6].

There will be some excess supply in the market though some firms gain at the expense of others. Such an excess supply is not due to a lack of demand.

II.2. Market shares

Competition among rivals results in a market share s_i for firm i. This may, for all practical purposes, indicate the value of the firm's product to the consumer. Generally,

v_i = value of the i^{th} product to consumers = $v_i (s_i)$, where

$s_i = y_i/\Sigma y_i$ = market share of firm i, where the summation is w.r.to i = 1,2,…,n

Two properties of v_i should be emphasized. First,

$v_i(s_i) = f(s_i)$ for $s_i \leq s_i^*$

$= f(s_i^*)$ for $s_i > s_i^*$

where s_i^* is determined by the intrinsic value of the firm's product.

Second, every firm must incur a cost $C_i(s_i)$ to realize the market share s_i. Conceptually, if $v_i(s_i^*) > C(s_i^*)$

the firm gains by $s_i > s_i^*$obtained by its use of non-price strategies. Refer to Fig. 1 and its interpretation in section III below.

Note that $s_i = s_i^*$ for all i will represent a stable steady state in the market.

However, $s_i > s_i^*$ is possible even if it is transient. That is, as noted above, some firms may gain at the expense of others. However, some excess supply is bound to emerge though not due to the lack of demand as stipulated by Keynesian macroeconomic theory.

In general, firms operating in a differentiated oligopoly make attempts to shift their demand curves to the right. The consumers, facing significant transaction costs of switching between products, tend to provide a semblance of loyalty for certain products. The upswing of such allegiance will however be reversed when consumers discover the superiority of competitive products. There will be sharp downturns and excess capacities for some firmswill emerge when such shifts persist. Cyclical behavior, around a stable trend indicative of the intrinsic value of the products of different firms, will be endemic to such markets. This argument acknowledges that differences in prices and the associated asymmetries may not be the most important drivers in these markets. Instead, the quantitative changes mentioned above are predominant. This shift in emphasis will provide the fundamental change to effectively represent the behavior of markets characterized as a differentiated oligopoly.

To sum up the argument of this section the following aspects must be reiterated. First,unlike the Keynesian environment, the unemployment and cyclical behavior in markets characterized as a differentiated oligopoly are not due to lack of demand. Instead, both the steady trend over time and cyclical fluctuations are a result of the behavior of firms in such markets. In general, the realized and/or targeted demand is always ahead of the market that a firm can gain based on the intrinsic value of its products. Second, the greed of some firms to keep the demand for their products exceeding that indicated by the intrinsic value of products is at the apex of the cyclical behavior. Third, in general, the macro-level unemployment and cyclical behavior, when it is discernible, is specific to some industries and firms within them. Fourth, asymmetric information regarding the products of the firms has no role to play in either determining the steady trends in the market or the fluctuations around it experienced in practice.

Observe that the above analysis supplements the Keynesian argument rather than supplant it. The relative strength of either of the arguments can be calibrated only when some empirical results can be developed.

III. STABILIZATION POLICIES

The intrinsic value of each of the products of different firms can be said to result in a threshold demand curve (or market share). The market attains stability when the strategies of every firm correspond to the threshold values. In general, innovative activities and the advantage that a firm derives due to the intrinsic value of its products should not be discouraged. However, it is difficult to assert

that there will be full employment if every demand curve reflects the intrinsic value of the corresponding products. Similarly, there is no objective basis to specify the optimum number of firms in the market. It may be necessary to define full employment as the maximum possible in the stable equilibrium. Some involuntary unemployment will be endemic to such imperfect markets. The observed cyclical effects in such markets are a result of the deviations from such stable demand curves.

Differentiated oligopoly markets contain some automatic stabilizers. Firms utilize some strategies,to convey the value of their products,in their interface with consumers on the market. Similarly, firms devise some strategies to gain an advantage over rivals in their interaction with them. Consumers may recognize that certain strategies of firms are meant to reduce the market shares of rival firms. They will ignore such strategies. Similarly, rival firms may initiate counteraction when they recognize this. Consequently, such strategies will not have the expected effect on the market for a firm's products. That is, the cyclical effects can be moderated due to the actions of the consumers as well as rival firms.

The attempts of a firm to gain increases in market demand (market shares) by utilizing non-price strategies involve an increase in selling expenses. The inelasticity of demand for the firm's products does not allow it to pass on all such expenses to the consumer through a price increase.Firms will reach a stage where further increases in demand (market share) cannot be sustained. In general, firms experiencing lower demand will find it feasible to increase selling expenses. On balance, the cyclical effects can be moderated. It can be claimed that the dynamics of the strategic choices of firms have stabilizing effects.

However, it is difficult to assert that these mechanisms will be sufficient to neutralize the cyclical swings that such markets experience.

Economic policy to complement the automatic stabilizers available in such markets can be defined if the following five distinct drivers of the performance of firms are acknowledged.

(a) Markets for industrial products generally have few firms. The technology of these products provides economies of scale to these firms. They also have advantages in the scaling up of plants.

(b) There is marked heterogeneity in the products of firms. Consumers experience significant information asymmetry in identifying the value of the different products. Their decisions are perforce based on imperfect information. An adverse section is possible. Another manifestation of information asymmetry is the high transaction costs of switching between products. It results in consumer loyalty to certain products in the market.

(c) Firms may attempt to increase the information asymmetry by undertaking intangible investments that will be intended to enhance the productivity

of physical capital and the quality of products. Rival firms vary such investments on a recurrent basis to stay ahead of rival firms.

(d) The information asymmetry that consumers experience may promote moral hazard on the part of the firms in the form of lowering the quality of products compared to those provided by the embodied technologies.

(e) A more prominent response from firms is their use of promotional strategies. The implied selling expenses may provide information about the value of products to consumers. However, at least in the initial stages, the addition to sales revenue implied by the increase in demand for their products will exceed the selling expenses.

Observe thateach of the above features of firms in a differentiated oligopoly has both positive and negative effects. An appropriate specification of the optimal levels of use in every one of these cases remains elusive. The only useful conclusion is that the stable steady-state trend is a result of each firm attaining a market commensurate with the intrinsic value of its products. There is an obvious need for stabilization policiessince such a state is generally unattainable.

Three policy instruments can be utilized to moderate the cyclical effects in the operation of such markets: a lump sum tax, a per-unit tax, or a goods and services tax. In general, an increase in profits will be indicated when the gain in revenue exceeds the selling expenses. Hence, even profit taxes will qualify as an instrument. However, these two forms of policy are interrelated. Note that

After tax profit = (1-t) [Sales- (1+e) Selling Expenses], where

t = tax rate on profits, and

e = rate of taxation on selling expenses

An increase in t and an increase in e will have similar effects on the quantum of selling expenses that a firm utilizes. However, note that a firm may accept an increase in selling expenses to reduce the taxes on profits even if such expenses have negligible effects on the market demand or sales.

Refer to Fig. 1. Let s on the horizontal axis represent the market share of a firm. Let v(s) be the value of the product corresponding to s. However, a threshold value of s* exists depending on the intrinsic value of the products of a firm. Suppose the cost c(s) represented by AB depicts the selling cost to achieve s. The emergence of a market share $s_1 > s^*$ at which $v(s^*) = c(s_1)$ can be expected. One way of reducing s_1 to s* is to shift AB to AB′ (utilizing a tax per unit of s) with a larger slope. Alternately, shifting the cost curve to A′B′ (if a lump sum tax is imposed) produces the same result. This analysis indicates that both the lump-sum tax and per unit tax will have the effect of reducing the market share to the efficient level s*. However, larger sales volumes will generally imply a greater tax collection from the per-unit tax.

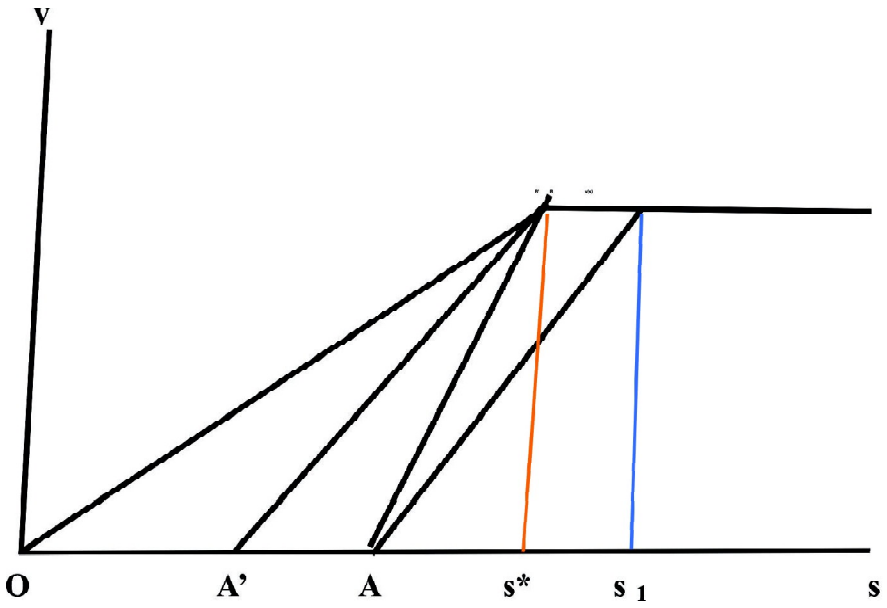

Figure 1

The context of intangible investments will also be similar.A reduction inintangible investments may reduce the possibility of a firm increasing its market demand. However, it reducesinnovation, information dissemination, and productivity enhancement.

Consider the alternative like the goods and services tax (GST). Lower values of GST imply that the consumers will bear less of the selling expenses. Hence, firms may be induced to decrease selling expenses as GST is reduced. However, a reduction in selling expenses beyond a limit is counterproductive in so far as it reduces the possibility of providing information about the value of products to the consumers.

In general, the moral hazard on the part of the consumers and firms can be kept under control by policies related to warranties and extended warranties. These policies may supplement apriori defined standards on the quality of products.

In sum, cyclical effects are intrinsic to the operation of such markets. They cannot be eliminated. However, it is difficult to provide a theoretical argument to define the efficient levels of the cyclical effects. The best that can be done is to moderate the effects predefined on some intuitive basis.

IV. CONCLUSION

The emphasis on the price variables persists in macroeconomics despite the quantitative orientation that has become an intrinsic feature of the Keynesian

method. One basic change in the context of markets characterized as differentiated oligopoly is the changes in the position of the demand curves and the associated market shares as determinants of the performance of such markets. The basic observation about the behavior of firms in such markets is that they vary their non-price strategies dynamically to maintain their market position. These effects operate alongside the differences in prices. However, the differences in prices or the information asymmetries associated with them do not explain the observed trend or cyclical movements in the industry. This shift in emphasis accounts for the cyclical fluctuations around a steady trend in such markets. The process results in a situation where the supply of firms always exceeds the demand that they expect. It has become necessary since holding inventories alone can ensure adequate supplies when the demand arises. Further, the requirements of intangible capital complementing physical capital are specific to firms and industries. The operation of such markets containssome automatic stabilizing effects. However, firms persist in creating differences so long as the costs of doing so turn out to be lower than the advantages they expect to gain. As a result, it may be suggested that either lumpsum or proportionate taxes imposed on the selling expenses of firms may be necessary to reduce the cyclical fluctuations around expected trends. Note that the effects indicated here operate in addition to the conventionally defined Keynesian sources of lack of demand. However, some empirical evidence to unravel the relative strength of the demand-oriented Keynesian policies vis-a-vis the supply restraining policies is necessary.

Notes

1. Observe that the provision of public goods, like a recreation park, has similar effects on consumption.
2. Explanations ofcyclical effects generally invoke Schumpeter's notion of creative destruction. See, for instance, Dosi *et al.* (2010).
3. The details of the relevant arguments can be obtained fromAkodoguand Mackay (2012), Azar and Vives (2018), De Loecker *et al* (2020), Dixon and Rankin (1994), Gutierrez and Philippon (2017), Ingrao and Sardoni (2020), Silvestre (1993), and Syverson (2019).
4. Schumpeter attributed the cyclical behavior to the innovator and entrepreneur. The general implication was that the perturbations will be eliminated when the market propels the system to a higher level of stable equilibrium.
5. Note that the shifts in demand may also indicate changes in the elasticity of demand. This can be readily accommodated in the argument.
6. Keynes (1924, p.17) can be modified to indicate this phenomenon. If the demand is "expected to rise and the business world acts on this expectation, that very fact causes (it) to rise for a time, and, by verifying the expectation, reinforces it; and similarly, if it expects them to fall. Thus, a comparatively weak impetus may be adequate to produce a considerable fluctuation".

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