Price Theory and Oligopoly

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1. Introduction

In his seminal article, ‘Price theory and oligopoly’ (Rothschild 1947), Kurt Rothschild critically reviews recent developments in the theory of imperfect competition and puts forward several ideas on how the theory might develop in the future. Subsequent developments in the theory of imperfect competition have shown the fruitfulness of his ideas. In this paper we review these developments and discuss the correspondence to Rothschild’s original propositions. We also discuss ideas from Rothschild (1947) and his later writings that can stimulate developments in price theory in the future.

The main theoretical works discussed in Rothschild (1947) are Edward Chamberlin’s Theory of Monopolistic Competition (Chamberlin, 1932) and Joan Robinson’s Theory of Imperfect Competition (Robinson 1933). Rothschild hails these works as major advances in theory as they brought a large number of new cases into the formal theory of markets, extending the theory that had previously relied predominantly on the two polar cases of perfect competition and pure monopoly. However, he notes that while these advances allow theory to be applied to cases, such as product differentiation across firms, which had been treated as exceptions in the theory of competition and monopoly, they do not go far in dealing with interdependence of firms and the resulting indeterminateness of pricing outcomes.

Rothschild notes the hesitancy of economists to move away from theory that provides the type of determinateness for price found in the theory of competition and monopoly. He also notes that the tools available for properly examining pricing behaviour when firms are interdependent had not yet been developed.\(^1\) However, he suggests ‘a general approach which – while much less elegant than traditional price theory – promises a more realistic treatment of the

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\(^1\) He comments perceptively on the potential to tackle these problems using the analysis presented in the book, Theories of Games and Economic Behavior, that had just been published by Morgenstern and von Neumann (1944), even though he had to rely only on review articles to make this judgment (see Rothschild (1947, p. 306, fn. 4). The development of game theory as a framework for analysing price behaviour has been impressive. However, Rothschild (1993) points to limits to extent to which game theory has been successful in dealing with interdependence in oligopoly pricing and continues to support the pursuit of alternative approaches. Thus, game theory is only discussed peripherally in this paper.
oligopoly problem.’ (Rothschild, 1947, p. 307) He then proceeds to set out ‘some considerations to which this approach gives rise.’ (ibid)

The remainder of this paper concentrates on reviewing developments in research on oligopoly theory and related empirical research on pricing in oligopoly over the years since the publication of Rothschild (1947), focussing in particular on developments related to the considerations proposed by Rothschild. We examine, in order, research on the topics of price rigidity and other pricing practices, non-price competition and barriers to entry, internal organisation of the firm, and the political and economic power exerted by large firms. In the process, we examine later writings by Rothschild that relate to these topics. We then conclude by reviewing Rothschild’s writings for guidance on considerations that might fruitfully be explored in future research related to price theory.

2. Price rigidity and other pricing practices

Essential to the propositions in Rothschild (1947) is the notion that in oligopoly ‘a “struggle for position” is taking place side by side with an attempt to make the best of every position that is held at any special moment’ (Rothschild, 1947, p. 309-10). Also, important is the treatment of price as a dynamic phenomenon in the sense that the implications of a price at any point in time for a firm’s position relative to its current rivals, its customers and its potential rivals need to be taken into account. This leads Rothschild to conclude that, ‘Since, therefore, the quoted price is not the mechanic result of impersonal market forces nor the essential adjustment to a constantly changing environment, but the expression of a strategic policy, it is clear that there will be a tendency for its rigid maintenance.’ (Rothschild, 1947, p. 311)

Price rigidity was not a new concept in economics. As Rothschild (1947) notes, Hall and Hitch (1939) had reported findings from interviews with businessmen in which price rigidity featured as an observed phenomenon. Also, Sweezy (1939) had put forward the theoretical explanation of rigid prices based on kinked demand curves. However, rather than rely on empirical evidence as in Hall and Hitch or on a profit-maximising model as in Sweezy, Rothschild’s proposition regarding price rigidity is based on his general approach that situates oligopoly behaviour in the context of the struggle for position and making the best out of every position at any special moment.
Rothschild abandons the neoclassical approach, which is universal in the sense that it is derived from axioms, such as profit maximisation, that are meant to apply to every situation. Instead, he pursues an approach that is general in the sense of having broad applicability, but with recognition that prices are subject to other influences not incorporated within the general theory. The term, strategic policy, combined with the notion of struggle, reflects the environment of uncertainty in which oligopoly firms operate. Rothschild notes that oligopoly firms have a security motive as well as a profit motive (Rothschild, 1947, p. 308). Further, there is scope for judgement and for taking definite positions in the market, which would be unjustified in an environment of certainty or rational expectations. The firms make choices that are not the unique outcome of external conditions. Price rigidity is a feature of oligopoly in this sense in that changes in cost or demand conditions don’t necessarily lead to changes in price.

The mainstream of neoclassical economics has never accepted price rigidity as a pervasive characteristic of oligopoly. Both the logic and the empirical support for the proposition have been strongly attacked. One serious logical problem is that the theory is incomplete, as it explains why prices don’t change but not how the fixed price is determined (see Reid, 1981 for a full discussion). Price rigidity can at best be considered as a theory of price in the short run, a theory of price change or rather lack of price change, but it is not a theory determining the price level and certainly not a theory of price in the long run. The empirical attack has been focussed on the distinction between posted prices and transaction prices, with the latter shown to be much more flexible than the former (see Stigler and Kindahl, 1970 for evidence on this point).

Rothschild’s point is that the tendency to maintain rigid prices is a pricing practice notable specifically in the context of oligopoly, because it is when firms are engaged in the struggle for market position and aware of their interdependence that this type of behaviour makes sense. Immediately after arguing for the rigidity of quoted prices, Rothschild (1947, p. 312) adds that, ‘Oligopolistic circumstances lead to a multitude of conditions surrounding the quoted price.’ He recognizes deviations from posted prices as a common occurrence and further discusses circumstances that lead to purposeful deviation from the normal practice of maintaining fixed posted prices, including the aggressive pursuit of a stronger market position (Rothschild, 1947, pp.313-317). Thus, attacks on the theoretical and empirical validity of price rigidity do not

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2 These other influences are not simply random shocks that have no systematic impact on the equilibrium outcome, as in neoclassical theory. Rather, they impact on the outcome in a systematic way, but only under special circumstances that are considered in more detailed analysis on a case-by-case basis.
directly address the proposition put forward by Rothschild, which is that the circumstances of oligopoly lead firms to try to maintain fixed prices as a normal business practice in circumstances where profit maximisation would suggest a pattern of fluctuating prices.

Price rigidity remains controversial in economics, but its practical relevance has dissipated in an era of endemic inflation. Rigid prices are not an appropriate business practice for achieving a secure position when costs and prices of substitute products are normally rising. Rather, maintaining rigid prices would lead to steadily declining profit margins under such circumstances, which would undermine the financial stability of the firm. Thus, alternative pricing practices are required for oligopoly under inflationary conditions. This is fully consistent with Rothschild’s general theory of pricing in oligopoly.

An alternative pricing principle discussed briefly in Rothschild (1947) is full-cost pricing of the type identified by Hall and Hitch (1939) in their interviews with businessmen. Rothschild suggests that this type of pricing is a

‘perfectly logical outcome of the market situation with which they were primarily concerned – monopolistic competition with an admixture of oligopoly’ as alternative pricing practices... When, however, the position of the oligopolists or duopolists is more powerful and not easily invaded they will not keep to the full-cost principle, but will add varying and "abnormal" profit percentages to their costs in proportion to their assumed strength, or they will fix prices without reference to costs altogether.’ (Rothschild, 1947, pp.311)

The general form of pricing practice covered by this passage is mark-up pricing, prices that are set by adding a percentage profit margin to some measure of unit cost.

Mark-up pricing satisfies the basic requirements of Rothschild’s general theory of pricing in oligopoly in that it is a practice that allows firms to maintain a degree of stability in the struggle for position while doing the best they can at any special moment. When all firms in an industry follow mark-up pricing rules and face similar inflationary cost increases, their relative position in price can be maintained and the threat of price wars minimised. This is the scenario discussed by Rothschild (1993) in a comparison of a Stackleberg model of oligopoly with a model that he labels the “Sylos approach” in that it is based on the work of Sylos-Labini (1969, 1979 and 1987). Rothschild (1993, p.169) concludes the comparison by stating that, ‘Openness of approach can be important. From this point of view case studies, numerical and graphical exercises, and so on, have a role to play in addition to or in place more “exact” but less open
analytical methods – more so in the sphere of oligopoly than in other branches of price and market structure theory.’

Variants of mark-up pricing are dominant in the post-Keynesian theory of pricing (see Lee, 1998). Applying mark-up pricing to the manufacturing sector of economy, which is generally characterized by oligopoly, provides a powerful tool in analysing aggregate economic activity. In particular, Kalecki (1971) shows how the distribution of income in the economy evolves over the business cycle by combining mark-up pricing in oligopoly with competitive pricing in primary production. Similar models are widely applied by other authors for analysing many aspects of income distribution and inflation.\(^3\) Indeed, Rothschild (1972) in his analysis of pricing in an inflationary environment directly applies a variant of mark-up pricing.\(^4\)

As with price rigidity, mark-up pricing is not a complete theory of pricing. It is a theory of price change, but not the price level. In particular, in the context of oligopoly an explanation of the size of the mark-up is required to complete the link between the cost level and the price level. Rothschild (1947) considers factors affecting the gap between cost and price in only a general way, but there is substantial analysis of these factors in the post-Keynesian literature cited above.

3. Non-price competition and barriers to entry
Rothschild (1947) makes scant mention of non-price competition and does not deal directly with issue of barriers to entry aside from a very perceptive comment on the endogeneity of market structure that is discussed below. Rothschild’s article was written before the seminal contributions of Bain (1956) and Sylos-Labini (1969), which introduced the threat of entry as a main consideration in the pricing behaviour of oligopoly. This section discusses these contributions and subsequent developments in the analysis of non-price competition and barriers to entry so as to assess the implications for price theory.

The most direct implication for price theory of non-price competition and barriers to entry is in the entry-limiting-price model as discussed in the seminal works of Bain (1956) and Sylos-Labini (1969) (the Italian original of 1956 is exposited in Modigliani. 1958), which

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\(^3\) See, for example, applications to the analysis of inflation in Beckerman and Jenkinson (1986) and Bloch, et al (2004).

\(^4\) In Rothschild (1972) prices rise by a fixed proportion of unit costs plus a percentage that depends on the phase of the business cycle. This ignores the role of raw material costs and results in a percentage profit margin that varies over the business cycle, but roughly captures the spirit of cost-plus pricing rules.
identifies a maximum price by incumbents to deter entry of new competitors. Spence (1977) reassesses this model in emphasising early capital accumulation helping incumbents to build large capacity and to make plausible the threat to lower price after entry. Caves and Porter (1977, p.261) generalise this approach stating, ‘as an investment decision made under uncertainty and conjectural interdependence, and by recognizing that subgroup structures of industries impede intra-industry mobility, we have sought to generalize the theory of barriers to entry into a theory of mobility barriers that takes a consistent and comprehensive view of the decision-making behaviour of both nascent and going firms.’

The work of Spence (1977) and Caves and Porter (1977) raise doubt on the ability of incumbents to use the threat of lower prices after entry as an effective deterrent to potential entrants. These doubts are amplified in the application of game theory to the investment decisions of incumbents and entrants by Dixit (1979 and 1980). Milgrom and Roberts (1982) further develop this line of inquiry by assuming asymmetry of information between the incumbent and the entrant may happen, where low demand or low marginal cost is signalled by the incumbent to limit entry by the entrant. Under conditions of full information and complete markets, Baumol, Panzar and Willig (1982, p.82) consider high sunk cost in defining an entry barrier in a contestable market as ‘anything that requires an expenditure by a new entrant into an industry, but imposes no equivalent cost upon an incumbent’. At this point, the idea that incumbents can use low prices to deter entry disappears completely from the horizon.

Much of the early research on entry barriers is based on the structure-conduct-performance paradigm, which ignores the dynamics of industry adjustment. In this paradigm, the number and size distribution of firms in an industry (as measured, for example, in a concentration ratio) determine profitability. Essentially, it is high entry barriers, rather than firm price or non-price behaviour, which result in highly concentrated industries and allow firms in these industries to persist in earning higher profits in without eroding their position.5

This view of exogenously determined market structure is challenged by Rothschild (1947) in another of his prescient commentaries of the state of existing theory. Rothschild notes,

*these theories are all based on the assumption that the oligopolists while recognising that their price activities will call forth reactions from their rivals-acquiesce in the permanent

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nature of the industry's structure. But since it is doubtless one of the distinguishing characteristics of duopoly and oligopoly that the rival firms can actively influence and change the market situation, these theories, too, fail to provide a theoretical framework for the interpretation of reality.' (Rothschild, 1947, pp. 303)

Some fifty years later, Sutton (1991, 1998) addresses this issue in an application of game theory to the conceptual inadequacies of the structure-conduct performance paradigm. Sutton argues that a definitive inverse relation is expected between concentration and market size as a barrier to entry, only as long as set-up costs for the industry are exogenously determined. Large markets are possible with a few large firms instead of a large number of firms as long as the few firms have available a strategy of high expenditures on items that enhance their market position, such as advertising and research and development, provided those expenditures have no market value outside of current operations (they are “sunk costs”). Sutton (1991) tests this hypothesis with twenty narrowly defined food and drink industries across six developed countries. Further evidence in support of Sutton’s proposition is provided by Robinson and Chang (1996) for a cross-section of US consumer and industrial goods manufacturing and by Bhattacharya and Bloch (2000) for a cross-section of Australian manufacturing industries.

In Sutton’s analysis, pricing does not play a role in the long-run steady-state structure of an industry. However, a potential role emerges in considering the process of adjustment to the steady state. Empirical studies of the adjustment of industrial concentration towards a steady state generally find that adjustment is very slow, approaching steady state at rates of no more than a few percentage points a year. High prices might speed or slow the adjustment process by affecting the timing of the investment decisions of either incumbent firms or potential entrants, for example by providing more internal finance for incumbents or reducing the risk of short-run losses for entrants. However, there is no clear evidence of a strong impact of profitability on the speed of adjustment.6

In recent decades, the structure of many industries has changed substantially, particularly due to the globalization, liberalization and privatization across industries and countries. Transnational corporations are increasingly expanding boundaries along with local firms. The whole process opens up both opportunities and threats to the industries. The role of entry barriers

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6 See Bhattacharya and Bloch (2000) for some estimates for a cross-section of Australian manufacturing industries and for a review of earlier studies on the speed of adjustment.
has evolved from the era of Bain and Sylos-Labini to that of Sutton’s research. The importance of non-price competition strategies (research and development, advertising, variety of products, product quality, etc) has increased over time in explaining competition within modern industries as compared to pricing strategies. The exact calculation of price associated with entry-limiting pricing has been generally abandoned in theoretical models, but a general proposition that entry barriers do lead to higher prices relative to unit production costs remains (especially when the “sunk costs” associated with building barriers to entry are excluded from production costs). This proposition fits well with Rothschild’s general theory of pricing in oligopoly, where barriers to entry are taken to be one of the other factors that must be kept in mind when considering pricing practices in oligopoly.

4. Internal organization
The growing scale and scope of firms had progressed sufficiently to be noted in Rothschild (1947) and is later discussed by Rothschild in relation to the power of transnational corporations (see the next section below). Large diversified firms develop complex internal structures to be able to manage their extensive and diverse operations. This complexity in turn influences decision making in the firm, including their pricing practices. (Rothschild, 1947, p. 313) notes the implications for pricing theory, stating that ‘Prices are therefore increasingly the outcome of the different pulls of the conflicting interests of various departments.’ This idea has not been directly developed further in subsequent literature, but there has been substantial development of the theory of organisation within the firm. At least some of this literature has implications for the strategies adopted by firms, including the way in which they compete in price and non-price dimensions. This section is devoted to discussing this literature and its implications for pricing theory in oligopoly.

Penrose (1959) provides a seminal contribution to the theory of organisation of the modern firm. Penrose argues that with modern forms of internal organisation there is no constraint on the size of firms. Large size brings with it the advantages of productivity gains from the division of labour, with large firms able to take advantage of the highly specialised

\footnote{For example, using data for 46 major product innovations, Agarwal and Gort (2001) find that the average duration of between the commercial introduction of a new product and its imitation by competitors declined from 33 years at the beginning of the century to 3.4 years for the two decades, 1967 to 1986.}
skills and knowledge of individual workers. However, specialisation of knowledge implies a lack of shared knowledge, which contributes to the conflicts of interest noted by Rothschild and the consequent need for mechanisms for coordination and the managing of conflict. Further, the need to share knowledge implies that the growth rate of a firm is constrained by the diversion of managerial effort to train and integrate new managers as the scale and scope of the firm expands.

Innovation is a key requirement for success in the modern large firm, which means the continual introduction of new knowledge to the firm. This adds to the complexity of the modern firm as discussed by Bloch and Metcalfe (2011). Therein, it is noted that such complexity contributes to the adoption of simplified rules and routines as mechanisms for decision making, providing a further rationale for the prevalence of rule-based pricing practices, such as maintaining rigid prices or basing prices on fixed mark ups over unit cost. Modern firms have to deal with complexity from within as well as interdependence from without.

It is interesting to compare the complexity view of the firm with the developments in mainstream analysis of the organisation of the firm. Here, the main focus in answering why firms exist and what determines their boundaries in terms of size and scope has been on transactions costs. Following Coase (1937), the basic mainstream argument has been that firms exist to economise on costs that would otherwise be incurred in organising transactions among independent workers, suppliers of materials and owners of capital equipment. Likewise, firm boundaries are determined to minimise the sum of transaction costs across all firms. This approach fits neatly with the axiomatic approach to production and consumption of neoclassical economics, but presumes a well informed process operating both within firms and across markets. Rothschild’s continual warnings about the dangers of pursuing theoretical elegance at the expense of relevance are particularly appropriate here.

In practice, firm boundaries are blurred in modern industrial world. For example, compare the Japanese form of industry organisation with strong inter-firm relationships to fiercely independent European and American firms. The former have cooperated effectively to enhance their competitiveness in the world market since World War II (Caves and Uekusa, 1976). This provides an illustration of how firm boundaries (level of integration), the structure of financial markets (in raising capital and develop innovative activities), formal (inter-firm agreements and complementary capabilities) and informal organisational structure (culture of
workforce, managerial complexity) and historical path dependence are significant in determining competitive strategies of transnational firms.

Case studies provide insight into the extent to which competitive strategy is influenced by internal structure. A powerful illustration is provided by Chandler (1990), particularly focussing on the role of investment within organisations in building modern capitalism. In a review, Teece (1993, p.200) suggests ‘Chandler has grasped some fundamental facets of enterprise performance largely neglected by economic theory –facets which must come into shape focus if economists are to understand the new forms of business organizations, financial institutions, governance systems, and policies needed to develop and exploit the wave of new industrial technologies which are upon us.” Modern firms are based on a variety of organisational mechanisms in determining cost and pricing structure.

Teece, et al (1994) develop the concept of ‘coherence’ of the multiproduct business firm. Enterprise learning, path dependencies and nature of selection environment are found to be significant in determining diversity amongst modern firms. The influence of the selection environment in determining the outcomes of strategy, particularly innovation strategy, is explored in detail by Nelson and Winter (1982) in their evolutionary approach to firm and organisational behaviour.

5. Power
Rothschild (1947) emphasizes that oligopoly raises concerns for power well beyond influence in the marketplace. In particular, the large amounts spent on lobbying by large oligopoly firms are noted as playing a role in shaping the firms’ position comparable to the role played by amounts spent on advertising. Rothschild puts forward the proposition that,

‘The oligopolistic struggle for position and security includes political action of all sorts right up to imperialism. The inclusion of these "non-economic" elements is essential for a full explanation of oligopoly behaviour and price.’ (Rothschild, 1947, p. 317, italics in original)

The importance of power in pricing theory and other areas of economics is a theme that continually appears in Rothschild’s writings. He devotes one of his last articles, Rothschild (2002), to a detailed critique of neoclassical economics for its failure to include the consideration
of power. Here, he notes that, ‘The neglect of power in mainstream economics has its main roots rather in deliberate strategies to remove power questions to a subordinate position for inner-theoretical reasons.’ (Rothschild, 2002, p. 437) These inner-theoretical reasons are partly methodological, particularly the desire to maintain an axiom-based theory that provides exact results and thereby avoids fuzzy notions embraced by other social sciences, and partly ideological, especially the pursuit of favour from powerful interests within society who benefit from the laissez-faire implications of neoclassical economics.

A specific concern related to the use of power by oligopoly firms in their modern guise of transnational corporations is taken up in Rothschild (2005). Here, transnational firms are noted as using their power of location of activity to enhance their position relative to parties that are unable to migrate, particularly small businesses and labour as well as national and local governments. The result is higher profits for the transnationals through reduced input prices and production costs. In terms of pricing for outputs not much is expected to change. Rothschild states that, ‘Competition within the transnational sector will continue to run according to existing theories of price and output determination.’ (Rothschild, 2005, p. 446, italics in original)

As Rothschild maintained a stream of commentary on the treatment, or rather neglect, of power in economic analysis, we do not comment further on the literature. However, events of recent years provide compelling examples of the use of state power to the advantage of large firms, particularly in the financial sector. The use of public funds to prop up large banks and other financial firms has nearly bankrupted several economies (and may yet do so), while others in society have had to deal with the impact of severe austerity programs. Mainstream economists have been quick to defend the interventions as necessary to maintaining the integrity of the international financial system and avoiding a banking panic. However, they have not been so quick to provide a compelling theory of why governments allowed banks to become “too big to fail” or become so highly leveraged that they were unable to survive a large shock of their own creation. More directly of concern to price theory is the pressure being applied to governments to find ways of driving down domestic wages, at the same time as propping up prices by protecting domestic producers, including domestic subsidiaries of transnational corporations, from foreign competition, including through the use of tariffs and non-tariff trade barriers.

6. Ideas for the next generation
Rothschild’s (1947) seminal paper on price and oligopoly aimed to provide guidance to subsequent researchers and he clearly did that with at least some of his propositions and discussion. Price theory has developed in a number of different dimensions to deal with his main insight of that oligopoly is a struggle for position, requiring an analysis that is much more than the application of an elegant profit-maximising calculus. Rothschild was consistent throughout his life in arguing for an open and realistic approach to economic theorizing, including price theory. As detailed above, there has been considerable progress of this sort in price theory through developments in rule-based pricing practices, such as mark-up pricing, endogenous market structure, the analysis of the impact of internal firm organisation on strategic policy and the use (and abuse) or both market and political power by oligopoly firms. However, much remains to be done along lines suggested by Rothschild in his time.

Power remains a key element of the economy that requires further examination. As noted immediately above, the exercise of state power to promote private interests is prominent in the factors leading up to and following the global financial crisis. Economists from Adam Smith onward have been strong critics of state power being used to pursue private interest and have even provided a theory of public choice based on the axioms of private optimization. However, the policy prescriptions from the mainstream for dealing with the problem fail to go beyond advocating laissez faire. As Rothschild notes, these policy prescriptions are long standing and flawed,

‘The trouble began … by concentrating many of its analyses on the actions of single self-interested individuals in a competitive world. While competition certainly still exists, the individual behavior and the extent and type of competition have dramatically changed since Smith’s days and these changes suggest very clearly that today it might be—more than ever—a big mistake to regard the power problem as a quantité negligible. (Rothschild, 2002, p.436)

Power affects pricing directly through various state interventions into the market, including price controls, subsidies, taxes, tariffs and other restraints on trade. Power also affects pricing indirectly through the regulation of market structure, industrial relations, consumer protection and environmental controls, as well as a host of other legislative, regulatory and judicial interventions. More generally, power influences the whole structure of society and the course of development through time, including the provision of education, the development of
technology, the degree of inequality in income and the extent of economic and political freedom for individuals. Rothschild was clearly on the mark arguing that this is a core issue for economics rather than a quantité negligable.

The internal organisation of firms remains a fertile ground for further development of price theory. Rothschild (1947) noted conflicts of interest within the firm as being one possible influence on pricing. As noted above, the complexity of the modern firm contributes to the adoption of rules and routines, including rule-based pricing practices such as mark-up pricing. More generally, coordinating the specialised knowledge within a firm, and managing the conflicts that arise, impacts on the type of competitive strategies adopted by a firm. The link between internal organisation and competitive strategy remains to be fully explored.

In spite of the voluminous literature on the subject appearing since the middle of the last century, the dilemma for pricing theory in oligopoly today is not much different than the way it was described in Rothschild (1947). There are analytical models based on axioms, such as profit maximisation, yielding exact results but only under very narrow conditions that avoid the general indeterminateness of price in oligopoly. There are also general theories that emphasise the struggle for position in oligopoly and capture features of pricing that result, such as price rigidity and mark-up pricing. Neither approach is fully satisfactory in terms of rigour, realism and usefulness for economic modelling. Rothschild’s consistent argument in favour of openness in dealing with this dilemma is still relevant and helpful as are the closing sentences of his 1947 article,

‘But the undiscovered territory must be entered by economic theory if it is not to lose all touch with reality. The tentative first step outlined in the previous section certainly looks very crude and pedestrian when compared with the polished elegance of modern value theory. But it is tentative steps of this sort which economic analysis must undertake today.’ (Rothschild, 1947, p.320)
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