Book Section:
Wilson, JF and Toms, JS (2012) Revisiting Chandler on the theory of the firm. In: Dietrich, M and Krafft, J, (eds.) Handbook on the economics and theory of the Firm. Edward Elgar, 297 - 307. ISBN: 978-1848446489.

https://doi.org/10.4337/9781848446489.00033

Chandler and the Theory of the Firm

Abstract
The essay provides a review of Alfred Chandler's contribution to the theory of the firm in his three main works: Strategy and Structure (1962), The Visible Hand (1977) and Scale and Scope (1990). Focusing on the economic components of Chandler's analysis, it examines linkages to subsequent developments in the theory of the firm, including the resource based view. It discusses possible extensions of the Chandlerian perspective incorporating elements of capital market transaction cost theory

Chandler and the Theory of the Firm

Introduction

In three influential books, *Strategy and Structure* (1962), *The Visible Hand* (1977) and *Scale and Scope* (1990), Alfred Chandler (1918-2007) made a seminal contribution to the development of the theory of the firm in the second half of the twentieth century. Chandler's theory of the firm was developed from detailed empirical observation rather than formal model building and provides a commentary on the rise of the large managerial corporation. Although Chandler's contribution to the theory of the firm is therefore somewhat implicit, it is clear from subsequent work by a range of social scientists that he is regarded as one of the key 20th century influences on this and other dimensions of economic and management theory. A great deal of subsequent theory building in organisational economics, transaction cost theory, new institutional economics and the resource based view of the firm has accordingly acknowledged its debt to Chandler's earlier empirical work. His theory of the firm is a theory of the large firm, or a theory of why large firms are successful. It is controversial, and implies a universally applicable model of business organisation, and as a consequence has attracted considerable criticism.

To describe these theories, accommodating this critique, and to suggest extensions, the chapter is structured as follows. The first section describes the economic components of Chandler's model. These components require extraction from Chandler's work, in view of the strong empirical orientation of most of his writings. These are also characterised by inter-linkages to antecedent and contemporaneous theoretical developments and these are described in the second section. The third section offers a critique of the Chandlerian perspective as a whole, from a theoretical and empirical point of view. In the light of this critique, the fourth section briefly discusses possible extensions of the Chandlerian perspective incorporating elements of capital market transaction cost theory. A final section summarises and draws conclusions.

The economic components of Chandler's model

The roots of Chandler's thinking lie in a deep rooted analysis of corporate America, centred on four case studies of large organisations in the inter-war period, typified by Du Pont (Chander, 1962). So, although 'Chandler developed most of this early thinking in a theoretical vacuum' (Whittington, 2008, p.xx), his detailed historical investigation into the responses of managers to the challenges of market and technology led growth in America's largest firms, nonetheless resulted in his influential thesis that the structure of an organisation is determined by its strategy towards products and markets. Accordingly the multi-divisional structure is a response to diversification across product and or geographical market.

Chandler's concept of the 'visible hand' explains the origins of the firm and its subsequent growth. Firms exist because they can achieve co-ordination more effectively than the market so that investment in managerial hierarchy achieves productivity gains. Such gains are more easily realisable when the market for the firm's output creates sufficient scale economies. Some of these gains arise from decentralisation of decision making within the managerial hierarchy. To achieve them most effectively, firms adopt the multi-divisional form (Chandler, 1962). The term M-Form is also used to describe this structure, and although commonly ascribed to Chandler was introduced and defined more precisely by Williamson (1971, p.382). According to this definition the key features are first, centralised control over strategic decision making investment in new products and markets and second, delegation of operational decision making to divisions monitored as profit centres. Chandler complements rather than rejects the conventional theory of the firm. So, on the one hand, estimation of market demand remains one of the key challenges facing managers of hierarchical and M-Form enterprises, notwithstanding their expanded scale and market dominance. At the same time his theory offers a detailed analysis of the organisation of supply.

Chandler also offers a theory of the growth of the firm. His ideas developed in parallel to the Rostow's (1960) stages theory of economic growth, which in the cold war period underpinned an alternative universalising alternative to Marxism. Chandler's large managerial enterprise represents a progression from prior stages of less efficient forms of organisation (Whittington and Mayer, 2000, pp.26-27). Managers are empowered by the increasing complexity of the organisation and the technical content of its routines. Ownership is thereby divorced from control, since family and investor groups could not provide the managerial capacity or the technical understanding to exercise direct control over the management process. Much of the impetus to growth arises from the perpetuation of managerial hierarchies. Management constitute a new business class whose incentives are predicated on growth rather than profit and on reinvestment rather than shareholder dividends.

In *Scale and Scope*, Chandler examines the nature of such investment more specifically. First, investment in production facilities realises economies of scale and scope embedded in technological development. Second, investment in a marketing and distribution network delivers sales volume equivalent to the production capacity. Third, investment in managerial hierarchy is required in order to co-ordinate production and sales and to plan for future investment in these functional activities (Chandler, 1990, p.8). Such investments, Chandler argues, create first mover based competitive advantage. The American model of business organisation is offered as an example in contrast to the Britain, where such investments occurred less extensively. British relative economic decline is therefore often cited as proof of the Chandler hypothesis. In this sense it is empirically testable and has given rise to a number of studies, discussed below, that raise opportunities for further refinement as well as the inevitable question marks.

Antecedent and associated economic theories

As can be observed from the above review of Chandler's ideas, there are some obvious debts to other economic theorists. Coase's (1937) transaction cost explanation of the firm as an alternative to costly market co-ordination provides a consistent theoretical justification for Chandler's managerial hierarchy. Penrose's (1959) analysis also contained similar elements to Chandler's model, linking growth, structure and the management function. She was the first to suggest that resources determine growth rate and profit level and limits on the firm's growth rate arise from managerial and capacity constraints. Penrose and others writing in the 1960s recognised the growing influence of managerial hierarchy on firm behaviour, and like Chandler, utilised objectives other than profit maximisation to explain firm behaviour. Baumol (1959) proposed revenue maximisation, Williamson (1964) managerial utility maximisation and Marris (1964) growth maximisation. The notion of maximisation itself was also challenged at around the same time by the behaviouralists, building on the work of Simon (1955, 1959), Cyert and March (1963) applied the theory of bounded rationality to explain firm behaviour, in terms of satisfactory rather than optimal outcomes. The notion of 'satisficing' is more attuned to a managerial theory of the firm since it can more readily accommodate the multiple objective functions that managers in the large productive enterprise typically face. It is also more likely to replace profit maximisation where capital market imperfections impose monitoring costs on outside shareholders (Jensen and Meckling, 1976). Taken together, these new economic assumptions about managerial behaviour provide important building blocks for Chandler's model.

These parallel theoretical developments have evolved along with Chandler's own writings, with the consequence that his model has become firmly embedded in the wider institutional and transaction cost economics literature. In addition to the conventional economic category of economies of scale, building on these literatures, Chandler (1990, pp.17-18, ff.2-3) adds economies of joint production and distribution, economies of scope, (Coase, 1937, Teece, 1980, Willig, 1981, Bailey and Friedlaender, 1982) and transaction cost economies (Coase, 1937, Williamson, 1981). By the same token, Williamson (1981) acknowledges the work of Chandler, which he develops to provide an economic, transaction-cost explanation of inter alia the rise of the multi-divisional firm.

Whilst relying upon and assimilating with these literatures, Chandler's emphasis differs in some important respects. Chandler (1990) stresses the active role of entrepreneurs in creating first mover competitive advantage, by making investments in plants of sufficient size to realise scale and scope economies. In contrast, institutional theories of the firm in tend to offer more deterministic explanations of firm behaviour, in the form of isomorphism (DiMaggio and Powell, 1991), evolution and routine (Nelson and Winter, 1982) and population ecology models of the firm and industry life cycle (Hannan and Freeman, 1989). Theories that contain behavioural dimensions assume negative attributes such as shirking (Alchian and Demsetz, 1972) and opportunism (Williamson, 1975) or passivity (Cyert and March, 1963). Chandler's positive and active view of corporate leadership is manifest only in restricted branches of organisational economics. Most prominent of these is the resource based view (RBV) of the firm. In the RBV, it is the possession of unique, or difficult to replicate, resources, including managerial talent and leadership that create competitive advantage and access to superior profits. In this sense, the RBV has been constructed in part on Chandler's pioneering work.

Critique

In common with much of institutional economics, Chandler presents us with an organisation that is efficient by virtue of cost minimisation. Whilst offering a useful alternative to the branch of economics that relies on profit maximisation, it offers no commensurate theory of value. In this sense it is incomplete as a theory of the firm. For example consider a firm making a Chandlerian investment in large scale plant with the objective of securing first mover competitive advantage. There is no theoretically consistent discount rate that can be using to appraise such investments, because such rates are derived from equilibrium based models of capital market behaviour that assume rational maximising behaviour. If the manager uses a discount rate that is regarded as 'satisfactory' by the manager but sub-optimum by the capital market, the value of the firm's assets will nonetheless be downgraded by the market. As a consequence, the manager will face the threat of removal from the operation of the market for corporate control. A similar result arises from the information asymmetry inherent in corporate investment decisions of this character. The manager can counter the risk of devaluation from these two sources by applying the market discount rate, in other words, becoming a shareholder value maximiser, and by supplying more complete information to market monitors. Chandler (1977) acknowledges that under such circumstances managerial control is partially relinquished and is replaced by finance capitalism. As Wu (1989, p.11) puts it, capital market imperfections create an entrepreneurial role for capitalists, but as capital markets become more developed, financiers shed their entrepreneurial role and entrepreneurs shed their financing function in favour of corresponding groups of professional managers. Chandler does not however enter into a discussion of these theoretical trade-offs.

A further problem arising from the absence of a Chandlerian theory of value is how to price the assets that give rise to first mover competitive advantage assets. In essence, this is the same as the problem of heterogeneous asset valuation that has remained unresolved in the wider field of economics since the close of the Cambridge controversies in the early 1980s (Cohen and Harcourt, 2003).[1] Conventionally, the asset value is the present value of the future cash flows it is likely to generate, presupposing a discount rate and therefore a rate of profit. However in the case of a first mover competitive advantage asset, as in neo-classical economics, the rate of profit follows from the possession of valuable assets.

There are though specific additional problems for the Chanderian model. First, the firm is a managerially controlled non-maximiser, so higher rates of profit relative to other firms are not its objective, and cannot be used to infer competitive advantage. Second, even if the firm is an efficient cost minimiser, the benefits of minimisation are unobservable. If the cheaper firm controls some but not all of the market, the price of output is regulated by the less efficient firm that can nonetheless satisfy some of the demand. The difference will constitute a rent for the more efficient firm. Because the firm is managerially controlled the rent may be absorbed by higher executive salaries or in managerial perquisites, which can manifest themselves as organisational slack. If the rent is absorbed in such fashion, in monetary terms the efficiency from lower cost production is exactly counterbalanced by the generation of

[1] For a recent analysis of the problem of heterogeneous assets valuation see Toms (2010).

managerial rents. Of course the rent can be used to fund further investment in productive capacity, such that the firm can capture a greater share of the market. The realisation of monopoly places an upward limit on this process, creating greater incentive for diversification. However, because the portfolio investor can diversify at lower transaction cost, the cost minimisation rationale for diversification can no longer apply.[2] In summary, even if efficiencies arising from investment in scale and scope economies can be generated, there are trade-off allocative efficiency problems in the absence of an efficient capital market.

So whilst economies of scale and scope have an obvious influence on organisational form and business strategy, they cannot by themselves account for general categories such as 'personal' and 'managerial' capitalism. The processes of allocating and distributing resources must also be considered. Notwithstanding the title of his 1990 work, *Scale and Scope*, all the economies of scale and scope referred to are internal, and external economies of scale and scope are only directly dealt with insofar as the distribution system is controlled by the firm to reduce associated unit and joint costs. Other external economies of scope are left out of the analysis, notwithstanding their potential importance for the understanding of economic performance and competitive advantage. These include district or local level economies associated with physical infrastructure, access to services, or pools of knowledge and expertise that lie outside the direct control of individual firms, as originally described by Alfred Marshall (Kamien *et al*, 1992, Oughton & Whittam, 1997). Clustering of firms in industrial districts, trade associations and other networked organisations are promoted through sharing trade secrets and drawing on local pools of experience and skilled labour. Such economies are of course important in regions and industries where the Chandlerian model appears to be less applicable, for example the successful Lancashire textile industry of the nineteenth century (Toms, 1998), the networked craft industries of Italy (Rinaldi, 2005), and the knowledge driven industries of Silicon Valley (Lecuyer, 2001).

The fragmentation of the computer industry in recent decades is a good illustration of how specialisation in certain periods of history and stages of economic development promotes flexibility, potentially replacing standardisation and scale economies (Piore & Sabel, 1984). Flexible specialisation does not however, presuppose small scale; indeed the computer industry, in the US at least, continues to sustain very large firms. Rather, competitive advantage comes from the fluidity of the boundaries of the firm (Zeitlin, 2008, p.129). As a result the co-ordinating mechanism is adjusted quickly according to circumstance, for example from market to hybrid (sub-contract, franchise, lease etc) to hierarchy and back again. Managerial structure accordingly plays a reduced role and its importance varies through time.

By emphasising managerial structure as the key mechanism for unlocking productivity, Chandler also neglects institutional factors that might promote managerial hierarchy or limit its scope for strategic action. As the literature on varieties of capitalism suggests (Whitley, 1994), the ownership of businesses

[2] Exceptions to this rule, notably external economies of scale and under-utilised capacity, are analysed by Teece (1980). Chandler (1962 – see p.453, ff.1) also points out that excess capacity arising from indivisible assets leads to diversification.

and their capital structure are a function of the configuration of financial institutions and can be very important as constraints or enablers of managerial activity.

The pattern of corporate development in the face of these changes in institutional structures presents a strong empirical challenge to Chandler's model. That challenge has been responded to most notably in the field of business history, where Chandler's influence continues to be strongly felt. Indeed, the Chandlerian thesis remains a widely accepted view of British business history (Elbaum and Lazonick, 1986). Empirical surveys have documented the extent of the diffusion of the M-form model, in Britain (Channon, 1973, Toms and Wright, 2002, Toms and Wilson, 2003), and France and Germany (Dyas and Thanheiser, 1976), and in all three countries. The latter evidence suggests that M-form adoption has indeed been widespread amongst the very large firms at least (Whittington and Mayer, 2000), but that there is a parallel and increasing trend of sell-offs, buy-outs and parent to parent sales of subsidiaries (Toms and Wright, 2003).

A further empirical test of the Chandler hypothesis is its prediction of British relative economic decline as a consequence of failure to adopt the efficiency features of the American model. For Chandler (1990) and Elbaum and Lazonick (1986) it was the absence of the large firm that undermined economic competitiveness. Again, this notion has been subjected to considerable empirical scrutiny by business historians. Whereas the Chandler hypothesis has remained influential in the US, British business historians have stressed the vibrancy of alternative forms of business organisation (Lamoreaux, Raff and Temin, 2008, p.44), including family businesses (Church, 1993, Jones and Rose, 1993), smaller and non-integrated firms. Others have argued that large firms have always been a feature of the British economy (Wardley, 1999), and that these were controlled by dispersed shareholders in contrast to the family groups that dominated US big business (Hannah, 2007). Because the Chandler model most obviously applies to manufacturing, and most would concede that British manufacturing has declined post 1945 (Matthews, 2007), other historians have pointed to the relative success of other sectors, particularly services and financial services over the longer run (Rubinstein, 1993), and pointed out that where success has been achieved, it has been more a function of market competition than managerial hierarchy (Broadberry and Crafts, 2001).

As suggested in the theoretical critique above, the rationale for Chandlerian firm, with its managerially determined objective function, depends to a certain extent on the absence of capital market scrutiny. Hence, the state of development of the capital market is likely to mediate the observed organisational form. Although Chandler highlights the importance of dividends in limiting capital accumulation in family businesses as part of his critique of British personal capitalism, he has little to say about capital markets and corporate governance. If capital markets were to become more efficient at scrutinising the actions of managers, then the Chandlerian firm might be expected to become less prominent.

Such a proposition can be subjected to empirical scrutiny. For example the absence or presence of a market for corporate control might have an important impact on the motivation and character of diversification. Similarly the presence or absence of liquid capital markets and legal rules on creditor and minority protection, accounting disclosure and insider trading might constitute further examples of market, governance and regulatory influences on corporate strategy and structure. Indeed these aspects appear to have become more important in recent decades and many key developments have followed the high water mark of the large Chandlerian organisation of the 1980s. Since then the steady growth of the managerial firm and its associated hierarchy has been supplanted by waves of divestment and delayering in Britain (Toms and Wright, 2002) and the US (Toms and Wright, 2005). Chandler's model has not yet been adapted to the wave of downsizing and sell offs that has transformed M-form US businesses into newer structures befitting the later twentieth century, including networks, joint ventures, multi-layered subsidiary organisations (Prechel, 2000, Toms and Wright, 2005, Zey and Swenson, 2001). According to these authors, corporate restructuring away from the M-Form model has been a consequence in substantial part of the liberalisation and greater transparency of financial markets.

As this brief review of empirical evidence suggests, the Chandlerian model lacks universal appeal because, as Whittington and Mayer suggest (2000, p.10), there is a need to accommodate both 'territory – national cultures and national institutions', as well as 'the constant ebb and flow of power or fashion' in our understanding of business evolution. From a historical point of view, the more the institutional environments of other countries and periods beyond the first half of the twentieth century are considered, the less sustainable Chandler's model becomes. Similarly, there is no provision for the political power of big business in explaining the success of corporate America. Nonetheless, as a model designed to explain an important episode in US corporate history, Chandler's model nonetheless has enduring appeal.

Can the Chandler model be developed?

As the critique above has suggested, Chandler's work might be developed by an engagement with capital market and valuation theory. At first sight this is a contradictory project, since managers and capital markets are concerned with maximising different things, or as we have seen, in the case of managerial hierarchies, avoiding maximisation altogether. However, Chandler's paradigm and capital market theory both operate with and accommodate transaction costs, in the latter case for example information costs, where outside investors cannot monitor managerial insiders without incurring costs. At the same time, managerial insiders face resource dependency vis a vis the capital market, creating incentives to share information at certain stages of the product life cycle. Meanwhile, capital markets undergo institutionally determined changes in their ability to monitor resource use by managerial groups, and hence the transaction based monitoring cost involved. So whereas the Chandlerian firm minimises internal transaction costs, for example by using an internal capital market in an M-Form structure, there is no reason why the minimisation of all transaction costs, including in the governance aspects of the organisation, should not be accommodated into the model. Organisational evolution then becomes a function of the relative importance of internal and external transaction cost, according to the conditions of economic development. Such a synthesis also offers the opportunity to build upon the seminal empirical work of Chandler, adding dimensions of corporate governance and accountability to explain the long run evolution of business organisations (Toms and Wilson, 2003).

Conclusions

Chandler's work forms part of a significant literature of managerial economics going back to the 1930s and the contemporaneous writing of Edith Penrose. For the reasons discussed above, Chandler’s importance stretches beyond managerial economics and the theory of the firm, and has been influential in the strategy[3] and management literature for similar reasons, and a dominant figure in business and economic history. There are strands of Chandler’s influence in all these areas that are of consequence for the theory of the firm, and this chapter has endeavoured to extract and summarise the most important and relevant aspects. As a consequence of such an engagement with Chandler’s writings, a deeper understanding of the growth and development of the large scale corporate organisation can be acquired. In this sense, Chandler’s empirical contribution is as important as his theoretical contribution. As Bartlett and Ghoshal (1993, p.25) concluded, the theory of the firm ought to be developed according to Chandler’s (1962, p.7) suggestion ‘from the point of view of busy men responsible for the destiny of the enterprise’, rather than deduced from the premises of social scientists.

That said, as the above discussion has shown, the Chandler model has theoretical shortcomings that prevent it operating as a fully integrated theory of the firm. At the same time, its universalising predictions are not always supported by empirical evidence. Even so, according to some, the large Chandlerian firm is of continuing importance and is developing in line with the global economy (Cassis, 2008). Meanwhile, the experience of managerial delayering, outsourcing and downsizing has shown that the large corporation is vulnerable to market pressures and capital market scrutiny. Where managers champion shareholder value, it is clear that to some extent they have lost sight of the managerially determined objectives of investment in scale and scope economies. If Chandler offers a view of productive efficiency, it needs to be reconciled with the question of allocative efficiency. In other words, for the economist, the crucial contingent questions remain: what is the optimum number of firms in a market and what is the optimum level of competition? Chandler’s analysis poses these questions rather than resolving them. In that sense, his theory of the firm remains to be developed.

[3] Chandler is credited with bringing the word ‘strategy’ into the business vocabulary, replacing the rather antiquated ‘business policy’, as well as offering a definition of the term that has stood the test of time (Whittington 2008; 267).

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