

HYPOTHESIS 1: AN INCREASE IN MARKET SIZE IS ASSOCIATED WITH AN INCREASE IN THE LEVEL OF ADVERTISING AND/OR R&D EXPENDITURE THAT, IN TURN, WILL TEND TO MAKE TYPE 2 INDUSTRIES MORE CONCENTRATED THAN TYPE 1 INDUSTRIES.

1.3 *Turbulence and Market Size*

What our theoretical framework has contributed so far is a neat way of thinking about initial industry conditions, and tracing out incentives for firm investment in variables such as advertising and/or R&D. Our theory allows us to draw a lower bound on the number of firms we would expect to observe in an industry, but remains silent on why we might expect to observe industries that lie above the lower bound, or in other words, why firms might vary in size. Thus, the resource-based view of the firm complements our existing theoretical framework, by helping to provide an explanation for why certain firms would be able to succeed, by matching their distinctive competencies to the environmental opportunities (Peteraf, 1993, Amit and Schoemaker, 1993). As Henderson and Mitchell (1997) argue, consensus will probably never be reached about whether organizational capabilities or the firm's environment are more important in terms of sustaining competitive advantage, as both are fundamentally endogenous, and so we must take both explanations into account. This section considers the relation between market share turbulence and our key theoretical variable, market size.

We define competitive advantage as a firm's ability to outperform its industry, and it is sustainable if it persists despite efforts by the firm's current rivals or indeed potential entrants to duplicate or neutralize the advantage. In order to generate sustainable competitive advantage, it has been argued that resources and capabilities should be rare, valuable, difficult to imitate, non-substitutable (Barney, 1991) and non-transferable in that they cannot be easily purchased in resource markets (Dierckx and Cool, 1989). These unique resources create isolating mechanisms that protect the firm from imitation (Lippman and Rumelt, 1982), where such isolating mechanisms might include for

example, property rights on scarce resources. In addition, managerial decisions with respect to resource deployment are characterized by uncertainty, complexity and intraorganizational conflicts (Amit and Schoemaker, 1993). Thus, heterogeneity across firms is maintained, where firms with superior resources will earn rents (Peteraf, 1993). Not only are resources heterogeneous in the resource-based view of the firm, but they are also sticky (Teece, Pisano and Shuen, 1997) in that in the short run at least, firms are constrained by their current resources (Diericky and Cool, 1989).¹¹

Arora and Gambardella (1997) show how the size of the market matters with respect to firm competencies, where in larger markets, firms are more efficient. Studying engineering firms that supply licensing and construction services to the oil and petrochemical sector across Europe and the U.S., their results show that in the significantly larger U.S. market, firms dominated in licensing, which required more specific competencies. On the other hand, European firms, operating in much smaller markets, tended to be present in construction services where fundamental skills did not differ much across projects, and therefore required more general competencies.¹²

This evidence emphasizes very nicely the complementarity of our theoretical approaches. Essentially, all these industries are R&D intensive industries, characterized by both horizontal differentiation as well as vertical differentiation. In larger markets, firms have an incentive to produce for market niches, as observed in the U.S. licensing segments. However, these engineering firms will develop rather more specialized competencies, because there is little incentive to escalate R&D spending, if that R&D spending is specific to

¹¹ If the competitive forces threatening sustainability are pervasive, profits in most industries should quickly converge to zero (Besanko *et al.*, 2000). However, if entry barriers or barriers to imitation are high, then we should expect to observe some persistence in profit rates over time, although it is not at all clear how one should judge "duration of leadership", i.e. what is the short run versus what is the long run? (Mueller, 1986; Sutton, 2002).

¹² Arora and Gambardella (1997) argue that similar patterns can be seen in machine tools, chemicals, computers, and telecommunications, where market size matters more for product-specific competencies than generic competencies.