

行政院國家科學委員會專題研究計畫成果報告

檢驗 Penrose 企業成長效應 - 以日本在美國直接投資為例

Examining the Penrose Effect in an International Context – The Case of Japanese Direct Investments in the United States

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一、中文摘要

Penrose 在她 1959 年所著“企業成長理論”一書中提到，由於企業為一行政體，企業的擴張有賴富有企業內部經驗的經理人來規劃和執行。此企業內部經驗須經長期累積，無法短期自外獲得，因此這些經理人的管理效能構成企業擴張的重要限制。此理論衍生的推論之一，為企業前後兩期的成長率呈負相關。文獻稱之為 Penrose 企業成長效應 (the Penrose effect)。導致此種效應的原因是：快速擴張的企業，因規模急遽擴大，協調控制的複雜度大幅提高，然管理效能因短期內缺乏彈性，無法因應增加，而導致管理失調，效率紊亂的現象。此 Penrose 企業成長效應曾經若干學者驗證，並得到實證的支持。然而學者未曾探討過是否企業對海外的擴張也存在此效應。本研究計劃彌補此文獻的不足，以日本對美海外直接投資資料來驗證 Penrose 企業成長效應，並進一步探討會加強或減弱此效應的因素。實證結果僅對 Penrose 企業成長效應提供有限

支持。

關鍵詞：Penrose 企業成長效應 海外擴張。

Abstract:

In her seminal book *The Theory of the Growth of the Firm*, Penrose (1959) argues that the capacities of internally experienced managers limit the rate at which a firm can grow in a given period of time. One implication of this argument is that, a fast-growing firm will eventually slow down in the subsequent period because its management, inelastic at least in the short run, is not able to handle the increased complexity effectively, and consequently inefficiency will follow. The proposition that growth rates of successive periods are negatively associated has been cited as the “Penrose effect” in the literature, and has been examined and verified in a few studies. However, researchers have yet explored the Penrose effect in an

international context. The current paper examines the Penrose effect by exploring whether Japanese firms can achieve growth in consecutive periods in the entered U.S. industries. The results in general show weak evidence to the Penrose effect.

Keywords: The Penrose effect, international expansion

二、緣由與目的

Studying the growth of a firm is valuable for researchers and practitioners (Mahoney and Pandian, 1992).

The literature has suggested that a major constraint to the growth of a firm arises from the lack of managerial capacities (Hay and Morris, 1990). Such a proposition was formalized in *The Theory of the Growth of the Firm*, written by Edith Penrose in 1959. Penrose argues that a firm's expansion requires the services from managers who have experience internal to the firm. Since such managers must be developed within the firm over time and could not be hired from outside, a firm could only increase its managerial inputs in an incremental fashion. Consequently a fast-growing firm is likely to incur managerial problems, which hamper its growth in the subsequent period.

The impact of the managerial constraint on firm growth has been cited as the "Penrose effect" in the literature

(Hay and Morris, 1991; Shen, 1970), and has been examined in a number of studies (Gander, 1991; Johnson et al., 2000; Orser et al., 2000; Shane, 1996; Shen, 1970; Thompson, 1994). However, despite that international expansion via foreign direct investments has been an important way of a firm achieving/maintaining growth (Chandler, 1990), to my knowledge, the Penrose effect has not yet been explored in an international context.

The current study attempts to fill this gap by examining the Penrose effect in international expansion. Whether a firm expands internationally incurs the Penrose effect does not have a straightforward answer. The Penrose effect arises from the lack of suitable management for coordinating increased complexity of an organization during its expansion. However, the use of new organizational technologies, such as a multi-divisional organizational structure (Chandler, 1991), may help reduce this complexity and hence the need for managerial inputs, which in turn may alleviate the Penrose effect. In addition, the need for closely coordinating subsidiaries might be reduced if the subsidiaries are located overseas (Penrose, 1959). As a result the time and efforts that managers must spend in managing international operations may be reduced.

The paper argues that the nature of coordination among subunits within the multinational firm influences the extent

to which a firm is subject to the Penrose effect during the process of international expansion. Although employing a multi-divisional organizational structure economizes the time and efforts of the parent managers (Chandler, 1962; Williamson, 1975), a premise underlying the use of such an organizational structure is that the activities between autonomous units can be effectively separable and there is little amount of interaction required among them (Eisenhardt, 1985). However, this premise does not always hold true. For example, individual subsidiaries may share common technologies or may involve joint production (Hennart, 1982; Porter, 1986). To maintain autonomous status of individual subsidiaries is likely to stifle exchanges among the subsidiaries and to produce suboptimal results (Hitt et al., 1997; Roth et al., 1991). To deal with this high interdependency among subunits, the multinational parent firm may attempt to closely coordinate subunits and impose behavior and/or social control over its foreign operations (Hennart, 1991; Ouchi, 1979). Doing so requires parent-specific knowledge and capabilities (Kuemmerle, 1997) that could only be developed within the multinational firm over time through training and learning by doing on the job (Becker, 1964; Castania and Helfat, 1991). In this case, a firm that grows fast in a foreign market is likely to encounter the Penrose effect as the coordination

complexity within the multinational firm may increase at a rate faster than its internal managerial resources can handle effectively.

三、結果與討論

I test the hypotheses on a sample of Japanese direct investments in the United States. Following Shen (1970) and Orser et al. (2000), I examine the Penrose effect by investigating whether growth rates of a firm's first two consecutive periods in a foreign market are positively or negatively correlated, given other things being equal.

The level of analysis is line of business. The dependent variable is the percentage change in a Japanese firm's total employment in a given U.S. industry between the fourth and the seventh years after entry. The key explanatory variable is the growth rate of the preceding period; i.e., the percentage change of the employment between first and the fourth years. A positive correlation coefficient between growth rates of the two consecutive periods provides contradictory evidence to the Penrose effect in the sense that it shows that a fast-growing firm can achieve growth in the subsequent period. An insignificant or even negative coefficient provides consistent evidence to the Penrose effect. To examine whether industry characteristics moderate the Penrose effect, I split the sample by the median of industry

variables and then run the regression on subsamples. All of the data are collected from secondary sources.

Descriptions for measures of variables and the regression tables are available upon request. I find that in general, Japanese firms that grow fast in the U.S. industries for the first three years also achieve higher growth rates for the following three years, a finding that is not consistent with the Penrose effect. It might be possible that the need for close coordination in international operations is not high and the multinational firm could overcome managerial constraint by utilizing newly-hires. The main theme of the paper is that the magnitude of the Penrose effect may be contingent on industry characteristics. My findings provide mild support to this argument in that after splitting the sample based on industry characteristics, the positive associations between growth rates of consecutive periods disappear in industries that are characterized by tacit knowledge and high unionization. The need and the cost of coordination among international operations in these industries are likely to be high, raising the potential managerial constraint facing the firms.

四、計畫成果自評

To my knowledge, the current paper is the first study examining the Penrose effect in an international context.

Specifically, I have explored whether firms can achieve growth in consecutive periods in the entered foreign industries. I have argued that the nature of coordination among subunits within the multinational firm influences the extent to which a firm is subject to the Penrose effect during the process of international expansion. I have identified several industries in which the need and the cost of coordination are likely to be high and hence the Penrose effect is likely to prevail.

I have tested the hypotheses based on a sample of Japanese direct investments in the United States. I found that the Penrose effect received only weak support from my sample. In industries that are characterized by explicit knowledge and low unionization, I found contradictory evidence to the Penrose effect as Japanese firms are found to have achieved growth in their first two consecutive periods. A potential reason is that the need and the cost of coordination among international operations in these industries are likely to be low, reducing the potential managerial constraint facing the firms.

Overall, the paper has followed closely what I planned in my proposal to the National Science Council. I plan to further revise the paper in the following few months and then submit to an academic conference or journal.

五、參考文獻

- Becker, GS. 1964. *Human Capital*. New York: National Bureau of Economic Research.
- Castania, RP. and CE. Helfat, 1991. Managerial resources and rents, *Journal of Management*, 17(1): 155-171.
- Chandler AD. 1962. *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*. MIT Press.
- Chandler, AD. 1990. *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge, MA: Belknap/Harvard University Press.
- Chandler AD. 1991. The functions of the HQ unit in the multibusiness firm. *Strategy Management Journal* 12: 31-50.
- Eisenhardt, KM. 1985. Control: organizational and economic approaches. *Management Science*, 31(2): 134-149.
- Gander, JP. 1991. Managerial intensity, firm size and growth. *Managerial and Decision Economics*, 12: 261-266.
- Hay, DA., and DJ. Morris 1991. *Industrial Economics and Organization: Theory and Evidence*. NY: Oxford University Press.
- Hennart, J-F. 1982. *A Theory of Multinational Enterprise*. Ann Arbor: University of Michigan Press.
- Hennart, J-F. 1991. Control in multinational firms: the role of price and hierarchy. *Management International Review*, 31: 71-96.
- Hitt, MA., RE. Hoskisson, and H. Kim 1997. International diversification: Effects on innovation and firm performance in product-diversified firms. *Academy of Management Journal*, 40: 767-798.
- Johnson, DR., DE Hatfield, and C Voigt 2000. *A resource-based view of firm growth: Managerial capability, diversification, and organizational learning*. Paper presented at the annual Academy of Management meeting. Toronto, Canada.
- Kuemmerle W. 1997. Building Effective R&D Capabilities Abroad. *Harvard Business Review* 75(2): 61-70.
- Mahoney, JT., and JR Pandian 1992. The resource-based view within the conversation of strategic management. *Strategic Management Journal*, 13: 363-380.
- Ouchi W 1979. A conceptual framework for the design of organizational control mechanisms. *Management Science* 25(9): 833-849.
- Orser, Barbara J., Sandy Hogarth-Scott,

and Allan L. Riding 2000. Performance, firm size, and management problem solving. *Journal of Small Business Management*, October: 42-58.

Penrose, ET. 1959. *The Theory of the Growth of the Firm*. New York: Oxford University Press.

Porter, ME. 1986. *Competition in Global Industries*. MA: Harvard Business School Press.

Roth, K., D. M. Schweiger, and A. J. Morrison. 1991. Global strategy implementation at the business unit level: Operational capabilities and administrative mechanisms. *Journal of International Business Studies*, Third quarter: 369-402.

Shane, SA. 1996. Hybrid organizational arrangements and their implications for firm growth and survival: A study of new franchisors. *Academy of Management Journal*, 39(1): 216-234.

Shen, TY. 1970. Economies of scale, Penrose-effect, growth of plants and their size distribution. *Journal of Political Economy*, 78(4): 702-716.

Thompson, RS. 1994. The franchise life cycle and the Penrose effect. *Journal of Economic Behavior and Organization*, 24: 207-218.

Williamson OE. 1975. *Markets and Hierarchies: Analysis and Antitrust implications*. Free Press: New York.