



# Flexibility–efficiency tradeoff and performance implications among Chinese SOEs

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## ABSTRACT

This paper examines performance implications of the flexibility–efficiency tradeoff in the turbulent environment. We test the relationship between resource utilization and firm performance among the Chinese state-owned enterprises (SOEs) during China's economic transformation. The study finds that (1) overall efficiency enhances performance; (2) different measures of efficiency all exhibit curvilinear relationship with performance; and (3) differences exist between high efficiency and low efficiency subgroups of firms. The results reveal that efficiency as well as flexibility has a positive impact on firm performance only within a certain range. Beyond a certain point, the cost of maintaining flexibility overwhelms the benefit, causing performance to decline.

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## 1. Introduction

The tradeoff between flexibility and efficiency has been called a central paradox of administration (Thompson, 1967). Traditional wisdom usually treat the competing needs for efficiency and flexibility as two opposite ends of a spectrum: while efficiency asks for maximizing output from given input by making best use of existing resources (Ghemawat and Costa, 1993); flexibility requires a firm to timely reposition itself with respect to future changes by reconfiguring its competences (Carlsson, 1989). Since efficiency and flexibility compete over a firm's scarce resources, the firm pursuing both will become stuck in the middle (Porter, 1980) and suffer inferior performance. Managers need to choose either efficiency-oriented or flexibility-oriented strategy, but not both (Abernathy, 1978). More recently, as today's ever-changing environment often challenges firms to simultaneously perform exploitative and explorative activities, researchers have started questioning the necessity of the tradeoff (Ferdows and De Meyer, 1990) and exploring the possibility of attaining both superior efficiency and flexibility (Adler et al., 1999).

Empirical evidence in this regard is, however, inconclusive. It remains unclear how either efficiency or flexibility alone, or together, affects a firm's performance in a turbulent environment. How should a firm strategically allocate its resources to meet the dual challenge of operating both flexibly and efficiently? What specific type of resource will enable a firm to perform ambidextrously (Duncan, 1976)? To answer these questions, this paper borrows insights from both the resource-based view (RBV) and the dynamic capabilities approach (DCA), two dominant theories in strategic management. We observe

that RBV and DCA need to be joined in examining the flexibility–efficiency tradeoff in turbulent environments, because dynamic capabilities should be built upon certain resources. We situate our research on the Chinese state-owned enterprises (SOEs) from 1996 to 1997. We choose this research setting because the Chinese SOEs, previously plagued by inefficiency, were challenged to meet the demands for both efficiency and flexibility during this turbulent period as China transformed itself towards a market economy. This paper is organized as follows: firstly, we examine the flexibility–efficiency tradeoff from the perspectives of RBV and DCA; secondly, we present the results found in the Chinese transitional economy; finally, we discuss the implication for future research based on the empirical results.

## 2. Theory and hypotheses

### 2.1. The flexibility–efficiency tradeoff

The postulate of a tradeoff between efficiency and flexibility, two points in a continuum, is one of the most enduring ideas in management literature (Adler et al., 1999). Many different definitions of efficiency and flexibility have been proposed (Klein, 1984; Carlsson, 1989; Evans, 1991; Ghemawat and Costa, 1993). Carlsson (1989) identified three aspects of flexibility: namely operational, tactical and strategic flexibility, suggesting that the definition of flexibility should include not only capacity utilization aspects but also strategic management issues. While the operational and tactical flexibility are associated with short and medium term, strategic flexibility is associated with long term and reflects how the firm positions itself with respect to a menu of choices for the future (Carlsson, 1989). Similarly, Ghemawat and Costa (1993) defined two types of efficiency: static efficiency refers to the refinement of existing products,

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processes or capabilities while dynamic efficiency is related to the development of new ones. Improvements in efficiency may come from utilizing previously unused resources or generating more output for the same level of input (Leontief, 1951). For the purpose of this study, efficiency refers to the degree to which a firm's resources are currently being consumed in producing products and services, while flexibility refers to the degree to which the firm maintains currently uncommitted resources which can be mobilized to absorb, inflict, or respond to environmental changes (Meilich, 1997). The flexibility–efficiency tradeoff is a decision about how much uncommitted resources a firm should have in order to balance the competing needs of efficiency and flexibility. When unutilized resources are eliminated, a firm trades adaptive flexibility for improved efficiency.

There are two opposing views regarding such tradeoff, while one argues that flexibility may facilitate risky organizational exploration under environmental turbulence and thus has performance-enhancing effect, the other one suggests that resource hoarding breeds inefficiency and hurts performance (Tan and Peng, 2003). For instance, investments in specialized training programs for employees may increase a firm's efficiency but they may also prohibit the firm from pursuing alternative programs because of the risk of turning these investments into sunk costs. On the other hand, investments in flexibility require a firm to possess surplus resources (March and Simon, 1958) and these surplus resources reduce the firm's efficiency. At present, evidence based on these two views remains inconclusive.

## 2.2. The flexibility–efficiency tradeoff in turbulent environments

For strategy researchers, the term flexibility has been widely used to denote firm capability to respond to rapid changes and to quickly re-align with the environment (Sanchez, 1995). Harrigan (1985) defined strategic flexibility as a firm's ability to reposition itself in a market, change its plans, or dismantle its strategies. The flexibility–efficiency tradeoff is of particular interest for strategy researchers because firms must choose between a strategy of dynamic effectiveness through flexibility and an alternative strategy of static efficiency through more rigid discipline (Abernathy, 1978; Ghemawat and Costa, 1993; Dutta et al., 2005). Firms pursuing both goals simultaneously will have to mix organizational elements appropriate to each strategy and therefore will lose synergy. Despite the above insights, it remains unclear whether the tradeoff postulate holds in turbulent environments and which type of resources enable a firm to balance the competing needs of efficiency and flexibility. In the following, we examine these issues from the resource-based view and dynamic capabilities approach.

The idea of treating the firm as a collection of resources can be traced back to the seminal work of Penrose (1959). Wernerfelt (1984) coined the term “resource-based view” and proposed to analyze firms from the resource side. As an alternative to Porter's (1981) industrial organization framework, RBV has been suggested to be a unifying paradigm of strategy research (Conner, 1991; Peteraf and Barney, 2003). From the RBV perspective, superior resources enable a firm to create more economic value than its competitors (Barney, 1991; Peteraf and Barney, 2003). When the strategic factor market (i.e. a market where the resources necessary to implement a strategy are required) is not perfectly competitive, a firm can obtain sustainable competitive advantage by accumulating critical resources which enable the firm to produce economic value for consumers more efficiently than its rivals (Barney, 1986; Dierickx and Cool, 1989; Finney et al., 2005). In turbulent environments, however, superior resources alone cannot guarantee business success because economic value created from these resources is in continuous and rapid changes (Judge and Elenkov, 2005; Farjoun, 2007) and dynamic capabilities are suggested to play a key role in achieving high performance (Tece et al., 1997; Eisenhardt and Martin, 2000; Zollo and Winter, 2002). Dynamic capabilities generally refer to the strategic routines by which

firms achieve new resource configurations in order to adapt to rapid environmental changes (Eisenhardt and Martin, 2000; Cepeda and Vera, 2007). Dynamic capabilities enable a firm to outperform its rivals through practicing entrepreneurial activities (Wu, 2007) such as experiential routines (Zollo and Winter, 2002), simple rules (Eisenhardt and Martin, 2000), and ad hoc problem solving activities (Winter, 2003).

We observe that both flexible adaptation and efficient resource utilization are critical in turbulent environments and that RBV and DCA need to be joined in examining the flexibility–efficiency tradeoff (Mahoney, 1995). Firms that are overly flexible and consumed in their drive for constant change and preparation for the future are likely to suffer the costs of experimentation without gaining much benefits (March, 1991). Such firms jeopardize their performance by being overly inefficient. Conversely, overly specialized organizations will be trapped in sub-optimal solutions, soon to be superseded by more innovative firms (Schumpeter, 1942). Furthermore, flexibility cannot be achieved without enough resource inputs because entrepreneurial activities themselves are not cost free (Olavarrieta and Friedmann, 2008). In order to maintain flexibility, a firm needs to accumulate a pool of resources in good times to build certain level of excess capacity which can be called upon during “rainy days”. Such flexibility is particularly important during times of environmental turbulence (D'Aveni and Gunther, 1994) because a firm needs to stockpile slack resources to pursue entrepreneurial activities. Such resources are particularly valuable for firms which attempt to revitalize themselves under disadvantaged situations because excess resources can both protect a firm and enable it to launch attacks (Harrigan, 1985; Finney et al., 2008). For example, Hatten and Hatten (1987) documented empirical cases in which firms use underutilized capacity to successfully enter new markets previously dominated by established competitors. In this case, surplus resources should be viewed as the result of deliberate choices rather than a sign of inefficiency.

## 2.3. Resource liquidity and performance implications

Which resources enable a firm to timely pursue entrepreneurial activities and thus outperform its competitors in turbulent environments? Not all resources have the same flexibility-enabling capacity: slack can take different forms in a firm (Bourgeois, 1981). The various forms of slack have been characterized in terms of the degree to which the resources have been absorbed into the organization, or, conversely, the degree to which they are available for discretionary use. Resources which have been committed to factors of production can be freed for other uses only through major efforts (Williamson, 1967). On the other hand, relatively liquid resources which have not been committed to factors of production are immediately accessible. There is no reason to expect all forms of resources to have the same performance-enhancing effects (Dreyer and Gronhaug, 2004). It is important to differentiate between absorbed slack which are clearly wasted resources and “excess resources” which are reserved for uncertain future. Among various resources which are unutilized or underutilized, the less liquid resources which have been committed to factors of production and fully or partially absorbed into production process will negatively affect performance, while the more liquid resources will positively affect performance. Hence, we propose the following hypothesis.

**H1.** The impact of resource utilization on performance is determined by the level of liquidity of different resources. More specifically, the level of resource liquidity is positively related to firm performance.

## 2.4. Is there an optimum level of efficiency?

In H1 we propose a linear first-order relationship. Is there a limit to which firm should maintain flexibility, an option that costs the

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