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The Role of Cost Allocation in Mitigating Resource Over-Consumption and Performance Impact of Distorted Cost Allocation

공통자원의 과잉소비 완화 관점에서 원가 배부의 역할과 왜곡된 원가 배부방식의 성과에 미치는 영향

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서울대학교 대학원
경영학과 (회계학 전공)

구민재

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ABSTRACT

This study first investigates whether cost allocation is essential, in the sense that it creates incentives for managers to control costs. I document that the absence of allocation negatively affects firm's cost management, which could be interpreted as the result of over-usage of common resources. Next, among firms that allocate costs, I assume that some firms "distort" cost, so that the allocated cost is deviated from the optimal level, which a division expects that they are accountable for. I investigate the impact of cost distortion on segment- and firm-level performance by using a comprehensive sample compiled from a Compustat-Segment database from 2000 to 2015. I find (partial) evidence that over-allocation (under-allocation) discourages divisional managers to improve their subsequent performance and that cost distortion, in general, negatively affects the segment-level and overall firm-level performance. My findings suggest that in order to motivate managers and facilitate their decisions, overhead costs should be allocated at an anticipated level, which reflects the actual divisional consumption of common resources.

Keywords: Cost allocation, cost distortion, divisional incentives, accurate cost drivers
Student Number: 2015-20578

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I. INTRODUCTION

Cost allocation is conventionally viewed as an internal control system that can motivate employees, provide information for economic decisions, justify costs or compute reimbursement amounts, and measure income as well as assets for tax concerns or financial reporting purposes (Horngren 2011). Proponents of cost allocation claim that non-allocation can lead to over-consumption of common resources and cannot reveal the true profitability by understating the product costs (Zimmerman 2010; Pfaff 1994; Doost 1996). However, opponents of cost allocation cast doubt on the effectiveness of cost allocation practices. Whether firms utilize a traditional costing system or an activity/transaction-based costing approach, there are limitations for each approach. First, simplistic costing method does not reflect the actual utilization of common resources and can induce segments to under-utilize (over-utilize) the resources that are less (highly) related to the incurrence of common overhead costs. Second, activity based costing system also has several drawbacks. The allocation bases (or factor inputs) are often opaque and do not reflect actual common resource consumption and the costing system is too complex for the users to comprehend. Thus, ABC might not motivate business unit managers and employees to effectively control shared resources.

The impact of non-allocation on firm's performance is an open question that I attempt to address. In particular, I examine whether the firms with "corporate" segments that bear common costs (or firms with high proportion of costs accumulated in headquarters to total costs) are more likely to fail in effectively controlling costs relative to their industry peers. In order to achieve this aim, I accumulate a comprehensive sample over the period of 16 years from 2000 to 2015 and use two measures to capture the tendency of non-allocation. I document that firms that keep common costs in center incur greater total costs, costs of goods sold, sales, general and administrative expenses than the other two-digit SIC industry peers that allocate costs. I show that firms that do

not allocate their common costs are less likely to effectively control costs. This finding could be explained by the overutilization of common resources by each business unit.

The main obstacle of cost allocation, however, is that the system will occasionally fail to reflect actual common resource consumptions. So the next question I try to address is whether such shortcoming of cost allocation would have any impact on subunit-level and organization-level performance. I assume that a cost distortion exists when divisions are allocated common costs that are deviated from the anticipated level. In order to measure cost distortion, I first make an attempt to derive a cost determinant model at the divisional level based on relevant cost allocation bases and organizational factors. I document that the change in divisional cost is significantly correlated with change in divisional sales, assets, foreign tax country characteristics, change in firm's cost, "Corporate & Others" segment classification, market concentration based on segment's and firm's two-digit SIC industry, intra-firm transaction level, the proportion of a division's sales revenue gained from the transactions with other divisions to the division's total sales revenue. I take the residual of the determinant model regression as my measure of cost distortion.

The impact of cost distortion on the subsequent change in segment-level and firm-level performances could be either positive or negative, viewed from information, behavioral, and fairness perspective. From information perspective, I assume that cost distortion triggers suboptimal actions of divisional managers, since it can distort the profitability of a certain product or service, providing a room to misprice products or distort investment choices and can undermine the informational value of the allocation system due to its arbitrariness and inaccuracy. From behavioral perspective, cost distortion can either induce optimal decisions (e.g., efficient reduction of labor cost, in case it is the allocation base, Hiromoto 1988) or induce over-(under-)utilization of common resources. From fairness perspective, cost distortion can trigger unfairness, in

terms of inequity (Forsyth 2006) or imperfect procedural fairness (Rawls 1999). The empirical results demonstrate that cost distortion aggravates divisional and firm's performance.

As my final investigation, I examine the association between over-(under-) allocation and the subsequent change in segment-level performances. I assume that unfairness (fairness) perception is reinforced and the possibility of product overpricing (underpricing) leading to lower (higher) competitiveness in the market increases among the segment groups that bear the over-allocated (under-allocated) amount. The empirical results provide (partial) evidence that over-allocation (under-allocation) negatively affects next period's divisional performance.

This paper contributes to the literature in several ways. First, this study contributes to the literature by providing large-sample evidence on the association of non-allocation with resource over-consumption at the firm-level. Second, following previous theoretical papers and textbooks, my paper is the first to empirically examine the determinants of divisional cost, showing how they have an explanatory power across industries. Third, my findings provide firms with a practical implication that the optimal cost allocation system is critical for the improvement of firm's overall performance.

The remainder of this paper is organized as follows. In section 2, related literatures are described and hypotheses are developed. In section 3, the data, sample, variables are described. Section 4 examines the empirical link between non-allocation of common cost and firm's over-(under-) consumption of resources. Section 5 empirically investigates the determinants of divisional costs. Section 6 and 7 explore the empirical link between cost distortion and segment- as well as firm-level performance. In section 8, limitations and contributions of my study are discussed.

II. BACKGROUND AND RESEARCH QUESTIONS

2.1. The Impact of Non-Allocation on Firm's Resource Over-(Under-) Consumption behaviors

The traditional view on cost allocation is that it can motivate employees, provide information for economic decisions, justify costs or compute reimbursement amounts, and measure income and assets for tax concerns or financial reporting purposes (Horngren 2011). In particular, most U.S. corporations allocate a significant amount of corporate overhead [3] back to profit centers, presumably to prevent individual divisions from overconsuming common resources (Zimmerman 2010).[4]

Zimmerman (2010) highlights the role of cost allocation as an internal tax system within the organizations. Compared with no allocations, cost allocations can reduce the manager's reported profits (or welfare) and change the mix of factor inputs, depending on which factor inputs are taxed. Thus, profit center managers have an incentive to reduce the consumption of taxed factor inputs (or allocation bases). In this respect, cost allocation can improve the accountability and consciousness of costs (Doost 1996). However, if common costs are not allocated, the managers have less incentive to determine the optimum level of the common costs (Zimmerman 2010, Pfaff 1994). In other words, non-allocation can induce overutilization of common resources. Also, some proponents of cost allocation find non-allocation misleading, since it can understate the product costs and overstate profits generated from the product line (Doost 1996).

[3] Frequently allocated costs include research and development, distribution expenses, income taxes, and financial and accounting costs (e.g., Zimmerman 2010).

[4] Joye and Blayney's survey (1990) found that 80% of firms allocated costs to divisions. In addition, a survey by Fremgen and Liao (1981) showed that 84 % of firms allocated at least part of their indirect costs to their profit centers. In a survey of large Canadian firms, 70 percent indicated they allocate costs (Atkinson 1987).

However, skepticisms exist in the effectiveness of cost allocation practices. According to Mckinsey survey (2017), except the goal of tax-and-regulatory compliance, respondents casted doubt on the achievement of other goals such as cost transparency, accuracy, .cost control, and decision making. Many companies use different cost allocation systems for different purposes. Some maintain utilizing traditional costing system, while others implement an activity/transaction-based costing approach.[5] Whichever they select, there are shortcomings for each approach. First, aggregate costing method would induce divisional managers to over- (under-) utilize resources, since the allocation base would only partially reflect the actual level of common resource consumption. Second, activity based costing system also has several problems. ABC cannot always capture every activity that induces common overhead costs. In a survey, many respondents replied their firms use opaque measures for cost allocation (McKinsey 2017). Also, too often, employees and managers find allocation system too complex to understand.[6] Thus ABC system might not be an optimal control system to mitigate over-consumption of common resources.

All things combined, the effectiveness of cost allocation is inconclusive and is an open question that I attempt to address in this paper. More specifically, I examine whether firms with high likelihood of non-allocation overconsume common resources and thus incur greater total costs, cost of goods sold, and sales & general and administrative expenses relative to their industry peers.

H1*: There is no association between absence of cost allocation and resource over-consumption.*

[5] Mckinsey survey (2016) reports that almost half are applying a single top-down methodology for all of their functions – typically charging each business based on the percentage of enterprise revenues or head count that the business represents. About 21 percent of respondents reported using bottom-up approaches based on transaction totals, while 17 percent estimated actual resource usage according to time-sheet or capacity-utilization records

[6] According to KPMG survey (2016), 39% of respondents reported that the recipients of allocated costs did not understand how to influence them. Another company, which had a sprawling network of locations, found that only one person truly understood how support-function costs were allocated to individual sites. That was the person who had designed the original methodology years earlier (Mckinsey 2017).

2.2. The Determinants of Divisional Costs

I explore the determinants of a divisional cost that consists of two categories: the volume-related segment characteristics and the organizational structure of a firm. Various studies have suggested, overhead costs are driven by volume-related cost drivers such as the value of total assets, the number of employees or the sales revenue (Foster and Gupta 1990; Banker and Johnston 1993; Anderson, Banker, and Janakiraman, 2003). First, an increase in divisional sales revenue can be explained not only by the divisional employee's efforts, but also by advertisements, marketing campaigns, and administrative staff's efforts at the headquarters-level. Segments should be responsible for the cost burden, which they have generated to raise their own revenue. Many companies follow the criterion of benefits received and allocate common costs on the basis of sales revenue. In fact, around 60 percent of firms in a large survey responded that sales revenue is a significant cost driver for cost allocation purposes (Horngren 2011; PWC 2009; KPMG 2016). Second, an increase in assets could incur not only an operating expense at the segment level but also greater allocation amount. For example, if a firm acquires new machines, expenses such as utility expense, building rent, depreciation on office equipment, or property taxes could be incurred. Thus, it is rational for divisions to pay for the negative externality they have created through an expansion of total assets (Zimmerman 2010).

The determinants of divisional cost may be associated with the organizational structure of the firm. [7]First, the number of segments can either increase or decrease the likelihood of cost allocation. On one hand, divisions will bear less cost burden with an increase in the number of segments because common resources would be shared across a greater number of segments. On the other hand, divisions could be charged greater

[7] Ramadan (1989) argues that the decision to allocate service costs is related to organizational variables (i.e., degree of interdependence and decentralization, costs of monitoring divisional manager's performance and the number of divisions).

common costs. Costs, particularly driven from support and marketing departments, vary with the diversity and complexity in the product line (Young 2011). And following prior studies, I assume that as the number of segments increases, the level of complexity rises (Markarian and Parbonetti 2007). Second, lower-tax foreign segments might be allocated less than higher-tax (domestic or foreign) segments. Several recent findings suggest that firms shift income across regions to minimize tax obligations (Hope et al. 2013; Chen et al. 2015). In line with but moving a step forward from the prior literature, I assume that firms allocate less corporate costs to lower-tax foreign segments. Third, I assume that segments named "others" or "corporate and others" are likely to be allocated greater firm-wide expenses. Lail et al. (2014) document that managements shift expenses to "corporate/other" segment to mask the true performance of operating (or core) segments. Fourth, firm-wide expenses would be positively associated with divisional costs. Divisional cost and firm-wide expense would be positively correlated, because the segment-level businesses are likely to expand or contract along with the firm-level. Positive correlation would also mean that as corporate overhead increases, segment-level allocated overhead costs rise. Fifth, I assume that R & D intensity increases divisional level costs. R&D intensity reflects internal complexity, which refers to the sophistication of production technologies, and the work-processes of employees (Moldoveanu and Bauer 2004; Simon 1996; Markarian and Parbonetti 2007). Companies with such internal complexity need to efficiently and effectively deploy competencies and capabilities, invest in R&D, and consistently train employees (Løwendhal and Revang, 1998; Markarian and Parbonetti 2007). Thus, I expect that HR, R&D, or administrative expenses that are allocated to each division would be positively correlated with the internal complexity. Sixth, I assume that competition could be either positively or negatively correlated with divisional costs. Firms that need to cope with rapid changes in customers and competitive environments face high external complexity

(Nolle 1994; Nadler and Tushman, 1992; Thompson and Strickland 1990). Such firms need to invest in marketing to outsmart the market and invest in HR to recruit business experts to facilitate resource function. Therefore, I expect that the external complexity is positively associated with corporate-wide expenses that would be allocated to divisions. But on the other hand, high competition is positively associated with the tendency to implement ABC (Gosselin 1997). Firms with intense competition are likely to have greater impetus to find ways to differentiate products and services from those provided by competitors (Guilding and McManus 2002). Such needs lead to greater number of products and services lines, and increased customization of products and services. Thus, firms require sophisticated costing systems to measure accurately the costs of increased variety and customization (Al-Omiri and Drury 2007). Such innovation in costing system would lead to improvement in cost management system (Swenson 1995), represented by efficient firm-wide cost reduction. Seventh, customer-base concentration would be negatively correlated with divisional expense. Patatoukas (2012) document that firms with high customer-base concentration (i.e., firms with major customers) are likely to show high operating efficiency in the form of reduced operating expenses including SG&A expenses. I assume that customer-base concentration is negatively related to SG&A expenses that would be allocated to each segment. Eighth, advanced manufacturing technologies (in short AMT) induce cost reduction, because AMT helps firms develop more competitive strategies (e.g. integrated low cost) integral for strategic competitiveness (Lei et al. 1996). [9]Also, large AMT firms have the highest percentage of innovative costing usage, such as ABC and strategic costing (SC) (Cescon 2012). Firm-wide cost reduction would be positively associated with segment level cost reduction. Nineth, firm size could either increase or decrease divisional cost. On one

[9] Al-Omiri and Drury (2007) states that the investment in advanced manufacturing technology (AMT) results in overhead costs being mainly associated with investment in AMT, which represented facility-sustaining costs.

hand, size represents organizational intricacy in terms of the number of employees, customers, product lines, and international exposure costs (Beyer and Trice 1979). The costs associated with marketing, administrative department vary with the complexity and diversity of the product line (Young 2011). Thus, size can trigger greater cost. On the other hand, size is associated with adoption of more complex administration systems (Moores and Chenhall 1994), and adoption of ABC (Innes and Mitchell 1995). Thus, size could be positively correlated with cost reduction, driven from adopting ABC. Tenth, I assume that firm's financial leverage is negatively associated with divisional cost. Gosselin 2007 suggested that firms that adopt ABC are more likely to use higher level of financial leverage. Eleventh, I incorporate the intra-firm transactions to gauge the effect of divisional autonomy (or negotiation power) on cost allocation. Cost allocation is one method of transfer pricing between the headquarters and divisions. If high intra-firm transactions reflect low divisional autonomy, which might be the managements' willingness to control transactions in their best desires (Spicer 1988; Chen et al. 2015), then the management has great negotiation power over divisions and would have discretion to occasionally allocate more overhead costs to certain divisions. If high intra-firm transactions represent high divisional delegation, which may be strengthened through experience and competence of divisional managers in having power over the management to negotiate and to set transfer prices (in this case, lower indirect costs to be allocated) in their own interests (Leana 1987; Chen et al. 2015). [11]Twelfth, I assume that the proportion of segment's sales revenue from other segments to segment's total revenue is negatively correlated with divisional expenses. Generating sales requires aggressive marketing and distribution efforts. However, if a segment

[11] If complexity implies the diversity of business transactions, the percentage of intra-firm transactions might reflect the level of complexity.

generates sales that are mostly internally driven, it triggers less administrative expense. Thus, such segments should be allocated less indirect costs. [12]

2.3. The Reasons to Distort Costs

A cost distortion exists when the allocated cost is deviated from the optimal level that divisions anticipate. Divisions would expect that the common costs are allocated based on the variables that actually drive such costs. Cost distortion can be divided into two cases: imprecise- and discretionary cost distortion. First, firms might distort cost ex-ante by using allocation bases that are not related to the actual common resource utilization (imprecise cost distortion or ex-ante systematic distortion). Still a great portion of firms are using conventional costing approach. McKinsey survey (2017) reported that more than 50 percent are using a single top-down methodology for cost allocation, charging each business based upon the revenue or head-count. They would implement such system because the measurement and information gathering cost of ABC adoption might be too high (Banker and Potter 1993). They might also deem their systems sufficiently fair, simple, and consistent (McWatters and Zimmerman 2015).

Secondly, managements might use subjectivity to mitigate the incompleteness of objective cost drivers (discretionary cost distortion). In other words, cost distortion as a result of ex-post flexible adjustment can induce adaptive divisional actions. In a volatile management environment, based on firm's new preferences, different weighting of bases or new allocation bases can be imposed on divisions in order to reflect the relevant business environment and allocate the common cost accordingly and such discretionary adjustments can induce adaptive behavior (Bol 2008). Moreover, firms might distort costs in order to limit the divisional manipulation from the allocation system. If divisions are aware that a certain action would decrease the level of allocated

[12] Because of low data availability and a heterogeneity in firms' allocation base selections, I am not able to subsume all the cost driver candidates, such as labor hours, machine hours.

amount, then they can use the information to "game" the system (Courty and Marschke 2004; Gibbs et al. 2004). In this case, a cost distortion based on subjectivity can play a role in restraining divisions from making perverse decisions. In this sense, cost distortion could be perceived as a proper allocation scheme based on combination of objective cost drivers and subjectivity. Third, the management responsible for the cost allocation might favor (disfavor) certain divisional managers. Such favoritism (animosity) will lead to cost under- (over-) allocation.

However, I assume that second or third forms of discretionary allocation are rare, since firms allocate common costs based on the predetermined allocation formula. Contrary to these two cases, the first form of allocation is more plausible, but still rare, relative to imprecise cost allocation system.

2.4. The Impact of Cost Distortion on Divisional and Firm Performance

The performance impact of cost distortion can be conjectured from an information perspective, behavioral, and fairness perspective. From an information perspective,[14]a cost distortion is likely to induce suboptimal actions of divisions. First, an imprecise allocation can distort the profitability of certain products or particular divisions (Pfaff 1994; Doost 1996), providing an avenue to misprice products or distort

[14] From an information perspective, one of the main issues in the cost allocation has been determining the optimal level of accuracy. Accuracy encompasses two measurement characteristics: precision and freedom from bias (Merchant and Shields 1993). Many researchers have defined accuracy in terms of the number of suitable cost drivers incorporated in the cost allocation system and they argue that the accuracy increases, as a greater number of relevant cost drivers are employed. The advocates of an activity costing system claim that an ABC can better control and manage overhead costs and blame traditional costing system for the failure in competition (Stapleton et al. 2004). The underlying causes for the inadequacy of conventional cost systems include the dramatic evolution of cost structure, the declined importance of direct labor as a dominant cost driver, and the complexity of firms' product lines (Terzioglu 2016). However, an activity-based costing system also has its drawbacks. Accuracy requires high information gathering costs and additional cost drivers may be subject to high measurement errors (Demski and Feltham 1976; Banker and Potter 1993). As an alternative, several firms distort costs by using fewer cost allocation bases. In other words, they use an aggregated, simplistic method for assigning overhead costs to divisions. For instance, in terms of product cost allocation, Merchant and Shields (1993) argue that firms deliberately use less accurate system to overstate costs to prevent price shaving by sales personnel, while some other firms understate costs to encourage improvement in production methods or to stimulate consumptions.

product mix. If a product looks profitable (unprofitable), even though it incurs net loss (net profit), a division would make a suboptimal decision to maintain (abandon) the product line. Second, a cost distortion could give divisions a perception that a firm allocates opportunistically and arbitrarily. Divisional managers could deem such an arbitrary system as unreliable. Less loyalty to the allocation system would lead to a decrease in its informational value. Thus, managers will not make efficient and effective decisions based upon the allocation system.

From a behavioral perspective, it could lead to suboptimal or optimal decisions. On one hand, a cost distortion could induce managers to over- (under-) utilize low-taxed (high-taxed) factor input (Zimmerman 2010). If common overhead costs are not allocated based on the actual usage of resources, divisional managers would fail to effectively reduce common costs that are eventually allocated to each business unit. On the other hand, despite the failure to reflect actual resource consumption, a cost distortion can induce desirable actions from the management's point of view. For example, Hiromoto (1988) reports that a Japanese electronics company intentionally employs labor costs as an allocation base instead of using more accurate variables. Such allocation decision is to encourage investment in modern production technologies. Also, having simple allocation bases could provide divisional managers a clearer signal on which activities or drivers they need to concentrate on, than having multiple, sophisticated allocation bases. McKinsey survey (2017) documents that decision makers of firm with sophisticated costing systems, too often, do not understand how support-function costs are allocated to individual sites. KPMG survey (2016) also reports that 39 percent replied that the recipients of allocated costs did not understand how to influence them.

From a fairness perspective, a cost distortion could demotivate managers. A cost distortion could reinforce a negative perception that common costs are not allocated to

divisions fairly based on what and how much common resources they actually utilize. Several literatures (Fleurbaey 1994; Chevaleyre et al. 2009) discuss the problem of fair resource allocation and claim that resources must be allocated in a compensatory way. However, if costs are allocated in a way that undermines the reliability of compensation system, then segments will have less motivation to work efficiently, since they cannot obtain the anticipated payoff from a certain performance. This form of unfairness goes against Forsyth (2006)'s definition of "equity" (one form of distributive justice), demonstrating that members' outcomes should be based upon their inputs. It can also be explained by Rawls' (1999) definition of "Imperfect procedural justice", which implies that although there is an independent criterion (in this case cost drivers) for a fair outcome, there exists no method that guarantees that the fair outcome will be achieved (due to incomplete allocation bases).

Combined as a whole, the association between cost distortion and segment-level performance (firm-level performance) is inconclusive. Thus, I try to empirically investigate this relationship as my second hypothesis.

H2a: *Cost distortion does not have impact on managerial efforts of divisions.*

H2b: *Cost distortion does not have impact on firms' subsequent performance.*

As my final analysis, I examine the performance impact of over-(under-) allocation. Although I assume the same predicted consequences of over-(under-) allocation as those of cost distortion, I consider different, additional impacts of cost over- and under-allocation on divisional performance, respectively.

For segments that are over-allocated, the negative impact on performance would be strengthened. First, the perception of unfairness would be reinforced. According to an agency model, a cost allocation is one method of paying for the negative externality that each division has created (Zimmerman 2010). However, if managers bear greater negative externality than expected, they will be disconcerted by the procedural or

distributive unfairness of the system. Such unfairness perception would lead to lower employee job performance (Lau and Moser 2008). The proponents of equity theory predict that individuals compare their own reward-to-input ratio (In this case allocated amount-to-common resource usage) to the corresponding ratios of their peers (Adams 1963; Bol 2011). If the ratios are unequal, then the party whose ratio is lower (in this case when it is higher) will feel upset. And in order to restore a feeling of equity, individuals will lower their performance (Garland 1973; Bol 2011). Second, over-application especially on a particular product could induce over-pricing, which eventually might lead to a decline in both product competitiveness and sales performance.

For segments that are under-allocated, a positive impact on divisional performance would be strengthened. First, segments might deem under-allocation as a "fair" treatment. Most employees believe their own performance is above-average (Beer and Gery 1972; Meyer 1975; Bol 2011). In the similar vein, but from the cost allocation setting, divisional managers and employees would believe they do not (over-) consume common resources. Thus, under-allocation would have a positive effect on fairness perception than the optimal allocation (Bol 2011). Under-allocated amount would be more similar to their own assessment of how much burden they need to bear for their usage of common resources than the optimal allocated amount. Second, under-application especially on a specific product could induce underpricing, which might affect high product competitiveness and greater sales performance. But, it is important to keep in mind that under-allocation that makes a certain product look more profitable would eventually harm the value of the firm in the long run, since under-allocation is masking the actual loss triggered from the certain product line.

H3: *If segments are over- (under-) allocated, they are discouraged (encouraged) to improve their performance.*

III. SAMPLE AND DESCRIPTIVE STATISTICS

I first obtain segment-level financial data from Compustat-Segment database between 2000 and 2015. Segments are comprised of product/service, geographic, operating, and market segments and each firm chooses different types of classification.[15] In my sample, most firms classify their segments based on either product/service or geographic area. I also obtain Compustat-Customer Segment database to measure the customer-based concentration. I obtain firm-level financial statement data from Compustat and restrict my sample to non-financial firms (excluding SIC code from 6000 to 6999). All main variables and control variables are winsorized at the top and bottom 1 percentiles. My final sample consists of 70,685 segment-year observations. Table 1 introduces the variables used for my empirical analyses and Table 2 provides sample composition by year and by industry. Although the firm-segments data are available since 1974, the number of samples became stable and sufficient starting from 2000.[16] Table 2 Panel B shows that the manufacturing sector is the most dominant industry sector among my sample.

<Insert Table 1 here>

<Insert Table 2 here>

Table 3 Panel A summarizes the empirical distribution of all the variables. Note that there are different number of observations for different variables due to data availability. There are several notable features. First, there is evidence that around 25%

[15] I eliminate observations that are related to non-operating activities. For example, I eliminate all the divisions that are classified as 'eliminations', 'corporate', 'others'. There are segments with negative sales revenue. Negative revenue may be due to intersegment elimination, which are revenues generated from sales to other business or geographic segments within a companies. These revenues are eliminated from firm's consolidated sales, since segments that are named as 'Eliminations', 'Corporate' or 'Others' usually take the corresponding negative value of sales revenue. However, certain segments that have negative sales are named differently. So I additionally delete segments that have negative divisional revenue.

[16] IAS 14 Segment Reporting requires reporting of financial information by business or geographical area. Initially issued in August 1981, IAS 14 was effective beginning on or after 1st of January 1983. IAS 14 was reformatted in 1994. The reformatted IAS 14 was issued on August 1997, and was applicable beginning on or after 1st of July 1998. IAS 14 is superceded by IFRS 8 Operating Segments effective for annual periods beginning 1st of January 2009.

of sample firms do not allocate their common costs. The mean value of DUM_CORPCOST is 26.24%. This finding is consistent with Fremgen and Liao's (1981) report that around 80% of firms allocate costs. Sanella (1986) also document that 26% of the firms replied that they do not allocate common costs.[17] Second, among the sample firm-segments, product/service segments (69.35%) were most dominant forms followed by geographic segments (19.79%), operating segments (7.32%), and market segments (1.65%). Third, the table shows a significant variation in the level of cost distortion. The mean (median) value is 0 (0.3121) and the interquartile range is from 0.1298 to 1.5546.

Table 3 Panel B reports pairwise correlations across variables that are used for the divisional cost determinant model. The change in segment cost is mostly correlated with other variables except Firm Herfindahl Index and HAVEN in pearson correlation matrix and with all the variables in spearman correlation matrix. In particular, it is highly correlated with the change in divisional sales revenue and divisional assets. Table 3 Panel C shows pairwise correlations across variables used in the main regression for hypothesis 2 and 3. The correlations of abnormal allocation (or over-allocation) with the next period change in ROA provide preliminary evidence of negative impact of cost distortion (over-allocation) on a segment-level performance.

<Insert Table 3 here>

IV. ABSENCE OF COMMON COST ALLOCATION AND RESOURCE OVER-CONSUMPTION

[17] 18% of firms from Sanella's survey (1986) replied that they do not have common costs. But Sanella (1986) seriously doubts such response to be true, particularly in a company with multiple divisions. He assumes that the companies that said that they had no common costs actually did have such costs but did not recognize them as such and simply charged them to their segments directly without flowing them through explicit common cost pool. Given this assumption, he claims that this group of companies follows a unique accounting treatment for the allocation of common costs to its industry segments.

I assume that if a firm allocates common costs, all the (or most of the) corporate advertising costs and administration costs are allocated to divisions. Thus, if a firm has a corporate function that bears cost, I assume that the firm does not allocate common cost. I use two alternative measures. The first measure is an indicator variable that equals 1 if the segment that is classified as "headquarter", "corporate", or "non-allocated" has a segment cost. The segment's total cost is computed as the segment revenue minus the operating profit. One of the limitations of the first measure is that it can falsely capture the firms which partially allocate common costs while keeping the rest in the center as those that do not allocate at all. In order to alleviate this issue I introduce an alternative measure, which is a proportion of corporate function's cost to firm's total cost, scaled by the reciprocal of the number of segments. I assume the greater the portion of cost within the corporate segment, the higher the likelihood of non-allocation. Additionally, I measure resource over-(under-) consumption using the total cost, costs of goods sold, sales, general and administrative expense level relative to the industry peers.

<Insert Table 4 here>

Table 4 reports the empirical association between the likelihood of no allocation and the relative cost level. In Panel A, the absence of allocation is proxied by the existence of cost in a "Corporate", "Headquarters", "Non-segment", "Administrative", or "Non-allocated" segment. I assume that if a firm allocates corporate expense then there exists no expense at corporate level. If not, consistent with Sanella (1986), I assume that the common costs are charged directly to the corporate segment. Panel A indicates that the likelihood of no allocation leads to greater total cost, costs of goods sold, sales, general and administrative expense level relative to two digit SIC industry peers ($t = 23.59, 13.73, 16.53$). In Panel B, the likelihood of no allocation is proxied by the proportion of cost in a "Corporate" segment to total firm cost, scaled by reciprocal

of the number of segments. I expect that the higher the concentration of corporate costs, the greater the likelihood of no or less allocation to each segment. Consistent with Panel A, Panel B reports the over-consumption effect of non-allocation behavior (t=19.81, 12.41, 13.75). These results imply that a firm that does not allocate common costs is less likely to effectively control costs, which could be the result of over-utilization of common resources by business units.

V. DIVISIONAL COST DETERMINANT MODEL

In this section, I examine the determinants of divisional cost. First, following Anderson et al. (2003), I include changes in the sales revenue, and the value of assets, as imperfect, yet observable cost drivers (or in case as cost allocation bases). Second, I include the number of segments. As mentioned in the hypothesis development section, it can either increase or decrease divisional costs. Third, I incorporate an indicator variable that is equal to 1 if a segment is named tax haven country, because of the suggestion that firms shift income to lower taxed foreign segments (Hope et al. 2013; Chen et al. 2015). I assume that firms have tendency to allocate less firm-wide expenses to such segments to pay less corporate tax.[18]Fourth, I include an indicator variable that is equal to 1 if segments are named "other", "rest", "non-core", or "corporate/other", because of the suggestion that firms that have segments named "corporate/others" are likely to shift firm-wide expenses to such segments in order to conceal the true performance of core segments (Lail et al. 2014). Fifth I incorporate the change in firm-wide expenses, which I expect to have a positive relationship with the change in

[18] In order to distinguish segments that belong to tax haven countries from the other, I refer to Dyreng and Lindsey (2009). Tax haven countries include Andorra, Anguilla, Antigua, Aruba, Bahamas, Bahrain, Barbados, Bahrain, Barbados, Belize, Bermuda, Botswana, British Virgin Islands, Brunei, Darussalam, Cape Verde, Cayman, Cook Islands, Costa Rica, Cyprus, Dominica, Gibraltar, Grenada, Guernsey and Alderney, Ireland, Isle of Man, Jersey, Kitts and Nevis, Latvia, Lebanon, Liberia, Liechtenstein, Luxembourg, Macao, Macau, Maldives, Malta, Marshall Islands, Mauritius, Monaco, Montserrat, Netherlands Antilles, Niue, Palau, Panama, Samoa, San Marino, Seychelles, Singapore, St. Lucia, St. Vincent and the Grenadines, Grenada, Switzerland, and U.S. Virgin Islands

divisional expenses. Sixth, I include R & D intensity, because of the suggestion that R&D intensity reflects internal complexity and the corporate cost vary with complexity (Young 2011). Seventh, I add Herfindahl Index at the firm's two-digit SIC industry level and segment's two-digit industry level as a proxy for external complexity. I expect that the external complexity is positively associated with firm-wide expenses that would be allocated to divisions. But on the other hand, greater competition would represent higher likelihood of adopting effective cost reduction strategy such as ABC. Eighth, I incorporate customer-base concentration measure introduced by Patatoukas (2012) and expect that the measure is negatively correlated with the change in divisional expense. Nineth, I add AMT, because of the suggestion that AMT helps firms reduce costs effectively for strategic competitiveness (Lei et al. 1996). I expect that firm-wide cost reduction would be positively associated with segment level cost reduction. Tenth, I include firm size, which reflects organizational complexity or the adoption of more sophisticated management accounting system such as ABC. Eleventh, I include firm leverage, which proxies the tendency to adopt ABC (Gosselin 2007). Twelfth, I incorporate the percentage of intra-firm transactions that reflect the level of divisional autonomy to set transfer prices (Chen et al. 2015). Thirteenth, I include the proportion of segment's revenue from other segments to the segment's total revenue (Seg Dependence), which I expect is negatively associated with the change in divisional costs. Additionally I include each indicator variable that equals 1 if it belongs to product/service, geographic, market, or operating segments. I also control for industry fixed effects and year fixed effects. In sum, I use the following regression:

$$\triangle log(Seg\ Cost_{i,j,t}) = \beta_0 + \beta_1 \triangle log(Seg\ Sales_{i,j,t}) + \beta_2 \triangle log(Seg\ Asset_{i,j,t}) + \beta_3 \#\ of\ segments + \beta_4 Haven + \beta_5 Corp\&others + \beta_6 \triangle log(Firm\ Cost_{i,t}) + \beta_7 FirmR\&D + \beta_8\ Seg\ Herfindahl + \beta_9\ Firm\ Herfindahl + \beta_{10}\ Customer\text{-}Concentration + \beta_{11}\ AMT + \beta_{12}\ Firm\ Asset + \beta_{12}\ Firm\ Leverage + \beta_{13}\ Intra\text{-}$$

$$Transactions + \beta_{14}\, SegDependence + \beta_{15}\ PDSRVC + \beta_{16}\ MARKET + \beta_{17}\ GEO + \beta_{18}\ OPER + Fixed\ Effects + \eta_{i,j,t} \quad (1)$$

<Insert Table 5 here>

Table 5 shows the regression results of the determinant model. I regress change in segment's total cost, selling, general & administrative expenses, and costs of goods sold on the determinant variables of divisional expense. The result shows that change in divisional cost is positively correlated with change in sales revenue (t=61.66) and change in sales asset (t=18.13). The coefficient on HAVEN is negative and significant (t=-1.83), implying that the segments that belong to lower-taxed countries are likely to be allocated less overhead expenses. The coefficient on CORP&OTHER is positive and significant (t=6.88). It implies that indirect costs are shifted to "others" or "corporate/others" divisions so that the core segments look more profitable. Following the expectation, the cofficient on the change in corporate firm expense is positive and significant (t=2.1). Herfindahl index based on the segment's two digit SIC industry is negatively correlated with the change in segment's expense (t=-3.77). This result might imply that the competition among segments in the same industry triggers complexity and diversity in the product or service line, which triggers greater costs from support functions. However, the Herfindahl index based on the firm's two digit SIC industry is positively correlated with the change in segment's costs (t= 2.29). This result could imply that the competition among firms in the same industry triggers the need to operate more efficiently and to adopt more sophisticated management accounting system such as ABC. The coefficient on INTRA_TRANSACT is positive and significant (t=4.37). This result might imply that high level of internal transactions trigger low divisional negotiation power or autonomy that leads to greater tendency of allocating more overhead costs. Finally, following my prediction, the coefficient on SEGDEPENDENCE is negative and significant (t=-5.9). Other variables show no

significance. High adjusted R-squared of 86.56% indicates a great explanatory power of my determinant variables on the dependent variable. The regression results for COGS and SG&A show difference in the determinants of each type of expense.

Following Jone's (1991) framework, the fitted value represents the optimum divisional cost change after considering determinants that drive change in divisional costs and controlling for industry- and year-fixed effects. I assume that divisional managers have expectations about the optimal amount of cost that should be allocated to their own, based on the level of activity and organizational factors. I define the bias from the optimal value as cost distortion. Thus, the residual represents the proxy for cost distortion that is deviated from the optimal amount.

VI. THE COST DISTORTION AND SEGMENT (FIRM) PERFORMANCE

For hypothesis 2a and 3, I take the residual values from the cost determinant model and test the association between cost distortion (over- and under-allocation) and segment-level using the following specifications:

$$\triangle SegROA_{i,j,t+1} = \beta_0 + \beta_1\, Rank(|\hat{\varepsilon}i,j,t|) + Controls + Fixed\ Effects + \eta_{i,j,t+1} \quad (2a)$$

$$\triangle SegROA_{i,j,t+1} = \beta_0 + \beta_1\, Rank(\hat{\varepsilon}i,j,t)^{+} + \beta_2\, Rank(\hat{\varepsilon}i,j,t^{-}) + Controls + Fixed\ Effects + \eta_{i,j,t+1} \quad (2b)$$

I take the absolute value of the residual as the degree of cost distortion. I use the residual that is over 0, as a proxy for over-allocation and the residual that is under 0, as a proxy for under-allocation. I use the quintile ranks of the independent variables. I use the quintile ranks of each independent variable to ensure that all independent variables are of similar scale (Guay et al. 2016; Patatoukas 2012). If a raw residual is greater than the other, the rank is also set at a higher number. The ranked specification has additional advantage of being robust to both outliers and non-linearity (Guay et al.

2016). The vector of controls includes variables that are known to have predictive power for future changes in segment-level performance, including the contemporaneous level and changes in profit margins and return-on-assets (e.g., Fairfield and Yohn 2001; Soliman 2008; Patatoukas 2012). I also control for segment industry, firm industry and year fixed effect.

<Insert table 6 here>

<Insert table 7 here>

Table 6 represents results from estimating equation (2a). Columns 1, 2, 3, 4 document that the level of cost distortion is negatively associated with the future divisional performance, in terms of return on assets, asset turnover, profit margin, and gross margin. The result is in line with the prediction that the cost distortion leads to suboptimal actions or demotivation of divisional managers and employees.

Table 7 presents results from estimating equation (2b). The findings show that under-allocation leads to negative divisional performance, in terms of return on assets, asset turnover, profit margin, and gross margin. This implies that over-allocated segments fail to increase sales, efficiently reduce operating costs such as cost of goods sold or selling, general & administrative expenses. The under-allocation, however, has no effect on next-period's divisional return on assets. I conduct a DuPont analysis by decomposing the results into asset turnover and profit margin. Column 2, 3 shows that under-allocation has no impact on profit margin but negative impact on asset-turnover. This finding implies that under-allocation leads to lower efficiency (proxied by asset turnover), but has no impact on profitability (proxied by profit margin). Additionally, column 4 documents under-allocation is negatively associated with subsequent change in gross margin.

For hypothesis 2b, I compute two measures of firm-level cost distortion, which are $((\sum_{j=1}^{n} \varepsilon^2)/\text{n})$ and $((\sum_{j=1}^{n} |\varepsilon|)/n)$, where a firm-year observation has n segments. It

represents to which extent a firm misallocates costs to divisions from the optimal amount. Consistent with second equations, I use control variables that have predictive power for future changes in firm performance. I also control for firm industry and year fixed effect. I use the following model specifications for hypothesis 2b:

$$\triangle FirmROA_{i,t+1} = ß_0 + ß_1\, Rank((\sum_{j=1}^{n} |\varepsilon|)/n) + Controls + Fixed\ Effects + \eta_{i,t+1} \quad (3a)$$

$$\triangle FirmROA_{i,t+1} = ß_0 + ß_1\, Rank((\sum_{j=1}^{n} \varepsilon^2)/\mathrm{n}) + Controls + Fixed\ Effects + \eta_{i,t+1} \quad (3b)$$

<Insert table 8 here>

Table 8 Panel A and B examine the lead-lag association between changes in firm's overall performance and firm-level cost distortion. Although cost distortion appears to be uncorrelated with subsequence changes in gross margin, consistent with the results at the segment-level, the findings document that a cost allocation negatively affects the subsequent changes in firm performance, in terms of firm's return on assets, asset turnover, and profit margin.

VII. ADDITIONAL ANALYSIS

The Mitigation Effect of Interdependence on the Association between Cost Over-(Under-)Allocation and the Subsequent Change in Divisional Performance

My findings indicate that cost distortion negatively affects the subsequent change in divisional and firm's performance. I additionally examine whether the level of interdependence has any mitigation impact on the association. Interdependencies occur when demand function of divisions are dependent or when divisions have supply and cost functions (Milgrom and Roberts 1992; Abernethy et al. 2004). As the interdependence level elevates, the divisional summary measures (DSM) in the performance measurement system get noisier and becomes less informative (Abernethy

et al. 2004). Also the use of DSMs in interdependent environment will induce managers to optimize performance at the segment level, rather than cooperate and optimize synergies among divisions (Abernethy et al. 2004). Thus the use of DSMs will decrease in such setting. In the similar vein, in terms of cost allocation, higher interdependence level will induce greater noise in the individual-level allocation bases. Top managements in such environment would encourage greater synergy and cooperation across units rather than competition. Thus, they have less motivation to allocate costs based on individual activity metrics and the noise in the allocation system (i.e. cost distortion) would be perceived more natural. Thus I posit that the negative impact of cost distortion on the subsequent change in divisional performance is mitigated by the level of interdependence. Following Bushman et al. (1995), I use intersegment sales as a percentage of firm sales as a proxy for interdependence.

<Insert table 9 here>

Table 9 Panel A demonstrates that interdependence alleviates the negative effect of cost distortion on divisional performance, in terms of change in ROA, asset turnover, and gross margin. Table 9 Panel B shows that the level of interdependence mitigates the negative impact, in terms of change in ROA and asset turnover. The results imply that the level of interdependence is strongly associated with the extenuation impact on operating inefficiency.

VIII. CONCLUSIONS

One of the limitations of this study is that I am not able to directly observe whether a firm allocates its common costs. But I try to alleviate this issue by developing alternative measures. My measure indicating that 26.24% of firms do not allocate costs, aligns with prior findings that around 80% of firms allocate their costs to divisions (Fremgen and Liao 1981; Joye and Blayney 1990). Second, I inevitably exclude

unobservable cost drivers, such as machine hours or level of production. However, I try to alleviate the issue by including variables that reflect the tendency to adopt more sophisticated allocation mechanism. Lastly, cost distortion has confounding implications. It may imply ex-ante distortion (e.g., usage of simplistic allocation method) or ex-post distortion due to subjectivity. However, ex-post distortion is relatively rare in real business practices, since most firms allocate costs based on a rigorously developed formula.

This study contributes to the literature by providing large-sample evidence on the association of non-allocation with resource over-consumption at the firm-level. This is the first study to explore the cost drivers and the organizational determinants of divisional costs. I introduce a measure of cost distortion based on the cost determinant model, which has a great explanatory power across industries. My findings provide a practical implication that the optimal cost allocation system is critical for the improvement of segment's and firm's overall performance.

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TABLE 1
Definition of Variables

Variables	Definition
RELATIVE COST	$\frac{\mathbf{FIRMCOST/FIRMSALES}-\overline{\mathbf{FIRMCOST}/\boldsymbol{FIRMSALES}}}{\overline{\mathbf{FIRMCOST}/\boldsymbol{FIRMSALES}}}$, where $\overline{\boldsymbol{FIRMCOST}}$ is the mean value of firm cost in 2-digit SIC industry and $\overline{\boldsymbol{FIRMSALES}}$ is the mean value of firm sales revenue in 2-digit SIC industry
RELATIVE COGS	$\frac{\mathbf{FIRMCOGS/FIRMSALES}-\overline{\mathbf{FIRMCOGS}/\boldsymbol{FIRMSALES}}}{\overline{\mathbf{FIRMCOGS}/\boldsymbol{FIRMSALES}}}$, where $\overline{\boldsymbol{FIRMCOGS}}$ is the mean value of firm cost in 2-digit SIC industry
RELATIVE SGA	$\frac{\mathbf{FIRMSGA/FIRMSALES}-\overline{\mathbf{FIRMSGA}\boldsymbol{FIRMSALES}}}{\overline{\mathbf{FIRMSGA}/\boldsymbol{FIRMSALES}}}$, where $\overline{\boldsymbol{FIRMSGA}}$ is the mean value of firm cost in 2-digit SIC industry
DUM_CORPCOST	Indicator variable that equals 1 if the firm has a corporate division that bears costs
RATIO_CORPCOST	$\left(\frac{\mathbf{"CORPORATE" segment cost}}{\mathbf{(Total\ cost)}}\right)$* 1/log(# of segments)
SEGCOSTRATE	$\log((Segcost_{i,j,t})/(Segcost_{i,j,t-1}))$
FIRMCOSTRATE	$\log((Firmcost_{i,t})/(Firmcost_{i,t-1}))$
SEGCOGSRATE	$\log((SegCOGS_{i,j,t})/(SegCOGS_{i,j,t-1}))$
SEGSGARATE	$\log((SegSGA_{i,j,t})/(SegSGA_{i,j,t-1}))$
SEGSALESRATE	$\log((Segrevenue_{i,j,t})/(Segrevenue_{i,j,t-1}))$
SEGASSETRATE	$\log((Segasset_{i,j,t})/(Segasset_{i,j,t-1}))$
|ABNORMALALLOCATION*	Absolute value of the residual obtained from cost determinant model regression
OVERALLOCATION	Positive value of the residual obtained from cost determinant model regression
UNDERALLOCATION	Negative value of the residual obtained from cost determinant model regression
DISTORT_SQR	$(\sum_{j=1}^{n} \varepsilon^2)$/n , where a firm-year observation has n segments
DISTORT_ABS	$(\sum_{j=1}^{n} \lvert\varepsilon\rvert)$/n , where a firm-year observation has n segments
INTRA_TRANSACT	$(\sum_{j=1}^{n}$ Intersegment eliminations$)$/$Firmrevenue_{i,t}$
SEGDEPENDENCE	$Intersegment\ elimination_{i,j,t}/Segrevenue_{i,j,t}$
CORP & OTHER	Indicator variable that equals 1 if the division is named "Corporate & Others" or "Other"
FIRMHERFINDAHL	Firm herfindahl index in 2-digit SIC industry
SEGHERFINDAHL	Segment herfindahl index in 2-digit SIC industry
HAVEN	Indicator variable that equals 1 if the division is named a tax haven country
SEGROA	Segment operating income scaled by lagged segment asset
SEGPM	Segment operating income scaled by segment revenue
SEGGM	Segment revenue minus segment COGS scaled by segment revenue
FIRMPM	Firm operating income scaled by firm revenue
FIRMROA	Firm operating income scaled by lagged firm asset
FIRMGM	Firm revenue minus firm COGS scaled by firm revenue
AMT	Indicator variable that equals 1 if the 2 digit code is between 34 and 39
FIRMLEVERAGE	Log(long-term debt)
FIRMASSET	Log(Firmasset)
FIRMRND	Firm's R&D expense scaled by firm's asset
CC	Customer concentration rate = $\sum_{k=1}^{n} \left(\frac{\mathbf{(Sales\ from\ Customer\ k}}{\mathbf{(Total\ Revenue)}}\right)^2$
PDSRVC	Indicator variable that equals 1 if the division is included in product/service segment
MARKET	Indicator variable that equals 1 if the division is included in market segment
GEO	Indicator variable that equals 1 if the division is included in geographic segment

OPER	Indicator variable that equals 1 if the division is included in operating segment
# OF SEGMENTS	Number of segments within each firm-year observation

TABLE 2
Sample Composition

Panel A: Breakdown by year

Year	Firms	Firm segments
2000	1789	5246
2001	1967	5760
2002	1909	5574
2003	1851	5272
2004	1803	5044
2005	1795	4955
2006	1740	4885
2007	1620	4545
2008	1564	4321
2009	1515	4125
2010	1486	4006
2011	1436	3841
2012	1315	3517
2013	1284	3340
2014	1236	3237
2015	1184	3017
Total	**25,494**	**70,685**

Panel B: Breakdown by industry

1-digit SIC	Description	Firms	Firm segments
0	Agriculture, forestry, and fisheries	162	315
1	Mineral and construction	2044	5738
2	Manufacturing	4875	14346
3	Manufacturing	7565	20525
4	Transportation, communications, utilities	4113	12224
5	Whole trade and retail trade	2547	6479
6	Finance, insurance, and real estate	n/a	n/a
7	Service industries	2732	7070
8	Service industries	1166	2986
9	Public administration	290	1002
Total		**25,494**	**70,685**

This table describes the sample composition. I eliminate all segment-year observations that have missing variables. Also, I eliminate observations that are related to non-operating activities. Thus, I additionally delete segments that have negative divisional revenue. My final sample consists of 70,685 segment-year observations for the period 2000-2015. Initially, I delete the firm-year observations, if the firm revenue equals the segment revenue. Otherwise, even if the number of segments for each firm-year is 1, I assume that there are other non-reportable segments. The reason for low average value for the number of segments for each firm is because a multitude of firms partially disclose performance outcomes of reportable segments.

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TABLE 3
Descriptive statistics

Panel A: Descriptive statistics

Variable	N	Std. Dev	Mean	P25	P50	P75
RELATIVE COST	80026	3.4064	0.9846	-0.0345	0.0415	0.2394
DUM_CORPCOST	80026	0.4399	0.2624	0.0000	0.0000	1.0000
FIRMHERFINDAHL	80026	2.2127	0.0558	0.0034	0.0081	0.0268
FIRMROA	80026	0.5459	-0.0883	-0.0485	0.0529	0.1125
RELATIVE COGS	80019	1.7837	0.3572	-0.2398	-0.0072	0.1959
SEGCOSTRATE	70685	1.5236	-0.1371	-0.8030	0.0000	0.2972
SEGSALESRATE	70685	1.6707	-0.1523	-0.8424	0.0000	0.2861
CORP & OTHER	70685	0.0980	0.0097	0.0000	0.0000	0.0000
INTRA_TRANSACT	70685	0.1779	0.0675	0.0000	0.0000	0.0273
SEGDEPENDENCE	70685	0.1711	0.0452	0.0000	0.0000	0.0000
FIRMCOSTRATE	70685	0.0618	0.0070	0.0000	0.0000	0.0000
SEGASSETRATE	70685	1.4698	-0.1461	-0.8343	0.0000	0.3214
SEGHERFINDAHL	70685	0.1093	0.0706	0.0094	0.0222	0.0785
HAVEN	70685	0.0485	0.0024	0.0000	0.0000	0.0000
RELATIVE SGA	64650	9.3844	2.8889	-0.1449	0.3054	1.4552
SEGROA	62557	0.3256	0.0000	-0.0044	0.0621	0.1138
SEGPM	62557	2.3729	-0.3343	-0.0050	0.0669	0.1391
AMT	47973	0.4509	0.2839	0.0000	0.0000	1.0000
FIRMLEVERAGE	47973	2.4499	6.6062	4.9630	6.7536	8.4183
FIRMASSET	47973	2.2770	7.2566	5.7830	7.3578	8.8783
FIRMRND	47973	0.0518	0.0229	0.0000	0.0007	0.0242
CC	47973	0.7110	0.2509	0.0413	0.1461	0.3506
PDSRVC	47973	0.4610	0.6935	0.0000	1.0000	1.0000
MARKET	47973	0.1273	0.0165	0.0000	0.0000	0.0000
GEO	47973	0.3985	0.1979	0.0000	0.0000	0.0000
OPER	47973	0.2604	0.0732	0.0000	0.0000	0.0000
# OF SEGMENTS	47973	8.4539	11.3280	5.0000	9.0000	15.0000
RATIO_CORPCOST	49314	0.2145	0.0666	0	0	0.0186
⊿SEGATO	22507	12.8463	-2.4368	-0.7179	0.09402	0.81546

TABLE 3
(continued)

|DISTORTION|	21971	0.2439	0.3121	0.0000	0.1298	1.5546
OVERALLOCATION	21971	0.2566	0.1199	0.0000	0.0000	1.5546
UNDERALLOCATION	21971	0.2475	-0.1240	-1.4348	0.0000	0.0000
FIRMPM	13767	0.3940	0.0427	0.0322	0.0808	0.1418
SEGCOGSRATE	12934	1.5916	-0.1453	-0.8832	0.0000	0.3295
SEGSGARATE	5781	1.3583	-0.1163	-0.7962	0.0000	0.3461
⊿SEGGM	3971	0.3242	0.0097	-0.0260	0.0000	0.02581

Panel B: Pearson (Spearman) pairwise correlations above (below) the main diagonal (N=70,685)

	SEGCOSTRATE	*SEGSALESRATE*	*SEGASSETRATE*	*SEGDEPENDENCE*	*HAVEN*	*SEGHERFINDAHL*	*FIRMCOSTRATE*	*FIRMCOSTRATE*	*FIRMHERFINDAHL*	*INTRA_TRANSACT*
SEGCOSTRATE	1	0.92***	0.74***	-0.09***	-0.01	-0.03***	0.15***	-0.07***	-0.002	0.02***
SEGSALESRATE	0.95***	1	0.71***	-0.09***	-0.003	-0.02***	0.14***	-0.13***	0.0002	0.02***
SEGASSETRATE	0.74***	0.74***	1	-0.02***	0.002	-0.02***	0.13***	-0.01*	0.0001	0.02***
SEGDEPENDENCE	0.01*	0.01***	0.02***	1	0.01***	-0.03***	-0.01***	0.06***	-0.05***	0.45***
HAVEN	-0.01***	-0.01***	0.001	-0.01**	1	-0.01**	-0.0001	-0.005	-0.005	0.003
SEGHERFINDAHL	-0.01***	-0.01*	-0.02***	-0.08***	-0.02***	1	0.002	-0.02***	0.70***	-0.06***
FIRMCOSTRATE	0.14***	0.13***	0.11***	-0.02***	0.001	0.01***	1	-0.01***	0.01***	-0.02***
CORP & OTHER	-0.06***	-0.09***	-0.008**	0.002	-0.005	-0.05***	-0.01**	1	-0.002	0.02***
FIRMHERFINDAHL	-0.01***	-0.01***	-0.003	-0.11***	-0.01**	0.77***	0.02***	0.003	1	-0.08***
INTRA_TRANSACT	0.02***	0.02***	0.01***	0.80***	-0.01***	-0.09***	-0.02***	0.02***	-0.12***	1

Panel C: Pearson (Spearman) pairwise correlations above (below) the main diagonal (N=21,971)

	$\triangle ROA_{t+1}$	|*DISTORTION*|	*OVERALLOCATION*	*UNDERALLOCATION*	*PM*	$\triangle PM$	*ROA*	$\triangle ROA$
$\triangle ROA_{t+1}$	1	-0.07***	-0.04***	0.05***	-0.05***	-0.01	-0.95***	-0.17***
|*DISTORTION*|	-0.04***	1	0.64***	-0.60***	-0.21***	0.06***	0.05***	0.01
OVERALLOCATION	-0.04***	0.25***	1	0.23***	-0.32***	0.05***	-0.01	-0.01
UNDERALLOCATION	-0.01**	-0.30***	0.84***	1	-0.07***	-0.03***	-0.07***	-0.02***
PM	-0.07***	0.03***	-0.25***	-0.26***	1	-0.28***	0.15***	-0.01*
$\triangle PM$	-0.03***	-0.002	-0.07***	-0.07***	0.20***	1	-0.02***	0.12***
ROA	-0.47***	-0.04***	-0.10***	-0.07***	0.67***	0.16***	1	0.16***
$\triangle ROA$	-0.20***	0.01*	-0.06***	-0.06***	0.15***	0.56***	0.26***	1

Panel A presents descriptive statistics for observations used in hypothesis 1, 2, and 3. Panel B presents Pearson/Spearman correlation coefficient among the variables used in the regression model to derive abnormally allocated cost amount. Panel C reports Pearson/Spearman correlation coefficient among the variables used in the regression model for hypothesis 2. *,**, and *** denote two-tailed significant at the 10%, 5% and 1% levels, respectively. See Table 1 for variable definitions.

TABLE 4
The Impact of Firm's Non-Allocation on Over-(Under-) Consumption

Panel A: Absence of allocation proxied by the existence of cost in a "Corporate" segment

	Sign Prediction	RELATIVE $COST_t$			RELATIVE $COGS_t$			RELATIVE SGA_t		
		Coeff.		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**
Intercept		0.1076	**	2.06	0.1038	***	3.28	1.2974	***	4.72
DUM_CORPCOST	+	**1.1947**	***	**23.59**	**0.3593**	***	**13.73**	**2.3809**	***	**16.53**
FIRM HERFINDAHL		-0.0103	**	-2.45	-0.0062	***	-3.44	-0.0279	**	-2.36
FIRMROA		-3.4466	***	-55.95	-1.1300	***	-28.04	-9.7784	***	-44.05
Year dummies		included			Included			Included		
Firm industry dummies		included			Included			Included		
N		80,026			80,019			64,650		
Adjusted R^2		44.62%			26.18%			36.15%		

Panel B: Absence of allocation proxied by the proportion of cost in a "Corporate" segment to total firm cost weighted by the number of segments

	Sign Prediction	RELATIVE $COST_t$			RELATIVE $COGS_t$			RELATIVE SGA_t		
		Coeff.		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**
Intercept		0.0607		1.45	0.0756	***	2.79	1.1040	***	4.09
RATIO_CORPCOST	+	**1.1057**	***	**19.81**	**0.3818**	***	**12.41**	**2.4729**	***	**13.75**
FIRM HERFINDAHL		-0.0137	***	-2.58	-0.0079	***	-3.24	-0.0363	**	-2.24
FIRMROA		-2.9453	***	-37.47	-1.0091	***	-20.02	-8.6076	***	-30.29
Year dummies		included			Included			Included		
Firm industry dummies		included			Included			Included		
N		69,768			69,766			57,340		
Adjusted R^2		41.58%			22.39%			31.86%		

This table reports the results from OLS regression in which the independent variable proxies for firm's resource over-(under-) consumption relative to peers. Over-(Under-) consumption measures include relative firm cost, COGS, SG&A level relative to 2 digit SIC industry peers. Coefficient estimates and t-statistics are presented in cells. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. Refer to Table 1 for variable definitions.

TABLE 5
Determinants of Divisional Cost Incurrence

	Sign Prediction	(1) SEGCOSTRATE			(2) SEGCOGSRATE			(3) SEGSGARATE		
		Coeff.		t-stat	Coeff.		t-stat	Coeff.		t-stat
Intercept		0.0636		0.95	0.0949		0.91	0.0141		0.06
SEGSALESRATE	+	0.7320	***	61.66	0.9911	***	58.34	0.3291	***	12.15
SEGASSETRATE		0.1716	***	18.13	-0.0125		-0.78	0.38238	***	13.11
SEGDEPENDENCE		-0.2567	***	-5.9	-0.6683	***	-6.71	-0.16868		-0.86
HAVEN	+	-0.1495	*	-1.83	-0.2012	*	-1.94	0.30963		1.61
SEGHERFINDAHL	-	-0.245	***	-3.77	-0.0887		-0.92	-0.3420		-1.27
FIRMCOST(COGS or SGA) RATE		0.1579	**	2.1	0.1241		1.16	0.86044	***	3.44
CORP & OTHER		0.6140	***	6.88	-0.0986		-0.87	1.01456	***	3.96
FIRMHERFINDAHL		0.3969	**	2.29	0.0369		0.16	1.01304		1.47
INTRA_TRANSACT		0.1277	***	4.37	0.3429	***	4.8	0.08625		0.56
AMT		-0.0199		-0.37	0.0227		0.24	0.09442		0.57
FIRMLEVERAGE		-0.0063		-0.54	-0.0099		-0.65	-0.01930		-0.45
FIRMASSET		0.0029		0.24	0.0086		0.52	0.00261		0.06
FIRMRND		0.0563		0.43	-0.0212		-0.12	0.05625		0.19
CC		0.0062		0.32	0.0012		0.17	0.00573		0.44
PDSRVC		-0.0187		-0.79	-0.0363		-0.82	0.12455		1.02
MARKET		-0.0351		-1.17	-0.0915		-1.65	0.1572	*	0.9
GEO		-0.0378		-1.52	-0.0499		-1.11	0.0574		0.45
OPER		-0.0364		-1.41	-0.0335		-0.6	0.0997		0.69
# OF SEGMENTS		0.0001		0.23	0.0004		0.39	0.0030		1.20
Year dummies		Yes			Yes			Yes		

TABLE 5
(continued)

Segment industry dummies	Yes	Yes	Yes
Firm industry dummies	Yes	Yes	Yes
N	47,973	12,934	5,781
Adjusted R^2	86.56%	87.42%	55.26%

Table 5 reports results from pooled OLS regression in which the independent variables proxy for change in divisional cost, COGS, and SG&A. Coefficient estimates and t-statistics are presented in cells.*, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively, using two-tailed tests. Refer to Table 1 for variable definitions.

TABLE 6
The Impact of Cost Distortion on Segment's Performance

	Sign Prediction	△SEGROA$_{t+1}$			△SEGPM$_{t+1}$			△ SEGATO$_{t+1}$			△SEGGM$_{t+1}$		
		Coeff.		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**
Intercept		0.0247	***	0.14	-0.1559		-1.59	0.7080		0.55	0.0724	*	1.87
RANK(|ABNORMAL|)	-	**-0.0029**	*******	**-2.57**	**-0.009**	******	**-2.16**	**-0.4483**	*******	**-6.35**	**-0.0049**		**-1.37**
SEGPM		0.0774	***	12.13	-0.3119	*******	-13.25	0.6388	***	9.32	-0.0706	***	-4.52
△SEGPM		-0.0047		-0.37	-0.1091	******	-2.18	0.3102	**	2.1	-0.0179		-0.58
SEGROA	+	-0.9449	***	-189.31	0.0108	*******	2.89	-6.1443	***	-18.28	-0.0013		-0.35
△SEGROA	-	-0.0144	***	-3.26	-0.0069		-1.34	0.4036		1.41	-0.0038		-0.73
Year dummies		included			Included			included			included		
Segment industry dummies		included			Included			included			included		
Firm industry dummies		included			Included			included			included		
N		21,971			21,869			12,507			3,971		
Adjusted R^2		92.03%			26.00%			40.65%			14.08%		

This table reports the results from OLS regression in which the independent variable proxies for segment performance. Performance measures used are changes in return on lagged assets (ROA), profit margin (PM), asset turnover (ATO), and growth margin (GM). Coefficient estimates and t-statistics are presented in cells. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. Refer to Table 1 for variable definitions.

TABLE 7
The Impact of Cost Over- (Under-) Allocation on Segment's Performance

	Sign Prediction	△SEGROA$_{t+1}$			△SEGPM$_{t+1}$			⊿ SEGATO$_{t+1}$			⊿SEGGM$_{t+1}$		
		Coeff.		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**
Intercept		0.0446		0.25	-0.1665		-1.69	0.8094		0.59	0.0623		1.45
RANK(PLUS)	-	**-0.0157**	***	**-4.07**	**-0.0130**	*	**-1.8**	**-0.8208**	***	**-7.18**	**-0.0099**		**-1.44**
RANK(MINUS)		**-0.0006**		**-0.18**	**0.0086**		**1.4**	**0.2979**	***	**2.87**	**0.0113**	*	**1.78**
SEGPM		0.0757	***	11.91	-0.3121	***	-13.15	0.5966	***	8.71	-0.0704	***	-4.45
⊿SEGPM		-0.0060		-0.47	-0.1094	**	-2.18	0.2689	*	1.83	-0.0177		-0.58
SEGROA	+	-0.9451	***	-189.69	0.0105	***	2.84	-6.1585	***	-18.35	-0.0013		-0.34
⊿SEGROA	-	-0.0146	***	-3.32	-0.0069		-1.35	0.3966		1.39	-0.0037		-0.71
Year dummies		included			Included			included			Included		
Segment industry dummies		included			Included			included			Included		
Firm industry dummies		included			Included			included			Included		
N		21,971			21,869			22,507			3,971		
Adjusted R^2		92.06%			25.99%			40.79%			14.08%		

This table reports the results from OLS regression in which the independent variable proxies for segment performance. Performance measures used are changes in return on lagged assets (ROA), profit margin (PM), asset turnover (ATO), and growth margin (GM). Coefficient estimates and t-statistics are presented in cells. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. Refer to Table 1 for variable definitions.

TABLE 8
The Impact of Cost Distortion on Firm's Performance

Panel A: Firm-level cost distortion using the squared value of abnormal allocation

	Sign Prediction	△FIRMROA$_{t+1}$			△FIRMPM$_{t+1}$			△ FIRMATO$_{t+1}$			△FIRMGM$_{t+1}$		
		Coeff.		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**
Intercept		-0.0036		-0.74	0.0204		1.18	-0.1747	***	-12.16	0.0369	***	5.59
RANK(DISTORT_SQR)	-	**-0.0016**	*******	**-2.78**	**-0.0032**	******	**-2.36**	**-0.0055**	*******	**-3.28**	**-0.0005**		**-0.74**
FIRMPM		0.0218	***	3.6	-0.3490	***	-9.96	0.0081		0.68	-0.0828	***	-5.27
△FIRMPM		-0.0262	**	-2.53	-0.0589		-1.21	0.0004		0.02	-0.0705	***	-3.49
FIRMROA	+	-0.2240	***	-9.89	0.2696	***	3.8	-0.0780		-1.49	0.0128		0.49
△FIRMROA	-	-0.0941	***	-3.65	-0.1372	**	-2.05	-0.0051		-0.08	-0.0573	**	-2.18
Year dummies		Included			Included			Included			included		
Segment industry dummies		Included			Included			Included			included		
Firm industry dummies		Included			Included			Included			included		
N		13,759			13,758			13,767			13,758		
Adjusted R^2		13.02%			24.99%			8.00%			11.43%		

Panel B: Firm-level cost distortion using the absolute value of abnormal allocation

	Sign Prediction	△FIRMROA$_{t+1}$			△FIRMPM$_{t+1}$			△ FIRMATO$_{t+1}$			△FIRMGM$_{t+1}$		
		Coeff.		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**
Intercept		-0.0041		-0.86	0.0194		1.13	-0.1756	***	-12.25	0.0373	***	5.67
RANK(DISTORT_ABS)	-	**-0.0013**	******	**-2.51**	**-0.0028**	******	**-2.25**	**-0.0053**	*******	**-3.19**	**-0.0008**		**-1.38**

TABLE 8
(continued)

FIRMPM		0.0217	***	3.59	-0.3492	***	-9.96	0.0079	0.67	-0.0828	***	-5.27
△FIRMPM		-0.0262	**	-2.53	-0.0591		-1.21	0.0002	0.01	-0.0705	***	-3.49
FIRMROA	+	-0.2235	***	-9.89	0.2705	***	3.81	-0.0770	-1.47	0.0126		0.48
△FIRMROA	-	-0.0941	***	-3.65	-0.1372	**	-2.05	-0.0051	-0.08	-0.0572	**	-2.18
Year dummies		Included			Included			Included		Included		
Segment industry dummies		Included			Included			Included		Included		
Firm industry dummies		Included			included			Included		Included		
N		13,759			13,758			13,767		13,758		
Adjusted R^2		13.00%			24.98%			8.00%		11.44%		

This table reports results from OLS regression in which the independent variable proxies for firm performance. Performance measures used are changes in return on lagged assets (ROA), profit margin (PM), asset turnover (ATO), and growth margin (GM). Coefficient estimates and t-statistics are presented in cells. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. Refer to Table 1 for variable definitions.

TABLE 9
Additional Analysis: The Mitigation Effect of Interdependence on the Association between Cost Distortion and the Subsequent Change in Divisional Performance

Panel A: Cost Distortion

	Sign Prediction	$\triangle SEGROA_{t+1}$			$\triangle SEGPM_{t+1}$			$\triangle SEGATO_{t+1}$			$\triangle SEGGM_{t+1}$		
		Coeff.		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**
Intercept		0.0448	**	2.32	0.0634		1.05	0.6436		0.56	0.0788	**	2.04
RANK(|ABNORMAL|)	-	-0.0063	**	-2.36	-0.0102	***	-2.29	-0.5005	***	-6.45	-0.0081	**	-2.12
RANK(|ABNORMAL|) *INTRA_TRANSACT		**0.0318**	*******	**3.19**	**0.0029**		**0.19**	**0.8192**	*******	**3.37**	**0.0927**	******	**1.99**
INTRA_TRANSACT		-0.0819	***	-2.81	-0.0095		-0.24	-1.0885	*	-1.65	-0.3133	**	-2.13
SEGPM		0.0772	***	11.99	-0.3069	***	-12.71	0.6349	***	9.24	-0.0706	***	-4.52
△SEGPM		-0.0053		-0.4	-0.1112	**	-2.14	0.3123	**	2.11	-0.0182		-0.59
SEGROA	+	-0.9446	***	-166.69	0.0119	***	3.01	-6.1406	***	-18.27	-0.0015		-0.39
△SEGROA	-	-0.0146	***	-3.09	-0.0069		-1.44	0.4042		1.42	-0.0041		-0.77
Year dummies		included			Included			Included			Included		
Segment industry dummies		included			Included			included			Included		
Firm industry dummies		included			Included			included			Included		
N		21,971			21,869			22,507			3,971		
Adjusted R^2		91.92%			25.51%			40.67%			14.37%		

Panel B: Cost Over-(Under)allocation

	Sign Prediction	△SEGROA$_{t+1}$			△SEGPM$_{t+1}$			△ SEGATO$_{t+1}$			△SEGGM$_{t+1}$		
		Coeff.		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**	**Coeff.**		**t-stat**
Intercept		0.0664	***	3.54	0.0474		0.77	0.6313		0.51	0.0690		1.6
RANK(PLUS)	-	-0.0188	***	-4.11	-0.0136	*	-1.67	-0.9028	***	-7.3	-0.0148	**	-2.02
RANK(MINUS)		-5.3E-06		0	0.0113	*	1.67	0.3791	***	3.35	0.0135	**	1.97
RANK(PLUS) *INTRA_TRANSACT		**0.0481**	**	**2.57**	**-0.0065**		**-0.21**	**1.3434**	**	**2.52**	**0.1568**		**1.46**
RANK(MINUS) *INTRA_TRANSACT		**-0.0331**	**	**-2.12**	**-0.0033**		**-0.15**	**-1.2794**	***	**-3.11**	**-0.0859**		**-1.12**
INTRA_TRANSACT		-0.0449		-1.34	0.0154		0.22	0.4228		0.56	-0.2696	**	-2.01
SEGPM		0.0753	***	11.8	-0.3069	***	-12.59	0.5939	***	8.64	-0.0705	***	-4.45
△SEGPM		-0.0067		-0.51	-0.1113	**	-2.13	0.2713	*	1.85	-0.0179		-0.58
SEGROA	+	-0.9448	***	-167.45	0.0116	***	2.96	-6.1559	***	-18.34	-0.0010		-0.26
△SEGROA	-	-0.0148	***	-3.15	-0.0070		-1.45	0.3976		1.4	-0.0039		-0.74
Year dummies		included			Included			included			Included		
Segment industry dummies		included			Included			included			Included		
Firm industry dummies		included			Included			included			Included		
N		21,971			21,869			22,507			3,971		
Adjusted R^2		91.95%			25.49%			40.81%			14.34%		

This table reports the results from OLS regression in which the independent variable proxies for segment performance. Performance measures used are changes in return on lagged assets (ROA), profit margin (PM), asset turnover (ATO), and growth margin (GM). Coefficient estimates and t-statistics are presented in cells. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively, using two-tailed tests. Refer to Table 1 for variable definitions.

공통자원의 과잉소비 완화 관점에서 원가 배부의 역할과 왜곡된 원가 배부방식의 성과에 미치는 영향

국문초록

본 연구는 원가 배부가 원가를 통제하는 데에 있어서 필수적인 역할을 하는지에 대한 논의로 시작한다. 본 연구에서는 원가 배부하지 않는 특성이 기업의 원가 통제와 역의 관계임을 밝히고 이를 공통 자원의 과대 사용이라 설명한다. 다음으로 원가를 배부하는 기업들 중에서 각 부서별 배부 기대치와는 다른 수준으로 원가 배부를 "왜곡" 하는 기업들이 있음을 가정한다. 본 연구는 Compustat 데이터베이스에 누적된 2000 년에서 2015 년에 걸친 방대한 샘플을 활용하여 원가 배부에 대한 왜곡이 차기 부서수준, 기업수준의 성과에 미치는 영향을 검토한다. 일반적으로 (부분적으로) 과대배부는 (과소배부는) 부서의 차기 성과에 부정적인 영향을 미치고 전반적으로 원가왜곡현상은 부서 차원뿐만 아니라 회사 차원의 성과에 악영향을 미친다는 결과를 도출해내었다. 본 연구의 결과는 경영자들의 동기부여와 효율적인 의사결정을 위해서 원가가 공통자원의 실제 소비 수준을 반영하는 수준으로 배부되어야 함을 암시한다.

키워드: 원가배부, 원가왜곡, 부서 내 인센티브, 정확한 원가동인
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