HOW MUCH DOES INDUSTRY AND COUNTRY MATTER TO FIRM PERFORMANCE IN EMERGING COUNTRIES?

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ABSTRACT

Emerging countries have grown significantly enough to compare them economically to developed countries, and yet relatively little systematic evidence exists on differences across emerging and developed countries in the components of firm performance. We contribute to understanding of the country, industry and firm effects on performance by examining heterogeneity in the profitability of corporations in emerging and developed economies. Using a regression method accounting for cross classifications, mixed effects, and auto correlation, we primarily analyze the persistence of abnormal returns. The results indicate that firms in emerging countries are heterogenous in their rates of persistence as compared to firms in developed countries. We identify the implications for researchers, managers, and policy-makers.

Keywords

Performance decomposition; emerging markets; industry structure; country effects; multilevel models

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INTRODUCTION

Scholars in the fields of strategic management and international business have documented that country, industry, and firm effects are each important to the performance of emerging-market firms (Khanna and Rivkin 2001, Henisz and Zelner 2006, McGahan and Victer 2010). Yet little research has addressed the relative importance of the country and industry identities of firms in these settings. This paper seeks to fill this gap by examining the importance and persistence of firm, country, and industry effects among firms headquartered in emerging and developed countries. The goal is to inform management scholars, business and public policy by assessing whether or not the influence of idiosyncratic industry effects on corporations in emerging countries is greater than on corporations in developed economies. This information is fundamental in order to undertand what theoretical lenses offer higher potential for explaining performance differences in emerging economies, as well as for assessing the opportunities available to managers and policy-makers in emerging economies.

Studies of the decomposition of variance in firm performance (Schmalensee, 1985; Rumelt, 1991; McGahan and Porter, 1997, 2002, 2003; Isobe, Makino and Chan, 2004; Chan, Isobe and Makino, 2008; McGahan and Victer 2010) establish whether firm profitability varies commonly by firm, industry, and country; however they do not (1) separately identify differences specifically for emerging and developed countries and (2) account in the same estimation model for the permanent and transient components of the different effects, and for persistence in these effects (Bou and Satorra, 2007, 2010; McGahan and Porter, 2002). Both shortcomings limit the theoretical inferences that researchers can derive from the results, as well as create biases for managerial and policy implications.

The main problem of not separately identifying differences for emerging and developed countries is that it masks the relative importance of theoretical lenses that might eventually help companies to cope with the different environments. Not accounting simultaneously for the

permanent and transient components masks the dynamic aspects of performance since companies not only permanently differ on their rent generating capability but also differ on the speed of erosion or generation of new competitive advantages. The importance of considering the dynamic aspects of performance has been stressed in recent studies that focus on time variation of the industry and country effect (Bhattacharjeen and Majumdar, 2011; Karniouchina, Carson, Short and Ketchen, 2013; Majumdar and Bhattacharjeen, 2014).

To analyze the country and industry effect on different national settings, we developed a unique econometric model using maximum likelihood estimation that is based on recent advancements (called the BFGS algorithm) that simultaneously estimates the permanent and transient components of firm, industry and country effects (Bou and Satorra 2007, 2010). In this model, differences in performance are modelled as long-term rents (i.e., persistent effects), short-term rents (i.e., transient effects), and unexpected shocks. To address these three components we estimate a cross-classified, mixed-effect regression model. Our results indicate that the permanent component of the firm, industry and country effects are substantially lower than the transient components. Specifically, the transient components account for most of the performance differences among firms competing both in developed and emerging economies. We also found that the country and country-industry effects of both the permanent and transient components are substantially larger for firms hosted in emerging than in developed countries. Particularly relevant is the magnitude of the country and country-industry effect of the transient component from Latin America even when compared to Asia. Lastly, the error term is also greater in emerging than in developed countries, highlighting the existence of higher levels of volatility.

At the heart of our contribution is our emphasis on autoregression in the estimated permanent and transient components, which we describe as 'persistence' (McGahan and Porter, 2002). The persistence of transient effects reflects the degree to which abnormal returns in one

year last into the subsequent year; in other words, 'persistence' measures the level at which transient influences last over time before they dissipate entirely. Greater persistence suggests that interventions, unexpected events, and other shocks that create abnormal returns may have significant, multi-year consequences during the period over which they decay.

Our study has important theoretical, practical and policy implications. Theoretically, we find that competitive advantages are mainly a multi-year, transient phenomenon tied to firm-specific factors both in developed and emerging countries. Permanent advantages are relatively minor but more important in emerging than developed countries. This may mean that managers competing in emerging economies need relatively more attention to the context than those competing in developed countries. From the public policy perspective, this reinforces the need for governments in emerging countries to be clear about the existing country-industry strategy and also to reduce the country effects from spasmodic changes.

The results shed important light on the generality of prior findings in this stream and suggest avenues for future research on the importance of both industry and firm effects in emerging markets.

ANTECEDENTS

Scholars in strategic management have long examined the sources of performance heterogeneity (PH) among corporations in developed countries. Decades of analysis have concentrated primarily on the relative importance of industry factors (Mason, 1939; Bain, 1956; Porter, 1985; Porter, 1990; McGahan and Porter, 1999) and firm-specific factors (Dierickx and Cool, 1989; Barney, 1991; Peteraf, 1993a).

Recently, scholars have liberalized the context for study beyond the United States by considering how the headquarter countries of firms influence their performance (McGahan and Victer, 2010). This approach allows for structural differences across national institutions that may systematically effect the performance of firms within a particular country, such as resource

endowments, tax rates, industrialization policy, and labor costs (Ricardo 1817; Feinberg and Gupta 2009; Ghemawat 2001). The results of such studies carry the potential to yield insights on the scope of country policy for influencing corporate performance. Despite the importance of country effects, relatively few studies have accounted for their impact on a decomposition of variance, in part because of data limitations.

Approaches to decomposition have concentrated on the so-called 'permanent' components of firm performance, which is based on the theory that the permanent component of performance is relatively more robust and important than transient influences on profitability (Rumelt, 1991; McGahan and Porter 1999, 2005). In some analyses, transient effects were subsumed into the error or were excluded from estimates of the permanent component through first differencing. The adjustment has the value of correcting biases in the estimates of the permanent components, but with the cost of masking dynamic processes.

The dynamics of change in the amounts of these effects were modeled in a complementary but largely separate research stream focused on the degree of persistence of abnormal returns in the face of unexpected shocks to performance (Mueller, 1986; Geroski and Jacquemin, 1988; Jacobsen, 1988; Jenny and Weber, 1990; Kessides, 1990; Khemani and Shapiro, 1990; Droucopoulos and Lianos, 1993; Kambhampati, 1995; Goddard and Wilson, 1996; Waring, 1996; Glen et al., 2001; McNamara et al., 2003). Most of these studies focused on the decay of performance using autoregressive models (Mueller, 1986; Geroski and Jacquemin, 1988; Jacobsen, 1988; Jenny and Weber, 1990; Kessides, 1990; Khemani and Shapiro, 1990; Droucopoulos and Lianos, 1993; Kambhampati, 1995; Goddard and Wilson, 1996; Waring, 1996; Glen et al., 2001; McNamara et al., 2003). In general, these analyses found that convergence to the industry mean was not complete, with abnormal returns persisting for several periods. These studies also found that the rate of convergence varied for different firms and different industries (Mueller, 1986; Waring, 1996; McNamara, et al., 2003). Further studies

using non-parametric estimation techniques for measuring shocks to performance confirmed these results (Wiggins and Ruefli 2002; Wiggins and Ruefli 2005; Devan, Klusas et al. 2007). Finally, some of this research suggested that country factors were potentially more important than industry or even firm-specific influences on corporate performance (Geroski and Jacquemin, 1988). On the whole, studies of persistence in performance provided an important window into the importance of dynamics in the evolution of performance, but relatively little specific insight into diversity in evolutionary paths.

Given that antecedents have been ambiguous at the conceptual level in their differentiation between the transient components of performance and the assumption of randomness necessary for modeling fixed effects tractably, further research is needed. Table 1 lists studies that explicitly distinguish permanent, transitory, and random components of performance in decomposition analyses; all of the studies take the national context as a given and focus on the relative importance of the firm-specific, industry and corporate effects.

*** Insert Table 1 Around Here ***

Among the studies listed in Table 1, only two simultaneously accounted for the permanent and transient components of abnormal returns: McGahan and Porter (1999) and Bou and Satorra (2007). They each followed different methods. McGahan and Porter (1999) estimated the persistence of the different components of performance (i.e., business-segment, corporate and industry effect). They found, in a sample of U.S. firms, that the temporary component of the industry effect persists longer (higher value) than the temporary component of the firm-specific effect. In contrast, Bou and Satorra (2007) focused on sources of the variation of the permanent and autoregressive components. They found, for a sample of Spanish firms, that transitory components are more important than permanent components of performance. Different from McGahan and Porter (1999), Bou and Satorra (2007) report varying rates of persistence in firm specific and industry effects on performance.

These studies suggest that transient effects persist at different rates and may accumulate into persistent components of performance. Effects arising at any level –the firm, industry, or country— may result from actions taken at any level (McGahan and Porter, 2005; McGahan and Victer, 2010). For example, firm action shapes industry evolution (Porter, 1981). Thus, a comprehensive understanding of the dynamics of corporate performance requires a detailed analysis of the transient effects that initially emerge as companies seek superior returns, as well as an analysis of the permanent differences that may arise as country, industry, and firm-specific influences become institutionalized.

Furthermore, prior studies suggest that transient effects may vary substantially by country. Initial evidence indicates complex underlying relationships in the interaction between country and industry influences on performance (Porter, 2003; McGahan and Victer, 2010), with the effect of country affiliation on firm performance contingent on the industry in which the firm competes. For example, a country with a rich endowment of natural resources may favor the development of industries related to these resources, and thus support the emergence of country-industry effects for firms headquartered in the country and in the targeted sectors. In developing economies without strong institutional constraints on corporate behavior, firms' actions may affect the institutional context and thus generate rents that comprise country-industry effects (Feinberg and Gupta, 2009).

Relatively little is known about the mechanisms by which the permanent components of performance arise. Chan, Isobe and Makino (2008) found a negative relationship between institutional development and corporate performance—suggesting that the so-called 'developed economies' might rely on institutions that may initially dampen performance volatility, but at the expense of higher levels of performance over the long run. They argue that this evidence mainly contradicts the predictions regarding the negative effect on performance of 'institutional voids' in developing countries (Khanna and Palepu, 1997; Khanna and Palepu, 2000a).

Similarly, Diaz Hermelo and Vassolo (2010) found a positive relationship between institutional development and hypercompetition.

Systematic evidence is needed for understanding how country, industry and firm-specific effects on performance differ between developing and emerging countries. Overall, antecedent studies of the decomposition of performance indicate that little is known about the mechanisms by which transient effects on firm performance arise and become persistent in different national contexts.

THEORY ON THE SOURCES OF PERFORMANCE HETEROGENEITY

Following McGahan and Porter (1999) and Bou and Satorra (2007), we identify three sets of constructs relevant to the study of PH. The first includes the endurance of differences in performance across the entire period under study (i.e., permanent components). The second includes elements of performance that vary between years but that regularly arise (i.e., transient components). The third refers to "randomness" and accounts for unexpected annual differences in performance (i.e., the unexplained component). Transient components compose the average amount of idiosyncratic performance across years; the random component is the difference between observed performance and the sum of the permanent and transient components. It is worth noting, however, that randomness applies to both the permanent and transient components. The three sets of PH emerge from three different sources: firm, industry and country specific. Therefore, competitive advantages behind PH are complex constructs that emerge from firm, industry and country level processes. Figure 1 describes these constructs and Table 2 summarizes the different theories that offer mechanisms to explain the existence of permanent, transitory, and random components of the different effects. Given the wide array of theoretical lenses that explain PH, grouping them depending on their emphasis of permanent (long-term), transient (short-term), or unexpected advantages facilitates their organization. Our

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classification is alternative, but complementary to recent intiatives that provide this synthesis (e.g., Majumdar and Bhattacharjee, 2014).

*** Insert Figure 1 and Table 2 about here ***

The first construct (the permanent component of PH) refers to permanent or stable differences between firms' performances over a fairly long period of time. Rumelt (1991) and McGahan (1999) argue that because competition acts to direct resources towards uses offering the highest returns, the presence of persistent PH indicates the presence of either natural or competitive impediments to resource flows. The resource-based view (RBV) looks into the nature of resources and capabilities to explain why a particular firm differs in its performance regarding a reference set of similar competitors (usually called "the industry"). Barney (1991) suggests that this impediment emerges if a firm is able to generate valuable, rare, and inimitable resources.

Bain (1959) offers an explanation for persistent industry effects. He suggests that market imperfections arise from the collective circumstances and behavior of firms within an industry (Rumelt, 1991), such as barriers to entry, scale economies and switching costs (McGahan, 1999). By contrast, Rumelt (1991) emphasizes competitive behavior as a force that reduces PH among rivals, and thus gives rise to an industry effect. However, the strength of the competition is shaped by the industry and institutional context (McGahan and Porter, 2005; McGahan and Victor, 2010). National context is also a source of permanent differences in performance. For example, the existence of country barriers to the trade or inappropriate regulation of competition generates permanent components of PH. Recent evidence indicates that the balance between the different sources of PH in developed and emerging economies (Makino, Isobe and Chan 2004; McGahan and Victer 2010) differs primarily for institutional reasons. Variously refined institutions—developed over time through the construction of negotiated settlements (Kaplan and Orlikowski, 2013)—constrain the range of legitimate

strategic actions. Competition is thus higher in developed markets, which by definition have more refined institutional arrangements. Therefore, we hypothesize that:

H1: Permanent differences in performance are lower for firms competing in developed countries than for firms competing in emerging economies.

Companies differ in mechanisms of differentiation within their local industry and country context, as well as in the global industry environment. Pressure on abnormal returns arises at each of these levels: from within the directly competitive context (i.e., the local and global industry) and from within the national context (i.e., the country). Empirical and prior theoretical studies have demonstrated that the competitive capabilities developed by firms in response to these pressures vary systematically in emerging and in developed environments. In particular, firms in developed countries sustain abnormal profits by investing in strategically valuable resources and by crafting unique competitive positions (Barney, 1991; McGahan and Porter, 2005). By contrast, firms in emerging-market countries must advocate for the development of local institutions even as they contend with the absence of important institutions and develop resource-based and positioning strategies (Hoskisson et al., 2000, Chan, Makino and Isobe, 2008).

In developed markets, the presence of developed institutions limits the advantages that accrue to particular companies. By contrast, in emerging-market countries, companies may achieve advantage by capturing ill-formed institutions or by appropriating value that would be limited if these institutions were more highly refined. In more developed countries, institutionalized rules, norms, and requirements are applied more consistently across firms. As a result, the institutional context is a relatively small source of permanent differentiation. Instead, stable differentiation arises from those industry properties that diminish rivalry and allow for a certain level of monopoly power such as barriers to entry, product differentiation, and scale economies. Therefore:

H2a: The permanent components of the industry effects are more important for firms

competing in developed countries than for firms competing in emerging economies.

Emerging economies have been found to have less well developed competition regulation (Singh, 2003), which could increase the occurrence of collusion (Knack and Keefer, 2007). The smaller size of their markets may induce concentration and state supported monopolies (Maskus and Lahouel, 2000). Entry of new firms into these markets seems to be more difficult due to inefficient credit and information markets, and the use of political power by incumbents to stymie entrance (Ghemawat and Khanna, 1998). Consequently, the institutional context is a major source of PH. Therefore,

H2b: The permanent component of the country effect is less important for firms

competing in developed countries than for firms competing in emerging economies.

These hypotheses replicate previous studies (e.g., Makino, Isobe and Chan, 2004; McGahan and Victer, 2010), but in an integrated setting that incorporates transient and random components. We shift the focus now to analyze these two other components.

Competition is a process and, thus, successful firms are those that not only posses the ability to adapt to any particular state of the environment, but also to changes in that state (Geroski and Jacquemin 1988). The second construct (the transient component of PH) refers to short-term rents that vanish over time.[1] Different mechanisms inhibit perfect and automatic imitation of successful firms. Dierickx and Cool (1989) identify mechanisms at the capability level. They argue that resources and capabilities are path dependent and face diseconomies of acceleration. Therefore, if a certain firm develops a particular capability that generates abnormal returns, competitors will need time to imitate and learn such a capability.

Industries have patterns of evolution with multiple periods of partial adjustments to new competitive conditions (Gort and Klepper, 1982; Nelson and Winter, 1982). The existence of

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[1] McGahan and Porter (1999) refer to them as incremental effects that may become part of the permanent effects.

attractive industries favors new entrants that push prices downward along the industry life cycle (Klepper and Graddy, 1990). Companies react within an industry through waves of consolidation and, in this manner, they defend their competitive position. After this consolidation, industries might experience the appearance of niche competitors, partially protected from dominant players and with the power of partially eroding their rents (Baum, 1995). Therefore, the industry goes through transitory adjustments, altering periods of higher rents with periods of more intense rivalry (Klepper, 1997).

D'Aveni (1994) characterizes competition as a series of short-term advantages. He asserts that imitation, new entrants, and the introduction of substitutes, among others, erode almost all competitive advantages and thereby prevent firms from achieving persistence of returns above the average of the industry. Wiggins and Ruefli (2002, 2005) found that superior abnormal returns behave (for firms competing in the US) in a way consistent with short periods of transitory advantages. D'Aveni (1994) proposes that the competitive situation in developed countries is one of hypercompetition. When considering this theory for emerging markets, however, their institutional environments do not favor competition (Hoskisson et. al., 2000), which recent evidence seems to support (Chacar and Visa, 2005; Diaz Hermelo and Vassolo, 2010). In developing markets, rents are more permanent and heavily based on institutional factors. That is, while firms competing in developed countries offer conditions of strong imitation that provide more transitory competitive advantages, firms competing in emerging economies are protected by the institutional context that inhibits competition (advantages are more of a permanent form). Therefore,

H3: Transient differences in performance are higher for firms competing in emerging economies than for firms competing in developed countries.

We also suggest that the mechanisms explaining transient differences in performance are different in developed than in emerging economies. In developed countries, where

companies follow resource-based strategies, the firm-specific effect is more important as a source of transitory advantages. Instead, in emerging economies, where companies follow mainly institutionally based strategies, the industry, country and industry-country effects become more important vis-à-vis developed countries. Therefore,

H4a: The firm-specific effect of the transient components is more important for firms competing in developed countries than for firms competing in emerging economies.

H4b: The industry, country, and industry-country effects of the transient components are more important for firms competing in emerging countries than for firms competing in developed countries.

"The unspecified error" is the third construct behind PH. Randomness is the consequence of unexpected shocks that alter both the permanent and transient component of PH. The sources of randomness are multiple. At the firm level, unexpected shocks happen as the consequence of a radical technological discovery (Tushman and Anderson, 1986) or a radical change in the business model. Industries face unexpected shocks with the sudden entrance of a new competitor or with changes in technology that alter structural properties.

In emerging countries, unexpected shocks have additional sources: macroeconomic and institutional; although also experienced by developed countries, these types of shocks, are much more frequent and deeper in emerging countries (Claessens, Kose and Terrones, 2008, 2011). Shocks appear as a consequence of macroeconomic instability (Calvo, Izquierdo and Talvi, 2006; Roubini and Setser, 2004) and also happen as a consequence of institutional change due to poor institutional quality. Therefore, firms competing in emerging economies have a compound source of unexpected pressures, including the industry and the country (Diaz Hermelo and Vassolo, 2010). Consequently, in emerging economies changes are more frequent and unpredictable in terms of course and intensity than in developed economies. A sudden change in the business environment may erode the value of a successful strategy, reducing any

incremental development that the firm could have derived from that success. In a worse case scenario, the shock may radically change exogenous conditions, rendering core capabilities and resources obsolete, and thus eliminating a critical source of competitive advantage and abnormal returns. Additionally, these changes may also alter industry conditions, eroding any firm's advantage that may result from positioning in the industry structure. Therefore,

H5: The unexplained component of performance will be higher in firms competing in emerging economies than in firms competing in developed countries.

The combinations of the three different constructs with the different mechanisms that explain the existence of the constructs generate a complex, multilevel series of interactions. Because of this complexity, we propose a systemic view of PH, one that addresses simultaneously the three constructs behind heterogeneity (stability, persistence, and randomness), as well as the mechanisms that explain the existence of the three constructs.

MODEL AND METHODS

We develop a hierarchical linear model (HLM) in four levels. First, we propose a general one-level model that accounts for the permanent component, the transient component, and an unexplained component at the firm level. Second, we develop a four-level model to simultaneously address firm, industry, industry-country and country effects on the permanent and transitory components. We follow Bou and Satorra, (2007) development of a two-level model (industry and firm) of abnormal returns introducing two additional levels to account for ceparete effects of country and country-industry interactions.

One-lelvel model: Permanent, Transient and Random Components

The focus of this paper is to understand performance heterogeneity across firms, i.e., the sources of variation of performance. Performance is defined as abnormal retuns of the firm with regards to its peers. We start with a very broad general function explaining abnormal retuns:

$$R_{cift} = P_{cif} + T_{cift} + E_{cift} \qquad t = 1, 2, \ldots T \qquad (1)$$

where R_{cift} is the abnormal return defined as the difference between the ROA of firm f in industry i and country c at year t and the mean ROA across firms at yeat t (R_{cift} = ROA $_{cift}$ − avg(ROA)$_t$); P_{cif} is the permanent component; T_{cift} is the transient component; and E_{cift} is the unexplained firm-year component or error term.

The *permanent component P_{cif}* accounts for long-run sustainable differences of firm performance that do not disappear within the period of observation. At this level it accounts for long-run or sustainable differences in performance across firms. The variability of the permanent component across firms could be the consequence of (i) a permanent set of firms' resources and capabilities, (ii) permanent industry structural characteristics, or (iii) permanent characteristics of the country in which the company competes. Latter on we will explain how to account for these. The *transient component T_{cift}* accounts for short-term differences in performance, the part of abnormal returns that erodes along the period of analysis. The transitory component may be the consequence of (i) firms' innovations that are completely imitated by competitors after a few years, (ii) changes in industry structure with a temporary impact on performance or (iii) temporary country changes, for example, an extraordinary growth expansion or a macroeconomic crisis whose consequences last for a short period of time. Latter on we will also explain how to account for these. The *unexplained componentE_{cift}*, accounts for the part of firms' profit that is not explained by the model and may represent annual events or annual shocks.

We adopt for the transient component a first-order autoregressive process AR(1) and re-express T_{cift} as β_1 $T_{cif(t-1)}$ + u $_{cift}$ The autorregressive of first order form assumes that transient differences in performance can be sustained from year to year but these differences converge to zero or in this case to the permanent component. The model can easily be extended to

autoregressive processes of a higher order. We assume that u_{cift} is uncorrelated with T_{cift}.

Therefore, we re-express equation (1) in the following way:

$$R_{cift} = P_{cif} + \beta_1 T_{cift(t-1)} + e_{cift} \qquad t = 1, 2, \dots T \qquad (2)$$

The parameter β_1 indicates how much of the transient abnormal return for the current year is explained by the previous year transient abnormal return. This can be consider as the rate at which firms' returns converge to the mean or, in this case, the rate at which the abnormal return converges to the permanent component. This paramenter varies from 0 to 1 being a value understood as higher sustainablility of abnormal reutrns or lower rate at wich abnormal returns converge to the mean. We assume that e_{cift} is uncorrelated with P_{cif} and $\beta_1 R_{cif(t-1)}$.

Four-lelvel model: Firm-Specific, Industry, Country-Industry and Country Effects

The current model specification is sufficient for testing H1, H3 and H5. However, we are also interested in testing the variation of the permanent and transient component across firms, industry and country and industry-country levels. For this reason we introduce four levels to the model. Firms belong simultaneously to an industry and a country, for this reason, we generated a country-industry dimension to account for this effect. Ignoring a country-industry dimension may generate correlations between countries and industries.

In this model the permanent component P_{cif} varies across firms, country-industry, industry and country, thus P_{cif} is decompose in a fixed effect β_0 plus random effects representing the range of variability of the parameter at the firm, country-industry, industry and country levels. P_{cif} is rexpressed as $\beta_0 + v_c + v_i + v_{ci} + v_{cif}$, where β_0 represents a time-invariant parameter (fixed effect), while v_c, v_i, v_{ci} and v_{cif} are the random effects that address the country, industry, country-industry and firm-specific effects of the permanent components.

A large value across firms (v_{cif}) could be understood as support for the presence of a unique set of resources and capabilities within companies that achieve long-term abnormal

returns. A large value across industries (v_i) or countries (v_c) implies that profitability could be the consequence of characteristics of industry structures or particularities of national contexts.

In the same way, we re-express the transient component $\beta_1\ T_{cift\ (t-1)}$ as

$$\beta_{11}\ T_{cift\ (t-1)} + w_c + w_i + w_{ci} + w_{cif} \tag{3}$$

where β_{11} represents a time-invariant parameter (fixed-effect) while w_c, w_i, w_{ci} and w_{cif} are the random effects that address the country, industry, country-industry and firm-specific effects of the autoregressive coefficient. In this case, if β_{11} is equal to 0.6, that means that on average, every company with an abnormal return in the previous year is expected to sustain 60% of that abnormal return this year, while a w_{cif} of 0,1 means that 0.6 could range from 0.4 to 0.8 ($0.6\pm1.98*0.1$) at the firm level. The focus of this paper is not so much the value of β_{11}, but the relative weight of the w componenets to explain heterogeneity of the transient component at the different levels. Thus, we report w_{cif} and all the random effects as a percentages of the total variance and should be interpreted as how much of the total variance of the transient component occurs across firms, country-industries, industries or countries. The same applies to v's and the permanent component.

With these definitions, we re-express equation (2):

$$R_{cift} = \beta_1 + v_c + v_i + v_{ci} + v_{cif} +$$
$$\beta_{11}\ T_{cift\ (t-1)} + w_c + w_i + w_{ci} + w_{cif} + e_{cift}\ t= 1, 2, \ldots\ T \tag{4}$$

Equation (4) indicates that firms' abnormal returns can be decomposed into several parts: a term β_{01} that indicates the average abnormal returns of the population (expected to be close to zero), a permanent variation due to the country, industry, country-industry, and firm-specific effects (i.e., v_c, v_i, v_{ci} and v_{cif} respectively), a trasient component β_{11}, a variation in the transient component due to the country, industry, country-industry, and firm-specific effects

(i.e., w_c, w_i, w_{ci} and w_{cif} respectively), and an error term e'_{cift}. This specification allows us to test hypotheses H2a, H2b, H4a and H4b in an integrated way.

Data and Sample

We followed the standard approach for analyzing performance using accounting information, namely Return on Assets (ROA) at the country level. This approach involves the ratio of net profit after interest and taxes to assets for each firm in a particular year. We gathered the accounting information from all listed companies in the North American and Global Compustat databases from 2000 to 2007. We defined industries using the SIC at the four-digit level. Following Fama and French (1997), we assigned them to 48 industries. Industries are designed to have a manageable number of distinct industries covering the different stock markets (Fama and French, 1997).

The original sample includes all the companies listed in the stock markets of 105 countries, having 228.609 observations for 37.978 firms in 47 economic sectors or industries. However, we were compelled to reduce the sample size to satisfy several requirements. All firms without four out of any five continuous years of information were excluded. This exclusion ensured that results would not be affected by temporary entities established for the dispensation of assets and other transient phenomena (McGahan and Porter, 1997). We eliminated repeated observations, as well as firms reporting missing data in our key variables. In addition, all observations without reported profit for the previous year were eliminated. We concentrated on data from all industries in four different regions (Asia, Europe, Latin America, and North America), excluding firms in the financial services and defense industries. In order to obtain a better assessment of the different component of variance, we excluded any subject with less than 3 nested observations. Finally, we eliminated observations in which the ratio of loss to equity was higher than 1. After these adjustments, the sample size diminished to 102.434

observations for 20.007 firms in 42 sectors of 49 countries. Table 3 reports some descriptive statistics such as the number of observations for each industry in each region, the mean, standard deviation and median ROA.

<div align="center">*** Insert Table 3 about here ***</div>

Countries with a very low level of economic development were excluded from the sample due to a lack of accounting information. Following the United Nations classification, we grouped countries into two broad categories: developed and emerging.

Econometric Analysis

We estimated the above model using an autoregressive cross-classified mixed-effect linear regression, which is part of the part of the family of hierarchical linear models (HLM). The model is cross-classified because the country-industry effect is simultaneously nested at the country and industry effect. In cross-classified models, lower level units belong to pairs or combinations of higher-level units formed by crossing two or more higher level classifications with one another. The model is mixed-effect because it focuses simultaneously in fixed (β_{01} and β_{11}) and random effects ($v_c; v_i; v_{ci}; v_{cif}; w_c; w_i; w_{ci}; w_{cif}$ and e_{cift}). The estimation of the permanent and autoregressive coefficients uses a fixed-effect approach while the analysis of variances is a random effects analysis.

For the analysis, this paper uses the Maximum Likelihood framework— maximized based on Broyden–Fletcher–Goldfarb–Shanno (BFGS) algorithm. It also assumes independence among permanent, transient and random effects as well as the stationarity of the dynamic components at the firm, industry and country level. This techinique is similar to the one used by Majumdar and Bhattacharjee (2014) in which they applied a nested model for companies belonging to the same group. However, they do not consider the nested effect of the groups in one industry or the cross classification of companies in groups and industries. This

paper builds on their prior work by considering both the nested effect and the cross classification.

We ran different models to obtain the estimated values. First, we ran the unrestricted model with the constant. Next, we incorporated the random effects for country, industry, country-industry interaction, and firm-specific effect. Finally, we incorporated the autoregressive term and obtained the random effects for this term.

Results might be sensitive to the nesting order. For that reason, we ran two different models: one nested at the country level and one nested at the industry level. In both cases we needed to generate the interaction industry-country effect. This was a problem also in prevous studies' ANOVA models. However, the important advantage of the selected model regarding previous antecedents based on ANOVA models is that the selected model allows a statistical comparison of the size of the coefficients and the incorporation of the autoregressive coefficient without the need to adjust the estimating parameters.

RESULTS

Table 4 provides the values for the global sample. The first group of columns reports the random effects parameters and the second group of columns reports the results as percentage of the total variance. Columns refer to components (permanent, transitory and randomness), and rows refer to effects (country, industry, industry-country, and firm-specific). Most important is the firm-specific effect (47%) that equals the randomness component (46%). The interaction industry-country effect (also known as the cluster effect) is 3%, followed by the industry (2%) and country effects (2%). The autoregressive coefficient β (.597) indicates that 59% of ROA at t sustains in ROA at $t+1$.

*** Insert Table 4 about here ***

Results are consistent with antecedents in the literature (Makino et al., 2004; Brito and Vasconcelos, 2006; McGahan and Victer, 2010). However, it is worth noting that the magnitude

of the industry, country, and industry-country effects are smaller than the magnitudes of antecedents in the literature. We address this issue below.

Testing Permanent, Transient, and Randomness Components (H1, H3 and H5)

In order to test the first group of hypotheses, we divided the full sample in developed and emerging economies. Table 5 reports results for developed countries, Table 6 provides information on emerging countries and Table 7 summarize the main expected relationships and results. All the values deviate significantly from zero.

*** Insert Tables 5, 6 and 7 about here ***

Table 5 provides the values for the permanent and transient components as well as the standard deviation of the disturbance term (randomness component). We observe that the permanent component is more important for firms competing in emerging economies than for firms competing in developed countries (4% vs 1%). Therefore, we support H1. For the case of the environmental effects (that is, the country, industry, and country-industry effects considered together), the transitory component is more important for firms competing in developed countries than for firms competing in emerging economies. Therefore, we reject H3. Finally, the randomness component is more important for firms competing in emerging economies than for firms competing in developed countries (50% vs 46%), providing empirical support for H5.

Testing Antecedents of Performance Heterogeneity (H2a, H2b, H4a, H4b)

H2a proposes that the industry effect of the permanent component is more important for firms competing in developed countries than for firms competing in emerging economies; Tables 5 and 6 show that the magnitude of this effect is 1% in both emerging and developed countries. Therefore, the results do not support H2a.

H2b proposes that the country effect of the permanent component is more important for firms competing in emerging economies than for firms competing in developed countries. Results slightly support this hypothesis: the country effect of the permanent component was

22

1% for firms competing in emerging economies. If the cluster effect of industry-country is included, results are reinforced.

The autoregressive coefficient indicates the amount of the year performance that the company replicates in the next year. In other words, it captures the idiosyncratic actions that allow the firm to isolate from external short-term shocks. When considering aggregate results, the coefficient β indicates that 59.40% of ROA at t sustains in ROA at $t+1$ for firms competing in developed countries and 58.70% for firms competing in emerging economies. That is, on average, no mean differences are observable between companies from developed and emerging economies. These results are slightly lower than the findings of McGahan and Porter (1999) for the U.S. (between 66 and 77%) and Bou and Satorra (2007) for Spain (64%).

We now analyze the variance decomposition of the β (that is, the variation of βi *regarding* mean β for the complete sample). The results strongly support H4a. It could be observed that the firm-specific effect of the transitory component is much more important in developed countries (49%) than in emerging economies (37%). Instead, results partially support H4b. The country and industry-country effects of the transitory component are more important for emerging economies (5% and 5% respectively) than for developed countries (1% and 1% respectively). Instead, the industry effect of the transitory component is slightly more important for developed countries (2%) than for emerging economies (1%).

Analysis by Region

The above analysis is subject to a potential criticism: it is possible that the within-group variance of emerging countries may be as large as between group variance. Therefore, to further examine the industry and county effects in emerging markets, we organize countries into four regions: North America (USA and Canada), Europe (excluding UK), Asia (excluding Japan), and Latin America. The number of observations per region are 36.348, 17.351, 37.328 and 2.691 respectively; table 7 summarizes the results.

Consistent with the above analysis, the industry effect decreases in importance, being higher in North Amercia and Europe (1% and 2% for the permanent and transient components, respectively) and lower in Latin America (1% and 0% for the permanent and transient components, respectively). In contrast, the country and country-industry effects increase in importance, reaching the higest levels for the temporary component in Latin America.

*** Insert Table 7 about here ***

The case of Latin America is particularly relevant since the country effect of the temporary component reaches 30% of the total variance while the firm-specfic effect decreases to 13%. This is the only situation in which the firm-specific effect is not the most important one.

DISCUSSION AND CONCLUSIONS

In this paper, we seek to identify the levels at which PH arises, and particularly to point to systemically observable differences in the persistence of abnormal returns at the levels of the firm, industry and country. The model attributes PH to long-term influences, short-term influences, and unexplained, within-year vairation.

We have found that transient sources of PH are more important than permanent ones. We also observed that firm effects explain greater PH than at other levels in both emerging and developed countries. Second, even where they are relatively less important, permanent industry and country effects account for significant differences in firms' profitability. In addition, while industry structure accounts for a larger amount of the permanent component of abnormal returns in developed countries, country characteristics account for a larger transitory component of PH in emerging economies. Unexpected shocks have more important effects on abnormal returns in emerging economies than in developed economies.

Theoretical Implications.

Although this analysis of performance does not permit conclusive inferences about the sources of PH (McGahan and Porter, 2005), this study serves as a valuable step in illuminating potential mechanisms. From our results, we point to several theoretically important relationships. First, even though the unexplained component is critical, predictable patterns of permanent and transitory components are also relevant in explaining PH. The high degree of persistence in the transient component suggests that, in emerging economies, performance may erode in a predictable pattern. From a theoretical standpoint, this means that the dynamics that lead to persistence in short-term rents are crucial to the largest "explained" part of PH. In managerial terms: Profitability depends centrally on transforming short-term events that influence profitability into multi-year opportunities.

Second, at the short-term rent (transient) level, firm-specific effects largely dominate other effects. This suggests to researchers that theories focusing on firm-specific activities in generating short-term rents are among the most relevant in explaining PH (Wiggins and Ruefli, 2002, 2005). The managerial implication is that high performing firms arise in a range of industries and countries. High performance is highly sensitive to short-term opportunities that the firm capitalizes but that its direct industry rivals and country peers do not pursue. One challenge is that low performance arises the same way, i.e., among firms that respond to short-term events differently from their industry competitors and country peers.

Of course, this does not mean that industry and country effects are unimportant. Our analysis indicates that persistent and transient differences in firm performance arise at both the industry and country levels. In some industries and countries, transient events may have either positive or negative multi-year consequences that significantly affect the performance of the firms positioned in those contexts. Furthermore, the role of industry and country effects varies systematically by region, and is especially great in Latin America. The implications for managerial and public policies are remarkable: Business leaders, regulators, and legislators

seeking to influence company performance may find levers in industry and country context. This point is valuable especially because persistence in the transient component of an industry or country effect may reflect the emergence of the effect as well as its decay. Inciting a multi-year transient effect may be an important tool of development.

We conjecture that in emerging-market countries, old decaying transient industry effects are being 'replaced' by emerging effects in other types of industries. In other words, the process of economy emergence involves both the decay of old types of effects and the emergence of others. Karniouchina et al., (2013) found that the stage of the industry life cycle matters to variance decomposition. Specifically, Karniouchina et al (2013) found that the amount of variance explained by firm, industry and country effects changes across various stages of the industry life cycle. It could be argued that the development of country institutions matters to variance decomposition. Our approach helps to reconcile theoretical developments (North, 1990) with empirical findings (Chan, Isobe and Makino, 2008; Diaz Hermelo and Vassolo, 2010). Institutions have a double effect. On one hand, less developed institutions favor lower levels of rivalry, creating the environmental conditions for higher persistent effects in PH. This aspect is observed in the analysis of the permanent component of performance. On the other hand, institutions tend to instigate transitions. This influence is observed in the analysis of the transient component of performance. Therefore, the effect of institutional development on the levels of effects is ambiguous. However, the implications for persistence are not ambiguous: in emerging contexts, variation in the institutional environment leads to persistent differences in both the permanent and transient components of performance. Additional research is needed to understand the opportunities for public policy makers as a result of these regularities.

Our analysis is consistent with prior research suggesting that institutional influences might not necessarily follow a linear trend from higher levels of discretional intervention to more stability as manifest in persistent effects. Majumdar and Bhattacharjee (2014) observe

oscillations in the influences of institutions in India over the period 1980-2006. They also detect that these changes alter the relative importance of the industry and country effects. This regularity points to interventions that may be designed to prevent convergence. That is, it is possible that Asia and Latin America do not necessarily move to the North America institutional model.

An important corollary of this analysis is that firms adapt fairly well to country specific permanent characteristics, developing adequate strategies and resources to survive in this environment. However, they find it more difficult to counterweigh sudden economic and political changes and volatility that generate short-term shocks. The implications for both business and public policy are extensive as executives and government officials seek opportunities for cultivating persistence in desired transient effects.

Limitations and Future Research

Although our empirical results are in line with antecedents in the literature, it is surprising that the industry, country, and industry-country effects are smaller than in previous studies. We offer at least two explanations for these differences. First, the heterogeneity of the sample: incorporating more diversity in the sample reduces the standard error or variance of the random parameters, which is similar to increasing the number of observations in an ordinary least squeare (OLS) model. Second, the companies were assigned to a country and an industry, but it was possible from them to maintain operations in more than one country or industry, and thus reducing these effects. This latter point is a clear limitation of our study.

For simplicity, we are only considering autoregressive components of the first order. Even though we are following the antecedents in the literature (e.g., Waring, 1996; McGahan and Porter, 1999; Bou and Satorra, 2007), it might also be important in future studies to examine autoregressive components of a higher order. Another potential limitation relates to the existence of different accounting rules among countries, something that might increment the

country effect for other motives beyond institutional or macroeconomic ones. Another potential problem is the existence of an unbalanced sample. In the current study we expect random drops in and out of the sample.

In spite of these limitations, our study provides an important step in the task of consolidating more than 30 years of performance analysis. Future research should expand the analysis and try to incorporate specific covariates to the regressions in order to obtain a fine-grained explanation of the causality behind PH. In addition, alternative econometric techniques will help to shed light on the different components of PH. We hope that our study acts as a solid foundation towards these future studies.

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Figure 1: A Systemic Approach to Performance Heterogeneity

Sources of Performance Heterogeneity		
Long-term advantages	Short-term advantages	Unexpected Shocks

↓ ↓ ↓

FIRM LEVEL

↓ ↓ ↓

INDUSTRY LEVEL

↓ ↓ ↓

COUNTRY LEVEL

↓ ↓ ↓

Permanent Differences in Performance	Transient Differences in Performance	Randomness
(Permanent Component)	(Transient Component)	(Error Term)
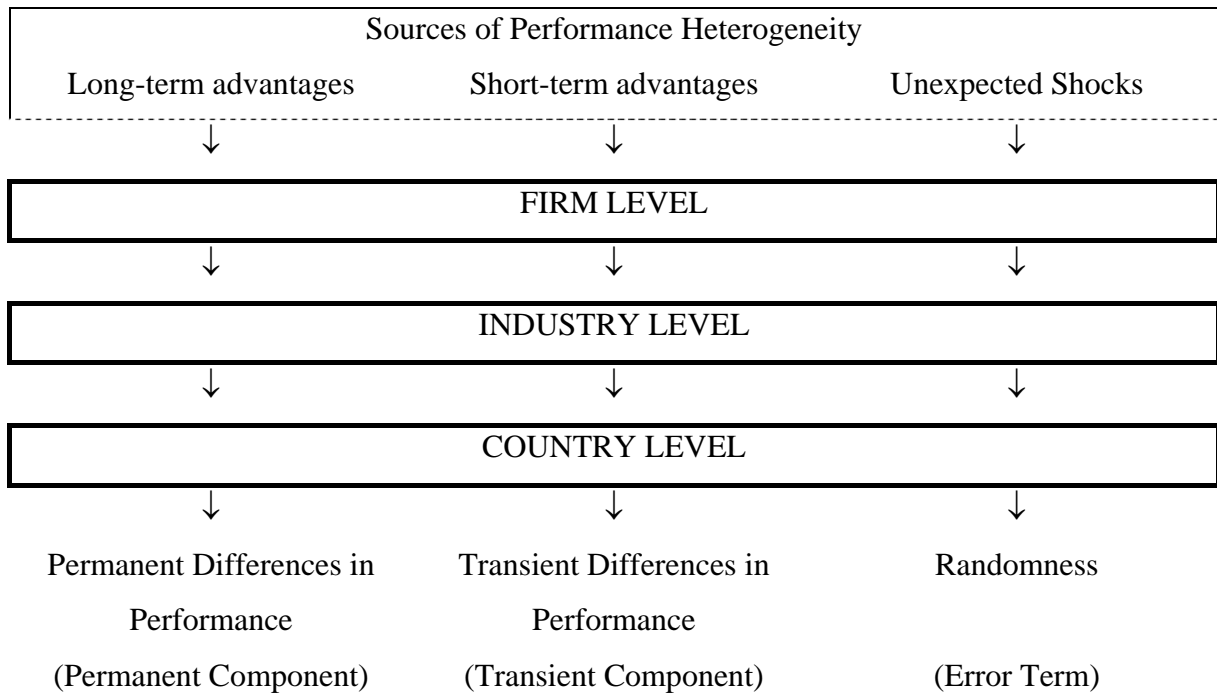
Table 1: Studies that Integrate the Permanent, Transient and Random Components

Study	Sample Period	Conceptual Approach to Transient Component	Empirical Approach to Transient Component
Rumelt (1991)	1974-1977	Recognize the existence of differences just as a disequilibrium phenomenon. The random component is ambiguously addressed.	Include a transient industry effect with interaction with year dummy variables. Test of autocorrelation to residuals: no autocorrelation found.
McGahan and Porter (1997)	1981-1994	Accepts the existence of transient effects but does not address them. The random component capture random shocks but without theoretical specifications.	Adjustments to estimates: correction for first-order autocorrelation.
McGahan (1999)	1981-1994	Recognizes transient components at the firm and industry level as common tendencies in performance. Does not introduce important conceptual characterizations of transitory and random components.	The residual factor (error term) reflects the transitory component at the firm level. Explicit incorporation of the transitory component of the industry effect. Estimation of permanent and transitory components in steps to avoid multicollinearity and problems of overspecification. Year effect reflects macroeconomic fluctuations.
McGahan and Porter (1999)	1981-1994	Recognizes the existence of permanent and transient components. Transient components are the consequences of shocks. They represent incremental changes to the permanent component. Random components are random shocks at the industry and firm.	System of equation that incorporates in each equation a permanent and transient component. Sequential estimation using OLS and correcting for biases using Nickell (1981).
Bou and Satorra (2007)	1995-2000	Recognize the existence of permanent and transient components. Transient component (they call temporary or autoregressive) depends on the size and frequency in which the short-run rents are generated. Random component is the consequence of extraordinary shocks from break-downs, damages, etc.	Two-levels model specification with simultaneous estimation of random and fixed effects.

Table 2: Factors that Favor and Inhibit PH

Mechanism	Firm Level	Industry Level	Country Level
Long-term advantages	Unique set of resource endowment (Barney, 1991)	Structural properties (Bain, 1959; Porter, 1985)	Political Power (Ghamawat and Khanna, 1998) National Resource Endowment (Ricardo, 1817) Collusion (Knack and Keefer, 2007; Maskus and Lahouel, 2000)
Short-term advantages	Path dependency (Dierixt and Cool, 1989) Routines, Inertia (Nelson and Winter, 1982) Dynamic Capabilities (Teece et al, 1997)	Competitive rivalry and imitation (Klepper and Graddy, 1990) Changing basis of competition (Baum, 1995)	Poor institutional regulations (North, 1990) Geographical distances (Ghemawat, 2001)
Randomness	Break-downs, damages (Bou and Satorra, 2007)	Technological disruptive innovation (Tushman and Anderson, 1986)	Change in the rules of the game (North, 1990). Macroeconomic volatility (Diaz Hermelo and Vassolo, 2010; García Sanchez et al, 2014)

Table 3: Descriptive Statistics

Industry	N	Asia	Europe	LATAM	NorAm	UK	Corporate ROA Mean	Corporate ROA Standard Error	Corporate ROA p50
Agriculture	162	91	17	13	28	13	1.0%	1.0%	3.0%
Aircraft	52	3	10		34	5	2.0%	1.0%	4.0%
Apparel	332	144	59	13	96	20	2.0%	1.0%	4.0%
Autos & Trucks	432	259	48	8	101	16	3.0%	0.0%	4.0%
Beer & Liquor	148	45	45	8	31	19	3.0%	1.0%	4.0%
Business Service	2,533	486	537	11	1,070	429	-5.0%	0.0%	0.0%
Business Supplie	306	128	68	12	83	15	2.0%	0.0%	2.0%
Candy & Soda	28	5		5	15	3	-1.0%	3.0%	4.0%
Chemicals	762	469	89	27	149	28	2.0%	0.0%	3.0%
Coal	53	24			21	8	2.0%	2.0%	5.0%
Communication	633	154	107	46	272	55	-4.0%	1.0%	0.0%
Computers	874	315	189	3	305	62	-4.0%	0.0%	0.0%
Construction	524	271	110	15	77	51	2.0%	0.0%	3.0%
Construction Mat	784	413	147	30	152	42	2.0%	0.0%	3.0%
Consumer Goods	453	226	67	13	108	39	2.0%	0.0%	3.0%
Electrical Equip	392	205	58	4	105	22	0.0%	1.0%	3.0%
Electronic Equip	1,347	683	143		449	72	-1.0%	0.0%	2.0%
Entertainment	393	68	77	3	154	91	-3.0%	1.0%	0.0%
Fabricated Produ	101	49	17	3	28	4	2.0%	1.0%	3.0%
Food Prods	674	373	111	35	121	34	3.0%	0.0%	4.0%
Healthcare	200	32	23	3	129	13	0.0%	1.0%	2.0%
Machinery	817	316	202	10	229	60	1.0%	0.0%	3.0%
Measurement & Co	269	56	41		151	19	-2.0%	1.0%	3.0%
Medical Equipmen	393	29	69		262	33	-9.0%	1.0%	-2.0%
Mines	377	41	13	11	228	84	-11.0%	1.0%	-10.0%
Personal Service	147	23	12		88	24	0.0%	1.0%	2.0%
Petroleum & Natu	801	116	71	4	524	86	0.0%	0.0%	3.0%
Pharmaceutical P	943	269	125		475	78	-14.0%	1.0%	-7.0%
Precious Metals	196	9	5		148	34	-12.0%	1.0%	-10.0%
Printing & Publi	209	54	54	3	66	32	1.0%	1.0%	3.0%
Recreation	169	69	24	3	59	14	-2.0%	1.0%	1.0%
Restaurants & Ho	384	117	35		163	69	1.0%	0.0%	2.0%
Retail	856	200	140	31	379	106	2.0%	0.0%	3.0%
Rubber & Plastic	295	159	33		83	20	1.0%	1.0%	3.0%
Shipbuilding & R	51	20	16		13	2	4.0%	1.0%	4.0%
Shipping Contain	76	42	9	3	18	4	3.0%	1.0%	3.0%
Steel Works	615	377	79	34	112	13	3.0%	0.0%	4.0%
Textiles	370	283	40	8	28	11	1.0%	0.0%	2.0%
Tobacco Products	17	10			7		9.0%	2.0%	11.0%
Transportation	737	291	161	22	198	65	2.0%	0.0%	4.0%
Utilities	638	141	78	78	320	21	3.0%	0.0%	3.0%
Wholesale	904	371	160	2	296	75	1.0%	0.0%	3.0%
Total	20,447						-1.0%	0.0%	2.0%

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Table 4: Permanent and Transient Components - Global

Fixed Effects

	Value
β_1	0.597***
	(0.010)
Constant	0.005**
	(0.002)

Standard errors appear beneath coefficient estimates.
† p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001

Random Effects

	Permanent	Transitory	Residual	Total	Permanent	Transitory	Residual	Total
Country	0.0001	0.0031		0.0032	0%	2%		2%
Industry	0.0001	0.0022		0.0023	1%	1%		2%
CountInd	0.0001	0.0039		0.0040	0%	3%		3%
Firm	0.0000	0.0723		0.0723	0%	46%		46%
Residual			0.0096	0.0096			46%	46%
Total	0.0003	0.0109	0.0096	0.0208	1%	52%	46%	100%

Table 5: Permanent and Transient Components – Developed and Developing Countries

Developed

Fixed Effects	Value
β_1	0.594 ***
	0.012
Constant	0
	0.003

Developing

Fixed Effects	Value
β_1	0.587 ***
	0.010
Constant	0.011 ***
	0.003

Random Effects	Permanent	Transitory	Residual	Total	Permanent	Transitory	Residual	Total
Country	0.0000	0.0015		0.0016	0%	1%		1%
Industry	0.0002	0.0033		0.0035	1%	2%		3%
Country-Ind	0.0000	0.0018		0.0019	0%	1%		1%
Firm	0.0000	0.0752		0.0752	0%	49%		49%
Residual			0.0123	0.0123			46%	46%
Total	0.0003	0.0144	0.0123	0.0270	1%	53%	46%	100%

Random Effects	Permanent	Transitory	Residual	Total	Permanent	Transitory	Residual	Total
Country	0.0001	0.0074		0.0075	1%	5%		6%
Industry	0.0001	0.0008		0.0009	1%	1%		1%
Country-Ind	0.0001	0.0072		0.0073	1%	5%		5%
Firm	0.0002	0.0566		0.0568	2%	37%		38%
Residual			0.0055	0.0055			50%	50%
Total	0.0004	0.0052	0.0055	0.0111	4%	47%	50%	100%

Standard errors appear beneath coefficient estimates.
† $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 6: Hypothese that Emerge from Theoretical Antecedents

HYPOTHESES	RESULT
H1: Permanent Component D < E	Supported
H2a: Industry effect of Permanent component D > E	Partially Supported
H2b: Industry effect of Permanent component D < E	Partially Supported
H3: Transitory component E > D	Rejected
H4a: Firm effect of Transitory component D > E	Supported
H4b: Industry, Country and Ind-Count effect of Transitory component E > D	Parcially Supported
H5: Random component E > D	Supported

Table 7: Permanent and Transient Components – By Regions

Asia

Fixed Effects	Value
β_1	0.589 ***
	0.010
Constant	0.011 ***
	0.003

Random Effects	Permanent	Transitory	Residual	Total	Permanent	Transitory	Residual	Total
Country	0.0002	0.0027		0.0028	1%	2%		3%
Industry	0.0001	0.0008		0.0008	1%	1%		1%
Country-Ind	0.0001	0.0065		0.0066	1%	5%		5%
Firm	0.0002	0.0574		0.0576	2%	40%		41%
Residual			0.0055	0.0055			49%	49%
Total	0.0005	0.0053	0.0055	0.0113	4%	47%	49%	100%

LatAm

Fixed Effects	Value
β_1	0.566 ***
	0.034
Constant	0.012 ***
	0.003

Random Effects	Permanent	Transitory	Residual	Total	Permanent	Transitory	Residual	Total
Country	0.0000	0.0963		0.0963	0%	30%		30%
Industry	0.0001	0.0000		0.0001	1%	0%		1%
Country-Ind	0.0000	0.0263		0.0264	0%	8%		9%
Firm	0.0001	0.0406		0.0407	1%	13%		14%
Residual			0.0053	0.0053			46%	46%
Total	0.0003	0.0059	0.0053	0.0115	2%	51%	46%	100%

Europe

Fixed Effects	Value
β_1	0.575 ***
	0.017
Constant	0.005 *
	0.002

Random Effects	Permanent	Transitory	Residual	Total	Permanent	Transitory	Residual	Total
Country	0.0000	0.0029		0.0030	0%	2%		2%
Industry	0.0001	0.0038		0.0039	1%	2%		3%
Country-Ind	0.0000	0.0033		0.0033	0%	2%		2%
Firm	0.0000	0.0651		0.0651	0%	39%		39%
Residual			0.0093	0.0093			54%	54%
Total	0.0001	0.0076	0.0093	0.0170	1%	45%	54%	100%

NorthAmerica

Fixed Effects	Value
β_1	0.615 ***
	0.014
Constant	-0.01 **
	0.004

Random Effects	Permanent	Transitory	Residual	Total	Permanent	Transitory	Residual	Total
Country	0.0000	0.0002		0.0002	0%	0%		0%
Industry	0.0002	0.0028		0.0030	1%	2%		3%
Country-Ind	0.0001	0.0031		0.0032	0%	2%		2%
Firm	0.0000	0.0746		0.0746	0%	52%		52%
Residual			0.0133	0.0133			43%	43%
Total	0.0003	0.0173	0.0133	0.0309	1%	56%	43%	100%

Standard errors appear beneath coefficient estimates.
† p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001