Economic reforms and the competitive environment of firms

Rogelio Oliva and Fernando F. Suarez

This article lays out several hypotheses to establish a specific link between structural economic reforms and the competitive environment of firms. We test our hypotheses on data from the steel industry in three post-reform economies. We find that economic reforms tend to have a positive effect on environmental munificence, but they also produce short-term instability in the environment. We elaborate on the implications of our results for managers, policymakers, and scholars.

1. Introduction

This article explores the effect of economic reforms on the competitive environment that firms face. Management scholars and economists agree that the environment is a key dimension determining the performance and even the survival of firms. However, very little theoretical and data-based research has been done to understand and measure the factors that trigger environmental change. This article explicitly articulates the link between a country’s macroeconomic conditions and the microeconomic elements in a given industry; the competitive environment is seen as a mediating element between government policy and the firms. We explore this issue by looking at one of the most interesting natural experiments in environmental change: the profound economic reforms undertaken by governments in emerging economies. Structural reforms in emerging economies have produced major changes in the business environment and dramatically affected the form and fate of firms in many industries (see, e.g., Academy of Management, 2000).

The subject of the environment has attracted interest and generated research from different streams of economics and management: developmental economics, comparative economics, strategy, organizational behavior, international management, and entrepreneurship, among others. Economists have focused on describing the diverse macroeconomic and institutional contexts at play in different countries (Edwards, 1995; Loayza and Palacios, 1997). Management scholars have looked at the environment as it relates to industry- and organizational-level issues, and have long emphasized the importance of the environment as a source of threats or
opportunities that could affect a firm’s performance (Cooper and Schendel, 1976; Oster, 1999; Siggelkow, 2002). In particular, Ginsberg and Buchholtz (1990), Haveman (1993), and Fuentelsaz et al. (2002) studied the effect of de-regulation; Christensen (1992a,b) looked at the impact of technological change; Kraats and Zajac’s (2001) studied the effect of demand changes on US colleges; D’Aveni (1994) explored the impact of competitor dynamics; and Piore and Sabel (1984) elaborated on the conditions that favor the emergence of vertical and horizontal networks. Recent research has focused on the effect of structural economic reforms on firms. For instance, Cuervo and Villalonga (2000) studied the change in firm performance after privatization, and Keister (2002) looked at changes in labor wage schemes in post-reform China. Newman (2000) derived several hypotheses about organizational response to economic reforms drawing from the Eastern European experience. Suarez and Oliva (2005) described the effect of profound economic reforms on firms as “avalanche change” and depict how organizations react to such massive and sudden change.

These papers explicitly or implicitly assume that economic reforms, deregulation, or technological change are clearly reflected in major changes in the competitive environments that firms face. Although the assumption may seem reasonable, none of these papers provide evidence (other than anecdotal) to show that these trigger events indeed produce such an effect on the firms’ competitive environment. The lack of empirical evidence on this important link is somewhat surprising, as much theoretical progress has been made regarding how organizations respond to what are assumed to be major changes in their competitive environment (Tushman and Romanelli, 1985; Siggelkow, 2002; Suarez and Oliva, 2005). Several questions remain unanswered: what dimensions of the competitive environment are affected? How large is the change? In this article, we set out to explore the link between changes in the alluded trigger events and changes in the competitive environment of firms. We focus on what is often referred to as the most radical trigger of change, country-wide economic reforms (Newman, 2000). We base our analysis on longitudinal data on the environment faced by firms in the steel industry in three countries that went through such reforms—Argentina, Chile, and Mexico. In each case, we explore whether economic reforms had indeed an impact on key environmental dimensions. The impact of structural reforms has been evaluated at the macro (Edwards, 1995; Loayza and Palacios, 1997) and microeconomic levels (Stallings and Peres, 2000; Moguillansky and Bielschowsky, 2001). At the microeconomic level structural reforms have been found to have a differentiated impact across economic sectors, particularly with respect to a sector’s ability to close the productivity gap to its developed competitors (Cimoli and Correa, 2005). These sectoral analyses, however, have focused on output variables (e.g., growth, employment, and equity) rather than the characteristics of the competitive environment. In assessing the impact of economic reforms on the firms’ environment, this article contributes to existing literature by providing a theory-based empirical testing of how economic reforms impact what can be
considered a mediating mechanism, the competitive environment, between macro-economic policy and firms’ responses. The article, however, does not explicitly explore the impact of the competitive environment on the firms’ performance, nor the impact of structural economic reforms on industry structure.

We start by briefly describing the existing literature on competitive environment with particular emphasis on the way different streams of literature have operationalized the environment. We then describe the form, speed and main characteristics of structural reforms in emerging economies, and articulate several hypotheses to establish a specific link between reforms and the key dimensions of the competitive environment. We test our hypotheses using econometric procedures under different model assumptions and find support for several of these hypotheses, thereby shedding light on the relationship between economic reforms and the competitive environment. Our findings represent the first rigorous empirical test, to our knowledge, of this important relationship. We close the article by highlighting the importance and implications of our findings for management practice.

2. The firms competitive environment

The competitive environment, which has been approached from a variety of perspectives in management and economics, can be thought of as anything that surrounds a firm and affects its ability to compete in the market. The early literature on the topic is descriptive in nature, providing varied ways to classify the environment and try to spell out the relationship between environment and firm’s performance. Scholars describing the environment typically divide it in different layers and dimensions. Andrews defines the environment of a business organization as “the pattern of all the external conditions and influences that affect its life and development” (Andrews, 1971: 48), and identifies five dimensions: technological, economic, physical, social, and political. Since Andrew’s book, researchers in strategy and related disciplines have continued to emphasize the importance of the external conditions (see, e.g., Cooper and Schendel, 1976; Dean and Brown, 1998; Oster, 1999; Forte and Hoffman, 2000).

Organizational behaviorists have long distinguished between two main layers of an environment. The task environment, the layer closer to the organization, which includes sectors that have direct transactions with the organization: customers, suppliers, and competitors; and the general environment, further removed from the organization, which includes sectors affecting organizations indirectly: social, demographic, and economic sectors (Dill, 1958; Bourgeois, 1980). This taxonomy is then linked to performance as researchers stress that the task environment is more dynamic, more complex, and more influential on organizations than the general environment (Daft et al., 1988). Porter’s (1980, 1990) frameworks can be considered
a form of operationalization of the task environment, with direct implications for firms’ performance.

A stream of literature in organizational behavior and population ecology has studied the influence of the task environment on firm performance (Emery and Trist, 1965; Child, 1972; Tung, 1979); this research triggered a search for more elaborate environmental descriptions. Aldrich (1979) proposes six dimensions of the organizational environment: capacity, stability, turbulence, homogeneity, concentration, and consensus. Subsequent research has tended to simplify the environment description, clustering its attributes around three basic dimensions: munificence, the extent to which an environment can support and sustain growth; dynamism, the unpredictability or instability (volatility) of an environment; and complexity, the range of skills, knowledge, and information-processing capabilities that managers need to succeed (Dess and Beard, 1984; Dess and Rasheed, 1991; see also Sharfman and Dean (1991) for a summary of this literature). We use these three environmental dimensions to build our argument in the remainder of this article.

3. Structural reforms in emerging economies

Over the last 30 years, developing economies have launched aggressive strategies in an attempt to trigger and sustain economic growth (McKinnon, 1991; Hachette and Luders, 1992; Edwards, 1995). During the 1970s, many developing economies in Southeast Asia launched a series of measures aimed at reforming financial markets and lowering trade barriers. Similar reforms were deployed in Latin America during the 1980s and 1990s, and, with the fall of the Berlin wall and the lost of credibility of the socialist model, similar processes were begun in Eastern Europe and the ex-soviet republics. Many observers view China as the new reformer looming over the horizon. Although there is still a debate about the origins of this transformation (Alesina and Drazen, 1991; Haggard and Kaufman, 1992b), by the early 1990s, a consensus had emerged on a market-oriented economic strategy to replace the old model of state-directed import substituting industrialization (Edwards, 1995). This consensus was built around the principles of macroeconomic stability, trade openness, a reduced role of government, and implementation of poverty reducing strategies (Iglesias, 1992).

For market-oriented economic reforms to take hold, they must follow a period of macroeconomic stability (Haggard and Kaufman, 1992a). Macroeconomic stability is achieved through policies aimed at lowering the inflation rate and increasing the country’s credibility in the eyes of foreign investors. Macroeconomic policies involve fiscal deficit control, changes in monetary policy, and exchange rate management. Structural reforms, on the other hand, are deeper than macroeconomic policies, and change the fundamental structure of the economy. Structural reforms include changes in regulations, tariffs, tax rates, and the control of capital transactions.
While there is very little controversy about the success of macroeconomic policies in reducing inflation, the evidence on the impact of structural reforms is limited, and at this stage they represent a “subjective view of how the economy should work and about the role of government” (Morley et al., 1999: 8). Although structural change programs are typically implemented as a simultaneous “reform package,” countries have adopted distinct reform sequences, with their implementations varying in scope and content.

Reforms are classified according to their purpose and the sequence in which they are typically implemented (Holden and Rajapatirana, 1995). The so-called first-generation reforms are geared to opening the economy to foreign competition, giving market forces the leading role in allocating resources, and reducing the public sector’s role in productive activities. First-generation reform efforts typically start with trade reform to open the economy to international markets. This process requires reducing tariffs, eliminating non-tariff constraints, diminishing differences in tariff structures across sectors, and eliminating artificial incentives to promote exports. Giving market forces the leading role in allocating resources calls for the liberalization of the financial markets and the labor market. Domestic financial liberalization entails eliminating the controls on borrowing and lending rates, and establishing an efficient credit allocation based on a profit and risk analysis rather than on administrative and political criteria. External (international) financial reform consists of freeing the capital flows in the economy, as well as eliminating controls and tributary penalties to foreign investment. Labor reform focuses on moderating hiring and dismissing costs, reducing the non-salary costs associated with social security programs, and facilitating the hiring of temporary workers. Reducing the role of the public sector in productive activities is typically achieved through privatization of state-owned companies and the creation of regulating institutions to oversee the correct functioning of markets. Finally, to reduce distortions in the market’s allocation of resources, reform efforts are often accompanied by tax reform, shifting the tax burden from wealth to consumption and freeing foreign trade.

Second-generation reforms aim to complete the transformation of the role of the state and develop accountable government institutions that will guarantee the rule of the law and support private sector initiative and activity. Second-generation reforms include reforms to the judicial and regulatory systems, which increase confidence that contracts will be enforced and that rights and property will be protected, while ensuring equal access to markets.

Drastic and simultaneous reforms in many areas of an economy—often implemented “overnight”—have been associated with immense adaptation challenges for local firms (Estrin et al., 1995). In a previous study of how firms react to reform-triggered change (Suarez and Oliva 2005) we suggest that this “[avalanche change] creates an apparent chaos that makes it difficult for firms to interpret all the signals coming to the organization” and that the experience of avalanche
change may even lead organizations to suffer “cosmoquakes” (Weick, 1993)—severe difficulty in sense making that can lead to organizational paralysis or erratic responses. While the organizational response to drastic environmental change has been studied extensively (Ginsberg and Buchholtz, 1990; Bacharach et al., 1996), the specific link between economic reforms and key dimensions of the competitive environment has not been given enough attention in the literature.

Policy designers only have access to specific levers that they believe will promote the growth and stability. While the evidence of the impact of economic reform on macroeconomic indicators is substantial, no formal research has been done to capture the effect of market-oriented reforms on the firms’ competitive environment (the task environment in particular) and subsequently on firms’ performance.

4. Economic reforms and the task environment of the firm

Given that economic reforms are characterized by great depth and scope along multiple areas, they should have a profound effect on both the general and the task environment. One could argue that, as a result of the transformation processes triggered by economic reforms, significant changes should be expected even in the general environment: social changes (e.g., change in the distribution of income); demographic changes (e.g., change in the rural/urban composition); and general economic changes (e.g., increased importance of the service sector). In this article, however, we will concentrate on the effects of the task environment, given that it is customarily considered to be more important for the success of firms (Daft et al., 1988). Moreover, most of the research and theory-building in management has been developed—explicitly or implicitly—with a view of the competitive environment that closely resembles the task environment (Porter, 1980; Dess and Beard, 1984; Brandenburger and Nalebuff, 1996).

4.1 Munificence

Munificence refers to the availability of environmental resources to support growth (Aldrich, 1979; Dess and Beard, 1984). When economists and policy-makers introduce reforms into a country, one of their main purposes is to set the bases for a strong and sustained growth (McKinnon, 1973; Shaw, 1973). Therefore, economic reforms should tend to increase munificence. The domestic financial reform, for instance, aims to correct distortions in the capital markets, bringing positive interest rates and slowly lowering the cost of capital by creating a more developed financial market. The international financial reform further moves interest rates toward international standards, making capital more accessible to firms. In a first stage, these changes in the capital markets benefit primarily the larger, better-endowed firms in the economy (Moguillansky and Bielschowsky, 2001). Emerging economies
Latin America is a case in point on this. Production structures are often characterized by a contrasting production structure, where a relatively small number of “modern” firms (many of them subsidiaries of international firms) coexist with a large number of small firms with limited resources, many of them operating outside of the formal market. Despite this heterogeneity, financial reforms that create deeper and more efficient financial markets tend, in the long term, to improve access to capital even for the less-endowed firms in the economy. International financial reform also increases the level of much-valued foreign investment, which is an important element in raising the country’s investment rate and creating growth. Finally, tax reforms also affect further growth, as they tend to free up capital and increase incentives for investment and wealth-creation. Examples from Latin American countries showing before and after figures for the drastic reforms deployed there illustrate the effects of economic reforms on munificence: Mexico’s foreign direct investment went from $2.8bn in 1988 to $11.5bn in 1994, representing more than 4% of Mexican GDP; and the annual interest rate in Argentina dropped from 1,518% in 1990 to 16% by 1992. Therefore, we posit that:

H1: Market-oriented economic reforms are positively associated with environmental munificence.

4.2 Instability

Instability refers to unpredictable discontinuities in an industry (Aldrich, 1979; Dess and Beard, 1984), and it should capture variations in the environment’s growth rate. For most countries, a hallmark of economic reforms is the fact that, once reforms are undertaken, the country is no longer in isolation. A more open, less regulated economy, is bound to be affected by international market forces, much more so than a closed, inward-looking economy. If foreign trade accounts for a higher proportion of the economy, firms are more likely to be affected by the ups and downs of international product prices—something particularly relevant for commodity-producing emerging economies. A more liberalized external financial sector permits firms in the country to draw on a much larger pool of potential investment, but it is also vulnerable to the subjective assessment of international investors—sometimes investors lose confidence in a country or a region, and pull back on their investments. The Mexican crisis of the mid-1990s and its corresponding effect on other Latin American economies is a case in point (Chapter 9 of Edwards, 1995). This greater unpredictability brought forward by economic reforms should have an identifiable effect on environmental instability, hence:

H2a: Market-oriented economic reforms are positively associated with environmental instability.
We also hypothesize that periods of profound and abrupt reform will “shake” the existing order of an emerging economy, producing significant short-term noise and instability. In other words, two countries showing the same total reform-induced change at the end of a given period could still show different impacts on instability, if reforms were applied more abruptly or erratically in one case and more gradually and evenly in the other. Thus,

\[
H2b: \text{The implementation rate of economic reforms is positively associated with environmental instability.}
\]

4.3 Complexity

Environmental complexity is an assessment of the range of skills, knowledge and information-processing capabilities that managers need to succeed (Aldrich, 1979; Dess and Beard, 1984). A greater number and diversity of elements in the task environment (e.g., competitors and products) will tend to make an environment more complex for any given organization in it (Keats and Hitt, 1988).

Structural economic reforms clearly impact environmental complexity. Trade reform brings in cheaper products that often have better quality and feature modern designs, increasing the level of efficiency and sophistication required of local firms. Also, foreign competitors tend to have more resources and greater product variety than firms in emerging economies, making post-reform competition in local markets much tougher. Privatization reform also increases the level of complexity in the environment, as private managers typically undertake bold initiatives to achieve higher quality and productivity in the formerly state-owned firms, resulting in a more intense competition within the industry. Moreover, as privatization often accompanies deregulation, there can be a further push for increased rivalry in the industry. A good example of this is Chile’s telecommunications industry. In Chile, privatization was executed with a radical deregulation of the industry and, as a result, the post-reform sector initially operated in a state of hypercompetition: long-distance telephony changed from being a monopoly in the 1980s to a fragmented industry with eight competitors by the mid 1990s. Thus, economic reforms bring a consistent set of effects on complexity so that:

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H3: \text{Market-oriented economic reforms are positively associated with environmental complexity.}
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5. Data and methods

Our design considers a longitudinal study of the impact of structural reforms in the task environment of firms. As the industry level provides the most consistent basis for assessing task environment (Dess and Beard 1984; Keats and Hitt 1988), we decided to test our hypotheses on the iron and steel industry in Argentina, Chile, and Mexico. We selected the steel industry because in all three countries before
reforms started: (i) steel was an important local industry with large incumbents that dominated the market; (ii) steel showed an active pattern of international trade; and (iii) state-owned firms produced a significant fraction of the total industry output. We selected these three countries because of the clear “before and after” effect from the dramatic reforms implemented by former President Menem in the early 1990s in Argentina, General Pinochet in Chile in the early 1980s and President Salinas in Mexico in the late 1980s. Our time series runs from 1970 to 1995 thus amply covering the transition period. In these countries, reforms not only changed the general macro economic environment for the steel industry by modifying the availability of capital and labor and financial cost for organizations, but also had direct impacts for the industry by significantly reducing tariffs for steel imports and privatizing major state-owned steel producing companies.

Data for the structural reforms came from the first-generation reform indices calculated by the Economic Commission for Latin America and the Caribbean (ECLAC). Data for the steel industry came from different sources: reports from the steel producer associations in Argentina (CIS), Chile (ASIMET), and Mexico (CANACERO); reports from National Statistical Institutes of Argentina (INDEC), Chile (INE), and Mexico (INEGI); different editions of UN Statistical Yearbooks; as well as from the Latin American Institute of Iron and Steel (ILAFA).

5.1 Measures of economic reform

There have been a number of efforts to describe and quantify the reform process in Latin America (Edwards, 1995; Burki and Perry, 1997; IADB, 1997; Loayza and Palacios, 1997; Lora and Barrera, 1997; Morley et al., 1999). Although methods and measurements vary among studies, most evidence shows dramatic progress in first-generation reforms for the whole region, while only a few countries have initiated the implementation of second-generation reforms. To measure the intensity and timing of structural reforms, we selected the first-generation reform indices calculated by Morley et al. (1999) for the Latin American region from 1970 to 1995. Morley et al. measured reform efforts in 17 countries1 across five first-generation reform areas: trade reform, domestic financial liberalization, liberalization of external financial transactions, privatization, and tax reform. For each reform area, they developed an annual index to measure the progress governments have made in implementing the reform packages. Table 1 shows the components of each index. Each index is normalized between zero and one, with one being the most reformed country—free from government intervention—in the sample. That is, a higher scoring in theses indices reflect less governmental control, but there is no assessment of what the optimal values for each index ought to be. Note that these indices measure

1Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Paraguay, Peru, Uruguay and Venezuela.
market reform implementation efforts—as opposed to actual results from the implementation—and that each of the components for the indices (e.g., level of tariffs, reserves-to-deposits ratio, etc.) is just a mechanism through which policy makers implement structural reform.

Although the indices measure relative performance to the most liberalized country in the sample, the resulting indices permit to examine the sequence, timing and intensity of reform processes across countries and areas of reform. The aggregate numbers tell a story of dramatic reform for the whole region (Figure 1). The reform efforts initiated in some countries during the early 1970s came to a halt after the debt crisis of 1982 but spread throughout the region after 1985. The general reform index for the region moved from 54% in 1985 to 82% in 1995.

For the countries in this study, the reform indexes calculated by Morley et al. for each reform area show a strong cross correlation, reflecting the intensity and simultaneity of the reform package pursued by the government. The strong collinearity among reform indexes makes it difficult to separate the effects of individual reform areas in the competitive environment. We used a simple arithmetic average to estimate an aggregate measure of structural reform in each country; this aggregated index maximizes the first order correlation with the individual originating indexes, and is reliable for all countries in our sample ($\alpha > 0.79$).

To measure the intensity of the reform efforts, we estimated the rate of annual change for the structural reform index as the relative change of the reform index over

Table 1 Components of reform index

<table>
<thead>
<tr>
<th>Reform Area</th>
<th>Index Components</th>
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<tbody>
<tr>
<td>Trade reform</td>
<td>• Average level of tariffs</td>
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<td></td>
<td>• Dispersion of tariffs</td>
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<tr>
<td>Domestic financial reform</td>
<td>• Control of borrowing rate (0/1)</td>
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<tr>
<td></td>
<td>• Control of lending rate (0/1)</td>
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<tr>
<td></td>
<td>• Reserves to deposits ratio</td>
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<tr>
<td>External financial reform</td>
<td>• Limits on profit repatriation</td>
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<tr>
<td></td>
<td>• Limits on interest repatriation</td>
</tr>
<tr>
<td></td>
<td>• Controls on external credits by national borrowers</td>
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<tr>
<td></td>
<td>• Capital outflows</td>
</tr>
<tr>
<td>Privatization</td>
<td>• One minus the ratio of value-added in state owned enterprises to non-agricultural GDP</td>
</tr>
<tr>
<td>Tax reform</td>
<td>• Maximum marginal tax rate on corporate income</td>
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<tr>
<td></td>
<td>• Maximum marginal tax rate on individual income</td>
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<tr>
<td></td>
<td>• Value-added tax rate</td>
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<td></td>
<td>• Efficiency of value-added tax rate</td>
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</table>

Source: Adapted from Morley et al. (1999).
the previous year—based on a linear transformation of the indexes in order to avoid distortions from small numbers in the denominator.

5.2 Measures of environmental characteristics

5.2.1 Munificence
Traditionally, indicators of munificence have reflected the growth rate for an industry over a given period—using either industry sales (Dess and Beard, 1984) or net sales and operating income (Keats and Hitt, 1988). However, since our study is longitudinal and we are interested in the evolution of the industry munificence, we opted for state variables (as opposed to change rates) to describe munificence. That is, our measurements capture the amount of environmental resources available for the industry at a given point in time.

We selected as indicators of munificence (i) the total consumption of steel, and (ii) the total gross product value of crude steel and pig iron as a proxy for the revenues generated by the industry. These two variables give an indication of the market size and the value extracted by the firms through the production of higher value-added goods, i.e., the variables capture the “market opportunity” for the industry, without including elements of the cost structure that might be related to firm specific organizational inefficiencies. For each country, the two indicators were combined into a single metric using principal component analysis. The resulting metric captured 65% of the original variance in the case of Argentina, 82% in the case of Chile, and 91% in the case of Mexico.

5.2.2 Instability
The concept of instability refers to unpredictable discontinuities in an industry and should capture the variations in its growth rate (Jurkovich, 1974; Miles et al., 1978).
Traditionally, instability is measured through the standard deviation of the growth rate of the munificence indicators over a given period (Dess and Beard, 1984; Keats and Hitt, 1988). However, our longitudinal study required an annual indicator of volatility, as opposed to an aggregated measure of variability over a given period. We captured instability by calculating the absolute difference between successive growth rates for the estimated munificence index. (The growth rates of the estimated indices were based on a linear transformation of the series to avoid distortions from small numbers in the denominator.)

5.2.3 Complexity
Given the small number of players in the steel industry, the large barrier to entry coming from economies of scale, and the standardized nature of its products, we did not find much variance in the measure of environmental complexity adopted by Keats and Hitt (1988): number and distribution of competitors and products. However, since these measures are used as a proxy for the challenge that managers face when coping and adjusting to changes in the environment, we opted for a measure of complexity that better reflects the intensity of competition in an industry such as steel. New economic theory has shown that even under conditions of oligopoly, intense competition can be triggered when there is symmetry in the size and resources of the industry players (Tirole, 1988). Accordingly, we opted for the ratio of the largest player’s market share to the second largest player’s as an indicator of the balance of power in the industry and a proxy for environmental complexity. We expected this variable to capture the complexity introduced by structural reforms with some delay as changes in individual market shares and industry structure often take some time to unfold.

5.3 Method of analysis
Because of the natural inertia of economic systems, and the fact that the index of economic reform reports changes in the implementation of reform efforts—as opposed to actual results from the implementation—we expected the effects of the structural reform on the environment to be delayed at least 1 year. In the case of munificence—the cumulative resource pool that supports growth—we expected an additional 1-year delay for the effects of the reform to be reflected in the accumulation of resources (Judge et al., 1980: 623–629). Similarly, in the case of complexity, we do not expect changes in structural reform to unfold immediately into changes in market share. Thus, we considered a 2-year lag specification (2-lag) when testing hypotheses H1 and H3, and a 1-year lag specification when testing H2.

Since there is no explicit theory about the transferability of economic reforms across countries, we tested our hypothesis of the impact of economic reform on environmental dimensions under two different assumptions. On one hand, given that reforms in each country were implemented at different times, and with different intensity and sequence, one could expect the effect of economic reforms to be
different in each country under study. That is, the impact of economic reforms in
country specific environments would be heterogeneous. We tested under the
heterogeneous-effects assumption with OLS models for each country (Model I).
Parameter estimates under this specification, however, should be interpreted with
cautions given the small sample used to estimate them.

Alternatively, one could argue that the reform packages in the three sample
countries had the same macroeconomic objectives, and that the estimated reform
index for each country measure similar reform efforts. Under this perspective, it is
reasonable to expect homogeneous effects of economic reforms in inherently
heterogeneous countries. We tested under the homogenous-effects assumption
through a panel data specification with fixed effects (Model II). By comparing the
results of the fixed effects model to a full model with dummies for each country
(Model III), we ruled out the potential dependence of the independent variables to
country specific effects. Finally, due to the small number of units under study
\((N=3)\) compared to the time frame \((T=25)\), we also estimated a pooled OLS estimator ignoring country differences (Model IV) (Hsiao, 1986).

Since our analysis focuses on the longitudinal impact of structural reform in one
industry in each country, we omitted control variables typically added when doing
cross-sectional analysis. For the OLS models (I, III, and IV), we used the Newey–
West (1987) method to estimate the variance and covariance matrix adjusting for
lags until standard errors were robust to both heteroskedasticity and order-one
autocorrelation in the error term. In all regressions we omitted time as a predictor
because of strong multicollinearity with the monotonic trend of the structural reform
indexes. Table 2 presents the means, standard deviations, and correlation coefficients
for all the variables used in the analysis.

6. Results

6.1 Munificence

The results in Table 3 suggest that hypothesis H1 finds support in our results under
both assumptions. The magnitude of the lagged reform index varies among countries
under the assumption of heterogeneous effects (Model I) (it is not significant in
Argentina), but assuming homogeneous effects across countries, the estimator for the
lagged reform index variable is significant at the 0.01 level and stabilizes across all
models. Country effects are then significant, but the consistency of the reform index
coefficient across Models II, and III, and the similitude of the country effects in Model
II and the intercept of Model III, suggest that country differences are not significant.
The consistency of results from the pooled OLS Model (IV) and the panel data analysis
confirms the absence of inherent country differences. Summarizing, we find evidence
that structural reforms, as captured by the ECLAC index, have a positive impact on the
munificence of the steel industry independent of country effects.
6.2 Instability

Hypothesis H2a is not supported by our results (Table 4). The coefficient for the reform index variable is non-significant for all models under the homogeneous effects assumption, and only significant for Chile and Mexico assuming heterogeneity (Chile presents a negative coefficient). Environmental instability in

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<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>s.d.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
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<tbody>
<tr>
<td><strong>Argentina</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Reform index (L1)</td>
<td>0.65</td>
<td>0.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Reform index (L2)</td>
<td>0.65</td>
<td>0.16</td>
<td>0.92**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Reform-rate of change (L1)</td>
<td>0.25</td>
<td>0.12</td>
<td>0.22</td>
<td>-0.18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Munificence</td>
<td>0.00</td>
<td>1.14</td>
<td>-0.11</td>
<td>0.06</td>
<td>-0.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Instability</td>
<td>0.00</td>
<td>1.00</td>
<td>0.45†</td>
<td>0.27</td>
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<tr>
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<tr>
<td>2. Reform index (L2)</td>
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<td>0.17</td>
<td>0.96**</td>
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<tr>
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<td>4. Munificence</td>
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<td>1.28</td>
<td>0.60**</td>
<td>0.66**</td>
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<td>-0.57**</td>
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<td>0.96**</td>
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<td>0.04</td>
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<td>4. Munificence</td>
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<td>1.35</td>
<td>0.78**</td>
<td>0.82**</td>
<td>0.02</td>
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<td>1.00</td>
<td>0.38</td>
<td>0.36</td>
<td>-0.10</td>
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<tr>
<td>6. Complexity</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
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<td><strong>All</strong></td>
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</tr>
<tr>
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<td>0.15</td>
<td>0.94**</td>
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<tr>
<td>3. Reform-rate of change (L1)</td>
<td>0.03</td>
<td>0.10</td>
<td>0.08</td>
<td>-0.24†</td>
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<tr>
<td>4. Munificence</td>
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<td>1.24</td>
<td>0.39**</td>
<td>0.48**</td>
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<tr>
<td>5. Instability</td>
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<td>0.99</td>
<td>0.08</td>
<td>-0.02</td>
<td>0.29*</td>
<td>-0.03</td>
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<td>6. Complexity</td>
<td>1.92</td>
<td>0.92</td>
<td>0.06</td>
<td>0.03</td>
<td>-0.06</td>
<td>0.44*</td>
<td>-0.08</td>
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</table>

†p<0.10.
* p<0.05.
** p<0.01.
our sample does not appear to be associated with higher levels of economic reform. Hypothesis H2b, however, does find some support in our data, as the coefficient for the reform-rate of change variable is significant at the 0.05 level for all models under the homogeneous-effects assumption (Models II, III, and IV) and is also significant for Chile under the heterogeneous-effects assumption (Model I). This variable captures the “noise” effect of rapid changes in the pace of reforms. In other words, a higher rate of change in the economic reforms index in any given year is associated with higher environmental instability the following year.

Since we measured instability as the absolute difference between two successive growth rates, it is not surprising that the country effects were not significant in the aggregated models; although economies grow at different rates, variations around the average growth rate are uniform. Accordingly, the results of the pooled OLS model are consistent with the results from models that account for country differences.
6.3 Complexity

In contrast to munificence and instability, the country effects on complexity are distinct—note the lack of explaining power of Models II and IV, and the difference in the coefficients of country dummies in Model III in Table 5. In retrospect, the difference in country effects makes sense since our measure of environmental complexity (the ratio between the first and second player in the industry) is unique to the industry players in that country, with no reason to expect convergence across countries. Assuming homogenous effects (Models II, III, and IV), country differences explain most of the variance in the sample, and the effects of reform on environmental complexity are not significant.

For the case of the heterogeneous-effects assumption, we find partial support for hypothesis H3 as the regression for Argentina is significant with a negative coefficient.
for the lagged reform index. Since our measure for complexity measures the relative market shares (balance of power) of the two main players in the industry, a negative coefficient for the lagged reform index variable implies that greater levels of economic reform are associated with a more balanced distribution of power in the industry—that is, with more competition and a more challenging and complex environment for managers to cope with. It is worth noting that our measure omits the effect the inflow of foreign products could have on the newly reformed markets, and thus it only captures one dimension of industry complexity. This omission, due to data constraints, may partly explain the lack of significance of this dimension in our study.

7. Discussion

We set out to explore the relationship between structural economic reforms and firms’ environment, using data from three emerging economies. Given the extensive economic reform programs undertaken by governments in developing countries, our research focus is germane to understanding the changes and challenges that firms

<table>
<thead>
<tr>
<th>Complexity (ms1/ms2)</th>
<th>Model I&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Model II</th>
<th>Model III&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Model IV&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Argentina</td>
<td>Chile</td>
<td>fixed effects</td>
<td>OLS plus dummies</td>
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<tr>
<td>Average reform index</td>
<td>−0.82</td>
<td>1.51</td>
<td>−0.44</td>
<td>−0.44</td>
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<tr>
<td>lagged 2 periods</td>
<td>(0.39)&lt;sup&gt;†&lt;/sup&gt;</td>
<td>(3.35)</td>
<td>(1.06)</td>
<td>(0.56)</td>
</tr>
<tr>
<td>Dummy Argentina</td>
<td></td>
<td></td>
<td>1.57</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dummy Chile</td>
<td>1.84</td>
<td>1.61</td>
<td>2.29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.33)&lt;sup&gt;**&lt;/sup&gt;</td>
<td>(2.45)</td>
<td>(0.78)&lt;sup&gt;**&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
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<td>35</td>
<td>35</td>
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<tr>
<td>R&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.15</td>
<td>0.01</td>
<td>0.00</td>
<td>0.65</td>
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<tr>
<td>Number of countries</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Standard errors in parentheses.

<sup>†</sup><i>p<0.10</i>

<sup>*</sup><i>p<0.05</i>

<sup>**</sup><i>p<0.01</i>

<sup>a</sup>Variance and covariance matrices estimated with Newey–West (1987) correction.
face not only in emerging countries but also in any economy that goes through deep, far-reaching reforms. As mentioned earlier, research in strategy suggests that firms that understand environmental change can better prepare for it and better explore options for survival and prosperity—we think this is particularly relevant for changes prompted by economic reforms.

Overall, our results suggest that there is an important relationship between economic reforms and the firm’s competitive environment—albeit not for all the identified environmental dimensions. As evidenced by the steel industry in Argentina, Chile, and Mexico, economic reforms tend to have a positive, lagged effect on environmental munificence (H1) and tend to produce short-term fluctuations in the environment (H2b). That is, firms that operate in emerging economies can expect significant uncertainty during the period immediately following reforms; only after a couple of years—when reforms start to settle—can these firms expect a gradual increase in the environment’s capacity to sustain growth. Our findings regarding the increased short-term fluctuations are consistent with existing literature in economics. The implementation rate of economic reforms has been studied in the economic development literature under the rubrics of reform “timing” and “sequencing” (Edwards, 1995). An increased environmental instability derived from a high rate of economic reform represents a difficult challenge for firms that have to decide how to adapt and react to greater environmental variation. Concerns about the potential impact of reforms in the economy have indeed led policy makers in the past to give much thought to the timing of economic reforms. There is still considerable debate about the advantages and disadvantages of a shock versus a gradual approach to economic reforms. It has been suggested that there may not be a “right” timing that works universally, and that countries should adjust the pace of economics reforms to be consistent with the strength and competitiveness of their local industries (Nsouli et al., 2005).

We found weak evidence that economic reforms in our sample are associated with increased complexity (H3), when an industry’s balance of power among competitors is used as a measure of complexity. We believe this lack of significance could be due to limitations in our data. Finally, contrary to what we expected, we found no evidence that the overall level of economic reform (how open the economy is to international markets and capitals) had an effect on the steel industry’s environmental stability (H2a).

We tested our hypotheses in only one industry across three countries. Our results may, therefore, not extend to other countries that may have experienced patterns of economic reforms different from the ones we studied, or to other industries that may present different characteristics than the steel industry in our analysis. Despite these limitations, we believe our results can be applicable to other country settings, given that policy makers in different countries tend to implement economic reforms in a similar way. Moreover, many developed nations in the last decade or so have implemented ambitious privatization and deregulation programs that have much in
common with the economic reforms undertaken by emerging economies. Moguillansky and Bielschowsky (2001), for instance, found that the iron and steel industry had higher levels of investments and productivity growth after the structural reforms in all the countries they studied, suggesting a transferability of insights across countries with similar reform sequence and timing. As for our industry setting, the steel industry may indeed be representative of a group of industries with similar responses to economic reforms. While there is evidence that different sectors have responded differently to the structural reforms (Stallings and Peres, 2000; Moguillansky and Bielschowsky, 2001), by aggregating the sector characteristics to the level of its competitive environment, as opposed to aggregated outcome variables, we believe we have introduced a mediation mechanism that will facilitate transferability of insights across sectors.

Our findings have implications for managers. The impact of economic reforms on the firms’ environment forces firms to attempt a difficult transition. Because reforms are associated with greater short-term instability (H2b), with several major changes occurring simultaneously, firms face a turbulent environment in which it is difficult for them to interpret the signals coming from the outside. Firms must adapt their routines to new conditions in the midst of an apparent “chaos”; innovation and learning become crucial capabilities firms must possess (Dosi, 1988). The situation becomes more challenging, as the expected benefits of economic reforms do not materialize immediately (H1). Firms are then required, under time pressure, to develop a new set of skills (marketing, manufacturing best-practices, alliances, etc.) in order to compete in an environment characterized by short-term instability. Such a situation triggers a powerful selection process—researchers have long pointed out that competition intensifies when resources become scarce (Dess and Beard, 1984; Castrogiovanni, 1991). Many firms are not capable of producing the depth and speed of transformation that is required by the environment and exit the industry—some without even attempting a transformation. Firms that succeed in transforming themselves adopt policies very different from the gradual trial and error processes of organizational adaptation described in most of the literature (Nelson and Winter, 1982; Mezias and Glynn, 1993; Wade et al., 1998). Indeed, adapting to environmental change resulting from massive economic reform requires a “shock” treatment applied simultaneously to all levels of the organization (Suarez and Oliva, 2005).

Our findings also have implications for policymakers in emerging economies. In general, due to the vast transformation challenge imposed on firms, policy makers should keep in mind the firms’ perspective when designing national-level policies—this may help ease the transition at both the firm and country levels. Policy makers should consider special measures to support firms during the first years after the reforms—e.g. facilitating access to information on external markets, latest technology, strategic alliance opportunities, etc.—until the delayed positive effects on munificence start to be felt in the competitive environment. Even before reforms are implemented, well-designed ex-ante training programs for managers and
employees on world-class practices—with compelling examples of how firms managed to survive and prosper after reforms—may ease the adaptation challenge firms face in post-reform settings.

There are, of course, several limitations to our study. One issue is external validity. More studies are needed in different industries in the same countries and then in other contexts in order to accept or reject the hypotheses that we have tentatively accepted or rejected here. Also, even though this article has taken the step of providing more specific data to measure the constructs, there is still need for a richer data set in order to test the impact of the environmental changes on organizational performance and structure, as well as to add relevant industry-level control variables. We hope there will be further research in this area.

The above constraints notwithstanding, we believe this article contains several contributions. On the theoretical side, it focuses on an important issue not properly addressed in the literature to date: the relationship between economic reforms and the competitive environment. By assessing this relationship we attempt to provide a necessary mediating link between macroeconomic dimensions and firms’ responses, shedding light on the challenges faced by both managers and policymakers. Second, we present longitudinal data on the environment, which allows us to assess environment changes in response to economic reform. The fact that we present objective longitudinal measures of the environmental attributes is, by itself, a step forward from the existing literature. Finally, in building our models and argument here, we span the boundaries of multiple disciplines—namely organizational theory, strategy, economics, and international management—with the corresponding benefit of cross-fertilization. Drastic economic reforms are being implemented in many countries around the world today. There is no question as to the importance, for managers and policy makers, of gaining a better understanding of how reforms affect the competitive environment of firms. We hope that this article will motivate further boundary-spanning empirical research on the topic.

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