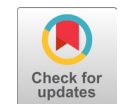


Research Article

Innovation Efforts of Small Businesses in Latin America

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Abstract

Purpose of the study: in this paper, we analyze the effects of institutional dynamics on innovation efforts of small businesses in Latin America. **Methodology/approach:** we use a survey sample of 11,446 small Latin American businesses from The World Bank; The survey comprised answered questions regarding their innovation efforts in the last three years: product innovation, process innovation and investments in research and development; To assess the effect of institutional dynamics (reforms and reversals), data from the Economic Freedom Index were captured. **Main results:** we conclude that in small businesses in Latin American countries, innovation efforts may be more linked to the preparation to face an institutionally inefficient environment than to take advantage of the environments that have had an institutional improvement. **Theoretical/methodological contributions:** these small business movements may be more linked to the search for survival in an uncertain environment, contradicting the expected effects that there would be more innovation efforts when the environment was conducive to it. **Relevance/originality:** this study is valuable because it allows the analysis of what types of institutional dynamics can lead to what types of responses in innovation efforts of small businesses. **Social/management contributions:** the study also contributes by demonstrating whether the formulation of institutional reforms can impact small businesses in the Latin American context, thus being important for the development of public policies.

Keywords: Innovation efforts; Institutional dynamics; Institutional reforms; Institutional reversals

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Resumo

Objetivo do estudo: Analisar os efeitos das dinâmicas institucionais nos esforços de inovação de pequenos negócios na América Latina. **Metodologia/abordagem:** Utilizamos uma base de dados do Banco Mundial com 11.446 pequenos negócios latino-americanos, que responderam questões relativas aos seus esforços de inovação (de produto, de processo e investimentos em pesquisa e desenvolvimento) nos últimos três anos. Para avaliar o efeito das dinâmicas institucionais (reformas e reversões), foram captados dados do Índice de Liberdade Econômica. **Principais resultados:** Concluímos que, nos pequenos negócios de países latino-americanos, os esforços de inovação podem estar mais ligados à preparação para o enfrentamento de um ambiente institucionalmente ineficiente do que ao aproveitamento dos ambientes que tiveram uma melhora institucional. **Contribuições teóricas/metodológicas:** Os movimentos desses pequenos negócios possivelmente se relacionam à busca por sobrevivência em um ambiente incerto, contrariando, assim, a suposição de que haveria mais esforços de inovação quando o ambiente fosse propício a ela. **Relevância/originalidade:** Este estudo é valioso por possibilitar a análise das dinâmicas institucionais, que podem levar a determinados tipos de resposta nos esforços de inovação de pequenos negócios. **Contribuições sociais/para a gestão:** este estudo também demonstra se a formulação de reformas institucionais pode impactar os pequenos negócios, no contexto latino-americano, sendo relevante, desse modo, para o desenvolvimento de políticas públicas.

Palavras-chave: Esforços de inovação; Dinâmicas institucionais; Reformas institucionais; Reversões institucionais.

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INTRODUCTION

Efforts to develop innovation are essential to business competitiveness (Freel, 2005), as they constitute a capacity highly sensitive to the context in which organizations operate (Solleiro and Castañon, 2005). Thus, companies located outside the developed countries' axis tend to perform relatively little innovation in their businesses (Szogs, 2008). Yet, they need to innovate to remain competitive against external threats and their internal competitors. In this sense, the initiatives of some Latin American countries stand out, which have implemented institutional and economic reforms to make their companies more innovative and competitive (Dau, 2012, 2013).

The literature brings business and economic factors that determine companies' innovation efforts, such as market structure, demand appropriateness, international openness, and technological collaboration (Kannebley Jr. et al., 2005; Kafourous et al., 2015; Papazoglou and Spanos, 2018).

Institutional factors, such as regulatory quality, corruption control, governance, and institutional transparency (Sirmon et al., 2007; Kaufmann et al., 2011; Barasa et al., 2017; Wang, 2018) are also of great importance for companies, in a competitive environment, since they reduce business-related uncertainties (North, 1991).

On the other hand, institutional reforms, specifically pro-market reforms, have emerged in some countries, especially in Latin America, to improve company efficiency and economic performance (Dau, 2012, 2013; Banalieva et al., 2018).

The role of institutional advancement in companies' innovation efforts is well known and is directly related to the quality of the institutional environment. While its existence can stimulate innovative behaviors, reducing uncertainties and facilitating coordination between economic agents (Acemoglu and Robinson, 2008; Alonso and Garcimartín, 2013); the low level of this quality, on the other hand, leads to unproductive, sometimes opportunistic behaviors, and increases uncertainties, reducing the propensity to innovate in firms (Greif, 2006; Alence, 2004).

In less developed countries, institutional advancement is still a challenge, although there is an attempt to develop economic freedom through pro-market structural reforms (Cuervo-Cazurra and Dau, 2009). Latin American countries, for example, have essential characteristics in their contexts, such as the restriction of qualified human and technological resources, when compared to developed countries, the result of a historical factor of the economy of late industrialization (Trevino et al., 2008).

In addition to the intrinsic complexity of the institutional dynamics of Latin American countries, it is worth noting that the challenges imposed by resource constraints are even more significant for small businesses if placed in parallel with larger firms (Tolstoy, 2009). Consequently, small companies must seek innovative alternatives to reconfigure their assets to deal with the institutional environment dynamics (Rosenberg, 2010).

The scarcity of resources makes innovation costly, leading Latin American companies to decide between allocating resources to enhance innovation efforts or reinforce their position in the products and processes they already have. Such a decision may require investment in research and development (R&D) and the introduction of new products and processes (OECD, 2005; Goedhuys et al., 2013).

In this article, we analyze whether this decision is also influenced by institutional factors, such as reforms and reversals, related

to the levels of institutional quality perceived by managers (Kaufmann et al., 2011; Barasa et al., 2017; Wang, 2018).

Therefore, assuming that institutional reforms are possibly promoting positive effects on small business innovation efforts, while institutional reversals, as they demand more conservative actions, result in less effort, this quantitative-explanatory investigation, which refers to the firm level, aims to examine the influence of institutional dynamics on small business innovation efforts. To this end, data from 11,446 thousand small businesses from Latin American countries were analyzed, particularly those that answered questions related to the innovation efforts of the World Bank's Enterprise Survey (World Bank, 2019).

Secondary data, considered in the survey, refer to 2006 and 2017 and were organized as follows: (a) for the independent variable "institutional dynamics", divided into "institutional reforms and reversals", the degree of change was adopted the Economic Freedom Index (Banalieva et al., 2018); and (b) for the dependent variable "innovation efforts", the indicators for "investment in R&D", "introduction of new products" and "introduction of new processes" from the World Bank's Enterprise Survey (World Bank, 2019), following the standards of the Oslo Manual (OECD, 2005).

It is worth noting that empirical research on the relationship between institutional dynamics and the innovation efforts of companies in countries that seek development, such as Latin Americans, is punctual. This may be associated with the fact that the systematic availability of data on companies' innovation efforts is recent in these countries, due to the late structuring of national innovation systems (Ayyagari et al., 2012; Goedhuys and Veugelers, 2012; Goedhuys et al., 2013).

Regarding contributions, we emphasize that this study: (a) is the first to jointly and empirically evaluate economic factors of institutional dynamics (reforms and reversals), to explain the small business innovation efforts (resource allocation), considering as a context of analysis a large number of firms from Latin American countries; (b) it makes it possible to analyze the types of institutional dynamics and their respective responses in small business innovation efforts; and (c) demonstrates how the formulation of institutional reforms can impact small businesses in the Latin American context, thus being important for the development of public policies.

THEORY

Tangible and intangible assets form the foundation of greater business performance (Ireland et al., 2003; Barney and Arian, 2001) and form part of a company's resource base (Mahoney, 1995; Sirmon et al., 2007); therefore, to obtain value, they need to be managed appropriately.

Investment in R&D is an example of a resource at the firm level, which drives the innovation effort (Goedhuys, 2007; Goedhuys and Sleuwaegen, 2010). If appropriately managed, it expands the possibilities of generating value, having, as a consequence, the introduction of new products and processes on the market (Crespi and Zuniga, 2012; Bradley et al., 2012).

Although the relationship between investment in R&D, the introduction of new products and processes, and innovation are often considered positive and beneficial to the firm (Arundel et al., 2007), it is noted, in developing countries, that such relationships have variations (Crespi and Zuniga, 2012). In Asia, for example, studies point to a positive association (Lee and Kang, 2007; Wang and Lin, 2012); whereas evidence in Chile and Mexico does not corroborate this result (Crespi and Zuniga,

2012). In the African countries, in turn, according to Goedhuys (2007), there was a positive relationship between R&D and product innovation in Tanzania, which was primarily considered a vital component of the innovation strategy for clothing manufacturers and textile companies from Kenya, Kamau and Munandi (2009).

In addition to internal resource management, companies in developing countries are continually challenged to deal with institutional dynamics, often characterized by a high degree of political instability, widespread corruption, and weak protection of property rights (Bräutigam and Knack, 2004). In most of these countries, poor governance still exists due to the presence of inefficient institutions (Olson et al., 2000), which explains the irregular growth rates in such locations (Olson et al., 2000). Empirical studies, such as those by Glaeser et al., (2004) and by Acemoglu and Robinson (2008), ratify the critical role of institutions with regard to the economic growth of developing countries.

Thus, in this article, our theoretical positioning is aligned with the new institutional economy (NEI), following works such as Williamson (2000), North (1990, 1991), and Henisz (2000). Although notable studies in the area of innovation have already used this perspective in topics related to national innovation systems (Nelson and Nelson, 2002), the relationship between political instability and innovation (Bhattacharya et al., 2017), and the institutional complexity (Wu and Park, 2019), among others, the dynamics of countries' institutions and their effects on innovation continue to be themes that call for further investigative deepening.

As the institutional environment of countries is not static, developing according to institutional changes (North, 1991) which, in most cases, are gradual and generated over decades, from the definition of laws and public policies (Williamson, 2000), the primary function of institutions is to restrict possible actions by decision-makers and to establish standards of behavior consistent with the formal and informal rules of the environment (North, 1990).

An institutional environment suitable for the development of companies generally presents the predictability of institutions and institutional change, with clear rules and arbitrary or opportunistic actions being restrained (Henisz, 2000). With the behavior of other parties predictable in a transaction, it is possible to reduce uncertainty in these institutions (North, 1991).

Institutional dynamics are essential for environments, as they change the "rules of the game" found in them. For this reason, pro-market institutional reforms have been frequent in different parts of the globe, with the purpose of, mainly, improving their business environments, making their companies more competitive, and resolving market imperfections caused by protectionist and centralizing policies (Banalieva et al., 2018).

In this sense, in recent decades, Latin American countries have developed a series of reforms, which encompass not only laws and rules for competition in business, but also fiscal, political, educational, and anti-corruption changes (Trevino et al., 2008), allowing them to decentralize and liberalize their economies for market transit (Dau, 2013).

Institutional pro-market changes tend to: (a) decrease government intervention in business and the economy (Cuervo-Cazurra and Dau, 2009); (b) improving countries' economic freedom (Banalieva et al., 2018); and (c) increase the profitability of companies, as well as the attractiveness of the country where they are located for foreign direct investment (Dau, 2013).

It is worth mentioning, however, that institutional changes are not always pro-market. For example, governments often generate changes characterized as institutional reversals. They are setbacks in which an adequate economy becomes inhospitable to some companies (Banalieva et al., 2018), thereby restricting their freedom and fewer opportunities (Dau and Cuervo-Cazurra, 2014).

Changes in the government's political perspective, especially in the executive, can lead to new or different policies and institutional dynamics. These changes, according to Banalieva et al. (2018), are of four types: (1) increasing reforms: when an institutional improvement is followed by an even bigger one in the following year; (2) decreasing reforms: when an institutional improvement is followed by another, in the subsequent year, relatively less than the first; (3) increasing reversals: when an institutional deterioration is followed by an even greater one, in the following year; and, finally, (4) decreasing reversals: when an institutional deterioration is followed by a smaller one, in the subsequent year.

When pro-market institutional reforms take place increasingly, companies perceive the country's institutional quality, which improves with greater intensity. Thus, uncertainty about government policies decreases (Banalieva et al., 2018), as does the prospect of a better institutional environment for business increases (Dau, 2012). It is expected that, after increasing reforms, companies will intensify their innovation efforts, given the prospects of greater respect for property rights and more efficient market conditions, which favor those who make innovation efforts. Therefore, we present:

Hypothesis 1: *Increasing reforms are directly related to innovation efforts.*

On the other hand, when pro-market institutional reforms are decreasing, they show a negative and uncertain perspective on the future (Banalieva et al., 2018). Thus, when there is a reduction in pro-market reforms, companies are expected to perceive the environment as uncertain for the future and adopt a tendency to reduce their innovation efforts, resorting to more conservative strategies and keeping their activities closer. That they consider knowing how to do well; in this sense, we propose:

Hypothesis 2: *Decreasing reforms are inversely related to innovation efforts.*

When there are reversals in the institutional environment, which make it suffer a deterioration in comparison to the past, the future tends to be perceived as more complicated for the open competition between companies (Dau, 2013). Such reversals can happen in two different ways (Banalieva et al., 2018): (1) increasing reversals, which result in a perspective of increasingly worse institutional conditions, due to less free environments for business; and (2) decreasing reversals, which can mean a possibly positive change in the long run. In this sense, it is expected that, in the face of increasing reversals, companies have resorted to more conservative strategies, as they envision an insecure and uncertain environment in the future, thereby reducing their innovation efforts. Thus, we have:

Hypothesis 3: *Increasing reversals are inversely linked to innovation efforts.*

Unlike increasing reversals, decreasing ones represent a possible change in government policies, reducing the deterioration of institutions and possibly leading to institutional progress in the medium or long term. In this way, innovation efforts will be more common when companies see decreasing reversals, as they can signal future improvements and environments more suited to business. Therefore, we propose:

Hypothesis 4: Decreasing reversals are directly linked to innovation efforts.

METHOD

For this investigation, we used quantitative data from 11,446 thousand small businesses from Latin American countries, based on the microdata from the World Bank's Enterprise Survey (World Bank, 2019), which is a survey conducted with organizations of all sizes and sectors, to analyze the business environment in that country.

It is worth noting that 74% of the sample is represented by companies that employ up to 99 workers, being, therefore, constituted, in its majority, by small businesses. Besides, the final sample took into account only those organizations that responded to questions regarding their innovation efforts in the past three years, indicating whether or not they made product, process, or investment innovations in R&D.

Explanatory quantitative studies are suitable for testing hypotheses, as they offer summary information on various characteristics, and data collection and analysis techniques are structured and objective. Furthermore, because there is a concern with representativeness, large and complex samples, in general, are adopted (Hair et al., 2005).

To test the hypotheses, we adopted the logistic regression method (Hair et al., 2005) and the Enterprise Survey standards following the Oslo Manual (OECD, 2005).

For the dependent variables of this study, which reflect the companies' innovation efforts, the companies' answers to the following questions were used: "Did this company introduce a new product in the last year?", "Did this company introduce a new process in the last year?" and "Has this company invested in research and development in the past year?"

For the independent variables, we used the classification by Banalieva et al. (2018) on pro-market institutional reforms,

divided into increasing reforms, decreasing reforms, increasing reversals, and decreasing reversals. The fiscal year of each observation was named t ; the previous year $t-1$; and the year preceding the previous year as $t-2$.

The variations in the Heritage Foundation's Economic Freedom Index (EFI) (2019), between $t-2$ and $t-1$, and between $t-1$ and t , named $V1$ and $V2$, were then calculated the formulas ($V1 = (EFI_{t-1} - EFI_{t-2}) / (EFI_{t-2})$) and ($V2 = (EFI_t - EFI_{t-1}) / (EFI_{t-1})$). Positive $V1$ and $V2$ indicated pro-market institutional reforms, while negative $V1$ and $V2$ pointed to reversals. The increasing reforms were classified as "1", when $V1 < V2$; and as "0", in other cases; and the decreasing ones, in turn, as "1", when $V1 > V2$; and as "0" in other cases. Increasing reversals were rated "1" when $V1 < V2$; and "0" in other cases; and the decreasing ones, "1", when $V1 > V2$; and "0", in other cases.

The following control variables were used: (1) the country level, based on data from the World Bank (2019), considering the variation in GDP and inflation (to control the country's economic situation); and the variation in GDP per capita (to control the country's economic characteristics); (2) the company level, using data from the Enterprise Survey, such as the age of the company (to control market experience), the origin of capital (to control possible variations in ownership), and the number of employees (for control of company size); and (3) the sector level, based on the two-digit SIC codes, also present in the Enterprise Surveys, to analyze the dichotomous variables of each sector (to control the sector effects).

The following is an aggregated synthesis of the research hypotheses and variables, the indicators used, the transformations carried out, and the sources in Table 1.

RESULTS

The variables and their descriptive data are presented in Table 2.

Variables	Description	Indicators	Transformações	Fontes
Dependents	Innovation efforts	Investment in R&D in the last three years.	1 = yes 0 = no	Enterprise Surveys (World Bank, 2019)
		Introduction of new products, in the last three years.		
		Introduction of new processes in the last three years.		
Independent	Institutional reforms and reversals	Increasing and decreasing reforms	1 = yes 0 = no	Economic Freedom Index (Banalieva et al., 2018)
Controls	By country	GDP variation	% of GDP variation, in relation to the previous year.	World Bank (2019)
		GDP per capita	In millions of dollars, as of 2010.	
		Inflation	% change in general prices, compared to the previous year.	
	By company	Company age	The number of years since the company started operating.	Enterprise Surveys (World Bank, 2019)
		Foreign ownership	% of foreign shareholding in the company's shares.	
		Government ownership	% of government shareholding in the company's shares.	
		Number of employees	The number of employees in the company.	
	By industry	Dichotomous for each industry, using two-digit SIC Code.	1 = yes 0 = no	

Tab. 01

Aggregated synthesis of variables

Source: The authors

To ensure that there are no problems with high correlations and multicollinearity, the correlations derived from our tests are shown on Table 3. It is worth noting that tests for the diagnosis of multicollinearity were carried out additionally, but variance

inflation factors above 1.5 were not found, which attests to the absence of inflationary problems in the variables. The highest correlations are only between the dependent variables, indicating that the introduction of new products and processes is directly linked to investments in R&D, as was already expected.

Variable	N	Min	Max	Mean	Std. dev.
New product	11446	0	1	,38	,486
New process	11446	0	1	,48	,500
R&D investment	11446	0	1	,62	,485
Increasing reforms	11446	0	1	,22	,415
Decreasing reforms	11446	0	1	,09	,289
Increasing reversals	11446	0	1	,09	,287
Decreasing reversals	11446	0	1	,04	,191
GDP variation	11446	-1,49	11,14	4,82	2,22
GDP per capita	11446	1233,59	16245,60	6619,67	3721,24
Inflation	11446	0,00	28,19	3,28	2,69
Age	11446	0	210	26,44	19,877
Foreign ownership	11446	0	100	9,19	27,282
Government ownership	11446	0	100	,12	2,698
Number of employees	11446	1	21955	134,77	526,874

Tab. 02
Descriptive statistics
Source: Research data

In Table 4, by means of a logistic regression, we show the results of the hypothesis tests, with the dependent variable, such as the introduction of a new product, assuming the values “1” for “yes” and “0” for “no”. Model 1 shows only the result of the control variables. In Model 2, we tested Hypothesis 1, about the positive influence of increasing reforms for the introduction of new products; being that, with this dependent variable, it was not confirmed. In Model 3, we tested Hypothesis 2, about the negative relationship between decreasing reforms and introducing new products; that has been confirmed, that is, decreasing reforms slow the introduction of new products. In Model 4, we tested Hypothesis 3, which predicted a negative relationship between increasing reversals and the introduction of new products. The results, surprisingly, show the opposite, that when there are increasing reversals, small businesses tend to introduce new products. In Model 5, Hypothesis 4 was tested, in which decreasing reversals would positively influence the introduction of new products. The results did not confirm the hypothesis, as they indicated no relationship between the

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 New product	1,000												
2 New process	,414**	1,000											
3 R&D investment	,309**	,333**	1,000										
4 Increasing reforms	-,013	-,036**	-,094**	1,000									
5 Decreasing reforms	-,036**	-,005	,049**	-,170**	1,000								
6 Increasing reversals	,090**	,090**	,074**	-,168**	-,100**	1,000							
7 Decreasing reversals	-,015	-,041**	-,005	-,106**	-,063**	-,063**	1,000						
8 GDP variation	-,045**	-,085**	-,164**	,023*	,036**	-,262**	,036**	1,000					
9 GDP per capita	,030**	,050**	-,006	,108**	,010	-,257**	-,208**	,049**	1,000				
10 Inflation	-,007	-,050**	,029**	-,097**	-,093**	-,100**	,287**	-,115**	-,288**	1,000			
11 Age	-,058**	-,036**	-,105**	-,033**	,010	-,018	-,006	,038**	,102**	-,055**	1,000		
12 Foreign ownership	-,076**	-,047**	-,103**	,014	,018	,033**	-,022*	,010	-,003	-,036**	,027**	1,000	
13 Government ownership	,004	-,005	-,020*	-,004	-,014	,001	,003	-,004	-,025**	,011	,020**	,057**	1,000
14 Number of employees	-,183**	-,178**	-,301**	,089**	,002	-,036**	-,017	,091**	,113**	-,080**	,301**	,290**	,047**

Tab. 03
Correlations
Source: Research data

Introduction of new products (dependent variable)	Model 1		Model 2		Model 3		Model 4		Model 5		Modelo 6	
	B	P	B	p	B	p	B	p	B	p	B	p
Increasing reforms			-,018	,730							,068	,214
Decreasing reforms					-,289	,000					-,186	,015
Increasing reversals							,641	,000			,634	,000
Decreasing reversals									-,070	,523	,015	,891
GDP variation	-,061	,000	-,061	,000	-,055	,000	-,038	,001	-,061	,000	-,034	,003
GDP per capita	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000
Inflation	-,003	,743	-,003	,738	-,006	,434	,006	,456	-,002	,830	,004	,665
Age	-,005	,000	-,005	,000	-,005	,000	-,005	,000	-,005	,000	-,005	,000
Foreign ownership	-,004	,000	-,004	,000	-,004	,000	-,004	,000	-,004	,000	-,004	,000
Government ownership	,013	,083	,013	,084	,013	,092	,014	,063	,013	,084	,014	,067
Number of employees	-,001	,000	-,001	,000	-,001	,000	-,001	,000	-,001	,000	-,001	,000
Industry controls (dummy)	Yes		Yes		Yes		Yes		Yes		Yes	
log -2 Likelihood	14828		14828		14813		14752		14828		14744	
R square (Nagelkerke)	0,05		,047		,049		,056		,047		,057	
Sig.	p<0,000		p<0,000		p<0,000		p<0,000		p<0,000		p<0,000	

Tab. 04
Linear regressions for the introduction of new products
Source: Research data

two variables. In Model 6, all variables were tested together to evaluate, also together, the size of their effects. Thus, the effects of decreasing reforms and increasing reversals were confirmed.

Table 5 contains the logistic regression tests for the introduction of new processes, using the dichotomous variable “1” for “yes” and “0” for no. The order of the models follows the same logic as in Table 4. Model 7 shows the effects of the control variables, and Model 8, the effects of increasing reforms, testing Hypothesis 1, which was not confirmed by the results. Model 9 demonstrates the Hypothesis 2 test, which was confirmed, as the results indicate a negative effect of the decreasing reforms for the introduction of new processes. Model 10 tested Hypothesis 3, which was again opposed, given that, in the face of increasing reversals, small businesses prefer to invest in innovation rather than having more conservative strategies. In Model 11, we tested Hypothesis 4, and the result did not allow us to verify the effects of decreasing reversals in the introduction of new processes. In Model 12, we demonstrate the set, confirming only the effect of decreasing reversals on the introduction of new processes.

As a way of analyzing the effects of institutional dynamics on R&D investment, we performed the logistic regression

tests with the variable “the company invested in research and development in the last year”, assuming the values “1” for “yes” and “0” do not stop”.

In Table 6, we tested the control variables in Model 13. In Model 14, we tested Hypothesis 1, with the result having an effect contrary to what was predicted. In Model 15, we tested Hypothesis 2, which was contradicted in the result, indicating an opposite effect. This effect was also observed in Hypothesis 3, tested on Model 16. Model 17 tested Hypothesis 4, not confirming it. The effects remain in Model 18, which tests all variables together.

DISCUSSION

This study aimed to analyze the effects of institutional dynamics on small business innovation efforts. For this, we analyzed data from 11,446 small businesses from Latin American countries, classifying institutional dynamics as pro-market institutional reforms, increasing and decreasing, and increasing and decreasing institutional reversals. We tested the effects of these dynamics on three dependent variables, which represent small

Introduction of new processes (dependent variable)	Model 7		Model 8		Model 9		Model 10		Model 11		Model 12	
	B	P	B	p	B	p	B	p	B	p	B	p
Increasing reforms			-,100	,051							-,029	,585
Decreasing reforms					-,209	,004					-,135	,065
Increasing reversals							,587	,000			,557	,000
Decreasing reversals									-,085	,427	-,025	,817
GDP variation	-,043	,000	-,044	,000	-,039	,000	-,023	,029	-,043	,000	-,022	,040
GDP per capita	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000
Inflation	-,038	,000	-,038	,000	-,041	,000	-,031	,000	-,037	,000	-,033	,000
Age	-,002	,024	-,002	,018	-,002	,024	-,002	,022	-,002	,026	-,002	,020
Foreign ownership	-,001	,051	-,001	,048	-,001	,057	-,002	,024	-,001	,050	-,002	,027
Government ownership	,003	,668	,003	,671	,003	,695	,004	,582	,003	,670	,004	,604
Number of employees	-,001	,000	-,001	,000	-,001	,000	-,001	,000	-,001	,000	-,001	,000
Industry controls (dummy)	Yes		Yes		Yes		Yes		Yes		Yes	
log -2 Likelihood	15329		15325		15320		15266		15328		15262	
R square (Nagelkerke)	,060		,060		,061		,067		,060		,067	
Sig.	p<0,000		p<0,000		p<0,000		p<0,000		p<0,000		p<0,000	

Tab. 05
Linear regressions for the introduction of new processes
Source: Research data

Investment in R&D (dependent variable)	Model 13		Model 14		Model 15		Model 16		Model 17		Model 18	
	B	P	B	p	B	p	B	p	B	p	B	p
Increasing reforms			-,294	,000							-,243	,000
Decreasing reforms					,176	,027					,194	,017
Increasing reversals							,333	,000			,290	,001
Decreasing reversals									,065	,549	,073	,509
GDP variation	-,120	,000	-,125	,000	-,123	,000	-,109	,000	-,120	,000	-,119	,000
GDP per capita	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000
Inflation	-,021	,017	-,023	,009	-,019	,028	-,016	,076	-,022	,014	-,018	,053
Age	-,006	,000	-,006	,000	-,006	,000	-,006	,000	-,006	,000	-,006	,000
Foreign ownership	-,003	,000	-,003	,000	-,003	,000	-,003	,000	-,003	,000	-,003	,000
Government ownership	,002	,844	,001	,864	,002	,821	,002	,799	,002	,842	,002	,793
Number of employees	-,001	,000	-,001	,000	-,001	,000	-,001	,000	-,001	,000	-,001	,000
Industry controls (dummy)	Yes		Yes		Yes		Yes		Yes		Yes	
log -2 Likelihood	13907		13877		13902		13890		13906		13862	
R square (Nagelkerke)	,143		,146		,143		,144		,143		,147	
Sig.	p<0,000		p<0,000		p<0,000		p<0,000		p<0,000		p<0,000	

Tab. 06
Linear regression for R&D investment
Source: Research data

Institutional reforms and reversals: theory		Implications of the hypothesis test
Institutional reforms are pro-market institutional changes and tend to decrease government intervention in business and the economy, resulting in greater freedom and opportunity for companies in a country (Cuervo-Cazurra and Dau, 2009).	Increasing institutional reforms: when an institutional improvement is followed by an even greater improvement, the following year (Banalieva et al., 2018).	(H1) When there are increasing institutional reforms, there is less investment in R&D. However, these reforms had no effect when analyzed in relation to the introduction of new products and new processes.
	Decreasing institutional reforms: when an institutional improvement is followed by a relatively minor improvement over the first, in the subsequent year (Banalieva et al., 2018).	(H2) When there are decreasing institutional reforms, there is less effort to introduce new products and processes. However, investments in R&D increase in the presence of these reforms.
Institutional reversals are institutional setbacks and tend to increase government intervention in business and the economy, resulting in less freedom and opportunity for companies in a country (Dau and Cuervo-Cazurra, 2014).	Increasing institutional reversals: when an institutional deterioration is followed by an even greater deterioration in the following year (Banalieva et al., 2018).	(H3) When there are increasing institutional reversals, there are more efforts to introduce new products and processes.
	Decreasing institutional reversals: when an institutional deterioration is followed by a minor deterioration in the subsequent year (Banalieva et al., 2018).	(H4) Increasing institutional reforms had no effect, when analyzed in relation to innovation efforts (introduction of new products and processes, and investment in R&D).

Tab. 07

Aggregate synthesis of the implications of the hypothesis test

Source: Research data

business innovation efforts. Contrary to what we expected, the results are different, depending on the type of innovation efforts.

The growing reforms, proposed as possible drivers of innovation efforts in small businesses (Dau, 2012; Barasa et al., 2017), had no effect when analyzed in relation to the introduction of new products and new processes. Regarding R&D investments, when there are increasing reforms, fewer investments are perceived. This opposite effect to what is expected makes sense, considering that such investments do improve not only the position of small Latin American businesses but also guarantee their survival in the face of a possible increase in difficulties. Therefore, when the prospect is for institutional improvement (Cuervo-Cazurra and Dau, 2009; Banalieva et al., 2018), small businesses stop investing in R&D and focus their resources on taking advantage of the positive moment in the market.

In the case of diminishing pro-market institutional reforms, it was proposed that they would have a negative effect on small business innovation efforts (Dau and Cuervo-Cazurra, 2014; Barasa et al., 2017). The results show that small businesses have fewer efforts to innovate, in relation to the introduction of new products and processes, when they face decreasing reforms, as they tend to seek more conservative strategies under conditions of uncertainty. R&D investments, in turn, an increase in the presence of decreasing reforms, an effect that may be related to a greater focus in the long run. In this sense, small businesses, when perceiving decreasing reforms (Cuervo-Cazurra and Dau, 2009; Banalieva et al., 2018), start to invest in R&D to guarantee a competitive advantage in relation to their competitors, in the event of a possible deterioration institutional in the future.

Regarding the increasing institutional reversals, the result pointed effects contrary to those predicted as negative. That is, instead of an increasing institutional deterioration reducing the innovation efforts of small businesses (Dau and Cuervo-Cazurra, 2014; Banalieva et al., 2018), the incidence of innovation efforts increased (introduction of new products and processes, and investments in R&D). The results may indicate, contrary to what we suppose, that small businesses, in the face of significant institutional deterioration and future uncertainties (Dau and Cuervo-Cazurra, 2014; Banalieva et al., 2018), prefer to make innovation efforts, perhaps as a way to guarantee competitive advantage or parity and to survive. On the other hand, there was no relationship between decreasing reversals and innovation efforts. The aggregated synthesis of the implications of the hypothesis test is shown in Table 7.

CONCLUSIONS

Based on the results, we conclude that, in small businesses in Latin American countries, innovation efforts may be more linked to the preparation to face an institutionally inefficient environment than to take advantage of those that have undergone an institutional improvement. This movement can be interpreted as the search for survival in an uncertain environment, contrary to the expected effects, that there would be more innovation efforts when the environment was conducive to it.

This study jointly and empirically evaluated economic factors of institutional dynamics (reforms and reversals), explaining small business innovation efforts (resource allocation) in a wide number of Latin American countries; made it possible to analyze the types of institutional dynamics and their respective responses, in the form of innovation efforts; and demonstrated how the formulation of institutional reforms could impact small businesses in Latin American countries, thus contributing to the expansion of the literature on the subject and the development of public policies.

The research, despite the numerous contributions cited, had some limitations, such as the fact that it was carried out with companies of all types and sizes (with the predominance of small businesses, which represent 74% of the sample), and many of them could not specify the degree of innovation of the efforts made. This makes the measure of innovation used subject to criticism, perhaps because it represents an incipient innovation effort. However, it should be noted that small and medium-sized companies constitute an important share in the economy of Latin American countries, which cannot be ignored. Therefore, although simple, this measure is the only one possible for this type of business.

Another limitation is in the sample considered: to perform the Enterprise Survey demands a considerable amount of resources; therefore, it is impossible to perform it annually. Thus, the results achieved are based on a sample of countries with only two or three focal years. Future studies could remedy these limitations and complement our results, analyzing secondary data made available every year, such as patents submitted by country, annually.

Conflict of interest statement

The authors state that there are no conflicts of interest.

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Authors' statement of individual contributions

Roles	Authors Contributions	
	Falaster CD	Costa PR
Conceptualization	X	X
Methodology	X	X
Software	X	X
Validation	X	X
Formal analysis	X	X
Investigation	X	X
Resources	X	X
Data Curation	X	X
Writing - Original Draft	X	X
Writing - Review & Editing	X	X
Visualization	X	X
Supervision	X	X
Project administration	X	X
Funding acquisition	X	X

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