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Article

Competitiveness and urban prosperity in Mexico: their contribution to quality of life

Competitividad y prosperidad urbana en México: su contribución a la calidad de vida

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Abstract

This paper identifies the association between urban competitiveness and prosperity in 70 Mexican cities. A regression model was developed with information provided by the Mexican Institute for Competitiveness, and UN-Habitat. As a result, the importance of public policies as an articulating element of both concepts was reaffirmed, through both economic promotion and social policies as instruments to improve the quality of life. The analysis points out that the lack of sustainability and governance hinder fair growth; provides new perspectives on the connection between competitiveness and prosperity; and emphasizes the importance of infrastructure in urban development.

Keywords: *wellbeing benchmarks, territorial attractiveness, thriving cities, public policies, social policy.*

Resumen

Este trabajo identifica la asociación entre competitividad urbana y prosperidad en 70 ciudades mexicanas. Se desarrolló un modelo de regresión, con información planteada por el Instituto Mexicano para la Competitividad y ONU-Habitat. Como resultado se reafirmó la importancia de las políticas públicas como elemento articulador de ambos conceptos, mediante políticas de promoción económica y política social como instrumentos para mejorar la calidad de vida. Este análisis señala que la falta de sostenibilidad y gobernanza limita el crecimiento equitativo; proporciona nuevas perspectivas sobre la conexión entre competitividad y prosperidad; y enfatiza la importancia de la infraestructura en el desarrollo urbano.

Palabras clave: referentes de bienestar, atractividad territorial, ciudades prósperas, políticas públicas, política social.

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Introduction

The performance of Latin American economies has been historically influenced by developed countries that have sought to impose their economic development approach on policies and institutions through supranational organizations (Guillén Romo, 2018). This has resulted in the widening of equality gaps among countries and regions, which, in a multidimensional manner, has led to a reduction in the quality of life for the less favored social groups. This has occurred through the systematic deterioration of their jobs and the continuous reduction in the coverage rates and quality of social security.

Economic inequality in Latin America has two dimensions: an external one, which can be used for comparing nations; and an internal one, which can be explained through economic and social variables such as income, ethnicity, culture, and gender (Jusidman, 2009). Thus, two of the major challenges the countries of the region are facing right now are how to increase aggregate growth to reduce their gap with developed countries, and how to generate conditions for a more egalitarian society (Bértola, 2018).

Over the past 15 years, Mexico has experienced weak growth rates nationwide. However, the development among sectors and regions has been asymmetrical, generating a concentration of income and services explained by variables such as the existence of leading sectors and public goods supply (Germán, 2019). This asymmetry has direct effects on the quality of life in multiple areas such as productivity, as well as on social and personal aspects throughout the country.

By using this reference point, the State's action has had the purpose of identifying and addressing the main public problems negatively affecting the population, through the design and implementation of public policies and their respective programs. From the social policy viewpoint, the main goals have been fighting poverty and reducing social inequality, with people and groups characterized as "vulnerable" as their target population. On the other hand, economic policy focuses on increasing national productivity through different actions aimed at attracting foreign direct investment, labor regulation, and in general, promoting the logistical, tax, and production conditions for the establishment and consolidation of economic sectors in order to encourage economic growth. In both cases, they pursue similar purposes in terms of increasing the people's quality of life, but by using different instruments.

It should be noted that the designs of state intervention in the social and economic spheres are influenced by the global context, with the Sustainable Development Goals (SDGs) as one of the main guidelines for national development planning. There are meeting points between regional competitiveness and quality of life, as seen from the city prosperity viewpoint, through five SDGs: 1. No poverty, 8. Decent work and economic growth, 9. Industry, innovation, and infrastructure, 10. Reduced inequalities, and 11. Sustainable cities and communities. However, it has already been noted that, in Mexico, there are important equality gaps that suggest regional differences in the relationship between competitiveness and city prosperity.

State intervention through public policies, despite its holistic approach, remains operationally segmented in order to strategically target different public problems. In this context, urban competitiveness gravitates more towards the economic policy spectrum through the pursuit of foreign direct investment, strategic capacity development –with a particular emphasis on high-caliber human capital and both physical and technological infrastructure– and the strategic deployment of tax incentives to attract corporate establishment. Correspondingly, quality of life aligns more closely with the UN-Habitat perspective, which focuses on enhancing urban living standards within the broader urbanization framework and critically examines city-specific scales, compositional dynamics, and environmental sustainability considerations. Notably, two pivotal dimensions emerge in parsing the complex interplay between urban competitiveness and prosperity. First, there is a critical non-deterministic relationship among the main goals of these perspectives (Torres and Rojas, 2015), implying that a highly competitive urban center does not necessarily correlate with peak prosperity—and conversely. The second dimension underscores the inherent heterogeneity of urban traits and economic vocations across territorial landscapes, which in contexts like Mexico's, systematically contributes to the persistent widening of socioeconomic equality gaps (Huerta, 2020).

The aim of this paper is to identify the meeting points of urban competitiveness and city prosperity from their contribution to quality of life through the analysis of 70 Mexican cities. It is assumed that although both have different goals, they both end up improving people's living conditions. Likewise, the presence of marked equality gaps that characterize the Mexican case is expected. For this, we used data sets from the Mexican Institute for Competitiveness (IMCO for its acronym in Spanish) (2010-2018) and the city prosperity index (CPI) from UN-Habitat (2015,

2018). The scope of this research consists of identifying the statistical association between variables, without implying the estimation of causality or spatial effects in the analyzed cities.

1. An approach to the concept of quality of life

The concept of quality of life began to be studied more frequently in the 1980s, when "it began to be defined as an integrative concept that covers all areas of life (multidimensional character) and refers to both objective conditions and subjective components" (Gómez and Sabeh, 2000, p. 1). However, as a new concept, its evolution has entailed discussions about what it should measure and how. It started from the need to measure reality by means of "social and statistical indicators on the population's social welfare," specifically out of objective economic and social conditions in the 1960s (Gómez and Sabeh, 2000, p. 1).

According to Leva (2005), in the 1980s and 1990s, the fields of study and the types of methodological approaches to quality of life were just beginning to be defined. The first approach is quantitative, which allows for measurement and quantification, while the second one is qualitative and, therefore, not measurable.

For a long time, the term "well-being" was used to measure a country's social and economic progress. The gross domestic product (GDP) was the index commonly used for this purpose. However, it is not possible to determine the impact of the GDP on different sectors of a country's population through the aggregate gain from production, which highlights the limitation of this index in measuring the overall progress of society. The evolution of the term has led to the view that well-being and development are not exclusively related to the economic sphere. Thus, quality of life emerged as a more inclusive term that takes into account not only aspects of consumption of goods and material well-being, but also aspects of a more ethical nature, such as environmental conservation in favor of future generations at the expense of present economic gain (D'Acci, 2011).

The concept of quality of life is both objective and subjective. Objective quality of life consists of observable factors such as wealth, health, tangible assets, and, in general, material well-being for the acquisition of goods or for access to opportunities (such as travel, hobbies, or access to better health or education services) (D'Acci, 2011). Subjective quality of life is related to

individual experience and perception of well-being from a psychological perspective; it includes the notion of happiness and satisfaction.

This broader concept of quality of life has led to studies (such as the *World Data Base of Happiness*) that try to show that there is no relationship between GDP and happiness. However, as mentioned by D'Acci (2011), those very studies show that the richest countries are, in fact, the happiest. This has led to the conclusion that wealth and happiness don't grow symmetrically; after a certain point, wealth keeps on growing while happiness stops doing so (Easterlin, 2001). Despite the differences between objective and subjective quality of life, the correlation between wealth and happiness is positive; rich countries have the best quality of life.

Despite the fact that quality of life is a concept used on a daily basis, virtually all scholars agree that there is no consensus on it, although there are some basic points of agreement: a) it is multidimensional; b) it includes both objective aspects (which are measurable), and subjective elements (which are hard to measure); c) it is used in different disciplines (psychology, medicine, philosophy, economics, sociology, ecology, education, public safety, and public policy, among others). Its definition is relative to individuals, culture, time, and space.

Quality of life has become an increasingly important term for determining a country's level of development. In the political sphere, it has become a recurring term that politicians constantly refer to as a part of public policy design (Espinosa Ortiz, 2014). According to Leva, the greatest challenge governments are facing at the national, state, and municipal levels is the implementation of public policies aimed at improving their population's quality of life. This need to improve quality of life is due not only to pressure from organized civil society but, in general, to competition among "urban centers to attract investors and qualified human resources" (Leva, 2005, p. 11).

Most studies define a city's competitiveness in terms of its general business environment, often measured by foreign direct investment, job growth, and population growth. However, as Nasi, Hyemin, Cucciniello and Christensen point out, "Another way to observe city competitiveness is to assess the implications for citizens in terms of standard of living and quality of life. This assessment focuses on a set of characteristics offered locally to enhance individual well-being […]" (Nasi *et al.*, 2022, p. 10). While this approach takes into account factors such as job opportunities, living standards, geographical location, and self-esteem, it typically relies on quantitative data, often overlooking subjective measures. In the case of Mexico, although it is classified as a middle-income

country in terms of its GDP, an unequal wealth distribution contributes to high levels of social inequality, even for Latin America's standards (Barkin, 1999). This leads us to believe that what really needs to be measured is not so much the amount of economic growth, but its quality. Although the importance of including variables of a more qualitative nature is certainly recognized, the scope of this study is limited to the objective quality of life.

2. The state of the art on territorial competitiveness

"Competitiveness" is a very elusive term. Díaz Sánchez (2010) highlighted that, because it has become a common currency and it is used widespread, its meaning usually ends up being diluted in definitions. Similarly, this concept has been adjusted to the purposes and interests of different authors. Gutiérrez (2005), as cited in Paredes *et al*. (2013), defined competitiveness as "the ability of a company to generate a product or service in a better way than its competitors" (p. 20). Chávez Nieto and Aguilera Aguilera (2013) employed the concept of competitiveness to compare the cost structure of the production process of a good with respect to others of the same quality. Meanwhile, Musik and Romo Murillo (2004), as cited in González and López (2013), emphasized that business competitiveness derives from the competitive advantage that a company has through its production and organization methods, reflected in the price and quality of the final product.

Originally, competitiveness was a microeconomic concept applied only to companies. However, mainly from the work of Porter (1990) on, and with the incorporation of economic geography, this approach became more generalized in order to analyze the competitiveness of municipalities, cities, regions, states, and countries. The territorial component was then added to "consider the impact of a territory's economic performance on the well-being of its resident population, as well as the responsibilities and roles the public sector assumes in promoting economic growth" (Garduño *et al.* 2013, p. 31).

In the 1990s, the "systemic competitiveness" approach associated with the German Development Institute (Esser *et al.* 1996) was developed. It proposed four competitiveness levels: meta, macro, meso, and micro. Of the above, it is important to highlight the meso level, since it "corresponds to both state and social actors, who develop specific support policies, promote the formation of structures, and articulate learning processes at the societal level." Additionally, Esser

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et al. (1996) considered that, at this point, the actors of state administration move (from the local to the national level), as also do the intermediate public and private institutions (technological, advisory entities, educational entities, business organizations, and other associations).

Moreover, territorial competitiveness is a concept that has been applied to study this phenomenon in municipalities, cities, regions, states, and nations as a whole. One derivation of territorial competitiveness is urban competitiveness. Sobrino (2005, p. 145) pointed out that this concept "refers to the ability of a city to insert itself in national and foreign markets, and its relationship with local economic growth and the increase in the quality of life of its residents." Alternatively, urban competitiveness is the degree to which cities can produce goods and services for regional, national, and international markets, while increasing the actual income and quality of life of the population, and pursuing sustainable development.

Also, Sobrino (2005, p. 147) emphasized that cities "compete for investments that generate jobs, contribute to local economic growth, have high income elasticity of demand, and favor production without harming the environmental conditions." In a later work, the same author established a more comprehensive definition of urban competitiveness, according to the Global Urban Competitiveness Project (2005), as cited in Sobrino (2003), by not only including economic aspects, but also by increasing and consolidating their cultural amenities, recreational attractions, social cohesion, governance, and a better environment for its resident population.

There are different perspectives that explain urban competitiveness, notably Richard Florida's (2002), who emphasizes the role of the creative class in driving economic growth. He highlights the importance of the 3Ts –talent, technology, and tolerance–, as well as the impact of cultural services and their implications for urban policy. Florida's ideas have led to a range of urban policies aimed at attracting the creative class, including investments in cultural infrastructure, the promotion of diversity, and the creation of vibrant public spaces. However, these proposals have faced criticism regarding their applicability in different contexts, highlighting the need for localized adaptations of such policies. The rise of the creative class is associated with gentrification, where investments in culturally vibrant areas increase property values and displace long-term residents, all of which highlights the potentially negative impacts on vulnerable populations (Faludi, 2019).

City development has been examined from various perspectives, all aiming to answer why some city regions thrive while others decline (Storper, 2013). Storper identifies four key aspects of

city growth: economic framework (including industry concentration, innovation, prices, and wages), institutional framework (the structure of the economic system and collective actions), social interaction framework (face-to-face interactions), and political-economic framework (the efficiency and equity of redistributive policies) (Storper, 2013). In this context, the importance of cities has grown due to how local public policies can sustainably impact their development (Nasi *et al.*, 2022). Understanding city growth is both a matter of innovation and an ongoing adaptation process across multiple levels, as it is a complex phenomenon that resists simple explanations. This study recognizes that, while objective economic variables are commonly used to analyze urban development, the institutional frameworks, social interactions, and political contexts can significantly shape the overall ecosystem of city growth.

A more comprehensive definition of competitiveness includes not only economic growth but also sustainable development, integrating physical, economic, social, and institutional resources. This approach highlights the local government's role as a key player in defining competitiveness as a multidimensional construct (Nasi *et al.*, 2022). Competitiveness encompasses the conditions and capabilities needed to attract and maintain territorial advantages at both national and local levels, which complement each other.

In 2007, the IMCO incorporated the element of sustainability (IMCO, 2007) and remarked that this factor is paramount for investment-oriented economic decision-making, adding that the term "sustainability" encompasses much of the meaning of what competitiveness entails. In the same year, Cabrero *et al*. (2007) reinforced the concept of urban competitiveness by incorporating aspects such as workforce training, improved urban-environmental and institutional conditions such as basic and communications infrastructure, quality of specialized services, technological innovations, institutional transparency, quality of regulation, efforts to combat insecurity, and promotion of social cohesion. The same authors added that urban competitiveness should also seek the abatement of social inequities.

The operational definition of city competitiveness applied in this work was based on the IMCO definition: the ability of cities to attract and retain talent and investments, which translates into increased productivity and well-being for its inhabitants (IMCO, 2016; Díaz Sánchez, 2010; Musik and Romo, 2005). Such attraction must be sustainable and compatible with ecological and environmental initiatives. Achieving urban competitiveness is not an end in itself; rather, it is

conceived as a vehicle for generating employment with decent wages, increasing real income, improving quality of life, and achieving equity among the residents through inclusion and social cohesion.

For the purposes of this work, we analyzed the territorial competitiveness related to the Mexican experience. Three types of studies were reviewed: those studying municipalities; those analyzing cities –in the sense of conurbations–; and, finally, those dealing with regions and states (IMCO, 2016; Pérez *et al.,* 2011; Cabrero Mendoza and Barbarín Rodríguez, 2011; Quijano, 2007; Gutiérrez, 2017; Sobrino, 2005). Up to this point, works related to both municipal and city competitiveness had been reviewed as a background. What distinguishes this work from those previously reviewed is the interaction established between competitiveness and quality of life, complementing the IMCO database, which is used to measure city competitiveness by means of the city prosperity index database, proposed by UN-Habitat for the same set of cities. This issue had not been discussed in the existing literature on the subject.

Empirically, for this work, competitiveness is operationalized through the *per capita* investment of the economically active population (EAP) that attracts both cities and the human talent that resides within them, as represented by the percentage of people over 25 who have completed higher education.

3. The role of public policies in the quality of life

Various disciplines have measured competitiveness by focusing on different aspects, ranging from physical and social infrastructure to input costs, lifestyles, tax systems, and environmental qualities. These factors are considered crucial in attracting firms and people, thus creating conditions for sustained competitiveness (Nasi *et al.*, 2022). The interplay among these elements has increasingly emphasized the role of local governance.

The ultimate purpose of social policy is to mitigate social inequality through public spending. In the case of Latin America, during the first decade of the 2000s, increases in social spending reduced poverty because efforts were focused on strengthening social assistance, public health, and the coverage of educational services (Ocampo, 2004). For Mexico in particular, those efforts were more targeted than universal, as proved by regional programs aimed at fighting poverty and improving living

conditions by increasing access to health and education services (Torres and Rojas, 2015). However, it is not possible to understand social policy without acknowledging its strong correlation with economic policy. Thus, poor economic performance has led to reductions in both social spending and quality of life. In this context, government intervention through public policies has been flawed. Stiglitz and Rosengard (2015) pointed out four aspects that potentially limit its effectiveness: insufficient information on the effects of public policies themselves, restrictions on guiding market actions, little control over the actions of public policy operators, and barriers arising from political systems. In this sense, assessment plays a crucial role because, through evidence analysis, it aims to identify the effects of social programs. Rodríguez (2009) emphasizes that the evaluation must be based on reliable information leading to an analysis that reflects and contrasts the goals and results of the programs by establishing causal relationships.

However, there is a barrier in social policy assessment, since, in some cases, it is developed out of the programs and not out of the public problems that they seek to address; this is due to the fact that, to some extent, they are trying to legitimize the effort and allocated resources (Cardozo Brum, 2003). As a result, public intervention has reached satisfactory assessments, but structural problems such as poverty, insecurity, and environmental damage continue to increase. In addition, the assessment orientation in Mexico has been characterized by its short-term emphasis based on tax years, or at best, on presidential terms, thus placing them as an administrative requirement rather than an exercise in reflection and continuous improvement (Cardozo Brum, 2015). As a result, there is little to no understanding of the over-time effects of both public programs and government intervention strategies. Accordingly, social policy must be analyzed as a long-term state intervention, given the inherent conditioning factors and institutional inertias stemming from previous governmental cycles. Within this analytical framework, Martínez (2020) delineates two critical factors underlying the limitations of social policy in Mexico: (1) the predominant –yet fundamentally insufficient– emphasis on poverty mitigation, consequently resulting in a diminished attention to social rights protection, notably exemplified by the establishment of the National Council for the Evaluation of Social Development Policy (CONEVAL, for its acronym in Spanish), which catalyzed the implementation of multidimensional poverty measurement and the development of robust methodological frameworks for public program assessment; and (2) the systemic segmentation of social programs, wherein the pronounced lack of both inter-sectoral and

inter-governmental coordination precipitated programmatic redundancy, suboptimal targeting mechanisms, and inefficient allocation of public resources, ultimately undermining the government's capacity to conceptualize and consolidate comprehensive universal social policies.

This restricts the understanding of the contribution of social policy to the improvement of the people's quality of life. At best, only the individual contributions of the programs and their effects on some variables that make up quality of life dimensions are identified. Given this limitation, the methodological section sought to establish an analytical framework in order to identify the dimensions in which regional competitiveness and prosperity in the cities converge, and thus, to discuss how they contribute to quality of life.

Urban competitiveness is a key focus of public policy, particularly in economic promotion. Local governments aim to attract investment by offering tax incentives to companies that can stimulate regional economic growth through strengthening productive chains and creating jobs. Chudnovsky, González, Hallak, Sidders, and Tommasi (2018) emphasize the importance of developing government capacity in four areas: human resources, organizational scope, horizontal policy and budget, and vertical policy. Additionally, Jiménez and Rendón (2012) identified six factors influencing foreign direct investment through empirical studies: exchange rates, market size, trade agreements, workforce characteristics, tax rates, and institutional strength. The effectiveness of these policies depends on city-specific characteristics, with benefits potentially dispersing across the national territory.

In essence, social policy aims to enhance quality of life by reducing inequalities and poverty, while economic promotion policies seek to boost regional competitiveness through economic growth, indirectly improving living conditions. Despite the potential convergence of these policy sectors' goals, their instruments and narratives are not always aligned. The following section will explore the specific aspects where these perspectives intersect.

Local governments can influence competitiveness in two main ways: first, their governmental structure plays a crucial role, as "competence and political leadership may impede or facilitate policy" (Nasi *et al.*, 2022, p. 16); and second, local government policies can enhance amenities to attract residents. The analysis of specific city situations can provide insights that help local governments "create conditions for sustainable urban growth" (Nasi *et al.*, 2022, p. 21) through targeted public policies.

4. Method

The methodology developed for this paper consisted of three stages. The first was the estimation of the competitiveness of 70 Mexican cities using two complementary models: one associated with the attraction of investment, and the other with the attraction and generation of human talent, using information from the years 2010-2018. The second stage consisted of the integration of the CPI proposed by UN-Habitat for the same cities that had been selected in the previous stage. Finally, the third stage involved the chi-squared test to identify the degree of dependence or independence between the cities' competitiveness and prosperity indexes.

In order to estimate the econometric model, we used natural logarithms for all continuous variables to represent their elasticities. In addition, the logarithmic transformation has various properties that make it attractive because it reduces both the asymmetry and heteroscedasticity of the variables (Gujarati and Porter, 2010). In tests, which were carried out but not included due to length limitations, it was determined that the fixed effects model was superior to both the pooled regression and the random effects models. Due to lack of space, the result is presented for all the cities included in the exercise. This implies that the dichotomous variables are not presented for the cities, nor for the years, which would allow the generation of a 70-city ranking in terms of competitiveness. A panel analysis was chosen because it allows for the construction of more complex models than those possible with either cross-sectional or time-series approaches. This method is especially beneficial for creating a classification and ranking of the cities' competitiveness that takes into account their individual heterogeneity. (Baltagi, 2005).

Based on the above, it is concluded that the model to be applied is logarithmic in the data panel with fixed effects. In addition, it was corrected for contemporary correlation, heteroscedasticity, and autocorrelation, following the panel corrected standard errors (PCSE) technique recommended by Aparicio and Márquez (2005). This technique was employed because it has greater precision than the generalized least squares method (Aparicio and Márquez, 2005). It should also be noted that both models take the logarithmic functional form to minimize the effects of outliers. The specification of the competitiveness model in its investment version can be found in equation (1):

$$\begin{aligned} \text{loginvest} = {} & c + \alpha\, \text{loghealthaccess} + \beta\, \text{loggroundfloor} + \gamma\, \text{loginternetaccess} \\ & + \delta\, \text{logvehicletheft} + \varepsilon\, \text{loginsecurityperception} + \zeta\, \text{logwagerecovery} \\ & + \eta\, \text{loglaborparticipation} + \theta\, \text{logworkingpopulation} + \iota\, \text{lnacademicperfomance} \\ & + \sum \phi_i\ \text{cityd}_j + {} + u_i,\ j = 1, \ldots 70\ \text{cities} \end{aligned} \quad (1)$$

The second model, associated with competitiveness based on human resources development, can be found in equation (2):

$$\begin{aligned} \text{loghumanresources} & \\ = {} & c + \alpha\, \text{loghealthaccess} + \beta\, \text{loggroundfloor} + \gamma\, \text{loginternetaccess} \\ & + \varepsilon\, \text{loginsecurityperception} + \zeta\, \text{logwagerecovery} + \eta\, \text{loglaborparticipation} \\ & + \theta\, \text{logworkingpopulation} + \iota\, \text{lnacademicperfomance} \\ & + \sum \phi_i\ \text{cityd}_j + {} + u_i,\ j = 1, \ldots 70\ \text{cities} \end{aligned} \quad (2)$$

The first model refers to the capacity to attract investment, established through the total investment in Mexican pesos per economically active person; the second one is relative to human talent through the percentage of the population aged 25 or older who have higher education.

The data utilized in this study originates from the Urban Competitiveness Indexes developed by the IMCO (UN-Habitat, 2018). Since this information is available on an annual basis, a panel integrating various databases spanning from 2010 to 2018 was built. Only the variables specified in the models were included, as they most accurately reflect the elements associated with urban competitiveness based on the theoretical framework presented in this paper. In terms of prosperity indexes, values for the years 2015 and 2018 were integrated, considering the same 70 cities used in the econometric models. These indexes have the following specifications:

City prosperity index

= (Productivity, infrastructure development, quality of life, equity and social inclusion, environmental sustainability, urban governance, and legislation)

Where:

Productivity = (economic growth, economic burden, economic density, employment)

Infrastructure development = (housing infrastructure, social infrastructure, ICT, urban mobility)

Quality of life = (health, education, safety, and security)

Equity and social inclusion = (economic equity, social inclusion, gender inclusion)

Environmental sustainability = (air quality, water, and energy)

Urban governance and legislation = (participation, institutional capacity)

For this phase, a database was created using indicators from the individual reports of each of the 70 cities considered earlier. However, two limitations were encountered. The first has to do with the timing of the data; some cities had information available for 2015, while others had data for 2018. The second limitation relates to the variables representing prosperity indexes, which were derived from definitions established by UN-Habitat. This constraint restricted the ability to design a custom set of variables specifically tailored for this case study. The indicators' values were taken from the individual reports prepared by UN-Habitat (2019) for each of the 70 cities considered in the econometric models. The assessment scale ranges from 0 to 100, considering the following scales of prosperity:

Table 1

City prosperity index's scales of prosperity

City prosperity index	*Scale of prosperity*
80-100	Highly reliable
70-79	Reliable
60-69	Moderately reliable
50-59	Moderately weak
40-49	Weak
0-39	Very weak

Source: *Reporte nacional de prosperidad urbana en México. Índice de las ciudades prósperas* (UN-Habitat, 2019).

Annexes 2 and 3 show the resulting values of both models for the 70 cities studied.

Finally, for the hypothesis tests, two groups of categorical variables, associated with either competitiveness (high competitiveness - low competitiveness) or city prosperity (more prosperous cities - less prosperous cities) were generated in order to populate the two-way tables required for such estimates. In this context, the hypothesis tests enabled the identification of relationships between factors associated with urban competitiveness and prosperity. And although this technique does not clarify the direction of these relationships, this limitation does not constrain the aims of this paper, which focus solely on establishing the presence of such relationships.

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5. Results and discussion: the nexus between competitiveness and quality of life

One of the main difficulties in the analysis of city competitiveness and prosperity was the multiple meanings of both concepts, and the difficulty in measuring them due to the diversity of variables involved. Regarding competitiveness, it was decided to use a definition aligned with the one developed by the IMCO. Hence, it was possible to utilize some of its variables, and through a data panel model, the competitiveness of 70 Mexican cities was estimated. The description of each variable is shown in Annex 1.

Table 2

Results of the econometric models

Dependent variable: loginvest				*Dependent variable: loghumanresources*		
Variable	Coefficient	P> | z |		Variable	Coefficient	P> | z |
loghealthaccess	0.0539622	0.164		*loghealthaccess*	0.054	0.164
loggroundfloor	-0.0124644	0.063		*loggroundfloor*	-0.012	0.063
loginternetaccess	-0.0027116	0.818		*loginternetaccess*	-0.003	0.818
logvehicletheft	-0.0123121	0.041		*logvehicletheft*	-0.012	0.041
loginsecurityperception	-0.0044293	0.740		*loginsecurityperception*	-0.004	0.740
logwagerecovery	1.185758	0.000		*logwagerecovery*	1.186	0.000
loglaborparticipation	-0.0594443	0.655		*loglaborparticipation*	-0.059	0.655
logworkingpopulation	-0.9504224	0.000		*logworkingpopulation*	-0.950	0.000
lnacademicperformance	-0.0013564	0.664		*lnacademicperformance*	-0.001	0.664

Source: authors' own creation based on data from *Índice de competitividad estatal* 2016 by the IMCO, using IBM SPSS (2020).

Broadly speaking, competitiveness can be associated with two major elements: the ability to attract investment and the generation of human talent. For the purposes of this paper, the latter was recovered empirically because it has a greater incidence among individuals, although both models were analyzed. In this sense, on the basis of the designed model, coefficients that cover a period from 2010 to 2018 were obtained, which grants certainty to the results.

As an outcome, it was possible to identify and quantify the equality gaps among cities. In this respect, there is no geographical pattern; competitiveness can be explained by the economic

vocation of cities, either by their attraction to tourists, degree of industrialization, or capacity to offer services, among other possibilities. Prosperity was addressed through the UN-Habitat index, which states that UN-Habitat's CPI is both a metric and a policy dialogue that offers decision-makers the conditions to formulate adequate policies based on good data, information, and knowledge. The CPI is a global initiative that provides an innovative approach to urban measurements and is meant to identify opportunities and potential areas of intervention for cities to become more prosperous. (UN-Habitat, 2019).

As outlined in the methodology, this index is multidimensional and addresses different components related to cities. Like competitiveness, the marked equality gaps among cities are evident. At an aggregate level, these axes show the emphasis and outstanding issues in local public policy, where equity and social inclusion, as well as infrastructure development, are the highest axes, while environmental sustainability and urban governance and legislation are the lowest. In addition to the above, the two dimensions with the highest level of inequity are environmental sustainability and urban governance and legislation. This makes it clear that the development of Mexican cities is poorly regulated, which leads to a disorderly urban expansion and zero environmental protection.

Table 3

Average values of the CPI dimensions

Dimension	*Average value*
Productivity	58
Infrastructure development	62
Quality of life	63
Equity and social inclusion	71
Environmental sustainability	48
Urban governance and legislation	36

Source: authors' own creation based on reports from the CPI (UN-Habitat, 2019) for 70 cities.

The central argument of this work lies in identifying the possible relationship between competitiveness and prosperity in cities. In an aggregate sense, we could assume the existence of a direct relationship between the two by considering the idea that the contribution made by the business sector directly affects the quality of life of residents. However, this is not plausible due to

the high rates of informal employment –close to 60%– in the Mexican case, which as an initial condition severely limits the access to the benefits of formal employment for the working population. Nonetheless, the CPI makes it possible to look for associations among the variables from the axes that make it up. The following table shows the results of the hypothesis tests.

Table 4

Association between competitiveness and the axes of prosperous cities

		Prosperous cities					
		Productivity	Infrastructure development	Quality of life	Equity and social inclusion	Environmental sustainability	Urban governance and legislation
Competitiveness	Human talent	Not statistically significant (<90%)	Statistically significant (95%-99%)	Not statistically significant (<90%)	Not statistically significant (<90%)	Not statistically significant (<90%)	Not statistically significant (<90%)
	Social investment	Not statistically significant (<90%)	Statistically significant (95%-99%)	Not statistically significant (<90%)	Not statistically significant (<90%)	Not statistically significant (<90%)	Not statistically significant (<90%)

Source: authors' own creation based on data from *Índice de competitividad estatal* 2016 by the IMCO and reports from the CPI (UN-Habitat, 2019), for 70 cities using IBM SPSS (2020).

As can be seen, only the infrastructure development axis is statistically associated with competitiveness. This suggests two possible complementary explanations. The first relates to the fact that the most competitive cities are those with the best capacity to become poles of attraction for capital. Thus, as a part of their dynamics, they consider the construction of infrastructure –for example, better communication routes– as well as the expansion of higher education supply to meet the needs of the formal productive sector. This leads to a structural improvement in the labor conditions of workers in the sectors that are part of the economic vocation of cities.

On the other hand, cities with higher rates of prosperity are characterized –among other things– by better conditions of infrastructure development (housing, social, and communications infrastructure, as well as mobility and urban form). This makes them attractive for productive investment, thus generating and/or strengthening economic sectors, and positively affecting the population. In both cases, the common factor is public policies. From the point of view of competitiveness, they are associated with the economic promotion policy, which is oriented towards providing incentives in order for companies to establish and consolidate, thus emphasizing the

creation of infrastructure such as industrial parks, roads, provision of public services (water, electricity, street lighting), and connectivity through public transport, as well as strengthening public safety. From the perspective of prosperous cities, the intervention comes from social policy through improvements in public transport and services, as well as the creation/rehabilitation of social spaces.

It should also be noted that Mexican urban public policies have lacked an emphasis on sustainability, since it is the index with the lowest values. This shows that, structurally, there are no existing conditions for including the environment as a variable of urban planning. Finally, based on the information presented, the specific importance of local public policy –and government capacities– for city development in areas such as competitiveness and degree of prosperity is emphasized. However, the data presented makes the asymmetric development among Mexican cities visible by referring to the initial argument of this work, which has to do with the challenge of decreasing the component of internal inequality beyond the contribution to the GDP of the cities with the best conditions.

Conclusions

The main empirical contribution of this study is its analysis of urban competitiveness in relation to city prosperity by using a panel regression model. The research identifies equality gaps among Mexican cities, highlighting the significant impact of urban infrastructure on both competitiveness and quality of life. By examining 70 Mexican cities, this work provides valuable insights into disparities between competitiveness and living standards. The study's methodological strength lies in its use of a panel data regression model with standard error correction, which enhances the accuracy of results. Its approach to assessing urban competitiveness is distinguished by the use of longitudinal data, allowing for the capture of trends over time. The application of regression models with PCSEs adds depth to the temporal analysis, representing a significant methodological contribution for similar studies. Furthermore, the paper enriches the theoretical discourse on the correlation between urban competitiveness and prosperity, suggesting that infrastructure serves as a key point of convergence between economic and social policies.

Based on the evidence presented, it was found that, in the Mexican case, the convergence point between urban competitiveness and prosperity in cities is the infrastructure development,

which is the result of both economic and social policies. Nevertheless, this contribution is partial since, as the discussion indicates, the concept of quality of life is multidimensional and covers both tangible and intangible aspects that are not correlated with each other.

This study once again reaffirms the marked equality gaps that characterize Mexico. Additionally, two crucial factors that ultimately affect the quality of life are added to the theoretical discussion. The first one relates to the fact that, structurally, urban development does not address environmental concerns, despite the many policies and international agreements adopted. Regardless of the high dispersion among cities, it is a failed assessment in all cases, and highlights a disorganized and rather inertial growth which corresponds to each city's history. The second aspect lies in the argument that the most competitive cities are not necessarily productive. In principle, this statement might seem counterintuitive, but it can be explained by the high rates of labor informality that seriously limit the benefits brought by the attraction of companies. Similarly, weak protection of labor rights contributes to job insecurity through subcontracting schemes that are disadvantageous to workers. This shows a disconnection between the general purposes of public policy and the objectives pursued individually by the sectors comprising the public administration. In order to address this issue, it is crucial to improve the way the State measures and addresses public problems. This involves moving from a segmented and atomized model to a more comprehensive one, in which these problems become the starting point for the design and implementation of integrated public policies and programs, encompassing both social and economic development.

Establishing cities as the units of analysis makes sense, as within them, it becomes evident that public problems are interconnected, often generating vicious circles that result in a gradual decrease in the people's quality of life and an increasing differentiation in living conditions among cities over time. Furthermore, there is an urgent need to integrate environmental care into both social and economic policies, as the most significant problems cities will be facing in the coming years are directly related to environmental issues. These include both water and waste management, as well as health problems stemming from air and water pollution.

Given the above, a more comprehensive approach to studying the factors that explain regional development is increasingly necessary. Consequently, this work aims to combine three

theoretical aspects that, although complementary, are traditionally addressed separately. These are: 1) quality of life as a multidimensional construct that seeks to identify and quantify the well-being that individuals experience in their various spheres of development; 2) competitiveness as a largely economic factor responsible for characterizing and explaining the regional makeup of economic sectors and their contribution to the national economy; and 3) the role of public policies as mechanisms through which the State regulates the relations between market and society. This serves the dual purpose of promoting economic development while also protecting citizens from market abuses to improve their quality of life.

The main contribution of this study lies in the identification of a variable –infrastructure development– that can potentially connect certain goals of social and economic policies, thus generating synergies in achieving their goals. In other words, the development of economic sectors contributes to improving the people's quality of life through the creation and strengthening of infrastructure. Likewise, public investment in social infrastructure contributes to making cities more competitive by creating better conditions for establishing and consolidating businesses. However, this finding should be interpreted with caution and viewed as a potential guide for future studies to focus more precisely on the specific types of infrastructure that support this argument. Although quality of life is a complex, intricate concept, this study shows that its multiple dimensions reflect the performance of economic and social policies, revealing that each variable adds to or subtracts to the concept, which in the aggregate allows for constructing quality of life's both perception and measurement. In this sense, future studies will determine the synergies generated by territorial competitiveness (economic promotion) and city prosperity (social spending) in terms of the type of infrastructure they generate.

To facilitate such an approach, it is imperative to progress toward intersectoral public policy frameworks, fundamentally grounded in the multifactorial complexity inherent both within and across public policy challenges. This advancement requires two critical levels of intervention and coordination: the first, attributable to the political domain, focuses on achieving consensus and strategic alignment among key stakeholders and policy agendas; the second addresses the technical-instrumental dimensions facilitating the design and implementation of interconnected public programs with synchronized objectives, targeted populations, and overarching policy goals.

This research integrates economic and quality-of-life considerations, enhancing its value for both scholars and policy-makers. The findings offer insights that can inform strategies to mitigate regional disparities in Mexico and provide a foundation for comparative studies across Latin America. By focusing on Mexico, a nation characterized by significant regional inequalities, the study becomes a crucial resource for academics and decision-makers alike.

The empirical analysis and methodology employed serve as a valuable template for future research in Latin American cities with comparable characteristics. This approach not only contributes to the existing body of knowledge but also offers practical applications for addressing urban development challenges in similar socioeconomic contexts. However, further studies are needed to clarify the relationship between municipal governance and urban competitiveness. In particular, more research is required to understand how local authorities influence and shape a city's competitive landscape.

Annexes

Annex 1

Description of panel model variables

Variable name in the model	*Meaning*	*Description*
Loginvest	*Natural logarithm of total investment*	Pesos per economically active person
Loghumanresources	*Natural logarithm of human talent*	Percentage of population aged 25 and over with higher education
Loghealthaccess	*Natural logarithm of access to health institutions*	Percentage of population with access to health institutions
Loggroundfloor	*Natural logarithm of dwellings with ground floor*	Dwellings with ground floor per 100 dwellings
Loginternetaccess	*Natural logarithm of homes with Internet*	Percentage of households with an Internet-connected computer
Logvehicletheft	*Natural logarithm of vehicle theft*	Stolen vehicles per 100,000 people
Loginsecurityperception	*Natural logarithm of perception of insecurity*	Percentage of the population aged 18 and over who feel insecure in their state
Logwagerecovery	*Natural logarithm of wage growth*	Average annual wage growth rate (2008-2016)
Loglaborparticipation	*Natural logarithm of labor participation*	Economically active population employed as a percentage of the total population
Logworkingpopulation	*Natural logarithm of employed population*	Number of people

Annex 1 *(continuation)*

Variable name in the model	*Variable name in the model*	*Variable name in the model*
lnacademicperformance	*Natural logarithm of academic performance*	Students with "good" or "excellent" in the PLANEA test as a percentage of the total number of students

Source: authors' own creation based on data from *Índice de competitividad estatal* 2016 by the IMCO (2016).

Annex 2

Competitiveness of Mexican cities

City	*Investment attraction*	*Human talent*
Acapulco	-3.923937	-3.923937
Aguascalientes	-5.487517	-5.487517
Campeche	-6.061988	-6.061988
Cancún	-2.776022	-2.776022
Cárdenas	-6.31554	-6.31554
Celaya	-3.896132	-3.896132
Chetumal	-3.437672	-3.437672
Chihuahua	-2.920734	-2.920734
Chilpancingo	-4.687332	-4.687332
Cd. del Carmen	-3.789569	-3.789569
Cd. Obregón	-4.949775	-4.949775
Cd. Victoria	-3.041301	-3.041301
Coatzacoalcos	-4.771069	-4.771069
Colima - Villa de Álvarez	-3.366583	-3.366583
Cuautla	-5.011226	-5.011226
Cuernavaca	-5.058702	-5.058702
Culiacán	-2.865519	-2.865519
Durango	-3.185427	-3.185427
Ensenada	-4.937016	-4.937016
Guadalajara	-5.496784	-5.496784
Guaymas	-1.727368	-1.727368
Hermosillo	-4.970854	-4.970854
Irapuato	-3.275498	-3.275498
Cd. Juárez	-4.719433	-4.719433
La Laguna	-2.496734	-2.496734
La Paz	-6.840371	-6.840371
La Piedad - Pénjamo	-5.600276	-5.600276
León	-3.089777	-3.089777
Los Cabos	-5.722064	-5.722064
Los Mochis	-3.41821	-3.41821
Manzanillo	-5.024186	-5.024186
Matamoros	-4.931338	-4.931338
Mazatlán	-4.477105	-4.477105
Mérida	-3.5612	-3.5612

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Annex 2 *(continuation)*

City	*Investment attraction*	*Human talent*
Mexicali	-4.071368	-4.071368
Monclova - Frontera	-4.305682	-4.305682
Monterrey	-0.2575285	-0.2575285
Morelia	-4.10285	-4.10285
Nuevo Laredo	-3.316239	-3.316239
Oaxaca	-4.442378	-4.442378
Orizaba	-4.332423	-4.332423
Pachuca	-4.440224	-4.440224
Piedras Negras	-6.065147	-6.065147
Poza Rica	-3.940822	-3.940822
Puebla - Tlaxcala	-2.629508	-2.629508
Puerto Vallarta	-4.327175	-4.327175
Querétaro	-3.004934	-3.004934
Reynosa - Rio Bravo	-2.146515	-2.146515
Río Verde - Cd. Fernández	-6.367934	-6.367934
Salamanca	-4.316783	-4.316783
Saltillo	-3.296147	-3.296147
San Francisco del Rincón	-5.506084	-5.506084
San Juan del Río	-4.880527	-4.880527
San Luis Potosí - Soledad de Graciano Sánchez	-3.229476	-3.229476
Tampico - Panuco	-3.216695	-3.216695
Tapachula	-5.818866	-5.818866
Tecomán	-6.343737	-6.343737
Tehuacán	-3.991568	-3.991568
Tehuantepec - Salina Cruz	-3.129495	-3.129495
Tepic	-4.863675	-4.863675
Tijuana	-5.502575	-5.502575
Tlaxcala - Apizaco	-4.498744	-4.498744
Toluca	-1.571808	-1.571808
Tula	-3.021996	-3.021996
Tulancingo	-6.150326	-6.150326
Tuxtla Gutiérrez	-4.466719	-4.466719
Uruapan	-5.677829	-5.677829
Veracruz	-2.581708	-2.581708
Zacatecas - Guadalupe	-5.434613	-5.434613
Zamora - Jacona	-4.722724	-4.722724

Source: authors' own creation based on data from *Índice de competitividad estatal* 2016 by the IMCO (2016).

Annex 3

Concentration of the axes of prosperous cities

City	*Productivity*	*Infrastructure development*	*Quality of life*	*Equity and social inclusion*	*Environmental sustainability*	*Governance and urban legislation*
Acapulco	55.42	61.59	51.2	60.55	33.32	29.43
Aguascalientes	59.47	63.29	67.81	72.43	33.27	29.4
Campeche	58.71	70.7	70.99	70.89	28.23	33.71
Cancún	67.58	55.21	66.48	76.03	64.97	67.08
Cárdenas	40.35	47.87	64.88	68.44	20.02	48.74
Celaya	59.9	56.87	60.38	71.3	36.95	40.6
Chetumal	58.36	66.46	61.11	69.79	27.56	57.59
Chihuahua	58.81	65.8	62.34	75.9	46.88	29.59
Chilpancingo	56.14	63.24	51.71	53.65	38.66	26.44
Cd. del Carmen	81.13	62.73	73	69.98	34.5	32.51
Cd. Obregón	61.18	74.86	62.88	73.31	82.56	51.28
Cd. Victoria	58.02	74.94	65.13	72.63	56.8	33.02
Coatzacoalcos	63.58	51.3	57.88	70.24	31.54	33.93
Colima - Villa de Álvarez	53.63	69.67	71.56	74.54	49.82	39.59
Cuautla	43.59	55.03	64.43	70.28	32.41	27.75
Cuernavaca	55.74	59.01	62.36	69.49	28.09	49.17
Culiacán	55.27	64.19	55.25	71.6	78.86	32.08
Durango	50.3	64.19	60.2	71.75	54.69	33.84
Ensenada	54.44	56.56	54.24	72.79	76.7	42.42
Guadalajara	62.09	66.29	65.9	74.86	89.65	37.42
Guaymas	55.52	64.75	62.16	66.81	40.47	40.91
Hermosillo	66.86	63.51	64.33	71.94	31.67	46.97
Irapuato	60.99	57.51	59.95	71.15	47.92	29.67
Cd. Juárez	61.67	57.32	62.48	71.67	45.86	24.82
La Laguna	56.57	62.2	64.15	69.97	41.36	35.21
La Paz	60.26	74.05	64.22	72.85	46.92	71.32
La Piedad - Pénjamo	45.29	61.85	54.6	72.19	33.94	27.83
León	63.44	65.2	65.78	70.85	49.16	30.69
Los Cabos	66.2	66.66	55.58	71.21	47.28	49.5
Los Mochis	49.81	60.41	60.21	71.46	42.88	42.59
Manzanillo	63.2	61.08	68.66	73.27	38.14	35.83
Matamoros	56.57	62.2	64.15	69.97	41.36	35.21
Mazatlán	60.24	69.39	61.5	69.68	57.64	32.79
Mérida	59.09	61.88	69.96	74.93	29.54	32.84
Mexicali	59.08	57.87	59.45	74.23	77.69	29.64
Monclova - Frontera	56.41	58.25	63.18	78.15	73.21	32.89
Monterrey	66.09	60.21	66.67	77.3	48.64	39.95
Morelia	54.18	61.77	58.57	67.28	74.47	33.72
Nuevo Laredo	59.22	59.31	58.57	70.94	58	32.65
Oaxaca	55	58.56	65.19	58.23	40.32	34.28

Annex 3 *(continuation)*

City	*Productivity*	*Infrastructure development*	*Quality of life*	*Equity and social inclusion*	*Environmental sustainability*	*Governance and urban legislation*
Orizaba	43.9	58.91	67.89	68.39	57.48	31.67
Pachuca	54.58	63.52	68.23	73.81	27.92	33.05
Piedras Negras	59.67	64.33	58.69	77.82	41.67	28.07
Poza Rica	46	59.06	64.73	70.73	50	23.41
Puebla - Tlaxcala	61.95	59.89	65.05	64.25	58.04	30.01
Puerto Vallarta	60.93	63.27	64	70.81	46.26	49.24
Querétaro	65.12	64.31	63.26	70.63	42.27	39.67
Reynosa - Río Bravo	67.96	55.9	58.33	74.54	48.13	25.2
Río Verde - Cd. Fernández	61.84	61.46	67.34	69.65	49.92	32.8
Salamanca	57.44	68.7	57.81	70.72	51.34	22.26
Saltillo	63.82	54.62	60.6	74.03	30.8	30.03
San Francisco del Rincón	56.02	50.79	65.76	78.9	59.72	19.45
San Juan del Río	65.1	69.22	65.79	71.01	38.6	47.1
San Luis Potosí	61.84	61.46	67.34	69.65	49.92	32.8
Tampico - Panuco	56.85	58.66	58.34	70.04	48.43	25.69
Tapachula	51.02	63.71	52.89	69.44	63.36	39.83
Tecomán	52.2	64.68	63.81	66.32	39.27	33.43
Tehuacán	56.42	63.43	55.21	71.86	58.26	37.24
Tehuantepec - Salina Cruz	52.79	57.78	63.85	60.45	54.21	40.52
Tepic	55.25	75.74	63.51	76.19	82.02	35.53
Tijuana	61.98	56.7	57.94	72.55	39.91	58.73
Tlaxcala - Apizaco	49.51	54.78	68.67	74.86	50.95	22.26
Toluca	62.44	55.15	67.51	71.33	37.68	31.74
Tula	61.55	58.02	73.43	70.86	40.02	35.48
Tulancingo	51.04	66.4	62.29	71.02	27.77	53.18
Tuxtla Gutiérrez	57.49	58.27	54	64.59	39.43	24.76
Uruapan	58.78	68.66	59.2	65.57	70.28	45.59
Veracruz	58.07	62.34	59.08	70.58	38.7	29.88
Zacatecas - Guadalupe	54.66	69.04	65.03	68.82	56.11	35.71
Zamora - Jacona	55.52	67.06	58.2	71.29	69.03	29.03

Source: authors' own creation based on data from *Índice de competitividad estatal* 2016 by the IMCO (2016).

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Curricular reviews

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