

# Business attraction in the Mekong Delta region of Vietnam: The impact of the provisional competitiveness index and public policy

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**Abstract:** Over the course of many years, the Mekong Delta region has experienced relatively low and inconsistent levels of business attraction and low quality of the enterprise environment compared to other regions in Vietnam. To delve into whether this discrepancy reflects a negative perception of the business environment in the area, this study employs a dataset comprising the aggregate Provincial Competitiveness Index (PCI) and nine of its component scores, alongside other significant control variables, to analyze business attraction trends spanning from 2010 to 2020. It based on the modeling analysis for the panel data that includes Pool-OLS, FEM and REM models. The findings indicate that PCI serves as an important indicator influencing the quality of the business environment and plays a role in determining the location preferences of businesses. It is observed that public investment has exerted an impact on enticing new businesses to the region throughout this period. These research outcomes carry several policy implications, suggesting that public policy interventions can positively shape the business environment, consequently bolstering the appeal of business investments in the region.

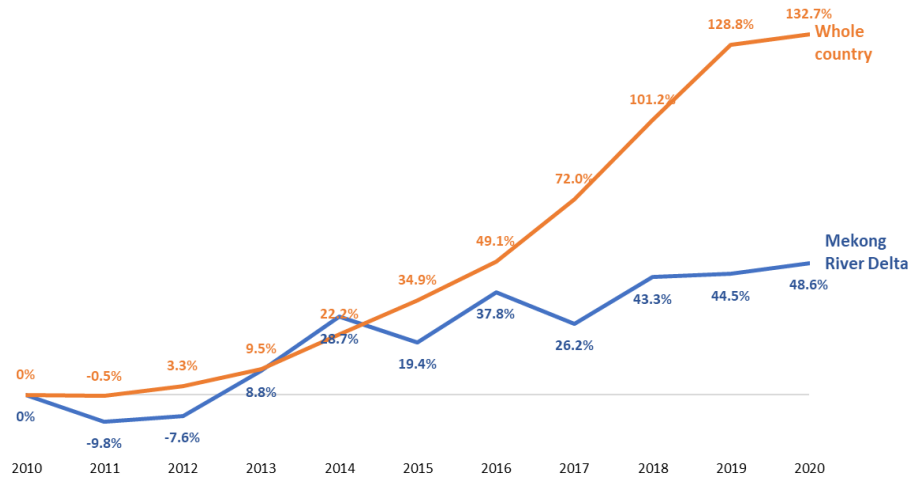
**Keywords:** provincial competitiveness index; business investment environment; business attraction; Mekong Delta; institutional quality

## 1. Introduction

As the Mekong Delta region undergoes economic restructuring, the private sector is playing a crucial role in driving its development (VCCI and FSPPM, 2020). The rise in private investment is expected to create more jobs, increase incomes, and enhance living standards in the area (Nguyen and Trinh, 2018; Saeed et al., 2006). Private investment is recognized as a key driver of economic growth (Abdelbary and Benhin, 2019), making it essential to attract businesses and capital to fuel investment in the Mekong Delta.

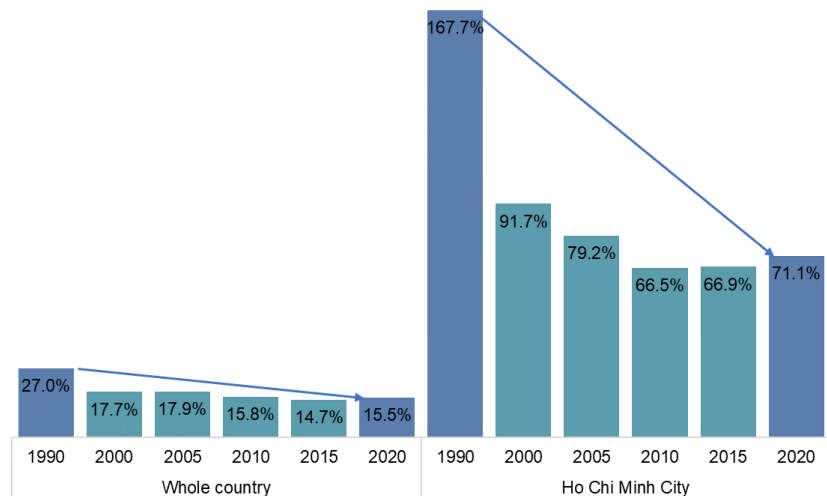
However, capital flows from businesses to the Mekong Delta region have been notably inconsistent and persistently lower compared to both the national average and other economic regions in Vietnam for a long time. Private sector investment in the region between 2010 and 2020 only represented 33.9% of total investment, falling below the national average of 40.1% (GSO, 2020), and exhibiting slower growth rates than the country as a whole (see **Figure 1**). Issues in implementing public investment laws and fostering public-private partnerships have hindered private sector participation, thereby dampening expectations for attracting private investment into the region (VCCI and FSPPM, 2020). Furthermore, capital inflows to the region experienced a more pronounced decline after 2019, largely attributed to the risks posed

by the COVID-19 pandemic and shifts in government response policies.



**Figure 1.** Annual growth rate of private investment 2010–2020 (Source: General Statistics Office of Vietnam. Statistical yearbook for the years from 2010 to 2020).

In addition, the Mekong Delta’s contribution to Vietnam’s overall GDP has steadily decreased over the past few decades, as illustrated in **Figure 2**. In 1990, the region accounted for 27% of the country’s GDP, whereas by 2020, this figure had plummeted to 15.5%. Additionally, the region’s GDP share in comparison to Ho Chi Minh City has notably declined over the same period, dropping from 167.7% in 1990 to just 71.1% in 2020. This suggests that in terms of sustaining economic development, the Mekong Delta has not yet taken full advantage of its favorable geographic location close to the southern economic center; rather, it has lagged in terms of relative GDP growth rates. Thus, when the lack of investment or decline phenomena occurs, the internal capacity of the region’s economy will not be exploited to the maximum making it difficult for improve labor productivity and economic growth (Perelman and Walheer, 2020).



**Figure 2.** GDP share of Mekong Delta compared to Ho Chi Minh City and Vietnam as a whole (Source: General Statistics Office of Vietnam. Statistical yearbook for the years from 2010 to 2020).

Aligned with this, insights into the quality of the provincial business environment are gleaned from the Provincial Competitiveness Index (PCI) compiled by VCCI [PCI] (Nam and Bao Tram, 2021). Over the years, the PCI scores of localities in the Mekong Delta region have consistently trailed behind the national average (VCCI, 2020; VCCI and FSPPM, 2020). Furthermore, notable disparities exist in the PCI rankings within the region. For instance, in 2020, Dong Thap, Long An, Vinh Long, and Ben Tre ranked among the top 10 provinces nationwide, whereas Bac Lieu, Kien Giang, Soc Trang, and Tra Vinh found themselves in the bottom group, with rankings of 63, 62, 51, and 48, respectively (VCCI, 2020). This discrepancy implies that, from a business standpoint, the investment and business environment in the region is less appealing compared to other areas in Vietnam. Consequently, the number of newly established businesses and investment projects in the past decade remains disproportionately low when compared to the national figures. By 2020, this decline in investment rates had resulted in underutilized productive capacity in the region, hindering efforts to boost labor productivity and spur economic growth (Perelman and Walheer, 2020). The important question at hand is to what extent private sector investment in the Mekong Delta has been hampered by unfavorable aspects of the business environment, as reflected in the PCI data.

Furthermore, currently, scholarly literature on the correlation between the Provincial Competitiveness Index (PCI) and business attraction to the Mekong Delta is relatively scarce. Prevailing research tends to emphasize the attraction of foreign direct investment capital (Giang, 2021; Hang et al., 2021; Malesky, 2010; Nguyễn, 2019; Nguyễn, 2021; Su Dinh and Hoai, 2017), neglecting an important source of capital from the domestic private sector (Su Dinh and Hoai, 2017). Moreover, other studies primarily resort to non-parametric assessments, particularly in disparate economic regions like Tây Nguyên (Le and Duy, 2021). This study seeks to bridge this research gap by employing rigorous panel data regression analysis to examine the relationship between PCI component indices and business attraction in the Mekong Delta from 2010 to 2020.

Therefore, based on the reasons mentioned above, this study investigates how public policies can affect business attraction by shaping the business environment. Specifically, we address the question of the PCI's impact on attracting businesses to the Mekong Delta region in Vietnam from 2010 to 2020. To examine this, we employ panel data regression methods and assess non-parametric methodologies to analyze the impact of each PCI component index on business attraction. The structure of this paper is as follows: Section 2 offers an overview of pertinent concepts and relevant literature shaping the modeling approach. Section 3 delves into the distinctive characteristics of business attraction in the Mekong region. The methodology employed for the empirical analysis is detailed in section 4. Section 5 presents and analyzes the primary findings derived from the modeling. Finally, the concluding section discusses policy implications drawn from the study's results.

## **2. Regional business attraction and the business environment**

Businesses play a role in driving economic growth, fostering job creation, and improving living standards within a region (Ahmad and Seymour, 2008; Audretsch,

2003; Audretsch et al., 2015; Braunerhjelm and Thulin, 2011; Chinitz, 1961; Saxenian, 1996). Business attraction strategy can be understood as the ability to persuade businesses to locate and invest in production and business activities in a specific geographical area such as a locality, or an economic region. The decision of businesses to invest in a project at a particular location takes into considerations of many factors, which can be viewed from two main perspectives: internal aspects of the investment project or businesses (Mohylova et al., 2021), and the environment in which investment operates (Godlewska and Pilewicz, 2020). Once businesses have fulfilled their internal investment criteria, they consider environmental factors such as the availability and quality of resources, as well as the institutional landscape, in prospective regions. These factors play a crucial role in determining the business location. In this context, the business operating environment and the capacity of local authorities to shape it become crucial determinants of where private sector businesses choose to locate.

According to Wheeler (1968), the business environment encompasses all external factors that influence the organization and operations of a business. Weimer (1974) further elaborates that business activities occur within an environment comprising natural conditions, climate, and a range of economic, social, political, or institutional conditions. Glueck and Jauch (1984) argue that the environment includes uncontrollable factors that can present opportunities or threats to a firm. Among these factors, socio-economic conditions, technological advancements, suppliers, competitors, and governmental policies are considered most significant. From a policy manager's standpoint, the business environment can be categorized into three groups: (1) objective factors unaffected by short-term policies, such as natural conditions, weather, and the general socio-economic context; (2) factors indirectly influenced by policies, including markets, suppliers, competitors, and technology; and (3) factors directly impacted by policies, such as infrastructure, institutions, and local government policies (taxes, land regulations, transparency, administrative procedures, corruption, legal framework, etc.). This paper focuses on how local authorities might shape the business environment to attract businesses to the region.

Many studies have emphasized the correlation between investment decisions and business locations with local government policies (Blume, 2006; Carlino and Mills, 1985; Wołowicz and Skica, 2013). Blume (2006) demonstrated the importance of a balanced combination of traditional tools such as consultation, land management, infrastructure investment, and regional cooperation in shaping the local business environment. Notably, research indicates that local governments play a pivotal role in fostering a favorable business environment (Godlewska and Pilewicz, 2020; Xing et al., 2018). The policies implemented by local authorities can influence corporate culture, thereby impacting businesses' decisions on investment locations (Gnyawali and Fogel, 1994). This explains regional disparities in competitiveness, influenced by factors like institutional frameworks, cultural norms, historical context, geographical features, sociological dynamics, and human capital (Georgellis and Wall, 2000). Additionally, Godlewska and Pilewicz (2020) found that variations in the investment appeal of local regions were closely tied to the entrepreneurial activities of local governments, particularly concerning infrastructure development such as roads, bridges, and public services. Similarly, Gluszak and Małkowska (2016) underscored

the importance of factors like tax incentives, adequate infrastructure provision, and zoning plans, while Olsson et al. (2020) highlighted the collaboration of local authorities through project co-financing. The characteristics of government leaders and the robustness of urban economies also influence location attractiveness, as noted by writers like Bjørnå and Aarsæther (2010). Therefore, a wide range of activities by local authorities collectively contribute to potentially improve the business environment and thereby promoting business attraction.

In Vietnam, the PCI index is a comprehensive measure of the quality of the business environment at the provincial level, and is widely used in studies related to the quality of the business environment and investment attraction (Hang et al., 2021; Le and Duy, 2021; Nguyễn, 2019; Nam and Bao Tram, 2021). The PCI score offers businesses insight into the potential of local governments to provide an attractive business environment when making investment location decisions (VCCI, 2017). The overall PCI scores are determined by a weighted sum of sub-indices, with weights assigned based on the perceived importance of each sub-index in influencing firm performance in each province. Since 2006, the ranking list has included 63 provinces in Vietnam, encompassing ten sub-indices that shed light on various dimensions of provincial governance. However, for this study, the fair competition index was excluded due to the cross-sectional nature of the data. As a result, the following nine indices were utilized: entry costs; land access & tenure; transparency; time costs; informal charges; business support services; labor policy; and law & order. Descriptions of these components are presented in **Table 1**.

**Table 1.** Components of the PCI (VCCI, 2017).

Number	Component index name	Description
1	Market entry costs—(Entry costs)	Measures business registration time or change in business registration content; waiting time to be granted all necessary papers and procedures; percentage of businesses waiting to complete procedures to officially operate.
2	Access to land and stabilization of land use—(Land Access & Tenure)	Measures issues related to land and business premises of businesses, including the percentage of businesses having sufficient legal land; on land area and risks of land acquisition issues.
3	Transparency	Measures the ease of access to legal documents, policies, planning as well as the ability to access the implementation of local and central policies effectively and openly.
4	Time cost to implement state regulations—(Time costs)	Measures issues related to the time spent by businesses to learn and implement legal regulations as well as state inspection and examination, including the proportion of businesses spending a lot of time; number of inspections; hours worked with inspectors, etc.
5	Informal charges	Measures unofficial payments associated with administrative procedures, corruption, and corruption that businesses must pay to conduct their business activities smoothly.
6	Proactivity	Measures the perception of businesses about the attitude, ability to work flexibly, dynamism and creativity in solving businesses related problems of local authorities.

**Table 1.** (Continued).

Number	Component index name	Description
7	Business support services (Business support services)	Measures issues related to businesses support services including the number of trade fairs, the ratio of service providers, the number of businesses using the service, intention to use business support services (legal advice, market search, business partner search, trade promotion, technology support services, etc.) provided by local authorities.
8	Labor policy	Measures issues related to training and local labor supply in terms of aspects including perception and assessment of the quality of the trained labor force, training services, job placement, profession; the rate of businesses using and the intention to use the service; rate of employees with quality training, etc.
9	Law & Order	Measuring the perception and evaluation of businesses on issues of mechanisms, regulations, and law enforcement; the number of economic disputes, etc.

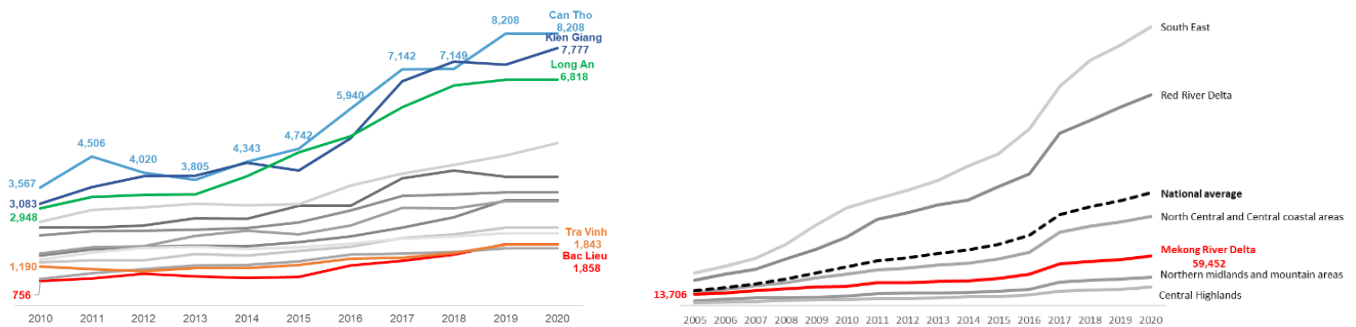
In this paper, the PCI index, together with the nine individual components, is used to represent the overall quality of the business environment as assessed by businesses. To gain insight into the factors influencing business investment appeal, additional control variables are considered. Notably, the public investment factor, an index encompassing aspects of infrastructure, public services, and public investment initiatives, is integral to evaluating the business environment’s quality. This inclusion draws from various sources (Godlewska and Pilewicz, 2020; Hromádka et al., 2019; Nguyen and Trinh, 2018; Saeed et al., 2006). Additionally, population factors and experiences during the COVID-19 pandemic are incorporated into the model as control variables. The population variable reflects both demand and supply dynamics within the region: on the demand side, it reflects market size, while on the supply side, it correlates with abundant labor availability in densely populated areas (Asongu, 2013; Graff Zivin and Neidell, 2013; Rabah, 2011).

The global COVID-19 pandemic is clearly an event that has had a major impact on all socio-economic activities, and of course has also had an important influence on attracting businesses activity and investment in almost every part of the world (Chiappini et al., 2021; Rodionov et al., 2021; VCCI and WB, 2020). Therefore, the inclusion of the COVID-19 pandemic experience is required when assessing the change in the stream of businesses attracted to the region during this period. The following section provides an overview of the patterns of business attraction in the Mekong region, which will be the subject of formal analysis in sections 4 and 5.

### **3. Business attraction in the Mekong Delta region: An overview**

From **Figure 3**, it can be observed that the number of businesses in the Mekong Delta localities increased steadily every year during the period 2010–2020, indicating some degree of investment attraction in the region. However, compared to other regions in the country, the number of businesses operating in the region has been lower than the national average and is almost always in the lowest ranking. Furthermore, the regional analysis reveals notable disparities among provinces, with Can Tho, Kien Giang, and Long An consistently maintaining a strong presence in terms of the number of businesses compared to others. Conversely, Bac Lieu, Tra Vinh, and Hau Giang

consistently exhibit the lowest number of active businesses in the region, despite experiencing growth over the 10-year period.



**Figure 3.** Number of businesses over the years in the Mekong Delta region over time (Source: General Statistics Office of Vietnam. Statistical yearbook for the years from 2010–2020).

In assessing the quality of the business environment, this analysis utilizes the composite PCI index and its components to offer a comprehensive overview of the region’s business landscape. **Figure 4** illustrates that the PCI composite index scores of the provinces in the region have fluctuated significantly and diverged notably between 2006 and 2020. This indicates the progress made in enhancing the business environment over the years, with Long An, Dong Thap, Can Tho, and Ben Tre consistently maintaining stable rankings. However, the majority of other localities, such as Tra Vinh, Hau Giang, Soc Trang, Kien Giang, and Bac Lieu, experienced sharp declines or lagged behind during this period.



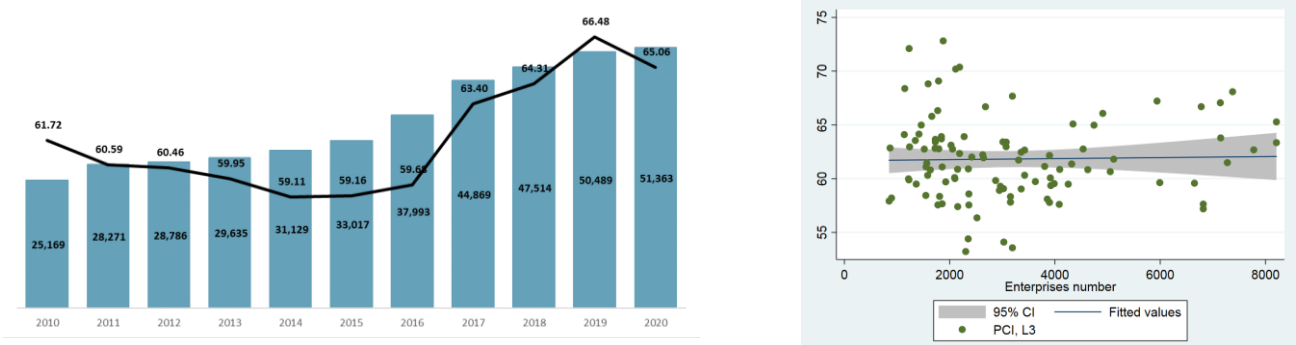
**Figure 4.** PCI composite score index and component indices of the Mekong Delta in 2010, 2015 and 2020 (Source: VCCI Vietnam. Annual PCI report for 2010, 2015, 2020).

Hence, significant disparities in the quality of the business environment across the entire region have become evident over the past decade. While Dong Thap and Vinh Long rank among the top provinces nationally in terms of PCI, Bac Lieu, Kien Giang, and Tra Vinh lag behind, occupying some of the lowest positions in the country. Furthermore, the fluctuating PCI assessments for Tra Vinh, Hau Giang, Soc Trang, Kien Giang, and Bac Lieu suggest that while these areas are in the early stages of development, sustained improvements have yet to be realized. Moreover, the regional mean scores of the PCI component indices demonstrate minimal variation,

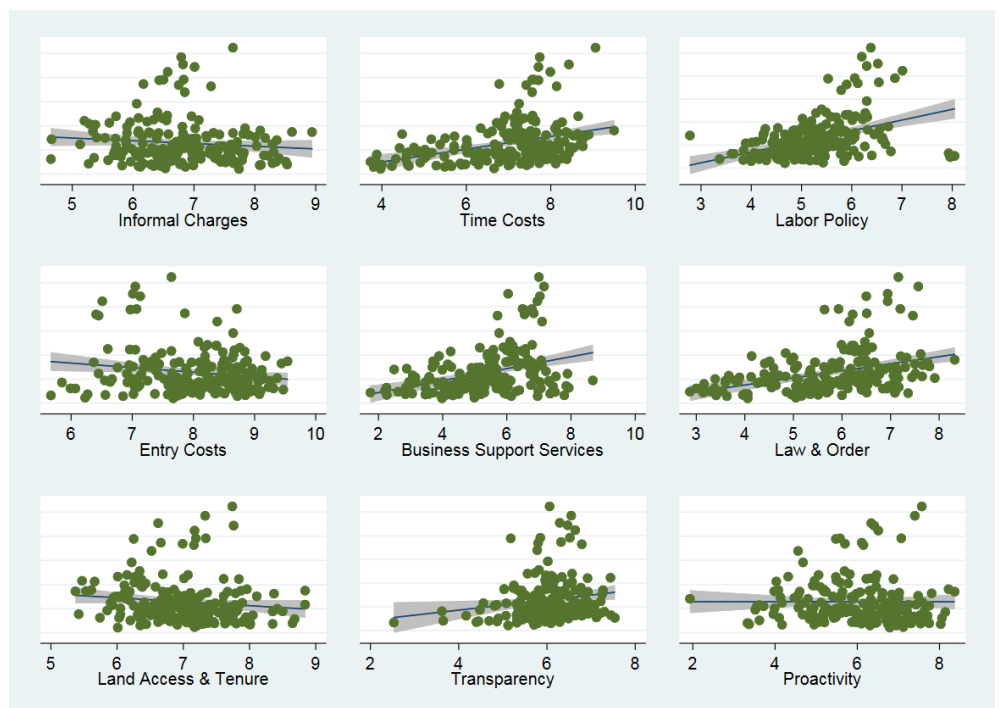
indicating that the overall quality of the business environment in the entire region has remained relatively low over several years.

This data strongly indicates that the quality of the business environment in the Mekong Delta region is characterized by instability, unattractiveness, and notable disparities. Some localities within the region exhibit high attractiveness for businesses, while others are deemed less appealing for business investment.

As illustrated in the following figures, the data portrays a statistically significant correlation, at the 5% significance level, between the number of businesses and various factors, including the composite score of the PCI index (**Figure 5**), PCI component indices (**Figure 6**), public investment (**Figure 7a**), and population (**Figure 7b**).

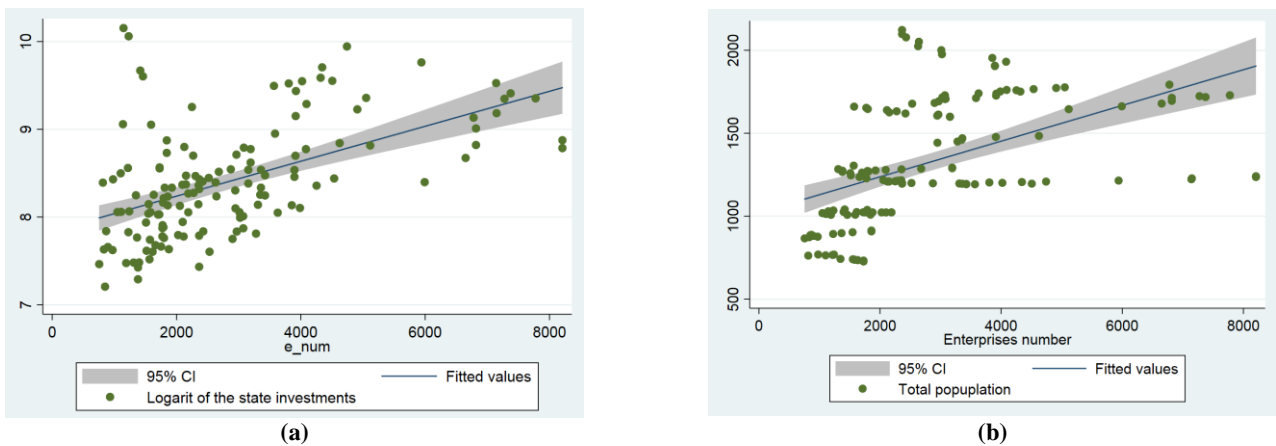


**Figure 5.** Relationship between number of businesses and PCI score (shows businesses growth and PCI score increase) (Source: Authors).



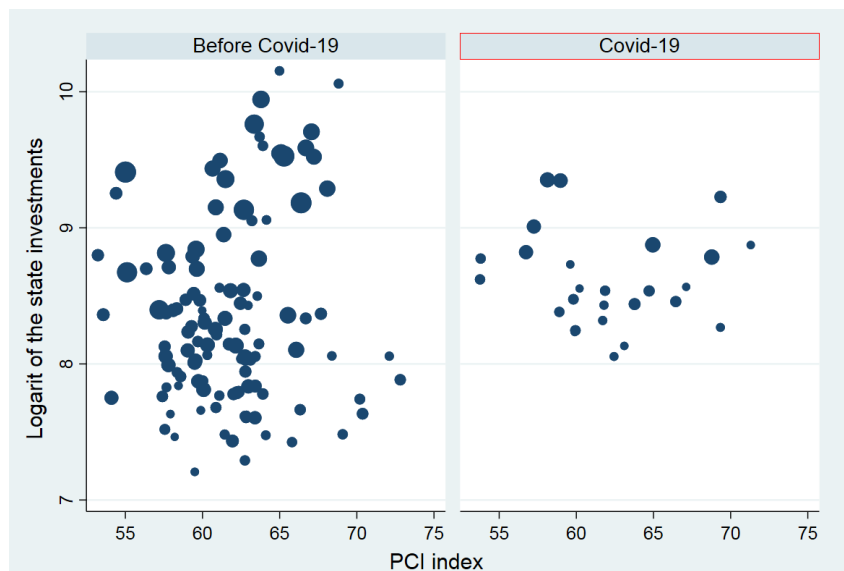
**Figure 6.** The relationship between the number of businesses and the PCI component indices (green dots represent the number of businesses) (Source: Authors).





**Figure 7.** Relationship between public investment and population and the number of businesses: (a) public investment; (b) population. (Source: Authors).

The correlation between changes in the number of businesses and state investment activity is illustrated in **Figure 8**, which also confirms that there is a clear difference in the number of businesses established in the periods before and after COVID-19 in localities within the region.



**Figure 8.** The changes in the number of businesses in correlation with the PCI and public investment observed over the two phases of COVID-19 (Source: Authors).

The vertical axis shows the size of state capital, the horizontal axis shows the value of the PCI index and the size of the dot represents the number of businesses

Attention now turns to empirical modelling to establish the extent to which the key factors outlined in this section contribute to an explanation of business attraction in the region.

#### 4. Research methodology

Based on discussion in sections 2 and 3, the article employs a standard model to effectively capture the impact of the business environment on business attraction,

prioritizing in-depth explanations of the results in the discussion. Utilizing overly complex models and intensive economic techniques may yield similar results. Furthermore, such approaches can complicate the presentation of the article. Therefore, employing a regular OLS model for tabular data, including both FEM and REM versions, and varying independent variables within the chosen model is deemed suitable for the scope of the research. The following estimation model is used to evaluate the impact of PCI on business attraction in localities in the Mekong Delta region.

$$Y_t = f(X_{it}) + U_t$$

where  $Y$  is the dependent variable;  $X_i$  is the set of independent and control variables included in the model, and  $U$  is the residual. Investment by the government sector is included amongst the independent variables, along with population to take into account of scale factors. The impact of the COVID-19 period on the pattern of business attraction is also allowed for in the model.

Data is collected for the period 2006–2020, with the PCI index including components published annually by the VCCI, and data for the control variables collected from the Statistical Yearbook dataset published annually by the General Statistics Office. The panel data was tested for stationarity before being included in the estimation model (Im et al., 2003; Levin et al., 2002).

The two specific estimation models used in this paper can be specified as follows:

$$e\_num_{i,t} = \alpha + \beta_1 PCI_{i,t-k} + \beta_2 \log Ig_{i,t-k} + \beta_3 pop_{i,t} + \beta_4 covid_t + e_{i,t-k} \quad (1)$$

$$e\_num_{i,t} = \alpha + \beta_{1j} X_{j,t-k} + \beta_3 pop_{i,t} + \beta_4 covid_t + e_{i,t-k} \quad (2)$$

where:

$e\_num$ : Number of businesses (businesses number);

PCI: Composite score of PCI index;

LogIg: Total investment capital in the state sector;

$X$ : The sub-indices of the PCI index;

$pop$ : Total population (1000 people);

$covid$ : 1 = experiencing the COVID-19 pandemic; 0 = did not experience COVID-19;

$i$ : is the  $i$  locality in the Mekong River Delta with  $i = 1, \dots, 13$ .

$j$ : is the order of the component indices of PCI with  $j = 1, \dots, 9$  respectively:

- (1) entrycost—Sub-index 1: Entry costs
- (2) landaccess—Sub-index 2: Land access & tenure
- (3) transparency—Sub-index 3: Transparency
- (4) timecost—Sub-index 4: Time cost
- (5) informalcharge—Sub-index 5: Informal charges
- (6) proactivity—Sub-index 6: Proactivity
- (7) busisuppser—Sub-index 7: Business support services
- (8) laborpolicy—Sub-index 8: Labor policy
- (9) laworder—Sub-index 9: Law and order

$t$ : time in period 2010–2020 with  $t = 2010, \dots, 2020$

$k$ : lag years, with  $k = 1, 2, 3$ .

The PCI components are outlined in some detail above in section 2, **Table 1**.

The Spearman correlation coefficient is used to test for the correlation between

the factors included in the model and the dependent variable. Three regression techniques are utilized for estimation: 1) Ordinary Least Squares—OLS); 2) Fixed Effects Models (FEM); 3) Random Effects Models (REM). In the case of the FEM, unobservable factors that might simultaneously affect the LHS and RHS of the regression are taken to be time-invariant, in which case the FEM is able to remove omitted variable bias and account for within-group variation over time (Bollent and Brand, 2010). In the case of the REM, it is assumed that the individual unobserved heterogeneity is uncorrelated with the independent variables and the variation across entities is taken to be random and uncorrelated with the predictor or independent variables included in the model (Bollent and Brand, 2010). The Hausman test is employed to select a suitable model between FEM and REM (Baltagi, 2021; Hausman and Taylor, 1981). The Breusch—Pagan Lagrangian Multiplier (LM) test, which examine the nature of the variance across entities and aid in deciding between REM and pooled OLS regression (Breusch and Pagan, 1979).

In addition, the analysis applies the Wald test to determine the significance of the explanatory variables in the model (Allison, 2006). Additionally, the model incorporates lagged effects of independent variables, accounting for one-, two-, and three-year lags, denoted as  $k_1$ ,  $k_2$ , and  $k_3$ . The reason for this choice stems from the lagged impact of independent factors on the dependent factor, as well as from observing the lagged changes in the number of businesses attracted by policies aimed at improving the business environment and attracting investments, as analyzed in sections 2 and 3.

## 5. Empirical results and discussions

The correlations between variables in model (1) as the number of annual lags ( $k$ ) changes are shown in **Table 2**.

**Table 2.** Correlation results between variables in the model (1) when lag  $k$  changes (Source: Authors).

	$k = 0$	$k = 1$	$k = 2$	$k = 3$
PCI	-0.0576	-0.0877	-0.0476	0.023
$\log Ig$	0.5317***	0.5365***	0.5537***	0.5647***
$pop$	0.5061***			
$covid$	0.2942***			

Note: Level of significance \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ .

The results of the regression analysis are presented in **Table 3**, which also reports information on the model selection tests outlined above in section 3.

The results show that, when the lags  $k = 2$ ,  $k = 3$  is applied, the effects are statistically significant at the 5% level for the PCI and public investment variables, while population and COVID variables are always statistically significant at the 1% level when  $k$  changes. The estimated coefficients show PCI and public investment have a positive and significant effect on the number of businesses, with notable changes in the coefficient values when  $k$  changes. As the number of lags increases from  $k = 2$  to  $k = 3$  the magnitude of the impact is larger; specifically, the PCI

regression coefficient PCI increased from 6.7 to 49.3 times and the value of the public investment coefficient increased from 425.4 to 716.0. This provides evidence of the lagged impact of PCI and public investment on business attraction. In addition, the regression results also confirm the role of the population and covid control variables in explaining the number of businesses, with the coefficient significance at the 1% level.

**Table 3.** Regression results of panel data regression model (Source: Authors).

	<i>k</i> = 0	<i>k</i> = 1	<i>k</i> = 2	<i>k</i> = 3	<i>k</i> = *** (L3.PCI L2.logIg)
PCI	-21.9413 (19.254)	-22.8402 (20.184)	6.7071 (21.637)	<b>49.3893**</b> (21.959)	<b>39.9069*</b> (22.409)
logIg	186.1979 (166.193)	201.0852 (176.956)	<b>425.4178**</b> (184.825)	<b>715.9875***</b> (177.462)	<b>561.2210***</b> (197.304)
pop	<b>6.2507***</b> (1.484)	<b>6.1897***</b> (1.571)	<b>6.1592***</b> (1.726)	<b>3.1592***</b> (0.740)	<b>3.2102***</b> (0.789)
covid	<b>1,244.8841***</b> (162.482)	<b>1,159.7401***</b> (157.874)	<b>1,060.4960***</b> (157.160)	<b>933.0125***</b> (154.435)	<b>986.6514***</b> (157.843)
Constants	-5,887.6829** (2,777.501)	-5,787.1193* (2,924.066)	-9,365.9309*** (3,077.181)	-10,324.6317*** (2,379.416)	-8,567.2389*** (2,477.487)
Number of observations	143	130	117	104	104
R-square	0.417	0.421	0.426	0.437	0.404
Number of locals	13	13	13	13	13
Model test	$F(4, 126) = 22.54$ Prob > $F = 0.0000$	$F(4, 113) = 20.50$ Prob > $F = 0.0000$	$F(4, 100) = 18.53$ Prob > $F = 0.0000$	Wald chi2(4) = 86.00 Prob > chi2 = 0.0000	Wald chi2(4) = 72.96 Prob > chi2 = 0.0000
Heteroscedasticity tests	Wald test H0: $\sigma^2(i) = \sigma^2$ for all $i$ chi2(13) = 603.02 Prob > chi2 = 0.0000	chi2(13) = 797.93 Prob > chi2 = 0.0000	chi2(13) = 414.69 Prob > chi2 = 0.0000	Breusch and Pagan Lagrangian multiplier test Var( $u$ ) = 0 chibar2(01) = 128.43 Prob > chibar2 = 0.0000	chibar2(01) = 134.43 Prob > chibar2 = 0.0000
Checking for multicollinearity	1.48				
Autocorrelation	Ho: difference in coefficients not systematic chi2(4) = 35.34 Prob > chi2 = 0.0000				

Note: Level of significance \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ .

Now, attention shifts towards examining the effects of the component PCI indices on the number of businesses in the region. The regression results obtained from the panel data spanning from 2010 to 2020 reveal minimal evidence of significant PCI component indicators influencing the number of businesses. It's acknowledged that concerns arise when panel data models feature a substantial number of independent variables relative to observations. To mitigate this limitation, a longer dataset is incorporated by extending the analysis back to 2006, which marks the beginning of the PCI index's development.

The results of the correlation test (**Table 4**) show that most of the PCI component

indices have a significant correlation at the 5% level for different values of  $k$ . The market entry price and transparency indices alone are only significant at the 10% level, and in the case of the market entry index, the sign of the correlation switches from negative to positive when the lag  $k > 1$ .

**Table 4.** Spearman correlation results between the PCI component indices and the number of businesses in the period 2006–2020 in the Mekong Delta region (Source: Authors).

	$k = 0$	$k = 1$	$k = 2$	$k = 3$
PCI	0.3676***	0.318***	0.2396***	0.1727**
Entry costs	-0.1707**	-0.1321*	0.0032	0.1386*
Land access & tenure	-0.1242*	-0.172**	-0.2572***	-0.324***
Transparency	0.1654**	0.2018***	0.1493*	0.1464*
Time costs	0.3504***	0.2948***	0.2736***	0.2505***
Informal charges	-0.1007	-0.1765**	-0.2387***	-0.2701***
Policy bias	-0.0008	-0.0674	-0.1708**	-0.2062***
Proactivity	0.3582***	0.3448***	0.3067***	0.2749***
Business support services	0.4127***	0.3965***	0.3427***	0.2725***
Labor policy	0.374***	0.3712***	0.3343***	0.3589***

Note: Level of significance \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ .

Regression results of the PCI component indices on the number of businesses are presented in **Table 5**. Based on the model selection criteria outlined in section 3, the FEM is used for all values of  $k$ . Tests for variance, multicollinearity, and autocorrelation were conducted to provide evidence of the robustness of the estimated relationships (Allison, 2006; Arellano and Honoré, 2001; Wooldridge, 2010).

The findings presented in **Table 5** reveal significant relationships between the number of businesses and six out of nine indicators. Specifically, the indicators related to law & order, labor policy, business support services, informal charges, transparency, and entry costs index show statistical significance when lag  $k = 3$ . Notably, law & order and labor policy have the most significant impact, even at lag  $k = 0$ . As the lag increases, the significance of law & order index becomes more pronounced, while labor policy remains significant at the 1% level for all lag levels. The indicators for business support services and informal charges show statistical significance at the 5% level for lag  $k = 2$ , and at the 10% level for lag  $k = 1$  and  $k = 3$ . However, no evidence of their effects is found at lag  $k = 0$ . Similarly, the time cost index is significant at the 10% level for lag  $k = 0$ , but its significance diminishes as the number of lags increases. The entry costs index yields similar results to the time cost component, being significant at the 10% level for lag  $k = 3$ . However, the indicators for land access & tenure, time costs, and proactivity do not exhibit statistically significant impacts on determining the number of businesses.

**Table 5.** Results of regression estimation with component indices of the PCI (Source: Authors).

	<i>k</i> = 0	<i>k</i> = 1	<i>k</i> = 2	<i>k</i> = 3
entrycost	-161.6439* (82.927)	-36.1514 (91.640)	61.8614 (88.760)	163.0471* (95.670)
landaccess	83.0847 (117.172)	27.2066 (119.614)	-29.8032 (118.174)	-77.6632 (125.542)
transparency	-96.8545 (109.207)	-134.0931 (116.824)	-206.1941* (115.042)	-215.3173* (119.312)
timecost	144.7969* (78.975)	64.9945 (80.291)	57.8809 (79.128)	4.4125 (81.513)
informalcharge	-98.8896 (108.369)	-205.2654* (109.668)	-246.6766** (108.663)	-194.0154* (112.847)
proactivity	-35.4928 (81.703)	-29.5598 (81.280)	-109.8848 (80.095)	-71.7646 (83.263)
busisupser	-66.9704 (65.641)	-136.1022** (67.057)	-167.6158** (67.023)	-120.4013* (69.181)
laborpolicy	369.7417*** (117.572)	443.0505*** (119.131)	405.4228*** (119.416)	389.4418*** (127.258)
laworder	145.7694* (87.228)	208.4065** (88.793)	204.8542** (87.579)	277.4299*** (90.670)
pop	13.2590*** (1.496)	12.0943*** (1.556)	11.3082*** (1.535)	10.8786*** (1.613)
covid	1,509.7163*** (224.333)	1,703.4806*** (234.441)	1,852.5986*** (207.949)	1,494.1151*** (208.241)
Constants	-16,609.6774*** (2,265.905)	-14,511.2675*** (2,379.955)	-12,176.6087*** (2,345.282)	-12,706.2454*** (2,449.823)
Number of observations	195	182	169	156
R-square	0.636	0.625	0.635	0.619
Number of locals	13	13	13	13
Model test	$F(11, 171) = 7.21$ Prob $\geq 0.0000$	$F(11, 158) = 23.95$ Prob $\geq 0.0000$	$F(11, 145) = 22.93$ Prob $\geq 0.0000$	$F(11, 132) = 19.48$ Prob $> F = 0.000$
	Wald test H0: $\sigma^2(i) = \sigma^2$ for all <i>i</i>			
Heteroscedasticity tests	chi2(13) = 607.06 Prob > chi2 = 0.0000	chi2(13) = 737.48 Prob > chi2 = 0.0000	chi2(13) = 910.31 Prob > chi2 = 0.0000	chi2(13) = 1378.48 Prob > chi2 = 0.0000
Checking for multicollinearity	1.83			
Autocorrelation	$F(1, 12) = 426.314$ Prob $> F = 0.0000$			

Note: Level of significance \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.10$ .

In terms of impact magnitude, the reciprocal value of the regression coefficient

for the labor policy index stands out as the largest, followed by law & order, transparency, informal charges, entry costs, and business support services. Regarding the direction of impact, in the first year ( $k = 0$ ), among the four indicators with a statistically significant impact, three indicators—labor policy, law & order, and time costs—positively influence the number of businesses, while the market entry index has a negative impact. At lag  $k = 1$ , entry costs and time costs no longer significantly impact the dependent variable. Instead, both informal charges and business support services indices exhibit a negative effect, which persists across changes in  $k$ . Law & order and labor policy indicators remain unaffected by changes in  $k$ . Finally, the transparency index shows significance at lag  $k = 2$  and  $k = 3$ .

The findings derived from the regression model indicate that the PCI has a significant impact on business attraction in the Mekong Delta regions. However, the results show that these effects occur with variables lags of 2 and 3 years implying that current efforts by local governments to enhance the business environment will likely take two to three years to yield significant impacts in attracting businesses to the region. Among the nine component indices of the PCI included in the regression analysis, six indices significantly contribute to explaining business attraction at the 5% significance level: law & order, labor policy, business support services, informal charges, transparency, and entry costs. Nevertheless, the Spearman correlation test indicates that all PCI components have a significant impact on business attraction at the 5% significance level. Taken together, these findings affirm that the economic management efforts of local governments and initiatives to improve the business environment have exerted a substantial impact on attracting investment, fostering production, and promoting business activities within the region. This aligns with prior studies on the impact of PCI on investment attraction, particularly concerning Foreign Direct Investment (FDI) (Hang et al., 2021; Le and Duy, 2021; Nguyễn, 2019; Xing et al., 2018). Furthermore, the evaluations of how different factors affect business attraction in the Mekong Delta region include various components of the PCI (Provincial Competitiveness Index). These components consist of labor policies, law & order, transparency, informal charges, entry cost, and business support services. These factors, ranked in order of decreasing impact, strongly influence the attraction of businesses to the Mekong Delta. These findings and their implications hold significant importance for policymakers, especially in the Mekong Delta region. In situations with restricted resources, it's crucial to prioritize policies that address the most significant aspects to maximize efficiency and prevent wastage. Moreover, it's important to reassess the quality of other aspects of the business environment when certain component indicators lack evidence or have minimal impact on attracting businesses.

The PCI index has a positive impact on attracting businesses, indicating that regions with higher-quality business environments tend to attract more businesses. This suggests that businesses place high value on the PCI index when assessing risks before investing in a particular location for production and business activities. The index reflects how enterprises evaluate the quality of the economic environment, which is a crucial factor in managing business risks when making investment plans. As a result, efforts by local governments in the Mekong Delta region to enhance economic management and operations are intensified, leading to improvements in the

business environment and increased business attraction (Godlewska and Pilewicz, 2020; Le and Duy, 2021; Nguyễn, 2019). However, it typically takes 2 or 3 years for these efforts to yield results. Therefore, strategies aimed at improving the business environment to attract businesses in this area should establish specific medium-term goals, such as a 5-year strategy roadmap.

Among the components of the PCI, labor policy and law & order emerge as having consistently significant positive impacts on business attraction in the Mekong Delta region. This underscores the critical importance of policy initiatives in areas like vocational training and medium-term planning strategies for labor markets. Additionally, it emphasizes the importance of having clearly outlined processes for regulating business activities and ensuring easy access to remedies. Furthermore, there is a robust positive correlation between the time cost component of the PCI and the number of businesses located in the region, significant at the 10% level. This indicates that time costs may be a crucial consideration for businesses. The time costs indicator refers to the time spent by businesses understanding and implementing legal regulations, as well as undergoing state inspection and examination of business activities. Streamlining and standardizing these procedures through reforms could significantly enhance business attraction to the region.

It's worth noting that three PCI components—business support services indicators, informal charges, and transparency—have a significant negative impact on business attraction. These results may suggest perceived shortcomings in the application of economic management policies in the region, particularly concerning transparency, corruption, and inconsistency in providing public services to support businesses. Widespread unofficial payments could exacerbate these issues. Observations suggest that businesses view state-owned enterprises as receiving preferential treatment from local authorities, posing challenges for the private sector. A considerable portion (61%) of businesses believe that business activities related to contracts, land, and other factors are predominantly controlled by a few businesses with close ties to state officials (VCCI and FSPPM, 2020). Similarly, the market entry index shows a negative impact on business attraction in the short term (first year in this study), previous similarly findings as (Giang, 2021; Le and Duy, 2021; Nguyễn, 2019). This is linked to administrative procedure issues and lengthy waiting times for businesses to fulfill market entry requirements. Recent assessments indicate that the market entry cost index of localities in the Mekong Delta region is lower than the national average. Over 16% of businesses have to wait over a month for all necessary documents to be processed. Additionally, the average business registration time in the region exceeds 5 days, higher than in other economic regions (VCCI and FSPPM, 2020). These factors, perceived by businesses, unfavorably influence intentions to establish operations within the Mekong Delta region.

The evidence regarding the impact of land access and proactivity indicators has not been found yet, but the correlation between them and business attraction is significant and strong. In fact, for businesses, assessing access to land, land use rights and transactions is always a critical issue to address for investment implementation (Carlton, 1983; Godlewska and Pilewicz, 2020; Le and Duy, 2021; Mohylova et al., 2021). This is one of the important factors, it acting as a key in removing difficulties to promote attracting businesses and investing. The correlation results reveal that the



land access index has a significant negative correlation with business. Hence, enterprises' assessments of land accessibility and land-related risks in this area are quiet, significantly impacting their investment decisions. This implies that the number of businesses concerned about cumbersome administration procedures is increasing in this region. Similarly, the proactivity indicator also shows a negative correlation for business attraction. This underscores businesses' concerns about the risk of rigid management, and a lack of dynamism, creativity, and problem-solving ability by local government officials. Therefore, policy makers should focus on improving and reevaluating the implementation policies related to these two indicators

In addition to the PCI, it's evident that state sector investment plays a crucial role in determining the region's attractiveness to businesses. The provision of key public infrastructure has positive feedback effects on private-sector investment decisions within a region (Nguyen and Trinh, 2018; Saeed et al., 2006). Investment in infrastructure not only yields short-term benefits by boosting aggregate demand but also enhances overall productivity, particularly in energy, transportation, sanitation, education, water, and telecommunications sectors (Gurara et al., 2018). Expanding infrastructure is vital for promoting efficient and sustainable industrial growth in the economy (Schanzenbach et al., 2017). An assessment of the current infrastructure status in this region reveals synchronization and limitations, particularly in transportation and irrigation infrastructure. These results align with assessments from previous studies (VCCI and FSPPM, 2020), emphasizing significant opportunities for improving public sector investment performance within the region. Moreover, all policy impacts are influenced by the current economic context and expectations about future market trends. Although the COVID-19 pandemic emerged towards the end of the study period, its profound impact on business development cannot be overlooked (VCCI and WB, 2020). This study clearly demonstrates how the flow of business investment decisions was disrupted during the pandemic. Like other regions, particular attention must be given to policies that enhance the business environment to address the challenging task of restoring business confidence, which has constrained and distorted private sector decision-making in recent years.

## **6. Conclusions**

In summary, this study examines the role of the business environment's quality, as measured by the PCI, in attracting businesses to the Mekong Delta region during the period 2010–2020. The PCI index and several of its component indices have demonstrated a significant positive influence on business attraction to the region. Notably, the labor policy, law & order, and time costs components of the PCI have exhibited particularly strong positive impacts. Additionally, the business support services, informal charges, and transparency components have shown statistically significant effects on attracting businesses, albeit with estimated negative impacts. Crucially, it's observed that most effects on business attraction associated with the PCI operate with a lag of two to three years. Another key finding is the significant positive impact of public investment activity on attracting businesses to the region during the period under examination.

The findings of this study suggest several policy implications and

recommendations. It's clearly established that the business environment in the Mekong Delta region significantly influences businesses' decisions regarding investment and production activities. The PCI index likely serves as a key reference for businesses when assessing the risks associated with location decisions. Hence, local authorities must carefully consider how their policies may affect the components of the PCI. However, it's important to recognize that the results of such policy initiatives may take 2 or 3 years to manifest significantly. Therefore, strategies aimed at enhancing the business environment in the region should be developed with a medium-term perspective. A 5-year roadmap strategy would likely be appropriate to achieve the objective of improving the quality of the business environment to attract businesses.

In conclusion, based on standard and simple economic tools aligned with specific statistical evidence, this study has shown how public policies can shape key aspects of the competitive environment, potentially increasing the attractiveness of the Mekong Delta region to businesses. Given the rather sluggish and uneven pattern of the business establishment in the region over recent years, the need for implementing such policies is evident. Moreover, there is a lot of potential for future research in this area. More advanced technical tools, such as models that consider how different economic factors are related in space, could be used to investigate this issue further. It would be interesting to see how the business environment in one area affects the attractiveness of businesses in nearby areas, and how this correlation works. Additionally, our research isn't limited to just the Mekong Delta region; similar methods could be applied to study other economic areas or even the entire country. Also, while the Mekong Delta region shares similarities among its locals, we haven't explored how specific regional factors impact businesses. Future studies that examine multiple regions within a country could provide valuable insights into how these factors influence the relationship between the business environment and business attractiveness.

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