



Available online at  
[www.heca-analitika.com/ijma](http://www.heca-analitika.com/ijma)

## Indatu Journal of Management and Accounting

Vol. 2, No. 2, 2024



# Starting a Business: A Focus on Construction Permits, Electricity Access, and Property Registration

Irsan Hardi <sup>1</sup>, Xuan-Hoa Nghiem <sup>2</sup>, Sunil Suwal <sup>3</sup>, Edi Saputra Ringga <sup>4</sup>, Rio Marsellindo <sup>5</sup> and Ghalieb Mutig Idroes <sup>6,\*</sup>

<sup>1</sup> Economic Modeling and Data Analytics Unit, Graha Primera Saintifika, Aceh Besar 23371, Indonesia; irsan.hardi@outlook.com (I.H.)

<sup>2</sup> Faculty of Economics and Management, International School, Vietnam National University, Hanoi 100000, Vietnam; hoanx@vnu.edu.vn (X.H.N.)

<sup>3</sup> Research Institute of Economics and Management, Southwestern University of Finance and Economics, Sichuan 610074, China; suwalsunil@gmail.com (S.S.)

<sup>4</sup> Department of Economics, Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, Terengganu 21030, Malaysia; p5650@pps.umt.edu.my (E.S.R.)

<sup>5</sup> School of Economics and Management, Harbin Institute of Technology, Shenzhen 518055, China; riomarsellindo@outlook.com (R.M.)

<sup>6</sup> Energy and Green Economics Unit, Graha Primera Saintifika, Aceh Besar 23371, Indonesia; ghaliebidroes@outlook.com (G.M.I.)

\* Correspondence: ghaliebidroes@outlook.com

### Article History

Received 19 October 2024

Revised 15 December 2024

Accepted 22 December 2024

Available Online 29 December 2024

### Keywords:

Ease of doing business

Starting a business

Dealing with construction permits

Getting electricity

Registering property

### Abstract

Efficient processes for construction permits, electricity access, and property registration are critical to fostering entrepreneurship and economic growth. Delays, high costs, and bureaucratic inefficiencies in these areas pose significant barriers to business start-ups. This study examines the impact of these factors on starting a business, highlighting their role in shaping formal economic activity and business dynamics. By applying methods such as the Generalized Linear Model (GLM), Robust Least Squares (RLS), and Quantile Regressions (QR) to data from 213 countries and cities featured in the World Bank's Doing Business 2019 (DB19) and Doing Business 2020 (DB20) reports, this paper demonstrates that all three factors significantly and positively impact starting a business. Notably, a comparison of results between DB19 and DB20 reveals that the magnitude of these influences decreased in DB20, with some effects becoming less significant or even insignificant compared to DB19. This phenomenon is most apparent in countries with middle-to-high starting a business scores. The findings suggest that shocks like the COVID-19 pandemic may have reduced the relevance of these factors in DB20, as the increased risks associated with starting a business during the pandemic likely overshadowed these considerations. Overall, the results indicate that streamlining construction permits, improving electricity access, and simplifying property registration processes could significantly enhance entrepreneurial activity, drive economic growth, and foster a more dynamic business environment.



Copyright: © 2024 by the authors. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License. (<https://creativecommons.org/licenses/by-nc/4.0/>)

## 1. Introduction

Efficient regulatory processes are believed to significantly contribute to fostering entrepreneurship and economic

growth [1, 2]. Among these, the ease of obtaining construction permits, accessing electricity, and registering property plays a pivotal role in shaping the business environment [3–5]. These processes determine

the feasibility and efficiency of starting a business, particularly in developing and emerging economies where bureaucratic hurdles often stifle entrepreneurial efforts [6–9]. The World Bank's (hereafter WB) Doing Business reports underscore the importance of these indices, highlighting their role in streamlining procedures and enhancing business efficiency [10, 11]. However, variations in their implementation across countries underscore the challenges of achieving uniformity in regulatory practices [1].

Economic shocks like the COVID-19 pandemic further emphasized the significance of these factors as economies grappled with heightened uncertainty and disruptions. During this period, starting a business became increasingly challenging, with prolonged delays, higher costs, and shifting priorities which in turn, further compounded existing barriers [12–14]. Despite global efforts to simplify business processes, structural inefficiencies persist, thus leaving significant room for improvement [15, 16]. Understanding how these factors influence entrepreneurial activity, especially during periods of economic shocks, may prove essential for policymakers aiming to create and nurture a resilient and dynamic business landscape [17–19].

In quite a few nations, starting a business remains a daunting task due to complex and inefficient regulatory processes [20–22]. According to the WB's Doing Business report, starting a business in low-income economies requires an average of 34 days and 6.8 procedures, compared to just 9 days and 4.5 procedures in high-income economies [10]. Entrepreneurs often face significant delays and high costs when obtaining construction permits, accessing reliable electricity, or registering property [23, 24]. These issues not only hinder business formation but also discourage potential investors and adversely affect economic growth [25, 26]. For example, prolonged waiting times for construction permits can delay critical projects [27, 28], unreliable electricity access hampers productivity [29, 30], and cumbersome property registration processes create uncertainty over ownership rights [31, 32]. These challenges are particularly severe in developing economies, where bureaucratic inefficiencies and inconsistent enforcement exacerbate the difficulties faced by aspiring business owners [33–35].

Initiated by the International Finance Corporation (IFC) and the WB, the Doing Business (DB) project is aimed at evaluating the ease of doing business across various economies by focusing on legislation that influences business establishment and operations. The project features the Ease of Doing Business Index and corresponding rankings, based on the premise that daily

economic activities are shaped by laws, regulations, and institutional frameworks [10]. A key component of the Doing Business score is the assessment of local business regulations, with the primary objective of encouraging reforms that facilitate business participation, enhance information accessibility, and promote transparency. Using data from economies and cities worldwide, the project aggregates objective metrics on implementing corporate regulations, placing particular emphasis on small and medium-sized enterprises (SMEs) as major drivers of economic growth and innovation [36].

Theoretically, this study employs theories of institutional economics, which emphasize the importance of robust regulatory frameworks for reducing transaction costs and fostering economic activity [37–39]. From a new institutional economics perspective, processes like construction permits, electricity access, and property registration act as institutional mechanisms that mitigate uncertainties, enable entrepreneurs to operate efficiently, and foster trust in regulatory systems [40–42]. Complementing this institutional economics perspective, the management perspective underscores the importance of streamlining workflows, minimizing delays, and optimizing resource allocation to enhance operational efficiency and strategic decision-making [43–45]. By reducing regulatory complexity, businesses can improve agility, foster innovation, and create a conducive environment for sustainable growth [46–48]. Together, these perspectives highlight possible significant contributions of efficient regulatory processes to driving entrepreneurship and economic development.

Empirical evidence further supports the importance of these indicators in driving entrepreneurial success. For instance, studies have demonstrated a positive correlation between simplified property registration and investment growth [49–52], as well as the impact of reliable electricity access on productivity, economic growth, and environmental sustainability [53–59]. Research also suggests that improved construction permit processes significantly enhance infrastructure development, indirectly boosting business formation [60–62]. However, these findings vary widely across regions and income levels, highlighting the need for contextualized studies. Furthermore, no studies have yet utilized various World Bank's Doing Business scores to assess their interconnections, particularly in examining how these factors determine the perspective of starting a business.

This study addresses the research gap by examining the collective impact of construction permits, electricity access, and property registration on the Starting a Business score. It specifically explores how these

**Table 1.** Details of variables.

Status	Variable	Symbol	Unit Measurement	Source
Dependent	Starting a Business Score	SB	Scale, from 0-100	World Bank [63]
Independent	Dealing with Construction Permits Score	DCP	Scale, from 0-100	World Bank [64]
	Getting Electricity Score	GE	Scale, from 0-100	World Bank [65]
	Registering Property Score	RP	Scale, from 0-100	World Bank [66]

relationships evolved between the 2019 and 2020 Doing Business reports, a period marked by the global economic shock of COVID-19. By leveraging various robust econometric methods, this study provides a granular analysis that captures both cross-sectional variation and temporal shifts in the impact of these indices.

In summary, this study aims to elucidate the interconnected roles of construction permits, electricity access, and property registration in shaping the starting-a-business initiative. The findings are expected to inform policymakers and stakeholders about the need for targeted regulatory reforms. This study contributes to the literature by providing a comprehensive, crisis-sensitive analysis, offering insights into how regulatory processes can be optimized to foster entrepreneurship and economic resilience.

## 2. Materials and Methods

### 2.1. Data and Variables

This study utilized data from 213 countries and cities featured in the World Bank's Doing Business 2019 (DB19) and Doing Business 2020 (DB20) reports [10]. The DB19 and DB20 datasets were assessed separately in cross-sectional form, as they do not have a sufficient time-series range to be treated as panel data. This approach also aimed to enhance the evidence by comparing their results. Furthermore, a total of four variables were employed, with the Starting a Business score (SB) serving as the dependent variable, and the Dealing with Construction Permits score (DCP), Getting Electricity score (GE), and Registering Property score (RP) serving as the independent variables. Details of the variables can be found in Table 1.

The World Bank's Doing Business report evaluates economies on key dimensions of business regulation, measured on a scale from 0 to 100, with higher scores indicating better performance. The Starting a Business score measures the regulatory environment and procedures required to launch a business, with higher scores reflecting greater efficiency and simplicity [63]. The Dealing with Construction Permits score assesses the processes, costs, and time associated with obtaining construction permits and complying with building regulations [64]. Similarly, the Getting Electricity score

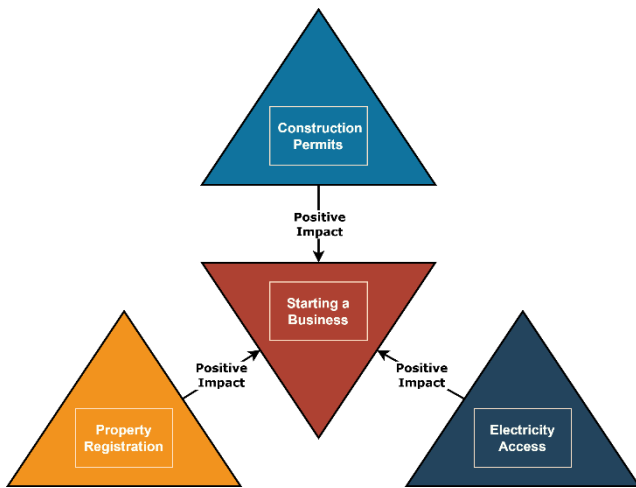
evaluates the accessibility, reliability, and affordability of electrical connections [65], while the Registering Property score examines the efficiency and transparency of property registration processes [66].

### 2.2. Conceptual Framework

The ease of starting a business is influenced by various institutional and infrastructural factors that determine the overall business environment. The efficiency of dealing with construction permits, access to electricity, and the process of registering property are critical components that shape entrepreneurial activity. Together, these factors create a conducive ecosystem that supports entrepreneurship, reduces barriers to entry, and fosters economic growth.

The efficiency and transparency of obtaining construction permits significantly influence the ease of starting a business [60]. Simplified permitting processes reduce the time and financial burden associated with establishing physical infrastructure, such as office spaces, manufacturing units, or retail outlets. This administrative efficiency not only lowers entry barriers for entrepreneurs but also fosters a business-friendly environment [27]. Moreover, streamlined processes enhance predictability, allowing businesses to plan operations and investments more effectively. In contrast, cumbersome permitting systems may deter entrepreneurs by increasing costs and delaying project timelines, ultimately stifling innovation and business growth [3, 67].

Similarly, access to electricity is a fundamental requirement for virtually all businesses, making the process of connecting to the grid a critical determinant of entrepreneurial success. Reliable and affordable electricity connections ensure the smooth operation of key business activities, including production, communication, and technological processes. An efficient electricity supply reduces operational costs, enabling businesses to allocate resources to other essential areas like hiring, marketing, or product development [68]. Furthermore, simplified procedures for obtaining electricity connections encourage small-scale entrepreneurs and startups, particularly in sectors heavily reliant on energy, to participate in the economy and contribute to local development [29].



**Figure 1.** Conceptual framework.

In addition to these factors, the process of registering property may release significant impact on creating a stable foundation for businesses. Secured and efficient property registration systems provide legal certainty, thus reducing the risk of disputes and enabling entrepreneurs to focus on their operations [51]. Properly registered property can also serve as collateral for securing loans, facilitating access to much-needed capital for new businesses. This access to finance is particularly important for startups that may lack alternative funding sources [49]. Additionally, transparent and straightforward property registration processes attract investment by fostering trust in regulatory institutions, promoting entrepreneurship, and supporting economic growth [69].

Building on the significance of these institutional and infrastructural factors, as illustrated in Figure 1, this study hypothesizes that the efficiency of dealing with construction permits, access to electricity, and the process of registering property each has a positive impact on the ease of starting a business. Streamlined construction permitting processes, reliable electricity access, and secure property registration are expected to lower barriers to entry, reduce operational uncertainties, and enhance resource accessibility for entrepreneurs.

### 2.3. Empirical Model

Based on the conceptual framework explained, this study focuses on examining the impact of the DCP score, which reflects delays and costs associated with business establishment; the GE score, which signifies reliable access to electricity for productivity; and the RP score, which fosters investment through secure ownership, on the SB score. The mathematical function for this relationship is presented in Equation 1.

$$SB = f(DCP, GE, RP) \tag{1}$$

Then, the practical econometric model derived from the function in Equation 1 is expressed in Equation 2.

$$SB_i = \beta_0 + \beta_1 DCP_i + \beta_2 GE_i + \beta_3 RP_i + \varepsilon_i \tag{2}$$

Where  $i$  represents the country/city,  $\beta_0$  is the constant,  $\beta_1$  to  $\beta_3$  are the coefficients, and  $\varepsilon$  is the error term.

### 2.4. Methods

This study employs various econometric methods tailored to address the limitations of traditional regression approaches, particularly in the context of cross-sectional data. Generalized Linear Models (GLM), Robust Least Squares (RLS), and Quantile Regression (QR) are utilized to enhance the reliability and robustness of the analysis. These methods are chosen for their ability to relax classical assumptions such as homoscedasticity, normality of residuals, and sensitivity to outliers. Together, these methods ensure a robust analytical framework that accommodates data heterogeneity and irregularities effectively. As the issue of multicollinearity is not addressed by these methods, this study will examine it in the results section, along with the Ramsey RESET test, to ensure that the employed model has proper specification.

#### 2.4.1. Generalized Linear Model (GLM)

The GLM extends ordinary linear regression by allowing the dependent variable to follow distributions other than the normal, making it highly versatile for analyzing cross-sectional data. It links the mean of the dependent variable to a linear predictor through a specified link function, enabling flexibility in modeling response types for continuous data that this study used. GLM excels in handling heteroskedasticity by using a variance function tied to the distribution of the dependent variable, thus relaxing the classical assumption of constant variance. Additionally, GLM can address issues of non-linearity between predictors and the response variable, making it a powerful tool for diverse datasets often encountered in cross-sectional studies [70, 71].

#### 2.4.2. Robust Least Squares (RLS)

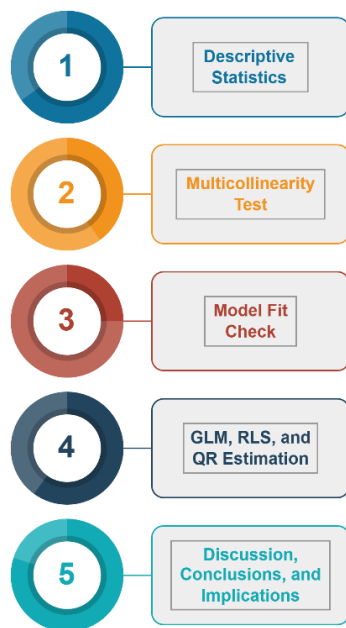
RLS is a regression technique designed to provide reliable estimates in the presence of outliers or violations of the assumption of normally distributed errors, making it especially suitable for cross-sectional data. Unlike ordinary least squares (OLS), which is highly sensitive to extreme values, RLS minimizes the influence of outliers by using weighting functions or iterative methods like Huber. This method mitigates the classical assumption of homoscedasticity and normality of residuals, ensuring robust and more accurate parameter estimates in the presence of data irregularities. Its ability to handle non

**Table 2.** Descriptive statistics for DB19 data.

Variables	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis
SB	83.539	85.5	100	25	11.049	-1.8376	8.3299
DCP	65.100	67.7	91.2	0	15.304	-1.8563	8.7213
GE	69.008	72.4	100	0	20.595	-0.9715	3.9452
RP	61.389	62.7	94.6	0	18.078	-0.6826	3.9952

**Table 3.** Descriptive statistics for DB20 data.

Variables	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis
SB	84.597	86.8	100	25	10.786	-2.0079	9.1986
DCP	66.486	68.9	93.5	0	15.382	-1.9969	9.2844
GE	70.332	73.4	100	0	20.191	-1.0539	4.3444
RP	61.841	63.6	96.2	0	18.161	-0.6948	4.0243



**Figure 2.** Flow analysis.

ideal data distributions makes RLS an excellent choice for datasets with high variability or unusual observations [72–75].

**2.4.3. Quantile Regression (QR)**

QR is a robust statistical method that estimates the conditional quantiles of a dependent variable, offering a more comprehensive view of the relationship between variables compared to OLS, which focuses only on the mean. Particularly useful for cross-sectional data, quantile regression excels in capturing the impact of independent variables across different points of the distribution, making it effective in the presence of heteroskedasticity or non-normal error distributions. By modeling different quantiles, it mitigates the classical assumption of homoscedasticity and provides robust estimates even in the presence of outliers, offering deeper insights into the variability and structure of the data [76, 77].

**2.5. Flow Analysis of the Study**

As shown in Figure 2, in the results section, the study begins by providing descriptive statistics. It then moves to testing multicollinearity between independent variables to ensure that the independent variables are not highly correlated and can provide reliable and unbiased estimates. Next, the study checks whether the model is properly specified using the Ramsey RESET test, followed by conducting estimations with the GLM, RLS, and QR methods. The findings from these three methods are then discussed. Finally, the analysis concludes with the study's conclusions and implications, offering insights for both policymakers and businesses.

**3. Results and Discussion**

**3.1. Descriptive Statistics**

Descriptive statistics in Tables 2 and 3 for the Starting a Business Score (SB) and its associated variables (DCP, GE, RP) show overall improvements from DB19 to DB20. The mean value of SB increased from 83.539 in DB19 to 84.597 in DB20, indicating a modest enhancement in the ease of starting a business over time. The data for SB is negatively skewed in both years, suggesting that higher values are more common, and its kurtosis increased from 8.33 to 9.20, reflecting distributions with heavier tails and more pronounced peaks. This indicates progress but also hints at a concentration of higher scores in certain entities.

For the Dealing with Construction Permits Score (DCP), the mean rose from 65.100 to 66.486, showing improvement in handling construction permits. Similar to SB, the DCP data is negatively skewed in both years, with a slight increase in kurtosis from 8.72 to 9.28, suggesting that the distribution's tails became heavier, indicating disparities in performance improvements. The Getting Electricity Score (GE) displayed the largest improvement among the variables, with the mean increasing from 69.008 to 70.332. This trend demonstrates enhanced

**Table 4.** Results of correlation matrix and VIF test.

Independent Variables	DB19			Centered VIF	DB20			Centered VIF
	Correlation				Correlation			
	DCP	GE	RP		DCP	GE	RP	
DCP	1			1.8629	1			1.8741
GE	0.6632	1		2.0216	0.6671	1		2.0289
RP	0.4918	0.5489	1	1.4936	0.4836	0.5407	1	1.4697

Note: A correlation value below 0.8 and a centered VIF value not exceeding 10 indicate no multicollinearity.

**Table 5.** Results of Ramsey RESET test.

Value Referral	DB19		DB20	
	Value	Prob.	Value	Prob.
t-stat.	0.5520	0.5815	0.7607	0.4477
F-stat.	0.3047	0.5815	0.5786	0.4477
LR	0.3118	0.5766	0.5917	0.4418

Note: A probability value greater than 0.05 indicates that the model is properly specified.

access to electricity. The skewness became slightly more negative, indicating a stronger concentration of higher values in DB20, while kurtosis rose from 3.95 to 4.34, suggesting that the tails of the distribution became slightly heavier over time. The Registering Property Score (RP) showed minor progress, with its mean increasing from 61.389 to 61.841. The skewness and kurtosis for RP remained relatively stable across the two datasets, suggesting no significant changes in its distribution.

Overall, these findings suggest steady progress in business-related scores over time, particularly in access to electricity and starting a business. However, the negative skewness and high kurtosis across most variables imply that improvements are not evenly distributed, with disparities persisting between entities.

### 3.2. Multicollinearity Test

Table 4 presents the correlation matrix and Variance Inflation Factor (VIF) results for the independent variables (DCP, GE, and RP) across the DB19 and DB20 datasets, confirming the absence of multicollinearity. All correlation coefficients are below 0.8 in both datasets, indicating no strong linear relationships among the variables. The centered VIF values for all variables are well below the threshold of 10, ranging from 1.4936 to 2.0216 in DB19 and from 1.4697 to 2.0289 in DB20, further confirming no multicollinearity. These findings ensure the independence of the variables and their suitability for inclusion in regression models without bias or inflated standard errors.

### 3.3. Model Fit Check

Table 5 presents the results of the Ramsey RESET test, confirming the proper functional specification of the regression models for both DB19 and DB20 datasets. All p-values for the t-statistic, F-statistic, and likelihood ratio (LR) exceed the 0.05 threshold, with values of 0.5815,

0.5815, and 0.5766 for DB19, and 0.4477, 0.4477, and 0.4418 for DB20, respectively. These results indicate that the null hypothesis of proper model specification cannot be rejected in either case, suggesting the absence of significant omitted variable bias or functional form misspecification in the models.

### 3.4. GLM Estimation

Table 6 displays the results of the Generalized Linear Model (GLM) estimation, examining the relationship between the Starting a Business score (SB) and the independent variables—Dealing with Construction Permits score (DCP), Getting Electricity score (GE), and Registering Property score (RP)—for the DB19 and DB20 datasets.

For DB19, all independent variables significantly influence the dependent variable (SB). DCP has a positive coefficient of 0.1877, significant at the 1% level ( $p = 0.0011$ ), indicating that a 1-point increase in DCP leads to an increase of 0.1877 points in SB. GE also shows a positive and statistically significant effect, with a coefficient of 0.1139 at the 5% level ( $p = 0.0107$ ), implying that a 1-point increase in GE increases SB by 0.1139 points. Similarly, RP has a positive coefficient of 0.0945, significant at the 5% level ( $p = 0.0306$ ), meaning that a 1-point increase in RP results in a 0.0945-point increase in SB. The likelihood ratio (LR) statistic of 83.416 ( $p = 0.0000$ ) confirms the overall model significance.

For DB20, the results are consistent, with all variables remaining significant. DCP has the strongest effect, with a coefficient of 0.2224, significant at the 1% level ( $p = 0.0001$ ), indicating that a 1-point increase in DCP leads to an increase of 0.2224 points in SB. RP retains a positive and statistically significant impact, with a coefficient of 0.0929 at the 5% level ( $p = 0.0276$ ), implying a 0.0929-point increase in SB for every 1-point rise in RP. GE shows a positive but weaker relationship with SB, with a

**Table 6.** Results of GLM estimation.

<i>Dependent Variable: SB</i>						
<b>Independent Variables</b>	DB19			DB20		
	<b>Coeff.</b>	<b>z-stat.</b>	<b>Prob.</b>	<b>Coeff.</b>	<b>z-stat.</b>	<b>Prob.</b>
DCP	0.1877	3.2576*	0.0011	0.2224	3.9536*	0.0001
GE	0.1139	2.5524**	0.0107	0.0787	1.7637***	0.0778
RP	0.0945	2.1627**	0.0306	0.0929	2.2029**	0.0276
Constant	57.664	19.303*	0.0000	58.528	19.722*	0.0000
LR stat.	83.416*			84.719*		
Prob.	0.0000			0.0000		

Note: \*, \*\*, and \*\*\* indicate 1%, 5%, and 10% significance levels, respectively.

**Table 7.** Results of RLS estimation.

<i>Dependent Variable: SB</i>						
<b>Independent Variables</b>	DB19			DB20		
	<b>Coeff.</b>	<b>z-stat.</b>	<b>Prob.</b>	<b>Coeff.</b>	<b>z-stat.</b>	<b>Prob.</b>
DCP	0.1565	3.2603*	0.0011	0.1349	3.0010*	0.0027
GE	0.0917	2.4691**	0.0135	0.0442	1.2412	0.2145
RP	0.0849	2.3342**	0.0196	0.1037	3.0758*	0.0021
Constant	63.037	25.332*	0.0000	67.701	28.551*	0.0000
Rn <sup>2</sup> stat.	84.467*			65.546*		
Prob.	0.0000			0.0000		

Note: \* and \*\* indicate 1% and 5% significance levels, respectively.

coefficient of 0.0787, marginally significant at the 10% level ( $p = 0.0778$ ), meaning a 1-point increase in GE results in a 0.0787-point increase in SB. The LR statistic of 84.719 ( $p = 0.0000$ ) reaffirms the model's overall explanatory power.

Comparing the magnitude of the impacts across DB19 and DB20, the results indicate a decrease in the influence of most independent variables on the SB, likely influenced by the shock of the COVID-19 pandemic. For DCP, the coefficient increase from 0.1877 in DB19 to 0.2224 in DB20. In contrast, GE shows a notable decline in its coefficient from 0.1139 in DB19 to 0.0787 in DB20. Similarly, RP experiences a slight decrease, with its coefficient reduced from 0.0945 in DB19 to 0.0929 in DB20. These changes suggest that the pandemic may have disrupted the regulatory and operational environments, altering the relative importance of these variables over time.

In summary, the findings suggest that DCP, GE, and RP positively contribute to the Starting a Business score. These results underline the importance of improving regulatory processes in construction permits, electricity access, and property registration to enhance business-starting conditions.

### 3.5. RLS Estimation

The results of the Robust Least Squares (RLS) estimation, presented in Table 7, provide a robustness check for the GLM results. The findings reaffirm the significance and direction of the relationships between the SB and the

independent variables—DCP, GE, and RP—for both DB19 and DB20 datasets.

For DB19, DCP remains highly significant with a coefficient of 0.1565 ( $p = 0.0011$ ), indicating that a 1-point increase in DCP leads to a 0.1565-point increase in SB. GE also exhibits a significant positive effect, with a coefficient of 0.0917 ( $p = 0.0135$ ), implying that a 1-point increase in GE results in a 0.0917-point increase in SB. RP continues to show a statistically significant impact, with a coefficient of 0.0849 ( $p = 0.0196$ ), suggesting that a 1-point increase in RP increases SB by 0.0849 points. The Rn<sup>2</sup> statistic of 84.467 ( $p = 0.0000$ ) confirms the model's strong explanatory power.

For DB20, the robustness results are consistent with those of GLM. DCP remains significant at the 1% level with a coefficient of 0.1349 ( $p = 0.0027$ ), indicating that a 1-point increase in DCP leads to a 0.1349-point increase in SB. RP also shows a significant positive relationship, with a coefficient of 0.1037 ( $p = 0.0021$ ), demonstrating a 0.1037-point increase in SB for every 1-point rise in RP. GE, however, has a smaller and statistically insignificant coefficient of 0.0442 ( $p = 0.2145$ ), suggesting that its influence on SB in DB20 may be weaker or inconsistent. The Rn<sup>2</sup> statistic of 65.546 ( $p = 0.0000$ ) further supports the model's overall robustness.

Consistent with the GLM results, the magnitude of the impacts between DB19 and DB20 also reflects a decrease in the influence of most independent variables. However, while GE and RP show a decline in the GLM results, DCP and GE exhibit a decrease in the RLS results. Specifically, the coefficient for DCP drops from 0.1565 in DB19 to

**Table 8.** Results of QR estimation for DB19.

<i>Dependent Variable: SB</i>									
<b>Independent Variables</b>	Quantiles								
	<i>Coeff. (t-stat.)</i>								
	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>
DCP	0.3546 (1.26)	0.2659 (2.29)**	0.2863 (3.14)*	0.2167 (2.34)*	0.1936 (2.25)*	0.1290 (2.08)**	0.1305 (2.04)**	0.0888 (1.49)	0.0427 (0.66)
GE	0.1445 (1.15)	0.1439 (1.83)***	0.0880 (1.54)	0.0819 (1.30)	0.0829 (1.24)	0.1102 (2.02)**	0.0810 (1.45)	0.0378 (0.79)	0.0291 (0.77)
RP	0.1986 (1.21)	0.1376 (1.78)***	0.1549 (2.82)*	0.1478 (2.65)*	0.1054 (1.79)***	0.0619 (1.28)	0.0809 (1.55)	0.0862 (2.18)*	0.0712 (2.55)*
Constant	27.720 (1.82)***	41.358 (7.44)*	46.430 (9.34)*	54.201 (9.37)*	60.129 (11.79)*	67.084 (17.54)*	69.622 (15.99)*	77.164 (18.89)*	83.631 (25.14)*
LR Stat.	48.798	58.107*	62.776*	57.203*	57.139*	54.208*	44.151*	30.843*	23.546*
Prob.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: \*, \*\*, and \*\*\* denote significance levels at 1%, 5%, and 10%, respectively.

**Table 9.** Results of QR estimation for DB20.

<i>Dependent Variable: SB</i>									
<b>Independent Variables</b>	Quantiles								
	<i>Coeff. (t-stat.)</i>								
	<b>0.1</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>
DCP	0.5297 (1.61)	0.2809 (2.33)**	0.3099 (3.47)*	0.2869 (3.39)*	0.2589 (2.36)**	0.1274 (2.75)*	0.1109 (2.44)**	0.0389 (0.48)	0.0488 (0.70)
GE	0.0497 (0.39)	0.0945 (1.29)	0.0443 (0.82)	0.1138 (2.03)**	0.0929 (1.55)	0.0489 (1.04)	0.0386 (0.86)	0.0192 (0.43)	0.0059 (0.14)
RP	0.1659 (1.17)	0.2163 (2.43)**	0.1640 (2.69)*	0.0331 (0.54)	0.0435 (0.74)	0.0989 (2.39)**	0.0935 (2.56)**	0.0974 (2.92)*	0.0839 (3.11)*
Constant	24.927 (1.74)***	40.041 (5.51)*	47.839 (10.2)*	55.295 (10.1)*	59.254 (8.24)*	70.214 (21.07)*	73.867 (22.5)*	81.725 (18.1)*	84.583 (26.7)*
LR Stat.	54.429*	64.299*	63.814*	58.773*	49.170*	48.018*	44.349*	32.504*	24.293*
Prob.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: \* and \*\* denote significance levels at 1% and 5%, respectively.

0.1349 in DB20, signaling a reduced impact. Similarly, GE experiences a notable reduction in its coefficient, from 0.0917 in DB19 to 0.0442 in DB20. On the other hand, RP sees a slight increase, with its coefficient rising from 0.0849 in DB19 to 0.1037 in DB20. These shifts once again suggest that the COVID-19 pandemic has likely altered the regulatory and business environments, leading to changes in the relative significance of these variables over time.

Overall, these results validate the GLM findings which consistently demonstrate significant and positive impacts on SB across both datasets. The robustness checks confirm that the regulatory environment, especially regarding construction permits and property registration, plays a critical role in facilitating business activities.

### 3.6. QR Estimation

The quantile regression results for DB19 and DB20, as shown in Tables 8 and 9, highlight the varying impacts of the independent variables on the Starting a Business (SB) score across its distribution. Lower quantiles represent lower-performing economies, while higher quantiles

correspond to higher-performing economies. DCP has the strongest influence at middle quantiles, with coefficients of 0.3546 (DB19) and 0.5297 (DB20) at quantile 0.1, indicating its significant role in improving SB scores for lower-performing economies. However, its impact diminishes at higher quantiles, becoming insignificant in some cases. GE shows a limited and inconsistent effect, with its highest significant coefficient at quantile 0.6 in DB19 (0.1102) and at quantile 0.4 in DB20 (0.1138). In contrast, RP consistently exhibits a positive and moderate influence across most quantiles, with coefficients ranging from 0.1054 to 0.1986 in DB19 and 0.0895 to 0.1659 in DB20. The constant term increases across quantiles, reflecting higher baseline SB scores for economies in the upper distribution. These findings highlight the need to prioritize improvements in construction permit processes, particularly in lower- to middle-performing economies, while also strengthening property registration systems and addressing additional barriers beyond electricity to foster business formation.

In terms of the number of significant quantiles, DCP and RP show the same number of significant quantiles across both DB19 and DB20. However, GE experiences a reduction in the number of significant quantiles in DB20

compared to DB19. Additionally, RP in DB20 exhibits more significance at the higher quintiles, whereas in DB19, RP was predominantly significant at the middle quintiles. Furthermore, the magnitude of impact (coefficient value) for both DCP and RP is reduced at the higher quintiles in DB20. This shift in the distribution of significant impacts and the reduced magnitude at higher quintiles likely reflects the broader economic disruptions caused by the COVID-19 pandemic.

### 3.7. Discussion

The results provide a comprehensive understanding of how construction permits, electricity access, and registering property influence the ease of starting a business. Each independent variable has their expected signs and therefore, aligns with the study's hypothesis by demonstrating a positive impact toward starting a business, though the magnitude and significance of these impacts varied across the DB19 and DB20 datasets, reflecting regional and temporal differences in regulatory environments. Notably, the economic shock induced by the COVID-19 pandemic influenced the dynamics of these relationships, highlighting the differential adaptability of economies to external disruptions. Furthermore, the data suggest a diminishing effect of these variables in middle- and higher-performing economies, where pre-existing efficiencies limit the scope for further improvement. These findings underscore the importance of tailored reforms and interventions to optimize the business environment across diverse economic contexts.

#### 3.7.1. The Impact of Construction Permits on Starting a Business

The Dealing with Construction Permits (DCP) score shows a consistently significant and positive impact on the Starting a Business (SB) score across both DB19 and DB20 datasets. In DB19, a one-point increase in DCP contributed to an SB increase of 0.1877 points in the GLM, which further rose to 0.2224 in DB20. The RLS and QR methods confirmed these findings, highlighting DCP's critical role in facilitating entrepreneurship. However, the QR analysis revealed that the magnitude of DCP's impact diminished at higher quintiles, especially in DB20, where the coefficients became insignificant at the upper quintiles.

This trend aligns with the observation that middle and higher-performing countries experienced reduced benefits from regulatory improvements, likely due to their already high performance, leaving less room for further gains [78]. The findings imply that for low- and middle-performing economies, reforms aimed at simplifying construction permitting processes could yield substantial benefits, reducing barriers to entry for

entrepreneurs and expediting project initiation [79]. Conversely, in higher-performing economies, where regulatory systems are already optimized, policymakers might focus on enhancing the quality and efficiency of permit evaluations, adopting digital solutions to further streamline processes, and reducing potential delays in specialized or large-scale projects [80].

#### 3.7.2. The Impact of Electricity Access on Starting a Business

The Getting Electricity (GE) score exhibited a significant and positive but less consistent impact on the SB score. In DB19, GE influenced SB with a GLM coefficient of 0.1139, meaning a one-point increase in GE contributed to an SB increase of 0.1139 points, but this impact weakened to 0.0787 in DB20. Similarly, RLS results showed a notable decline in the significance of GE's impact in DB20. The QR analysis further emphasized the variability of GE's impact, with significance observed only in specific quintiles in DB19 and DB20, particularly among lower- and middle-performing economies.

The implications of these findings highlight the critical importance of reliable and affordable electricity access in supporting entrepreneurial activities, particularly in economies where infrastructure gaps persist. In lower-performing economies, addressing deficiencies in electricity supply—such as unreliable connections, high costs, and limited access—can have a transformative effect on business productivity and growth [81]. For middle-performing countries, targeted investments in grid modernization, renewable energy integration, and subsidy programs for business electricity usage may help unlock further gains [82]. In contrast, for higher-performing countries, policymakers may consider strategies to reduce bureaucratic hurdles in obtaining electricity connections, ensuring that businesses can scale operations quickly without facing infrastructure-related bottlenecks [83].

#### 3.7.3. The Impact of Property Registration on Starting a Business

The Registering Property (RP) score consistently demonstrated a positive and significant impact on the SB score across all methods and datasets. In DB19, a one-point increase in RP resulted in a 0.0945-point rise in SB under GLM, which remained relatively stable at 0.0929 in DB20, further robustly supported by the RLS method. Interestingly, QR results indicated that RP's influence shifted towards higher quintiles in DB20, highlighting its growing importance in higher-performing economies.

The findings underscore the pivotal role of secure and efficient property registration systems in fostering a

conducive business environment. In low-performing economies, reforms to enhance transparency, reduce registration costs, and shorten processing times can significantly boost investor confidence and promote formal business activity [84]. For middle-performing economies, integrating digital property registration systems and ensuring interoperability across governmental agencies could enhance efficiency and reduce fraud risks [85]. In higher-performing economies, where property registration processes are more efficient, policymakers could focus on maintaining high standards while exploring innovative approaches such as blockchain-based systems to further enhance reliability and reduce transaction costs for businesses [86].

#### 3.7.4. Contextualizing the COVID-19 Pandemic

The economic shock triggered by the COVID-19 pandemic significantly influenced the relationship between regulatory processes and entrepreneurship. The pandemic heightened uncertainties, disrupting traditional business models and delaying new business initiatives [12, 87]. During this period, DCP emerged as a crucial factor, especially in lower-performing economies, where streamlined construction permits mitigated some of the delays caused by administrative bottlenecks and pandemic-related restrictions. Conversely, the reduced impact of GE and RP in DB20 indicates a shift in business priorities, with immediate concerns, such as liquidity management and workforce safety, overshadowing longer-term infrastructural and property considerations.

In middle- and higher-performing economies, the impact of DCP, GE, and RP on the SB score showed diminishing returns. These countries often benefit from well-established regulatory systems, leaving limited room for incremental improvements to significantly influence entrepreneurial activity. This saturation effect was particularly pronounced in DB20, where the pandemic further compressed the relative importance of these factors. Policymakers in such contexts must focus on innovative regulatory strategies and targeted interventions to address emerging challenges while maintaining their high standards [88]. Meanwhile, lower-performing economies can gain substantial benefits from prioritizing reforms in regulatory processes, ensuring resilience to future economic shocks [89].

#### 4. Conclusions, Implications and Limitations

This study demonstrates that construction permits, electricity access, and property registration all positively and significantly impact starting a business, though their effects vary across economies. Construction permits is crucial for lower- and middle-performing economies, where simplifying processes can reduce entry barriers,

while higher-performing economies benefit more from improving the efficiency and quality of permit evaluations. Electricity access has a similar pattern, with its impact being stronger in economies with infrastructure gaps and weaker in developed nations, where focusing on reducing bureaucratic delays may improve scalability. Property registration consistently influences business formation, especially in higher-performing economies, where digital solutions and innovative approaches like blockchain can further streamline processes. The COVID-19 pandemic played a significant role by shifting priorities; during the crisis, countries with pre-existing inefficiencies faced further delays, making regulatory improvements more critical in lower-performing economies. At the same time, in higher-performing economies, the pandemic highlighted diminishing returns from regulatory enhancements, as businesses had to focus more on immediate operational challenges rather than long-term infrastructure reforms.

The findings of this study offer valuable implications for both policymakers and entrepreneurs. For policymakers in lower- and middle-performing economies, simplifying the process for construction permits, streamlining property registration, and improving electricity access can significantly reduce entry barriers and foster entrepreneurship. Policymakers should focus on reducing bureaucratic inefficiencies, cutting unnecessary steps, and implementing digital solutions to enhance transparency and speed. For electricity, investing in infrastructure to ensure reliable and affordable access is critical, particularly in regions with existing gaps. In higher-performing economies, the focus should shift to enhancing the quality and efficiency of these systems, leveraging innovative technologies like blockchain for property registration and reducing operational bottlenecks. For entrepreneurs, understanding the importance of navigating regulatory processes is key. Business owners should actively engage with available digital platforms to streamline permit applications and property registration, and where applicable, advocate for improvements in electricity infrastructure. During times of economic uncertainty, both policymakers and entrepreneurs must adapt quickly—policymakers by ensuring flexible regulatory frameworks and entrepreneurs by focusing on immediate operational adjustments while planning for long-term efficiency.

While the authors tried their best to conduct a comprehensive study, this paper still suffers from certain limitations which in turn, open new directions for future research. First, it relies solely on cross-sectional data from the Doing Business reports, which limits the ability to analyze the dynamics and causality over time.

Therefore, future studies could benefit from utilizing panel data to capture temporal variations and provide more accurate insights. Additionally, employing other econometric methods that focus on the direction of causality could help assess the unidirectional or bidirectional causality between the variables. Furthermore, this study focuses on indicators from the Doing Business reports, whereas future research could incorporate data from the World Enterprise Survey, which offers a deeper understanding of business environments. These recommendations could provide a more thorough analysis of the regulatory environment's impact on starting a business.

**Author Contributions:** Conceptualization, I.H.; methodology, I.H., X.H.N. and G.M.I.; software, I.H., S.S., E.S.R., R.M. and G.M.I.; validation, I.H., X.H.N. and E.S.R.; formal analysis, I.H., X.H.N.; investigation, I.H., S.S., R.M. and E.S.R.; resources, I.H. and G.M.I.; data curation, I.H., S.S. and G.M.I.; writing—original draft preparation, I.H.; writing—review and editing, I.H., X.H.N., S.S., E.S.R., R.M. and G.M.I.; visualization, S.S., R.M. and G.M.I.; supervision, X.H.N. and G.M.I.; project administration, G.M.I. All authors have read and agreed to the published version of the manuscript.

**Funding:** This study does not receive external funding.

**Data Availability Statement:** The data can be retrieved as a free download from the official World Bank website.

**Acknowledgments:** The authors would like to express their gratitude to their respective institutions.

**Conflicts of Interest:** All the authors declare that there are no conflicts of interest.

## References

- Minniti, M. (2008). The Role of Government Policy on Entrepreneurial Activity: Productive, Unproductive, or Destructive?, *Entrepreneurship Theory and Practice*, Vol. 32, No. 5, 779–790. doi:10.1111/j.1540-6520.2008.00255.x.
- Estrin, S., Korosteleva, J., and Mickiewicz, T. (2013). Which Institutions Encourage Entrepreneurial Growth Aspirations?, *Journal of Business Venturing*, Vol. 28, No. 4, 564–580. doi:10.1016/j.jbusvent.2012.05.001.
- Hallward-Driemeier, M., and Pritchett, L. (2015). How Business is Done in the Developing World: Deals versus Rules, *Journal of Economic Perspectives*, Vol. 29, No. 3, 121–140. doi:10.1257/jep.29.3.121.
- Koellinger, P. (2008). Why Are Some Entrepreneurs More Innovative than Others?, *Small Business Economics*, Vol. 31, No. 1, 21–37. doi:10.1007/s11187-008-9107-0.
- Welter, F., Baker, T., Audretsch, D. B., and Gartner, W. B. (2017). Everyday Entrepreneurship—A Call for Entrepreneurship Research to Embrace Entrepreneurial Diversity, *Entrepreneurship Theory and Practice*, Vol. 41, No. 3, 311–321. doi:10.1111/etap.12258.
- Bikse, V., Lusena – Ezera, I., and Rivza, B. (2018). Innovative Start-Ups: Challenges and Development Opportunities in Latvia, *International Journal of Innovation Science*, Vol. 10, No. 2, 261–273. doi:10.1108/IJIS-05-2017-0044.
- Kanchana, R. S., Divya, J. V, and Beegom, A. A. (2013). Challenges Faced by New Entrepreneurs, *International Journal of Current Research and Academic Review*, Vol. 1, No. 3, 71–78.
- Amankwah-Amoah, J., Boso, N., Adomako, S., and Danso, A. (2024). Editorial to the Special Issue “International Entrepreneurial Behaviors of African Firms: Emerging Issues, Challenges and Opportunities”, *Journal of Business Research*, Vol. 182, 114763. doi:10.1016/j.jbusres.2024.114763.
- Noviandy, T. R., Idroes, G. M., Hardi, I., Afjal, M., and Ray, S. (2024). A Model-Agnostic Interpretability Approach to Predicting Customer Churn in the Telecommunications Industry, *Infolitika Journal of Data Science*, Vol. 2, No. 1, 34–44. doi:10.60084/ijds.v2i1.199.
- World Bank. (2021). Ease of Doing Business Scores, from <https://archive.doingbusiness.org/en/data/doing-business-score>.
- Isenberg, D. J. (2010). How to Start an Entrepreneurial Revolution, *Harvard Business Review*, Vol. 88, No. 6, 40–50.
- Donthu, N., and Gustafsson, A. (2020). Effects of COVID-19 on Business and Research, *Journal of Business Research*, Vol. 117, 284–289. doi:10.1016/j.jbusres.2020.06.008.
- Thukral, E. (2021). Covid-19: Small and Medium Enterprises Challenges and Responses with Creativity, Innovation, and Entrepreneurship, *Strategic Change*, Vol. 30, No. 2, 153–158. doi:10.1002/jsc.2399.
- Ringga, E. S., Hafizah, I., Idroes, G. M., Amalina, F., Kadri, M., Idroes, G. M., Noviandy, T. R., and Hardi, I. (2024). Long-Term Impact of Dirty and Clean Energy on Indonesia's Economic Growth: Before and During the COVID-19 Pandemic, *Grimsa Journal of Business and Economics Studies*, Vol. 2, No. 1, 66–76. doi:10.61975/gjbes.v2i1.49.
- Meyer, B. H., Prescott, B., and Sheng, X. S. (2022). The Impact of the COVID-19 Pandemic on Business Expectations, *International Journal of Forecasting*, Vol. 38, No. 2, 529–544. doi:10.1016/j.ijforecast.2021.02.009.
- Calvino, F., Criscuolo, C., and Verlhac, R. (2020). *Declining Business Dynamism* (Vol. 94). doi:10.1787/77b92072-en.
- Antunes, P., and Mourão, H. (2011). Resilient Business Process Management: Framework and services, *Expert Systems with Applications*, Vol. 38, No. 2, 1241–1254. doi:10.1016/j.eswa.2010.05.017.
- Giones, F., Brem, A., Pollack, J. M., Michaelis, T. L., Klyver, K., and Brinckmann, J. (2020). Revising Entrepreneurial Action in Response to Exogenous Shocks: Considering the COVID-19 Pandemic, *Journal of Business Venturing Insights*, Vol. 14, e00186. doi:10.1016/j.jbvi.2020.e00186.
- Noviandy, T. R., Hardi, I., and Idroes, G. M. (2024). Forecasting Bank Stock Trends Using Artificial Intelligence: A Deep Dive into the Neural Prophet Approach, *The International Journal of Financial Systems*, Vol. 2, No. 1, 29–56. doi:10.61459/ijfs.v2i1.41.
- Mora-Sanguinetti, J. S., and Pérez-Valls, R. (2021). How Does Regulatory Complexity Affect Business Demography? Evidence from Spain, *European Journal of Law and Economics*, Vol. 51, No. 2, 203–242. doi:10.1007/s10657-020-09650-w.
- Liu, Y., Dilanchiev, A., Xu, K., and Hajjiyeva, A. M. (2022). Financing SMEs and Business Development as New Post COVID-19 Economic Recovery Determinants, *Economic Analysis and Policy*, Vol. 76, 554–567. doi:10.1016/j.eap.2022.09.006.
- Hardi, I., Idroes, G. M., Hardia, N. A. K., Fajri, I., Furqan, N., Noviandy, T. R., and Utami, R. T. (2023). Assessing the Linkage Between Sustainability Reporting and Indonesia's Firm Value: The Role of Firm Size and Leverage, *Indatu Journal of Management and Accounting*, Vol. 1, No. 1, 21–28. doi:10.60084/ijma.v1i1.79.
- Gustika Sandra, Tarmizi, Jumra, Rika Damayanti, Muh. Bakri, Asia A. Pananrangi, Mukhawas Rasyid, A. Arfyan Pratama, and Sakti Yadi. (2022). An Analysis of the Criminal Act of Granting Business Permits by Officials Without Completed Environmental

- Permits, *International Journal of Community Service (IJCS)*, Vol. 1, No. 2, 182–186. doi:10.55299/ijcs.v1i2.223.
24. Eisenmann, T. (2021). *Why Startups Fail: A New Roadmap for Entrepreneurial Success*, Crown Currency.
25. Leonidou, L. C. (2004). An Analysis of the Barriers Hindering Small Business Export Development, *Journal of Small Business Management*, Vol. 42, No. 3, 279–302. doi:10.1111/j.1540-627X.2004.00112.x.
26. Hardi, I., Ray, S., Duwal, N., Idroes, G. M., and Mardayanti, U. (2024). Consumer Confidence and Economic Indicators: A Macro Perspective, *Indatu Journal of Management and Accounting*, Vol. 2, No. 2, 81–95. doi:10.60084/ijma.v2i2.241.
27. Dlamini, M., and Cumberlege, R. (2021). The Impact of Cost Overruns and Delays in the Construction Business, *IOP Conference Series: Earth and Environmental Science*, Vol. 654, No. 1, 012029. doi:10.1088/1755-1315/654/1/012029.
28. Li, Z.-C., Huang, H.-J., and Yang, H. (2020). Fifty Years of the Bottleneck Model: A Bibliometric Review and Future Research Directions, *Transportation Research Part B: Methodological*, Vol. 139, 311–342. doi:10.1016/j.trb.2020.06.009.
29. Khurana, T., and Sangita, S. (2022). Household Access to Electricity and Non-farm Business in Rural India: A Panel Data Analysis, *Energy for Sustainable Development*, Vol. 67, 125–134. doi:10.1016/j.esd.2022.01.008.
30. Elliott, R. J. R., Nguyen-Tien, V., and Strobl, E. A. (2021). Power Outages and Firm Performance: A Hydro-IV Approach for a Single Electricity Grid, *Energy Economics*, Vol. 103, 105571. doi:10.1016/j.eneco.2021.105571.
31. Asaftei, G., Kumbhakar, S. C., and Mantescu, D. (2008). Ownership, Business Environment and Productivity Change, *Journal of Comparative Economics*, Vol. 36, No. 3, 498–509. doi:10.1016/j.jce.2008.03.005.
32. Ray, S., and Hardi, I. (2024). Refining ESG Disclosure's Role in Corporate Economic, Environmental, and Social Sustainability Performance, *Indatu Journal of Management and Accounting*, Vol. 2, No. 1, 1–8. doi:10.60084/ijma.v2i1.144.
33. Yackee, J. W., and Yackee, S. W. (2006). A Bias Towards Business? Assessing Interest Group Influence on the US Bureaucracy, *The Journal of Politics*, Vol. 68, No. 1, 128–139.
34. Krkač, K. (2023). Authority vs. Bureaucracy, *Encyclopedia of Sustainable Management*, Springer International Publishing, Cham, 194–200. doi:10.1007/978-3-031-25984-5\_356.
35. Hardi, I., Idroes, G. M., Utami, R. T., Dahlia, P., Mirza, M. A. F., Humam, R. A., Chairunnisa, R., Hardia, N. A. K., and Mahdani, R. (2023). Dynamic Impact of Inflation and Exchange Rate in Indonesia's Top 10 Market Capitalization Companies: Implications for Stock Prices, *Indatu Journal of Management and Accounting*, Vol. 1, No. 2, 51–59. doi:10.60084/ijma.v1i2.110.
36. Corcoran, A., and Gillanders, R. (2015). Foreign Direct Investment and the Ease of Doing Business, *Review of World Economics*, Vol. 151, No. 1, 103–126. doi:10.1007/s10290-014-0194-5.
37. Bradley, P. (2021). An Institutional Economics Framework to Explore Sustainable Production and Consumption, *Sustainable Production and Consumption*, Vol. 27, 1317–1339. doi:10.1016/j.spc.2021.02.035.
38. Matthes, M., and Kunkel, S. (2020). Structural Change and Digitalization in Developing Countries: Conceptually Linking the Two Transformations, *Technology in Society*, Vol. 63, 101428. doi:10.1016/j.techsoc.2020.101428.
39. Idroes, G. M., Rahman, H., Uddin, I., Hardi, I., and Falcone, P. M. (2024). Towards sustainable environment in North African countries: The role of military expenditure, renewable energy, tourism, manufacture, and globalization on environmental degradation, *Journal of Environmental Management*, Vol. 368, 122077. doi:10.1016/j.jenvman.2024.122077.
40. Tamanaha, B. Z. (2015). The Knowledge and Policy Limits of New Institutional Economics on Development, *Journal of Economic Issues*, Vol. 49, No. 1, 89–109. doi:10.1080/00213624.2015.1013881.
41. Klein, P. G. (1998). New Institutional Economics, *SSRN Electronic Journal*. doi:10.2139/ssrn.115811.
42. Noviandy, T. R., Idroes, G. M., and Hardi, I. (2024). Enhancing Loan Approval Decision-Making: An Interpretable Machine Learning Approach Using Lightgbm for Digital Economy Development, *Malaysian Journal of Computing (MJOC)*, Vol. 9, No. 1, 1734–1745. doi:10.24191/mjoc.v9i1.25691.
43. Teece, D. J. (2010). Business Models, Business Strategy and Innovation, *Long Range Planning*, Vol. 43, Nos. 2–3, 172–194. doi:10.1016/j.lrp.2009.07.003.
44. Tsamenyi, M., Sahadev, S., and Qiao, Z. S. (2011). The Relationship between Business Strategy, Management Control Systems and Performance: Evidence from China, *Advances in Accounting*, Vol. 27, No. 1, 193–203. doi:10.1016/j.adiac.2011.05.001.
45. Hardi, I., Idroes, G. M., Hamaguchi, Y., Can, M., Noviandy, T. R., and Idroes, R. (2024). Business Confidence in the Shift to Renewable Energy: A Country-Specific Assessment in Major Asian Economies, *Journal of Economy and Technology*. doi:10.1016/j.ject.2024.08.002.
46. Davis, S. J. (2015). Regulatory Complexity and Policy Uncertainty: Headwinds of Our Own Making, *SSRN Electronic Journal*. doi:10.2139/ssrn.2723980.
47. de Lucio, J., and Mora-Sanguinetti, J. S. (2022). Drafting “Better Regulation”: The Economic Cost of Regulatory Complexity, *Journal of Policy Modeling*, Vol. 44, No. 1, 163–183. doi:10.1016/j.jpolmod.2021.10.003.
48. Hardi, I., Ali, N., Duwal, N., Devi, N. C., Mardayanti, U., and Idroes, G. M. (2024). Business Confidence in Indonesia: Which Macroeconomic Factors Have Long-Term Impact?, *Indatu Journal of Management and Accounting*, Vol. 2, No. 1, 40–54. doi:10.60084/ijma.v2i1.203.
49. Immergluck, D., Lee, Y. S., and Terranova, P. (2012). Local Vacant Property Registration Ordinances in the U.S.: An Analysis of Growth, Regional Trends, and Some Key Characteristics, *SSRN Electronic Journal*. doi:10.2139/ssrn.2130775.
50. Szepter, S. (2007). The Right of Registration: Development, Identity Registration, and Social Security—A Historical Perspective, *World Development*, Vol. 35, No. 1, 67–86. doi:10.1016/j.worlddev.2006.09.004.
51. Walacik, M. (2024). Property Appraisal via Lens of Property Registration Abundance – Real Estate Market Asymmetry Assessment, *International Journal of Strategic Property Management*, Vol. 28, No. 6, 393–410. doi:10.3846/ijspm.2024.22686.
52. Hardi, I., Afjal, M., Can, M., Idroes, G. M., Noviandy, T. R., and Idroes, R. (2024). Shadow economy, energy consumption, and ecological footprint in Indonesia, *Sustainable Futures*, Vol. 8, 100343. doi:10.1016/j.sfr.2024.100343.
53. Nsabimana, R., Perelman, S., Walheer, B., and Mapapa, M. (2024). Effectiveness and Efficiency in Access to Reliable Electricity: The Case of East African Countries, *Socio-Economic Planning Sciences*, Vol. 93, 101898. doi:10.1016/j.seps.2024.101898.
54. Ayaburi, J., Bazilian, M., Kincer, J., and Moss, T. (2020). Measuring “Reasonably Reliable” Access to Electricity Services, *The Electricity Journal*, Vol. 33, No. 7, 106828. doi:10.1016/j.tej.2020.106828.
55. Shrimali, G., and Sen, V. (2020). Scaling Reliable Electricity Access in India: A Public-Private Partnership Model, *Energy for Sustainable Development*, Vol. 55, 69–81. doi:10.1016/j.esd.2020.01.006.
56. Bakry, W., Nghiem, X.-H., Farouk, S., and Vo, X. V. (2023). Does It Hurt or Help? Revisiting the Effects of ICT on Economic Growth

- and Energy Consumption: A Nonlinear Panel ARDL Approach, *Economic Analysis and Policy*, Vol. 78, 597–617. doi:10.1016/j.eap.2023.03.026.
57. Nghiem, X.-H., and Narayan, S. W. (2022). What Drives Persistently High Inflationary Pressures in Vietnam? Some Evidence from the New Keynesian Curve Framework, *Buletin Ekonomi Moneter Dan Perbankan*, Vol. 24, No. 4, 517–540. doi:10.21098/bemp.v24i4.1766.
  58. Idroes, G. M., Afjal, M., Khan, M., Haseeb, M., Hardi, I., Noviandy, T. R., and Idroes, R. (2024). Exploring the Role of Geothermal Energy Consumption in Achieving Carbon Neutrality and Environmental Sustainability, *Heliyon*, e40709. doi:10.1016/j.heliyon.2024.e40709.
  59. Sikdar, A., Bani, N. Y. binti M., Salimullah, A. H. M., Majumder, S. C., Idroes, G. M., and Hardi, I. (2024). Energy Poverty and Environmental Quality Nexus: Empirical Evidence from Selected South Asian Countries, *Ekonomikalia Journal of Economics*, Vol. 2, No. 2, 119–135. doi:10.60084/eje.v2i2.221.
  60. Agustina, E. (2021). The Enforcement of Administrative Law to Violation of Building Construction Permit Requirements for Business Activity, *Proceedings of the 1st International Conference on Science and Technology in Administration and Management Information, ICSTIAM 2019, 17-18 July 2019, Jakarta, Indonesia*, EAI. doi:10.4108/eai.17-7-2019.2303437.
  61. Sawant, V., and Kewate, S. (2024). Evaluation and Optimization of Processing Time for Construction Permits, *Challenges and Opportunities in Industrial and Mechanical Engineering: A Progressive Research Outlook*, CRC Press, 262–271.
  62. Churghulia, D. (2019). The Ways of Solving the Legislative and Practical Problems of Construction Permit in the Light of New Construction Code, *J. Law*, 259.
  63. World Bank. (2021). Starting a Business, from <https://archive.doingbusiness.org/en/data/exploretopics/startng-a-business>.
  64. World Bank. (2021). Dealing with Construction Permits, from <https://archive.doingbusiness.org/en/data/exploretopics/dealing-with-construction-permits>.
  65. World Bank. (2021). Getting Electricity, from <https://archive.doingbusiness.org/en/data/exploretopics/getting-electricity>.
  66. World Bank. (2021). Registering Property, from <https://archive.doingbusiness.org/en/data/exploretopics/registering-property>.
  67. Hardi, I., Ray, S., Attari, M. U. Q., Ali, N., and Idroes, G. M. (2024). Innovation and Economic Growth in the Top Five Southeast Asian Economies: A Decomposition Analysis, *Ekonomikalia Journal of Economics*, Vol. 2, No. 1, 1–14. doi:10.60084/eje.v2i1.145.
  68. Scott, A., Darko, E., Lemma, A., and Rud, J.-P. (2014). How Does Electricity Insecurity Affect Businesses in Low and Middle Income Countries, *Shaping Policy for Development*, Vol. 16, No. 1, 1–80.
  69. Ali, T., Nadeem, A., Alzahrani, A., and Jan, S. (2020). A Transparent and Trusted Property Registration System on Permissioned Blockchain, *2019 International Conference on Advances in the Emerging Computing Technologies (AECT)*, IEEE, 1–6. doi:10.1109/AECT47998.2020.9194222.
  70. Warton, D. I., Lyons, M., Stoklosa, J., and Ives, A. R. (2016). Three Points to Consider When Choosing a LM or GLM Test for Count Data, *Methods in Ecology and Evolution*, Vol. 7, No. 8, 882–890. doi:10.1111/2041-210X.12552.
  71. Nelder, J. A., and Wedderburn, R. W. M. (1972). Generalized Linear Models, *Journal of the Royal Statistical Society. Series A (General)*, Vol. 135, No. 3, 370. doi:10.2307/2344614.
  72. Hardi, I., Afjal, M., Khan, M., Idroes, G. M., Noviandy, T. R., and Utami, R. T. (2024). Economic freedom and growth dynamics in Indonesia: an empirical analysis of indicators driving sustainable development, *Cogent Economics & Finance*, Vol. 12, No. 1. doi:10.1080/23322039.2024.2433023.
  73. Hardi, I., Ringga, E. S., Fijay, A. H., Maulana, A. R. R., Hadiyani, R., and Idroes, G. M. (2023). Decomposed Impact of Democracy on Indonesia's Economic Growth, *Ekonomikalia Journal of Economics*, Vol. 1, No. 2, 51–60. doi:10.60084/eje.v1i2.80.
  74. Nghiem, X. H. (2020). *Essays on Vietnam's monetary policy*, Doctor of Philosophy, RMIT University.
  75. Nghiem, X.-H., and Narayan, S. W. (2022). What Drives Persistently High Inflationary Pressures in Vietnam? Some Evidence from the New Keynesian Curve Framework, *Buletin Ekonomi Moneter Dan Perbankan*, Vol. 24, No. 4, 517–540. doi:10.21098/bemp.v24i4.1766.
  76. Van Hinsberg, N., and Can, M. (2024). The Impact of Green Trade Openness on Air Quality, *Ekonomikalia Journal of Economics*, Vol. 2, No. 2, 105–118. doi:10.60084/eje.v2i2.198.
  77. Koenker, R., and Bassett, G. (1978). Regression Quantiles, *Econometrica*, Vol. 46, No. 1, 33. doi:10.2307/1913643.
  78. Haidar, J. I. (2012). The Impact of Business Regulatory Reforms on Economic Growth, *Journal of the Japanese and International Economies*, Vol. 26, No. 3, 285–307. doi:10.1016/j.jjie.2012.05.004.
  79. Kirkpatrick, C. (2014). Assessing the Impact of Regulatory Reform in Developing Countries, *Public Administration and Development*, Vol. 34, No. 3, 162–168. doi:10.1002/pad.1693.
  80. Hutter, B. M. (2011). Understanding the New Regulatory Governance: Business Perspectives, *Law & Policy*, Vol. 33, No. 4, 459–476. doi:10.1111/j.1467-9930.2011.00346.x.
  81. Jamasb, T., Thakur, T., and Bag, B. (2018). Smart Electricity Distribution Networks, Business Models, and Application for Developing Countries, *Energy Policy*, Vol. 114, 22–29. doi:10.1016/j.enpol.2017.11.068.
  82. Geginat, C., and Ramalho, R. (2018). Electricity Connections and Firm Performance in 183 Countries, *Energy Economics*, Vol. 76, 344–366. doi:10.1016/j.eneco.2018.08.034.
  83. Winkler, H., Simões, A. F., Rovere, E. L. la, Alam, M., Rahman, A., and Mwakasonda, S. (2011). Access and Affordability of Electricity in Developing Countries, *World Development*, Vol. 39, No. 6, 1037–1050. doi:10.1016/j.worlddev.2010.02.021.
  84. Bromley, D. W. (2009). Formalising Property Relations in the Developing World: The Wrong Prescription for the Wrong Malady, *Land Use Policy*, Vol. 26, No. 1, 20–27. doi:10.1016/j.landusepol.2008.02.003.
  85. Domeher, D., and Abdulai, R. (2012). Access to Credit in the Developing World: Does Land Registration Matter?, *Third World Quarterly*, Vol. 33, No. 1, 161–175. doi:10.1080/01436597.2012.627254.
  86. Enemark, S., Williamson, I., and Wallace, J. (2005). Building Modern Land Administration Systems in Developed Economies, *Journal of Spatial Science*, Vol. 50, No. 2, 51–68. doi:10.1080/14498596.2005.9635049.
  87. Bunnag, T. (2024). The Importance of Gold's Effect on Investment and Predicting the World Gold Price Using the ARIMA and ARIMA-GARCH Model, *Ekonomikalia Journal of Economics*, Vol. 2, No. 1, 38–52. doi:10.60084/eje.v2i1.155.
  88. Olkiewicz, M. (2022). The Impact of Economic Indicators on the Evolution of Business Confidence during the COVID-19 Pandemic Period, *Sustainability*, Vol. 14, No. 9, 5073. doi:10.3390/su14095073.
  89. Akpan, I. J., Udoh, E. A. P., and Adebisi, B. (2022). Small Business Awareness and Adoption of State-Of-The-Art Technologies in Emerging and Developing Markets, and Lessons from the COVID-19 Pandemic, *Journal of Small Business & Entrepreneurship*, Vol. 34, No. 2, 123–140. doi:10.1080/08276331.2020.1820185.