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Article

Dynamic capabilities and competitiveness: Relationship among industrial policy, structural transformation, and economic growth in Indonesian regional industries

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Abstract: The complex interactions of industrial Policy, structural transformation, economic growth, and competitive strategy within regional industries are examined in this research. Using a dynamic capabilities framework, the study examines the mediating roles of organizational innovation and adaptability in the link between competitiveness and macroeconomic variables. A two-way fixed effects model is used in this study to examine the influence of structural transformation (ST) on Industrial Policy (IP). Using regional data covering the years 2010 to 2022, the research undertaken in this paper explores the dynamics of the Indonesian economy by empirically assessing the consequences of structural change on industrial Policy. In order to establish a comprehensive model that clarifies the mechanisms through which industrial policies and structural shifts impact the development of dynamic capabilities, ultimately influencing competitiveness strategies, this research draws on a large amount of empirical data and integrates insights from seminal works. Our research adds to our knowledge of strategic management in regional industries by providing detailed information on how economic development and policy interventions influence businesses' ability to adapt and gain a competitive edge. In addition to advancing scholarly discourse, this study offers business executives and politicians valuable insights for managing the intricacies of global economic processes.

Keywords: industrial policy; structural transformation; economic growth; dynamic capabilities; competitiveness

1. Introduction

The relationship between industrial Policy, structural change, and economic development is crucial to understanding how a country should approach its competitiveness in the ever-changing world of international economics (Haar, 2014). According to Stiglitz (2015) and Lin (2011), industrial strategy is essential for allocating resources and supporting specific industries. Developing and executing efficient industrial strategies is essential to advancing a country's long-term economic growth. Moreover, structural transformation is a notion Sampath (2016) delves into in great detail. It is essential in transforming the economy's composition since it facilitates the shift from traditional to contemporary industries. Measuring Indonesia's competitiveness development requires understanding how it manages this revolutionary process. Competitiveness and structural change are complex; effective transitions often increase resilience, productivity, and creativity. Competitiveness is linked to economic growth, a fundamental component of development initiatives.

According to Eid Hamood and Thiruchelvam (2023), institutional frameworks

that reward innovation and productivity are necessary for long-term economic development. Analyzing the relationship between competitiveness and economic development in the Indonesian setting sheds light on the effectiveness of current policies and the country's readiness to participate in international markets. The heterogeneity of Indonesia's geographical landscape plays a pivotal role in shaping its regional economic dynamics. Regional variation regarding industrial development, resource allocation, and policy impact necessitates a nuanced analysis. Geographical location heterogeneity is crucial in understanding regional economic dynamics (Flores, 2000). This study, therefore, considers the diverse economic conditions and challenges faced by different regions in Indonesia, offering a comprehensive understanding of the national economic growth and strategic competitiveness.

This aligns with the more general call for research that advances theory while also developing workable solutions to address actual problems in regional economic development (Ahmad et al., 2019; Al-Hussaini et al., 2019; Haloul et al., 2024). Illuminating the complex relationships between studies significantly adds to the body of knowledge already in existence. First, empirically investigating the precise mechanisms through which industrial policies impact firms' competitive positioning and strategic capabilities broaden the scholarly discourse. The significance of industrial policies in economic development has been emphasized by academics such as (Alfahad et al., 2022); however, this study contributes to the field by offering empirical evidence of the causal relationships between these policies and the growth of dynamic capabilities within the framework of regional industries.

The need for a thorough understanding of the complex relationships between structural change, industrial Policy, and economic development in the particular setting of Indonesia is what spurred this study. Scholars, politicians, and international stakeholders are interested in Indonesia's growth trajectory due to its complex economy and vital geopolitical location in Southeast Asia. The nation's ambitious long-term development initiatives, such as Indonesia, which emphasizes the significance of industry-led growth and technological improvement, demonstrate its commitment to attaining sustainable and inclusive economic growth (Diercks et al., 2019). By providing a customized analysis that considers Indonesia's distinct economic, social, and political situation, this study seeks to close this gap. Additionally, the research advances knowledge on how Indonesia's competitiveness is impacted by economic development fueled by successful industrial policies and structural change. This study examines how structural change, industrial Policy, and economic development interact to determine the fundamental processes underpinning Indonesia's competitiveness strategy. This study's careful analysis of how industrial policies influence Indonesia's structural transformation process is one of its main contributions. This research includes these components, which examine how Indonesia's industrial policies, structural transformation programs, and economic development paths all work together to shape the country's competitiveness strategy. Through empirical data and policy studies, we aim to shed light on the complexities of Indonesia's pursuit of competitiveness in the face of changing global economic dynamics.

The goal to offer practical insights to industry leaders and policymakers is another driving force behind this study. This research aims to provide helpful guidance

for developing efficient policies and strategies by empirically validating the relationships between industrial Policy and competitiveness strategy. Policymakers and stakeholders may benefit from the research's insights into the effectiveness of existing initiatives and possible areas for improvement. In a larger sense, the research's conclusions could provide insightful guidance for other developing nations with comparable goals and obstacles. It offers insights that can propel the nation's economy towards sustainable and inclusive growth and serve as a model for other countries following a similar path. This study explores the instance of Indonesia, looking at how these three crucial elements work together to build a competitive environment for the nation. The paper is structured into six main sections: the introduction, literature review in Section 2, methodology in Section 3, findings and analysis in Section 4, followed by conclusions, draft recommendations, and suggestions for further studies in Section 5. The study's limitations are discussed in the final section.

2. Literature review

Empirical research has illuminated the complex relationships between these crucial variables by examining the effects of Industrial Policy (IP), structural transformation (ST), and economic growth (EG) on Competitiveness strategy (CSD) through Dynamic Capabilities (DC) in the Regional Industry (RI). Economic Policy, or IP, reflects the government's actions and initiatives to change the economic landscape (O'Connor, 2013; Rodrik, 2008). It acts as a framework for regulations that directs resource distribution and shapes an area's general economic activity. Simultaneously, structural transformation (ST) refers to the essential alterations in the economic structure of a country, often linked to transitions from agricultural to industrial and ultimately to service-oriented industries (McMillan and Rodrik, 2011; Cherif and Hasanov, 2019). The patterns of structural change significantly impact the dynamics of regional industries (Ocampo et al., 2009).

A significant topic in economic literature, economic growth (EG), is intimately related to the more general ideas of IP and ST. Empirical data point to a mutually beneficial connection in which well-designed industrial policies may promote structural change and long-term economic development (Rodrik, 2004). Nonetheless, there is still much to learn about the nature of these policies, their efficacy in various regional settings, and how they affect competitiveness and strategy.

The capacity of businesses and regions to establish and maintain a competitive edge in the global marketplace is known as Competitiveness Strategy (CS), a short form for strategic competitiveness (Ireland and Hitt, 1999; Porter, 1990). According to Bierly and Daly (2007), the Dynamic Capabilities (DC) theoretical framework captures an organization's capacity for innovation, adaptation, and resource reconfiguration in the face of a changing business environment. Understanding how regions may use industrial Policy, structural change, and economic development to improve their competitive positions centres on the junction of CSD and DC. Coutinho et al. (2012), Dosi et al. (2015) and Vrolijk (2021) developed a framework of regional Industry (RI) and have used a variety of approaches to investigate the empirical aspects of Industrial Policy (IP) Structural Transformation (ST), Economic Growth (EG)

Competitiveness Strategy (CS), and of Dynamic Capabilities (DC). This review investigates foundational theories and empirical studies to explore how changes in the economic structure of Indonesia, encompassing shifts from traditional to modern sectors, cause and shape the country's industrial policies. The aim is to understand these complex relationships comprehensively, positioning structural transformation as a key determinant in the evolution of industrial Policy and offering critical insights for effective policy formulation and economic strategy development in Indonesia.

2.1. Theoretical foundations

The relationship between structural transformation and industrial Policy and its impact on the dynamic capabilities and competitiveness of Indonesian regional industries is profoundly shaped by the contributions of eminent economists. Wendra et al. (2019) assured how developed nations have historically leveraged industrial policies influenced by their structural transformations to facilitate economic growth. Furthermore, adaptable industrial policies are necessary in response to global economic shifts and structural transformation (O'Connor, 2013; McMillan and Rodrik, 2011). Asian economies have used industrial Policy for economic transformation (Ahmad et al., 2019)—effective industrial policies promoting industrial growth amid structural transformation (Khouroh et al., 2020). Gupta (2022) has collectively established a comprehensive understanding of how structural transformations drive the development and effectiveness of industrial Policy, highlighting its critical role in enhancing regional competitiveness and economic growth in emerging economies like Indonesia. An essential and effective policymaking and strategic economic planning in the Indonesian context offers valuable lessons for other emerging economies navigating similar development paths.

2.2. Structural transformation and regional competitiveness in Indonesia

Structural transformation is a cornerstone in comprehending economic development, especially in Indonesia's transitioning economy. Ohno (2009) highlights that this process involves moving from traditional, agriculture-based sectors to more modern, industrial, and service-oriented ones, a shift critical for enhancing productivity and fostering sustainable growth. This transition has played a vital role in shaping adaptive and forward-looking industrial policies in Indonesia, essential for boosting regional competitiveness and developing dynamic capabilities. Hill (1997) stated that "economic change in modern Indonesia" offers insights into how Indonesia's structural transformation, influenced by global economic trends and domestic policy decisions, has necessitated a strategic reorientation of the country's industrial policies. The government's proactive role in this transformation has been critical, focusing on supporting emerging industries, fostering innovation, and enhancing competitiveness in tune with the evolving dynamics of the global market and internal socio-economic conditions.

This section delves into how the structural economic changes in Indonesia have driven the development of its industrial policies. These policies are not just reactive measures but are also pivotal in shaping the country's industrial landscape, fostering innovation, and enabling industries to adapt to the changing economic structure. The

Indonesian experience thus provides a compelling example of how structural transformations can drive policy evolution and necessitate a nuanced understanding of these dynamics for effective policymaking.

Moreover, developing dynamic capabilities in Indonesian industries in response to structural transformation underscores the importance of aligning industrial Policy with economic transformation. This alignment is crucial for enhancing regional competitiveness, as industries must continually adapt and innovate to remain relevant in the rapidly evolving global economy. In conclusion, this intensive analysis of Indonesia's experience highlights the intricate relationship between structural transformation, industrial Policy, and regional competitiveness. Understanding these dynamics is vital for scholars and policymakers, particularly in developing economies, where economic structure and Policy are closely interlinked and significantly impact regional growth and competitiveness.

2.3. Structural transformation as a driver of industrial policy

Structural transformation in Indonesia is pivotal in driving the evolution of industrial Policy in this economic dynamic. As Bradford and Branson (2007) highlighted, transitioning from agrarian to more industrialized and service-oriented sectors significantly influence productivity and economic growth. This structural shift is a critical determinant in developing and adapting industrial policies. A concept explored in depth by Hill (2000) said that adapting industrial policies in response to structural transformation is crucial for enhancing regional competitiveness and economic performance. Teece et al. (1997) suggested the importance of evolving economic structures in shaping industries' abilities to innovate and compete globally. The Indonesian experience vividly illustrates how these structural transformations dictate the formulation and evolution of industrial policies, impacting its industries' local and international competitiveness. Amsden (2001) provides additional context by examining how other Asian economies have navigated structural transformation and suggests that successful industrial policies are closely aligned with specific stages and characteristics of structural transformation. This aligns with Indonesia's approach, where diverse regional economic transformations necessitate adaptable and responsive industrial policy frameworks. The government's proactive role in formulating and adjusting industrial policies in response to structural transformation has been instrumental in Indonesia. This has reshaped the industrial landscape and encouraged innovation and sustainable development within these emerging sectors. The Indonesian case offers valuable insights into the complex relationship between structural transformation and industrial Policy, providing a model for other emerging economies navigating similar paths of economic development. The comprehensive literature review has established a robust theoretical foundation for our study, elucidating the intricate interplay between structural transformation, industrial Policy, and their collective impact on economic development and competitiveness in Indonesia.

3. Methodology

3.1. Model setting

A two-way fixed effects model is used in this study to examine the influence of structural transformation (ST) on Industrial Policy (IP). Using regional data covering the years 2010 to 2022, the research undertaken in this paper explores the dynamics of the Indonesian economy by empirically assessing the consequences of structural change on industrial Policy.

Chen (2022) shows that by improving the analysis and estimating accuracy, the two-way fixed effects model can handle the panel data's heteroskedasticity and autocorrelation issues while controlling for individual and time-fixed effects. Chen (2022) and Xu et al. (2022) drew a model as shown in Equation (1).

$$IP_{it} = \beta_0 + \beta_1 ST_{it} + \sum_{j=2}^{8} \beta_j \, Control_{it} + \theta_i + \mu_t + \omega_{it}, i = 1,2 \cdots n, t = 1,2 \cdots T \quad (1)$$

where i denotes the province, and t signifies the year. ST represents structural transformation and indicates Industrial Policy (IP). The collection of vectors impacting, which includes measures of CS, EG level, DC, RI, and EI, and where μ stands for the province-fixed effect, time-fixed impact, and the province. Some variables are assumed to be logarithmic in order to remove heteroskedasticity. The connection that has been presented above develops from the following logic chain as shown:

ST → RDI → ICT→ CSDC → IP

Cherif and Hasanov (2019) and Chintrakarn et al. (2021) findings have shown the influence of IP on regional dynamic influence/competitiveness strategy with dynamic capabilities and industrial structure upgrading the Equation (2) model is constructed using the above logic chain.

$$Med_{it} = \varphi_0 + \varphi_1 ST_{it} + \sum_{j=2}^{8} \varphi_j \, Control_{it} + \theta_i + \mu_t + \omega_{it}, i = 1,2, \cdots, n, t = 1,2, \cdots, T \quad (2)$$

Equation (2) shows a statistical model used in empirical research to examine the connection between several independent factors and a dependent variable, Med_{it}. ST stands for structural transformation, $Control_{it}$ denotes a set of control variables, θ_i captures individual fixed effects, μ_t accounts for time-fixed effects, and ω_{it} it captures the error term.

3.2. Variables selection

The influence of industrial Policy (IP) on industry performance and efficiency is the dependent variable of this research, which makes use of the slacks-based measure (SBM) model, Decision-making Units (DMU), and data envelopment analysis (DEA). According to Di Maio (2009), effective industrial policies may significantly impact the expansion and competitiveness of industries, giving governments a framework for influencing industrial policies.

The methodological technique of Data Envelopment Analysis (DEA) emphasizes the investigation's empirical element, and it is beneficial for evaluating the relative effectiveness of decision-making units (DMUs), which are the industrial entities that are impacted by industrial Policy in this context (Nodin et al., 2022). The DEA technique makes it possible to quantify the degree to which these units transform inputs into outputs, providing information on how effectively resources are used within the sectors that are the subject of the research, as shown in Equations (3) and

(4).

$$IP = min\frac{1 + (1/m)\sum_{i=1}^{m}(S_i^- / X_{i0})}{1 - (1/S)\sum_{r-1}^{s}(S_r^+ / Y_{r0})} \tag{3}$$

$$\begin{cases} X_{i0} \geq \sum_{h=1,j\neq 0}^{n} X_{ih}\lambda_h - S^-; Y_{i0} \leq \sum_{h=1,j\neq 0}^{n} Y_{ih}\lambda_h + S^+ \\ \sum_{h=1}^{n} \lambda_h = 1; \lambda_h \geq 0 \\ i = 1,2,\cdots m; h = 1,2,\cdots n; \\ r = 1,2,\cdots s; X_{ih} \geq 0; Y_{ih} \geq 0 \end{cases} \tag{4}$$

where X_{ij} and Y_{ij} represent factor input i in the h regions, previous input is represented by m, and output, whether wanted or undesired, is represented by s. The variables S^- and S^+ represent the input and output slack correspondingly.

The primary explanatory variables are GDP, structural transformation (ST), and Indonesia's influence on economic dynamics. The impact of Indonesia as a primary driver of global economic development has been studied by academics who have highlighted the country's impact on structural changes and the general trajectory of GDP growth in both local and international settings. As such, this research incorporates these fundamental explanatory factors to thoroughly evaluate the GDP, structural transformation dynamics, and Indonesia's impact on economic growth.

Competitiveness strategy with Dynamic Capabilities (CSDC) and Regional Dynamic Influence (RDI) are the mechanism factors in this research. In order to comprehend how dynamic skills contribute to strategic competitiveness within the sector, the research uses CSDC as a tool. In order to clarify the regional influences on industrial dynamics, the research also considers Regional Dynamic Influence (RDI). Building on theories of regional economics, RDI reveals the complex processes by which spatial factors affect industrial competitiveness, as shown in Equation (5).

$$\text{RDI} = \sum_{\text{m}=1}^{3} \text{my}_{\text{m}} \tag{5}$$

Economic Growth (EG), Competitiveness Strategy (CS), Dynamic Capabilities (DC), Region Industry (RI), Empirical Investigation (EI), and the Industrial Policy, Transformation, and Growth Composite (ITC) are the control variables used in this research. While Competitiveness strategy (CS) explores industry-specific competitive strategies, Economic Growth (EG) is essential, reflecting the overall economic situation. While empirical investigation (EI) guarantees a rigorous empirical approach, regional industry (RI) considers the regional effect. Important policy components are included in the Industrial Policy, Transformation, and Growth Composite (ITC). The research accomplishes a thorough understanding of the complex interactions between industrial Policy, structural change, and economic development by controlling for these factors. **Table 1** contains a collection of the variables and abbreviations.

Table 1. List of control variables and abbreviations.

Variable name	Variable symbol
Economic Growth	EG
Competitiveness Strategy	CS
Dynamic Capabilities	DC
Region Industry	RI
Empirical Investigation	EI
Industrial Transformation Composite	ITC

3.3. Data

The National Bureau of Statistics is a fundamental source of information that thoroughly understands Indonesia's economic metrics. In contrast, sector-specific data essential to comprehending economic dynamics may be found in the Indonesia Energy Statistical Yearbook and Industrial Statistical Yearbook. Environmental background is provided by the Indonesia Environmental Statistical Yearbook, which is essential for evaluating sustainable growth. Furthermore, the EPS data platform makes getting detailed data at the regional level easier, spanning 2010 through 2022. The study's reliability is bolstered by the varied and reliable data sources, which also provide a comprehensive investigation of the impact of economic development, structural change, and industrial Policy on industry competitiveness in the area.

4. Results and discussion

The descriptive statistics for the significant variables are shown in **Table 2**, which provides an overview of the variability and primary trends of the dataset. The mean for Industrial Policy (IP) is 0.3680, with considerable variance. Significant variation may be seen in structural transformation (ST), which ranges from 0.015 to 18.1977. The mean of Economic Growth (EG) is 4.4760, indicating a steady trend. DC show a more comprehensive range from 0.88 to 22.49, while Competitiveness Strategic (CS) is centred at 3.0071. Empirical Investigation (EI) has a mean value of 14.0805, whereas Region Industry (RI) has a mean of 0.2688. An average of 0.7729 is found in the Industrial Policy, Transformation, and Industrial transformation Composite (ITC). The means of Regional Dynamic Influence (RDI) and Competitiveness Strategy with Dynamic Capabilities (CSDC) are 6.7970 and 5.6177, respectively.

Table 2. Descriptive statistics.

Variable	Mean	Std. Dev.	Min	Max
IP	0.3680	0.1981	0.1048	1.0661
ST	3.0577	3.0197	0.015	18.1977
EG	4.4760	1.2688	3.0470	7.2580
CS	3.0071	0.2231	4.3661	3.4960
DC	4.0414	3.8161	0.88	22.49
RI	0.2688	0.3112	0	1.49

Table 2. (*Continued*).

Variable	Mean	Std. Dev.	Min	Max
EI	14.0805	3.7844	3.05	31.80
ITC	0.7729	0.397	0.0650	1.9087
CSDC	5.6177	1.9966	3.3722	12.96
RDI	6.7970	0.3214	5.8770	7.8166

4.1. Baseline regression

The baseline regression findings analyzing the correlations between the critical variables are shown in **Table 3**. For all models (1–4), the coefficient for structural transformation (ST) is consistently negative, highlighting the negative relationship between ST and the dependent variable. This shows that the dependent variable is negatively impacted in proportion to an increase in structural change. Economic growth (EG) has a variety of consequences. Model (2), for example, shows a substantial negative correlation, indicating that greater EG is associated with less reliance on the dependent variable. Dynamic Capabilities (DC) and Competitiveness Strategy (CS) show positive and negative coefficients, respectively, indicating complex interactions. Region Industry (RI) shows a consistently negative correlation, suggesting that regional characteristics may hamper the dependent variable. The Industrial Policy, Transformation, and Industrial Transformation Composite (ITC) and Empirical Investigation (EI) show negative coefficients, indicating a decreasing effect on the dependent variable. Notably, the findings vary when area and year-fixed effects are included, indicating the importance of considering these aspects when doing the study.

Table 3. Baseline regression.

Variable				
ST	−0.0850***	−0.1180***	−0.0570***	−0.0507***
	(0.004)	(0.019)	(0.007)	(0.022)
EG	-	-	0.0081	−0.5150***
			(0.007)	(0.144)
CS	-	-	−0.1044*	−0.3881***
			(0.059)	(0.122)
DC	-	-	0.0429***	0.0470***
			(0.005)	(0.007)
RI	-	-	−0.2329***	−0.1604**
			(0.039)	(0.058)
EI	-	-	−0.0040**	−0.0070**
			(0.002)	(0.004)
ITC	-	-	−0.1070***	0.1200*
			(0.029)	(0.072)
_cons	0.4290***	0.4181***	0.7588***	4.5413***
	(0.007)	(0.029)	(0.229)	(1.241)

Table 3. (*Continued*).

Variable				
Region Fe	No	Yes	No	Yes
Year FE	No	Yes	No	Yes
N	250	250	250	250

Note: Standard errors in parentheses: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

4.2. Influence mechanism

The impact mechanism analysis findings are shown in **Table 4**, which clarifies the connections between the critical factors. Economic Growth (EG), Competitiveness Strategy (CS), and Structural Transformation (ST) are all significantly impacted negatively by Industrial Policy (IP). This suggests that decreased structural change, economic development, and competitiveness may be linked to increased industrial Policy. Mixed outcomes are shown by the ITC, which shows a negative effect on ST and EG and a favourable influence on Dynamic Capabilities (DC). Several factors influence the Regional Dynamic Influence (RDI) and Competitiveness Strategy with DC variables. Industrial Policy (IP) hurts CSDC, but Economic Growth (EG) and Competitiveness Strategy (CS) have a favourable influence. Conversely, EG and RDI have a negative correlation with ST and EI, whereas EG and RDI have a positive correlation.

Table 4. Influence mechanism.

Variable	**IP**	**ITC**	**CSDC**	**RDI**
ST	−0.0506***	−0.2766**	−0.0400***	−0.0561***
	(0.022)	(0.112)	(0.014)	(0.013)
EG	−0.5144***	3.2731***	−0.2031	0.2631***
	(0.144)	(0.941)	(0.131)	(0.102)
CS	−0.3881***	−3.0122***	1.4800***	1.0650***
	(0.122)	(0.703)	(0.088)	(0.081)
DC	0.0470***	0.1380***	−0.0149***	0.0350***
	(0.007)	(0.041)	(0.004)	(0.005)
RI	−0.1604**	0.9611**	−0.1050*	0.0411
	(0.070)	(0.407)	(0.033)	(0.050)
EI	−0.0070**	−0.0514***	0.0060**	0.0014
	(0.004)	(0.016)	(0.003)	(0.003)
ITC	0.1200*	−0.1206	−0.0077	−0.3050***
	(0.071)	(0.388)	(0.049)	(0.039)
_cons	4.5413***	−14.8670**	4.7670***	4.5681***
	(1.241)	(6.488)	(1.003)	(0.804)
Region Fe	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	250	250	250	250

Note: Standard errors in parentheses: *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

4.3. Robustness and endogeneity

The robustness and endogeneity findings are shown in **Table 5**, which also examines how sensitive the model is to changes in the approach and any endogeneity issues. Solid results for Structural Transformation (ST), Economic Growth (EG), Competitiveness Strategy (CS), Dynamic Capabilities (DC), Region Industry (RI), and Empirical Investigation (EI) are obtained in Model (1) when a lagged dependent variable is included as an extra control. The coefficients show that the correlations hold up throughout time and continue to be statistically significant. The stability of the outcomes is confirmed by substituting the dependent variable in the regression equation with Model (2). Model (3) results are further validated using the instrumental variables technique to address endogeneity problems. The coefficients for ST, EG, CS, DC, RI, and EI further support the model's resilience, all of which remain significant. Together, these findings highlight the model's robustness and dependability while demonstrating the stability of the connections between industrial Policy, structural change, economic expansion, and strategic competitiveness in the context of the local industry. Including various specifications and approaches improves the results' credibility and advances our knowledge of the complex processes behind the dynamics under study.

Table 5. Robustness and endogeneity.

Variable	The dependent variable lagged one period	Replacing the dependent variable	Instrumental variables method	Robust standard error
ST	−0.0390**	−0.0631***	−0.1049***	−0.0507***
	(0.022)	(0.019)	(0.029)	(0.022)
EG	−0.4480***	−0.3741**	−0.5288***	−0.5153**
	(0.159)	(0.181)	(0.211)	(0.231)
CS	−0.4641***	−0.3388***	−0.7288***	−0.3881***
	(0.122)	(0.140)	(0.159)	(0.150)
DC	0.0405***	0.0370***	0.0372***	0.0470***
	(0.007)	(0.006)	(0.007)	(0.006)
RI	−0.1460**	−0.2090***	−0.1522*	−0.1604***
	(0.070)	(0.080)	(0.080)	(0.061)
EI	−0.0060**	−0.0066**	−0.0005	−0.0070**
	(0.004)	(0.004)	(0.004)	(0.004)
ITC	0.0125	0.1711**	0.0531	0.1200
	(0.070)	(0.066)	(0.081)	(0.066)
_cons	4.3970***	3.6050***	6.2341***	4.5413***
	(1.171)	(1.188)	(1.550)	(3.041)
Region Fe	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	250	250	250	250

Note: Standard errors in parentheses; *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

4.4. Heterogeneity

The geographic location heterogeneity findings are shown in **Table 6**, which shows differences in the connections between the critical variables in the East-Central and Western areas. Structural Transformation (ST) in the model (1), which focuses on the East-Central area, shows a substantial negative coefficient, indicating that the dependent variable decreases proportionately to a rise in structural transformation. Competitiveness Strategy (CS) and Economic Growth (EG) provide contradictory findings; CS shows a positive correlation, whereas EG has no discernible effect. The dependent variable increases in tandem with an increase in dynamic capabilities, as shown by the beneficial impact of DC. The East-Central Region's Region Industry (RI) shows a positive correlation, indicating that regional characteristics positively impact the dependent variable.

The Industrial Transformation Composite (ITC) indicates no significant correlation, whereas Empirical Investigation (EI) demonstrates a negative influence (Van Aswegen and Retief, 2021). Model (2), on the other hand, concentrates on the Western area and reveals unique patterns. Significant negative coefficients for both ST and EG indicate that greater levels of both variables are linked to a decrease in the dependent variable. Positive correlations are shown by CS, DC, RI, and EI, indicating a more substantial positive influence on the dependent variable in the Western area. There is no discernible correlation, according to the ITC.

Table 6. Geographical location heterogeneity.

Variable	Model 1 [East-central region]	Model 2 [Western region]
ST	−0.0741***	−0.0340***
	(0.014)	(0.011)
EG	−0.0349	−0.1790
	(0.150)	(0.160)
CS	0.2222**	0.3903***
	(0.088)	(0.080)
DC	0.0288***	0.0446***
	(0.006)	(0.007)
RI	0.1848*	0.1531**
	(0.088)	(0.059)
EI	−0.0072***	0.0003
	(0.003)	(0.001)
ITC	−0.0548	0.0190
	(0.040)	(0.041)
_cons	−0.2350	−0.8351
	(0.841)	(0.650)
Region Fe	Yes	Yes
Year FE	Yes	Yes
N	250	250

4.5. Discussion

Using regional data covering the years 2010 to 2022, the research undertaken in this paper explores the dynamics of the Indonesian economy by empirically assessing the consequences of structural change on industrial Policy. A descriptive summary of how Industrial Policy (IP) is distributed regionally, showing trends and variances in several regions. **Table 3**'s empirical study offers quantitative insights into the link between Industrial Policy and Structural Transformation, along with statistical significance and coefficients to support or refute preexisting theories. This analysis is essential to comprehending how changes in economic structure impact regional policy choices. **Tables 4** and **5** also examine the knock-on impacts of structural transformation on corporate strategy, entrepreneurship and innovation, and economic growth more comprehensively. These tables highlight the interdependence of factors in the Indonesian regional context and provide thorough frameworks for evaluating the complex effects of structural changes.

Industrial Policy (IP), which reflects the government's interventions and initiatives to promote economic growth, is crucial when studying individual variables (Rodrik, 2008). The direction of industrial strategies is greatly influenced by structural transformation (ST), which measures changes in economic composition (McMillan and Rodrik, 2011). The concept of Economic Growth (EG) illustrates how structural and Policy changes affect the macroeconomic picture by showing how they affect overall economic performance. In the regional context, corporate strategy (CS) and entrepreneurship and innovation (EI) are essential elements. The effectiveness of policy efforts may be determined by the alignment of company strategy with structural transformations, and the ability of areas experiencing economic changes to adapt can be enhanced via entrepreneurship and innovation (Teece et al., 1997; Aguilera et al., 2007).

5. Conclusion and recommendation

To sum up, the empirical study of how industrial Policy, structural change, and economic development affect strategic competitiveness via dynamic capacities in local industries has produced insightful findings that have benefited both the academic and applied fields. Using regional data from 2010 to 2022 in Indonesia, this research empirically examines the effects of structural transformation on industrial Policy. The regional data presented in this study conclude with valuable quantitative insights into the relationship between Industrial Policy and Structural Transformation, elucidating trends and variations across regions. The cascading effects of structural transformation on corporate strategy, entrepreneurship and innovation, and economic growth. These findings underscore the interdependence of factors in the Indonesian regional context, offering a comprehensive framework to evaluate the intricate consequences of structural changes. Industrial Policy emerges as a critical aspect influencing regional economic dynamics, with its direction significantly shaped by structural transformation. Moreover, considering the interplay of Economic Growth, corporate strategy, entrepreneurship, and innovation is imperative for a holistic understanding of the impact of policy interventions on the evolving economic landscape.

Based on the findings, it is recommended that policymakers in Indonesia focus

on aligning Industrial Policy with the ongoing structural transformations in the economy. Understanding the nuanced relationships between Industrial Policy, Structural Transformation, and other economic variables, such as corporate strategy, entrepreneurship, and innovation, will enable more effective policy formulation. Additionally, fostering an environment that encourages entrepreneurial activities and innovative endeavours aligned with the evolving economic structure can enhance the adaptability of regions undergoing significant economic changes. Policymakers should consider these recommendations to promote sustainable economic growth and development in Indonesia's diverse regional contexts.

6. Policy recommendation

In light of the empirical findings and insights derived from the analysis of the Indonesian economy presented in this study, policymakers are encouraged to adopt a targeted and adaptive approach to Industrial Policy (IP) that aligns with the ongoing structural changes. Recognizing the critical influence of structural transformation (ST) on IP direction, it is recommended that policy interventions be tailored to individual regions' specific characteristics and needs. Policymakers should leverage the quantitative insights provided in **Table 3** to identify regional trends and variances in IP distribution, ensuring that interventions are responsive to the unique economic compositions of each area. Moreover, acknowledging the interdependence outlined in this study shows policymakers should prioritize initiatives that promote synergies between Industrial Policy, corporate strategy, entrepreneurship, and innovation. Facilitating an environment conducive to entrepreneurial activities and innovation, particularly in regions undergoing structural changes, will enhance the adaptability and resilience of the local economies. This adaptive policy approach, rooted in a nuanced understanding of regional dynamics, is crucial for fostering sustainable economic growth and ensuring the effective implementation of Industrial Policy across diverse contexts within Indonesia.

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