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Unlocking innovation: Governance and firm-level innovation in selected Asian countries

Aloysius Gunadi Brata[1]
Pristanto Silalahi[2]
Ronny Prabowo[3]
Billie Ariyanta Hartono[4]

Abstract

This study examines the association between governance and firm-level innovation in Indonesia and Philippines, offering insights for escaping the Middle-Income Trap (MIT). Using the 2023 World Bank Enterprise Surveys (WBES), we estimate cross-sectional logit models with stratified analyses by sector and firm size. Our findings reveal that while burdensome tax administration and informal payments are negatively associated with innovation in Indonesia, these payments paradoxically show a positive association in the Philippines, reflecting firms' strategic adaptation to weak formal institutions. Across both countries, worker training emerges as the most consistent innovation driver, regardless

Keywords

- innovation
- governance
- middle-income trap

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[1] Faculty of Business and Economics, Atma Jaya Yogyakarta University, Jalan Babarsari No. 43, Yogyakarta, Indonesia, 55281, corresponding author: gunadi.brata@uajy.ac.id, https://orcid.org/0000-0001-5058-3900.

[2] Faculty of Business and Economics, Atma Jaya Yogyakarta University, Jalan Babarsari No. 43, Yogyakarta, Indonesia, 55281, pristanto.silalahi@uajy.ac.id, https://orcid.org/0000-0002-2698-7339.

[3] Faculty of Economics and Business, Satya Wacana Christian University, Jalan Diponegoro No. 52-60, Salatiga, Indonesia, 50711, ronny.prabowo@staff.uksw.edu, https://orcid.org/0000-0003-0785-3156.

[4] Faculty of Business and Economics, Atma Jaya Yogyakarta University, Jalan Babarsari No. 43, Yogyakarta, Indonesia, 55281, billiearyanta612@gmail.com, https://orcid.org/0009-0005-2703-6497.

of sector or firm size. By providing the first 2023 WBES-based comparison of how formal and informal governance obstacles shape firm-level innovation in two ASEAN economies, this study identifies critical pathways for governance reform and innovation-led growth.

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Introduction

The middle-income trap (MIT) is a crucial problem facing many developing economies (Islam et al., 2023). The World Development Report (World Bank, 2024) emphasises that achieving high-income status necessitates a strategic recalibration around investment, infusion, and innovation (the 3i). To emulate successful development models, countries need to begin with robust investment, followed by the infusion of foreign technologies, and culminating in a balanced strategy that fosters domestic innovation. Central to this transition is the cultivation of a vibrant innovative ecosystem that can sustain long-term growth and global competitiveness.

Existing studies highlight innovation and governance as crucial factors in overcoming MIT. Paus and Robinson (2022) underscore that increased and broad-based innovation is the cornerstone for escaping MIT, in which government support plays a pivotal role. Similarly, Kharas (2013) argues that MIT is fundamentally a governance failure stemming from an inability to adopt a long-term, holistic perspective. Avoiding the trap requires sustained effort over a decade or more, encompassing transparent and accountable public institutions with a necessity to shift the "rule of man" to the "rule of law". Doner and Schneider (2016) claim that MIT arises from institutional challenges implying that politics is more crucial than economics in explaining MIT. Additionally, Andreoni and Tregenna (2020) also argue that escaping MIT depends not only on innovation capacity but also on a governance structure that supports the implementation of industrial policies. Moreover, Bhattacharya and Rath (2020) suggest the importance of innovation activities in spurring productivity that would bolster firms' growth.

However, the nexus between governance and innovation remains complex and contested. Specifically, the literature distinguishes between formal governance and informal governance, which can shape firm behaviour in different and sometimes opposing ways (North, 1993; Williamson, 1985). Jia et al. (2019)

highlight the impact of agency risk on innovation, differentiating between the quantity and novelty of innovation and demonstrating how conventional corporate governance tools depend on public governance. Sivak et al. (2011) provide empirical evidence that good governance, while generally beneficial, can have nuanced effects. For instance, bureaucratic barriers can discourage direct innovation, pushing firms towards technology licensing, while corruption represses R&D. Interestingly, they also note a potential negative impact of overly efficient courts on innovation and R&D, suggesting the need for a balanced approach. Furthermore, regional infrastructure, heavily influenced by government policy, also emerges as a decisive determinant of innovation outcomes.

While these studies highlight the importance of governance, much of the literature remains focused on developed economies or broad national-level indicators. Dunyo and Odei (2023), for instance, explain the specific aspects of the business environment that influence firm-level innovation. They find that policy instability, weak legal institutions, corruption, and informal competition negatively impact non-technological innovations. Conversely, formal training, foreign technology licenses, and R&D investments enhance both technological and non-technological innovations. These findings underscore the importance of targeted policy interventions to create a conducive environment for innovation. Similarly, Bobillo et al. (2018), drawing on data from advanced economies, show that corporate governance capability is a key factor in supporting a firm's innovation capacity. Moreover, they reveal that corporate governance drivers such as executive incentives and the presence of independent non-executive directors influence a firm's innovation capacity. Based on case studies from China, Brazil, and South Africa, Andreoni and Tregenna (2020) highlight how innovation policy outcomes are influenced by governance quality. Other interesting findings are from Weng et al. (2021) that find that perceived constraints from the governmental system increase firms' propensity to innovate, while the prevalence of bribery make firms more likely to be non-innovators.

Yet these findings have limited applicability in a context like Southeast Asia, where the institutional capacities, political dynamics, and development stages differ significantly. For instance, focusing on the issues of the MIT for the ASEAN-4 countries (Indonesia, Malaysia, Thailand, and the Philippines), Kumagai (2019) uses the viewpoint of the trade structure, instead of the link between governance and innovation. Importantly, these four countries are defined by the World Bank as countries that failed to overcome the MIT (Ke, 2024)

This study addresses this gap by examining the association between governance and firm-level innovation in two selected Asian countries, namely Indonesia and Philippines, which are struggling with the challenges of the MIT but are situated at different income levels. Indonesia has reached upper middle-income status, while the Philippines remains in the lower middle-income group. Both nations face structural challenges such as archipelagic geogra-

phy, large populations, political contestation, and persistent levels of poverty and inequality. According to the WIPO's Global Innovation Index, out of 139 countries, Indonesia ranks 55th with the score of 31.3 and Philippines ranks 50th with the score of 33.6 (WIPO, 2024).

This paper aims to address four research questions (RQ):

RQ1: Are formal governance obstacles associated with firm-level innovation?
RQ2: Are informal governance practices associated with firm-level innovation?
RQ3: Are firm-level internal capabilities associated with firm-level innovation?
RQ4: Do the associations between governance and firm-level innovation differ across sectors (manufacturing, retail services, other services) and firm size (small, medium, large)?

By examining the specific mechanism through which governance is associated with firm-level innovation within Indonesia and the Philippines, this paper offers a contribution to the MIT debate. Specifically, it advances a comparative ASEAN perspective, frames governance through the balance between the "rule of law" and the "rule of man", generating context-specific, policy relevant insights for fostering domestic innovation ecosystems and sustaining long-term economic growth.

This study finds that governance obstacles are negatively associated with innovation in Indonesia, while firms in the Philippines developed coping mechanisms that transform institutional inefficiencies into temporary advantages. Across both countries, worker training remains the factor most consistently associated with innovation, regardless of sector or firm size.

This paper is organised as follows: Section 1 reviews the literature on the association between governance and innovation, with particular attention to the firm level. It outlines the study's hypotheses. This is followed by a section on the data and methodology used in the paper. The next two sections present results and a discussion, and the conclusion to the study, respectively.

1. Literature review

To ground the research questions theoretically, we review the literature on institutions, governance, and firm-level innovation, identifying key debates and conflicting findings that motivate our empirical approach.

1.1. Institutions and innovation

The relationship between governance and firm-level innovation is primarily grounded in Institutional Theory, which states that the quality of the insti-

tutional environment shapes firms' strategic behaviour, including innovation investment decisions (North, 1993). Institutions, which are defined as the formal and informal "rules of the game in society" governing human interactions, establish the degree of certainty, intellectual property protection, and contract enforcement mechanisms that are required for innovative activity (Acemoglu & Robinson, 2012; North, 1993; Rodríguez-Pose & Di Cataldo, 2015). Because innovation is inherently high-risk, with uncertain outcomes and long payback periods, firms are more likely to innovate when the institutional environment guarantees stability and predictability.

The distinction between formal institutions and informal institutions are particularly relevant in developing-country context, where formal and informal governance may operate in opposing directions. For innovation, this duality means that formal and informal governance must be examined simultaneously to accurately reflect the institutional environment within which firms make their investment decisions.

The literature presents conflicting evidence on how formal governance shapes innovation. On one hand, a well-functioning institutional framework is critical for innovative behaviour. This encompasses political stability, legal certainty, and administrative efficiency as its defining features. Rodríguez-Pose and Di Cataldo (2015) show that governance quality is positively associated with regional innovation performance in Europe, while Andreoni and Tregenna (2020), drawing on China, Brazil, and South Africa, demonstrate that industrial policy outcomes depend heavily on the governance structure supporting their implementation. Barra and Ruggiero (2023) further show that rule of law, regulatory quality, and government effectiveness as the dimensions governance are positively associated with distinct types of innovation among Italian manufacturing firms. In a more recent study, Farooq et al. (2025) find that governance quality is positively associated with firm-level innovation across South Asian economies, reinforcing the view that strong formal institutions create a more conductive environment for innovative investment. Similarly, Xu (2024) shows that government transparency reduces information asymmetry and uncertainty, positively associated with firm innovative activity in China, while Persaud and Zare (2022) demonstrate that the significance of governance quality varies across the type of innovation and institutional context in India.

On the other hand, several studies show that formal institutions can hinder innovation. Williamson (1985) and Henisz (2000) argue that complex tax regulations, cumbersome licensing bureaucracies, and slow service systems increase transaction costs, effectively diverting financial and managerial resources away from research and development (R&D). Aghion et al. (2013) similarly find that institutional burdens reduce firms' ability to generate product and process innovation. Political instability and weak public governance can increase the risk to long-term investments. Under conditions of uncertainty,

firms tend to be risk-averse, opting for short-term liquidity over long-term innovative projects (Busse & Hefeker, 2007; Dixit & Pindyck, 1994; Odei, 2024). Corruption, as a formal governance failure, further undermines innovation by increasing the cost and unpredictability of doing business (Cheng et al., 2022; Dunyo & Odei, 2023; Sivak et al., 2011). Informal payments to public officials represent a direct manifestation of such corruption, as firms are compelled to make unofficial payments to navigate administrative or regulatory processes. Sivak et al. (2011) find that the prevalence of bribery represses R&D. Weak judicial systems similarly deter innovation by reducing contract enforcement and intellectual property protection (Rodríguez-Pose & Di Cataldo, 2015; Acemoglu & Robinson, 2012). Other findings from Weng et al. (2021) show that while prevalence of bribery to public officials makes firms more likely to be non-innovators, perceived constraints from the government system can paradoxically increase the propensity to innovate, as firms seek to differentiate and survive.

The relationship between governance and innovation is not always linear. Sivak et al. (2011) find that while governance is generally beneficial, bureaucratic barriers can push firms towards alternative innovation pathways such as technology licensing rather than internal R&D, and that overly efficient courts may even reduce innovation incentives in certain contexts, and R&D, suggesting the need for a balanced approach. While Dunyo and Odei (2023) find that policy instability and weak legal institutions negatively affect non-technological innovations, they also show that certain regulatory pressures stimulate adaptive responses. Mendoza (2023) extends this argument to the Philippines and Thailand, revealing how governance conditions and network embeddedness jointly shape firms' ability to innovate and upgrade within global value chains. These findings suggest that the impact formal governance on innovation is not unambiguous.

The dominant view of the literature on informal governance and innovation holds that informal payments and practices in the informal sector harm innovation. This occurs primarily because rent-seeking behaviour diverts financial and managerial resources away from productive investment in R&D and new product development. Dunyo and Odei (2023) confirm that informal competition negatively affects firm-level innovations in emerging economies.

A strand of the literature highlights that under condition of weak formal institutions, informal practices can serve as functional substitutes. Jia et al. (2019) show that governance mechanisms shape not only the quality but also the pathways of innovation, with firms adapting their strategies depending on the public governance context. In environments where formal channels are inefficient, informal payments may accelerate access to permits, services, or protections that enable firms to innovate. This mechanism is documented particularly in a developing-country setting, where institutional voids are common (Andreoni & Tregenna, 2020).

1.2. Firm-level characteristics as drivers of innovation

A firm's innovative capability is associated not only with the institutional environment, but also with its internal characteristics. We consider several characteristics, including size, age, workforce training, foreign ownership, and international certification, as essential determinants of a company's innovative capability. Firm size is associated with innovation through two competing mechanisms. On the one hand, larger firms possess greater R&D resources and enjoy the benefits of economic of scale (Cohen & Levin, 1989; Ipinnaiye et al., 2025; Schumpeter, 1942; Shao et al., 2025); on the other, large organisational structures can also create bureaucracy that stifles creativity (Gobble, 2019). Thus, the balance between efficiency of scale and organisational survival is key for innovation in companies. Over time firms accumulate experience and establish R&D routines (Huergo & Jaumandreu, 2004), though older firms may also become path-dependent and resistant to change (Coad et al., 2016).

The quality of human resources, developed through training, is among the most consistently documented associates of innovation in the empirical literature. Training is positively correlated with absorptive capacity leading to the ability to recognise and integrate external knowledge into innovation (Cohen & Levinthal, 1990; Cozzarin & Percival, 2023; Laursen & Foss, 2003; Zahra & George, 2002). Foreign ownership can further enhance innovation through technology transfer and cross-border knowledge dissemination (Girma et al., 2009; Javorcik, 2004; Keller, 2010). Similarly, international certification encourages continuous learning, operational efficiency, and global market legitimacy (Amundsen & Osmundsen, 2020; Corbett et al., 2005; Du et al., 2023).

1.3. Research gaps

Two important research gaps remain. Firstly, most evidence on governance and innovation originates from developed economies or broad national-level indicators. This limits applicability to a developing-country context, where institutional capacity, political dynamics, and development stages differ substantially (Barra & Ruggiero, 2023; Bobillo et al., 2018). Furthermore, while recent studies have begun to address this gap (Akpan et al., 2022; Farooq et al., 2025; Odei, 2024; Persaud & Zare, 2022), firm level evidence from Southeast Asian remains scarce.

Secondly, the governance and innovation link in Southeast Asia remains largely unexplored at the firm level, particularly in countries confronting MIT. Kumagai (2019), for instance, examines MIT among ASEAN-4 countries through the lens of trade structure rather than governance and innovation,

while Mendoza (2023) address governance and upgrading in the Philippines and Thailand but focuses on global value chain rather than firm-level innovation determinants using representative survey data. Phan (2024) uses the same WBES database to examine governance quality and firm investment but does not specifically address innovation outcomes nor the formal-informal governance distinction central to the current study. No existing study comparatively examines how formal and informal governance obstacles shape firm-level innovation in Indonesia and the Philippines using comparable, nationally representative survey data.

This study address both gaps. By using the 2023 World Bank Enterprise Surveys (WBES) and applying cross-sectional logit model, we examine how formal governance obstacles (tax rate, tax administration, business licensing, political instability, corruption, courts, and crime) and informal governance (informal payment and informal sector competition) are associated with the probability of firm-level innovation in Indonesia and the Philippines. We further test whether these associations differ across sectors and firm sizes. Building on the theoretical and empirical discussion above, this study establishes four hypotheses:

H1: Higher levels of formal governance obstacles are negatively associated with the probability of firm-level innovation.
H2: Informal governance practices which include informal payments and informal sector competition are negatively associated with firm-level innovation.
H3: Internal firm capabilities are positively associated with the probability of firm-level innovation.
H4: The association between governance and firm-level innovation differs across sectors and firm sizes.

2. Data and methodology

This study uses the WB Enterprise Surveys (WBES) database, nationally representative firm-level surveys with top managers and owners of businesses in over 150 economies providing insights into business environment. For Indonesia and the Philippines, the latest data is for 2023 and covers nearly 3000 and 1000 enterprises, respectively.

Table 1 provides a description of variables. The focus is placed on innovation, covering product and process innovations. It is based on the question: “During the last three years, has this establishment introduced new or improved products or services?” This is our dependent dummy variable.

Table 1. Variable description

Variable	Question	Note
Innovation	H.1. During the last three years, has this establishment introduced new or improved products or services?	Dummy (1 = yes, 0 = no)
Governance		
Formal	J.30. Using the response options on the card; To what degree are each of the following an obstacle to the current operations of this establishment?	0 (no obstacle) 1 (minor obstacle) 2 (moderate obstacle) 3 (major obstacle) 4 (very severe obstacle)
	Tax rate	
	Tax administration	
	Business and licensing permits	
	Political instability	
	Corruption	
	Courts	
	Crime	
Informal	J.7.a. Informal payments or gifts (as a percentage of sales)	Dummy (1 = yes, 0 = no) [Yes, if the percentage of informal payments or gifts is not zero]
	E.0. Using the response options on the card; To what degree are practices of competitors in the informal sector an obstacle to the current operations of this establishment?	0 (no obstacle) 1 (minor obstacle) 2 (moderate obstacle) 3 (major obstacle) 4 (very severe obstacle)
Firm characteristics		
Age of firm	B.5. In what year did this establishment begin operations?	Years (in log form)
Workers	L.1. At the end of fiscal year [Insert last complete fiscal year], how many permanent, full-time individuals worked in this establishment? Please include all workers and managers	Number of workers (in log form)
Training for workers	L.11. Over fiscal year [Insert last complete fiscal year], did this establishment have formal training programmes for its permanent, full-time workers?	Dummy (1 = yes, 0 = no)
Share of foreign	B.2. What percentage of this firm is owned by each of the following? Share of private foreign individuals, companies or organisations	%
International certification	B.8. Does this establishment have an internationally recognised quality certification?	Dummy (1 = yes, 0 = no)

Source: on the basis of WBES questionnaire.

Our variables of interest are those capturing governance. They include two groups representing formal governance and informal governance. For formal governance, there are seven indicators, indicating obstacles faced by firms (tax rate, tax administration, business licensing, political instability, corruption, courts, and crime). These formal governance variables have five levels, from no obstacle (0) to a very severe obstacle (4). Meanwhile, for informal governance, we use a question on informal payments or gifts (as a percentage of sales), which we transform into a dummy variable, and the degree of practices of competitors in the informal sector an obstacle to the current operations of the establishment (from no obstacle = 0, to very severe obstacle = 4). Additionally, for control variables, we include five variables representing firm's characteristics.

To investigate association between governance and firm-level innovation, we estimate cross-sectional logit regression separately for each country. We also conduct additional estimations based on sector and size of firms to evaluate whether the associations between governance and firm-level innovation differ across sectors and firm size. The manufacturing, retail services, and other all services sectors with small, medium and large groups become the objects this study. The model aims to estimate the probability that a firm engages in innovative activity, specifically, the introduction of new products or services, given governance dimensions and firm's internal characteristics.

Because innovation outcomes are dichotomous (success or failure), a logit regression model is appropriate, as these models allow for non-linear estimation of probabilities within the range of 0 to 1 (Greene, 2012; Wooldridge, 2019). The dependent variable $Innovation_i$ takes the value of 1 if the firm successfully introduces an innovation, and 0 otherwise. This approach follows prior empirical studies in innovation economics, which emphasise the complementary role of governance structures and firm-specific factors in shaping innovation outcomes (Hall & Lerner, 2010; Roper & Love, 2002).

We model firm innovation as a binary outcome driven by an unobserved latent variable $Innovation_i^*$, representing the firm i's propensity to innovate. The observed binary outcome $Innovation_i$ is related to the latent variable through the following threshold-crossing rule:

$$Innovation_i = \begin{cases} 1 & \text{if} \quad Innovation_i^* > 0 \\ 0 & \quad otherwise \end{cases}$$

Let $\boldsymbol{G}_i = (Gi_1, Gi_2, ..., Gi_7)$ denote the vector of formal governance obstacle indicators for firm i, comprising tax rate, tax administration, business licensing, political instability, corruption, courts, and crime. Let $\boldsymbol{I}_i = (li_1, li_2)$ denote the vector of informal governance indicator for firm i, comprising informal payments and informal sector competition, while $\boldsymbol{X}_i = (Xi_1, Xi_2, ..., Xi_5)$ denotes the vector of firm-level characteristics, comprising firm age, firm size, work-

er training, foreign ownership, and international certification, as described in Table 1. The parameter vectors β_1, β_2 and β_3 are coefficient vectors to be estimated.

The latent variable is a linear function of governance conditions and firm characteristics, with an additive error term assumed to follow a standard logistic distribution:

$$Innovation_i^{\star} = \beta_0 + \beta_1 \boldsymbol{G}_i + \beta_2 \boldsymbol{I}_i + \beta_3 \boldsymbol{X}_i + \varepsilon_i$$

where $\varepsilon_i \sim$ Logistic (0,1). The assumption of a logistic error distribution gives rise to the logit model and implies that the probability that firm i introduces an innovation is:

$$P(Innovation_i = 1) = l(\beta_1 \boldsymbol{G}_i + \beta_2 \boldsymbol{I}_i + \beta_3 \boldsymbol{X}_i)$$

where $l(\cdot)$ is the logistic cumulative distribution function (CDF).

To facilitate interpretation and cross-country comparability, we report Average Marginal Effects (AMEs), computed as the sample average of the individual marginal effects, which are directly interpretable as changes in predicted probability (Greene, 2012).

The empirical strategy is subject to several measurement and design considerations that are addressed as follows. Firstly, the governance indicators are drawn from the WBES standardised questionnaire, in which managers or respondents rate the extent to which specific institutional factors constrain their operations. While this ensures cross-country comparability and has been widely adopted in firm-level innovation research (Dunyo & Odei, 2023; Weng et al., 2021), it captures perceived rather than objective governance quality and is thus subject to self-report bias. Managers may underreport sensitive practices such as informal payments or overstate obstacles. The WBES sampling methodology and anonymous reporting protocols are designed to minimise these concerns.

Secondly, governance indicators are analysed separately rather than aggregated into composite indices, as aggregation would suppress the distinct mechanisms through which individual formal and informal governance dimensions relate to innovation. Thirdly, given the cross-sectional nature of the WBES data, all estimated coefficients reflect conditional associations between governance obstacles and innovation rather than causal effects. These findings are discussed accordingly throughout the paper.

3. Results and discussion

3.1. Main results of the governance-innovation link

Table 2 reports the AMEs from the logit model for Indonesia and the Philippines. The AMEs represent the change in the probability of innovation associated with a one-unit increase in each explanatory variable, evaluated at the sample means. We discuss these results in relation to H1, H2, and H3.

The results provide partial support for H1, which predicts that higher levels of formal governance obstacles are negatively associated with the probability of firm-level innovation. In Indonesia, tax administration is the only formal governance obstacle that is statistically significant and negative. A one-unit increase in the tax administration obstacle is associated with a 3.1 percentage point reduction in the probability of innovation. This finding is consistent with H1 and confirms that inefficient administrative processes erode firms' resources and discourage innovative investment (Aghion et al., 2013; Williamson, 1985). In the Philippines, no formal governance obstacle is negative and significant. This is inconsistent with H1 and suggests that formal institutional barriers operate differently across the two countries.

Two findings show opposite direction to that predicted by H1. Firstly, business licensing is positively and significantly associated with innovation in both Indonesia and the Philippines. These indicate that rather than suppressing innovation, licensing barriers appear to stimulate adaptive strategies. Firms confronting regulatory hurdles may develop informal mechanisms, streamline internal processes, or leverage networks, to overcome them. A selection effect is also plausible, indicating that surviving firms in heavily regulated markets may already be more capable innovators, independently of any adaptive response to licensing barriers. In other words, firms effectively converted obstacles into innovation triggers. This is consistent with Sivak et al. (2011), who find that bureaucratic barriers can push firms toward alternative innovation pathways. Secondly, political instability is positively and significantly associated with innovation in Indonesia, though insignificant in the Philippines. This counterintuitive finding may reflect a resilience effect. It indicates that under condition of political uncertainty, firms may innovate as a survival strategy to diversify revenue, reduce dependence on stable regulatory conditions, or differentiate from competitors (Dixit & Pindyck, 1994; Timbate et al., 2024). However, this interpretation should be treated with caution, given the cross-sectional design and the perception-based nature of the variable.

For the informal governance, the results show a sharp divergence between the two countries. In Indonesia, informal payments are negatively associated with innovation, consistent with H2. A one-unit increase in informal payment prevalence is associated with a 3.9 percentage point reduction in the proba-

Table 2. Main regression results on innovation: Average Marginal Effects (AMEs)

Variable	Indonesia	Philippines
Formal governance		
obstacle:_tax rate	–0.003 (–0.31)	0.034 (1.86)
obstacle:_tax administration	–0.031** (–2.59)	–0.035 (–1.58)
obstacle:_business licensing and permits	0.028** (2.76)	0.041** (2.74)
obstacle:_political instability	0.016* (2.05)	0.022 (1.15)
obstacle:_corruption	–0.002 (–0.28)	0.005 (0.29)
obstacle:_courts	–0.021 (–1.70)	0.009 (0.41)
obstacle:_crime	–0.007 (–0.81)	–0.004 (–0.27)
Informal governance		
obstacle:_informal payment	–0.039* (–2.34)	0.166*** (3.77)
obstacle:_informal sector	0.012 (1.65)	0.022 (1.91)
Firm characteristics		
log(age of firm)	0.001 (0.08)	0.006 (0.38)
log(workers)	0.017** (2.78)	–0.008 (–0.75)
training for workers	0.055** (3.15)	0.093** (3.26)
share of foreign	–0.000 (–0.26)	0.001 (0.95)
international certification	–0.007 (–0.37)	0.012 (0.31)
_cons	–3.237*** (–7.09)	–2.629*** (–6.42)
N	1568	815
chi^2	57.192	62.802
p	0.000	0.000
r2_p	0.076	0.088
Correctly classified (%)	92.09	81.60

Notes: z statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Source: own elaboration.

bility of innovation, suggesting that rent-seeking behaviour diverts resources from productive investment (Dunyo & Odei, 2023; Weng et al., 2021).

In sharp contrast, informal payments in the Philippines are positively and strongly associated with innovation, exhibiting the largest marginal effect in the entire model. This finding directly contradicts H2 and suggests that under the conditions of weak formal institutions, informal payments may function to accelerate access to permits, services, or offer protection that enable firms to innovate. This serves as a functional substitute for formal governance efficiency (Andreoni & Tregenna, 2020; Jia et al., 2019). This interpretation is consistent with the literature, according to which firms in developing economies often develop informal coping strategies when formal channels are unreliable or inaccessible. While this relationship may reflect short-term adaptive behaviour, it raises concerns about long-term institutional sustainability. Reliance on informal payments as a coping mechanism risk entrenching weak governance rather than creating pressure for institutional reform (Kharas, 2013). However, reverse causality cannot be ruled out, as more innovative firms may be larger and more visible, leaving them more exposed to demands for informal payments.

The results also strongly support H3, which predicts that firms with stronger internal capabilities are more likely to innovate. Worker training is robust and consistent determinant of innovation in Indonesia and the Philippines. This confirms that human capital development strengthens absorptive capacity and directly enhances firms' innovative capability, regardless of the governance environment. This finding is consistent with (Cohen & Levinthal, 1990; Kim et al., 2025; Laursen & Foss, 2003; Rakthin et al., 2024; Xiong et al., 2025).

In Indonesia, firm size also matters, which is consistent with the Schumpeterian view that larger firms possess greater R&D resources (Cohen & Levin, 1989; Ipinnaiye et al., 2025; Schumpeter, 1942; Shao et al., 2025). In the Philippines, however, firm size is not significantly linked to innovation, suggesting that scale effect is less relevant in this institutional context. Notably, firm age, foreign ownership, and international certification are statistically insignificant in both countries, indicating that these characteristics do not independently predict innovation once governance and training are accounted for. This offers partial support for H3 and highlights the centrality of worker training as a firm-level characteristic associated consistently with innovation across both countries.

3.2. Sectoral patterns in the governance-innovation association

Table 3 reports the AMEs from sector-stratified logit models for manufacturing, retail services, and other services in Indonesia and the Philippines.

Table 3. Regression results on innovation by sector: Average Marginal Effects (AMEs)

Variable	Indonesia			Philippines		
	manu-facture	retail services	other services	manu-facture	retail services	other services
Formal governance						
obstacle:_ tax rate	–0.004 (–0.26)	–0.022 (–1.64)	0.004 (0.30)	0.037 (1.37)	–0.006 (–0.09)	0.043 (1.38)
obstacle:_ tax adminis-tration	–0.020 (–1.05)	–0.012 (–0.79)	–0.037* (–2.21)	–0.055 (–1.60)	0.013 (0.18)	–0.020 (–0.57)
obstacle:_ business licensing and permits	0.025 (1.60)	–0.012 (–0.68)	0.038** (2.78)	0.057* (2.19)	0.072** (2.66)	0.004 (0.20)
obsta-cle:_political instability	0.032** (2.79)	0.004 (0.32)	0.001 (0.12)	0.028 (0.86)	–0.003 (–0.05)	0.009 (0.34)
obstacle:_ corruption	–0.015 (–1.16)	0.001 (0.04)	0.005 (0.39)	0.002 (0.08)	0.044 (0.96)	–0.014 (–0.57)
obstacle:_ courts	–0.043* (–2.10)	0.003 (0.25)	–0.017 (–1.00)	–0.036 (–1.14)	0.055 (1.13)	0.050 (1.40)
obstacle:_ crime	–0.011 (–0.82)	–0.009 (–0.53)	0.004 (0.32)	0.011 (0.38)	0.002 (0.04)	–0.014 (–0.59)
Informal governance						
obstacle:_in-formal pay-ment	–0.078* (–2.52)	–0.015 (–0.43)	–0.004 (–0.17)	0.146* (2.43)	0.142 (0.93)	0.188* (2.42)
obstacle:_in-formal sec-tor	0.006 (0.52)	0.025* (2.08)	0.019 (1.62)	0.026 (1.54)	0.011 (0.38)	0.023 (1.11)
Firm characteristics						
log(age of firm)	0.005 (0.28)	–0.032 (–1.15)	–0.006 (–0.40)	0.039 (1.24)	0.036 (1.14)	–0.036 (–1.35)
log(workers)	0.016 (1.84)	0.019 (1.42)	0.019 (1.79)	–0.006 (–0.38)	–0.022 (–0.57)	0.004 (0.21)
training for workers	0.072* (2.48)	0.020 (0.48)	0.044 (1.78)	0.109* (2.28)	0.049 (0.67)	0.092* (1.99)
share of foreign	–0.000 (–0.39)	0.000 (.)	0.000 (0.81)	0.001 (1.03)	0.002 (1.04)	0.000 (0.22)

Table 3 continued

Variable	Indonesia			Philippines		
	manu-facture	retail services	other services	manu-facture	retail services	other services
international certification	–0.012 (–0.38)	0.029 (0.83)	–0.016 (–0.55)	–0.006 (–0.12)	–0.082 (–0.87)	0.053 (0.83)
_cons	–2.775*** (–4.27)	–1.940 (–1.16)	–3.948*** (–5.26)	–3.420*** (–4.41)	–3.675** (–2.96)	–1.975** (–3.25)
N	735	245	579	363	118	334
chi^2	44.725	28.852	36.461	29.153	28.187	24.762
p	0.000	0.007	0.001	0.010	0.013	0.037
r2_p	0.108	0.132	0.104	0.095	0.299	0.081
Correctly classified (%)	90.34	95.51	93.26	80.44	88.98	81.14

Notes: z statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Source: own elaboration.

These results are discussed in relation to H4, which predicts that the relationship between governance obstacles and firm-level innovation differs across sectors.

In Indonesia the governance-innovation association appeared primarily in the manufacturing and other services sectors, while retail services show a limited significant association. In manufacturing, political instability is positively linked to innovation, while courts obstacles and informal payments are negatively associated. The negative relationship with court obstacles suggests that weak reinforcement and intellectual property protection deter firms from committing resources to innovative projects (Rodríguez-Pose & Di Cataldo, 2015), while the positive link with political instability indicates the resilience effect discussed in Section 3.1. For other services, tax administration obstacles are negatively and significantly associated with innovation, while the relationship with business licensing is positive and significant. This suggests administrative burdens suppress innovation while licensing hurdles stimulate adaptive responses (Sivak et al., 2011). In retail services, only informal sector competition is significant, suggesting that retail firms innovate primarily in response to competitive pressure from informal competitors. Worker training is significant only in manufacturing, a point consistent with H3, which corresponds with the greater role of absorptive capacity in production-oriented firms (Cohen & Levinthal, 1990; Kim et al., 2025; Rakthin et al., 2024; Xiong et al., 2025).

In the Philippines, sector-specific patterns are less uniform than in Indonesia, though the results still broadly support H4. Informal payments are positively

and significantly associated with innovation for both manufacturing and other services, while are found to be insignificant for retail services. The consistency of this finding across two sectors strengthens the interpretation from Section 3.1 that informal payments serve as a functional substitute for weak formal governance rather than reflecting sector-specific dynamics (Jia et al., 2019). Business licensing is positively related to innovation in manufacturing and retail services, suggesting that licensing obstacles stimulate adaptive innovation primarily in sectors with higher regulatory exposure. Worker training remains significant in manufacturing and other services, offering further support for H3.

Taken together, these sectoral results provide some evidence in support of H4, namely that the link between governance and innovation differs across sectors in both countries. It should be noted that these comparisons are based on sector-stratified AME estimates from separate subgroup models and do not constitute a formal statistical test of coefficient equality across sectors. Within this limitation, the patterns observed are informative. In Indonesia, innovation in manufacturing is most sensitive to formal governance, particularly judicial quality and political instability, while innovation in retail services responds primarily to informal sector competition. In the Philippines, informal payments emerge as a consistent positive associate of innovation in manufacturing and other services sectors, while formal governance obstacles play a more selective role. These cross-sector differences suggest that governance reform strategies should be tailored to the specific institutional vulnerabilities of each sector.

3.3. Firm-size patterns in the governance-innovation link

Table 4 reports AMEs from firm-size stratified logit models for small, medium, and large firms in Indonesia and the Philippines. In Indonesia, the relationships differ across firm sizes, broadly supporting H4. Large firms show the strongest formal governance association, as business licensing is positively and significantly associated with innovation. This suggests that large firms are most capable of converting regulatory hurdles into adaptive innovation opportunities, consistent with the Schumpeterian argument that larger firms possess greater resources to absorb institutional constraints (Schumpeter, 1942). Medium-sized enterprises show a positive relationship between political instability and innovation, supporting the resilience effect identified in Sections 3.1 and 3.2. For small firms, workforce size is the only significant associate of innovation, indicating that scale rather than governance conditions drive innovative activity among small firms. Worker training is positively associated with innovation among medium- and large size Indonesian firms.

Table 4. Regression results on innovation by firm size: Average Marginal Effects (AMEs)

Variable	Indonesia			Philippines		
	small	medium	large	small	medium	large
Formal governance						
obstacle:_tax rate	0.009 (0.67)	–0.011 (–0.56)	–0.020 (–1.17)	0.020 (0.80)	–0.003 (–0.07)	0.111** (2.62)
obstacle:_tax administration	–0.026 (–1.75)	–0.035 (–1.45)	–0.044 (–1.71)	–0.014 (–0.46)	–0.038 (–0.86)	–0.061 (–1.33)
obstacle: _business licensing and permits	0.010 (0.70)	0.028 (1.56)	0.104*** (4.95)	0.069*** (3.72)	0.030 (1.05)	–0.032 (–0.78)
obstacle:_political instability	0.006 (0.56)	0.039* (2.53)	–0.008 (–0.60)	0.023 (0.99)	0.034 (1.02)	0.008 (0.20)
obstacle:_corruption	–0.002 (–0.14)	–0.001 (–0.06)	–0.041 (–1.71)	–0.028 (–1.27)	0.016 (0.71)	0.078* (1.97)
obstacle:_ courts	–0.001 (–0.07)	–0.041 (–1.83)	–0.034 (–1.72)	0.010 (0.38)	0.009 (0.26)	–0.058 (–1.25)
obstacle:_ crime	–0.016 (–1.25)	0.003 (0.23)	0.011 (0.61)	–0.003 (–0.14)	–0.004 (–0.17)	0.031 (0.78)
Informal governance						
obstacle:_informal payment	–0.046 (–1.95)	–0.057 (–1.68)	0.027 (0.72)	0.220** (2.77)	0.172* (2.39)	0.183* (2.26)
obstacle: informal sector	0.011 (1.21)	0.009 (0.60)	0.041* (2.31)	0.035* (2.06)	0.037 (1.87)	–0.015 (–0.54)
Firm characteristics						
log(age of firm)	–0.001 (–0.10)	0.024 (1.02)	–0.018 (–0.84)	0.012 (0.57)	–0.019 (–0.52)	0.026 (0.78)
log(workers)	0.042*** (3.30)	0.015 (0.96)	0.051* (2.54)	0.035 (1.23)	–0.026 (–0.99)	–0.039 (–1.55)
training for workers	0.028 (1.06)	0.067* (1.96)	0.069* (2.33)	0.071 (1.83)	0.097 (1.87)	0.049 (0.64)
share of foreign	0.000 (.)	0.000 (0.55)	–0.001 (–1.42)	0.001 (1.38)	–0.001 (–0.40)	0.000 (0.44)
international certification	0.061 (1.86)	–0.037 (–0.97)	0.000 (0.01)	0.110 (1.58)	0.022 (0.28)	–0.030 (–0.53)

Table 4 continued

Variable	Indonesia			Philippines		
	small	medium	large	small	medium	large
_cons	–4.021*** (–5.13)	–3.595*** (–3.85)	–6.997*** (–3.40)	–3.943*** (–5.22)	–1.638 (–1.68)	–1.438 (–1.29)
N	812	489	257	347	255	213
chi^2	32.036	28.887	38.665	42.255	22.830	27.704
p	0.002	0.011	0.000	0.000	0.063	0.016
r2_p	0.081	0.088	0.300	0.161	0.095	0.123
Correctly classified (%)	94.09	89.78	93.77	84.73	81.96	80.28

Notes: *z* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Source: own elaboration.

Informal payments are consistently negative for small and medium-sized firms, though not statistically significant, while informal competition is significantly linked with innovation only among large firms.

In the Philippines, informal payments are positively and significantly associated with innovation across all firm sizes, namely small, medium, and large. The consistency of this finding across all size categories reinforces the interpretation from Sections 3.1 and 3.2 those informal payments function as a broad institutional coping mechanism rather than a size-specific strategy (Jia et al., 2019) and as such directly contradicting H2. An alternative interpretation is that larger, more profitable firms are simultaneously more innovative and more exposed to rent-extraction. However, the cross-sectional design cannot disentangle whether informal payments enable innovation as a coping mechanism, or whether innovative firms are simply more likely to be targeted for rent-extraction.

Among formal governance variables, business licensing is positively linked with innovation only for small firms, while tax rate and corruption are positively associated with innovation for large firms. This counterintuitive finding likely reflects a selection effect where more profitable large firms face higher tax burdens and are simultaneously more innovative.

The firm-size results offer empirical support for H2. As with the sector-level analysis, these comparisons are taken as descriptive evidence. The patterns suggest that governance reform efforts should be differentiated by firm-size. Large and medium-sized Indonesian firms benefit most from reducing licensing and administrative burdens, while firms across all size in the Philippines face structural exposure to informal payment dynamics. These size-differentiated patterns, alongside findings in Section 3.2, provide cumulative support for H4.

3.4. Discussion

This study provides new insights into the relationship between governance and firm-level innovation in Indonesia and the Philippines, two Southeast Asian countries facing the challenges of the MIT. The findings broadly align with, though do not fully confirm, prior evidence on governance and firm-level innovation, with several results departing from theoretical predictions therefore warrant cautious interpretation.

The results for Indonesia broadly support H1. Specifically, tax administration obstacles (most notably in other services) and court obstacles (most notably in manufacturing) are negatively associated with innovation, consistent with the institutional barriers literature (Aghion et al., 2013; Cheng et al., 2022; Farooq et al., 2025; Paus & Robinson, 2022; Williamson, 1985). However, larger firms appear to convert licensing challenges into opportunities for adaptive innovation, consistent with paradoxical governance effects documented by Sivak et al. (2011). This finding also aligns with Mendoza (2023), who documents how governance conditions and network embeddedness are jointly associated with firms' innovative capacity in the Philippines and Thailand, suggesting that formal governance association with innovation are highly context-dependent. The sector- and size-specific patterns observed in Indonesia are also consistent with Barra and Ruggiero (2023).

The Philippines results complicate the interpretation further. Contrary to H2, informal payments are positively and strongly associated with innovation across firms and sectors, suggesting that firms use these payments strategically to navigate bureaucratic inefficiencies (Jia et al., 2019; Phan, 2024). While this reflects short-term adaptive behaviour, reliance on informal payments risks sustaining weak governance and undermining the shift toward "rule of law" that Kharas (2013) identified as key for escaping the MIT. This highlights a critical divergence between the two analysed countries. Governance failures in Indonesia largely suppress innovation, while in the Philippines they may paradoxically sustain it, though in ways that may raise concerns about long-term institutional sustainability.

Despite these differences, worker training consistently emerges as the positive associate of innovation across both countries, sectors, and firm sizes, strongly supporting H3 and confirming the centrality of human capital in strengthening absorptive capacity (Cohen & Levinthal, 1990; Dunyo & Odei, 2023; Farooq et al., 2025). By contrast, foreign ownership and international certifications are statistically insignificant across most specifications, departing from Persaud and Zare (2022) and Odei (2024), who find that ownership type moderates the governance-innovation association in India and other emerging markets. This suggests that the innovation benefits of global linkages may be more context-dependent than previously assumed. Alternatively,

the binary measures of foreign ownership share and certification status may be too crude to detect their relationships within the firm-level data.

Conclusions

This study examines the association between governance and firm-level innovation in Indonesia and the Philippines, two ASEAN countries facing the persistent challenges of the MIT. To our knowledge, this is the first study to comparatively examine how formal and informal obstacles are associated with firm-level innovation in Indonesia and the Philippines using the 2023 WBES, providing new firm-level evidence from Southeast Asia. The findings reveal contrasting dynamics across distinct governance environments. In Indonesia, tax administration obstacles and informal payments are negatively associated with a firm's capacity to innovate. This highlights how formal and informal governance obstacles function primarily as barriers, consistent with H1 and H2. In the Philippines, informal payments are paradoxically and positively associated with innovation, mirroring firms' strategic adaptation to weak institutions. This finding contradicts H2 and raises important questions about long-term institutional sustainability. Across both countries, worker training emerges as the most consistent driver of innovation regardless of sector, or firm size, strongly supporting H3. This also reaffirms the centrality of human capital development. Governance associations differ meaningfully across sectors and firm sizes, broadly supporting H4.

Based on these findings, Indonesia should prioritise governance reforms to unlock latent innovation potential, while the Philippines should focus on formalising adaptive practices and reducing structural dependence on informal mechanisms. For both countries, investing in human capital, expanding access to global certifications, and strengthening international linkages remain crucial priorities for sustaining innovation-led growth and avoiding MIT.

This study has several limitations. The cross-sectional nature of the WBES data limits inference to conditional associations and precludes causal conclusions. The reliance on perception-based measures introduces self-report bias that cannot be fully eliminated. The country-specific focus on Indonesia and the Philippines also limits the generalisability of the findings to other ASEAN or developing-country context. Future studies could address these limitations by employing panel data, extending the comparative framework to additional ASEAN economies, and exploring causal identification strategies to strengthen the robustness of the findings.

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