

The Influence of Investment Opportunity Set, Intellectual Capital and Cash Holding on Company Value in the Food and Beverage Sub-Sector in Indonesia, Malaysia and Singapore

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ABSTRACT: This study aims to examine the variation in the influence of the Investment Opportunity Set (IOS), Intellectual Capital (IC), and Cash Holding (CH) on firm value within the food and beverage sub-sector across Indonesia, Malaysia, and Singapore. The research employs quantitative secondary data and utilized a sample of 122 companies selected through purposive sampling. The analytical methods include panel data regression and a Test for the Equality of Regression Coefficients (or coefficient comparison test). The findings reveal a heterogeneous influence of the variables on firm value across the three nations. Specifically, IOS significantly affects firm value in Indonesian and Singaporean companies, while this relationship is absent in Malaysia. Conversely, IC did not significantly affect firm value in any of the three observed countries. The CH variable, notably, consistently and significantly impacts firm value across all three countries. Furthermore, subsequent difference tests showed that the cross-country impact of both IOS and IC on firm value is statistically similar, but the influence of CH on firm value differs significantly among the three nations.

KEYWORDS: Investment Opportunity Set, Intellectual Capital, Cash Holding, Firm Value

INTRODUCTION

The food and beverage (F&B) sub-sector is characterized by sustained growth and expansion, playing a crucial role in the global and regional economies, including in Indonesia, Malaysia, and Singapore. Indonesia, leveraging its large population, possesses massive domestic market potential and high consumption growth. Furthermore, the F&B sub-sector in Indonesia is a major economic engine, contributing substantially to government revenue (Ahmad et al., 2022). Conversely, Malaysia and Singapore represent more mature markets and serve as regional logistics hubs, exhibiting rapid adoption of lifestyle trends and innovations. Malaysia's F&B manufacturing industry is a rapidly growing component with a substantial export market, positioning it as one of the world's top two exporters of oils and fats, particularly palm oil-based products (Yunus et al., 2024). Similarly, Singapore, being one of the wealthiest countries globally with a very high GDP per capita, is driven by a highly developed and open market-based economy that prioritizes the trade sector and relies heavily on export and import activities (Ahmad et al., 2022).

Firm value serves as a key reflection of a company's existence and longevity. A stable or increasing value trajectory tends to attract investors who seek to maximize their personal wealth. High firm valuation, in turn, signifies an enhancement in the company's reputation, quality, and overall performance (Tabé et al., 2022). Furthermore, prioritizing the maximization of firm value not only benefits investors through the potential for increased returns but also strengthens the company's standing within its industry and society. Investors are more inclined to commit capital to firms that demonstrate a proven ability to maximize value, as this signals superior management quality and robustness in a competitive market (Hoang et al., 2024). Sustained growth in firm value can also attract a wider pool of investors, which is crucial for securing greater access to resources and funding necessary for future growth and expansion (Ibrahim & Isiaka, 2020).

Firm value is determined by various internal and external factors, including the Investment Opportunity Set (IOS), Intellectual Capital, and Cash Holding. The Investment Opportunity Set itself is an essential determinant of corporate value, as it shapes the perceptions of managers, owners, investors, and creditors (Serna, 2023). An attractive IOS typically reflects the potential for higher future returns, leading investors to seek out firms that offer strong investment growth prospects (Al-Gamrh et al., 2020). The scope of a firm's IOS is defined by the future expenditures management has planned, which are viewed as current investment

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choices expected to generate greater returns (Ogunsola, 2024). Furthermore, a company's IOS is often signaled through its profit growth. Robust profit growth conveys a positive signal to the market and stakeholders, particularly investors (Christianty & Latuconsina, 2023). This positive signaling is crucial; it influences investor reactions, ultimately boosting confidence and facilitating easier access to external financing (such as equity or debt issuance) to fund the opportunities within the IOS (Naveed et al., 2020). Crucially, strong profit growth strengthens a company's ability to capitalize on its existing IOS and generate new opportunities, thereby impacting the firm's future value (Dang et al., 2018).

Intellectual Capital (IC) is intrinsically linked to organizational success. Enhancing IC management efficiency is recognized as the most strategic means to ensure a company's sustainable and competitive operational functions. Competitive advantages stemming from IC, such as specialized employee knowledge and skills, are key factors that attract investors. Indeed, the strong link between increasing firm value and IC performance demonstrates that effective IC management is crucial for value maximization (Opazo & Gonzalez, 2021). Cash Holding (CH) is also vital; companies must accurately estimate and maintain appropriate levels of cash reserves to meet daily operational needs without compromising liquidity, which ultimately impacts firm value (Feng et al., 2022). CH is typically measured by the average cash and cash equivalents a company holds. These holdings represent the liquid assets intentionally maintained for various strategic purposes, including investment, dividend payouts, or as precautionary reserves against unforeseen circumstances (Jabbouri & Almustafa, 2021). A firm that maintains adequate cash holdings signals management's competence in cash flow management and its commitment to financial stability, thereby increasing its appeal to investors and ultimately boosting its value (Yudhyani et al., 2022).

Prior studies yield contradictory results regarding the influence of the Investment Opportunity Set (IOS), Intellectual Capital (IC), and Cash Holding (CH) on firm value. Regarding the IOS, several studies—including those by Adam et al. (2020), Chabachib et al. (2020), (Tabe et al., 2022), (Tangngisalu et al., 2023), and Afridi et al. (2022) (which examined banking companies on the Pakistan Stock Exchange)—found that IOS has a positive effect on firm value. This contrasts with the findings of Al-Gamrh et al., (2020) and Bon & Hartoko (2022), which suggest that IOS does not affect firm value. Similarly, the literature on Intellectual Capital (IC) is mixed. Research on international companies adopting integrated reporting at the IIRC (Salvi et al., 2020) demonstrated a significant positive relationship between IC and firm value. These findings align with those from Nguyen & Doan (2020) on Vietnamese manufacturing firms, Ni et al. (2020) on the Taiwan Stock Exchange, Necib et al. (2025) on the London Stock Exchange, Ousama et al. (2020) on the Qatar Stock Exchange (QSE), Hussaini et al. (2025) on Nigerian companies, and Schiuma et al. (2024), all of which indicated a positive influence of IC on firm value. However, these results are contradicted by studies conducted by (Castro et al., 2021), (Bala et al., 2024), and (Inrico et al., 2023), which conclude that IC does not influence firm value. Finally, studies focusing on Cash Holding (CH) have also provided varied outcomes. Research conducted by (Jaradat et al., 2021) (on Jordanian manufacturing firms listed on the Amman Stock Exchange (ASE)), (Feng et al., 2022) and (Shubita, 2020) (on Chinese companies), (Hamad et al., 2021) (on ASE companies), and (Abdullah, 2025) (on Saudi companies) all established a positive effect of CH on firm value. Conversely, (Irawan et al., 2022), and (Afifa et al., 2021), studying Jordanian firms, found that cash holdings have no effect on firm value.

The research problem is: Does the influence of the Investment Opportunity Set (IOS), Intellectual Capital (IC), and Cash Holding (CH) on firm value differ significantly across the food and beverage sub-sector in Indonesia, Malaysia, and Singapore? The objective is to analyze the influence of IOS, IC, and CH on firm value, and to test for significant differences in this influence across the food and beverage sub-sector in Indonesia, Malaysia, and Singapore.

LITERATURE REVIEW

Company Values

Firm value represents the investors' perception of a company's financial condition, and this perception is directly correlated with its share price (Bardos et al., 2020). A primary method for measuring firm value is using the Tobin's Q ratio, which was developed by James Tobin and is widely considered to provide superior information. Companies are required to implement policies aimed at increasing their value so that investors, shareholders, creditors, and other stakeholders are assured of the firm's strong performance. The value of assets, stock prices, or projected future cash flows serve as sources (or proxies) of a company's value (Pangestuti et al., 2022).

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Investment Opportunity Set

Tabe et al. (2022) state that the Investment Opportunity Set (IOS) comprises the various assets a company currently possesses alongside the investment options it may consider for future deployment. Each existing asset functions as a foundation for evaluating and planning diverse investment opportunities that can be implemented later. By effectively leveraging current assets and exploring various investment avenues, a company can enhance its growth potential and overall value. Through appropriate investment selection and management, a firm holds the potential to strengthen its market position and sustain long-term, superior periodic development.

Intellectual Capital

Intellectual Capital (IC) is defined as an intangible asset owned by a company, encompassing the knowledge and information that can contribute to its future success (Soewarno & Ramadhan, 2020). This intangible asset holds significant potential to provide a sustainable competitive advantage. IC comprises the company's collective knowledge, expertise, and innovation, along with its strong relationships with suppliers, customers, and business partners.

Cash Holding

Cash holdings represent the amount of readily available cash a company maintains to cover its daily operational needs. Managers utilize these highly liquid reserves to conduct various business activities, ensuring the firm has sufficient funds to meet short-term obligations and providing financial flexibility in the face of market uncertainty. In this study, cash holdings are quantified as the ratio of cash and cash equivalents to total assets (Houqe et al., 2023).

Research Conceptual Framework

Based on the theoretical and empirical literature reviewed, the conceptual framework illustrating the relationship among the variables is presented below:

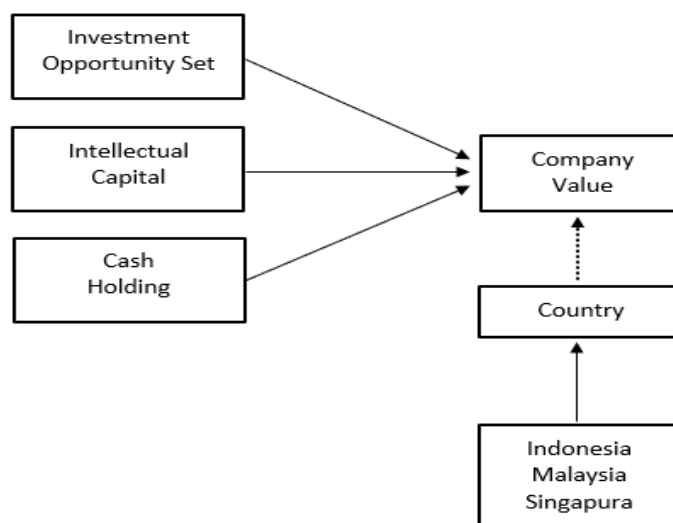


Figure 1. Research Conceptual Framework

Hypothesis

The Investment Opportunity Set (IOS) provides guidance as a benchmark, where the firm's primary objective—maximizing its value—is dependent on its capital expenditure (Afridi et al., 2022). Firms that optimally manage their resources in operational activities can enhance their investment opportunities, which is often reflected by rising stock market prices. A company's decision to capitalize on existing opportunities is crucial, as it directly impacts firm value (Bon & Hartoko, 2022). Research by (Adam et al., 2020) and (Tabe et al., 2022) established that a decrease in the IOS level results in a decline in firm value; conversely, an increase in the IOS is expected to boost value. Firms that consistently engage in heavy investment tend to demonstrate superior capital management. Such firms typically experience continuous growth in assets over time or accumulate significant wealth, which subsequently exerts a positive impact on firm value (Chabachib et al., 2020).

H1 : Investment opportunity set influence on company value

Based on Signaling Theory, intellectual capital (IC) is viewed as crucial information used by firms to signal their innovation capacity, competitive advantage, and prospects for business sustainability. The disclosure of IC assures investors that a company is capable of creating sustainable added value, thereby reinforcing market confidence and boosting firm value. Therefore, IC functions as a

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signal that effectively reduces information asymmetry between management and investors, helping firms achieve more optimal valuations (Xu & Liu, 2020). To expand their business, companies must intensify efforts in developing intellectual capital (Ni et al., 2020). IC is essential for firms to create wealth, maximize value, and secure a competitive advantage (Ousama et al., 2020). Consequently, companies aiming to increase their corporate value must prioritize intellectual capital. Strong IC is a critical element that fosters business competitiveness, which is fundamental to increasing firm value (Salvi et al., 2020; Hussaini et al., 2025).

H2 : Intellectual capital influence on company value

From a Signaling Theory perspective, cash holdings are regarded as a crucial indicator that firms utilize to communicate their financial condition to external stakeholders, particularly investors. Cash, being the most liquid asset, functions not only as an operational tool supporting daily business activities but also as a signal of management's capability to maintain financial stability. A firm's disclosure of its cash holdings can be interpreted as a signal of its readiness to confront uncertainty, its capacity to fund investment opportunities, and its short-term liquidity resilience. However, excessive cash holdings can simultaneously raise stakeholder concerns, potentially encouraging inefficient managerial practices, such as income smoothing or the allocation of funds for non-productive purposes. Consequently, corporate cash disclosures act as a vital signaling mechanism, requiring management to balance investors' positive perceptions of liquidity with minimizing apprehension about surplus cash accumulation (Musyafa & Kholilah, 2023). Previous research by Jaradat et al. (2021) suggests that firms strategically employ cash holdings for value-enhancing investments. By maintaining greater cash reserves, companies mitigate their reliance on external financing, thereby lowering transaction costs and enhancing their ability to invest in profitable projects. Therefore, at optimal levels, cash holdings can contribute positively to firm value (Hamad et al., 2021; Abdullah, 2025). These findings consistently support the view that strategically managed cash holdings underpin a company's growth and stability objectives.

H3 : Cash holding influence on company value

Firm value is frequently employed as the primary indicator for assessing the success of a business entity, as it reflects the market's perception of a company's future prospects, performance, and governance (Pangestuti et al., 2022). Factors such as the Investment Opportunity Set (IOS), Intellectual Capital (IC), and Cash Holdings (CH) play a significant role in shaping these perceptions. The influence of these three variables on firm value tends to exhibit a consistent trend across countries, suggesting a uniform market valuation pattern for a company's fundamental factors. Previous research supports this notion: Hermawan et al. (2025) found that the IOS has a positive effect on firm value in Indonesia, Malaysia, and Singapore. Similarly, (Susila et al., 2023) demonstrated that IC positively affects firm value across ASEAN nations, including Indonesia, Malaysia, and Singapore. Furthermore, cash holdings have consistently been shown to significantly impact firm value. (Anandita & Septiani, 2023) found that CH affects the value of companies in Indonesia, while international research by (Feng et al., 2022) revealed a positive relationship between CH and firm value. This evidence confirms that cash holdings are a vital indicator considered by investors when assessing firm value, and its effect is theoretically expected to be consistent across diverse markets.

H4 : There are no differences in the influence of Investment opportunity set, Intellectual capital and Cash holding on company value in Indonesia, Malaysia and Singapore.

RESEARCH METHODOLOGY

The study's population was defined as manufacturing companies in the food and beverage sub-sector listed on the Indonesia Stock Exchange (IDX), Bursa Malaysia, and the Singapore Exchange (SGX) over the three-year period from 2022 to 2024. Data compiled from these exchanges yielded a total population of 179 companies: 98 on the IDX, 48 on Bursa Malaysia, and 33 on the SGX. A purposive sampling method was employed to select the sample, resulting in 366 qualified observations, broken down into 204 samples from the IDX, 93 from Bursa Malaysia, and 69 from the SGX. The data were analyzed using a panel data regression model, involving both model accuracy assessments and hypothesis testing (t-test and F-test).

RESULTS AND DISCUSSION

Model Accuracy Test

1. Chow Test

Table 1. Chow Test Results

Effects Test	Indonesia	Malaysia	Singapore
	Prob.	Prob.	Prob.
Cross-section F	0.6718	0.000	0.000
Cross-section Chi-square	0.1974	0.000	0.000

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Based on the Chow test, it is known that in Indonesia the value The Chi-square Crosssection Probability is 0.1974, which is >0.05 , indicating that the common effect model is better than the fixed effect model. In Malaysia and Singapore, the Chi-square Crosssection Probability value is 0.0000, which is <0.05 , indicating that the fixed effect model is better than the common effect model.

2. Hausman test

Table 2. Hausman Test Results

Test Summary	Indonesia	Malaysia	Singapore
	Prob.	Prob.	Prob.
Cross-section Random	0.2051	0.1251	0.000

Based on the Hausman test results, Indonesia and Malaysia obtained probability values of 0.2051 and 0.1251, respectively, greater than 0.05, indicating that the random effects model was the best model. Meanwhile, Singapore obtained a probability value of $0.000 < 0.05$, indicating that the fixed effects model was the best model.

3. Lagrange Multiplier Test

Table 3. Test Results Lagrange Multiplier

	Hypothesis Test	
	Indonesia	Malaysia
	Cross-section	Cross-section
Breusch-Pagan	0.368309 (0.5439)	51.09650 (0.0000)

The results of the Lagrange Multiplier test in Indonesia obtained a Breusch Pagan cross-section value of $0.5439 > 0.05$, indicating that the best model is the common effect model. Meanwhile, in Malaysia, the Breusch Pagan cross-section value was $0.000 < 0.05$, indicating that the best model is the random effect model.

Hypothesis Testing

Table 4. Hypothesis Test Results

	Indonesia		Malaysia		Singapore	
	Common Effect Model		Random Effect Model		Fixed Effect Model	
	t-Statistic	Prob.	t-Statistic	Prob.	t-Statistic	Prob.
C	4.395833	0.0000	4.564634	0.0000	-1.152491	0.2555
IOS	4.087985	0.0001	1.761906	0.0815	2.744540	0.0088
IC	0.993999	0.3214	-0.554574	0.5806	-0.075605	0.9401
CH	4.273761	0.0000	6.906958	0.0000	12.54730	0.0000
Weighted Statistics						
	Indonesia		Malaysia		Singapore	
F-statistic	16.86937		15.97667		13.07975	
Prob(F-statistic)	0.000000		0.000000		0.000000	

Hypothesis testing of the State of Indonesia

- The partial test confirmed that the IOS variable significantly affects Company Value. This conclusion is supported by the calculated t-statistic of 4.087985, which exceeds the critical t-table value of 1.971896, and a significance value (0.0001) that is less than 0.05. Consequently, the null hypothesis (H_0) is rejected.
- The IC variable was found to have no significant effect on Company Value. The null hypothesis (H_0) is accepted, as the calculated t-statistic of 0.993999 is less than the critical t-table value of 1.971896, and the significance value (0.3214) is greater than 0.05.

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- c. The partial test results indicated that the CH variable significantly influences Company Value. The null hypothesis (H₀) is rejected because the t-statistic of 4.273761 is greater than the t-table value (1.971896), and the significance value (0.0000) is below 0.05.
- d. The simultaneous test, or F-test, demonstrated that the IOS, IC, and CH variables collectively affect the Value of Food and Beverage Companies in Indonesia. This is evidenced by a calculated F-value (16.86937) that exceeds the F-table value (2.64975), coupled with a high probability value of 0.000000. These results lead to the rejection of the null hypothesis (H₀).

Hypothesis testing for Malaysia

- a. The partial test indicated that the IOS variable has no significant effect on Company Value. This conclusion stems from the acceptance of the null hypothesis (H₀), as the calculated t-statistic (1.761906) was less than the critical t-table value (1.986979), and the significance value (0.0815) exceeded the 0.05 threshold.
- b. The analysis showed that the IC variable also has no significant effect on Company Value in Malaysia. The null hypothesis (H₀) was accepted because the t-statistic (-0.554574) was smaller than the critical t-table value (1.986979), and the p-value (0.5806) was greater than 0.05.
- c. In contrast, the partial test confirmed that the CH variable significantly influences Company Value. The null hypothesis (H₀) was rejected due to the large calculated t-statistic (6.906958), which surpassed the t-table value (1.986979), and a significance value (0.0000) below the 0.05 cutoff.
- d. The overall model demonstrated a significant simultaneous effect of the IOS, IC, and CH variables on the Value of Food and Beverage Companies in Malaysia. This is confirmed by the calculated F-value (15.97667) exceeding the F-table value (2.706999), with a highly significant probability value (0.000000), leading to the rejection of the null hypothesis (H₀).

Hypothesis testing for the State of Singapore

- a. The partial test results indicated that the IOS variable significantly affects Company Value. The null hypothesis (H₀) was rejected because the calculated t-statistic (2.744540) exceeded the critical t-table value (1.997138), and the significance value (0.0088) was less than 0.05.
- b. The analysis showed that the IC variable has no significant effect on Company Value in Singapore. This is confirmed by the acceptance of the null hypothesis (H₀), as the t-statistic (-0.075605) was smaller than the critical t-table value (1.997138), and the p-value (0.9401) was greater than 0.05.
- c. The partial test confirmed that the CH variable significantly influences Company Value in Singapore. The null hypothesis (H₀) was rejected due to the very large calculated t-statistic (12.54730), which significantly surpassed the t-table value (1.997138), and a significance value (0.0000) below the 0.05 cutoff.
- d. The overall model demonstrated a significant simultaneous effect of the IOS, IC, and CH variables on the Value of Food and Beverage Companies in Singapore. This is evidenced by the calculated F-value (13.07975) exceeding the F-table value (2.745915), coupled with a highly significant probability value (0.000000), leading to the rejection of the null hypothesis (H₀).

Test For the Equality of Regression Coefficients

Table 5. Results of the coefficient comparison test

	Investment opportunity set		Intellectual capital		Cash holding	
	t count	P value	t count	P value	t count	P value
Indonesia vs Malaysia	1,933	0.054	1,133	0.258	2,437	0.015
Indonesia vs Singapore	-0.558	0.577	0.546	0.585	-6,290	0.000
Malaysia vs Singapore	-1,781	0.076	0.956	0.956	-10,623	0.000

Results of the coefficient comparison test on the investment opportunity set variable show that H₀ is accepted in all three countries, where in the comparison of Indonesia and Malaysia the p-value is 0.054 > 0.05. The comparison of Indonesia and Singapore the p-value is 0.577 > 0.05. The comparison between Malaysia and Singapore, indicated by a p-value of 0.076 (which is greater than 0.05), suggests that there is no significant difference in the influence of the Investment Opportunity Set (IOS) on firm value across Indonesia, Malaysia, and Singapore.

Results of the coefficient comparison test on the intellectual capital variable show that H₀ is accepted in all three countries, where in the comparison between Indonesia and Malaysia the p-value is 0.258 > 0.05. The comparison between Indonesia and Singapore the p-value is 0.585 > 0.05. The comparison test for Intellectual Capital (IC) yielded a p-value of 0.956 (p > 0.05), indicating no significant difference in the variable's influence on firm value across Indonesia, Malaysia, and Singapore.

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Results of the coefficient comparison test on the cash holding variable show that H_0 is rejected in all three countries, where in the comparison of Indonesia and Malaysia the p-value is $0.015 < 0.05$. The comparison of Indonesia and Singapore the p-value is $0.000 < 0.05$. The comparison of Malaysia and Singapore the p-value is $0.000 < 0.05$, so the results show that there is a significant difference in the influence of CH in Indonesia, Malaysia, and Singapore.

CONCLUSIONS, LIMITATIONS, AND SUGGESTIONS

Overall, this study found that the influence of independent variables on Firm Value (NP) varies across Indonesia, Malaysia, and Singapore. Cash Holding (CH) proved the most consistent, significantly influencing NP across all three countries. Meanwhile, Investment Opportunity Set (IOS) only influenced NP in Indonesia and Singapore, and surprisingly, Intellectual Capital (IC) did not show a significant influence on NP across all countries studied. Based on the results of the difference test, only Cash Holding (CH) showed a significant difference across countries, indicating homogeneity in the influence of IOS and IC across the three jurisdictions.

This study has several major limitations. First, its scope is limited to the food and beverage subsector, which limits the generalizability of the findings to other industrial sectors. Second, the independent variables used are relatively limited (IOS, IC, and CH), leaving the potential influence of other important factors such as corporate governance or leverage excluded from the model. Third, the use of purposive sampling technique has the potential to introduce selection bias, where the selected sample of 122 companies may not be fully representative of the population of food and beverage companies in the three countries. Future researchers are advised to expand the scope of variables by including factors that theoretically also influence Firm Value, such as company size or governance variables, to build a more robust model. It is also recommended to expand the research sample to include other industrial sectors (e.g., the consumer or manufacturing sector in general) or to expand the coverage of countries in the Southeast Asian region. Finally, researchers can focus on in-depth analysis of the unique findings, namely the lack of influence of IC and the significant difference in influence of CH, by examining specific moderating or intervening variables related to the regulatory environment or corporate policies in each country.

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