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Macroeconomic Determinants of Financial Inclusion in ASEAN Countries: Implications for Sustainable Development Goals (SDGs) and Islamic Finance



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Abstract

Purpose: This study examines the relationship between financial inclusion and four macroeconomic indicators—economic growth, unemployment rate, interest rate, and the population aged 15 years and above—across ten ASEAN member states.

Methodology: Secondary panel data covering 2000–2023 were obtained from the World Bank, the Global Findex Database, and CEIC Data. An Index of Financial Inclusion (IFI) was constructed following Sarma and Pais (2011). Panel unit root tests, Pearson correlation analysis, variance inflation factor diagnostics, and panel ordinary least squares regression were employed.

Findings: The regression model explained 57.3% of the variation in financial inclusion. Population aged 15 years and above and unemployment rate were found to have significant positive relationships with financial inclusion, whereas GDP growth and interest rate were statistically insignificant. The findings suggest that demographic structure and labour market conditions play a more important role than aggregate economic growth or borrowing costs in promoting financial inclusion across ASEAN.

Unique Contribution to Theory, Policy and Practice: The study provides regional evidence on the macroeconomic determinants of financial inclusion and offers policy implications for advancing the SDGs while supporting the broader objectives of Islamic finance in fostering inclusive and sustainable economic development.

Keywords: *Financial Inclusion, ASEAN, Macroeconomic Determinants, Panel Data Analysis, Unemployment Rate, Islamic Finance, Sustainable Development Goals*

JEL Codes: *G21, E24, E43, O16, O53*

1. INTRODUCTION

The pursuit of sustainable and inclusive economic development has become a central priority for governments, international organisations, and financial institutions worldwide. Recognising that access to affordable financial services is fundamental to reducing poverty and promoting shared prosperity, the United Nations Sustainable Development Goals (SDGs) identify financial inclusion as an important enabler of several development objectives, particularly SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), and SDG 10 (Reduced Inequalities) (United Nations, 2015; United Nations, 2023). Access to formal financial services enables individuals and businesses to save securely, obtain productive credit, manage financial risks, and participate more fully in economic activities, thereby fostering sustainable economic development and social inclusion.

Financial inclusion also occupies a central position within Islamic finance, which promotes equitable access to financial services based on the principles of justice (*adl*), shared prosperity, risk-sharing, and ethical finance. Rather than focusing solely on financial profitability, Islamic finance seeks to improve social welfare through Shariah-compliant financial products that facilitate entrepreneurship, reduce poverty, and encourage inclusive economic participation. Consequently, expanding financial inclusion is regarded as an important mechanism for achieving the higher objectives of Islamic law (*Maqasid al-Shariah*), particularly the preservation and development of wealth (*ḥifẓ al-māl*) and the promotion of public welfare (*maṣlaḥah*) (IFSB, 2023). This positions Islamic finance not merely as an alternative financial system but as a substantive contributor to the SDG agenda: Islamic social finance instruments such as *zakat*, *waqf*, and *qard-hasan* directly support SDG 1 (No Poverty) and SDG 10 (Reduced Inequalities), while Shariah-compliant banking and microfinance advance SDG 8 (Decent Work and Economic Growth) by expanding access to productive, interest-free capital for underserved populations (Mohieldin et al., 2012; World Bank & Islamic Development Bank Group, 2017; Islamic Financial Services Board [IFSB], 2023). Understanding the macroeconomic conditions that support financial inclusion is therefore also relevant to understanding the conditions under which Islamic finance can most effectively advance the SDGs across ASEAN, a region home to some of the world's largest Muslim populations and fastest-growing Islamic finance markets.

Recognising the severity of this challenge, ASEAN has set a regional target to reduce financial exclusion to 30% by 2025. Member states have collectively introduced a range of policy measures to advance financial access — from national financial inclusion strategies and digital banking regulations to regional frameworks such as the ASEAN Banking Integration Framework (ABIF) and the ASEAN Financial Integration Framework (AFIF) (Ong et al., 2023; Rillo, 2018). Despite these efforts, progress has been uneven across the bloc, with structural barriers — including low financial literacy, fragmented regulatory coordination, limited digital infrastructure, and deeply entrenched informal financial practices — continuing to constrain meaningful financial

participation, particularly among rural communities, women, and lower-income households (Loo, 2019).

Whether financial inclusion can take root and expand within an economy is closely related to its broader macroeconomic conditions. Research has consistently shown that economic growth, labour market dynamics, borrowing costs, and demographic structure shape the environment in which financial services are accessed and used (Demirgüç-Kunt et al., 2018; Park & Mercado, 2015). A growing economy tends to generate income, employment, and demand for financial services; a large working-age population provides a natural base for financial market participation; while persistently high interest rates or inflation can erode the affordability and attractiveness of formal credit and savings products (World Bank, 2025). However, the precise nature of these relationships within the ASEAN context has not been comprehensively examined. Most existing studies have focused either on a single country, a single macroeconomic variable, or regions outside ASEAN—leaving policymakers without a regionally integrated, empirically grounded account of what drives financial inclusion across the full diversity of ASEAN member states (Erlando et al., 2020; Cicchiello et al., 2021).

In recent years, ASEAN governments and regional bodies have stepped up efforts to address financial exclusion through both supply-side interventions (expanding banking infrastructure, promoting fintech, and developing mobile payment ecosystems) and demand-side measures (financial literacy programmes and targeted social protection). For instance, Indonesia launched its National Strategy for Financial Inclusion in 2016, Malaysia achieved 97% adult financial access by 2023 (Bank Negara Malaysia, 2023), and Singapore's PayNow initiative standardised digital payments at a national scale (Tan, 2022). Nonetheless, low-income member states such as Cambodia, Laos, and Myanmar continue to languish at sub-50% access rates (Demirgüç-Kunt et al., 2022), suggesting that policy efforts alone — absent an understanding of the macroeconomic preconditions for financial inclusion — may not suffice. Uneven economic growth, demographic imbalances, and labour-market vulnerabilities form the real structural impediments to ASEAN-wide financial inclusion advancement (Younas et al., 2022). Only by understanding these macroeconomic drivers is it possible to design financial inclusion strategies that are both effective and sustainable across the diverse ASEAN landscape.

Therefore, this study investigates the macroeconomic determinants of financial inclusion across ten ASEAN countries from 2000 to 2023, examining four key indicators: GDP growth, the unemployment rate, the interest rate, and the population aged 15 and above. Research on this relationship within the ASEAN region, using a unified panel data framework, remains limited. The present study aims to address this gap by providing empirical evidence on which macroeconomic and demographic conditions are most strongly associated with financial inclusion across ASEAN, and by offering targeted policy guidance that responds to the region's structural realities. In doing so, it offers a resource not only for policymakers and financial regulators, but also for financial

institutions and businesses seeking to understand better and serve the underbanked populations that represent ASEAN's greatest untapped economic potential.

Accordingly, while the empirical analysis is framed in conventional macroeconomic terms, its findings are interpreted throughout through two complementary lenses: the United Nations SDG framework and the higher objectives of Islamic finance (Maqasid al-Shariah). This dual framing allows the study to speak not only to conventional financial inclusion policy but also to the growing regional agenda of Shariah-compliant, SDG-aligned financial development in ASEAN.

2. LITERATURE REVIEW

2.1 The Concept of Financial Inclusion

Financial inclusion denotes the ability of individuals and businesses to access and use a relevant range of financial services, including savings, credit, insurance, and payments, in a manner that is affordable, accessible, and responsive to their needs (Demirgüç-Kunt et al., 2020). The concept has evolved from an early emphasis on providing basic banking products to a broader recognition that meaningful inclusion requires both access and active, beneficial use of financial services. Technological innovation, particularly the diffusion of digital banking, mobile money, and e-wallets, has expanded the boundaries of what financial inclusion can encompass, allowing previously underserved populations to bypass traditional infrastructural constraints (World Bank, 2023).

2.2 Financial Inclusion in ASEAN

Financial inclusion levels vary markedly across ASEAN member states, reflecting differences in economic structure, regulatory maturity, and digital readiness. Malaysia has achieved near-universal access, with approximately 97% of adults able to access financial services and 92% actively using digital financial services by 2024 (Bank Negara Malaysia, 2023, 2024). Indonesia has progressed substantially through its National Strategy for Financial Inclusion, with digital platforms such as GoPay and OVO raising adult access to over 61% by 2021 (Demirgüç-Kunt et al., 2022), although the archipelago's geographic dispersion across more than 17,000 islands continues to constrain rural access (Sun & Siagian, 2015). The Philippines and Thailand have likewise expanded access through mobile banking and e-money platforms, reaching approximately 50% and 82% of adults, respectively (World Bank, 2025), while Vietnam reported 69% account ownership in 2021 (Demirgüç-Kunt et al., 2022). Cambodia, Myanmar, and Laos lag considerably behind, with fewer than half of adults possessing formal financial access, constrained by inadequate infrastructure and large informal economic sectors (Demirgüç-Kunt et al., 2022; Banna & Alam, 2021). Singapore stands as the regional leader, characterized by near-universal access and a highly digitized financial landscape underpinned by initiatives such as PayNow and the Singapore Quick Response Code (Tan, 2022), while Brunei exhibits high basic access but

comparatively slower adoption of digital financial instruments due to cultural preference for cash-based and in-person banking (Pg Md Salleh, 2015).

2.3 Financial Inclusion and Macroeconomic Variables

The relationship between financial inclusion and economic growth has attracted substantial empirical attention. Demirguc-Kunt et al. (2015) found a positive and significant relationship between financial inclusion and economic growth, attributing this to the role of financial institutions in supporting savings mobilization, investment, and entrepreneurship. Similarly, Beck et al. (2007) emphasized that financial inclusion channels household savings into productive investment, thereby reinforcing business expansion. However, Nisreen Emara and Ali El Said (2021) cautioned that the strength of this relationship is highly context-dependent, varying with the depth and maturity of domestic financial systems.

Evidence on the financial inclusion–unemployment relationship is more mixed. Bruhn and Love (2014) reported that a 1% increase in financial inclusion was associated with a 0.7% rise in employment, while Mehry et al. (2021) found that financial inclusion significantly reduced unemployment across 35 developing countries between 2009 and 2018. Conversely, Naceur et al. (2019) observed that unemployment can rise with financial sector growth under conditions of high banking market concentration, while Molefhi (2019) reported mixed effects depending on the specific financial inclusion indicator examined. This inconsistency underscores the necessity of further region-specific investigation.

The literature linking financial inclusion to interest rates remains comparatively underdeveloped. Theoretical work suggests that expanded access to formal financial services should reduce dependence on informal high-interest lenders and improve the transmission of monetary policy (Arshad et al., 2021), yet empirical studies examining this relationship specifically within ASEAN remain scarce. Existing research has largely focused on country-level analyses of financial inclusion and monetary policy rather than the dynamics of regional interest rate convergence (Andaiyani et al., 2024).

Demographic structure, particularly the working-age population (over 15 years old), has likewise received limited direct attention in the financial inclusion literature. Demirgüç-Kunt et al. (2018) and Park and Mercado (2015) found that countries with larger adult populations tend to exhibit higher financial inclusion due to greater economic activity and demand for financial services, a relationship grounded in human capital theory (Becker, 1964) and the life-cycle hypothesis (Modigliani, 1966).

2.4 Theoretical Underpinning

This study draws on four complementary theoretical frameworks. Ozili's (2020) Financial Inclusion Theory posits that broadening access to financial services reduces income disparity and enhances economic participation among marginalized populations. Financial Stability Theory,

rooted in Minsky's Financial Instability Hypothesis, suggests that inclusive finance strengthens systemic resilience by expanding the customer base and reducing reliance on unregulated informal channels (Demirgüç-Kunt et al., 2018; Jungo et al., 2022). Sachs' Poverty Trap Theory (Banerjee & Duflo, 2011) frames financial exclusion as a structural barrier that perpetuates poverty, which financial inclusion can help to dismantle. Finally, Levine's (2005) finance–growth nexus hypothesis contends that financial sector development supports economic expansion through more efficient capital allocation and enhanced investment and entrepreneurship. Collectively, these frameworks support the conceptual model and hypotheses examined in this study.

2.5 Research Gap

Despite the breadth of existing scholarship, several gaps persist. First, much of the literature is geographically narrow, focusing on individual countries or regions outside ASEAN (Cicchello et al., 2021). Second, prior studies have tended to examine financial inclusion in relation to isolated economic variables rather than within an integrated framework (Mehry et al., 2021). Third, demographic considerations, particularly the working-age population, remain underexplored in conjunction with financial inclusion in the ASEAN context (Emara & El Said, 2021). Fourth, the financial inclusion–interest rate relationship remains largely untested at the regional level (Arshad et al., 2021). This study addresses these gaps by jointly examining financial inclusion alongside GDP growth, the unemployment rate, the interest rate, and the population aged 15 and above. Fifth, despite growing global interest in the convergence of Islamic finance and the SDGs, few empirical studies have examined the macroeconomic and demographic drivers of financial inclusion in ASEAN through an explicit Islamic finance and SDG-oriented lens (Dusuki, 2008; Hasan et al., 2020).

2.6 Islamic Finance, Financial Inclusion, and the Sustainable Development Goals

Islamic finance and the SDG agenda share a striking conceptual convergence. The higher objectives of Islamic law (Maqasid al-Shariah), the preservation of faith, life, intellect, lineage, and wealth, align closely with the SDGs' emphasis on poverty eradication, social justice, and inclusive economic participation (Dusuki, 2008). Islamic social finance instruments, including zakat (obligatory almsgiving), waqf (charitable endowments), and qard-hasan (benevolent, interest-free loans), operate as redistributive mechanisms that channel wealth from prosperous to marginalized segments of society, directly advancing SDG 1 (No Poverty) and SDG 10 (Reduced Inequalities). Shariah-compliant banking, takaful (Islamic insurance), and Islamic microfinance further extend formal financial access to populations that may be excluded from, or reluctant to participate in, conventional interest-based finance, thereby supporting SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation and Infrastructure) (Mohieldin et al., 2012; Hasan et al., 2020). At the regional level, several ASEAN member states, most notably Malaysia, Indonesia, and Brunei, have integrated Islamic finance into national financial inclusion strategies, leveraging zakat and waqf institutions alongside Islamic banks and takaful operators to reach

underserved rural and low-income populations (World Bank & Islamic Development Bank Group, 2017; Islamic Financial Services Board [IFSB], 2023). This suggests that the macroeconomic and demographic determinants examined in the present study are also pertinent to Islamic finance institutions and regulators seeking to design Shariah-compliant, SDG-aligned interventions—for instance, targeting zakat and waqf disbursements toward age cohorts and labor-market segments identified as most closely associated with financial exclusion.

3. CONCEPTUAL FRAMEWORK

The conceptual framework, presented in Figure 1, positions financial inclusion as the dependent variable explained by four macroeconomic and demographic indicators – GDP growth, the unemployment rate, the interest rate, and the population above 15 years old – with inflation incorporated as a control variable. This framework is adapted from Sharma and Kukreja (2013). It reflects the theoretical linkages established in Section 2.4, allowing the study to capture both common effects expected to operate similarly across ASEAN economies and differential effects that may vary according to each country's stage of economic development.

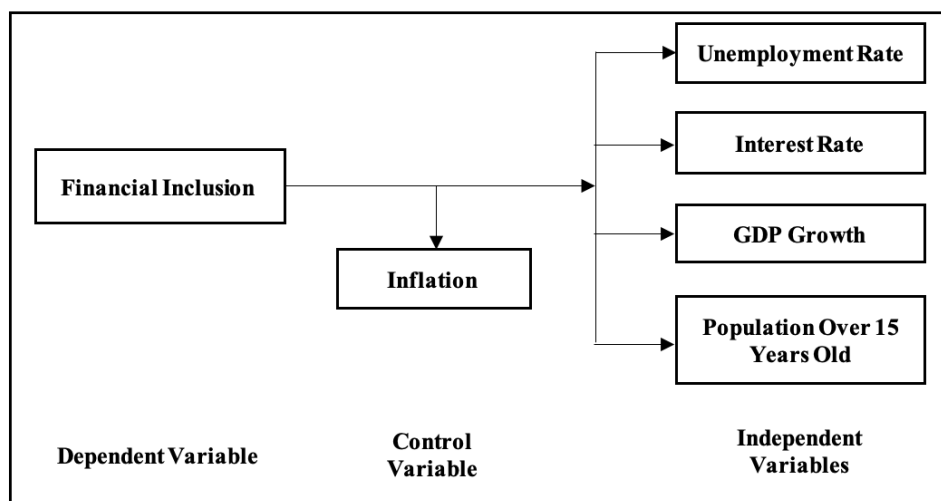


Figure 1: Conceptual Framework from Sharma and Kukreja (2013).

The hypotheses of this study are shown below:

- H1: Financial inclusion is positively related to economic growth in ASEAN countries.
- H2: Financial inclusion is positively related to the unemployment rate in ASEAN countries.
- H3: Financial inclusion is positively related to the interest rate in ASEAN countries.
- H4: Financial inclusion is positively related to the population above 15 years old in ASEAN countries.

4. RESEARCH METHODOLOGY

4.1 Research Design

This study adopted a descriptive and inferential research design grounded in secondary panel data to investigate the relationship between financial inclusion and macroeconomic indicators across ten ASEAN countries. To accommodate the considerable economic heterogeneity within ASEAN, countries were stratified according to World Bank income classifications – high-income (Singapore, Brunei), upper-middle-income (Malaysia, Thailand), lower-middle-income (Indonesia, the Philippines, Vietnam), and low-income (Cambodia, Laos, Myanmar) – enabling both aggregate regional analysis and consideration of how financial inclusion dynamics might vary by development stage.

4.2 Measurement of Variables

Financial inclusion, the dependent variable, was measured through three established dimensions following Sarma and Pais (2011): banking penetration (commercial bank deposit accounts per 1,000 adults), service availability (commercial bank branches per 100,000 adults), and usability (outstanding loans from commercial banks as a percentage of GDP). Economic growth was proxied by the annual GDP per capita growth rate, drawn from World Bank World Development Indicators and consistent with endogenous growth theory (Romer, 1994). The unemployment rate was defined as the percentage of the labour force without work but actively seeking employment, sourced from the World Bank and the International Labour Organisation. The interest rate was represented by the lending rate charged to prime borrowers, adjusted for inflation using the GDP deflator. The population above 15 years old was measured as a percentage of the total population, while inflation, included as a control variable, was captured through the annual percentage change in the Consumer Price Index.

4.3 Index of Financial Inclusion

The Index of Financial Inclusion (IFI) was computed following the methodology of Sarma and Pais (2011). For each dimension i , a normalised score was calculated as:

$$d_i = w_i \times (A_i - m_i) / (M_i - m_i)$$

where w_i is the weight assigned to dimension i ($0 \leq w_i \leq 1$), A_i is the actual value of variable i , and m_i and M_i are its minimum and maximum values, respectively. The Euclidean distances from the worst (X_1) and ideal (X_2) points were then computed, and the IFI was derived as the average of X_1 and X_2 , classified as follows: index values below 0.3 indicate low financial inclusion, values between 0.3 and 0.6 indicate moderate inclusion, and values of 0.6 or above indicate high financial inclusion.

4.4 Data Collection

Secondary data spanning the 2000–2023 period were obtained from the World Bank World Development Indicators, the Global Findex Database, and CEIC Data, encompassing all ten ASEAN member states. These sources were selected for their methodological consistency and comprehensive coverage of ASEAN economies, and data were cross-validated where possible against IMF and Asian Development Bank statistics to enhance reliability.

4.5 Regression Equation and Estimation Technique

Panel data regression was conducted in EViews using pooled OLS, fixed effects, and random effects estimators to account for unobserved heterogeneity and time-invariant country effects. The regression model is specified as:

$$IFI_{it} = \beta_0 + \beta_1 GDPGrowth_{it} + \beta_2 UnemploymentRate_{it} + \beta_3 InterestRate_{it} + \beta_4 Population_{it} + \beta_5 Inflation_{it} + \varepsilon_{it}$$

where i denotes the country, t denotes the year, β_0 is the intercept, β_1 through β_5 are the estimated coefficients, and ε_{it} is the error term. Prior to estimation, panel unit root tests (Im-Pesaran-Shin [IPS] and Levin-Lin-Chu [LLC]) were conducted to confirm variable stationarity, while Pearson correlation analysis and variance inflation factor (VIF) diagnostics were used to assess multicollinearity among the independent variables.

4.6 Robustness Checks

To strengthen the reliability of the findings across ASEAN's diverse economic landscape, five robustness procedures were undertaken: subgroup analysis by income classification, alternative model specifications, instrumental variable treatment for potential endogeneity, outlier and country-exclusion analysis, and sensitivity testing across sub-periods (pre-2008, 2008–2015, and 2016–2023) to detect possible structural shifts associated with the global financial crisis and the COVID-19 pandemic.

5. RESULTS

5.1 Descriptive Statistics

Table 1 reports the descriptive statistics for all study variables across the ten ASEAN countries from 2000 to 2023. On average, GDP growth was 5.04%, inflation averaged 4.64%, and the population above 15 years old constituted 72.67% of the total population, while the mean interest rate and unemployment rate stood at 4.54% and 2.92%, respectively. Banking infrastructure averaged 39.59 ATMs and 9.12 commercial bank branches per 100,000 adults, alongside 1,084 depositors per 1,000 adults. Depositors with commercial banks exhibited the largest dispersion among all variables, while inflation displayed pronounced right skewness and high kurtosis, indicating the presence of extreme values, most notably in Myanmar and Laos.

Table 1: Descriptive Statistics for ASEAN Countries (2000–2023)

Item	GDP (%)	Growth	Inflation (%)	Pop. (%)	>15 (%)	Interest Rate (%)	Unemployment (%)
Mean	5.04		4.64	72.67		4.54	2.92
SD	3.86		6.67	7.10		7.09	2.05
Min	-12.02		-2.31	56.78		-20.50	0.12
Max	14.52		57.07	88.21		34.81	9.32
Skewness	-0.96		3.92	0.15		0.43	0.74
Kurtosis	2.87		21.13	-0.22		3.39	-0.09

5.2 Panel Unit Root Tests

Panel unit root tests (IPS and LLC) confirmed that eight of the nine variables were stationary at level ($p < 0.001$), indicating they were integrated of order $I(0)$ and suitable for direct regression analysis. Commercial bank branches per 100,000 adults exhibited non-stationarity at level in the IPS test ($p = 0.995$) but achieved stationarity following first-order differencing ($p < 0.001$), and was therefore treated as $I(1)$ in subsequent analysis.

5.3 Correlation and Multicollinearity

Pearson correlation analysis revealed that the IFI was weakly and negatively correlated with GDP growth ($r = -0.177$) and the interest rate ($r = -0.129$), moderately and positively correlated with the unemployment rate ($r = 0.308$), and strongly and positively correlated with the population above 15 years old ($r = 0.687$). Variance inflation factor (VIF) diagnostics confirmed the absence of problematic multicollinearity, with all values well below the threshold of 10 (GDP growth = 1.149, population above 15 years old = 1.050, unemployment rate = 1.113, interest rate = 1.049), supporting the validity of the subsequent regression estimates (Hair et al., 2019).

5.4 Regression Results

Table 2 presents the panel regression results explaining financial inclusion across the ten ASEAN countries. The model demonstrated strong overall explanatory power ($R^2 = 0.5731$; adjusted $R^2 = 0.5500$; $F = 24.8371$, $p < 0.001$), indicating that approximately 57.3% of the variation in financial inclusion was jointly explained by the four predictor variables.

Table 2: Panel Regression Results for Determinants of Financial Inclusion

Variable	Coefficient	Std. Error	t-ratio	p-value
GDP Growth	0.0008	0.0048	0.1646	0.8697
Population Over 15 Years Old	0.0220*	0.0025	8.7320	0.0000
Interest Rate	-0.0026	0.0027	-0.9379	0.3513
Unemployment Rate	0.0323*	0.0081	4.0100	0.0001
Constant	-1.3955*	0.2063	-6.7650	0.0000

Note: * denotes statistical significance at the 5% level. $R^2 = 0.5731$; Adjusted $R^2 = 0.5500$; $F(4,74) = 24.8371$, $p = 0.0000$.

The population above 15 years old was the strongest and most statistically significant predictor of financial inclusion ($\beta = 0.0220$, $t = 8.732$, $p < 0.001$), indicating that a one-percentage-point increase in this demographic share was associated with a 2.20% increase in the IFI. The unemployment rate also exhibited a positive and significant relationship with financial inclusion ($\beta = 0.0323$, $t = 4.010$, $p < 0.001$). In contrast, GDP growth ($\beta = 0.0008$, $p = 0.870$) and the interest rate ($\beta = -0.0026$, $p = 0.351$) were not statistically significant predictors of financial inclusion. Inflation, included as a control variable, exhibited a significant negative relationship with the IFI ($\beta = -1.3955$, $p < 0.001$), indicating that rising price levels were associated with reduced financial inclusion.

6. DISCUSSION

The finding that GDP growth was not significantly related to financial inclusion (H1 not supported) challenges the assumption that economic expansion automatically translates into greater financial access. This result is consistent with Sahay et al. (2015) and Demirgüç-Kunt et al. (2018), who similarly found that the benefits of growth do not uniformly translate into financial inclusion without deliberate policy intervention. A plausible explanation lies in the uneven distribution of growth dividends across ASEAN economies, where expansion may concentrate in capital-intensive sectors with limited linkages to underserved populations (Beck et al., 2007). This is consistent with Kuznets' (1955) hypothesis that the social returns to growth diminish at higher levels of development, suggesting that financial inclusion in ASEAN is more directly shaped by targeted regulatory reform, mobile banking expansion, and agent banking networks than by aggregate output growth alone.

The strong, significant relationship between the population above 15 years old and financial inclusion (H4 supported) underscores the centrality of demographic structure in shaping regional

financial access. This finding aligns with human capital theory (Becker, 1964) and the life-cycle hypothesis (Modigliani, 1966), both of which suggest that working-age individuals are more economically active, financially literate, and able to engage meaningfully with formal financial institutions. The result also resonates with Demirgüç-Kunt et al. (2018) and Park and Mercado (2015), who reported comparable demographic effects across Asian economies, reinforcing the view that countries undergoing demographic transitions toward larger working-age populations are positioned to benefit from accelerated financial inclusion if appropriately supported by policy.

The positive and significant association between unemployment and financial inclusion (H2 supported, though counterintuitive in direction) merits careful interpretation. Rather than reflecting a causal mechanism whereby unemployment drives inclusion, this relationship more plausibly reflects counter-cyclical policy responses, such as cash transfers, microcredit schemes, and unemployment-linked social protection, that are channeled through formal financial systems during periods of labor-market stress (Beck et al., 2007; Demirgüç-Kunt et al., 2018). It may also capture structural transitions within ASEAN economies, where shifts from informal to formal employment, rural-to-urban migration, and digital adoption occur simultaneously with short-term unemployment fluctuations (Allen et al., 2016). Reverse causality is also plausible, whereby expanded financial access enables entrepreneurship and self-employment that gradually reduce unemployment over time (King & Levine, 1993).

The absence of a significant relationship between interest rates and financial inclusion (H3 not supported) suggests that macroeconomic price variables exert limited direct influence on financial access in ASEAN, a result consistent with Honohan (2008) and Beck et al. (2007), who similarly found that institutional and structural factors dominate over interest rate movements in shaping financial inclusion outcomes. Structural barriers such as inadequate collateral, weak identification systems, and limited digital infrastructure likely constrain financial access irrespective of prevailing borrowing costs (Demirgüç-Kunt et al., 2015).

Collectively, these findings suggest that financial inclusion in ASEAN functions as a structural and demographic phenomenon rather than a straightforward macroeconomic outcome. This has important implications for regional policymaking: rather than relying on aggregate growth or monetary policy alone, ASEAN governments should pursue targeted, demographically informed strategies that pair financial access with employment generation, skills development, and entrepreneurship support, particularly given the region's varying stages of economic and demographic development.

These findings also carry implications for how ASEAN's economic diversity should be incorporated into financial inclusion policy. High-income economies such as Singapore and Brunei, which already exhibit near-universal basic access, may derive greater marginal benefit from deepening the quality and sophistication of financial services available to their working-age populations, whereas lower-income economies such as Cambodia, Laos, and Myanmar may

benefit more from foundational investments in banking infrastructure and digital connectivity. The consistent significance of the demographic variable across the pooled regional sample suggests that this driver operates broadly across the bloc, even as the channels through which it operates may differ by development stage, reinforcing the value of the tiered analytical approach adopted in this study.

These findings also carry direct relevance for Islamic finance and the SDG agenda in ASEAN. The strong demographic effect and the counter-cyclical unemployment relationship suggest that financial inclusion gains are most pronounced where formal financial systems intersect with social protection and labor-market transitions—precisely the terrain in which Islamic social finance instruments such as zakat, waqf, and qard-hasan are designed to operate. Where GDP growth alone does not translate into broader financial access, Maqasid-driven redistribution mechanisms may offer a complementary channel for reaching underserved working-age and unemployed populations, thereby advancing SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), and SDG 10 (Reduced Inequalities) alongside conventional financial inclusion policy (Dusuki, 2008; Mohieldin et al., 2012; Hasan et al., 2020). For ASEAN's Muslim-majority economies in particular, embedding Islamic social finance within national financial inclusion strategies may therefore strengthen, rather than substitute for, the demographic and labor-market-oriented policy responses identified in this study

7. CONCLUSIONS AND RECOMMENDATIONS

This study examined the relationship between financial inclusion and four macroeconomic and demographic indicators across ten ASEAN countries from 2000 to 2023. The findings indicate that financial inclusion is significantly and positively associated with the unemployment rate and the population aged 15 and above. At the same time, no significant relationship was found with GDP growth or the interest rate. These results suggest that financial inclusion in ASEAN is shaped predominantly by demographic structure and labour-market dynamics rather than by aggregate macroeconomic growth or monetary conditions.

Several policy implications follow from these findings. First, given the significant link between financial inclusion and unemployment, initiatives to expand financial access should be paired with complementary programmes in skills development, vocational training, and entrepreneurship support, ensuring that financial access translates into productive employment outcomes rather than merely reflecting social safety-net usage. Examples such as Bangladesh's Grameen Bank microfinance model and Kenya's M-Pesa platform illustrate how financial inclusion initiatives are most effective when embedded within broader economic empowerment programmes (Yunus, 2007; Jack & Suri, 2014).

Second, although GDP growth was not significantly related to financial inclusion, this does not diminish its developmental importance; rather, it suggests that ASEAN policymakers should

prioritise the quality and targeting of financial inclusion programmes – including financial literacy education, appropriately designed products, and supportive regulatory frameworks – over simple expansion of access metrics, following examples such as Brazil's correspondent banking model and China's digital finance platforms (Beck et al., 2007; Demirgüç-Kunt, 2022).

Third, the significant demographic effect suggests that age-appropriate, life-stage-specific financial inclusion strategies should be developed, ranging from basic banking and digital payment adoption for younger adults to credit access and wealth-building products for working-age adults, and pension and healthcare financing products for older populations. Fourth, although interest rates were not significantly related to financial inclusion, central banks and financial regulators should continue to monitor how expanding financial access interacts with monetary policy transmission and credit allocation, as demonstrated by the Reserve Bank of India's Priority Sector Lending programme and the Central Bank of Kenya's regulatory adaptation to mobile money expansion (Reserve Bank of India, 2019; Jack & Suri, 2014). Finally, given the considerable heterogeneity across ASEAN member states, stronger regional cooperation and knowledge-sharing, potentially building on Singapore's experience with digital payment infrastructure, alongside continuous monitoring and evaluation mechanisms, would support more effective and contextually responsive financial inclusion policy across the region. Fifth, given the strong alignment between the study's findings and the objectives of Islamic finance, ASEAN regulators and Islamic financial institutions should consider integrating zakat, waqf, and Islamic microfinance more systematically into national financial inclusion strategies, targeting the demographic and labour-market segments identified in this study as most closely associated with financial exclusion.

This study is not without limitations. The financial inclusion measures employed, while internationally recognised, capture access and usage rather than the full multidimensional quality of financial services. The 2000–2023 study period encompasses major structural disruptions, including the global financial crisis and the COVID-19 pandemic, which may not be fully captured by the static panel model employed. Additionally, while four macroeconomic and demographic indicators were examined, other potentially relevant factors, including institutional quality, regulatory effectiveness, and educational attainment, were not incorporated and may have introduced specification bias. Future research should therefore pursue micro-level analyses using household and firm-level data, employ advanced econometric techniques such as instrumental variable estimation or dynamic panel GMM models to address potential endogeneity, investigate the specific transmission mechanisms linking financial inclusion to economic outcomes, and conduct comparative analyses across ASEAN subgroups differentiated by income and development stage.

In conclusion, financial inclusion in ASEAN should be pursued as a strategic component of inclusive development, supported by coordinated policy efforts spanning employment generation, demographic targeting, and regional cooperation, to ensure that financial access genuinely

advances the economic well-being of all ASEAN citizens. In doing so, ASEAN policymakers and Islamic financial institutions alike can advance a shared agenda in which financial inclusion serves simultaneously as a driver of the SDGs and as a practical expression of the Maqasid al-Shariah, reinforcing the region's position at the forefront of inclusive and Shariah-compliant sustainable development.

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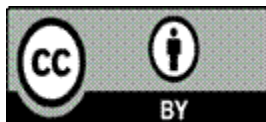
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