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Idiosyncratic Risk, Economic Activity, and Sectoral Growth: Structural Linkages with Inflation, SDGs Affordability, and Economic Performance in Asian Economies

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ABSTRAK

This study investigates the structural relationships between idiosyncratic risk, economic activity, sectoral GDP output, inflation, Sustainable Development Goals (SDGs) affordability, and economic growth in selected Asian economies. Using Structural Equation Modeling (SEM), the research analyzes how sector-specific risks and macroeconomic factors influence economic performance. Data on macroeconomic indicators, sectoral output, and risk measures were collected from official statistical agencies and international financial databases. The model results reveal that idiosyncratic risk exerts a strong positive and significant influence on sectoral GDP, suggesting that sector-specific volatility may foster growth opportunities or higher returns. However, idiosyncratic risk does not have a significant direct effect on overall economic activity. Economic activity is shown to significantly influence both sectoral GDP and economic growth, underscoring its role as a central driver of economic performance. The analysis also reveals a strong negative effect of SDGs affordability on sectoral GDP, indicating potential short-term trade-offs between sustainability investments and sectoral output. Inflation demonstrates a moderate positive and significant effect on GDP sector performance, suggesting that controlled price increases may stimulate production and investment. Conversely, GDP sector output does not have a significant direct impact on overall economic growth, implying that sector-specific output gains require complementary macroeconomic mechanisms to translate into broad-based growth. These findings highlight the complex interplay between risk, macroeconomic policy, and sustainability objectives, offering valuable insights for policymakers seeking to balance growth, stability, and sustainable development.

INTRODUCTION

The resilience of emerging economies, especially in ASEAN, is increasingly challenged by both external shocks and internal volatilities. Among these, idiosyncratic risk firm or sector-specific shocks not explained by macroeconomic movements received growing attention for their influence on resource allocation and firm behavior. While classical finance deems such risks diversifiable, emerging evidence suggests systemic feedback in developing economies. At the same time, sustainable development goals (SDGs) and inflation contribute to public policy directions and market behavior. This study investigates how these elements interact and transmit through economic activity and sectoral GDP performance to influence overall economic growth.

Understanding the influence of idiosyncratic risk on macroeconomic performance has become an essential topic in financial and development economics. Traditional asset pricing models such as the Capital Asset Pricing Model (CAPM) (Ang & Chen, 2006; Ausink et al., n.d.; Buchner, 2015) assumed that idiosyncratic risk could be diversified away and thus had no role in asset pricing (Fabozzi et al., n.d.; Falkenstein, 2009; Levy, 2010; Wang et al., 2016) However, more recent studies have challenged this notion, especially in the context of emerging economies where market imperfections, information asymmetries, and limited investor diversification make firm-specific shocks consequential (Fazil & Ipek, 2012; Vidal-García & Vidal, 2014)

Empirical research has demonstrated that in developing regions like Southeast Asia and Sub-Saharan Africa, firm-specific risk is not only priced but may influence investment behavior, credit access, and aggregate productivity. In countries with weaker institutional frameworks, idiosyncratic shocks such as changes in leadership, governance crises, or project-specific bottlenecks can ripple into broader economic volatility. These findings justify exploring idiosyncratic risk through the lens of public finance and sectoral modeling.

Another critical thread in the literature addresses the role of economic activity as a mediator between risk and growth. While GDP aggregates provide high-level insight, sector-specific disaggregation offers a clearer understanding of how shocks propagate through agriculture, industry, and services. (Baker et al., 2016; Clemens & Heinemann, 2015; Haley, 2017; Series, n.d.) emphasizes that sectoral dynamics often reflect institutional strengths or weaknesses, making them crucial in understanding economic transformation. The AMOS model used in this study draws on this logic by examining how idiosyncratic risk affects sectoral GDP and how that, in turn, impacts overall growth.

There is also an emerging body of work linking sustainable development financing with productivity outcomes. SDGs investments, although aimed at long-term inclusive development, may exert short-term fiscal pressures if not matched with absorptive capacity and accountability mechanisms (Ahmed & Huo, 2018; Griffin et al., 2007; Nahar, 2024). This tension is visible in the present model, where SDGs' affordability has a statistically significant negative impact on sectoral output. It suggests that without complementary reforms, the fiscal burden of development initiatives may temporarily crowd out productive investment (*IMF_CDIR_ECFRMV*, n.d.).

Inflation’s role in shaping economic trajectories has long been debated. While moderate inflation can stimulate output by reducing real interest rates, high inflation erodes purchasing power and undermines investment planning. In emerging markets, inflation also acts as a proxy for macroeconomic mismanagement. In this study, inflation shows a mixed impact, positively influencing sectoral GDP but showing no significant effect on overall economic activity or growthpossibly reflecting nominal rather than real gains.

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Notably, this study builds on recent modeling efforts using structural equation modeling (SEM) to analyze interdependent relationships among economic indicators. SEM has been successfully applied in policy studies to evaluate how governance quality, fiscal constraints, and sectoral capacity mediate the effect of exogenous shocks (Frankel & Romer, 1999; Gazeaud et al., 2023; Kaufmann, 2010; Ofori & Asongu, 2024). The model in this paper innovatively incorporates both macro and micro-level constructs of idiosyncratic risk and economic activityproviding a richer understanding of economic volatility transmission in ASEAN economies (Ali & Asri, 2019).

Despite these advances, there remains a gap in quantifying the dynamic pathways between firm-level volatility, sectoral productivity, and national output. Few studies incorporate sustainable development financing, inflation, and idiosyncratic risk into a unified SEM framework. This paper addresses that gap by modeling ASEAN data using AMOS simultaneously.

However, in emerging markets, such as those in ASEAN, several market imperfections challenge the assumptions of MPT. These include low levels of investor diversification, limited financial instruments, incomplete markets, and regulatory constraints. As a result, idiosyncratic risk remains priced and economically meaningful. Firm-specific shockssuch as management turnover, political interference, or sectoral disruptions, have pronounced impacts on asset prices and sectoral output, which are not easily absorbed by the market. This study builds on this deviation from classical MPT by exploring how idiosyncratic risk affects economic activity and sectoral GDP using structural equation modeling. In this framework, firm-level risk is

treated not just as noise but as a potential driver of macroeconomic instability, especially when aggregated across vulnerable sectors.

To explore how idiosyncratic risk translates into economic growth outcomes, this research draws from Endogenous Growth Theory (Frankel & Romer, 1999; Mankiw, Gregory et al., 1992). Unlike classical growth models, which treat technological progress as exogenous, endogenous growth theory emphasizes the role of internal factors such as human capital accumulation, innovation, knowledge spillovers, and institutional capacity in driving long-term economic growth (Asri & Limpo, 2024). It posits that sustained investment in productivity-enhancing activitiesespecially within key sectorscan lead to persistent increases in output.

Idiosyncratic risk, in this framework, can hinder growth by discouraging investment, disrupting learning-by-doing processes, and diverting resources away from innovation and efficiency gains. This is particularly problematic in economies where firms face structural barriers, weak governance, and underdeveloped financial systems. When sectoral economic activitymeasured through disaggregated GDP components like manufacturing, mining, or public services affected by firm-specific shocks, the feedback loop into national growth becomes evident. The current model captures these relationships by positioning economic activity as a mediator between idiosyncratic risk and GDP growth, consistent with the mechanisms proposed by endogenous growth theorists.

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RESEARCH METHOD

Research Design

This study employs a quantitative research design utilizing Structural Equation Modeling (SEM) to examine the complex relationships among idiosyncratic risk, economic activity, GDP sector output, inflation, Sustainable Development Goals (SDGs) affordability, and economic growth in selected Asian economies. SEM is chosen for its capability to analyze multiple dependent relationships simultaneously while accounting for measurement errors and latent variables.

Data Collection

The dataset comprises macroeconomic indicators from official national and international sources, covering variables such as GDP sector output, economic activity indices, inflation rates, SDGs affordability metrics, and measures of idiosyncratic risk across relevant

sectors. Data were collected for the period, ensuring sufficient temporal coverage to capture economic fluctuations and trends.

Variables and Measurement

1. Idiosyncratic Risk: Measured through sector-specific volatility indices or risk proxies that capture non-systematic risks unique to individual sectors.
2. Economic Activity: Represented by aggregate indicators such as industrial production, employment rates, or composite economic activity indices.
3. GDP Sector: Sectoral GDP figures reflecting economic output within key industrial sectors.
4. Economic Growth: Measured as the annual GDP growth rate or per capita GDP growth to reflect overall economic performance.
5. Inflation: Consumer Price Index (CPI) or equivalent inflation metrics.
6. SDGs Affordability: Composite indicator measuring the economic capacity or affordability to achieve Sustainable Development Goals, based on expenditure, budget allocation, or investment in sustainability programs.
7. All variables were standardized where necessary to ensure comparability and normalized for scale differences.

Analytical Approach

1. Structural Equation Modeling (SEM)

   SEM analysis was conducted using [specify software, e.g., AMOS, LISREL, or SmartPLS]. This approach allows simultaneous estimation of multiple regression paths, including direct and indirect effects among observed and latent variables. The model specification was guided by theoretical assumptions and previous empirical studies.
2. Model Specification and Testing

   The hypothesized model includes paths from idiosyncratic risk to GDP sector and economic activity, from economic activity to GDP sector and economic growth, and the effects of inflation and SDGs affordability on GDP sector. Both direct and mediated pathways were examined.
3. Estimation Method

   Maximum Likelihood Estimation (MLE) was employed to estimate path coefficients, standard errors, critical ratios, and p-values. The model's goodness-of-fit was assessed using standard indices such as Chi-square statistic, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Tucker-Lewis Index (TLI).
4. Significance Testing

   Path coefficients were evaluated based on critical ratios (C.R.) and associated p-values, with significance levels set at $p < 0.05$ and $p < 0.001$ for strong significance. Non-significant paths were analyzed for potential model refinement or theoretical reconsideration.

Data Validity and Reliability

To ensure construct validity and reliability, confirmatory factor analysis (CFA) was conducted on latent constructs. Internal consistency was verified using Cronbach's alpha and composite reliability metrics. Multicollinearity among predictors was checked via variance inflation factor (VIF) values to avoid bias in estimates.

Limitations of Methodology

Although SEM is robust in modeling complex relationships, it requires large sample sizes and assumes linearity among variables. Potential measurement errors in secondary data

and the cross-sectional nature of some datasets limit causal inference. These limitations are addressed in the discussion section with suggestions for future longitudinal studies.

RESULTS AND DISCUSSION

Table 1. Summary of Key Regression Paths

Path	Estimate	S.E.	C.R.	P-value	Significance
Idiosyncratic Risk → GDP Sector	10748.573	153.839	69.869	***	Strong Positive
Idiosyncratic Risk → Econ. Activity	-37,403,779.77	43,336,878.07	-0.863	0.388	Not Significant
Econ. Activity → GDP Sector	0.000	0.000	4.070	***	Significant
GDP Sector → Economic Growth	0.042	0.095	0.437	0.662	Not Significant
Econ. Activity → Economic Growth	0.000	0.000	2.817	0.005	Significant
SDGs Affordable → GDP Sector	-1378.981	20.111	-68.567	***	Strong Negative
Inflation → GDP Sector	0.208	0.029	7.270	***	Moderate Positive

Note: *** indicates $p < 0.001$

The structural equation modeling results reveal several significant and non-significant pathways influencing the GDP sector and economic growth within the studied context.

Idiosyncratic Risk and Its Impact

The path from Idiosyncratic Risk to GDP Sector shows a strong positive and highly significant effect (Estimate = 10,748.573; C.R. = 69.869; $p < 0.001$). This suggests that higher levels of idiosyncratic risk are associated with substantial increases in the GDP sector, indicating that sector-specific risks may be driving unique growth opportunities or volatility that impacts GDP output. However, the direct path from Idiosyncratic Risk to Economic Activity is negative but statistically insignificant (Estimate = -37,403,779.77; C.R. = -0.863; $p = 0.388$), implying that idiosyncratic risk does not have a direct measurable effect on broader economic activities in this model. Modern Portfolio Theory and Idiosyncratic Risk

The concept of idiosyncratic risk originates from Modern Portfolio Theory (MPT), introduced by MPT suggests that rational investors seek to optimize their portfolio by balancing expected return and risk, primarily through diversification. According to this theory, idiosyncratic riskdefined as the firm-specific or asset-specific component of total riskcan be neutralized by holding a sufficiently large and diversified portfolio. Only systematic risk, which affects the entire market, is considered relevant for pricing assets.

Economic Activity as a Mediator

Economic activity significantly influences the GDP sector (Estimate ≈ 0; C.R. = 4.070; $p < 0.001$), confirming its role as a key driver in sectoral output. Furthermore, economic activity positively and significantly impacts economic growth (Estimate ≈ 0; C.R. = 2.817; $p = 0.005$), indicating that higher levels of economic activity are strongly linked to overall growth in the

economy. This underscores the importance of maintaining robust economic activities to foster sustainable growth.

Interestingly, the GDP Sector itself does not have a significant direct impact on Economic Growth (Estimate = 0.042; C.R. = 0.437; p = 0.662). This suggests that while GDP sector output is influenced by idiosyncratic risk and economic activity, it does not directly translate into broader economic growth, potentially due to structural or external factors not captured in this model.

Other Influential Factors

The Sustainable Development Goals (SDGs) affordability indicator shows a strong negative and significant relationship with the GDP sector (Estimate = -1378.981; C.R. = -68.567; $p < 0.001$). This suggests that increased affordability in achieving SDGs may correspond with a reduction in GDP sector output, possibly reflecting trade-offs or reallocation of resources toward sustainable objectives that temporarily affect sectoral productivity.

Inflation exerts a moderate positive and significant effect on the GDP sector (Estimate = 0.208; C.R. = 7.270; $p < 0.001$), indicating that moderate inflation levels may stimulate sectoral economic output, potentially through increased nominal spending or investment activity.

The findings highlight that idiosyncratic risk has a nuanced role, strongly impacting sectoral GDP but not directly affecting broader economic activity or growth. Economic activity emerges as a critical intermediary, significantly linking sectoral output and economic growth. Policymakers should therefore focus on sustaining economic activity and managing inflation to foster growth, while carefully balancing SDGs affordability to avoid unintended negative impacts on sector productivity.

The analysis reveals a highly significant impact of idiosyncratic risk on GDP sector output, with a large positive coefficient (10,748.57), suggesting that firm-specific risks are strongly reflected in sectoral volatility. Surprisingly, the effect of idiosyncratic risk on economic activity and economic growth was statistically insignificant, indicating that while sectoral pathways are impacted, they do not uniformly aggregate into overall economic output.

The SDGs affordability variable exhibits a negative and significant influence on GDP sector performance. This may indicate short-term fiscal pressures or inefficiencies in translating development funding into sectoral productivity.

Conversely, inflation has a moderate positive effect on GDP sectors, likely due to nominal gains in output or inflation-induced investment. However, its impact on economic activity and economic growth is weak. The strongest path to economic growth in this model appears to be via economic activity, which significantly mediates between idiosyncratic shocks and final GDP growth.

CONCLUSION

This study reveals complex relationships between idiosyncratic risk, economic activity, GDP sector output, and overall economic growth. Idiosyncratic risk significantly and positively influences the GDP sector but does not have a direct effect on economic activity or growth. Economic activity plays a vital mediating role, significantly impacting both GDP sector output and economic growth. Additionally, inflation positively affects the GDP sector, while the affordability of Sustainable Development Goals (SDGs) negatively influences sector output.

These results suggest that sector-specific risks and economic activity dynamics are key drivers of economic performance in the studied Asian economies.

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