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MACROECONOMIC RISK AND GROWTH IN THE SOUTHEAST ASIAN COUNTRIES: INSIGHT FROM INDONESIA

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PREFACE

The world's economic condition after suffering the COVID-19 pandemic has transformed dramatically by several challenges that affected numerous aspects. These potential issues include volatility in stock prices, labor markets, financial development, financial market risk, etc. Although the economy in various countries around the world is now developing for the better, the presence of problems such as geopolitical tensions and economic uncertainty still increases the probability of the emergence of a macroeconomic risk for certain countries.

The volume provides contemporary issues in the field of finance and economy in Indonesia and some Southeast ASEAN countries. These concentration areas, emerging markets, offer a unique setting that differs from those countries in developed markets, such as the domination of institutional and family-owned and the significant contribution of small businesses to economic growth. As a result, it is interesting to see the economic viability and risk with these background countries. This volume covers these topics and is represented in several papers written by authors from multiple countries. In Indonesia, a paper on this issue finds that business risk and asymmetric information significantly affected the increase of friction, while the stability of the economy reduced the friction. Another paper in this issue finds that business risk is associated with the instability in stock price that can cause the firm's financial stability.

Firms in emerging countries are also often difficult to sustain because of the lack of risk assessment practice. Hence, this volume contains a discussion regarding risk reporting and disclosure practices, and it will bring a new finding in the accounting practice in emerging economies. Also, a paper will propose a new method for evaluating the risk of investing in the stock portfolio that could be applied to investment data interest and decision-making, which is considered essential for business in the long term. Macroeconomic risks are also inseparable from the social context in the country. Thus, a paper in this book presents labor force, migrant workers, and gender equality, which are important to be discussed in this topic.

Apart from several aforementioned new issues in finance and economics, some classical issues such as systemic risk, bank stability, and profitability also be covered in this volume because those topics are never absolute to be discussed, particularly in the context of macroeconomics risk. All the paper's findings will enrich the evidence and literature on economic growth, economic risk, and others. These findings would be immensely beneficial for stakeholders, governments, policy-makers, and the people within the sector under financial risk, economic analysts, and others in order to tackle similar problems regarding the macroeconomics risk from the fundamentals.

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CHAPTER 1

BUSINESS-SPECIFIC RISKS AND STOCK MARKET VOLATILITY AS INDONESIAN MACROECONOMIC RISK ESTIMATORS

Ezra Valentino Purba and Zaäfri Ananto Husodo

ABSTRACT

This study aimed to know the effect of cross-sectional risk, which comprises business-specific risk and stock market volatility, as a variable for estimating macroeconomic risk in Indonesia. This study observes public companies in Indonesia and Indonesian macroeconomic data from 2004 to 2020. In this study, the author uses term spread as the dependent variable that reflects macroeconomic risk. The cross-sectional risk comprises financial friction (FF), cash flow (CF), debt–service ratio, and stock market volatility as independent variables. By using the Autoregressive Distributed Lag (ARDL) Model method, this study shows that business-specific and stock market risk can estimate macroeconomic risk, so that it becomes an early signal of economic shock, such as recession or high inflation, in the future. The model in this study also examines the cross-sectional risk relationship with other macroeconomic indicators, such as the Consumer Confidence Index (CCI), money supply (M0), and Indonesia's trade balance (TB).

Keywords: Macroeconomic risk; business risk; volatility; financial friction; Indonesian stock market; cross-sectional risk

JEL classifications: E0; G1; G32

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1. INTRODUCTION

In 2008, the world was under heavy pressure due to the Global Financial Crisis that hit the global economy. Economic activity fell dramatically in all corners of the world. The United States, the country with the largest economy in the world, experienced an economic contraction of 2.5% in 2009, the worst since 1947. In addition, the labour market also experienced shocks. The unemployment rate in the United States rose to 9.9% in 2009, translating to nearly 9 million Americans losing their jobs. Apart from the USA, Europe, and Asia also feel the impact of this economic pressure, including Indonesia. In 2009, Indonesia's economic growth fell to 4.6%, whereas previously, Indonesia experienced a vast economic acceleration of 6%. Fortunately, the impact of the financial crisis in Indonesia was insignificant for two reasons: (1) the appropriate policy response from Bank Indonesia and the Government of Indonesia; and (2) the relatively small proportion of Indonesia's exports to GDP (Chatib Basri & Rahardja, 2010).

Given the magnitude of the impact experienced by the 2008 recession, macroeconomic models should have captured the symptoms of a recession that occurred because economists have an economic model to predict the business cycle and thus should be able to predict a recession (Haltmaier, 2011). However, a recession of enormous magnitude remains inevitable. Even after the crisis occurred, economists and policy-makers still underestimated the impact of the financial crisis on the real economy, arguing that macroeconomic indicators such as GDP growth, consumption levels, investment, and unemployment were still safe. Based on these problems, the author sees that the macroeconomic model must be able to describe business conditions wholly and factually by including business-specific risks in estimating macroeconomic risks.

To examine the relationship between macroeconomic risk and business risk, the author found that macrofinance studies have proven that asset price risk movements and business performance affect economic fluctuations (Cochrane, 2017). Previous macrofinance research found various indicators that can be used as predictors of economic risk (Bali, Brown, & Caglayan, 2014; Chen, 1991; Fama & French, 1989; Pellegrini, Pellegrini, & Sironi, 2019), for example, default spread, term spread, changes in short-term interest rates, dividend yield, index stock market, inflation, unemployment rate, and real GDP growth. Dividend yield and default spread are some indicators that align with the business cycle. On the other hand, variables such as short-term interest rates, term spreads, and industrial production growth explain future business cycles. In this study, the author attempts to estimate the future recession risk so that investors and policy-makers can make informed decisions before a recession occurs. Therefore, the dependent variable in this study must have properties as a predictor of recession.

As the main dependent variable, the author uses the term spread as a proxy for macroeconomic risk. The term spread is the difference between the yield on long-term government bonds and the yield on short-term government bonds. This variable has been recognized by macroeconomic and financial theory as a predictor of the business cycle and consistently affects interest rates, inflation, and economic growth (FAMA, 1990; Fama & French, 1989; Harvey, 1989); in their research, they argue that term spread is a good predictor in predicting short-term business cycles. Empirical research conducted by Berardi (2009) found that the term spread has an *R*-square of 85% to predict economic growth in three months and an *R*-square of 57% to predict economic growth in one year. Due to the high reliability of term spread in predicting macroeconomic risk, the author makes this variable the dependent variable indicating future macroeconomic risk. In addition, term spread can explain macrofinancial relationships (Borio, Drehmann, & Xia, 2019; Min, 1998).

As a variable that reflects risk expectations on the economy, the author considers that the term spread variable has a strong relationship with business risk and stock market risk. Since the economy is built by business activities, the aggregate risks or pressures on business activities will affect the economy at a macrolevel. In addition, the stock market has also been shown to consistently explain macroeconomic conditions (Cochrane, 2005; Khandaker & Islam, 2015) because the stock market is considered to capture all information on the economy, so the pressure on the stock market indicates pressure on the economy as well. Therefore, in this study, the author includes several business-specific and stock market risks as independent variables that explain term spreads. These risks include information asymmetry, which in many cases causes market failure (Akerlof, 1970; Bond, 2009; Cawley & Philipson, 1999; Halov & Heider, 2011), business premium risk, liquidity risk, leverage risk, and market volatility risk. In this study, the author named these risks as cross-sectional risks. In the following paragraphs, the author will explain the relationship between each component of cross-sectional risk proxied by FF, CF, DSR, and stock market volatility.

FF (Hall, 2013) is a calculation of business risk in the economic system whose calculation is the difference from the aggregate performance of the company minus the risk-free interest rates obtained by investors. This variable indicates the business risk premium. The formula for calculating FF is the same concept as the market risk premium formula, which is the difference in market return minus the risk-free rate. In a market risk premium, the indicator provides the extra return information that the market demands as risk increases. Likewise, FF, where the higher the friction, the higher the company's return required by investors or banks for increased risk. Hall points out that conventional measures such as bond spreads, investment-to-GDP ratios, and unemployment rates cannot indicate potential future financial crises. Hall argues that financial measures are better for identifying potential crises than macroeconomic measures.

In Indonesia, the author found that during the 2008 global financial crisis, the average friction was constantly increasing due to increasing economic uncertainty, which translated to increased business risk. This also impacts the next few years because the friction value remains high until the end of 2012, indicating high uncertainty in the business world even after the crisis. Indonesia's friction data, a pattern in which business premiums remain high after the crisis, is in line with Hall's (2013) findings. After 2013, the friction value began to decline, indicating that business risks and uncertainties have decreased due to an increasingly stable economy.

The increase in friction during 2008–2012 also indicated asymmetric information in the market. In that period, banks offered low deposit interest rates, while the return on invested capital (ROIC) received by companies was high. This is because the information is not symmetrical between banks that provide funds and companies that make investments. When banks disburse loans, only companies know the return they will get in the future, while banks cannot get that information accurately. This causes friction to become one of the indicators of asymmetric information, which ultimately reflects the risk of the company in general as well.

The second cross-sectional risk variable is CF, which explains the company's liquidity risk and is able to predict macroeconomic risk (Fazzari, Hubbard, Petersen, Blinder, & Poterba, 1988; Galindo Martín & Méndez Picazo, 2002; Johnson & Lee, 1994). The relationship between CF movements and the business cycle occurs because the company has predicted future economic conditions. When a company expects a bad economic prospect going forward, the company tends to increase the amount of cash so that the company can survive when the business situation is uncertain. Based on these studies, it can be concluded that CF can be a proxy for calculating the company's short-term risk.

To estimate CF movements in Indonesia, the author adds the CFs of 203 public companies listed on the Indonesian stock market since 2004. This sample selection aims to create data stability, where there is no shock caused by companies with large cash that have just gone public after 2004. The author found a six times significant increase in CF in quarter-I 2007, quarter-II 2007, quarter-III 2009, quarter-II 2010, quarter-IV 2010, and quarter-I 2020. From this data, it is found descriptively that the company tends to increase its CF when the company sees that there will be a recession in the next few periods. On the other hand, when the economy is stable, as in the third quarter of 2018, more cash outflows are used for investment.

The third cross-sectional risk that the author examines is a measure of leverage risk which is measured using the DSR. DSR is the interest expense paid divided by the company's total revenue (Drehmann & Juselius, 2012). Several studies consider that this ratio is more effective than another leverage ratio, the debt-to-GDP ratio. This is because DSR is able to capture changes in interest expense paid by the company within a certain period of time. In addition, for the case of Indonesia, the debt-to-GDP ratio is also less effective in calculating leverage risk because Indonesia's GDP is highly supported by household consumption and MSMEs, so Indonesia's GDP is not sensitive to changes in corporate debt relative to GDP.

Based on the author's data from 2004 to 2020, Indonesia's DSR did not experience significant fluctuations in 2008 but had a large impact on the 2020 recession. Since the first quarter of 2020, Indonesia's DSR has consistently been at the highest level. Indonesia's DSR reached its highest point in the fourth quarter of 2020. Based on some prior studies, this was due to the fact that in 2008, the global financial crisis did not massively suppress Indonesia's real economy because Indonesia's exports in 2008 only contributed 1.9% of GDP, so the global recession put less pressure on domestic companies. However, the 2020 recession has a different impact because the COVID-19 pandemic attacks Indonesian household consumption, which affects 56% of the GDP. Therefore, the decline in public consumption affects the income of most Indonesian companies. However, due to the cost of debt that must continue to be paid, Indoneseia's DSR reached its highest point throughout 2020. The maximum value of DSR was 11.08% which occurred in the fourth quarter of 2020, and the minimum value was 4.56% which occurred in the first quarter of 2013.

The last variable in the cross-sectional risk studied in the author's model is the stock market's volatility. According to French, Schwert, and Stambaugh (1987), stock market volatility is defined as a stock risk which is the covariance between returns and one or more variables. This variable is included to analyze the effect of the stock market on macroeconomic risk in addition to the company's fundamental variables that have been described with the previous variables. The reason for choosing this variable is that the author wants to prove a strong relationship between the stock market and macroeconomics, as found in previous studies (Choudhry, Papadimitriou, & Shabi, 2016; Diebold & Yilmaz, 2009; Engle & Rangel, 2008; Hamilton, 1996).

From the data on the volatility of the Indonesian stock market, the author found that the volatility value of Indonesia experienced only five shocks, namely in the fourth quarter of 2004, the fourth quarter of 2006, the fourth quarter of 2008, the third quarter of 2009, and the second quarter of 2020 if we examine more deeply, the volatility of the Indonesian stock market increases when approaching crisis events such as high inflation in 2005, financial recession in 2008, and the COVID-19 pandemic in 2020.

The author argues that Indonesia's macroeconomic indicators can be explained using cross-sectional risk variables, all of which can be taken from public companies in Indonesia and capital market data. Business premium risk and asymmetric information are explained by FF, liquidity risk is explained by CFs, the DSR explains leverage risk, and stock market risk is explained by volatility in the Indonesian stock market. The model that the author uses is expected to be able to estimate the risk of the recession that occurs in the future by using business-specific risk analysis and stock market volatility.

In addition to testing the robustness of the model, this study also examines macroeconomic variables other than term spread, such as the CCI, M0, and TB. Each variable is chosen to represent a different perspective in macroeconomics. Where term spread represents the state of the financial market and interest rates, CCI represents public consumption, which contributes 56% to Indonesia's GDP, M0 represents Indonesia's monetary condition, and TB represents Indonesia's interaction with international trade. Using these variables, this research is expected to capture economic risks holistically from various perspectives.

2. LITERATURE REVIEW

2.1. Theoretical Foundations of Macrofinancial Relationships

Microfinance is a study that studies the relationship between asset prices and economic fluctuations (Cochrane, 2017). Asset prices and returns are correlated with the business cycle. The recessions in 2008 and 2020 are evidence of this correlation. In both periods, stock returns and bond yields fell along with economic growth and inflation. Several previous studies have examined macrofinance relationships from various perspectives: leverage and balance sheets (Brunnermeier, 2009; He & Krishnamurthy, 2013), CF and behavioural finance (Shiller, 1981, 2014), and long-term risk (Bansal, 2012; Bansal & Yaron, 2004). Although there are various perspectives, all macrofinancial research generally proves a strong relationship between asset prices and macroeconomic conditions.

Aizenman and Pasricha (2012) found several financial market indicators that influence macroeconomic risk, including external exposure (external debt-reserves/GDP, short-term debt-reserves/GDP, foreign currency assets, external portfolio debt assets/GDP, portfolio debt liabilities/GDP), institutions (quality regulators, bank supervision), financial developments (private credit from domestic banks/GDP, stock market value/GDP), and banking health indicators (HHI, concentration ratio, net interest margins, NPL, liquid reserves/assets, and capital to asset ratio). The results of this study indicate that countries with low external debt-reserves/GDP have a more resilient market than countries with high external debt-reserves/GDP.

2.2. Macroeconomic Risk

Macroeconomic risk is defined as the change in asset value due to persistent shocks to the real economy (meaning negative growth and inflation). According to the NBER, an economy is categorized as a recession when there is a contraction in real GDP, corporate revenue, unemployment rate, production, and retail sales within a few months. Previous research has examined the determinants that cause recessions to occur (Blanchard, Dell'Ariccia, & Mauro, 2010; Frankel & Saravelos, 2010; Lane & Milesi-Ferretti, 2011) and found two interesting findings: first, most research focuses on macroeconomic variables; and second, the emerging consensus narrative about a global recession starts from the United States to high-income countries and finally to emerging market countries.

Several variables that can be used as proxies for macroeconomic risk include the default spread, term spread, changes in short-term interest rates, dividend yield, stock market index, inflation, unemployment rate, and real GDP growth (Bali et al., 2014; Chen, 1991; Fama & French, 1989). Several financial markets variables, such as dividend yield and default spread, are indicators that explain the health of the economy, which goes hand in hand with GDP growth. Variables such as short-term interest rates, term spreads, and the lag of industrial production growth explain future business cycle growth. Since this study focuses on predicting the risk of a future recession, which therefore means incorporating predictive factors, the author uses the spread term as the dependent variable of this study.

Empirical research evidence has found consistent results regarding the ability of forecast term spreads to predict future economic activity (Borio et al., 2019; Estrella & Hardouvelis, 1991; Estrella & Mishkin, 1998; Plosser & Geert Rouwenhorst, 1994). The real equilibrium spread is equal to the marginal rate of substitution between current consumption and consumption at maturity and, therefore, can calculate consumption growth. Output and consumption are highly correlated, which means that the current equilibrium real rate is expected to be correlated with future output growth. With this understanding, it can be concluded that the higher the spread term means investors expect that there will be a slowdown in growth in the near term or interpreted as a potential recession in the short term.

2.3. Cross-sectional Risk

Cross-sectional risk is a risk consisting of business-specific risk and stock market volatility. This study has a main hypothesis where cross-sectional risk has an influence on estimating Indonesia's macroeconomic risk. The cross-sectional risk itself consists of FF, CF, DSR, and stock market volatility.

FF (Hall, 2013) is a measure of business risk in the economic system, which is defined as the difference between the aggregate performance of companies and the risk-free rate. Hall points out that conventional measures, such as corporate bond spreads, investment-to-GDP ratios, and unemployment rates, are unable to indicate potential future financial crises. Hall argues that the aggregate size of the firm's analysis can show better results in predicting potential future financial crises. In general, FF is proven to affect economic activity. Gertler and Karadi (2011) and several other researchers prove that during a recession, FF is at a worse level. Hall (2011) finds that when friction is at a low level, there is an interpretation that borrowing money becomes easier because of low interest rates and low investment returns, so Hall (2011) argues that negative friction has implications for the housing bubble in the United States. Gertler and Kiyotaki (2010) argue that FF affects real activity via funds in banks. When friction is low, banks will find it easier to provide credit, while when friction is high, banks will be selective in providing credit and cause misallocation of capital, which results in suboptimal productivity. In the end, FF is a very crucial variable in the economy to explain economic activity in real terms.

CF is the amount of cash transferred to the company or from the company. In general, CF refers to the movement of money into or out of business, which consists of three categories: operating CF, investment CF, and financing CF (Ross, Westerfield, & Jordan, 2003). The 2008 recession showed clearly that the market is far from perfect, so CF management is necessary to prevent future business and economic risks (Baskin, 1987; John, 1993). Opler, Pinkowitz, Stulz, and Williamson (1999) found several factors that cause companies to hold cash, including company growth prospects, short-term working capital imbalances, leverage levels, industry volatility, and company size. This study also finds that asymmetric information and economic uncertainty increase the cash held by the company. Empirical research by Lins, Servaes, and Tufano (2010) argues that companies use liquidity to protect themselves from risk. This study found that cash holding is used to protect the company when experiencing a CF shock during a bad economy. On the other hand, when the economy is good, companies will use credit facilities to exploit future business opportunities.

DSR is a measure of financial constraints related to company debt to investigate possible recessions and financial crises in the future (Drehmann & Juselius, 2012). Min (1998) argues that the DSR calculates the probability of liquidity problems that the economy will experience in the future. Min's research shows that the higher the aggregate DSR of a country, the lower the creditworthiness of that country, which causes the spread of sovereign bonds to be higher. In some of the countries studied, it was found that incomes began to decline several months before the recession occurred, which caused the DSR to begin to appear to increase as well. This finding is in line with the research results of Drehmann and Juselius (2014), which found that DSR has become a reliable early warning signal for predicting systemic economic risk in a period of less than one year. DSR tends to peak just before a shock or recession occurs.

French et al. (1987) define stock market volatility as stock risk, which is the covariance between returns on one or more variables. The relationship between stock market volatility and business cycles has become an important point in several studies and is able to provide information for policy-makers and investors to make decisions (Corradi, Distaso, & Mele, 2013; FAMA, 1990; Schwert, 1989). Several recent studies have also found a strong relationship between stock market volatility and to predict of macroeconomic variables even before the 2008 financial crisis (Choudhry et al., 2016; Diebold & Yilmaz, 2009; Engle & Rangel, 2008; Hamilton, 1996; Lee, 2019). Based on these empirical findings, stock market volatility has a causal relationship with the business cycle. Due to the very high correlation between volatility and macroeconomic conditions and this variable reflecting investor expectations, stock market volatility is the only stock market variable included in the model.

3. RESEARCH METHODOLOGY

Descriptive research in this study was conducted to examine the effect of cross-sectional risk variables on term spreads, which the author chose as proxies for macroeconomic risk in Indonesia. In addition, this study also explains cross-sectional risk consisting of business-specific risk variables and stock market risks, such as FF, CF, DSR, and stock volatility. This study was conducted longitudinally or through sample testing over a certain period (Malholtra & Dash, 2016). Data collection in this study was carried out using secondary data search techniques, through Refinitiv and the World Bank Database. The results of this study are expected to be used by further research, investors, banks, and other financial institutions, and the government as policy-makers.

In searching for the required research sample, the author found that there are 721 Indonesian companies listed on the Indonesia Stock Exchange. However, after the author conducted a screening process to adjust to the criteria, public companies listed from 2004 to 2020, the author found 708 companies eligible for research samples. After finding the sample, the author then performs data treatment in the form of treatment of missing, incomplete, and data that include outliers. The data cleaning process was carried out because the researcher's research method was sensitive to incomplete data and outliers. The treatment of outliers is carried out by a value replacement process or also known as winsorizing. In this study, the author does winsorize with tightness of 1%. The reason for this tightness is that the author sees that the data is stable at the time of winsorizing 2.5% and 5%.

3.1. Term Spread (TERM)

Previous macrofinancial studies have proven that term spreads can measure macroeconomic risk and potential future recessions. The higher the spread between long-term government bonds and short-term government bonds, the higher the