

Constructing a Multidimensional Financial Stability Index: A Focus on Internal and External Drivers in Developing Nations

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Abstract

This study constructs a financial stability index for various developing countries using data from 2005 to 2020, revealing varying levels of financial stability across nations and years. The study uses weighted average methods of index construction followed by UNDP. The study uses some internal and external elements of financial stability to construct the index. The findings indicate that most developing countries, including Albania, Algeria, Angola, Argentina, Bangladesh, and others, have consistently low financial stability scores throughout the period. A few countries, such as Belize, Brazil, China, and Malaysia, have experienced fluctuations, with instances of medium-level financial stability. Notably, China stands out as the only developing country achieving high financial stability, particularly after 2012, with an increasing trend peaking at 54.79 in 2020. The overall results highlight that, except for China, developing countries struggle to attain a high level of financial stability, mainly remaining within the lower or medium stability brackets. The study emphasizes the need for developing countries to enhance economic activities and infrastructure to improve their financial stability. Achieving this would require comprehensive policy measures to foster economic growth, improve access to finance, and promote financial inclusivity. The findings underscore the importance of structural and policy reforms in driving financial stability, which is crucial for sustainable development. This study highlights that by constructing a multidimensional index incorporating these internal and external factors, policymakers and researchers can better assess the financial stability of developing countries. This index provides a more comprehensive understanding of the financial system's strengths and weaknesses, allowing for more targeted policy interventions to enhance financial stability.

Keywords: Developing Nations, Financial Stability Index, Economic Growth, Policy Reforms.

Introduction

Financial stability is a fundamental pillar for the sustainable economic growth of any nation, particularly in developing economies where economic volatility is often more pronounced. Financial stability refers to the ability of a financial system to withstand shocks and disruptions, thereby maintaining its capacity to efficiently allocate resources, support investment, and sustain economic growth. *Financial stability* can be broadly defined as a condition in which the financial

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system, including institutions, markets, and infrastructure, operates efficiently, even in the face of external or internal shocks. According to the International Monetary Fund (IMF), financial stability is characterized by the absence of significant financial system disruptions that could adversely affect actual economic activity. This includes stable and well-functioning financial institutions, sound markets, and infrastructure that are resilient to shocks. The European Central Bank (2019) defines *financial stability* as a state where the financial system can absorb shocks without causing significant disruption to the functioning of financial markets or the economy.

When a financial system is stable, it encourages confidence among investors, consumers, and businesses, ultimately fostering a more resilient economic environment. Conversely, periods of financial instability, marked by volatility in banking sectors, currency markets, and broader financial systems, can have devastating effects, particularly in developing countries more vulnerable to external shocks (Allen & Wood, 2006).

In recent years, the global economy has experienced several financial crises, from the Asian financial crisis in the late 1990s to the global financial crisis of 2008, highlighting the importance of a stable financial system. In developing nations, maintaining financial stability is crucial due to the interdependence between the financial system and the real economy, where shocks in one area can have severe ripple effects across the entire economy. Therefore, understanding the drivers of financial stability, both internal and external, has become a critical area of research, particularly for policymakers seeking to safeguard their economies from potential crises. Furthermore, financial stability helps ensure that resources are allocated effectively in developing economies, promoting economic development. It also supports investment by reducing uncertainty and encouraging domestic and foreign investors to engage in long-term projects (Cecchetti, 2017).

On the other hand, financial instability can lead to severe recessions, banking crises, and currency devaluations, which can negatively impact economic growth. A stable financial system also ensures that monetary policy is transmitted effectively, allowing central banks to stabilize inflation and unemployment. Additionally, financial stability is crucial for the smooth functioning of payments systems, efficient credit allocation, and confidence in the economy. These functions are even more critical in developing countries, as financial markets are often less developed, making them more susceptible to shocks (Allen, 2017).

The factors contributing to financial stability are multifaceted, encompassing internal and external elements. A comprehensive understanding of these factors is essential for constructing a multidimensional index of financial stability, particularly for developing countries where vulnerabilities to both internal and external shocks are high.

The ultimate objective of this study is to construct a multidimensional index of financial stability for efficient measurement. Furthermore, this index will give an accurate picture of financial stability among developing countries because it focuses on the internal and external financial stability factors. The index will capture the complexity of financial systems in developing nations, accounting for their unique challenges in maintaining stability. This tool will also enable policymakers, researchers, and financial institutions to make informed decisions, ultimately promoting sustainable economic growth and resilience. The construction of this index will address existing measurement gaps, ensuring a more accurate reflection of the status of financial stability across different countries.

Contribution of the Internal and External Factors to Financial Stability

The internal and external factors contribute to financial stability by addressing internal and external vulnerabilities. Internally, managing the interest rate spread, inflation, and bank risk levels

(measured by the Z-score) ensures that the domestic financial system operates efficiently and can withstand economic shocks. Externally, maintaining adequate foreign exchange reserves, a balanced current account and manageable external debt levels helps countries mitigate the risks associated with global economic fluctuations and capital flow volatility. In developing countries, these factors are remarkably interconnected. For instance, high inflation can weaken the banking sector, leading to broader interest rate spreads and lower Z-scores, destabilizing the financial system. Similarly, significant external debt levels can drain foreign exchange reserves and widen the current account deficit, increasing vulnerability to external shocks and further exacerbating financial instability.

By constructing a multidimensional index incorporating these internal and external factors, policymakers and researchers can better assess the financial stability of developing countries. This index provides a more comprehensive understanding of the financial system's strengths and weaknesses, allowing for more targeted policy interventions to enhance financial stability. The concept of financial stability is multifaceted, and its maintenance is critical for the sustainable economic growth of developing countries. Internal and external factors significantly shape a nation's financial stability. Including factors such as interest rate spread, inflation, Z-score, foreign exchange reserves, current account balance, and external debt in constructing a multidimensional index will provide valuable insights into the state of financial stability in developing nations. Through such an index, policymakers can be better equipped to navigate the complexities of financial stability, ultimately fostering more resilient and prosperous economies.

Significance of the Study

The significance of this study lies in its potential to provide both theoretical and practical insights into the concept of financial stability, particularly in the context of developing countries. Financial stability is a cornerstone of economic growth and development, and understanding the drivers of this stability is essential for policymakers, financial institutions, and international organizations aiming to foster sustainable economic environments. The study's construction of a multidimensional financial stability index, which includes internal and external factors, offers a more nuanced and comprehensive assessment of financial stability than traditional single-factor measures.

Theoretical Significance

From a theoretical perspective, this study contributes to the growing body of literature on financial stability by integrating multiple internal and external dimensions that shape financial system stability in developing countries. Most existing studies focus on internal factors (such as inflation or interest rate spreads) or external factors (such as foreign exchange reserves or external debt) without exploring the interplay between these factors comprehensively. By developing a multidimensional index that incorporates both internal and external components, this study provides a more holistic framework for understanding financial stability.

Practical Significance

The practical significance of this study is evident in its implications for policymakers and financial regulators in developing countries. The proposed multidimensional index offers a tool to help these stakeholders better monitor and manage financial stability. This index enables more informed decision-making and the design of targeted interventions to mitigate potential risks by providing a comprehensive measure incorporating critical internal and external factors.

Policy Design and Implementation: Policymakers can use the findings of this study to develop more effective macroprudential policies. For instance, understanding how factors such as interest rate spreads, inflation, and Z-scores interact with external factors like foreign exchange reserves and external debt can inform policies that aim to balance internal economic stability with external financial sustainability. Countries with fragile financial systems could use this index to prioritize certain areas for reform, such as enhancing foreign exchange reserves or managing external debt levels.

Risk Management: Financial institutions, especially central banks and regulatory bodies, can use the multidimensional index to assess the risk exposure of the banking sector and other financial institutions. These institutions can develop more robust risk management frameworks by evaluating internal and external factors.

International Organizations and Aid Agencies: International organizations like the International Monetary Fund (IMF) and the World Bank and aid agencies working in developing countries could benefit from the multidimensional index. The index offers a practical tool for assessing the financial stability of countries receiving financial aid or undergoing economic restructuring.

Benchmarking and Comparison: This study's multidimensional index can also be used as a benchmarking tool, allowing developing countries to compare their financial stability across time or against other nations. This comparative approach can foster collaboration among countries facing similar challenges, encouraging the sharing of best practices and solutions. It can also help international investors evaluate the financial health of developing economies, leading to better-informed investment decisions.

Addressing Gaps in the Literature

One of the most significant contributions of this study is its ability to address the gaps in existing research on financial stability. Much of the current literature focuses on financial stability from a developed country perspective, where internal factors like inflation and interest rate policies play a more prominent role. In contrast, developing economies are often more exposed to external shocks, such as fluctuations in global commodity prices or sudden changes in capital flows. This study's emphasis on external factors like foreign exchange reserves, current account balances, and external debt recognizes the unique vulnerabilities of developing economies and integrates them into the financial stability analysis.

Additionally, while previous research often isolates factors affecting financial stability, this study introduces an integrative approach by constructing a multidimensional index. This allows for a more comprehensive understanding of how different factors interact to contribute to or detract from financial stability. The study also responds to calls for more empirical work in this area, providing a practical tool that can be applied in real-world policy settings.

Contribution to Sustainable Development

Lastly, the study has broader implications for sustainable development in developing countries. Financial stability is a prerequisite for long-term economic growth, job creation, and poverty reduction. A stable financial system ensures that credit is available to businesses and consumers, investments are secure, and governments can effectively manage their debt. By focusing on the internal and external factors that contribute to financial stability, this study supports efforts to create resilient economies that can withstand external shocks, maintain consistent growth, and improve the well-being of their populations.

Literature Review

The literature on financial stability encompasses a wide range of studies examining the factors that influence the resilience of financial systems. This literature review summarizes significant research articles from various authors, discussing the role of internal and external factors in maintaining financial stability, particularly in developing economies. The reviewed studies explore topics such as interest rate spreads, inflation, foreign exchange reserves, external debt, and banking sector health, all of which contribute to understanding financial stability.

The concept of financial stability has garnered significant attention in recent years, particularly following the 2008 financial crisis, which underscored the critical need for robust financial systems. Financial stability refers to the financial system's resilience against shocks and ability to efficiently allocate resources, assess and manage risks, and maintain participant confidence (Allen & Wood, 2012; Shah & Ali, 2022). Recent literature highlights the role of macroprudential policies in mitigating systemic risks and enhancing financial stability (Galati & Moessner, 2013). Regulatory frameworks like Basel III have been implemented to strengthen bank capital requirements and promote stability (Admati & Hellwig, 2013). Furthermore, while contributing to economic growth, financial innovations and technological advancements also pose new challenges to financial stability, requiring adaptive regulatory approaches (Arner et al., 2017). Empirical studies show that financial inclusion can enhance stability by broadening the depositor base and reducing reliance on volatile wholesale funding (Cull et al., 2014). However, the relationship between financial inclusion and stability is complex and contingent on the regulatory environment (Sahay et al., 2015).

Moreover, cross-country analyses suggest that solid institutional frameworks and effective governance are crucial for maintaining financial stability (Laeven & Valencia, 2013). The interplay between financial development and stability continues to be a focal point for policymakers and researchers aiming to foster sustainable economic growth (Beck, 2012; Demirgüç-Kunt et al., 2013). The ongoing evolution of financial markets necessitates continuous monitoring and proactive policy measures to safeguard financial stability (Adrian & Liang, 2018).

Allen and Wood (2006) provide an early definition of financial stability, emphasizing its importance in maintaining a system that operates effectively without systemic risks. The authors assert that financial stability is not simply the absence of crises but also the ability of the financial system to withstand shocks and operate smoothly under normal conditions. They propose that financial stability should be evaluated through a forward-looking perspective, which considers current conditions and potential vulnerabilities that could arise in the future. This study sets the stage for exploring internal and external factors in determining financial stability.

One of the critical internal factors influencing financial stability is the interest rate spread, which reflects the difference between lending and deposit rates. Beck and Hesse (2009) investigate this factor, particularly in the context of developing economies like Uganda. Their research suggests that wide interest rate spreads often indicate inefficiencies within the banking sector, such as high operating costs, poor credit risk management, and lack of competition. The authors argue that reducing the interest rate spread can improve financial stability by enhancing the efficiency of the banking system and fostering competition. However, in some cases, Demirgüç-Kunt and Huizinga (1999) find that broader interest rate spreads may buffer economic instability, especially in countries with less developed financial markets. This suggests that while interest rate spreads are generally considered harmful to financial stability, their impact may vary depending on the specific economic context.

Inflation is another critical internal factor widely studied regarding financial stability. Mishkin (2008) emphasizes the importance of stable inflation for the smooth functioning of financial markets. High inflation can erode the value of financial assets, increase uncertainty, and lead to higher interest rates, destabilizing financial systems. In contrast, low and stable inflation is associated with a more predictable economic environment, allowing for more effective monetary policy and better pricing of financial assets. Khan and Senhadji (2001) extend this argument by demonstrating that the relationship between inflation and financial stability is non-linear. Their study finds that while moderate inflation supports economic growth and financial stability, high inflation destabilizes financial markets. This research underscores the importance of inflation management, particularly in developing economies where inflation is often volatile due to external shocks such as price fluctuations.

The Z-score, a measure of banking sector health, has also been extensively studied regarding financial stability. The Z-score combines capital adequacy, profitability, and volatility measures to assess the risk of insolvency in banking institutions. Beck et al. (2006) find that higher Z-scores are associated with more excellent financial stability, as they indicate that banks are better capitalized and less vulnerable to external shocks. However, the authors note that the Z-score may not fully capture the risks associated with financial instability in countries with weak regulatory environments. This suggests that while the Z-score is a helpful indicator of financial health, it should be complemented by other metrics, particularly in developing economies with less robust financial sectors.

Obstfeld et al. (2015) highlight the importance of holding substantial foreign exchange reserves, arguing that they provide countries with the liquidity needed to stabilize their currencies during periods of financial stress. Aizenman and Lee (2007) support this view, finding that countries with higher foreign exchange reserves are less likely to experience currency crises. However, Rodrik (2006) presents a counterargument, suggesting that while foreign exchange reserves provide a buffer against external shocks, the opportunity cost of holding large reserves can be substantial, particularly for developing countries that might otherwise use these resources for productive investments. This tension between holding reserves for stability and investing in growth presents a critical policy dilemma for policymakers in developing economies.

The current account balance is another external factor that has been studied extensively in relation to financial stability. A persistent current account deficit can indicate that a country borrows heavily from abroad, making it vulnerable to changes in global interest rates or sudden stops in capital inflows. Reinhart et al. (2016) argue that large current account deficits are often a precursor to financial crises, particularly in developing countries that rely heavily on external financing. Similarly, Calderón, Chong, and Loayza (2002) find that countries with persistent current account deficits are more likely to experience financial crises, mainly when these deficits are financed through short-term capital inflows. However, Gourinchas and Obstfeld (2012) suggest that current account deficits are not inherently destabilizing, as they can be sustainable if accompanied by productive investments that generate future returns. This suggests that the impact of current account deficits on financial stability depends on the deficit's underlying causes and financing structure.

External debt is another critical external factor significantly affecting financial stability, particularly in developing economies. High levels of external debt can increase a country's vulnerability to external shocks, such as currency depreciation or rising global interest rates. Reinhart and Rogoff (2010) find that countries with external debt levels exceeding 60% of GDP are more likely to experience financial crises, mainly if the debt is denominated in foreign

currencies. Eichengreen (2019) adds that managing external debt is critical for maintaining financial stability in developing economies, as excessive debt burdens can lead to balance-of-payments crises and destabilize the financial system. These findings highlight the importance of debt management strategies in maintaining financial stability, particularly in economies more reliant on external borrowing.

Despite the substantial body of literature on financial stability, several gaps still need to be addressed, particularly in understanding how internal and external factors influence financial stability. Most existing studies focus on internal factors, such as inflation and interest rates, or external factors, such as foreign exchange reserves and external debt, without considering how these factors interact. For example, Mishkin (2008) argues that inflation and interest rate policies must be coordinated with exchange rate management to ensure financial stability. Similarly, Rodrik (2006) suggests that the effectiveness of foreign exchange reserves in stabilizing financial systems is closely linked to internal factors such as inflation and interest rates. These findings suggest that future research should focus on developing more integrated models of financial stability that consider the interactions between internal and external factors.

Moreover, much of the existing literature on financial stability focuses on developed economies, leaving a gap in the understanding of financial stability in developing countries. Developing economies face greater exposure to external shocks, less developed financial institutions, and weaker regulatory frameworks. Allen et al. (2011) emphasize that financial systems in developing countries are often more fragile due to these factors, making financial stability more challenging to achieve and maintain. Therefore, more research is needed to explore how developing countries can enhance their financial stability, considering their specific economic conditions and vulnerabilities.

Conceptual Framework

Measuring Financial Stability: Conceptualization

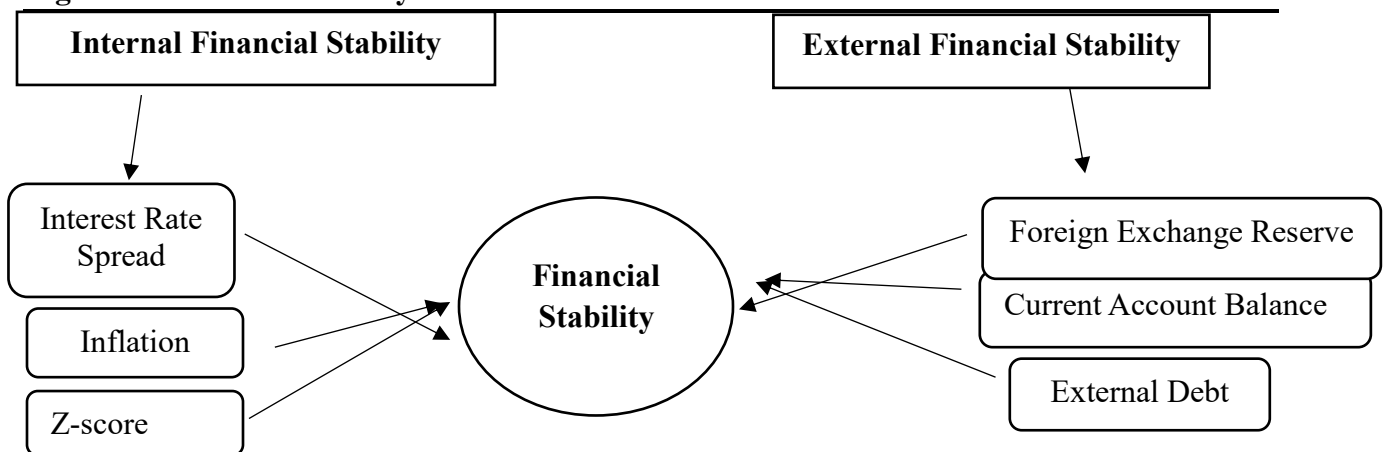
Financial stability is providing financial products and services through a sound financial system. Financial instability is costly for the countries, as evidenced by the financial crises of 2008-09. For the last twenty years, policymakers and researchers have been using measures to assess financial stability. There are many financial indicators defined by the International Monetary Fund, Czech National Bank, Swiss National Bank, and Central Bank of Turkey for financial stability are also used by various researchers and policymakers (Hawkin & Klau, 2000; Barth et al., 2004; Nelson & Perli, 2005; Adasme et al., 2006; Pasiouras et al., 2006; Gray et al., 2007; Pasiouras et al., 2009; Khan, 2011; Dupas et al., 2012; Barakat & Hussainey, 2013; Han & Melecky, 2014; Delis, 2015). Financial stability is a stable financial system capable of allocating resources and absorbing shocks that can avoid disruption in actual sector activities and the financial system and reduce barriers in the process of financial intermediation (Bank Indonesia, 2007; European Central Bank, 2012).

Previous researchers have investigated financial stability by using individual proxies like bank Z-score, capital adequacy, Asset quality, management efficiency, earning, liquidity, and sensitivity to market (Barth et al., 2004; Pasiouras et al., 2006; Adasme et al., 2006; Pasiouras et al., 2009; Khan, 2011; Dupas et al., 2012; Barakat & Hussainey, 2013; Han & Melecky, 2014; Delis, 2015). The Z-score is a widely used variable that shows the banking system's default probability. This indicator gives only micro-level information related to accounting and audit framework (Altman, 1968; Altman et al., 1977; Boyd & Graham, 1986; Hannan & Hanweck, 1988; Uhde & Heimeshoff, 2009; Cihak et al., 2012 and Creel et al., 2015). Hollo et al. (2012) developed a financial stability measurement through a composite indicator of systemic stress. Based on studies conducted by

(Hawkins & Klau, 2000; Nelson & Perli, 2005; Gray et al., 2007; Cheang & Choy, 2011), some sectors can affect the financial system's stability. These factors jointly cover the micro and macro factors of financial stability. These factors efficiently measure financial stability, which was previously ignored. Furthermore, this study indicates the external and internal factors of financial stability following the methodology (Vinus & Kusairi, 2017).

In this study, a composite index of internal and external financial stability is built using the weighted average index construction method used by UNDP. This study constructed an index for financial stability using a multidimensional approach. This index covers financial system stability by using internal financial system stability as well as external financial system stability. For internal financial stability, the country's internal factors like domestic credit, inflation, money supply, bank Z-score, and interest rate spread are used to construct the index. For external financial stability, the county's external elements, like foreign exchange reserves, current account balance, and external debt, are used for index construction.

Figure 1: Financial Stability



Theoretical Framework

The theoretical framework of this study is grounded in a combination of financial stability theories, including the financial fragility hypothesis, financial intermediation theory, and external vulnerability theory. These theories provide a foundation for understanding the relationship between internal and external factors and their collective impact on financial stability.

Financial Fragility Hypothesis: The financial fragility hypothesis, developed by Minsky (1977), suggests that financial systems inherently move between stability and fragility as a result of the lending and borrowing activities of financial institutions and households. According to this hypothesis, during periods of economic prosperity, financial institutions tend to take on more risk, leading to a buildup of vulnerabilities in the financial system. Over time, these vulnerabilities can lead to financial crises. This theory is relevant to internal factors such as interest rate spreads and Z-scores, which indicate the degree of risk-taking and stability in the banking system. A narrow interest rate spread and a high Z-score suggest that financial institutions are managing risks effectively, which reduces financial fragility and promotes stability (Borio, 2014).

Financial Intermediation Theory: Financial intermediation theory highlights the role of financial intermediaries, such as banks, in channelling funds from savers to borrowers in an efficient and stable manner (Diamond, 1984). Financial intermediaries mitigate the risks of asymmetric

information, enhance liquidity, and improve capital allocation. This theory supports the inclusion of the internal factor, interest rate spread, in the framework. A lower spread signifies that financial intermediaries are performing their functions efficiently, contributing to overall financial stability. Furthermore, financial intermediaries must manage inflationary pressures and capital adequacy, as reflected by the Z-score, to ensure their long-term stability (Beck et al., 2006).

External Vulnerability Theory: This theory focuses on the risks that arise from a country's exposure to external factors, such as foreign exchange reserves, external debt, and current account balances. According to Obstfeld (2013), countries that hold large foreign exchange reserves are better equipped to mitigate the effects of sudden capital outflows and external financial shocks. External vulnerability theory emphasizes that economies with high levels of external debt and persistent current account deficits are more likely to experience financial instability, particularly if their external liabilities are in foreign currencies (Reinhart & Rogoff, 2010). This theory justifies the inclusion of external factors in the conceptual framework, underscoring their critical role in maintaining financial stability in developing economies.

Monetary Theory of Inflation: The relationship between inflation and financial stability is grounded in the monetary theory of inflation, which posits that inflation is fundamentally a monetary phenomenon that affects the overall stability of financial systems (Friedman, 1968). According to this theory, maintaining low and stable inflation is crucial for promoting economic predictability and reducing the risks of asset bubbles, currency depreciation, and banking crises. High inflation can lead to higher interest rates, which in turn can destabilize the financial system by increasing the cost of borrowing and reducing asset values (Mishkin, 2008). Therefore, inflation management is a critical component of financial stability, particularly in developing economies that face volatile inflationary pressures.

Research Methodology

This study employs a comprehensive research methodology to construct a multidimensional index of financial stability, incorporating both internal and external factors. The methodology encompasses the research design, data collection methods, and analytical techniques used to achieve the study's objectives. The approach is designed to provide a robust assessment of financial stability in developing countries by integrating multiple dimensions of financial stability into a single index.

Research Design

The research design is quantitative and employs a cross-sectional approach to analyze financial stability in developing countries. The study uses econometric methods to construct and validate a multidimensional financial stability index. The research design includes the following key components:

Index Construction: The weighted average method of index construction is used to construct index because it is a widely used technique, particularly in the development of composite indices like the Human Development Index (HDI) by the UNDP. This method involves assigning different weights to various indicators based on their relative importance, and then aggregating them to produce a single index score. The core idea is to capture multiple dimensions of a phenomenon, such as development or financial stability, in a balanced manner. By assigning weights, the method ensures that each indicator's influence on the final index aligns with its significance in the real world. This prevents one dimension from overpowering others, which is crucial when integrating diverse factors like health, education, or income in the HDI or liquidity, political stability, and

capital adequacy in financial stability indices. The weighted average method's flexibility in adjusting the weights allows for fine-tuning based on empirical data, expert judgment, or policy priorities, thus enhancing its adaptability across different contexts.

The benefits of using the weighted average method in index construction are manifold. First, it provides a transparent and mathematically simple approach, making the results easy to interpret and accessible to both policymakers and researchers. This clarity is essential for gaining the confidence of stakeholders who rely on these indices for decision-making. Second, the method allows for flexibility in adjusting weights to reflect the relative importance of each dimension, ensuring that the index aligns with the objectives it seeks to measure. Third, the weighted average prevents extreme values in one indicator from dominating the overall score, ensuring a more balanced and accurate representation. It also helps in capturing complex, multidimensional issues, as it allows for the integration of various factors in a coherent manner. Furthermore, it can be tailored to reflect the priorities of specific countries, regions, or institutions, making it a versatile tool for both global and localized assessments.

The multidimensional index is constructed using a weighted aggregation of the selected factors. Each factor is standardized to ensure comparability across countries and is then aggregated using an appropriate weighting scheme. The weights are determined based on the relative importance of each factor in contributing to financial stability, as established through empirical analysis and expert judgment.

Data Collection: The study uses secondary data from reputable sources, including the World Bank, the International Monetary Fund (IMF), and national statistical agencies. Data are collected for a sample of developing countries over a specific time period, typically ranging from 2005 to 2020, to capture both current and historical trends in financial stability.

Sample Selection: The sample includes a representative set of developing countries. The selection criteria involve choosing countries based on their level of economic development, data availability, and relevance to the study's objectives. The sample is designed to capture a diverse range of economic conditions and financial stability profiles.

Financial Stability Index

The weighted average method, as adopted by the United Nations Development Programme (UNDP) for index construction, is justified by its ability to balance multiple indicators, ensuring that each factor contributes appropriately to the overall index without disproportionate influence. It allows for the assignment of customizable weights to reflect the varying significance of different dimensions, providing a more accurate representation of outcomes. This method is transparent and straightforward, making it easy to implement and understand for policymakers and researchers. Moreover, the weighted average approach offers flexibility, enabling adjustments based on empirical evidence or expert judgment, which is crucial when dealing with diverse countries or regions. It also prevents extreme values in one indicator from skewing the index, ensuring that all dimensions are fairly represented. By reflecting policy priorities through weight adjustments, this method aligns indices with real-world objectives, making it an ideal tool for constructing indices that capture complex, multidimensional phenomena like human development or financial stability. Following the method proposed by Amidzic et al. (2014), Shah and Ali, 2023 and Kondratovs (2013) to reduce the biases, this study uses equal weight to each variable as well as to each dimension of financial stability because each dimension is equally important. The calculation of sub-indices is given below in Equation 3.13.

$$d_i = \frac{A_i - m_i}{M_i - m_i} \quad (1)$$

d_i : level of indicators

A_i : Actual value of variable of country i

m_i : Minimum value of the variable of country i

M_i : maximum value of variable of country i

This study has used various indicators of each dimension of financial stability based on the literature review. The present study constructs an index of financial stability by developing two macro dimensions, including all sub-dimensions and the variables shown above.

In this study, the value of d_i indicates the achieved level of a country's indicator i . Eight indicators are contributing to the financial stability used by this study. So, a country's financial stability index is shown at point $X = (d_1, d_2, d_3, d_4, d_5, d_6, d_7, d_8)$ in eight dimensions. The source of these eight-dimensional organized systems is the point $O = (0, 0, 0, 0, 0, 0, 0, 0)$, which reveals the worst condition of financial stability, whereas the point $I = (1, 1, 1, 1, 1, 1, 1, 1)$ shows the ideal condition if a country performs the better amongst the sample in dimensions.

The study of Amidzic et al. (2014) and Kondratovs (2013) examines the financial stability index by measuring the distance between X and O as well as the distance between X and I . An X indicates the high value of the financial stability index due to the presence of a large distance from O and a small distance from I . While in the presence of more than two dimensions, the distance between the two dimension's points from O and the minimum distance from I show a higher level of financial stability. That's why to use both distances for investigating the financial stability.

The Present study follows the methodology of Amidzic et al. (2014), to use the average of simple Euclidean distance among the X and O and the inverse Euclidean distance of X and I .

In the first step, this study examines the distance between X and O (Denoted by X_1) by applying the normalized Euclidean distance method shown in Equation 3.14. This normalization method is used to make the value of the financial stability index between 0 to 1. The higher value of X_1 indicates that X is away from O , which shows financial stability in countries.

$$X_1 = \frac{\sqrt{d_1^2 + d_2^2 + \dots + d_n^2}}{\sqrt{n}} \quad (2)$$

In the second step, the inverse distance between X and I (Denoted by X_2) is examined by applying normalized Euclidean distance methods. Equation 3 shows the normalized Euclidean distance of X to I . This subtrahend should be lower to associate with financial stability. While it is difficult to consider a large X_1 and a small X_2 for the comparison of financial stability among countries. That's why the normalized Euclidean distance between X and I is deducted from 1, which is said to be 'inverse distance'. This makes the next step easier and simpler. The greater X_2 shows a stable financial system.

$$X_2 = 1 - \frac{\sqrt{(1 - d_1)^2 + (1 - d_2)^2 + \dots + (1 - d_n)^2}}{\sqrt{n}} \quad (3)$$

The final step index of financial stability is computed by the simple average of X_1 and X_2 . This computed index in equation 4 reveals that both $X-O$ distance and $X-I$ distance are considered for measuring the financial stability among countries.

$$FSI = \frac{1}{2}(X_1 + X_2) \quad (4)$$

Table 1: List of developing countries

List of developing countries			
1	Albania	23	Ecuador
2	Algeria	24	Egypt
3	Angola	25	El Salvador
4	Argentina	26	Equatorial Guinea
5	Armenia	27	Estonia
6	Azerbaijan	28	Fiji
7	Bangladesh	29	Gabon
8	Belarus	30	Georgia
9	Belize	31	Ghana
10	Benin	32	Grenada
11	Bolivia	33	Guatemala
12	Bosnia and Herzegovina	34	Guyana
13	Botswana	35	Haiti
14	Brazil	36	Honduras
15	Bulgaria	37	India
16	Cameroon	38	Indonesia
17	China	39	Iran
18	Colombia	40	Iraq
19	Comoros	41	Jamaica
20	Costa Rica	42	Jordan
21	Djibouti	43	Kazakhstan
22	Dominican Republic	44	Kenya
45	Kyrgyzstan	67	Paraguay
46	Laos	68	Peru
47	Lebanon	69	Philippines
48	Lesotho	70	Romania
49	Libya	71	Saint Lucia
50	Malaysia	72	Samoa
51	Maldives	73	Sao Tome and Principe
52	Mauritania	74	Senegal
53	Mauritius	75	Solomon Islands
54	Mexico	76	Suriname
55	Micronesia	77	Tajikistan
56	Moldova	78	Tanzania
57	Mongolia	79	Thailand
58	Montenegro	80	Tonga
59	Morocco	81	Tunisia
60	Namibia	82	Turkey
61	Nicaragua	83	Ukraine
62	Nigeria	84	Uzbekistan
63	North Macedonia	85	Vanuatu
64	Pakistan	86	Zambia
65	Panama	87	Zimbabwe
66	Papua New Guinea		

Source: Listed by the World Bank

Results and Discussion

The present index consists of multidimensions of financial stability (internal and external financial stability) using data from 87 developing countries (upper middle income and lower middle income) for 16 years from 2005 to 2020. This study constructed an index for various developing countries presented in the table by using multiple indicators of each dimension presented above for multiple periods.

Based on computed values of the index for financial stability the study has divided the countries into the following three categories.

High financial inclusion : If the value of the stability index is ranging from 51 to 100, it indicates a higher level of financial stability.

Medium financial inclusion: If the value of the financial stability index is in the range of 31 to 50, it indicates a medium level of financial stability

Lower financial inclusion: If the value of the financial stability index lies between 0 to 30, it indicates a lower level of financial stability.

Results

Tables 1A and 1B show the values of the financial stability index constructed for various developing countries by using the latest data from 2005 to 2020. Results show that every developing country has a different level of financial stability each year. Estimated results show that Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bangladesh, Belarus, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Bulgaria, Cameroon, Colombia, Comoros, Costa Rica, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Estonia,

Fiji, Gabon, Georgia, Ghana, Grenada, Guatemala, Guyana, Haiti, Honduras, Iran, Iraq, Jamaica, Kazakhstan, Kenya, Kyrgyzstan, Laos, Lesotho, Maldives, Mauritania, Mauritius, Mexico, Micronesia, Moldova, Mongolia, Montenegro, Morocco, Namibia, Nicaragua, Nigeria, North Macedonia, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Romania, Saint Lucia, Samoa, Sao Tome and Principe, Senegal, Solomon Islands, Suriname, Tajikistan, Tanzania, Tonga, Tunisia, Turkey, Ukraine, Uzbekistan, Vanuatu, Zambia and Zimbabwe has lowest score of financial stability index which indicate the lower financial stability during selected time frame. While Belize achieves a medium level of financial stability in 2007 and 2013. Brazil also got a medium level of financial stability from 2008 to 2020 and is on an improving trend. Bulgaria achieved a medium level of financial inclusion only in 2013. After that, it shows a declining trend. China had a medium level of financial stability from 2005 to 2012; after this, China achieved a higher level of financial stability and also has an increasing trend of financial stability. Furthermore, China is the leading country in the level of financial stability because China's score of financial stability was 54.79 in 2020. Djibouti got a medium level of financial stability only in 2009 and 2010. Haiti got a medium level of financial stability only in 2020. Jamaica's score of financial stability has improved to medium level in 2013,2014,2015 and 2020. Jordan has also shown an improved level of financial stability to a medium level from 2013 to 2020. Laos got a medium level of financial stability in 2007 and 2020. Libya got a medium level of financial stability only in 2011 and 2012. Malaysia had a medium level of financial stability in 2011, 2012,2013, 2015 and 2020. Malaysia has a fluctuating trend of financial stability across the selected time frame. Mauritius got medium financial stability in 2012,2013,2015, 2019 and 2020. The index score shows that Mauritius has been struggling to improve its financial stability from 2012 onward. Micronesia achieved medium financial stability only in 2020. Mongolia and Morocco have improved their level of financial stability from 2013 to onward till 2020. Both countries have a medium level of financial stability presently. Panama also improves its level of financial stability from 2008 to 2020 from lower to medium level of financial stability. Thailand has had a medium level of financial stability from 2013 to 2020, which also depicts an increasing trend of financial stability. While Tunisia got a medium level of financial stability in 2007 and presently is in a medium level of financial stability. Turkey has got medium level of financial stability only in 2020. Vanuatu has got medium level of financial stability in 2007, 2008, 2009, 2012, 2013,2014,2015, 2018,2019 and 2020. Results show that Vanuatu is trying to improve its level of financial stability over time. Overall results show that all the developing countries except China are still struggling to improve their level of financial stability and still are in lower or medium levels of financial stability. Only China has a higher status of financial stability. These results show that developing countries have to focus on their economic activities as well as infrastructure development to improve their level of financial stability. So that they can achieve better financial stability scores.

Table 2a: List of countries 2005-2012 financial stability

Sr. No	Country	2005	2006	2007	2008	2009	2010	2011	2012
1	Albania	18.04	17.90	19.85	19.85	20.22	20.46	21.01	24.33
2	Algeria	22.32	19.74	17.57	21.30	19.55	19.36	22.30	20.94
3	Angola	30.20	19.89	17.45	18.45	15.33	21.59	25.86	24.04
4	Argentina	18.26	15.53	17.20	17.31	19.98	14.31	16.64	17.48
5	Armenia	18.29	16.76	18.37	17.68	18.58	19.46	20.94	23.03
6	Azerbaijan	14.74	17.24	18.01	22.44	27.07	19.52	25.08	24.71

7	Bangladesh	17.53	17.00	18.54	19.51	22.69	20.00	20.04	20.55
8	Belarus	16.16	12.38	14.70	16.31	17.58	16.10	22.66	24.58
9	Belize	28.61	24.29	31.75	27.79	29.77	26.92	28.15	28.96
10	Benin	16.25	12.83	11.72	14.06	15.06	12.30	14.26	15.13
11	Bolivia	19.83	18.96	21.03	20.04	21.54	19.38	19.50	21.22
12	Bosnia and Herzegovina	16.98	18.83	25.02	22.75	25.78	23.41	22.44	25.42
13	Botswana	19.11	17.02	15.09	15.53	17.07	14.63	18.19	18.46
14	Brazil	26.12	27.81	29.53	31.20	33.22	29.59	31.08	32.51
15	Bulgaria	17.54	18.15	29.25	25.68	29.30	27.30	28.24	30.17
16	Cameroon	13.20	10.99	10.43	12.28	13.09	9.97	12.10	13.30
17	China	45.58	45.70	45.44	46.94	50.60	47.20	47.80	49.03
18	Colombia	14.75	14.07	15.47	16.83	18.68	14.79	17.02	18.42
19	Comoros	13.03	12.53	14.43	14.14	16.88	14.55	14.97	16.80
20	Costa Rica	21.43	20.24	20.98	23.19	25.49	21.09	21.50	24.37
21	Djibouti	27.33	19.39	22.56	17.19	33.64	32.77	22.09	18.34
22	Dominican Republic	19.81	17.70	19.14	19.61	21.61	17.86	19.00	21.87
23	Ecuador	16.89	15.66	17.71	17.67	17.66	13.75	15.89	16.90
24	Egypt	24.18	21.82	23.22	22.93	23.14	19.15	19.46	20.75
25	El Salvador	22.02	20.50	24.10	23.05	25.99	22.82	23.65	24.56
26	Equatorial Guinea	18.66	13.36	10.52	13.53	8.40	6.52	10.50	12.40
27	Estonia	12.41	12.54	14.89	18.22	22.43	17.70	18.36	17.90
28	Fiji	21.99	19.81	21.61	24.17	27.93	24.00	24.98	26.54
29	Gabon	21.87	17.74	18.31	18.51	16.73	16.22	23.71	20.44
30	Georgia	14.50	12.64	14.99	17.08	21.31	18.77	18.01	20.81
31	Ghana	17.12	14.67	12.51	13.54	16.49	13.01	14.21	15.78
32	Grenada	18.15	20.05	25.07	23.56	27.14	24.64	23.16	25.64
33	Guatemala	19.87	18.08	21.16	22.06	25.07	20.87	21.53	22.69
34	Guyana	31.09	27.49	19.06	19.32	22.40	19.72	21.01	23.44
35	Haiti	17.90	17.59	18.30	19.12	21.09	17.69	16.52	17.43
36	Honduras	23.30	20.71	22.20	22.24	25.45	21.96	22.23	23.52
37	India	21.34	20.82	22.23	24.25	24.75	21.80	22.51	23.78
38	Indonesia	18.52	16.46	18.31	18.51	20.90	16.61	17.72	18.53
39	Iran	19.08	17.27	17.79	18.72	19.70	17.42	21.71	20.78
40	Iraq	18.16	13.46	12.33	17.99	10.81	14.39	20.93	17.71
41	Jamaica	18.12	18.11	25.42	21.46	25.73	27.00	26.20	28.53
42	Jordan	35.30	36.42	40.67	37.81	37.77	35.29	34.06	33.82
43	Kazakhstan	19.24	20.42	27.12	25.64	26.65	24.46	25.80	24.94
44	Kenya	18.08	16.95	17.39	18.74	20.35	17.58	17.94	19.44
45	Kyrgyzstan	23.43	22.72	27.38	25.31	29.58	25.83	28.27	27.12
46	Laos	19.98	22.78	32.51	24.90	26.44	23.41	22.22	23.40
47	Lebanon	33.21	32.97	39.40	40.10	35.42	35.95	37.01	37.09
48	Lesotho	17.44	18.22	18.89	21.27	22.07	14.56	13.88	18.69

49	Libya	27.68	26.34	21.71	27.99	30.30	24.78	31.79	31.27
50	Malaysia	33.61	29.24	28.45	31.20	32.76	28.73	32.24	30.79
51	Maldives	13.36	14.02	20.93	19.98	22.74	18.88	16.23	19.60
52	Mauritania	16.84	21.47	25.37	21.40	21.80	21.62	22.09	20.37
53	Mauritius	27.35	24.64	30.06	26.72	28.11	25.34	26.57	31.07
54	Mexico	18.81	16.70	17.33	17.92	20.80	16.17	18.08	19.57
55	Micronesia	14.28	13.07	15.50	15.23	15.61	15.43	14.16	18.84
56	Moldova	16.67	16.06	21.26	17.60	20.83	21.36	18.53	20.87
57	Mongolia	29.01	25.38	25.77	23.89	26.02	26.55	22.20	28.60
58	Montenegro	9.81	9.95	19.32	16.69	18.10	22.50	25.00	30.21
59	Morocco	27.57	26.49	28.34	29.26	30.95	29.11	28.67	30.91
60	Namibia	22.11	20.53	20.93	22.39	22.79	19.16	20.16	21.28
61	Nicaragua	17.70	15.94	20.31	19.78	22.91	21.34	21.44	25.21
62	Nigeria	22.37	17.29	15.43	16.53	19.05	16.53	17.03	18.12
63	North Macedonia	18.38	18.14	20.67	18.17	20.94	18.98	21.40	23.67
64	Pakistan	17.21	16.00	17.99	18.47	20.62	16.49	19.20	18.87
65	Panama	28.84	26.29	29.14	41.39	43.91	38.24	38.45	40.36
66	Papua New Guinea	20.01	17.91	15.10	17.82	15.80	14.90	16.69	15.65
67	Paraguay	24.82	24.32	27.58	26.44	31.32	27.35	22.99	24.80
68	Peru	20.76	20.53	21.77	21.25	24.47	21.09	21.93	23.76
69	Philippines	20.88	19.21	20.17	19.48	23.56	18.86	20.28	21.43
70	Romania	16.48	15.51	19.88	19.07	22.73	20.31	21.13	23.12
71	Saint Lucia	21.14	20.57	25.15	27.96	26.91	24.42	23.77	23.64
72	Samoa	18.07	18.10	19.39	21.88	24.08	21.87	22.07	24.02
73	Sao Tome and Principe	30.28	27.97	45.40	25.53	22.58	24.00	21.17	24.41
74	Senegal	14.12	11.62	13.97	14.83	18.00	16.25	17.02	18.43
75	Solomon Islands	15.59	14.75	17.14	16.17	15.57	12.88	17.12	20.20
76	Suriname	17.58	17.07	19.20	21.12	22.02	20.74	22.30	21.39
77	Tajikistan	12.49	13.53	14.43	17.29	17.30	16.21	17.96	18.84
78	Tanzania	16.02	12.99	15.29	15.78	17.23	15.19	15.11	16.18
79	Thailand	35.09	30.69	36.25	37.31	40.31	36.03	39.89	40.57
80	Tonga	16.66	16.35	17.92	18.97	16.79	14.34	13.36	17.23
81	Tunisia	29.57	25.12	31.18	30.74	32.33	29.50	30.64	31.82
82	Turkey	20.51	18.59	22.89	23.86	27.27	23.63	22.95	26.08
83	Ukraine	24.95	23.27	27.84	27.85	31.38	26.51	26.30	25.19
84	Uzbekistan	16.46	13.58	13.48	15.84	17.22	15.51	15.58	14.66
85	Vanuatu	28.61	23.93	30.68	31.75	31.08	28.73	28.33	30.66
86	Zambia	18.66	15.37	15.40	16.59	22.61	18.13	19.61	19.09
87	Zimbabwe	20.90	18.64	28.80	8.94	10.84	6.62	9.39	10.22

Table 2b: List of countries 2013-2020 financial stability

Sr. No	Country	2013	2014	2015	2016	2017	2018	2019	2020
1	Albania	26.62	27.62	27.88	21.56	20.55	21.25	23.16	27.12
2	Algeria	21.71	22.76	18.84	13.68	15.23	17.81	18.73	21.88
3	Angola	27.05	24.95	22.14	19.06	19.10	26.30	27.20	26.17
4	Argentina	19.02	22.86	19.87	17.47	16.19	22.91	28.40	30.37
5	Armenia	25.27	25.35	25.79	23.00	21.73	21.29	23.27	28.70
6	Azerbaijan	26.87	23.96	20.02	15.38	18.94	22.59	20.89	21.80
7	Bangladesh	22.57	22.57	25.35	21.14	20.60	19.84	21.75	25.30
8	Belarus	19.47	22.77	24.88	20.27	19.62	21.44	21.60	25.45
9	Belize	30.44	28.33	27.26	21.23	20.04	21.36	23.10	28.89
10	Benin	15.75	18.92	17.62	14.11	13.55	14.81	17.08	21.14
11	Bolivia	24.64	23.22	24.51	19.96	19.95	20.48	22.03	25.09
12	Bosnia and Herzegovina	27.70	26.32	27.22	21.65	21.36	22.35	23.60	26.64
13	Botswana	24.26	24.32	21.50	18.70	17.06	16.42	15.05	18.08
14	Brazil	33.29	32.50	36.48	32.94	32.13	32.92	34.30	38.61
15	Bulgaria	33.46	29.28	29.23	24.55	23.33	23.27	23.96	26.66
16	Cameroon	15.35	18.02	16.93	12.70	13.29	13.75	16.14	18.94
17	China	51.45	44.89	53.51	49.32	48.83	49.20	50.46	54.79
18	Colombia	20.87	21.56	22.36	18.35	18.15	19.32	20.89	25.11
19	Comoros	17.72	20.44	19.20	13.88	14.61	15.99	17.60	20.55
20	Costa Rica	26.79	26.81	27.27	22.71	21.07	22.49	23.18	26.46
21	Djibouti	12.69	28.60	30.24	20.47	19.54	18.42	26.54	25.40
22	Dominican Republic	24.76	26.59	26.15	21.66	22.13	23.57	25.23	29.03
23	Ecuador	18.52	20.56	19.71	17.33	16.76	17.98	20.07	23.79
24	Egypt	22.75	24.72	22.79	19.32	21.23	23.04	23.19	27.11
25	El Salvador	25.71	26.61	26.56	21.83	21.52	22.37	24.45	28.68
26	Equatorial Guinea	13.46	16.32	11.05	6.90	10.89	11.76	13.07	15.39
27	Estonia	20.10	18.93	20.51	17.32	16.83	16.81	17.56	20.47
28	Fiji	25.71	25.64	28.10	23.91	22.40	23.67	26.00	29.91
29	Gabon	21.75	21.45	17.79	11.65	13.08	16.15	17.99	20.27
30	Georgia	24.95	24.78	25.53	19.42	19.60	21.58	24.74	28.17
31	Ghana	18.50	20.87	19.70	14.90	15.37	16.11	18.16	21.78
32	Grenada	27.10	25.92	24.87	18.07	15.30	16.01	18.21	23.34
33	Guatemala	25.34	26.84	25.97	21.72	21.76	23.31	24.81	28.93
34	Guyana	25.91	28.41	26.95	22.74	20.55	15.81	15.27	22.44
35	Haiti	19.92	22.82	20.56	16.59	16.79	18.51	20.01	25.26
36	Honduras	26.29	28.05	29.02	24.52	24.54	24.58	26.74	32.00
37	India	26.45	25.81	26.95	22.99	22.63	24.42	26.27	30.50
38	Indonesia	20.59	21.47	21.27	16.85	16.76	17.31	18.33	22.29
39	Iran	23.68	20.89	22.77	21.41	18.20	21.61	21.91	24.31
40	Iraq	19.23	22.77	15.31	11.79	14.89	18.67	17.18	20.86

41	Jamaica	30.77	32.53	31.29	26.06	23.91	27.77	28.81	32.46
42	Jordan	36.95	35.06	36.32	30.60	30.04	32.34	34.62	37.74
43	Kazakhstan	27.68	27.52	25.76	23.08	20.72	22.99	22.86	25.82
44	Kenya	21.67	24.28	23.25	18.20	17.38	18.24	19.64	23.26
45	Kyrgyzstan	30.27	31.95	30.30	23.93	22.94	22.81	26.05	33.72
46	Laos	24.81	38.53	27.38	17.95	23.20	25.57	28.46	33.23
47	Lebanon	36.19	35.94	40.71	32.55	30.24	25.48	28.40	37.48
48	Lesotho	21.52	23.92	22.45	17.75	19.01	19.72	21.89	30.75
49	Libya	26.59	17.52	24.15	22.59	29.80	29.67	30.43	16.50
50	Malaysia	31.46	24.70	30.16	27.61	28.92	29.88	28.90	33.73
51	Maldives	22.53	23.90	21.14	11.41	11.88	12.39	17.51	23.33
52	Mauritania	24.01	26.02	25.46	19.40	18.29	18.08	22.25	24.96
53	Mauritius	33.27	28.89	32.73	26.98	28.51	28.17	30.33	34.86
54	Mexico	22.01	23.83	22.67	18.84	19.95	20.87	22.77	27.20
55	Micronesia	22.76	29.15	25.97	23.65	24.88	29.72	28.18	31.97
56	Moldova	23.56	23.83	23.11	18.35	16.64	15.74	18.45	22.81
57	Mongolia	31.93	39.23	41.20	36.35	36.26	35.03	37.88	42.02
58	Montenegro	34.15	31.53	31.73	21.79	20.62	22.53	26.49	31.80
59	Morocco	32.91	31.14	36.50	31.46	31.27	31.18	33.33	31.81
60	Namibia	22.19	21.30	22.48	17.01	20.04	21.08	22.92	26.15
61	Nicaragua	29.01	30.74	27.85	21.53	21.19	25.38	28.31	30.68
62	Nigeria	20.87	21.03	18.35	15.72	17.40	17.17	16.98	20.24
63	North Macedonia	25.84	25.44	25.91	20.76	21.07	22.45	22.81	27.04
64	Pakistan	20.63	22.61	20.75	15.99	15.15	15.41	18.49	23.32
65	Panama	40.18	38.41	41.92	34.38	33.16	35.83	38.73	42.05
66	Papua New Guinea	21.19	32.87	32.49	31.64	29.57	30.97	28.24	30.43
67	Paraguay	29.29	29.13	27.47	23.30	22.38	25.34	27.49	29.73
68	Peru	26.35	26.20	25.07	20.77	20.91	22.02	23.24	27.15
69	Philippines	24.32	24.50	24.57	20.12	19.81	20.06	22.09	26.43
70	Romania	25.80	24.52	22.98	17.72	17.12	17.63	19.06	22.96
71	Saint Lucia	26.23	22.67	24.93	16.58	18.66	20.47	21.59	26.88
72	Samoa	29.01	25.62	28.00	21.98	22.65	25.64	26.64	29.75
73	Sao Tome and Principe	26.82	27.79	28.48	22.45	19.35	20.34	23.39	23.25
74	Senegal	20.70	22.44	21.91	17.22	16.59	17.93	21.82	24.67
75	Solomon Islands	21.89	23.10	22.23	17.55	18.02	20.03	20.04	25.81
76	Suriname	22.22	23.23	21.51	20.72	21.29	20.18	20.53	29.97
77	Tajikistan	22.55	26.89	24.31	18.97	22.55	21.50	22.85	26.41
78	Tanzania	17.88	22.35	19.48	15.11	16.12	18.20	20.50	23.67
79	Thailand	41.92	34.44	43.15	41.75	41.71	40.70	40.62	42.18
80	Tonga	20.04	23.10	20.32	16.55	16.81	18.47	21.64	24.44
81	Tunisia	32.92	31.27	32.09	27.79	28.28	26.00	29.35	36.90

82	Turkey	28.54	27.80	29.77	26.07	25.44	26.95	30.08	31.63
83	Ukraine	27.14	28.85	34.29	25.39	22.66	22.10	22.25	25.58
84	Uzbekistan	17.18	19.24	17.07	13.29	16.14	16.08	19.51	23.01
85	Vanuatu	31.16	30.90	32.85	29.69	29.85	34.47	36.63	34.47
86	Zambia	19.22	23.17	23.04	18.87	19.93	21.27	24.99	32.36
87	Zimbabwe	12.03	14.93	19.36	9.41	9.78	10.31	11.41	14.51

Discussions

The results of the financial stability index for various developing countries from 2005 to 2020 reveal a landscape characterized by heterogeneity and persistent challenges. Most developing countries in the sample have a low or medium level of financial stability, underscoring a need for more robust financial systems, effective regulatory frameworks, and resilient economic structures. The continuous low financial stability scores of countries such as Albania, Algeria, and Angola indicate that systemic issues such as weak banking sectors, political instability, and economic vulnerabilities continue to impede progress (Beck et al., 2013; Elsayed et al., 2023; Ozili & Iorember, 2024).

China stands out as the only country to achieve a high level of financial stability by 2020, with a score of 54.79. This remarkable progress can be attributed to several factors, including the implementation of comprehensive financial sector reforms, the development of a diversified and deep financial market, and the country's robust economic growth (Xu, 2018; Malik et al., 2022; Chen et al., 2024). China's focus on financial inclusion, risk management, and regulatory oversight has played a pivotal role in enhancing its financial stability. For instance, the Chinese government has actively promoted the expansion of financial services to underserved populations, thereby fostering a more inclusive and stable financial system (Allen et al., 2019; Phan et al., 2021). Furthermore, China's continuous efforts to reform its banking sector, develop capital markets, and enhance monetary policy frameworks have helped it weather global financial shocks and maintain a trajectory toward higher financial stability (Sun, 2019; Shah et al., 2024).

Other countries, such as Brazil, Panama, and Thailand, have exhibited an upward trend in financial stability, moving from lower to medium levels over the years. This improvement can be linked to targeted reforms aimed at strengthening financial sector regulations, improving governance, and enhancing financial access (World Bank, 2014). Brazil's regulatory authorities, for example, have focused on enhancing risk management practices within the banking sector, improving supervision, and fostering financial inclusion. These efforts have contributed to a more stable financial environment, even amidst global economic uncertainties (Adrian & Liang, 2018). However, several countries display fluctuations in their financial stability levels, indicating vulnerability to internal and external shocks. Malaysia, for example, has shown a fluctuating trend, achieving medium financial stability in select years (2011, 2012, 2013, 2015, and 2020). This fluctuation may be due to the country's exposure to global financial market volatility, domestic economic conditions, and evolving regulatory challenges (Mohan et al., 2017; Wang & Luo, 2022). Similarly, countries like Mauritius and Bulgaria show struggles in maintaining consistent financial stability, possibly reflecting issues such as regulatory gaps, external debt pressures, or the impacts of global financial integration.

The overall results underscore a key policy implication: developing countries must prioritize building robust financial systems, strengthening regulatory frameworks, and promoting economic diversification to achieve and maintain financial stability. The literature indicates that countries with diversified economies and well-regulated financial sectors are better positioned to absorb

shocks and mitigate the risks associated with financial instability (Claessens & Kodres, 2014). Therefore, developing countries need to focus on long-term strategies that include enhancing financial literacy, expanding access to credit, improving governance, and fostering macroeconomic stability. Additionally, international cooperation and support can play a vital role in helping these countries build resilient financial infrastructures and achieve sustainable financial stability.

Conclusion

The analysis of financial stability in developing countries from 2005 to 2020 reveals a persistent struggle among these nations to achieve higher levels of financial stability. The majority of developing countries in the sample continue to exhibit low or medium levels of financial stability, with only China achieving a high level by the end of the study period. China's success in this area underscores the importance of comprehensive financial reforms, strong regulatory oversight, and the development of a robust and inclusive financial system. These factors have allowed China to not only enhance its financial stability but also to position itself as a leader among developing economies in this regard.

The progress observed in countries like Brazil, Panama, and Thailand, which have shown an upward trend toward medium financial stability, suggests that targeted reforms, such as strengthening financial regulations, enhancing risk management practices, and promoting financial inclusion, can positively impact financial stability. However, the fluctuating financial stability levels seen in countries like Malaysia, Mauritius, and Bulgaria indicate that achieving and maintaining financial stability is a complex challenge. These fluctuations highlight the vulnerabilities of developing countries to internal and external shocks, global financial market volatility, and evolving regulatory challenges.

Overall, the findings emphasize the need for developing countries to focus on long-term strategies for enhancing financial stability. This includes building robust financial systems, improving regulatory frameworks, fostering economic diversification, and expanding access to finance. The results also indicate that financial stability is a multifaceted issue that requires addressing both macroeconomic and microeconomic factors, including governance, financial literacy, and market development. International support and cooperation may also play a crucial role in helping these countries strengthen their financial infrastructures.

Policy Suggestions

To improve financial stability in developing countries, policymakers should implement a multi-pronged strategy. First, they need to strengthen regulatory frameworks by enhancing banking sector supervision, promoting transparency, and implementing risk management practices that align with international standards. Encouraging financial inclusion is crucial; expanding access to financial services for underserved populations can diversify the financial system and enhance stability. Developing robust capital markets is another key policy action to reduce reliance on banking sectors and distribute risk more efficiently. Furthermore, diversifying the economy and reducing dependency on volatile sectors can help mitigate external shocks. Improving financial literacy and promoting consumer protection are also essential to foster trust and resilience within the financial system. Lastly, international cooperation, such as technical assistance and capacity-building support from global financial institutions, can assist in implementing reforms and developing a resilient financial infrastructure. By focusing on these areas, developing countries can create a more stable financial environment that supports sustainable economic growth.

References

- Admati, A. R., & Hellwig, M. F. (2013). *The Bankers' New Clothes: What's Wrong with Banking and What to Do about It*. Princeton University Press.
- Adrian, T., & Liang, N. (2018). *Monetary Policy, Financial Conditions, and Financial Stability*. *International Journal of Central Banking*, 14(1), 73-131.
- Aizenman, J., & Lee, J. (2007). International reserves: Precautionary versus mercantilist views, theory and evidence. *Open Economies Review*, 18(2), 191-214.
- Allen, F. (2017). Financial stability and economic development. *Journal of Financial Regulation*, 3(1), 5-24.
- Allen, F., & Wood, G. (2006). Defining and achieving financial stability. *Journal of Financial Stability*, 2(2), 152-172.
- Allen, F., Otchere, I., & Senbet, L. W. (2011). African financial systems: A review. *Review of Development Finance*, 1(2), 79-113.
- Allen, F., Qian, J., & Gu, X. (2019). An Overview of China's Financial System. *Annual Review of Financial Economics*, 11(1), 255-273.
- Allen, W. A., & Wood, G. (2012). Defining and achieving financial stability. *Journal of Financial Stability*, 2(2), 152-172.
- Arner, D. W., Barberis, J., & Buckley, R. P. (2017). The Evolution of Fintech: A New Post-Crisis Paradigm? *Georgetown Journal of International Law*, 48(3), 1271-1319.
- Beck, T. (2012). Financial development and economic growth: Theory and evidence. In *Handbook of the Economics of Finance (Vol. 2, pp. 357-414)*. Elsevier.
- Beck, T., & Hesse, H. (2009). Why are interest spreads so high in Uganda? *Journal of Development Economics*, 88(2), 192-204.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2006). Bank concentration, competition, and crises: First results. *Journal of Banking & Finance*, 30(5), 1581-1603.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2013). Finance, Institutions and Economic Development. *Handbook of Economic Growth*, 2(1), 1059-1130.
- Borio, C. (2014). The financial cycle and macroeconomics: What have we learnt? *Journal of Banking & Finance*, 45(2), 182-198.
- Calderón, C., Chong, A., & Loayza, N. (2002). Determinants of current account deficits in developing countries. *The World Bank Economic Review*, 16(3), 429-456.
- Cecchetti, S. G. (2017). The importance of financial stability for economic growth. *Economic Policy Review*, 23(1), 55-72.
- Chen, Y., Lyulyov, O., Pimonenko, T., & Kwilinski, A. (2024). Green development of the country: Role of macroeconomic stability. *Energy & Environment*, 35(5), 2273-2295.
- Claessens, S., & Kodres, L. (2014). The Regulatory Responses to the Global Financial Crisis: Some Uncomfortable Questions. *IMF Working Paper No. 14/46*.
- Cull, R., Demirgüç-Kunt, A., & Morduch, J. (2014). Banks and Microbanks. *Journal of Financial Intermediation*, 23(4), 453-469.
- Demirgüç-Kunt, A., & Huizinga, H. (1999). Determinants of commercial bank interest margins and profitability: Some international evidence. *World Bank Economic Review*.
- Demirgüç-Kunt, A., Feyen, E., & Levine, R. (2013). The evolving importance of banks and securities markets. *World Bank Policy Research Working Paper No. 6391*.
- Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *The Review of Economic Studies*, 51(3), 393-414.

- Eichengreen, B. (2019). *Globalizing capital: A history of the international monetary system*. Princeton University Press.
- Elsayed, A. H., Naifar, N., & Nasreen, S. (2023). Financial stability and monetary policy reaction: Evidence from the GCC countries. *The Quarterly Review of Economics and Finance*, 87(2), 396-405.
- Fisher, I. (2016). The purchasing power of money. *Journal of Political Economy*, 12(3), 257-276.
- Friedman, M. (1968). The role of monetary policy. *The American Economic Review*, 58(1), 1-17.
- Galati, G., & Moessner, R. (2013). Macroprudential policy—A literature review. *Journal of Economic Surveys*, 27(5), 846-878.
- Khan, M. S., & Senhadji, A. S. (2001). Threshold effects in the relationship between inflation and growth. *IMF Staff Papers*, 48(1), 1-21.
- Laeven, L., & Valencia, F. (2013). The debate on the role of financial development in economic growth. *IMF Working Papers*, 13(11).
- Laeven, L., & Valencia, F. (2018). Systemic banking crises revisited. *Journal of International Money and Finance*, 83(1), 28-52.
- Malik, A. H., bin Md Isa, A. H., bin Jais, M., Rehman, A. U., & Khan, M. A. (2022). Financial stability of Asian Nations: Governance quality and financial inclusion. *Borsa Istanbul Review*, 22(2), 377-387.
- Minsky, H. P. (1977). A theory of systemic fragility. In E. I. Altman & A. W. Sametz (Eds.), *Financial crises: Institutions and markets in a fragile environment* (pp. 138-152). John Wiley & Sons.
- Mishkin, F. S. (2008). How should we respond to asset price bubbles? *Financial Stability Review*, 12(1), 65-74.
- Mohan, R., Shin, H. S., & Korinek, A. (2017). Monetary Policy and Financial Stability: Transmission Mechanisms and Policy Implications. *IMF Economic Review*, 65(3), 633-654.
- Nguyen, T. (2020). Interest rate spread and financial stability in developing economies. *Emerging Markets Finance and Trade*, 56(3), 572-590.
- Obstfeld, M. (2013). Finance at centre stage: Some lessons of the Euro crisis. *European Economy - Economic Papers*, 493, 1-34.
- Obstfeld, M., Shambaugh, J. C., & Taylor, A. M. (2015). The trilemma in history: Tradeoffs among exchange rates, monetary policies, and capital mobility. *Review of Economics and Statistics*, 97(1), 83-95.
- Ozili, P. K., & Iorember, P. T. (2024). Financial stability and sustainable development. *International Journal of Finance & Economics*, 29(3), 2620-2646.
- Phan, D. H. B., Iyke, B. N., Sharma, S. S., & Affandi, Y. (2021). Economic policy uncertainty and financial stability—Is there a relation? *Economic Modelling*, 94(1), 1018-1029.
- Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a time of debt. *American Economic Review: Papers & Proceedings*, 100(2), 573-578.
- Reinhart, C. M., Rogoff, K. S., & Savastano, M. A. (2016). Debt intolerance. *Brookings Papers on Economic Activity*, 1(1), 1-74.
- Sahay, R., Čihák, M., N'Diaye, P., & S., J. (2015). Financial Inclusion: Can it Meet the Needs of the Poor? *IMF Staff Discussion Note No. 15/06*.

- Shah, S. M., & Ali, A. (2022). A Survey on Financial Inclusion: Theoretical and Empirical Literature Review. *Journal of Policy Research (JPR)*, 8(4), 310-330.
- Shah, S. M., & Ali, A. (2023). Macro Dimensions of Financial Inclusion Index and its Status in Developing Countries. *Journal of Policy Research (JPR)*, 9(1), 1-12.
- Shah, S. M., Ali, A., Alim, W., Khan, J., & Alam, M. (2024). Exploring the link among financial inclusion, economic growth, tax revenue and environmental degradation in developing countries: a study aligned with SDG 8 and 13. *Remittances Review*, 9(2), 4227-4244.
- Sun, W. (2019). *Financial Development and Financial Stability in China*. *Journal of Financial Regulation and Compliance*, 27(4), 454-474.
- Wang, R., & Luo, H. R. (2022). How does financial inclusion affect bank stability in emerging economies? *Emerging Markets Review*, 51(2), 100876.
- World Bank. (2014). *Global Financial Development Report 2014: Financial Inclusion*. *World Bank Publications*.
- Xu, Y. (2018). The role of financial development in the financial stability of China. *Journal of Asian Economics*, 54(1), 37-52.