CHEMICAL ENGINEERING TRANSACTIONS
VOL. 107, 2023

A publication of
AIDIC
The Italian Association of Chemical Engineering
Online at www.cetjournal.it

Guest Editors: Petar S. Varbanov, Bohong Wang, Petro Kapustenko

ISBN 979-12-81206-07-6; **ISSN** 2283-9216
DOI: 10.3303/CET23107100

The Theoretical Framework of Sustainable Financial Development Through Literature Outlook

István Szalai*, Katalin Czakó

Széchenyi István University, 1 Egyetem Square, 9026 Győr, Hungary
szalai.istvan01@gmail.com

Sustainable development seeks to strike a balance between economic growth, social well-being and environmental protection. It should be integrated into financial development as well. As a consequence, banks are realising changes in their roles, decision-making, and operations. This paper aims to introduce a structured literature outlook about the different interpretations of sustainable financial development (SFD) on micro and macro levels. The literature mapping is focusing on three main contexts. The basic assumption of the paper is that it is crucial to emphasise the importance of country-level economic growth, the indicators used to determine the level of financial development and the resilience of the financial intermediary actors. As a consequence, the paper represents some existing results in terms of these three contexts. This gives the future basis for the efficient interpretation of sustainable financial development aspects in the operation and the decision-making processes of financial institutions and also for policy-making institutions on the macro-level.

1. Introduction

Sustainable development is a holistic approach to economic, social and environmental development that aims to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. It seeks a balance between economic growth, social well-being and environmental protection.
By integrating sustainability into financial development, societies can achieve economic prosperity while addressing environmental and social challenges. Sustainable financial development can support the transition to a low-carbon and resilient economy, promote social inclusion and support responsible business practices.
Through their activities, financial institutions and financial markets exert a dominating influence on the economy, society, and sustainable development. They are intermediaries able to channel capital to different markets, regions, sectors, or projects or may choose to focus on financial derivatives (Weber, 2014).
In the case of other market segments, adaptable reporting methods, including sustainable aspects, can be identified (Tóth and Suta, 2021). By embracing sustainable financial development, the actors of financial market intermediary systems can play a more vital role in promoting a more sustainable economy. But what is sustainable financial development? It is rooted in sustainable development, defined by the Brundtland report as the search to meet current needs without compromising future generations (Waygood, 2011). According to Levashova (2011), a key aspect of this concept relates to integrating economic and social issues, which implies that environmental and economic development policies and concerns will be assimilated. Sustainable financial development refers to integrating sustainability principles into banks' and financial institutions' operations, strategies and decision-making processes. This includes integrating environmental, social and governance (ESG) factors into their lending practices, risk management, investment decisions and overall business models (Busch et al., 2016). Banks can invest capital in sustainable projects, encourage innovation in green finance and promote responsible business practices. Sustainable banking practices contribute to environmental protection, social inclusion and long-term economic stability, aligning the financial sector with the broader sustainable development goals. Sustainability has become a key driver of financial stability and financial resilience after the financial crisis in 2008 (World Economic Forum USA Inc., 2012). It has new interpretations after the global economic crises caused by COVID-19 and the Ukrainian-Russian conflict.
The UN and the World Bank published a report, called the Roadmap, which aims to propose an integrated approach that can be used by all financial sector stakeholders—both public and private—to accelerate the

Paper Received: 18 March 2023; Revised: 20 June 2023; Accepted: 28 June 2023
Please cite this article as: Szalai I., Czakó K., 2023, The Theoretical Framework of Sustainable Financial Development through literature outlook, Chemical Engineering Transactions, 107, 595-600 DOI:10.3303/CET23107100

transformation toward a sustainable financial system. This approach can be defined as a macro tool as it can bring policy cohesiveness across ministries, central banks, financial regulators, and private financial sector participants as well in order to focus efforts. The ultimate vision of the authors of the Roadmap is to reach as many of the national financial market processes that integrate sustainability considerations into their operations, including the full costing of positive and negative externalities that sustainability implies, leading to a reorientation of the flow of resources toward more inclusive and sustainable activities (World Bank Group, 2017). The best practice methods and suggested tools can also give a good root to identify the basic components of proper sustainable financial development determinants in the financial development composite indices.

The current paper aims to present a short map of the literature on sustainable financial development. At the macro level, the basic assumption of the paper is that the present statistical and reporting technologies do not properly consider the sustainable determinants in the financial development indices. The method used in the paper is literature mapping. At the same time, it should be noted that only those findings are strongly connected to the interpretation of sustainable financial development, which is rooted in resilience. The next assumption of the paper is that in the interpretation of sustainable financial development, it is crucial to highlight the country-level GDP, the indicators used to determine the financial development level and the resilience of the financial intermediary actors. The paper represents basic theories and interpretations. At the same time, through the mapping, it points to the papers which provide actual interpretations and focus points in sustainable financial development. With fulfilling the aim of the paper – to have an outlook about the different interpretations of SFD – the expected result of the recent paper is to represent the relationship between sustainable development and financial development, the future potential for sustainable financial development, the preconditions for its success, and the main channels through which sustainable banking can enhance financial development on macro-level as well.

2. Theory

Bokros et al. (2001) write about the financial transition in Europe and Central Asia, highlighting the challenges of the new decade, referring to the Russian banking crisis and its recovery, and writing about the general effects of the banking crisis, as it is undermining the overall confidence of the economy and results in the drop in the GDP. Due to this, sustainability got significant importance in these years in the field of financial development. Aanalysing financial development and putting it into a sustainable context is a very time-dependent direction in research. Deidda and Fattouh (2005) call attention to the negative effects of the banking concentration. The paper highlighted the duplication of the banks' investments in fixed capital, which is detrimental to economic growth. Domestic financial sectors have key importance and need to gain their resilience capacity. The same authors made an analysis of the interaction between banks and the financial market. Their interpreted interaction is, where bankers collect information through monitoring and screening the market (Deidda and Fattouh, 2008). This study closely takes the financial sector to the questions of entrepreneurial status and gives the reasonability to analyse the sustainable characteristics of local financial systems and their development. Shen and He (2022) construct threshold variables such as financial system, economic development level, infrastructure, and industrial structure. They determined the threshold variable, which leads to diminishing marginal trends in financial development and economic growth. This paper can be considered an overall methodological cornerstone, representing the general mission of all the papers taken in the review: which variables can give the best input to properly determine the level of sustainable financial development.

3. Methods

The interrelation between sustainable banking and financial development is a continuously changing field of science. The methodology applied in this paper gives an initial basis to the novel (or at least the most up-to-date) approach to sustainable financial development (SFD). In the initial keyword creation, the analysis followed the goal of the paper: trying to find the presence of sustainability in different dimensions of financial development. The keywords for the primary searches were the following: "economic AND growth" OR "GDP" OR "financial development indicators" OR "financial development determinants" OR "resilience" AND "sustainability" and its grammatical versions and expressions used in finance such as "green finance", "ESG", "SDG".

Papers in the literature review were collected based on the following intaking criteria:

1. The initial background of a development process is that it should result in economic growth on the macro-level, which is most commonly measured by GDP. This is the reason why papers focusing on the relation of GDP and financial development were analysed.
2. Financial development indicators: in order to discuss novel interpretation, existing indicators should be considered, and indicators focusing on sustainability should be identified

3. Resilience: resilience (and also adaptivity) gives the root of the novel approach. Sustainable financial development can give resilience to the national macroeconomies. Basic assumption in this logic is that the system of indicators in the existing financial development index can be varied with those ones, which support the resilience of a country's economy in the times, when economic processes are not foreseeable or affected by external circumstances like global pandemic, wars or even natural disasters.

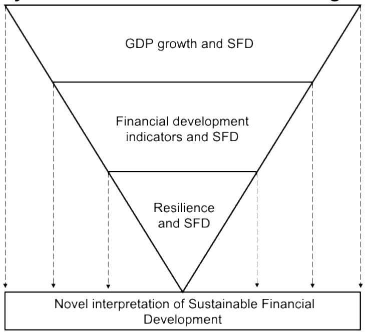

Figure 1: Scope of highlighted literature of the novel interpretation of Sustainable Financial Development

Based on the three contexts of economic growth, financial development indicators and resilience, the paper focuses on the goal of highlighting those papers, which can add significant input to the novel interpretation of sustainability. Elements in focus are the following parameters: besides the literature review seeking for actual results, empirical papers were in the focus of the analysis. During the investigation, it was important to collect the dominant metrics in the focus of the analysed papers. Finally, the short summary of results or main findings can be also found in the review, as well as the limitations.

4. Results

The most significant point of the results is that sustainable factors are not represented or not presented well as indicators in the financial development composite indices. Sustainable determinants can be observed at the level of the market. At the same time, sustainability goals can be rarely identified among the indicators. As sustainable growth is supposed to be developed hand in hand with economic growth, the results of this review strengthened the basic expectation of the paper: there is a need to implement sustainable development goals into the financial development indices.

4.1 Economic growth and SFD

In their related paper, Calderon and Liu investigate the data of 109 developing and industrial countries from 1960 to 1994 to examine the direction of causality between financial development and economic growth. They found some interesting results. It has been obtained, that financial development enhances economic growth for all countries. They also found evidence of bidirectional causality, so that financial depth stimulates growth and, simultaneously, growth propels financial development. This paper provides an empirical basis for promoting financial and economic development, and provides policy implications in order to gain sustainable economic growth (Calderon and Liu, 2003).
Applied panel smooth transition regression from annual data is represented by Thu-Ha and Kou-Chun (2020). They have the result that foreign direct investment has a beneficial effect on the local financial system in Asia from 1996-2017. Although these countries position themselves at particular levels of financial development and so explain their current earning capability from FDI, it is notable that "this study considers only the conventional indicators reflecting the depth of finance but ignores the access and efficiency of the financial system" (Thu-Ha, and Kou-Chun, 2020). Also, the Asian market is analysed by Amit and Mittal by applying a system GMM analysis. They write about the strengthening of the causative effect between banks and GDP growth. Khan (2007) applies the bound testing approach to examine the long-run relationship between the growth rate of real GDP, ratio of FDI to real GDP, financial sector development, labor and physical capital. Cointegrating these factors gives one of the findings that a well-developed financial sector can represent a source of having better ability to absorb the positive impact of FDI. The research field is Pakistan. There is a general note at the end of the study – the development of the local financial system is crucial to provide better financial constructions for investors. Alfaro et al. (2004) have very similar thinking in their paper by using cross-country data. Pradhan et al. (2019) are trying to explain a possible causality between FDI, economic growth and financial development. The sample are the G-20 countries from 1970-2016. They highlight policies of the financial system, which promote the liberalization of the economy and capital openness. They highlight the limitation that their method

cannot deal with crisis events and they say that the causality presented in their paper is time-varying. Jithin and Suresh (2020) have an interesting approach. They discuss the question of how FDI in financial services effects the financial development of a country. Among 26 emerging economies between 2003-2015, they have the general result that well-developed financial markets are attracting FDI more in the case of financial services as well. The authors apply dynamic ordinary least squares (DOLS) to analyse the long-run relationship between financial services FDI and financial development.

Gál (2015) represents a smaller case of Budapest, Hungary, where the capital is evaluated as an International Financial Centre. This urban aspect is based on the comparison with other CEE cities, Warsaw and Prague by taking factors of international financial centres (IFC). Akbar and McBride's (2004) article is also dealing with the Hungarian case and highlights the elements of the multinational enterprise strategy. They divide the market serving and resource-taking FDI and state that serving FDI is represented more in service industries. They call attention to the importance of strategic policy-making.

Representing some new findings, Contractor et al. (2020) are focusing on regulations and business environmental impacts on FDI inflows. They separate regulatory variables based on different stages of an investing multinational's life-cycle. Durusu-Ciftci et al. (2017) highlight debt from credit markets and equity from stock markets as two long run determinants and analysing 40 countries from 1989-2011. One of their findings is that the contribution of the credit markets to GDP growth is substantially greater. Ibrahim and Acquah researches the African case in the interrelation of FDI, economic growth and financial sector development. Casual linkages in 45 African countries are under analysis from 1980-2016 through the panel Granger Non-Causality test. They also call the attention for the policy implications.

4.2 Financial development indicators and SFD

It is already visible from the previous point that policies of the financial system can be understood as basic financial development indicators. However, beside policies, Choong et al. (2005) states that local financial system needs to achieve a critical minimum development level in the technological evolution, because the incoming FDI takes an additional technological input. This input can be utilized only, if the local financial system's absorptive capability is fair enough. They reached this result on the Malaysian market applying the unrestricted error correction model of Pesaran et al. (2001). Keykanloo et al. (2020) divide financial development indices into two groups, market indices and institutional indices and examining the effects on the absorption capacity of the FDI in 11 countries, in1990-2014. They notice that in countries with weak capital markets, the financial market access index (FMA) and the financial institution efficiency index (FIE) have a significant negative effect on FDI absorption and vice versa. Gural and Lomachynska (2017) analyse the impact of the volume and depth of the financial system on the dynamics of economic growth in V4 countries from 1992-2016. They define a critic that the root is the insufficient level of national financial system development. Bank-oriented financial systems are heavily dependent on foreign capital. Governments' main focus in these countries is to keep the sustainability of banking sectors. This holds back the financial development of the national economies of the Visegrad Group (Gural and Lomachynska, 2017). Based on annual data of 61 countries in 12 y is analysed by Ozkok (2015), who is using indices in the contexts of financial openness, institutional and educational variables. The group of indicators' effects on financial development are well described in the paper.

Khoury et al. (2023) observed ESG in the performance of banks in MENAT regions. Green finance is one the most important issues in China (Zhou et al., 2023). Ahmed et al. (2022) examined the importance of institutional quality and financial development in terms of sustainable economic growth. They analysed the South Asian economies over the period 2000-2018 with data from the World Bank. The results of the panel cointegration approaches reveal long-run cointegration between the factors, and they found that institutional quality and financial development are driving factors in promoting green economic growth in the long run.

Having understood the key importance of variables related to ESG measurements, Busch et al. highlight that in order to reach the full potential of financial intermediary players in terms of sustainable financing, not just a reorientation toward a long-term paradigm for sustainable investments but also the enhancements in ESG measurements are vital steps. (Busch et al., 2016) So it is crucial to even more specify the variables in this context, in order to implement them to a dynamic and even more relevant composite index of SFD.

4.3 Resilience and SFD

As mentioned before, resilience aims to give the root of the paper's novel approach. Sustainable financial development aims to give stability and resilience to a macroeconomy. The significance of the resilience of national financial systems has also been emphasised in the UN Environment Inquiry, where it has been referred to as one of the eight essential characteristics in terms of the successful transition towards a sustainable financial system (UN Environment Inquiry, 2015). The basic assumption in this logic is that the system of indicators in the existing financial development index can be varied with those ones which support the resilience of a country in those times when economic processes are not foreseeable or affected by external circumstances like global pandemic, national economic conflicts or natural disasters. Taking resilience into account in the interpretation gives the necessity and reasonability of the continuous analysis. Beck et al.'s (2022) starting point is that 9 of the 13 systematic banking crises were caused by the credit concentration. They identify new concentration measures like "sectoral exposures, specialisation and differentiation" and test existing theories. Banks in 34 countries are in the research during 2002-2012. Their mission is to be able to use their methodology for the definition of time-varying indicators. Beck et al. (2006) deal with bank concentration through the fragility of the banking system. The main finding is that crises are less likely in economies with more concentrated banking systems. The predecessor of both papers is from Beck et al. (2003), which can be understood as a basic paper on the relationship between bank concentration and crises. Botes et al. (2021) also consider bank crisis management as their main focus. The starting logic is that banks in the emerging market limit authorities' strategic options. Marques and Alves (2021) discuss the business model diversity and banking sector resilience. They are making the following theoretical contributions. The authors set up a two-step measure of business model diversity based on applying clustering techniques on a set of business model variables at the bank level. They define the specification of a 3SLS model that explicitly considers the interactions of business model diversity with diversification and market power in explaining banking sector resilience, make the breakdown of the baseline results per type of financial system (i.e. bank vs market-based) and the analysis of the diversity and composition of optimal country-level portfolios of banking business models. They highlight the mixed predictions in the literature in the topic of resilience and financial development's relation.

5. Conclusion

The presented empirical results emphasise the role of well-developed institutions that enable sustainable banking in promoting financial development, which can ultimately contribute to achieving the Sustainable Development Goals. Although the sustainable aspects are already presented at the market level, this representation is not strong in the context of financial development indicators. There is a recognition to categorise the determinants (Keykanloo et al., 2020). At the same time, in this synthesis of existing empirical papers, the sustainable factors are interpreted at the banking sector level. There were no papers with the goal of an overall investigation of financial development indices and sustainable development determinants. That leads to the following conclusion. In the financial market, the determinants of the Sustainable Development Goals are presented on the micro-economic level rather than the macro level. The paper presents a short literature map of sustainable financial development, a changing topic. Research in recent years has shown that the relationship between sustainable banking and financial development is not as homogeneous as it can be seen. As an example, geographical differences among papers are strongly represented. The result is the representation of the relationship between sustainable development and financial development. In the future, sustainable financial development will have a more significant role in economic growth. Besides policies, efficient channels need to be set up, which banks can rely on to build development processes in sustainable ways. The preconditions for the success of sustainable financial development should be continuously under-researched with macro statistical tools as well. Lead by this point of view. This paper observed that the latest ways of thinking in papers are willing to separate and highlight indicators like regulatory or direct entrepreneurial from ones like stages in the life cycle of firms or expectations for market finance. The more resilience in the focus of the research, the more differences can be observed among indicators and methodologies. Considering the resilience and fragility of financial intermediary systems, new interpretations are coming up in the related scientific literature. Assuming the country-level characteristics of sustainable financial development, particular attention should be paid to geographical territories or macroeconomies.

References

Ahmed F., Kousar S., Pervaiz A., Shabbir A., 2022, Do institutional quality and financial development affect sustainable economic growth? Evidence from South Asian countries. Borsa Istanbul Review, 22, 189–196.

Akbar Y.H., McBride J.B., 2004, Multinational enterprise strategy, foreign direct investment and economic development: the case of the Hungarian banking industry. Journal of World Business, 39, 84-105.

Alfaro L., Chanda A., Kalemli-Ozcan C., Sayek S., 2004, FDI and economic growth: the role of local financial markets. Journal of International Economics, 64, 89-112.

Beck T., Demirgüç-Kunt A., Levine R., 2003, Bank Concentration and Crises. NBER Working Paper Series, <www.nber.org/papers/w9921>, accessed 20.10.2023.

Beck T., Demirgüç-Kunt A., Levine R., 2006, Bank Concentration, Competition, and Crises: First results. Journal of Banking & Finance, 30,1581-1603.

Beck T., Deyonge O., Mulier K., 2022, Bank Sectoral Concentration and Risk: Evidence from a Worldwide Sample of Banks. Journal of Money, Credit and Banking, 54,1705-1739.

Bokros L., Fleming A, Fotava C., 2001, Financial transition in Europe and Central Asia: challenges of the new decade, World Bank Publications, Washington DC, United States.

Botes J.,Lawson A., Pozdyshev V., Vrbaski R., 2021, Managing banking crises in emerging market economies. FSI Insights on policy implementation, 38, 1-42.

Busch T., Bauer R., Orlitzky M., 2016, Sustainable Development and Financial Markets: Old Paths and New Avenues. Business & Society, 55, 303–329.

Calderon C., Liu L., 2003, The direction of causality between financial development and economic growth. Journal of Development Economics, 72, 321-334.

Choong C.K., Yosup Z., Soo S.C., 2005, foreign direct investment and economic growth in Malaysia: the role of domestic financial sector. The Singapore Economic Review, 50, 245-268.

Contractor F.J., Dangol R., Nuruzzamana N., Raghunathc S., 2020, How do country regulations and business environment impact foreign direct investment (FDI) inflows? International Business Review, 29, 101640.

Deidda L., Fattouh B., 2005, Concentration in the banking industry and economic growth. Macroeconomic Dynamics, 9, 198-219.

Deidda L., Fattouh B., 2008, Banks, financial markets and growth. Journal of Financial Intermediation, 17, 6-36.

Durusu-Ciftci D., Ispir M.S., Yetkiner H., 2017, Financial Development and Economic Growth: Some Theory and More Evidence. Journal of Policy Modeling, 39, 290-306.

Gál Z., 2015, Development of international financial centres in Central and Eastern Europe during transition period and crisis. The case of Budapest, Studia Regionalne i Lokalne (in Polish), 16, 53-80.

Gural A., Lomachynska I., 2017, FDI and financial development as determinants of economic growth for V4 countries. Baltic Journal of Economic Studies, 3, 59-64.

Jithin P., Surech B.M., 2020, Does foreign direct investments in financial services induce financial development? Lessons from emerging economies. International Journal of Finance and Economies, 27, 4399–4411.

Keykanloo M.G., Hosseini S., Jazeh K.E., Askari A., 2020, The Effect of Financial Development on Foreign Direct Investment. Iranian Economic Review, 24, 885-906.

Khoury R., Nasrallah N., Alareeni B., 2023, ESG and financial performance of banks in the MENAT region: concavity–convexity patterns. Journal of Sustainable Finance & Investment, 13, 406-430.

Khan M.A., 2007, Foreign Direct Investment and Economic Growth: The role of domestic financial sector. Pakistan Institute of Development Economics, 18, 1-55.

Levashova Y., 2011, Role of sustainable development in Bilateral Investment Treaties: recent trends and developments, Journal of Sustainable Finance & Investment, 1, 222-229.

Marques B.P., Alves C.F., 2021, Business Model Diversity and Banking Sector Resilience. FEP Working Papers, 623, 1-47.

Ozkok Z., 2015, Financial openness and financial development: an analysis using indices. International Review of Applied Economics, 29, 620-649.

Pesaran M.H., Shin Y., Smith R., 2001, Bound Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics, 16, 289–326.

Pradhan R., Arvin M.B., Bahmani S., Hall J.H., 2019, Attaining economic growth through financial development and foreign direct investment. Journal of Economic Studies, 46, 1201-1223.

Shen L., He G., 2022, Threshold Effect of Financial System on High-Quality Economic Development. Journal of Mathematics, 2022, 1-14.

Tóth Á., Suta A., 2021, Global Sustainability Reporting in the Automotive Industry via the eXstensible Business Reporting Language. Chemical Engineering Transactions, 88, 1087-1092.

Thu-Ha T.A., Kuo-Chun Y., 2020, Growth effect of foreign direct investment and financial development: new insights from a threshold approach. Journal of Economics and Development, 23, 144-162.

UN Environment Inquiry, 2015, The Financial System We Need: Aligning the Financial System with Sustainable Development, UN Environment Programme. <unepinquiry.org/wp-content/uploads/2015/11/The_Financial_System_We_Need_EN.pdf>, accessed 20.10.2023.

Waygood S., 2011, How do the capital markets undermine sustainable development? What can be done to correct this? Journal of Sustainable Finance & Investment, 1, 81-87.

Weber O., 2014, The financial sector's impact on sustainable development. Journal of Sustainable Finance & Investmen, 4(1), 1–8.

World Bank Group, 2017, Roadmap for a sustainable financial system. <sustainabledevelopment.un.org/content/documents/2451121283121120171533333RoadmapforaSustainableFinancialSystem.pdf>, accessed 20.10.2023.

World Economic Forum USA Inc., 2012, The Financial Development Report 2012. <www3.weforum.org/docs/WEF_FinancialDevelopmentReport_2012.pdf>, accessed 20.10.2023.

Zhou K., Tao Y., Wang S., Luo H., 2023, Does Green Finance Drive Environmental Innovation in China?, Emerging Markets Finance and Trade, 59, 2727-2746.