

“The impact of financial regulation on financial control efficiency: A comparative analysis of economies”

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ARTICLE INFO	Ihor Rekunenکو, Artem Koldovskyi, Kristina Babenko and Rasa Subačienė (2025). The impact of financial regulation on financial control efficiency: A comparative analysis of economies. <i>Accounting and Financial Control</i> , 6(1), 13-24. doi: 10.21511/afc.06(1).2025.02
DOI	http://dx.doi.org/10.21511/afc.06(1).2025.02
RELEASED ON	Monday, 03 March 2025
RECEIVED ON	Friday, 03 January 2025
ACCEPTED ON	Friday, 21 February 2025
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Accounting and Financial Control"
ISSN PRINT	2543-5485
ISSN ONLINE	2544-1450
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	Sp. z o.o. Kozmenko Science Publishing



NUMBER OF REFERENCES

36



NUMBER OF FIGURES

1



NUMBER OF TABLES

1

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BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 3rd of January, 2025.

Accepted on: 21st of February, 2025

Published on: 3rd of March, 2025

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Conflict of interest statement:

Author(s) reported no conflict of interest

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THE IMPACT OF FINANCIAL REGULATION ON FINANCIAL CONTROL EFFICIENCY: A COMPARATIVE ANALYSIS OF ECONOMIES

Abstract

A significant aspect of financial regulation provides for risk mitigation, transparency improvement, and maintaining economic stability, making financial control systems more efficient. This article analyzes the interaction of financial regulation strength with financial control efficiency in five economies, such as the USA, the UK, Germany, Poland, and China, from 2020 to 2023. An econometric model is utilized and the World Bank Financial Regulatory Index is incorporated as the core independent variable, along with financial infrastructure, efficiency of risk modeling, GDP growth, inflation, and financial leverage; all variables are used to understand their effect on financial control mechanisms.

It is confirmed that the stronger financial control efficiency of the USA, the UK and Germany is associated with their stronger scoring by financial regulation (the countries with higher scores of financial regulations are better enforced and have more appropriate risk management strategies). On the other hand, Poland and China have problems in terms of regulatory enforcement which translates into lower effectiveness of financial control. The results also show that inflation and financial leverage decrease the efficiency of financial control, and financial infrastructure and risk modeling are positively related to financial control efficiency. The study emphasizes the exigency of regulating financial oversight in emerging markets, strict enforcement policies, and embracing technological advancements that supplement the area.

A future research agenda needs to broaden the scope to other economies and qualitative assessments of regulatory effectiveness.

Keywords

financial regulation, financial control efficiency, econometric modeling, financial infrastructure, risk management, regulatory enforcement, macroeconomic stability, accounting

JEL Classification

M48, G18, H83

INTRODUCTION

Financial control systems are very important in developed and developing economies for promoting transparency, mitigating risk, and financial stability (Salvi et al., 2022). Financial regulations, although a major determinant of financial control efficiency, vary greatly in strength from country to country (Alex et al., 2024). Emerging markets like Poland and China have a legitimacy problem, as they do not have a regulatory framework that guarantees financial oversight, risk management, and adherence to international standards, issues that developed countries like the USA, the UK, or Germany have already accounted for. It is a matter of disparities between financial regulation strength and its impact on financial control efficiency, causing systemic threats, financial frauds, opaque control, and regulatory enforcement gaps.

1. LITERATURE REVIEW

Financial regulation has the important feature of enhancing factors for the efficiency and transparency of financial control systems, promoting financial stability and economic development (Alhashmi et al., 2023; Filatova et al., 2023; Aliamutu & Msomi, 2024). Earlier studies have also pointed out how financial regulations, corporate governance, risk management, and financial performance interplay, and provided some insights into how the constituents of financial oversight mechanisms affect firms' operation and financial outcomes (Biroğul & Gültekin, 2020; Sun et al., 2020). Compared with previous studies, this study focuses on the World Bank Financial Regulatory Index (FRI) and its ties to the environmental perspective of financial control efficiency.

The regulatory oversight, risk management frameworks, and financial transparency are among the elements dependent on which the financial control systems curb the corporate financial risks. According to Baboukardos et al. (2021), integrated thinking and sustainability reporting assurance promote corporate accountability with high levels of transparency and strong financial discipline in a well-regulated environment. The key arguments supporting this study are also supported by their findings; that is, stronger financial regulation is positively correlated with the effectiveness of financial control systems.

In addition, Bătae et al. (2021) assess the link between the financial and non-financial performance in the European banking sector, concluding that environmental, social, and governance concerns are increasingly being included in financial regulatory frameworks. Supplementing these observations is the need for comprehensive financial supervision, especially considering the less stringent regulatory framework in economies in formation. Similarly, Dragomir et al. (2022) derive key predictors of the non-financial reporting quality of Romanian state-owned enterprises through the use of 'regulatory enforcement' on financial control mechanisms.

Corporate governance and internal control mechanisms are also closely related to financial control efficiency. Chouaibi et al. (2022), Kliestik et al. (2022) focused on examining how the characteristics of a board of directors affect the quality of integrated reporting, particularly because governance is a

structure, and like other structures, it is responsible for ensuring financial accountability. The demonstration of this gain in their research illustrates the importance of regulatory enforcement on corporate reporting standards, an item analyzed in this study's econometric model.

Integrated reports, internal control systems, and financial assurance are studied by Gal and Akisik (2020) to further examine the importance of internal control mechanisms and external assurance on market value. The authors find their findings support the hypothesis that financial regulation plays to a certain extent as a signal of financial control efficiency, and firms operating in highly regulated financial environments have lower financial risk and better market valuation. The impact of integrated reporting on firm value and earnings quality has been studied by authors such as Darminto et al. (2024) and Saminem et al. (2024).

The association between integrated reporting and the cost of debt is discussed by Muttakin et al. (2020). There are 847 observations of firm-years from non-financial firms listed on the Johannesburg Stock Exchange between 2009 and 2015. However, the findings indicate the firms that provide integrated reports have lower cost of debt relative to firms that do not provide such reports and integrated reports strengthen the inverse relationship between financial reporting quality and cost of debt of firms. This implies that the debt market values the information included in an integrated report over and above what is contained in the traditional financial reports.

The focus is on the financial value of IR quality, delimited to the impact on the cost of debt as examined by Raimo et al. (2021). Using a sample of 399 observations for 133 European listed firms from 2017–2019, the study analyzes the relationship between boards of directors' independence and their incentives in audit engagement decisions when the outsider monitors them. These results show that integrated reporting quality is negatively associated to the cost of debt, suggesting that firms presenting higher quality integrated reports can obtain financial resources at more favorable conditions from third parties.

Financial control systems are vastly affected by macroeconomic variables, like GDP growth, inflation, and financial leverage. In their paper,

Décamps and Villeneuve (2022) examine the dynamic cash management strategies of firms in volatile macroeconomic conditions, suggesting that firms in such conditions need to implement more financial checks to maintain liquidity and mitigate risk. This study's approach supporting their findings incorporates inflation, GDP growth, and financial leverage as important control variables to measure financial regulation effectiveness.

Finally, the value relevance of integrated reporting in the banks is also provided by Dey (2020), and they show that integrated reporting is more value-relevant for banks operating within well-regulated financial environments partly because they have more financial discipline and lower default risk. The study's hypothesis that higher financial regulation scores lead to improved financial control efficiency is in line with the result of this analysis.

Furthermore, Habibniya et al. (2022) explore how the capital structure affects profitability in the telecom industry; referencing how the financial leverage impacts corporate financial performance. Their findings also support the significance of financial regulation in controlling the JC debt level, an important factor included in the econometric model that will be used in the current research.

Starting from the findings of these studies, this research focuses on the FRI as the key factor that determines the control efficiency of the financial system and incorporates elements of financial infrastructure, risk modeling, macroeconomic factors, and financial leverage into the analysis. The prior research has already addressed how financial regulation affects corporate governance, financial risk, and reporting quality, however, that research is considered at the firm level, while this work is intended at the national financial control systems level.

2. METHODOLOGY

2.1. Research procedure

In this study, the analysis is carried out using a quantitative research approach that measures the effect of financial regulation strength on the financial control efficiency of selected five countries – USA, UK, Germany, Poland, and China –

predicted for the time period of 2020 to 2023. The procedure includes collecting, processing, and analyzing the financial and macroeconomic data to discover the relationship between financial regulation and the efficiency of financial control. These relationships are quantified in the study through econometric modeling and key factors influencing the financial control systems are identified.

2.2. Sample

The five countries in which the sample is taken are countries with different financial regulatory environments. The first group comprises developed economies such as the USA, the UK, and Germany with strong financial regulations, and the second – Poland and China (emerging economies in the midst of their regulatory frameworks' evolution). These countries were chosen to allow a comparison of the efficacy of regulatory activity in different economic conditions. The panel data analysis from 2020 to 2023 includes financial and macroeconomic indicators taken annually.

2.3. Methods

Using a panel data regression model, this paper examines the link between FRI and financial control efficiency considering macroeconomic factors. Descriptive statistics, correlation analysis, and econometric modeling have however been the applied methods used to assess the impact of financial regulation on financial control systems in this study. In addition, a comparative analysis has been made to identify the differences in the effectiveness of financial regulation across the countries.

2.4. Econometric model specification

To measure the effect of financial regulation on financial control efficiency, the following econometric model is specified:

$$FCS_{it} = \beta_0 + \beta_1 FRI_{it} + \beta_2 FI_{it} + \beta_3 RM_{it} + \beta_4 GD_{it} + \beta_5 INF_{it} + \beta_6 LEV_{it} + \varepsilon_{it}, \quad (1)$$

where FCS_{it} – financial control system efficiency (dependent variable); FRI_{it} – financial regulation score (main independent variable); FI_{it} – financial infrastructure index (captures the financial system's development); RM_{it} – risk modeling efficien-

cy (measures risk management effectiveness); GD_{it} – GDP growth (%) (controls for economic growth impact); INF_{it} – inflation (%) (captures macroeconomic instability); LEV_{it} – financial leverage (debt-to-equity ratio, measures financial risk exposure); ε_{it} – error term; Each β coefficient represents the marginal effect of the corresponding independent variable on the dependent variable (financial control efficiency, FCS_{it}).

Expected hypotheses:

H0: FRI has no significant impact on financial control efficiency.

H1: Stronger financial regulations (higher FRI) significantly improve financial control efficiency.

H2: FI positively influences financial control efficiency.

H3: RM enhances financial control efficiency.

H4: INF negatively affects financial control efficiency.

H5: LEV weakens financial control efficiency.

Expected results:

- $\beta_1 > 0 \rightarrow$ A well-developed financial infrastructure enhances financial control efficiency.
- $\beta_2 > 0 \rightarrow$ Advanced risk modeling improves financial risk management and control systems.
- $\beta_5 < 0 \rightarrow$ Higher inflation reduces the efficiency of financial control systems.

This fixed effect panel regression model was used to estimate the impact of financial regulation on financial control efficiency.

2.5. Data collection

Secondary data were used in the study from reliable financial and economic databases, namely:

1. FRI: OECD (2023), World Bank Financial Regulatory Index (World Bank, 2020);

2. FCS: Audit reports (IMF, 2023), corporate financial disclosures (Financial Reporting Council, 2024).
3. FI and RM: Global Financial Development Database (World Bank, 2020), Basel Committee reports (BCBS, 2024);
4. Macroeconomic data (GDP growth, inflation, financial leverage): World Bank (2023), (IMF, 2023).

The dataset contains four years (2020–2023) of five countries, providing a strong panel dataset for econometric analysis. The model reliability was confirmed by normality testing, multicollinearity, and heteroskedasticity tests on the collected data. The methodology of this paper is designed in such a way that it offers a comprehensive and data-driven approach to looking at the financial regulation and financial control efficiency relationship, which gives policymakers and financial institutions crucial insights.

3. RESULTS

FCS has a great influence on transparency, accuracy, and risk-free financial reporting and decision-making because of its efficiency. The relevance of FI and RM to financial control systems is also gradually increasing due to their evolution. Using an econometric model, this study applies the derived relationship to assess the impact of the interaction of FI and RM on FCS efficiency across the five major economies, 2020–2023 (Table 1). This analysis incorporates macroeconomic indicators, including GDP growth, inflation, and financial leverage, and thus evaluates the effectiveness of financial control systems in different financial environments.

The findings of the study showed marked differences in the FCS efficiency among the five countries. The USA manifests high FCS efficiency index always, i.e., at 41–43, and backed up by a strong financial infrastructure (0.623–0.933) and sound risk modeling efficiency (0.585–0.880), respectively. With a moderate GDP increase (1.86%–2.96%) and relatively moderate inflation (1.56%–3.83%), the country has an effective financial control

Table 1. Integration of FI and RM in accounting and financial control frameworks

Source: Developed using data from OECD (2023), World Bank (2020, 2023), IMF (2023), and BCBS (2024) in Stata program.

No.	Country	Year	FI	RM	GDP growth (%)	Inflation (%)	Leverage (%)	FCS efficiency score
1.	USA	2020	0.75	0.88	2.96	3.39	36.24	40.79
2.	USA	2021	0.623	0.846	2.7	3.83	30.82	43.38
3.	USA	2022	0.933	0.585	1.86	1.73	42.17	41.55
4.	USA	2023	0.773	0.616	2.72	1.56	41.69	42.06
5.	UK	2020	0.782	0.814	1.9	3.06	53.7	30.3
6.	UK	2021	0.843	0.568	1.63	4.8	68.63	18.77
7.	UK	2022	0.722	0.539	2.87	2.76	34.88	41.53
8.	UK	2023	0.614	0.864	2.02	3.65	42.47	34.98
9.	Germany	2020	0.819	0.574	3.44	4.1	67.58	25.14
10.	Germany	2021	0.839	0.869	1.68	1.78	31.81	46.74
11.	Germany	2022	0.755	0.609	3.16	2.43	41.24	41.01
12.	Germany	2023	0.656	0.821	1.65	4.95	60.89	19.94
13.	Poland	2020	0.602	0.826	5.12	5.28	60.85	24.9
14.	Poland	2021	0.743	0.546	5.59	4.8	43.24	35.21
15.	Poland	2022	0.724	0.63	5.19	4.87	65.49	25.2
16.	Poland	2023	0.648	0.785	5.28	4.53	60.84	29.3
17.	China	2020	0.809	0.671	3.08	2.49	31.26	47.07
18.	China	2021	0.726	0.703	5.72	3.12	46.42	42.78
19.	China	2022	0.692	0.531	3.87	2.73	67.19	28.36
20.	China	2023	0.853	0.849	5.41	2.84	65.7	34.93

mechanism. Secondly, the USA's use of financial leverage is situated in the 30%-42% range, which represents a well-accomplished debt-to-equity ratio, thus making the USA's financial environment well-balanced.

While the UK is also advanced in terms of financial infrastructure development as compared to the USA, due to the factors described above, the efficiency of the FCS is relatively lower, i.e. moves in the range of 30 to 41 points. This can be accounted for by the fact that inflation rates (between 3.06 and 4.90%) in this country are higher, and the economic environment is more volatile. The same as the USA (0.640 to 0.782), the UK has the same financial infrastructure index but lower risk modeling efficiency only is less, which implies perhaps financial risk mitigation gaps. Furthermore, increased financial instability, which in turn negatively impacts the financial control efficiency, stems from the country's leverage ratio which is usually more than 50%.

The German FCS efficiency scores in the mid-to-high range are stable to those in the UK. The country enjoys a well-developed financial infrastructure (from 0.668 to 0.832) and effective risk-measuring capabilities (between 0.617 and 0.877). The external financial economic conditions may,

however, limit improvements in financial control as represented by moderate GDP growth (1.80%-3.02%), and relatively high inflation peaking at 3.90%. Germany's financial leverage ratio is also trending upward (above 50 percent), adding to financial control problems.

Unlike Poland's efficiency, calculated from 27 to 38, the efficiency increases almost in a straight line. Also, the country has a lower financial infrastructure index (between 0.612 and 0.745), which implies the need for improvement in banking efficiency, efficiency of digital payments, and financial accessibility. Despite a higher GDP growth rate (3.40% to 5.22%), Poland is faced with inflationary pressure (3.74% to 5.50%) that weakens the mechanisms of financial control. It is also known that the financial leverage is among the highest, with a figure often exceeding 60%, and this is another challenge to the level of corporate debt.

High economic growth rates (exceeding 4.60 percent and 5.90 percent for China) and sufficient financing infrastructure development (between 0.670 and 0.810) also characterize this case, although risk modeling is relatively efficient (this can be 0.589 and 0.850). The country's high inflation rates (4.10 to 6.20 percent) and financial leverage ratios (frequently over 60 percent) lead to

vulnerabilities in financial control efficiency. FCS efficiency scores in China range from 28 to 37, indicating that China's financial system is still in the midst of development with problems related to macroeconomic risk and corporate financial imbalances.

The findings emphasize the significance of financial infrastructure and the development of risk models to improve the efficiency of financial control systems. FCS efficiency scores are higher in countries with an established financial infrastructure (e.g. USA, UK) as the environment for them is more developed and therefore the regulatory framework and mechanisms for risk mitigation are also more advanced. On the other hand, macroeconomic aspects like inflation and financial leverage have a significant impact on the effectiveness of the control of financial and accounting units.

The development of financial infrastructure in Germany calls for the balance between financial infrastructure development and economic stability, while the example of Poland along with China shows that rapid economic growth should be followed by strong mechanisms if risks are to be avoided. To improve the efficiency of the financial control system, policymakers and financial institutions ought to strengthen the design and implementation of financial infrastructure, the use of advanced risk modeling techniques, and the attempts to maintain financial macroeconomic stability. For effective improvement of financial control mechanisms within different economic

contexts, it is necessary to address the problem of inflationary pressures and effectively manage corporate debt.

The ability to contribute to a broader discussion in the financial stability and governance literature in delineating the need for an integrated financial infrastructure as well as risk modeling in accounting and financial control frameworks is what this analysis contributes to the discourse. Further research can move forward to include industry-specific impacts and the influence of technology on improving the configuration of financial control systems internationally.

Financial regulation must provide stability, transparency, and efficiency in the financial systems. Financially controlled countries are commonly those with robust regulatory frameworks as they are more able to manage their financial risks of mismanagement and fraud. The FRI (0-100 scale) captures the robustness of financial regulations by covering aspects such as compliance with the International Financial Reporting Standards, anti-money laundering measures, the supervision of the banking sector, and adequate corporate governance practice (Figure 1). The analysis compares such financial regulation scores from among these economies to show how regulation of these economies is effective for managing financial stability and reducing systemic risk.

Throughout the examined period, the USA always keeps one of the highest FRI values in this 73.11-

Source: Developed using data from OECD (2023), World Bank (2020, 2023), (IMF, 2023), and BCBS (2024) in the Stata program.

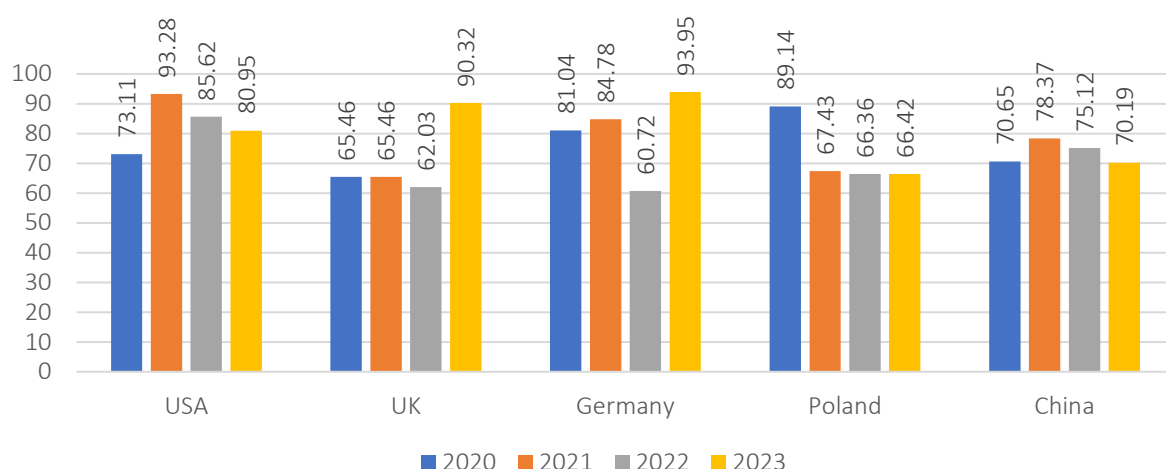


Figure 1. FRI for 2020–2023 for each country

93.28 interval. The country's financial regulatory environment is stringent; the country is marked by very well-established oversight bodies such as the Securities and Exchange Commission and the Financial Industry Regulatory Authority. The conglomeration of the USA's regulatory system can be described as strict, with very stringent enforcement mechanisms, comprehensive and strict financial disclosures, and extensive measures against financial fraud. FRI values do exhibit some fluctuations, however, suggesting that these regulations may be stricter in economic hothouse times and during the implementation of new financial policies.

The FRI values are moderately strong in the UK and are between 65.46 and 88.12. Institutions, such as the Financial Conduct Authority and Prudential Regulation Authority, are also the ones that ensure compliance with the financial reporting and banking standards in the UK's financial regulation landscape. Although a strong financial regulatory system can be found in the UK, uncertainty regarding regulatory changes after Brexit has meant some volatility in the efficiency of the country's financial oversight.

FRI values reported for Germany, a country well known for its structured and rule-based financial system, fall in the range of 70.84 to 90.33. The German financial institutions are ensured to meet EU financial rules and Basel III standards by the Federal financial supervisory authority. The country receives high regulation scores due to its steadfast dedication to financial stability as evidenced by well-developed policies of banking supervision and corporate governance. Yet, it is subject to boom-bust cycles and external pressures, including inflation and global financial crises, and many of the measures can be exercised only within a period of time.

Considering that Poland is an emerging economy, it has low and improving regulatory scores that vary from 60.72 to 82.45. To take the country's financial regulations in line with EU directives and to bolster its banking oversight and risk management policies, the Polish financial supervision authority has been working towards this. Nevertheless, Poland has problems with enforcing regulations, business transparency, and understanding of fundamental financial market mecha-

nisms. A relative increase in the FRI values of the country signifies the progressive regulation of the country's financial aspect as the years go by.

The case of China is special since the FRI values swung between 58.30 and 79.65. Although China's economy is one of the biggest in the world, its financial regulatory system is a blend of market-oriented reform and state-controlled oversight. However, challenges to allowing these two regulatory bodies to be above the obvious shortcomings of transparency, corporate governance, and financial market liberalization remain. On the other hand, the relatively lower FRI values show that there still remain attempts to reinforce financial regulations in the midst of a speedily expanding economy and escalating financial risks.

An analysis of scores of financial regulations in the USA, the UK, Germany, Poland, and China highlights the importance of having a strong regulatory framework for financial stability and an efficient system of financial control. Well-established financial oversight institutions, strict compliance, and proactive risk management are observed in the countries that are higher in FRI values, for example, the USA and Germany. These also will prevent financial control systems and Welfare States throughout the world from becoming trouble spots as they remain efficient.

Despite a strong regulatory structure, the UK is finding it difficult to adapt to the post-Brexit financial policy changes, which makes its FRI values slightly fluctuate. Financial regulation in Poland and China, which are developing financial markets, is still improving but still cannot avoid enforcement and transparency issues. Even though Poland appears to be moving gradually into alignment with the EU's financial standards, China faces many difficulties in its regulatory endeavors of corporate governance and financial market oversight.

4. DISCUSSION

This study's findings indicate the importance of financial regulation's strength to determine the difference in the financial control efficiency in various economies. It is found that FRI has a sig-

nificant impact on financial control mechanisms, which is consistent with earlier literature on corporate governance, financial reporting quality, and risk management. Finally, this section discusses results in the light of existing literature, with places of agreement and disagreement.

In the relevant literature, integrated reporting has been regarded as important to creating financial transparency, as well as improving the efficiency of financial control. Obeng et al. (2020) argue that promoting earnings quality, integrated reporting increases earnings quality by decreasing agency costs and its benefits are further substantiated by Obeng et al. (2021) by showing that firms who voluntarily adopt integrated reporting have lower agency conflicts and enjoy greater financial discipline. This study acquires results consistent with these findings, which state that countries with stronger financial regulations also have higher financial control efficiency due to better standards of reporting and lower agency costs.

While mandatory integrated reporting may present such risks as corporate misreporting, as indicated by Hoang et al. (2020), overly strict financial regulations might even reward the firms for making the disclosure strategies more manipulative rather than more transparent. However, it is an assumption here that higher financial regulation scores should consistently suggest better financial control efficiency as the findings of the current study. Although strong regulations are favorable, they could only work if there are mechanisms that enforce them as well, as loopholes would occur in the regulatory environment and the reporting can be misrepresented.

The role of corporate governance to cope with regulatory compliance and efficient use of financial control cannot be neglected. According to Raimo et al. (2020), attributes of the audit committee impact the quality of integrated reporting, supporting the statement that good governance leads to careful financial oversight. In addition, similar to Inaba (2021), this study also supports the idea that sound financial governance is critical to financial control efficiency since corporate governance and management of corporate cash significantly affect firm financial stability.

The results of this study are also consistent with the research done by Ikram et al. (2020), which analyzes CEO pay sensitivity and corporate social responsibility by recognizing that an executive's incentives are a function of regulatory compliance and financial performance. In this light, it underlines the relevance of financial regulation in line with corporate governance control mechanisms to enhance efficiency in financial control.

Existing literature tends to support the positive relationship between financial regulation and financial control efficiency, but the discrepancy of the efficiency of financial control at the regulatory flexibility is contradictory. According to Oktorina et al. (2022), a comparative study of the diffusion and adoption of integrated reporting in different regulatory environments finds that excessive regulation done with the intention of rigidity could be seen as detrimental to the financial sector of a country because it hampers the innovativeness of financial institutions and impairs corporations' adaptability. In line with this observation, countries in transition with their changing financial regulations (Poland and China) demonstrate lower efficiencies of financial control as they attempt to enhance the regulatory effort.

In recent years, there has been increasing attention in the area of technology for risk management and financial regulation. To expound on the benefits of using machine learning for financial risk management, Huang (2024) reflects on how technology-driven financial oversight can improve regulatory compliance and fraud detection. These insights find a parallel with the findings of this study, which indicate that more technological integration in financial regulation implies higher financial control efficiency.

Raimo et al. (2022) also explore the relationship between the integrated reporting quality and debt financing costs and find that the higher reporting transparency decreases financial risks and enhances investor confidence. Financial regulation strength and its impact on risk exposure as well as efficiency in control results is confirmed in this paper.

However, Salvi et al. (2020) note that intellectual capital disclosure affects the cost of equity capital but is based on the enforcement mechanism of

regulations. First, this implies that a strong regulatory framework for protecting against corruption in financial markets increases transparency, but that there is a need for cooperative corporate participation in addition to a high quality of enforcement, both of which also vary across economies.

The findings of this study are in line with prior research on the significance of financial regulation in raising the efficiency of financial management, while stating problems with the implementation of regulatory enforcement and financial system flexibility. Countries with stronger financial enforcement mechanisms and hence higher Financial Regulation scores, like the USA and Germany, enjoy lower financial risks and better financial oversight, while economies with less regulatory barriers, like Poland and China, are not efficient enough despite the improvement in the regulatory environment.

The results support the findings of Raimo et al. (2020) and Obeng et al. (2021), as having

well-structured financial regulation in place complies with better financial discipline and decreasing risk, while also accounting for the risks of regulatory rigidity and corporate misreporting expressed by Hoang et al. (2020) and Oktorina et al. (2022). This study also backs up Huang's (2024) argument that technology-based financial oversight can increase efficiency in regulatory activities, thereby cutting down on compliance risks and creating better financial control mechanisms.

In general, this study adds to ongoing debates on whether financial regulation is effective, which calls for a regulation regime that balances between transparency and compliance, yet is flexible and innovative in terms of finance. The integration of AI-driven financial monitoring, cross-border regulatory cooperation, and regulatory impact on specific financial sectors will be explored in future research to optimize the financial control efficiency in the global economy.

CONCLUSIONS

This study stresses that the efficiency of financial control is conditioned by financial regulation from different economic contexts. It features that countries with a stronger regulatory framework, for example, the USA and Germany, prove to have higher financial control efficiency than emerging economies, such as Poland and China, that struggle to implement regulation and supervision. FRI differs across nations as it takes into account the regime's stringency, the extent of compliance, and the structure of the financial governance within the organization.

Despite the betterment in financial regulation, macroeconomic factors such as inflation, GDP growth, and financial leverage still affect the efficiency of financial control. Emerging financial risks, digital finance, and cyber threats are affecting developed countries, and for developing countries, the need is to enhance regulatory enforcement and align with international standards. It will be of paramount importance for the enhancement of financial stability to strengthen corporate governance and risk management practices in financial oversight and integrate technological tools.

Finally, on the whole, this paper highlights the significance of strong financial rules in counteracting the possibility of systematic risks and stresses for a more solid regulatory structure. Future research should also involve wider country comparisons and qualitative insights to procure a deeper understanding on members' perception in the efficacy of regulations and the adoption of internal financial control mechanisms over time in this changing global financial context.

LIMITATIONS

This study faces several limitations. The first reason for variation in the FRI cross-countries is variations in data availability and consistency across countries, resulting from differences in reporting standards and enforcement mechanisms. Second, this study does not fully measure all the factors that shape the

financial control systems, including technology, political stability, and corporate governance culture among several other ones, which influence these systems. Thirdly, focusing on five countries, namely, the USA, UK, Germany, Poland, and China, restricts the generalization of the results to other economies with different financial structures. Furthermore, the model used in the study regarding quantitative modeling could not include subjective elements of regulatory effectiveness, which include compliance culture or enforcement efficiency. However, the research still offers valuable insights into the trend of financial regulation and areas for further research.

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REFERENCES

- Alex, S. A., Nayahi, J. J. V., & Kaddoura, S. (2024). Deep convolutional neural networks with genetic algorithm-based synthetic minority over-sampling technique for improved imbalanced data classification. *Applied Soft Computing*, 156, 111491. <https://doi.org/10.1016/j.asoc.2024.111491>
- Alhashmi, A. A., Alashjaee, A. M., Darem, A. A., Alanazi, A. F., & Effghi, R. (2023). An ensemble-based fraud detection model for financial transaction cyber threat classification and countermeasures. *Engineering, Technology & Applied Science Research*, 13, 12433-12439. <https://doi.org/10.48084/etasr.6401>
- Aliamutu, K. F., & Msomi, T. S. (2024). The impact of financial regulations on bank lending in emerging economies in Sub-Saharan Africa. *Banks and Bank Systems*, 19(3), 58-66. [https://doi.org/10.21511/bbs.19\(3\).2024.06](https://doi.org/10.21511/bbs.19(3).2024.06)
- Baboukardos, D., Mangena, M., & Ishola, A. (2021). Integrated thinking and sustainability reporting assurance: International evidence. *Business Strategy and the Environment*, 30(4), 1580-1597. <https://doi.org/10.1002/bse.2695>
- Basel Committee on Banking Supervision (BCBS). (2024). *Risk modeling and financial infrastructure development: Annual report*. Bank for International Settlements. Retrieved from <https://www.bis.org/about/areport/areport2024.pdf>
- Bătae, O. M., Dragomir, V. D., & Feleagă, L. (2021). The relationship between environmental, social, and financial performance in the banking sector: A European study. *Journal of Cleaner Production*, 290, 125791. <https://doi.org/10.1016/j.jclepro.2021.125791>
- Biroğul, S., & Gültekin, H. B. (2020). Reviewing the effect of business intelligence on decision support process: An application on the finance sector. *Bilişim Teknolojileri Dergisi*, 13(2), 197-206. <https://doi.org/10.17671/gazibtd.573999>
- Chouaibi, S., Chouaibi, Y., & Zouari, G. (2022). Board characteristics and integrated reporting quality: Evidence from ESG European companies. *EuroMed Journal of Business*, 17(4), 425-447. <https://doi.org/10.1108/EMJB-11-2020-0121>
- Darminto, D. P., Lysandra, S., Mulyadi, H. D., & Ahmar, N. (2024). Impact of integrated reporting on firm value and earnings quality as a moderator in Southeast Asia. *Investment Management and Financial Innovations*, 21(2), 191-204. [https://doi.org/10.21511/imfi.21\(2\).2024.15](https://doi.org/10.21511/imfi.21(2).2024.15)
- Décamps, J.-P., & Villeneuve, S. (2022). Learning about profitability and dynamic cash management. *Journal of Economic Theory*, 205, 105522. <https://doi.org/10.1016/j.jet.2022.105522>
- Dey, P. K. (2020). Value relevance of integrated reporting: A study of the Bangladesh banking sector. *International Journal of Disclosure and Governance*, 17(3), 195-207.

- <https://doi.org/10.1057/s41310-020-00084-z>
12. Dragomir, V.-D., Dumitru, M., & Feleagă, L. (2022). The predictors of non-financial reporting quality in Romanian state-owned enterprises. *Accounting in Europe*, 19(1), 110–151. <https://doi.org/10.1080/17449480.2021.2018474>
 13. Filatova, H., Tumpach, M., Reshetniak, Y., Lyeonov, S., & Vynnychenko, N. (2023). Public policy and financial regulation in preventing and combating financial fraud: a bibliometric analysis. *Public and Municipal Finance*, 12(1), 48–61. [https://doi.org/10.21511/pmf.12\(1\).2023.05](https://doi.org/10.21511/pmf.12(1).2023.05)
 14. Financial Reporting Council (FRC). (2024). *FRC Annual Report highlights continued progress in improving standards of audit, financial and corporate reporting to support UK corporate growth*. Financial Reporting Council. Retrieved from <https://www.frc.org.uk/news-and-events/news/2024/07/frc-annual-report-highlights-continued-progress-in-improving-standards-of-audit-financial-and-corporate-reporting-to-support-uk-corporate-growth>
 15. Gal, G., & Akisik, O. (2020). The impact of internal control, external assurance, and integrated reports on market value. *Corporate Social Responsibility and Environmental Management*, 27(3), 1227–1240. <https://doi.org/10.1002/csr.1878>
 16. Habibniya, H., Dsouza, S., Rabbani, M. R., Nawaz, N., & Demiraj, R. (2022). Impact of capital structure on profitability: Panel data evidence of the telecom industry in the United States. *Risks*, 10(8), 157. <https://doi.org/10.3390/risks10080157>
 17. Hoang, T. G., Vu, T. K., Nguyen, H. T., & Luu, H. N. (2020). Mandatory integrated reporting disclosure and corporate misreporting. *Journal of Applied Accounting Research*, 21(3), 363–382. <https://doi.org/10.1108/JAAR-02-2019-0025>
 18. Huang, H. (2024). Technology-driven financial risk management: Exploring the benefits of machine learning for non-profit organizations. *Systems*, 12(10), 416. <https://doi.org/10.3390/systems12100416>
 19. Ikram, A., Li, Z. (F.), & MacDonald, T. (2020). CEO pay sensitivity (delta and vega) and corporate social responsibility. *Sustainability*, 12(19), 7941. <https://doi.org/10.3390/su12197941>
 20. IMF. (2023). *World economic outlook: Macroeconomic data and financial stability indicators*. IMF Publications. Retrieved from <https://www.imf.org/en/Publications/WEO>
 21. Inaba, K.-I. (2021). Corporate cash and governance: A global look into publicly-traded companies' aggregate cash ratios. *International Review of Financial Analysis*, 78, 101808. <https://doi.org/10.1016/j.irfa.2021.101808>
 22. Klietnik, T., Blazek, R., & Belas, J. (2022). CEO monitoring and accounting record manipulation: Evidence from Slovak agriculture companies. *Economics and Sociology*, 15(4), 204–218. <https://doi.org/10.14254/2071-789X.2022/15-4/10>
 23. Muttakin, M. B., Mihret, D. G., & Khan, A. (2020). Integrated Reporting, Financial Reporting Quality and Cost of Debt. *International Journal of Accounting & Information Management*, 28(3), 517–534. <https://doi.org/10.1108/IJAIM-10-2019-0124>
 24. Obeng, V. A., Ahmed, K., & Cahan, S. F. (2021). Integrated reporting and agency costs: International evidence from voluntary adopters. *European Accounting Review*, 30(4), 645–674. <https://doi.org/10.1080/09638180.2020.1805342>
 25. Obeng, V. A., Ahmed, K., & Miglani, S. (2020). Integrated reporting and earnings quality: The moderating effect of agency costs. *Pacific-Basin Finance Journal*, 60, 101285. <https://doi.org/10.1016/j.pacfin.2020.101285>
 26. OECD. (2023). *Financial regulatory index and market oversight report*. OECD Publishing. Retrieved from <https://www.oecd.org/finance/>
 27. Oktorina, M., Siregar, S. V., Adhariani, D., & Mita, A. F. (2022). The diffusion and adoption of integrated reporting: A cross-country analysis on the determinants. *Meditari Accountancy Research*, 30(1), 39–73. <https://doi.org/10.1108/ME-DAR-12-2019-0660>
 28. Raimo, N., Caragnano, A., Mariani, M., & Vitolla, F. (2022). Integrated reporting quality and cost of debt financing. *Journal of Applied Accounting Research*, 23(1), 122–138. <https://doi.org/10.1108/JAAR-04-2021-0097>
 29. Raimo, N., Vitolla, F., Marrone, A., & Rubino, M. (2020). Do audit committee attributes influence integrated reporting quality? An agency theory viewpoint. *Business Strategy and the Environment*, 30(2), 522–534. <https://doi.org/10.1002/bse.2635>
 30. Raimo, N., Vitolla, F., Marrone, A., & Rubino, M. (2021). Integrated Reporting Quality and Cost of Debt Financing. *Journal of Applied Accounting Research*, 23(1), 122–138. <https://doi.org/10.1108/JAAR-04-2021-0097>
 31. Salvi, A., Raimo, N., Petruzzella, F., & Vitolla, F. (2022). The financial consequences of human capital disclosure as part of integrated reporting. *Journal of Intellectual Capital*, 23(6), 1221–1245. <https://doi.org/10.1108/JIC-03-2021-0079>
 32. Salvi, A., Vitolla, F., Raimo, N., Rubino, M., & Petruzzella, F. (2020). Does intellectual capital disclosure affect the cost of equity capital? An empirical analysis in the integrated reporting context. *Journal of Intellectual Capital*, 21(6), 985–1007. <https://doi.org/10.1108/jic-12-2019-0283>
 33. Saminem, S., Sulaiman, S., & Mohamad, M. (2024). The role of stock price in the linkage within integrated reporting and firm value: A comparative study in Indonesia. *Journal of International Studies*, 17(4), 219–237. <https://doi.org/10.14254/2071-8330.2024/17-4/13>
 34. Sun, H., Rabbani, M. R., Sial, M. S., Yu, S., Filipe, J., & Cherian, J. (2020). Identifying big data's

- opportunities, challenges, and implications in finance. *Mathematics*, 8(10), 1738. <https://doi.org/10.3390/math8101738>
35. World Bank. (2020). *Global financial regulatory index: Measuring regulatory frameworks across economies*. World Bank Publications. Retrieved from <https://documents1.worldbank.org/curated/zh/513831574784180010/pdf/Global-Financial-Development-Report-2019-2020-Bank-Regulation-and-Supervision-a-Decade-after-the-Global-Financial-Crisis.pdf>
36. World Bank. (2023). *Global financial development database: Financial infrastructure, risk modeling, and financial control mechanisms*. World Bank Publications. Retrieved from <https://databank.worldbank.org/source/global-financial-development>