THE LINK BETWEEN FIRM LEVEL ESG AND MACROECONOMIC GROWTH: A PANEL ANALYSIS OF G20 COUNTRIES

UNDERGRADUATE THESIS
SUBMITTED TO THE FACULTY OF ISLAMIC ECONOMICS AND BUSINESS
SUNAN KALIJAGA STATE ISLAMIC UNIVERSITY, YOGYAKARTA
AS ONE OF THE REQUIREMENTS TO SUBMIT THESIS

BY:
Nabil Ghazy Hamdun
NIM. 21108010037

SUPERVISOR:
Riswanti Budi Sekaringsih, SE. M.Sc.
NIP. 19851009 2018012001

BACHELOR OF SHARIA ECONOMICS PROGRAM
FACULTY OF ISLAMIC ECONOMICS AND BUSINESS
STATE ISLAMIC UNIVERSITY OF SUNAN KALIJAGA
YOGYAKARTA
2025

RATIFICATION SHEET

KEMENTERIAN AGAMA
UNIVERSITAS ISLAM NEGERI SUNAN KALIJAGA
FAKULTAS EKONOMI DAN BISNIS ISLAM
Jl. Marsda Adisucipto Telp. (0274) 550821, 512474 Fax. (0274) 586117 Yogyakarta 55281

PENGESAHAN TUGAS AKHIR

Nomor : B-1386/Un.02/DEB/PP.00.9/08/2025

Tugas Akhir dengan judul : THE LINK BETWEEN FIRM LEVEL ESG AND MACROECONOMIC GROWTH: A PANEL ANALYSIS OF G20 COUNTRIES

yang dipersiapkan dan disusun oleh:

Nama : NABIL GHAZY HAMDUN
Nomor Induk Mahasiswa : 21108010037
Telah diujikan pada : Rabu, 20 Agustus 2025
Nilai ujian Tugas Akhir : A

dinyatakan telah diterima oleh Fakultas Ekonomi dan Bisnis Islam UIN Sunan Kalijaga Yogyakarta

TIM UJIAN TUGAS AKHIR

Ketua Sidang

Riswanti Budi Sekaringsih, M.Sc.
SIGNED

Valid ID: 68a81c670c5c8

Penguji I

Dr. Sunaryati, SE., M.Si.
SIGNED

Valid ID: 68a827da05684

Penguji II

Muh. Rudi Nugroho, S.E., M.Sc.
SIGNED

Valid ID: 68a86e3572e78

Yogyakarta, 20 Agustus 2025
UIN Sunan Kalijaga
Dekan Fakultas Ekonomi dan Bisnis Islam

Prof. Dr. Misnen Ardiansyah, S.E., M.Si., Ak., CA., ACPA.
SIGNED

Valid ID: 68abc085a2c4f

THESIS APPROVAL LETTER

To:
Dear Dean of the Faculty of Islamic Economics and Business
UIN Sunan Kalijaga Yogyakarta
In Yogyakarta

Assalamualaikum wr.wb.

After reading, researching, providing clues and correcting and making corrections as necessary, I as a supervisor am of the opinion that your thesis:

Name	: Nabil Ghazy Hamdun
NIM	: 21108010037
Thesis Title	: The Link Between Firm Level Esg And Macroeconomic Growth: A Panel Analysis Of G20 Countries

It can be submitted to the Faculty of Islamic Economics and Business, Department/Sharia Economics Study Program, UIN Sunan Kalijaga Yogyakarta as one of the requirements to obtain a Bachelor of Science degree in the field of Islamic economics.

With this, I hope that the thesis mentioned above can be submitted soon. I thank you for your attention.

Yogyakarta, 8 August 2025

Acknowledged,

Supervisor	Head of Program Study
Riswanti Budi Sekaringsih, SE. M.Sc.	Dr. Miftakhul Choiri, S.Sos., M.S.I.
NIP. 19851009 2018012001	19820219 201503 1 002

STATEMENT OF AUTHENTICITY

The undersigned:

Name	: Nabil Ghazy Hamdun
NIM	: 21108010037
Program Studi	: Sharia Economics
Faculty	: Islamic Economics and Business

I declare truthfully, that my thesis entitled: The Link Between Firm Level Esg And Macroeconomic Growth: A Panel Analysis Of G20 Countries is a personal work and as far as the author's knowledge does not contain material published or written by others, except for certain parts that the author takes as a reference.

If it is proven that this statement is not true, then it is entirely the responsibility of the compiler.

Yogyakarta, 8 August 2025

Which states,

Nabil Ghazy Hamdun

21108010037

PUBLICATION CONSENT SHEET

As one of the academic satcis of UIN Sunan Kalijaga Yogyakarta, I am the undersigned:

Name : Nabil Ghazy Hamdun
NIM : 21108010037
Study Programs : Sharia Ecoonomics
Faculty : Islamic Economics and Business
Type of Work : Thesis

For the sake of scientific development, I agree to grant UIN Sunan Kalijaga Yogyakarta Non-Exclusive Royalty-Free Rights for my scientific work entitled:
"The Link Between Firm Level ESG and Macroeconomic Growth: A Panel Analysis Of G20 Countries"

Along with existing devices (if needed). With this Non-Exclusive Royalty-Free Right, UIN Sunan Kalijaga Yogyakarta has the right to store, transfer/format, manage in the form of a database, maintain and publish my final project as long as I still include my name as the author/creator and as the owner of the CPTA rights.

Thus I made this statement in truth.

Made in Yogyakarta
On date: 08 August 2025
Undersigned,

Nabil Ghazy Hamdun
21108010037

MOTTO

"Keep on, the world isn't going to stop for you."

ACKNOWLEDGMENT SHEET

Praise for the presence of Allah SWT who has given His grace and mercy, so that the author is able to complete the final project entitled “The Link Between Firm Level Esg and Macroeconomic Growth: A Panel Analysis of G20 Countries”. Shalawat and salam may remain abundant poured out to our lord the Prophet Muhammad SAW.

This thesis is prepared to fulfill one of the requirements to achieve the Bachelor of Sharia Economics Study Program at the Faculty of Economics and Islamic Business UIN Sunan Kalijaga Yogyakarta. In the preparation of this thesis is inseparable from the help of various parties. Therefore, on this occasion, the author would like to express her gratitude to these parties:

1. Prof. Noorhaidi Hasan, S.Ag., M.A., M.Phil., Ph.D. as the Rectore of Sunan Kalijaga Yogyakarta State Islamic University
2. Prof. Dr. Misnen Ardiansyah, S.E., M.Si., Ak., CA., ACPA. As the Dean of Faculty of Islamic Economics and Business Sunan Kalijaga Yogyakarta State Islamic University
3. Dr. Miftakhul Choiri, S.Sos.I., M.S.I. as Head of the Sharia Economics Study Program, Faculty of Islamic Economic and Business, Sunan Kalijaga Yogyakarta State Islamic University
4. Mrs Riswanti Budi Sekaringsih, SE. M.Sc. as Thesis Supervisor who believed in me up until the end and whom I owe a lot of what I’ve achieve during my time here
5. Dr. Abdul Qoyum, S.E.I., M.Sc.Fin. as Lecturer Academic Advisor who has helped pushed me to my best self
6. All Lectures of the Faculty of Islamic Economics and Business, Sunan Kalijaga Yogyakarta State Islamic University who always provide knowledge and experience to the author during the lecturer process.
7. All of the beloved employees and administrative staff behind the scenes, Pak Miskidi, Pak Kabag, Pak Habib and team of the Faculty of Islamic Economics and Business, Sunan Kalijaga Yogyakarta State Islamic University

8. To my beloved parents, Umi and Abi, my deepest love and gratitude. You are the main supporters of my existence, my main reason to strive and the reason for all my achievements. Your prayers made me.
9. To all my friends, I love you from the deepest part of my existence.
10. All parties who have helped the author in the preparation of this thesis which the author cannot mention one by one.

May all who have helped with this process harvest the benefit of their labor of love whether soon or in the hereafter. We hope that this thesis can be a testament to all your hard work and may be useful to any researchers whom wish to delve into this topic.

Yogyakarta, 7 August 2025

Author,

Nabil Ghazy Hamdun

21108010037

CONTENTS

FIGURES LIST

TABLE LIST

ABSTRAK

Studi ini menganalisis dampak kinerja *Environmental*, *Social* dan *Governance* (ESG) terhadap PDB per kapita di 19 negara G20 dari tahun 2005 hingga 2024. Menggunakan Hipotesis Porter dan Model ertumbuhan Solow sebagai landasan teoretis, diterapkan Model *Fixed Effect* dengan control variabel makroekonomi. Hasil menunjukkan bahwa skor lingkungan memiliki dampak positif terhadap PDB per kapita, menunjukkan bahwa praktik yang bertanggung jawab secara lingkungan mendukung inovasi dan produktivitas jangka panjang. Di sisi lain, skor sosial menunjukkan hubungan negatif, mengimplikasikan adanya *trade-off* jangka pendek antara kinerja tanggung jawab sosial dan output ekonomi. Skor tata kelola tidak berpengaruh, menunjukkan hubungan yang terbatas terhadap PDB per kapita selama periode studi. Hasil menyoroti dampak ekonomi yang beragam dari ESG. Rekomendasi kebijakan meliputi mendorong inovasi hijau, menyelaraskan inisiatif sosial dengan tujuan pertumbuhan jangka panjang, dan memperkuat kerangka kerja tata kelola. Penelitian masa depan sebaiknya mengeksplorasi hubungan kausal dan dinamika sektor secara spesifik.

Kata Kunci: ESG, PDB per Kapita, Pertumbuhan Ekonomi, Porter Hypothesis

ABSTRACT

This study analyzes the impact of Environmental, Social, and Governance (ESG) performance on GDP per capita in 19 G20 countries from 2005 to 2024. Using the Porter Hypothesis and Solow Growth Model as theoretical foundations, a Fixed Effect Model with macroeconomic controls is applied. Results indicate that environmental scores have positive effect towards GDP per capita, suggesting that environmentally responsible practices support innovation and long-term productivity. In contrast, social scores show a negative relationship, implying short-term trade-offs between social responsibility initiatives and economic output. Governance scores are statistically insignificant, indicating limited direct influence on GDP per capita during the study period. Results highlight ESG's varied economic effects. Policy recommendations include fostering green innovation, aligning social initiatives with long-term growth objectives, and strengthening governance frameworks. Future research should explore causal relationships and sector-specific dynamics.

Keywords: ESG, GDP per Capita, Economic Growth, Porter Hypothesis

CHAPTER 1

INTRODUCTION

A. Background

In recent years, the integration of Environmental, Social, and Governance (ESG) considerations into economic activity and decision making has received considerable traction within the global economic landscape. Between 2010 and 2021, there was a notable rise in the proportion of S&P 500 companies issuing ESG reports, soaring from 35% to 86%. Furthermore, following the adoption of voluntary standards, there was an 11% boost in the quantity of pertinent information disclosed (Rouen et al., 2022). This expanding interest reflects a shift in measuring corporate performance, where traditional financial metrics are no longer perceived as the sole determinants of success. Instead, a holistic approach that encompasses the wider impacts of business endeavours, whether it be societal and environmental, has emerged as a pivotal consideration for investors, policymakers, and stakeholders alike.

The increase of ESG considerations in finance is emblematic of a broader societal awakening to the interconnectedness between economic prosperity, environmental sustainability, and social equity (Leach et al., 2018). With an increasing awareness of the long-term risks posed by climate change, social inequalities, and corporate malfeasance, investors are increasingly scrutinizing companies' ESG practices as indicators of resilience and long-term viability. This trend is underscored by the abundance of ESG rating agencies, sustainability

indices, and reporting standards, reflecting a growing consensus within the financial community regarding the importance of ESG factors.

ESG practices encompass a spectrum of activities aimed at fostering sustainable development, ethical conduct, and stakeholder engagement (De Lucia et al., 2020). From promoting diversity in the laborforce and reducing carbon emissions to enhancing corporate governance structures, ESG initiatives are predicated on the notion that businesses have a broader responsibility beyond maximizing shareholder value. By integrating ESG considerations into their operations, firms can mitigate risks, enhance brand reputation, and unlock new sources of value creation. Moreover, ESG practices are increasingly shown to driver innovation and competitiveness, positioning firms at the vanguard of a rapidly evolving global economy.

The adoption of ESG practices can bring benefits for firms, ranging from cost savings and operational efficiencies to enhanced access to capital and improved employee morale. By embracing sustainable business practices, companies can mitigate regulatory risks, attract socially responsible investors, and bolster long-term shareholder value. Moreover, ESG integration can serve as a catalyst for organizational change, fostering a culture of transparency, accountability, and ethical leadership. However, the extent to which ESG considerations can be turned into tangible financial outcomes remains a subject of debate, necessitating rigorous empirical analysis to elucidate the causal mechanisms underlying this relationship.

Beyond the firm level, the ramifications of ESG practices extend to the macroeconomic domain, with profound implications for national competitiveness, economic growth, and societal well-being (Chen, 2023; Škare & Golja, 2014; J. Wang et al., 2023; Zhou et al., 2020). By promoting sustainable development and social inclusion, countries can cultivate a conducive environment for innovation, entrepreneurship, and human capital formation. Moreover, some studies find that involving ESG factors within financial institutions' policies makes financial systems more sustainable (Ziolo et al., 2019). From a socio-economic perspective, countries that prioritize ESG goals are likely to experience higher levels of social cohesion, public health, and quality of life, thereby fostering resilient and inclusive societies (Li et al., 2021).

While the literature on ESG and firm-level performance is flourishing, relatively few studies have systematically examined the macroeconomic implications of ESG practices at the country level (Skouloudis et al., 2016; Zhou et al., 2020). This research seeks to address this gap by providing a comprehensive analysis of the relationship between ESG and macroeconomic growth. By employing a panel regression of data from 19 countries with large and growing economies in the G20 during 2005 - 2024, this study aims to explore the channels through which ESG practices influence key macroeconomic indicators, including GDP growth, income inequality, and human development. Moreover, by incorporating cross-country comparisons and timeseries analyses, this research aims

to provide actionable insights for policymakers, investors, and other stakeholders seeking to grow towards a more sustainable and socialized global economy.

To finish, the integration of ESG considerations into financial decision-making shows a big shift in how we conceptualize and evaluate corporate performance. By transcending traditional notions of profit maximization and embracing a stakeholder-centric approach, ESG practices hold the potential to reshape the economic landscape and foster sustainable development at both the firm and country levels. Through rigorous empirical analysis and interdisciplinary collaboration, this research seeks to contribute to a deeper understanding of the nexus between ESG factors and macroeconomic performance, thereby informing evidence-based policy interventions and investment strategies with the goals of a more equitable and sustainable future.

B. Research Questions

Departing from the background above, several questions can be formulated as follows:

1. Does Firm-level environmental performance affect GDP per Capita of G20 Countries?
2. Does Firm-level social performance affect GDP per Capita of G20 Countries?
3. Does Firm-level governance performance affect GDP per Capita of G20 Countries?

C. Research Objectives

Based on the formulation of the problem above several objectives that can be obtained include:

1. To analyze whether Firm-level environmental performance affects GDP per Capita of G20 Countries?
2. To analyze whether Firm-level social performance affects GDP per Capita of G20 Countries?
3. To analyze whether Firm-level governance performance affects GDP per Capita of G20 Countries?

D. Significance of Study

The benefits of this research include:

1. For researchers, it is hoped that the results of this study can add to relatively scarce the collection of research on ESG performance and its impact on the economy.
2. For the government, it is hoped that the results of this research can provide additional information for the government in creating and implementing correct regulations on sustainable economic growth through ESG.
3. For academics, it is hoped that the results of this study can be used as a reference in conducting further research on sustainable economics.

CHAPTER V

CONCLUSION

A. Conclusion

This study set out to investigate the influence of firm-level Environmental, Social, and Governance (ESG) performance on macroeconomic growth, specifically GDP per capita, across 19 G20 countries over the period 2005–2024. The motivation behind this research stems from the increasing relevance of ESG practices in shaping both financial performance and economic policy. Despite the growing interest in ESG, there remains a limited understanding of how firm-level ESG engagement translates into broader economic outcomes. The analysis in this study is grounded in the Porter Hypothesis, which suggests that well-structured sustainability practices can foster innovation and enhance competitiveness. Additionally, the Solow Growth Model serves as a theoretical underpinning, with ESG indicators conceptualized as complementary inputs alongside capital accumulation, labor, and productivity.

The empirical analysis, conducted using a Fixed Effect Model, produced mixed findings. First, the environmental component (LN_ENV) was found to have a positive and statistically significant effect on GDP per capita. This result supports the idea that environmentally responsible business practices, such as energy efficiency, pollution reduction, and resource management, can contribute positively to economic performance, likely by enhancing innovation and long-term productivity (Ambec et al., 2013; Lyeonov et al., 2019; Porter & van der Linde,

1995). Second, the social component (LN_SOC) demonstrated a negative and statistically significant relationship with GDP per capita. This outcome contradicts initial expectations and highlights a possible short-term trade-off between investing in socially responsible initiatives (such as fair labor practices, diversity programs, or community engagement) and economic output (Becchetti et al., 2005; T. Wang & Bansal, 2012). While such initiatives may lead to long-term benefits, they may also impose near-term costs that dampen growth in the short run. Lastly, the governance component (LN_GOV) was shown to have no statistically significant effect on GDP per capita, suggesting that corporate governance mechanisms, at least as measured in ESG frameworks, do not exert a direct or immediate influence on national economic performance. This may be due to the delayed nature of governance reforms or the disconnect between firm-level governance practices and broader institutional quality.

B. Policy Implications

These findings carry several implications for policy. First, the positive relationship between environmental performance and economic growth provides empirical support for the integration of green policies at both the corporate and national levels. Policymakers can leverage this insight to promote environmental innovation through incentives or regulatory frameworks. Second, the observed negative impact of social ESG components on GDP per capita highlights the importance of aligning social investments with long-term development strategies. Governments may need to provide complementary policies, such as education,

labor protections, and institutional support, that mitigate short-term costs and enhance the economic value of social responsibility efforts. Third, the absence of a significant impact from governance scores points to the need for further alignment between firm-level governance indicators and broader institutional reforms. Enhancing regulatory quality, rule of law, and anti-corruption measures at the national level could help strengthen the economic relevance of governance practices.

These findings also open important avenues for future research. Longitudinal studies could provide deeper insights into the delayed effects of ESG performance, particularly in relation to governance. Causality tests, such as instrumental variable or Granger causality approaches, may help clarify the directionality of the relationships observed. Furthermore, disaggregated or sector-specific analyses may reveal industry-level nuances in ESG performance and economic impact. Finally, future studies might also consider evaluating ESG's influence on alternative development metrics beyond GDP per capita, such as income inequality, human development, or environmental resilience.

In sum, this research contributes to the evolving discourse on ESG by empirically examining its macroeconomic implications. While ESG is increasingly embedded in corporate and policy agendas, this study underscores that its relationship with economic growth is multifaceted and context dependent. A nuanced and evidence-based approach is therefore essential for integrating ESG principles into sustainable development strategies.

C. Limitations and Suggestions

Future studies could expand the sample beyond G20 countries to include emerging and developing economies, allowing for a more comprehensive comparison of ESG–GDP relationships across different economic contexts. Incorporating alternative ESG data sources or firm-level metrics could help capture sectoral variations and improve measurement accuracy. Additionally, adopting dynamic panel models or time-lagged variables may provide deeper insights into the short-term and long-term effects of ESG performance on economic growth. Adopting a dynamic panel model like GMM may also help explain for the inflated R squared value found in this research through observing specific moments within the regression. Future research could also integrate non-linear modeling approaches to explore potential threshold effects or diminishing returns in ESG's contribution to GDP per capita.

Addressing the issue of causality through methods such as instrumental variable regression or Granger causality tests could strengthen the robustness of findings. Lastly, expanding the set of control variables to include innovation, education quality, and environmental policy stringency may yield a more nuanced understanding of the mechanisms linking ESG dimensions to macroeconomic performance.

REFERENCES

Acheampong, A. O. (2018). Economic growth, CO2 emissions and energy consumption: What causes what and where? *Energy Economics*, *74*, 677–692. https://doi.org/10.1016/j.eneco.2018.07.022

Alejo, J., Galvao, A., Montes-Rojas, G., & Sosa-Escudero, W. (2015). Tests for Normality in Linear Panel-data Models. *The Stata Journal: Promoting Communications on Statistics and Stata*, *15*(3), 822–832. https://doi.org/10.1177/1536867X1501500314

Ambec, S., & Barla, P. (2002). A theoretical foundation of the Porter hypothesis. *Economics Letters*, *75*(3), 355–360. https://doi.org/10.1016/S0165-1765(02)00005-8

Ambec, S., Cohen, M. A., Elgie, S., & Lanoie, P. (2013). The Porter Hypothesis at 20: Can Environmental Regulation Enhance Innovation and Competitiveness? *Review of Environmental Economics and Policy*, *7*(1), 2–22. https://doi.org/10.1093/reep/res016

Azam, M., Khan, A. Q., Abdullah, H. B., & Qureshi, M. E. (2016). The impact of CO2 emissions on economic growth: Evidence from selected higher CO2 emissions economies. *Environmental Science and Pollution Research*, *23*(7), 6376–6389. https://doi.org/10.1007/s11356-015-5817-4

Baldacci, E., Clements, B., Gupta, S., & Cui, Q. (2004). Social Spending, Human Capital, and Growth in Developing Countries: Implications for Achieving the MDGs. *Social Science Research Network*. https://www.semanticscholar.org/paper/Social-Spending%2C-Human-Capital%2C-and-Growth-in-for-Baldacci-Clements/7ae9239a1791864942fe98f73927e1c5ee460241

Becchetti, L., Vergata, T., Giacomo, S. D., Alford, H., Bagella, M., Hasan, I., Lothian, J., Marzano, F., Nucci, F., & Pozzolo, A. (2005). *The impact of Social Responsibility on productivity and efficiency of US listed companies*.

https://www.semanticscholar.org/paper/The-impact-of-Social-Responsibility-on-productivity-Becchetti-Vergata/514287e1e754ca6b367d5d7c9f66297bb5055c50

Blanchard, O. (2020). *Macroeconomics, Global Edition*. Pearson Higher Ed.

Chang, C.-P., & Hao, Y. (2017). Environmental performance, corruption and economic growth: Global evidence using a new data set. *Applied Economics*, *49*(5), 498–514. https://doi.org/10.1080/00036846.2016.1200186

Chen, J. (2023). *The relationships among ESG, FDI and economic growth in CEE countries*.

Chirwa, T. G., & Odhiambo, N. M. (2016). Macroeconomic Determinants of Economic Growth: A Review of International Literature. *South East European Journal of Economics and Business*, *11*(2), 33–47. https://doi.org/10.1515/jeb-2016-0009

Cho, D. (2023). Environmental, Social, and Governance (ESG): Where Has It Come from, and Where Will It Go? In *The Competitiveness of Nations 2: Government Policies and Business Strategies for Environmental, Social, and Governance (ESG)* (pp. 103–121). World Scientific.

Claessens, S. (2003). Corporate Governance and Development. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.642721

Claessens, S., & Yurtoglu, B. (2012). *Corporate Governance and Development*. International Finance Corporation, Washington, DC. https://doi.org/10.1596/26874

Cracolici, M. F., Cuffaro, M., & Nijkamp, P. (2010). The Measurement of Economic, Social and Environmental Performance of Countries: A Novel Approach. *Social Indicators Research*, *95*(2), 339–356. https://doi.org/10.1007/s11205-009-9464-3

Cutler, D. M., Katz, L. F., Card, D., & Hall, R. E. (1991). Macroeconomic Performance and the Disadvantaged. *Brookings Papers on Economic Activity*, *1991*(2), 1–74. https://doi.org/10.2307/2534589

De Lucia, C., Pazienza, P., & Bartlett, M. (2020). Does Good ESG Lead to Better Financial Performances by Firms? Machine Learning and Logistic Regression Models of Public Enterprises in Europe. *Sustainability*, *12*(13), 5317. https://doi.org/10.3390/su12135317

Diaye, M.-A., Ho, S.-H., & Oueghlissi, R. (2022). ESG performance and economic growth: A panel co-integration analysis. *Empirica*, *49*(1), 99–122. https://doi.org/10.1007/s10663-021-09508-7

Duasa, J., & Afroz, R. (2013). Modeling Environmental Performance and Economic Development. *International Journal of Trade, Economics and Finance*, 384–387. https://doi.org/10.7763/IJTEF.2013.V4.322

Gani, A. (2011). Governance and Growth in Developing Countries. *Journal of Economic Issues*, *45*(1), 19–40.

Garba, M. K., Oyejola, B. A., & Yahya, W. B. (2013). *Investigations of Certain Estimators for Modeling Panel Data Under Violations of Some Basic Assumptions*.

Glejser, H. (1969). A New Test for Heteroskedasticity. *Journal of the American Statistical Association*, *64*(325), 316–323. https://doi.org/10.1080/01621459.1969.10500976

Guanhui Fu & Ait Laasri Otmane. (2022). *ESG performance and economic growth: A panel co-integration analysis of North African countries and CEMAC sub-regions*. https://doi.org/10.5281/ZENODO.6469967

Guarini, G. (2020). The Macroeconomic Impact of the Porter Hypothesis: Sustainability and Environmental Policies in a Post-Keynesian Model. *Review of Political Economy*, *32*(1), 30–48. https://doi.org/10.1080/09538259.2020.1748308

Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics*. McGraw-Hill Irwin.

Hassani, B. K., & Bahini, Y. (2022). Relationships between ESG Disclosure and Economic Growth: A Critical Review. *Journal of Risk and Financial Management*, *15*(11), 538. https://doi.org/10.3390/jrfm15110538

Ho, S.-H., Oueghlissi, R., & Ferktaji, R. E. (2023). Testing for Causality Between Economic Growth and Environmental, Social, and Governance Performance: New Evidence from a Global Sample. *Journal of the Knowledge Economy*. https://doi.org/10.1007/s13132-023-01406-6

Hsiao, C. (2003). *Analysis of Panel Data* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/CBO9780511754203

Huynh, K. P., & Jacho-Chávez, D. T. (2009). A nonparametric quantile analysis of growth and governance. In Q. Li & J. S. Racine (Eds.), *Advances in Econometrics* (Vol. 25, pp. 193–221). Emerald Group Publishing Limited. https://doi.org/10.1108/S0731-9053(2009)0000025009

Inekwe, M., Hashim, F., & Yahya, S. B. (2021). CSR in developing countries – the importance of good governance and economic growth: Evidence from Africa. *Social Responsibility Journal*, *17*(2), 226–242. https://doi.org/10.1108/SRJ-10-2019-0336

Istiqomah, Y. N. A. (2015). The Influence of Marketing Mix (Product, Price, Place, and Promotion) and Service on Customer's Decision of Using BSM Saving Products. *Global Review of Islamic Economics and Business*, *3*(2), 073–098. https://doi.org/10.14421/grieb.2015.032-01

Jalilian, H., Kirkpatrick, C., & Parker, D. (2007). The Impact of Regulation on Economic Growth in Developing Countries: A Cross-Country Analysis. *World Development*, *35*(1), 87–103. https://doi.org/10.1016/j.worlddev.2006.09.005

Lazăr, D., Minea, A., & Purcel, A.-A. (2019). Pollution and economic growth: Evidence from Central and Eastern European countries. *Energy Economics*, *81*, 1121–1131. https://doi.org/10.1016/j.eneco.2019.05.011

Leach, M., Reyers, B., Bai, X., Brondizio, E. S., Cook, C., Díaz, S., Espindola, G., Scobie, M., Stafford-Smith, M., & Subramanian, S. M. (2018). Equity and sustainability in the Anthropocene: A social–ecological systems perspective

on their intertwined futures. *Global Sustainability*, *1*, e13. https://doi.org/10.1017/sus.2018.12

Leogrande, A., & Costantiello, A. (2023). The Role of GDP Growth in the ESG Approach at World Level. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4434206

Li, T.-T., Wang, K., Sueyoshi, T., & Wang, D. D. (2021). ESG: Research Progress and Future Prospects. *Sustainability*, *13*(21), 11663. https://doi.org/10.3390/su132111663

Lyeonov, S., Pimonenko, T., Bilan, Y., Štreimikienė, D., & Mentel, G. (2019). Assessment of Green Investments' Impact on Sustainable Development: Linking Gross Domestic Product Per Capita, Greenhouse Gas Emissions and Renewable Energy. *Energies*, *12*(20), 3891. https://doi.org/10.3390/en12203891

Malinvaud, E. (1970). *Statistical Methods of Econometrics*. North-Holland Publishing Company.

Mkandawire, T. (2007). Transformative Social Policy and Innovation in Developing Countries. *The European Journal of Development Research*, *19*(1), 13–29. https://doi.org/10.1080/09578810601144236

Mohd Daud, S. N., Ghazali, N. S., & Mohammad Ismail, N. H. (2024). ESG, innovation, and economic growth: An empirical evidence. *Studies in Economics and Finance*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/SEF-11-2023-0692

Neagu, O., Ardelean, D. I., & Lazăr, V. (2017). How is environmental performance associated with economic growth? A world cross-country analysis. *Studia Universitatis „Vasile Goldis" Arad – Economics Series*, *27*(3), 15–32. https://doi.org/10.1515/sues-2017-0010

Onifade, O. C., & Olanrewaju, S. O. (2020). Investigating Performances of Some Statistical Tests for Heteroscedasticity Assumption in Generalized Linear

Model: A Monte Carlo Simulations Study. *Open Journal of Statistics*, *10*(03), 453–493. https://doi.org/10.4236/ojs.2020.103029

Pandey, P., Madhusudhan, M., & Singh, B. P. (2023). Quantitative Research Approach and its Applications in Library and Information Science Research. *Access: An International Journal of Nepal Library Association*, *2*(01), 77–90. https://doi.org/10.3126/access.v2i01.58895

Porter, M. E. (1991). America' Green Strategy. *Scientific American*. https://www.scientificamerican.com/article/essay-1991-04/

Porter, M. E., & van der Linde, C. (1995). Toward a New Conception of the Environment-Competitiveness Relationship. *The Journal of Economic Perspectives*, *9*(4), 97–118.

Rouen, E., Sachdeva, K., & Yoon, A. (2022). The Evolution of ESG Reports and the Role of Voluntary Standards. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4227934

Sánchez, P. E., & Benito-Hernández, S. (2015). CSR Policies: Effects on Labour Productivity in Spanish Micro and Small Manufacturing Companies. *Journal of Business Ethics*, *128*(4), 705–724. https://doi.org/10.1007/s10551-013-1982-x

Škare, M., & Golja, T. (2014). The impact of government CSR supporting policies on economic growth. *Journal of Policy Modeling*, *36*(3), 562–577. https://doi.org/10.1016/j.jpolmod.2014.01.008

Skouloudis, A., Isaac, D., & Evaggelinos, K. (2016). Revisiting the national corporate social responsibility index. *International Journal of Sustainable Development & World Ecology*. https://www.tandfonline.com/doi/abs/10.1080/13504509.2015.1099121

Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, *70*(1), 65–94. https://doi.org/10.2307/1884513

Trahan, R. T., & Jantz, B. (2023). What is ESG? Rethinking the “E” pillar. *Business Strategy and the Environment*, *32*(7), 4382–4391. https://doi.org/10.1002/bse.3371

Ugur, M. (2014). CORRUPTION’S DIRECT EFFECTS ON PER-CAPITA INCOME GROWTH: A META-ANALYSIS. *Journal of Economic Surveys*, *28*(3), 472–490. https://doi.org/10.1111/joes.12035

UN Global Compact. (2004). *Who Cares Wins: Connecting Financial Markets to a Changing World*.

Wang, J., Yu, J., & Zhong, R. (2023). Country environmental, social and governance performance and economic growth: The international evidence. *Accounting & Finance*, *63*(4), 3911–3941. https://doi.org/10.1111/acfi.13079

Wang, T., & Bansal, P. (2012). Social responsibility in new ventures: Profiting from a long-term orientation. *Strategic Management Journal*, *33*(10), 1135–1153. https://doi.org/10.1002/smj.1962

Williams, C. (2011). Research Methods. *Journal of Business & Economics Research (JBER)*, *5*(3). https://doi.org/10.19030/jber.v5i3.2532

Wooldridge, J. M. (2009). *Introductory Econometrics: A Modern Approach*. South-Western Cengage Learning.

Zhou, X., Caldecott, B., Harnett, E., & Schumacher, K. (2020). The Effect of Firm-Level ESG Practices on Macroeconomic Performance. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3618748

Zhu, F. (2014). Corporate Governance and the Cost of Capital: An International Study. *International Review of Finance*, *14*(3), 393–429. https://doi.org/10.1111/irfi.12034

Ziolo, Filipiak, Bąk, & Cheba. (2019). How to Design More Sustainable Financial Systems: The Roles of Environmental, Social, and Governance Factors in the Decision-Making Process. *Sustainability*, *11*(20), 5604. https://doi.org/10.3390/su11205604