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SUSTAINABLE ECONOMIC GROWTH THROUGH GREEN MARKETING: A MACROECONOMIC STUDY

Abstract:

This study emphasizes the importance of green marketing in promoting sustainable economic growth, particularly through the development of green sectors like the EGGS industry. Green marketing highlights the environmental and economic benefits of such sectors, attracting investment and driving sectoral growth. By fostering consumer awareness and aligning with sustainability goals, green marketing enhances the contribution of the EGGS sector to overall economic performance. Using data from 27 primarily EU countries from 2013 to 2021 (excluding 2020 due to COVID-19's economic impact), this analysis employs time-series regression and correlation methods to examine the relationship between EGGS contributions and GDP growth. The results show positive correlations in the majority of countries, , underscoring the role of the EGGS sector in driving sustainable growth. As economies transition toward greener practices, green marketing will be crucial in supporting sectors like EGGS, which not only contribute to GDP growth but also promote environmental sustainability.

Keywords:

Green marketing, EGGS sector, Sustainable economic growth, GDP growth, Environmental sustainability, Green transition, Green economics

JEL Classification: M31, Q01, Q56

1. Theoretical part

Environmental protection has been a public concern for a long time. However, in the field of marketing, terms like “ecological marketing” and “green marketing” did not exist until the mid-1970s (Henion & Kinnear, 1976). In popular publications, green marketing is often synonymized with sustainable marketing, but to the authors of this article, it is just a part of the evolution of a concept and a philosophy. Though it is not the specific topic of this research, it is necessary to point out the difference between both terms: green marketing should be considered a part of sustainable marketing. While green marketing focuses on reducing environmental harm, producing, and promoting environmentally friendly products, sustainable marketing has a broader meaning – it includes social and economic impacts, goals, and dimensions.

As proof, in 1994, Polonsky defined green marketing as “all activities designed to generate and facilitate any exchange intended to satisfy human needs and wants such that the satisfaction of these needs and wants occurs with minimal detrimental impact on the natural environment” (Polonsky, 1994). Sustainable marketing, on the other hand, is defined as a “purpose-driven practice that works to orientate businesses, brands, and society towards a sustainable future, influencing appropriate awareness, aspiration, adoption, and action across economic and sociocultural systems by taking necessary accountability for its impacts and opportunities” (Cambridge Institute for Sustainability Leadership, 2023). Moreover, Kotler (2023) emphasizes the purpose of sustainable marketing and even sees it as a business (not only a marketing) strategy (Kotler & Armstrong, 2023).

Additionally, green marketing is often confused with green advertising. The authors insist that green marketing is not only about advertising or promoting eco-friendly products but also about inventing them according to the needs of specific segments, including pricing these products and placing them in ways that are most appropriate for clients. For example, Kiyak and Grigoliene (2023) researched the effectiveness of marketing communications that highlight the environmental benefits of products. Their study paid attention to all elements of the marketing mix but concluded that “more attention is paid to promoting environmental friendliness and minimizing harm to the environment” (Kiyak & Grigoliene, 2023). It is not a coincidence that green marketing has at least ten significant constructs and indicators, including green product development, green pricing, corporate environmental responsibility, regulatory compliance, environmental and economic performance metrics, brand perception changes, and changes in a company’s market share due to green marketing efforts. Green promotion is only one of these constructions.

Different research on the importance of green marketing has been conducted worldwide, varying in scope, object, topic, and methodology. For example, some papers are dedicated to the impact of green marketing efforts on consumer behavior or companies’ performance. These studies seem to be addressed rather to business companies and consumers. However, the current paper focuses on the hypothesis of a potential relationship between efforts in the field of green marketing and GDP. There is not an abundance of similar research yet.

However, Banelienė and Strazdas (2023) found that across the EU (including 25 countries), green innovation positively impacts economic growth, while digitalization shows a mixed impact. They created a conceptual model for their study, and the methodology is based on the European

Innovation Index (EII), Eco-Innovation Index (EcoII), and the European Digital Social Innovation Index (EDSII) as key indicators. Data is analyzed using the least squares method to estimate the impact of these indicators on GDP per capita. The model includes variables such as digital inclusion, access to employees with software engineering skills, and individual giving (Banelienė & Strazdas, 2023).

Thakur, Rana, and Kaur conducted a thorough literature review of green marketing in various industry sectors, particularly in developing countries like India. They insist that green marketing encompasses a broad range of activities, including product modification, eco-friendly packaging, and environmentally oriented advertising. Through the literature review, the researchers found that companies adopting green marketing strategies gain a competitive edge by differentiating their products as environmentally friendly. This differentiation helps attract eco-conscious consumers and enhances brand loyalty (Thakur et al., 2019).

Another significant literature review on green marketing has been made by Alkhatib, Kecskés, and Keller, who researched 54 scientific publications and concluded that a positive correlation exists between digital marketing and the promotion of green products concerning consumer awareness. Moreover, their research claims that there has been a steady increase in research interest in the intersection of digital marketing and green marketing, with a significant rise during the COVID-19 pandemic due to increased digitalization (Alkhatib et al., 2023). On the contrary, the current research presented deliberately omits pandemic situations to receive more objective results according to their purpose.

2. Methodology

The methodology employed in this analysis is grounded in data sourced from Eurostat, focusing on the time period from 2013 to 2021. The year 2020 was purposefully excluded due to the anomalous economic downturn caused by the COVID-19 pandemic, which led to a significant GDP contraction. This exclusion is critical in maintaining the integrity of the analysis by ensuring that the relationships between the EGGS sector and GDP growth are not influenced by this extraordinary global event, thus providing a clearer picture of the sector's impact under more typical economic conditions.

The primary instruments used in this analysis include time-series regression models and correlation analysis, applied across 27 primarily EU countries. The regression analysis allows us to examine how changes in the EGGS sector over time relate to GDP growth within individual countries. This method is particularly useful given that each country operates within a distinct economic, social, and institutional framework, and thus the relationship between sectoral contributions and economic growth can vary significantly. The regression models provide a temporal view, highlighting trends and shifts in the importance of the EGGS sector for each country's GDP performance over the selected years.

Correlation analysis is also central to this methodology, as it quantifies the strength and direction of the relationship between EGGS contributions and GDP growth. In addition to general correlation analysis, statistical significance testing at the 95% confidence level was applied to further isolated relationships that are likely to be meaningful. This allows us to differentiate between correlations that may occur by chance and those that indicate a real underlying economic

relationship. The use of country-specific regression analyses, coupled with significance testing, ensures that the results are robust and tailored to the unique dynamics of each country.

The article's focus on the EGGS sector is driven by its potential to serve as a model for sustainable economic growth, underpinned by green marketing strategies. Green marketing is essential because it promotes sustainable practices that align with broader environmental and economic objectives. By emphasizing the sustainability benefits of the EGGS sector, green marketing can attract investment, foster sectoral growth, and ultimately contribute to GDP expansion. This is particularly important in the context of the green economy, where industries that promote environmental sustainability, like the EGGS sector, can serve as engines for economic growth.

3. Empirical analysis

On Figure 1, the EGGS contributions and their corresponding GDP growth across 27 primarily EU countries from 2013 to 2021 are illustrated. The graph provides insights into the average values of EGGS by country and overtime, along with GDP growth trends and the differences observed between 2013 and 2021. This allows for a comparative analysis of how countries with varying levels of EGGS contributions have experienced economic growth over the analyzed period.

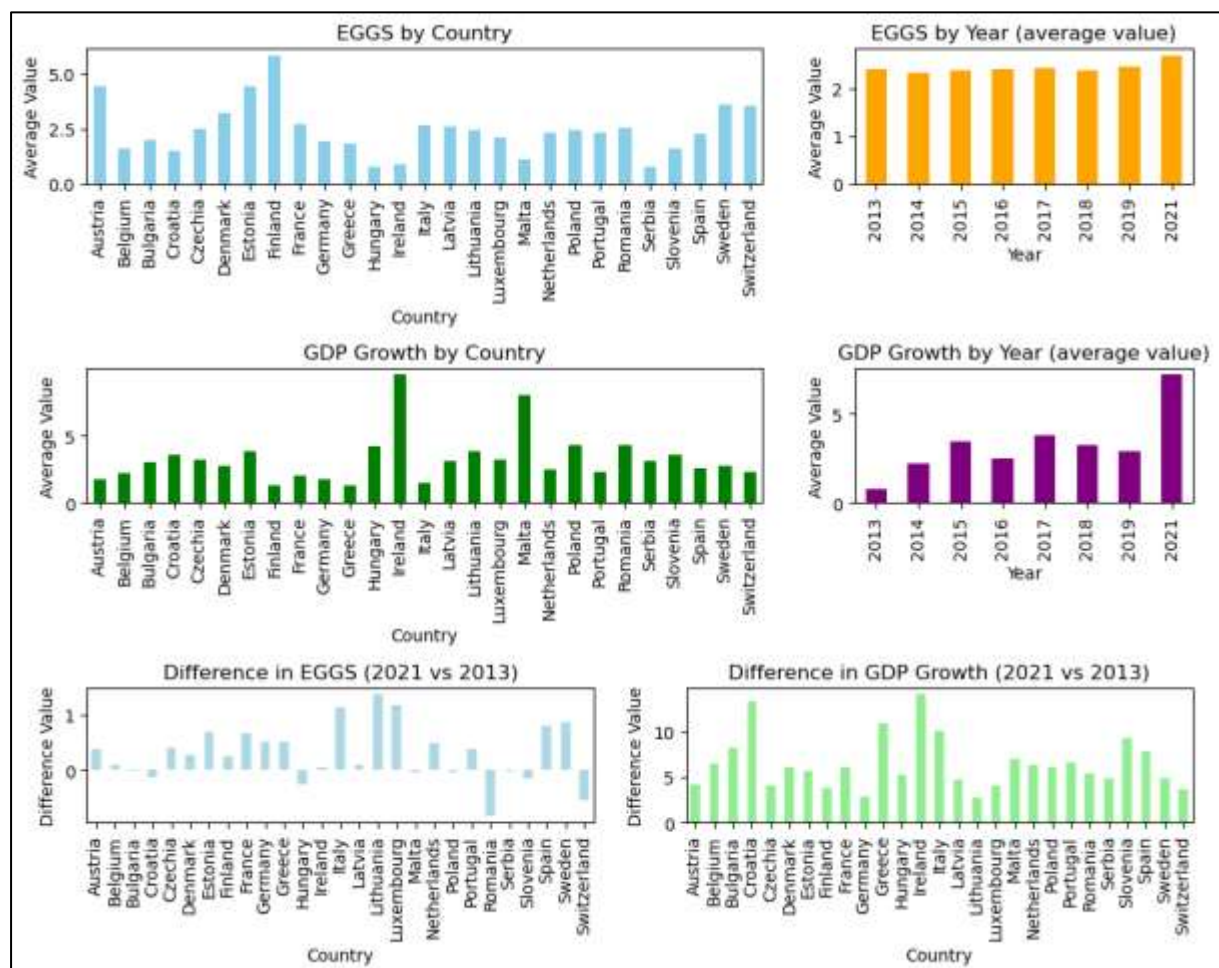


Figure 1. Comparative Analysis of EGGS Contributions and GDP Growth Across Countries (2013-2021)

Countries such as Finland, Estonia, and Austria exhibit consistently higher average values of EGGS contributions. For instance, Finland maintains an average value of around 5.6 to 6.0, peaking at 5.92 in 2021. Estonia also shows a steady increase in EGGS contributions, reaching 4.63 in 2021. Austria, starting from a lower base in 2013, shows a consistent upward trajectory in EGGS contributions by 2021. These countries exemplify a strong commitment to EGGS production and consumption, suggesting that their economies benefit from the stable growth of this sector, which may positively influence food security, employment, and sustainability.

On the other hand, Hungary and Ireland represent cases with significantly lower EGGS contributions. Hungary's contribution decreased from 0.83 in 2013 to 0.56 in 2021, while Ireland experienced a similar decline. Interestingly, these lower EGGS contributors display robust GDP growth during the same period, especially Ireland, whose GDP surged in 2015 with a significant spike of 24.6%. This indicates that while these countries have experienced economic expansion, they may not be fully tapping into the potential of EGGS as a contributor to sustainable economic growth.

A notable pattern emerges when comparing the changes in EGGS and GDP growth over time. The analysis of EGGS by Year shows a steady increase in average EGGS contributions. This upward trend reflects the growing emphasis on sustainable agricultural practices, possibly driven by policy shifts and the need for more resilient food systems in the face of environmental challenges. Meanwhile, GDP Growth by Year mirrors this pattern, with moderate increases between 2015 and 2019, followed by a significant surge in 2021. This suggests a potential relationship between the rise in EGGS contributions and broader economic growth, with 2021 marking a pivotal year where both indicators experience substantial growth.

In the analysis of the Difference in EGGS (2021 vs 2013) and GDP Growth (2021 vs 2013), Ireland shows one of the largest positive differences in GDP growth, rising by 14.1 points, despite a slight decrease in EGGS contribution (-0.05). Croatia exhibits the highest GDP growth increase, jumping by 13.3 points, while its EGGS contribution remains almost flat, increasing by only 0.13. On the other hand, Hungary displays the most significant negative change in EGGS contribution, dropping by 0.27, while its GDP growth increased by 5.3 points, highlighting a disconnect between these two indicators in certain countries.

Figure 2 presents a regression analysis between an environmental indicator and GDP growth over the period 2013 to 2021, showcasing an interesting trend in the relationship between these two variables. At first glance, one might interpret the negative slopes of the regression lines to suggest that an increase in the environmental indicator—represented by EGGS—leads to a decrease in GDP growth. However, this relationship is more nuanced.

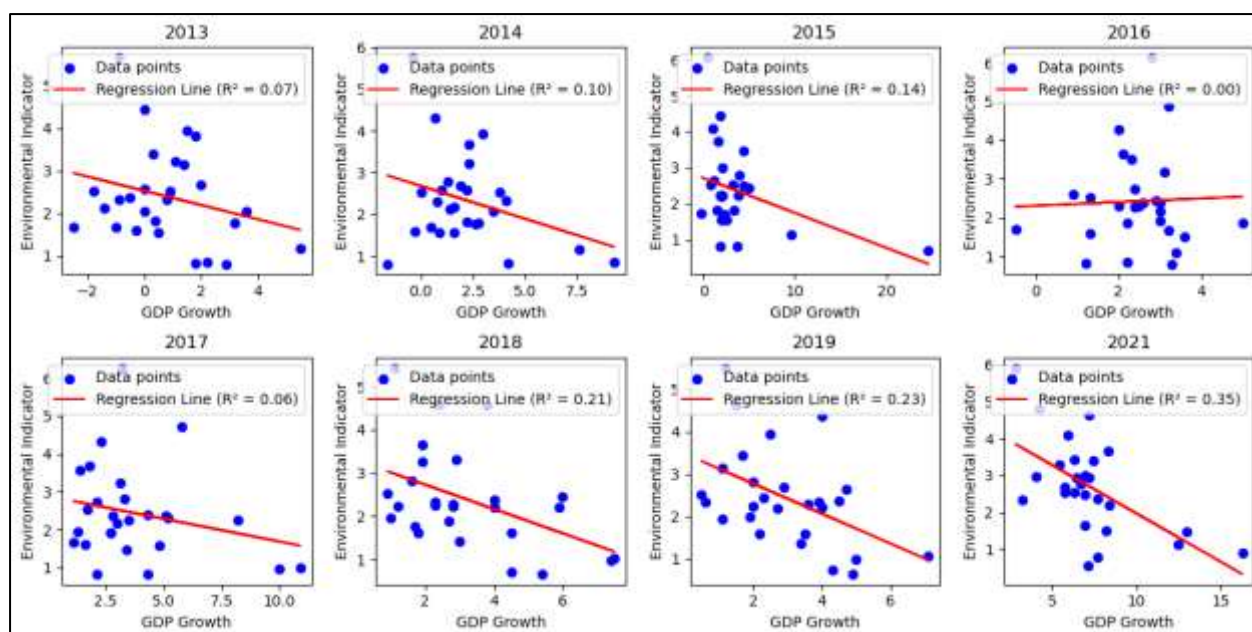


Figure 2. Yearly Regression Analysis of EGGS Contributions and GDP Growth (2013-2021)

The results suggest that countries with higher EGGS contributions tend to have lower GDP growth rates, while those with lower EGGS contributions experience higher GDP growth. This indicates that the EGGS sector is more developed in wealthier countries, where GDP growth is relatively stable or modest. In contrast, countries with faster GDP growth may still be in the process of expanding their economic activities, including the development of the EGGS sector, which has not yet reached its full potential.

The most telling insight is the increasing strength of the regression relationship over time, with the R^2 value reaching 0.35 in 2021, compared to 0.07 in 2013. This suggests that the relationship between EGGS contributions and GDP growth becomes clearer over time, likely as countries with higher GDP stabilize and focus more on sustainable sectors like EGGS, while countries with rapid GDP growth are still expanding other areas of their economy.

In less words, the figure highlights that the EGGS sector is not a direct cause of lower GDP growth but rather an indicator of economic maturity, with more developed countries investing in sustainable sectors while experiencing slower but steady economic expansion.

Figure 3 provides a country-by-country regression analysis of the relationship between EGGS contributions and GDP growth across 27 primarily EU countries during the analyzed period. This figure is essential to understanding whether an increase in EGGS contributions in each country leads to a corresponding increase or decrease in GDP growth. Given that each country has distinct economic and social parameters, the relationship between EGGS and GDP growth may vary significantly across different national contexts.

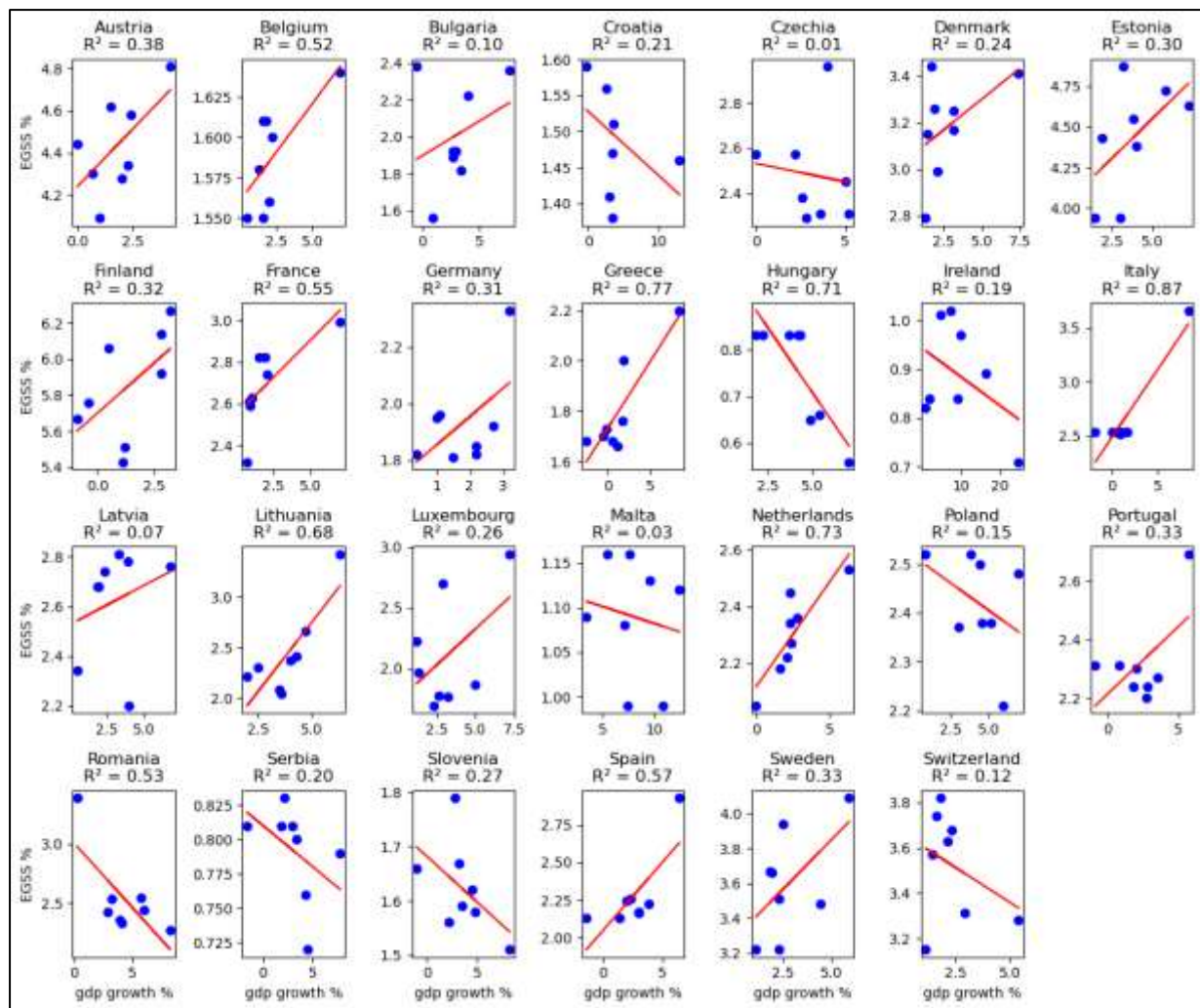


Figure 3. Country-Specific Regression Analysis of EGGS Contributions and GDP Growth (2013-2021)

The logic underpinning the figure is that economic growth is not driven by EGGS contributions alone but is influenced by a broader set of economic, social, and institutional factors. However, if EGGS contributions correlate positively with GDP growth within individual countries, it suggests that expanding this sector could have tangible economic benefits. The results show that in some countries, higher EGGS contributions are associated with increasing GDP growth, while in others, the relationship is either weak or negative, reflecting the complexity of economic growth drivers.

Countries such as Italy and France show strong positive relationships between EGGS contributions and GDP growth. For instance, Italy exhibits an R^2 value of 0.87, suggesting that an increase in EGGS contributions is closely linked to higher GDP growth, indicating that the EGGS sector plays a significant role in driving economic expansion. Similarly, France, with an R^2 value of 0.55, demonstrates that the EGGS sector is a key contributor to its economic growth. These results suggest that further development of the EGGS sector in these countries could lead to sustained economic improvements.

In contrast, countries like Hungary, Poland, Romania, Serbia, Slovenia and Ireland display negative correlations between EGGS contributions and GDP growth. Hungary, with an R^2 value of 0.71, shows a clear negative regression, suggesting that as EGGS contributions increase, GDP growth decreases. This could reflect economic complexities where growth in the EGGS sector might be offset by declines or slower growth in other sectors, or that investments in the EGGS sector could be crowding out resources from other more productive sectors. Similarly, Ireland, with an R^2 value of 0.19, indicates that higher EGGS contributions are not strongly associated with economic growth, possibly due to its reliance on other economic sectors or external factors.

Other countries, such as Czechia and Malta, show weak or no correlation between EGGS and GDP growth. Czechia, with an R^2 value of 0.01, and Malta, with an R^2 value of 0.03, indicate that EGGS contributions have little to no explanatory power in predicting GDP growth during the period analyzed. This suggests that in these countries, the EGGS sector might be too small to significantly impact the overall economy, or that other industries are driving economic growth more dominantly.

Figure 4 presents two key analyses of the correlation between the EGGS sector and GDP growth across countries. The first graph illustrates the correlation between EGGS and GDP growth for each country, without considering statistical significance, while the second graph focuses only on statistically significant correlations at the 95% confidence level. These two visualizations allow us to explore whether the EGGS sector has a meaningful impact on boosting GDP growth across different countries and to assess the reliability of these findings based on statistical significance.

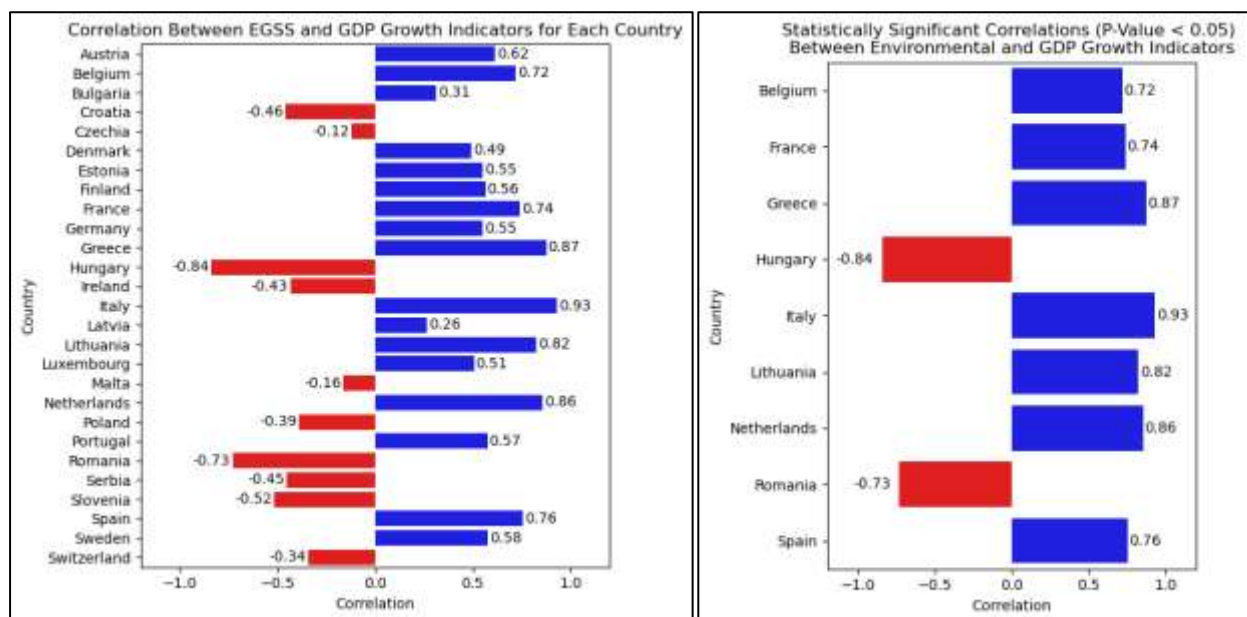


Figure 4. Correlation Between EGGS Contributions and GDP Growth Indicators for Each Country (2013-2021)

In the first graph, most countries display positive correlations between EGGS and GDP growth. This indicates that, generally, as the EGGS sector expands, GDP growth also tends to rise. Italy stands out with a very strong positive correlation (0.93), suggesting that an increase in the EGGS sector has been closely associated with GDP growth in the country. Other countries like Greece

(0.87), the Netherlands (0.86), Spain (0.76), and France (0.74) also show strong positive correlations, emphasizing that EGGS is a crucial contributor to economic performance in these nations.

The second graph, which accounts for statistical significance, further reinforces the critical role of the EGGS sector. Even when controlling for significance, countries like Italy, Greece, Lithuania (0.82), the Netherlands, Spain, and France continue to exhibit strong positive correlations. These significant positive relationships highlight that the EGGS sector is not just incidentally related to GDP growth but is a meaningful driver of economic performance. The fact that these countries maintain significant positive correlations after statistical testing strengthens the argument that expanding the EGGS sector can contribute to economic growth.

While a few countries, like Hungary (-0.84) and Romania (-0.73), show significant negative correlations, the overwhelming majority of nations demonstrate a positive link between the EGGS sector and economic growth. The prevalence of these positive correlations, especially in the second graph, underscores the sector's potential to drive sustainable economic growth. Therefore, for most countries, the EGGS sector represents an opportunity for economic expansion, further validating the sector's importance in achieving both economic and environmental sustainability goals.

4. Conclusion

In conclusion, this analysis highlights the vital role of green marketing in fostering the growth of green sectors, like the EGGS industry, and driving sustainable economic growth during the green transition. The positive correlation between EGGS sector expansion and GDP growth, observed in majority of the countries, underscores the economic benefits of investing in environmentally friendly industries. These sectors, when supported by targeted green marketing, not only contribute to sustainability but also act as key drivers of economic resilience.

Green marketing is essential because it promotes the environmental and economic benefits of sectors like EGGS. By raising awareness about the sustainability and low environmental impact of the EGGS sector, green marketing can attract investments, foster consumer demand, and stimulate sectoral growth. This alignment with sustainability goals enhances the sector's contribution to economic development. By leveraging green marketing to support sectors like EGGS, countries can ensure economic prosperity while advancing environmental protection, positioning themselves for stable growth in the face of global environmental challenges.

References

1. Alkhatib, S., Kecskés, P. & Keller, V. (2023). Green marketing in the digital age: A systematic literature review. *Sustainability*, 15(16), pp. 12369.
2. Anand Thakur, A., Rana, A. & Kaur, A. (2019). Growth of green marketing – A literature perspective of green Indian economy. *International Journal of Architecture and Urban Development*, 8(4), pp. 17-20.
3. Banelienė, R. & Strazdas, R. (2023). Green innovation for competitiveness: Impact on GDP growth in the European Union. *Contemporary Economics*, 17(1), pp. 92-108. DOI: 10.5709/ce.1897-9254.501.
4. Cambridge Institute for Sustainability Leadership. (2023). What is sustainable marketing? Available at: <https://www.cisl.cam.ac.uk/resources/blog/what-sustainable-marketing> [Accessed 3 Nov. 2024].
5. Henion, K.E. & Kinnear, T.C. (1976). Ecological marketing. *Ecological Marketing*. American Marketing Association, p. 168. ISBN 0-87757-076-0, ISBN 978-0-87757-076-9.
6. Kiyak, D. & Grigoliene, R. (2023). Analysis of the conceptual frameworks of green marketing. *Sustainability*, 15(21), pp. 15630.
7. Kotler, P. & Armstrong, G. (2023). *Principles of Marketing* (Global ed., 19th ed.). Pearson.
8. Polonsky, M.J. (1994). An introduction to green marketing. *Electronic Green Journal*, 1(2).
9. Thakur, A., Rana, A. & Kaur, A. (2019). Growth of green marketing – A literature perspective of green Indian economy. *International Journal of Architecture and Urban Development*, 8(4), pp. 17-20.
10. World Gold Council. Annual Reports and Market Analysis. Available at: <https://www.gold.org/> [Accessed 3 Nov. 2024].

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