

Harmonizing Sovereign ESG Indicators with HeXie Management Theory

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Abstract

Aggregating variables to monitor sustainable development is prevalent, yet interpreting composite indices, which encompass a variety of distinct dimensions, is often challenging. This calls for the adoption of solid conceptual frameworks for index construction and interpretation. This study applies the HeXie management theory to classify the World Bank's sovereign environmental, social, and governance (ESG) indicators, offering fresh insights into societies' strengths and weaknesses in addressing corresponding concerns. Analysis of 2020 ratings reveals that Norway, New Zealand, and Switzerland excel in motivating residents for ESG initiatives, while Sweden, Japan, and Finland lead in mechanism design to manage ESG progress. Moreover, Sweden, Japan, Finland, Switzerland, Austria, the Netherlands, and Luxembourg are found to be the most promising countries to enter a double-helix, virtuous circle for further development. I further show that the He/Xie distinction bears a broad correspondence to the UN Sustainable Development Goals: Xie-type dimensions align with mechanism-driven goals (e.g., SDG 6, 7, 9, and 16), while He-type dimensions align with goals that depend heavily on sustained human agency (e.g., SDG 5, 8, and 13). Additionally, the study utilizes panel data from 61 countries spanning 2002 to 2020 and a two-way fixed-effects estimator to examine the classification. Overall, it explores the potential value of integrating management theories with composite-index construction, extending HXMT from the firm level to the sovereign level.

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As emphasis on sustainable development has grown, the environmental, social, and governance (ESG) framework has come to prominence, driven by a joint

initiative of UN-invited financial institutions in 2004. In 2020, the UNDP also introduced a new dimension to the Human Development Index (HDI) to underscore environmental pressures. To date, alongside the promotion of the Sustainable Development Goals (SDGs), the ESG movement has been a global issue, being not just within the business context.

Because sustainability spans a wide range of dimensions, this informational richness complicates both interpretation and the drawing of conclusions on overall progress, a challenge documented in the composite-index literature more broadly (Greco et al., 2019) and in the sustainability context specifically (Hirai & Comim, 2022). Therefore, the use of composite indices has been favorable among many researchers and investors. Kwatra, Kumar, and Sharma (2020) provide a critical review of how such indices are constructed and computed, while Costanza et al. (2016) demonstrate their value in linking sustainable well-being to the SDGs. However, the debate on the choice of appropriate measures and the interpretation of composite indices remains wide. Various approaches attempting to balance either side have been proposed, such as the adoption of both a dashboard and a composite index, or very recently, the introduction of partial orderings (Comim & Hirai, 2022; Hirai & Comim, 2022). This study follows the stream of using composite indices to assess and monitor regional sustainable development with a focus on ESG pillars, and at the same time, echoes Comim and Hirai (2022) call on a solid conceptual basis throughout the use of composite indices.

To this end, this study introduces the HeXie management theory (HXMT), a management theory rooted in the wisdom of Chinese culture, to characterize the common ESG indicators for enriching the interpretation of composite indices, whereby additional policy implications beyond what each pillar literally means are possible to be drawn. Reflected in its name ‘He-Xie,’ equivalent to ‘harmony’ in English, the HXMT is mainly aimed at guiding organizers through real-world problem-solving and periodic goal attainment. This theory was first proposed by Youmin Xi, dating back to 1989. After two decades of development, it has evolved into an integrated and systematic theoretical framework, which has been used to address complex managerial and social problems by a growing number of scholars and practitioners (see e.g., Li et al., 2022; Van de Ven, Meyer, & Jing, 2018; Zhang, 2016; Zhang, Fu, & Xi, 2018).

Before turning to the analysis, it is helpful to position HXMT against the theoretical lenses most commonly used to interpret ESG performance. Three representative streams are particularly relevant here. The first is the organizational-learning stream, which explains ESG performance as the outcome of single-loop and double-loop learning within organizations (Xia, 2022). This stream is powerful at the firm level but is less informative about features of ESG progress that cannot be fully explained by learning processes within a single actor, such as trans-boundary pollution, demographic trends, or geopolitical constraints. The second is the stakeholder-and-CSR stream, which interprets ESG progress as an equilibrium of stakeholder pressures and voluntary commitments (Freeman, 2010; Mitchell, Agle, & Wood, 1997). This stream captures motivation and legitimacy well, and has been extended to explain why firms adopt ESG

frameworks under external pressure (Eccles, Ioannou, & Serafeim, 2014), while often taking measurement frameworks as given rather than theorizing their structure.

The third is the methodological stream on composite-index construction, which debates aggregation rules, weighting, and partial orderings (e.g., Comim & Hirai, 2022; Hirai & Comim, 2022; Kwatra, Kumar, & Sharma, 2020), but largely abstracts from the theoretical content of what is being aggregated. HXMT differs from these perspectives in that it is explicitly built on a duality between He (human agency under uncertainty) and Xie (rational design of mechanisms), which is conceptually prior to measurement and complementary to organizational learning (Xi, Cao, & Xiangli, 2010; Xi, Zhang, & Ge, 2012). Prior studies argue that this duality is well suited to sustainable development because the three pillars of sustainability contain tensions that neither pure agency nor pure mechanism can resolve (He, Ant'onio, & Trigo, 2012). More recently, Wang et al. (2025) operationalize this duality at the firm level by coupling “people” and “things” in management accounting. The contribution of the present paper is to extend this duality to the sovereign level and to use it as an interpretive key for an existing composite-index database.

As being a unique practice-based theory (Zhang, Fu, & Xi, 2018), it offers a novel perspective, completely different from those in the existing literature, for extracting underlying characteristics potentially hidden behind a rich set of variables. With this merit, this study is aimed to shed light on the directions towards which countries can further put their efforts to thrive. Concerns may arise regarding the application of a management theory to ESG indices at the country level. Nevertheless, not only governing ESG progress shares substantial similarities with managerial practices, but also the key concepts of the HXMT are not bound to the business context, leaving room for generalizing them to a broader, macro-social scenario (see Xi & Zhang, 2013).

Being inspired by the HeXie management theory, this study classifies the World Bank's ESG indicators into two categories, following the distinction between relatively uncontrollable factors intrinsic to human society and controllable factors that can be improved through the design of control mechanism. This distinction is based on two fundamental concepts of the HXMT, i.e., He and Xie principles. Specifically, the He principle refers to taking advantage of people's initiatives and self-determination, by promoting contextual circumstances, atmosphere, or conditions, to cope with complex and uncertain issues along with the development of an organization or society, while the Xie principle centers on the role of rational design and rigorous planning in achieving expected outcomes, which relates, more often, to things than to humans (Xi, Cao, & Xiangli, 2010).

To embody the essence underlying the He principle, factors sorted into this group have at least one of the three characteristics: a) it is considerably random or subject largely to natural conditions, like precipitation-evapotranspiration index, and thus, human initiatives and/or adaption play a critical role in its evolution, which links to the emphasis of the He principle on the intrinsic power of human

beings, b) there is an inevitable trend rooted in human development and economic growth, such as low fertility rates widely seen in developed economies that can hardly be lifted once it goes down, and c) improving the outcome calls for a joint force beyond a single society, such as climate change, or the society cannot get out of trouble only with its own efforts because of geopolitical reasons, to name an example. In the latter two scenarios, the ingrained inconsistency and complexity of human behaviors and social dilemma largely complicate the pursuit of desirable outcomes.

In contrast, identifying factors underlying the Xie principle is based on the judgment of whether their improvements can be achieved through the development of social mechanism and optimization.¹ It is not surprising to see that most of the World Bank's ESG indicators are classified into this group, considering that the measurability *per se* favors a plannable attribute. Eventually, there are 11 versus 32 factors in the He and Xie groups, respectively. It is worth noting that although the World Bank provides 71 ESG indicators on its website, some of them are available for only a few countries, have not been updated in recent years, or do not cover at least two adjacent periods.² Variables that do not meet these criteria are therefore excluded to ensure comparability of recent ESG progress across countries.

Further, I aggregate the estimates according to the construction of the HDI. To examine the reasonability of my classification, I then perform a country-year two-way fixed-effects (TWFE) estimation, one of the most commonly-used econometric techniques for causal inference (Allison, 2009). The reason for doing so stems from the consideration of human development as the ultimate goal of all development, a premise established in the development economics literature by Ranis, Stewart, and Ramirez (2000) and Basu (2000), and extended by Zsolnai (2018) to the question of what economic actors ultimately should pursue. Thus, if ESG progress can be effectively planned and controlled, it should eventually manifest consistently in measures of human development. In contrast, a fragile relationship between them suggests that the identified factors are not very controllable by versatile mechanisms implemented in contemporary societies.

The results demonstrate that the Xie-related ESG performance is negatively correlated with the HDI at the 1% significance level. By contrast, the influence of He-related ESG outcomes on the HDI, though statistically significant at the 5% level, is of considerably smaller magnitude (3.3% versus 38.97%; adjusted R-squared: 99.64%).³ These findings showcase that the underlying attributes of the respective indicators are much less controllable compared to those in the Xie group, supporting the classification employed in this study.

¹ It should be noted that the difference between He and Xie factors is not dichotomous; neither are He factors 100% uncontrollable, nor are dimensions in the Xie group 100% controllable.

² Retaining at least two adjacent periods is to enable the fixed effects regression.

³ The log-transformed GDP has been included as a control variable in the regression. Not using a log-transformed GDP per capita is because the HDI already accounts for living standards.

DATA AND METHODS

All the indicators used in this study are retrieved from the Sovereign ESG Data Portal of the World Bank. To conduct a comprehensive assessment for ESG performance across countries between the He and Xie groups, a composite index is necessary.⁴ Therefore, I begin by applying min-max normalization to all indicators and reversing the direction of certain normalized indices so that a larger value consistently represents a worse outcome.⁵ Then, I aggregate the indices, according to the formulation of the HDI, as follows:

$$\begin{aligned} N_x &= \frac{x - \min(x)}{\max(x) - \min(x)} \\ Y_\theta &= \frac{1}{n} \sum_{i=1}^n x_i, \text{ where } \theta \in \{e, s, g\} \\ \text{ESG} &= (Y_e \cdot Y_s \cdot Y_g)^{\frac{1}{3}} \end{aligned} \quad (1)$$

Where N_x denotes the normalized outcome of each indicator, Y_θ is the arithmetic mean of normalized indicators of each pillar, and ESG represents the geometric mean of ESG ratings in the He or Xie group.

The assignment of each indicator to the He or the Xie group followed a three-step protocol. First, for each indicator I examined the World Bank’s definition and its “development relevance” note to form an initial qualitative assessment of whether variation in the indicator is more closely linked to rational planning and mechanism design or to broader structural conditions. Second, I evaluated this initial assessment against the three He-group criteria stated in Section 1, namely natural variability, inevitable human-development trends, and dependence on joint forces beyond a single society. Third, an indicator was assigned to the He group only if it satisfied at least one of these criteria; otherwise it was assigned to the Xie group. As noted earlier, the two groups are not dichotomous at the margin, but the three-step protocol helps discipline judgment in borderline cases.

Table A1 presents the classification of all indicators used in this study. Indicators in the He group are those deemed quite random, subtle and/or intangible and thus, are not very controllable. For instance, the population density index is categorized into the He group because it, on one hand, relies partly on the natural condition – the land area of the country, and on the other hand, entails a range of complex factors, such as international migration, fertility rates, mortality

⁴ It should be noted that recent literature argues against the aggregation of dimensions for comparison purposes and suggests an alternative solution using a poset analysis (Comim & Hirai, 2022; Hirai & Comim, 2022). I believe such an approach could be valuable for future research. However, considering the number of ESG indicators here, a partially-ordered ranking is unfeasible without aggregation.

⁵ A small number of indicators, such as the gender parity index, which does not follow the convention that either a larger or smaller numeric value represents a better situation, are excluded to ensure that all indices can be interpreted consistently.

rates, and urbanization, among others. This implies that adequately controlling them, albeit possible, is very likely to trigger undesirable, coercive measures. Instead, human agency plays a critical role in the evolution of these driving forces.

Like the fertility rate index, the unemployment index is also assigned to the He group. As described in the World Bank's development relevance, 'high unemployment rates can occur in countries with a high level of economic development and low rates of poverty; in countries with well-developed safety nets, workers can afford to wait for suitable or desirable jobs.' In other words, unemployment rates are not linearly correlated with the social advancement and, at the same time, human initiative and self-determination are influential to the formation of outcomes.

Two further methodological points deserve emphasis. First, regarding the robustness of the classification, I re-ran the full ranking exercise after reassigning the three indicators identified as most borderline, namely net migration, unemployment rate, and food production index, across groups. As reported in Table A4, the top-tier and bottom-tier countries remain largely unchanged relative to Table A3, and the correlation between the original and reassigned ESG rankings exceeds 0.95 in both groups. The ranking distances reported below are therefore unlikely to be driven by any single borderline classification. Second, regarding aggregation, I retain an HDI-style geometric mean because it is consistent with the reference framework in the development-indicators literature and because, with 43 retained indicators, a poset analysis in the spirit of Comim and Hirai (2022) and Hirai and Comim (2022) becomes computationally and interpretively difficult. However, the poset approach can be a valuable complement for future work on a smaller, theory-selected subset of indicators.

Six indices, denoting environment, social, and governance pillars classified under the guidance of He and Xie principles, respectively, are generated. As shown in Table A2, among the 61 countries, the governance pillar demonstrates the highest average value in both groups, while the social pillar exhibits the lowest average values in each. It is worth recapping that the greater the value, the worse the performance. In addition, the ultimate composite indices reported in Table A2 indicate that the average ESG performance is slightly better in the He group than in the Xie group.

RESULTS

Based on the conceptual framework of this study, each country has two outcomes ranked on an annual basis over 19 years. Here, I exemplify the interpretation with the 2020 rankings. Although outcomes are equally important for portraying ESG progress, this study highlights the ranking distance between two outcomes. This is because, as discussed in the HXMT, the He and Xie principles form a unified whole, interacting with each other in a manner analogous to a double helix. The co-evolution of He and Xie factors, referred to as He-Xie coupling, can empower organizations or societies to enter a virtuous circle in

pursuit of desirable outcomes. Although this cannot be tested empirically, the results offer tentative insight into whether a virtuous circle may be expected, and where societies may need to focus greater effort to facilitate one.

As shown in Figure 1, Norway claims the top spot in the He group, followed by New Zealand (19th in Xie), Switzerland (4th in Xie), and Japan (2nd in Xie), while Sweden ranks first in the Xie group, followed by Japan (4th in He), Finland (6th in He), and Switzerland (3rd in He). It is expected that a smaller distance in ESG performance between the two groups, combined with a relatively good performance (top 25% percentile considered here) in each, signifies the potential for driving a virtuous circle (He-Xie coupling). Therefore, the selected countries are Sweden, Japan, Finland, Switzerland, Austria, the Netherlands, and Luxembourg. It is unsurprising that some developed nations, such as Spain and France, rank highly on the Xie axis, reflecting the strength of their well-developed institutional mechanisms. However, their comparatively poor performance on the He factors points to a weakness in fostering human agency.

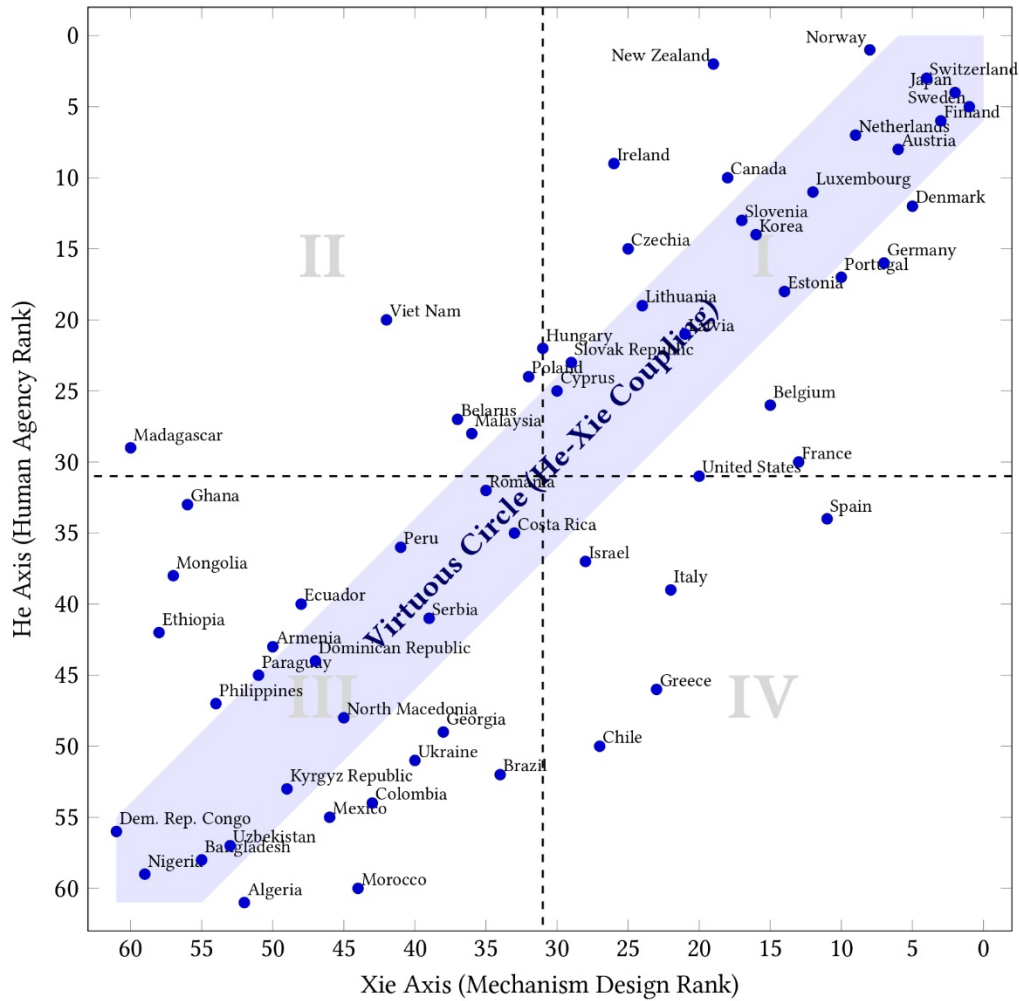


Figure 1. Global Ranking Correlation between Human Agency and Mechanism Design (Source: Created by author)

Breaking the ranking distance into each sub-category, as seen in Tables A5, A6 and A7, reveals distinct patterns across the three pillars. The environmental pillar produces the largest dispersion between groups. Costa Rica stands out as the best-performing society from an environmental perspective among the 61 countries, ranking 4th and 5th in the He and Xie groups, respectively. At the other extreme, countries such as Ireland, Malaysia, Israel, and New Zealand rank highly on He but substantially lower on the environmental Xie side, suggesting that relatively favorable conditions for human agency have not automatically translated into well-designed environmental mechanisms.

The social pillar shows the largest gaps between He and Xie outcomes, and these gaps run primarily in one direction: countries with strong He performance whose Xie performance lags behind. Japan is the notable exception, ranking 1st in both groups, with Switzerland, the Netherlands, and Germany also performing strongly on the Xie side. Vietnam illustrates the dominant pattern most clearly, ranking 4th on the He side but only 44th on the Xie side, with Belarus (7th vs. 34th) exhibiting a similar gap. For these countries, greater commitment to mechanism design and planning would help convert latent agency into durable social outcomes.

The governance pillar presents the smallest distance between the two groups, with countries like New Zealand, Norway, and Sweden excelling in each. A correlation matrix indicates that the relationship between the two governance-oriented ESG outcomes is the strongest among the pillars. In the language of HXMT, governance thus appears to be the domain in which He and Xie are most naturally aligned. Even so, a few developed nations show notable discrepancies with opposite inclinations, such as the United States (33rd in He vs. 13th in Xie) and Portugal (9th vs. 20th).

I then conduct a TWFE regression, as follows:

$$HDI_{jt} = \alpha + \beta_1 \times ESG_{jt} + \beta_2 \times Z_{jt} + \gamma_j + \gamma_t + \varepsilon_{jt} \quad (2)$$

Where ESG_{jt} is either the He-related or Xie-related ESG progress of country j at time t ; Z_{jt} is a control variable, i.e., the log-transformed GDP; γ_j are country fixed effects; γ_t are time fixed effects; ε_{jt} is an idiosyncratic error term.

As reported in Table A8, both the baseline and TWFE models show that an increase in the Xie-related ESG index is negatively correlated with human development. Yet, the relationship between ESG outcomes in the He group and the HDI turns out to be weaker, and the magnitudes of the effects are much smaller. If we agree that the major mission of a country is to protect and flourish its people's lives, any effective social mechanisms rolled out with this internalized vision will eventually be turned into a function of human development. In turn, the weak

linkage here suggests, at least, an inefficiency of corresponding mechanisms, implying a greater demand for human agency.

PRACTICAL IMPLICATIONS AND SDG LINKAGES

The He/Xie distinction is not merely a reading aid for composite indices; it also offers a diagnostic perspective for how governments and firms may prioritize effort. In this section, I translate the empirical patterns of Figure 1 and Table A3–A7 into three practical implications and then relate each side of the distinction to the SDGs it most directly informs.

MIRROR-IMAGE CONSTRAINTS ACROSS COUNTRIES

Countries ranked high on the Xie side but low on the He side, such as Spain, France, and Greece, appear comparatively strong in designing rules, reporting standards, and administrative procedures. However, further progress may depend more heavily on He-side dimensions, including civic education, participatory policy design, and conditions that sustain household-level and community-level initiative. Countries ranked high on the He side but low on the Xie side, such as Viet Nam in the social pillar and New Zealand in the environmental pillar, exhibit the opposite configuration. Their outcomes appear relatively stronger on dimensions associated with human agency, but comparatively weaker in the mechanisms that convert those conditions into durable progress. The implication is not that both sides must be strengthened simultaneously, but rather that the rankings provide a tentative indication of where a country's binding constraint may lie.

CROSS-LEVEL PARALLELS WITH THE FIRM

Wang et al. (2025) operationalize the duality within management accounting, where the Xie side maps onto processes, controls, and reporting infrastructure, whereas the He side maps onto the cultural and motivational conditions under which those processes operate. This firm-level interpretation is conceptually parallel to the sovereign-level patterns documented in the present study, although the current analysis does not empirically test firm-level ESG behavior. Chao (2023) in an empirical comparative study of CSR across the Taiwan Strait, observes that Asian CSR remains disproportionately focused on philanthropic initiatives and applies HXMT to interpret this pattern, suggesting that the He/Xie framing can help diagnose why CSR practices in this context have yet to become strategically embedded. Taken together with the present study, these contributions point toward a He/Xie framing that may bridge ESG analysis at the sovereign and organizational levels.

CORRESPONDENCE WITH THE SDGs

Xie-type indicators align closely with SDGs whose targets can be substantially advanced through mechanism design, such as SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 9 (industry, innovation, and infrastructure), and SDG 16 (peace, justice, and strong institutions). Progress on these goals is commonly tracked through access indicators and governance-oriented measures similar to those entering the Xie group. He-type indicators, by contrast, correspond more closely to SDGs whose outcomes depend heavily on sustained human agency and on forces that extend beyond a single society's boundaries. Examples include SDG 5 (gender equality, which contains strong behavioral and social dimensions), SDG 8 (decent work and economic growth, where unemployment and labour-force participation are shaped partly by long-run demographic and technological forces), and SDG 13 (climate action, which inherently requires coordination beyond any individual country). From this perspective, a country's overall SDG performance may benefit from being diagnosed along both He and Xie dimensions rather than through a single headline SDG Index. Countries that are strong on one axis but weak on the other may encounter persistent constraints in the SDGs that depend more heavily on the weaker dimension.

DISCUSSION AND CONCLUDING REMARKS

Despite extensive research on sustainable development indicators, the predominant focus remains on improving the construction of composite indices from methodological or computational perspectives. The existing literature seldom seeks to enrich the interpretation of such indices by integrating appropriate theoretical frameworks. In line with recent calls for a solid conceptual basis for composite indices, this study applies the HeXie management theory to ground the classification of ESG indicators, retrieved from the World Bank, and to draw novel intuition about the strengths and weaknesses of societies in addressing ESG issues.

Inspired by the features described in the He and Xie principles, it divides 43 indicators into two groups. In terms of the 2020 ranking outcomes, Norway, New Zealand, and Switzerland are best at motivating residents in the face of ESG challenges, while Sweden, Japan, and Finland take the lead in mechanism design to move forward. In addition, the findings show that Sweden, Japan, Finland, Switzerland, Austria, the Netherlands, and Luxembourg are the most promising countries to enter a double-helix, virtuous circle, according to the concept of the He-Xie coupling. Lastly, a TWFE estimator has been adopted to examine the effects of two distinct ESG movements on the HDI, serving as a means to test the reasonability of the classification. This testing is grounded in the notion that human development is the ultimate aim of all development efforts.

Three contributions are worth making explicit. First, the paper extends HXMT applications from the firm-level literature (Chao, 2023; He, Ant'onio, & Trigo, 2012; Wang et al., 2025) to the sovereign level, and in doing so shows that the He/Xie duality can be operationalized beyond the firm level. Second, it complements the methodological debate on composite indices, dashboards, and partial orderings (Comim & Hirai, 2022; Hirai & Comim, 2022) by showing that a theory-driven classification can add interpretive value to composite indices without requiring that they be discarded in favor of alternative tools. Third, it adds a structural counterpoint to organizational-learning-based accounts of ESG progress (Xia, 2022): the results suggest that a non-trivial share of ESG progress, namely the He dimension, cannot be fully explained through organizational learning within a single actor and instead depends on conditions that are only partly controllable by any one society.

Several limitations accompany this contribution. The He/Xie classification, though constrained by an explicit protocol, retains a judgment element at the margin; the sensitivity check limits but does not eliminate this concern. The World Bank indicator set is itself an interpretive lens, and some dimensions relevant to sustainability, such as biodiversity stocks and cultural heritage, are represented only indirectly. Future research could (i) analyze dynamic trends of ESG progress in the two groups using clustering techniques and the panel data created in this study, (ii) apply a partial-ordering analysis to a smaller, theory-selected subset of indicators as a complement to the composite-index approach, and (iii) develop the practitioner toolkit sketched in Section 4 into a full diagnostic instrument.

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DATA STATEMENT

The data used in this study can be downloaded directly from the World Bank.

REFERENCES

- Allison, P. D. (2009). *Fixed effects regression models*. SAGE Publications. <https://doi.org/10.4135/9781412993869>
- Basu, K. (2001). On the goals of development. In G. M. Meier & J. E. Stiglitz (Eds.), *Frontiers of development economics: The future in perspective* (pp. 61–86). World Bank & Oxford University Press. <https://openknowledge.worldbank.org/entities/publication/3d90ffc1-2fb9-551e-9429-d36836096713>

- Chao, C.-C. (2023). *Practice and prospects of corporate social responsibility: An empirical comparative study of both sides of the Taiwan Strait* [Doctoral dissertation, Iscte – Instituto Universitário de Lisboa]. Repositório do Iscte. <https://repositorio.iscte-iul.pt/handle/10071/28389>
- Comim, F., & Hirai, T. (2022). Sustainability and human development indicators: A poset analysis. *Ecological Economics*, 198, Article 107470. <https://doi.org/10.1016/j.ecolecon.2022.107470>
- Costanza, R., Daly, L., Fioramonti, L., Giovannini, E., Kubiszewski, I., Mortensen, L. F., Pickett, K. E., Ragnarsdottir, K. V., De Vogli, R., & Wilkinson, R. (2016). Modelling and measuring sustainable wellbeing in connection with the UN Sustainable Development Goals. *Ecological Economics*, 130, 350–355. <https://doi.org/10.1016/j.ecolecon.2016.07.009>
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835–2857. <https://doi.org/10.1287/mnsc.2014.1984>
- Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139192675>
- Greco, S., Ishizaka, A., Tasiou, M., & Torrisi, G. (2019). On the methodological framework of composite indices: A review of the issues of weighting, aggregation, and robustness. *Social Indicators Research*, 141(1), 61–94. <https://doi.org/10.1007/s11205-017-1832-9>
- He, H., António, N., & Trigo, V. (2012). HeXie management theory and sustainable development. *African Journal of Business Management*, 6(50), 12005–12015. <https://doi.org/10.5897/AJBM11.2565>
- Hirai, T., & Comim, F. (2022). Measuring the sustainable development goals: A poset analysis. *Ecological Indicators*, 145, Article 109605. <https://doi.org/10.1016/j.ecolind.2022.109605>
- Kwatra, S., Kumar, A., & Sharma, P. (2020). A critical review of studies related to construction and computation of sustainable development indices. *Ecological Indicators*, 112, Article 106061. <https://doi.org/10.1016/j.ecolind.2019.106061>
- Li, N., Huijser, H., Xi, Y., Limniou, M., Zhang, X., & Kek, M. Y. C. A. (2022). Disrupting the disruption: A digital learning HeXie ecology model. *Education Sciences*, 12(2), Article 63. <https://doi.org/10.3390/educsci12020063>
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853–886. <https://doi.org/10.5465/amr.1997.9711022105>
- Ranis, G., Stewart, F., & Ramirez, A. (2000). Economic growth and human development. *World Development*, 28(2), 197–219. [https://doi.org/10.1016/S0305-750X\(99\)00131-X](https://doi.org/10.1016/S0305-750X(99)00131-X)
- Van de Ven, A. H., Meyer, A. D., & Jing, R. (2018). Opportunities and challenges of engaged indigenous scholarship. *Management and Organization Review*, 14(3), 449–462. <https://doi.org/10.1017/mor.2018.28>
- Wang, L., Zhang, C., Liu, L., Wang, S., & Zhang, X. (2025). Research on corporate management accounting from the perspective of HeXie management theory. *Cogent Business & Management*, 12(1), Article 2454981. <https://doi.org/10.1080/23311975.2025.2454981>

- Xi, Y., & Zhang, X. (2013). On the constructing mechanism and strategy of HeXie society from the perspective of social governance. *Systems Engineering – Theory & Practice*, 33(12), 3001–3008. [https://doi.org/10.12011/1000-6788\(2013\)12-3001](https://doi.org/10.12011/1000-6788(2013)12-3001)
- Xi, Y., Cao, X., & Xiangli, L. (2010). A Chinese view on rebuilding the integrity of management research: The evolving He-Xie management theory. *Chinese Management Studies*, 4(3), 197–211. <https://doi.org/10.1108/17506141011074101>
- Xi, Y., Zhang, X., & Ge, J. (2012). Replying to management challenges: Integrating oriental and occidental wisdom by HeXie management theory. *Chinese Management Studies*, 6(3), 395–412. <https://doi.org/10.1108/17506141211259104>
- Xia, J. (2022). A systematic review: How does organisational learning enable ESG performance (from 2001 to 2021)? *Sustainability*, 14(24), Article 16962. <https://doi.org/10.3390/su142416962>
- Zhang, X. (2016). Co-evolution between institutional environments and organizational change: The mediating effects of managers' uncertainty. *Journal of Organizational Change Management*, 29(3), 381–403. <https://doi.org/10.1108/JOCM-12-2014-0218>
- Zhang, X., Fu, P., & Xi, Y. (2018). Promoting management education in China through developing practice-based management theories: An interview with practitioner-scholar Youmin Xi. *Journal of Management Inquiry*, 27(2), 212–223. <https://doi.org/10.1177/1056492617708056>
- Zsolnai, L. (2018). Economic actors and the ultimate goal of the economy. In P. Róna & L. Zsolnai (Eds.), *Economic objects and the objects of economics* (pp. 151–159). Springer. https://doi.org/10.1007/978-3-319-94529-3_11

APPENDIX

Table A1. Classification of ESG Indicators

Variable Name	ESG Pillar	Category
Population density	Environment	He
Cooling Degree Days	Environment	He
Heating Degree Days	Environment	He
Heat Index 35	Environment	He
Standardized Precipitation-Evapotranspiration Index	Environment	He
Land Surface Temperature	Environment	He
Unemployment rate	Social	He
Fertility rate	Social	He
Labor force participation rate	Social	He
Political Stability and Absence of Violence/Terrorism	Governance	He
Ratio of female to male labor force participation rate	Governance	He
CO2 emissions	Environment	Xie
Methane emissions	Environment	Xie
Nitrous oxide emissions	Environment	Xie
Renewable energy consumption	Environment	Xie
Level of water stress	Environment	Xie
Food production index	Environment	Xie
Adjusted savings: natural resources depletion	Environment	Xie
Adjusted savings: net forest depletion	Environment	Xie
Annual freshwater withdrawals	Environment	Xie
Forest area	Environment	Xie
Tree Cover Loss	Environment	Xie
Access to clean fuels and technologies for cooking	Social	Xie
Access to electricity	Social	Xie
People using safely managed drinking water services	Social	Xie
People using safely managed sanitation services	Social	Xie
Life expectancy at birth	Social	Xie
Population ages 65 and above	Social	Xie
School enrollment	Social	Xie
Hospital beds (per 1,000 people)	Social	Xie
Mortality rate, under-5 (per 1,000 live births)	Social	Xie
Prevalence of undernourishment	Social	Xie
GDP growth	Governance	Xie
Individuals using the Internet	Governance	Xie
Proportion of seats held by women in national parliaments	Governance	Xie
Government Effectiveness	Governance	Xie
Regulatory Quality	Governance	Xie
Voice and Accountability	Governance	Xie
Patent applications	Governance	Xie
Scientific and technical journal articles	Governance	Xie
Control of Corruption	Governance	Xie
Net migration	Governance	Xie

Table A1. *Continued*

Variable Name	ESG Pillar	Category
Rule of Law	Governance	Xie

Source: The Sovereign ESG Data Portal of the World Bank.

Table A2. Descriptive Statistics on ESG Pillars

Variable	Obs.	Mean	Std. Dev.	Min	Max
e_he	1,065	0.3091	0.0509	0.1651	0.4671
s_he	1,065	0.2446	0.0941	0.0826	0.6051
g_he	1,065	0.3197	0.1441	0.0891	0.8918
e_xie	1,065	0.3124	0.0423	0.1703	0.4937
s_xie	1,065	0.2365	0.1512	0.0697	0.8394
g_xie	1,065	0.5363	0.1346	0.2783	0.8329
ESG_he	1,065	0.2819	0.0776	0.1332	0.5909
ESG_xie	1,065	0.3293	0.0873	0.1801	0.6448

Source: Author's calculation using the Sovereign ESG Data Portal of the World Bank.

Table A3. ESG Rankings for 2020

Country	Rank_He	Rank_Xie	Distance	Country	Rank_He	Rank_Xie	Distance
Sweden	5	1	4	Hungary	22	31	-9
Japan	4	2	2	Poland	24	32	-8
Finland	6	3	3	Costa Rica	35	33	2
Switzerland	3	4	-1	Brazil	52	34	18
Denmark	12	5	7	Romania	32	35	-3
Austria	8	6	2	Malaysia	28	36	-8
Germany	16	7	9	Belarus	27	37	-10
Norway	1	8	-7	Georgia	49	38	11
Netherlands	7	9	-2	Serbia	41	39	2
Portugal	17	10	7	Ukraine	51	40	11
Spain	34	11	23	Peru	36	41	-5
Luxembourg	11	12	-1	Viet Nam	20	42	-22
France	30	13	17	Colombia	54	43	11
Estonia	18	14	4	Morocco	60	44	16
Belgium	26	15	11	North Macedonia	48	45	3
Korea	14	16	-2	Mexico	55	46	9
Slovenia	13	17	-4	Dominican Republic	44	47	-3
Canada	10	18	-8	Ecuador	40	48	-8
New Zealand	2	19	-17	Kyrgyz Republic	53	49	4
United States	31	20	11	Armenia	43	50	-7
Latvia	21	21	0	Paraguay	45	51	6
Italy	39	22	17	Algeria	61	52	9
Greece	46	23	23	Uzbekistan	57	53	4
Lithuania	19	24	-5	Philippines	47	54	-7
Czechia	15	25	-10	Bangladesh	58	55	3
Ireland	9	26	-17	Ghana	33	56	-23
Chile	50	27	23	Mongolia	38	57	-19
Israel	37	28	9	Ethiopia	42	58	-16
Slovak Republic	23	29	-6	Nigeria	59	59	0
Cyprus	25	30	-5	Madagascar	29	60	-31
				Dem. Rep. Congo	56	61	-5

Notes: 'Distance' is calculated as the difference between the rank of ESG progress in the He group and the rank in the Xie group. The orderings here are neither ascending nor descending.

Source: Author's elaboration using the Sovereign ESG Data Portal of the World Bank.

Table A4. Alternative ESG Rankings for 2020

Country	Rank_He	Rank_Xie	Distance	Country	Rank_He	Rank_Xie	Distance
Sweden	3	1	2	Hungary	27	31	-4
Japan	5	2	3	Greece	36	32	4
Finland	6	3	3	Romania	43	34	9
Switzerland	2	4	-2	Brazil	52	34	18
Denmark	12	5	7	Malaysia	32	35	-3
Austria	9	6	3	Costa Rica	29	36	-7
Germany	14	7	7	Belarus	23	37	-14
Norway	1	8	-7	Viet Nam	25	38	-13
Netherlands	8	9	-1	Peru	34	39	-5
Portugal	17	10	7	Georgia	44	40	4
Luxembourg	16	11	5	Serbia	35	41	-6
Korea	19	12	7	Ukraine	45	42	3
Estonia	11	13	-2	Morocco	60	43	17
Belgium	30	14	16	Colombia	42	44	-4
Slovenia	18	15	3	Mexico	54	45	9
New Zealand	4	16	-12	North Macedonia	39	46	-7
France	31	17	14	Dominican Republic	52	47	5
Canada	7	18	-11	Kyrgyz Republic	53	48	5
Czechia	22	19	3	Ecuador	48	49	-1
Latvia	13	20	-7	Paraguay	46	50	-4
Spain	20	21	-1	Armenia	33	51	-18
United States	26	22	4	Philippines	55	52	3
Lithuania	10	23	-13	Uzbekistan	57	53	4
Ireland	15	24	-9	Algeria	61	54	7
Italy	37	25	12	Bangladesh	56	55	1
Israel	49	26	23	Ghana	47	56	-9
Slovak Republic	24	27	-3	Mongolia	41	57	-16
Chile	50	28	22	Ethiopia	51	58	-7
Cyprus	21	29	-8	Nigeria	59	59	0
Poland	28	30	-2	Madagascar	38	60	-22
				Dem. Rep. Congo	58	61	-3

Notes: 'Distance' is calculated as the difference between the rank of ESG progress in the He group and the rank in the Xie group. The orderings here are neither ascending nor descending.

Source: Author's elaboration using the Sovereign ESG Data Portal of the World Bank.

Table A5. 2020 Ranking of the Environment Pillar

Country	Rank_He	Rank_Xie	Distance	Country	Rank_He	Rank_Xie	Distance
Brazil	34	1	33	Korea	3	32	-29
Sweden	8	2	6	Chile	54	33	21
Nigeria	16	3	13	Serbia	38	34	4
Peru	21	4	17	Greece	43	35	8
Costa Rica	4	5	-1	Lithuania	37	36	1
Finland	7	6	1	Poland	33	37	-4
Dem. Rep. Congo	6	7	-1	Romania	41	38	3
Latvia	23	8	15	Germany	52	39	13
Colombia	22	9	13	Denmark	36	40	-4
Ethiopia	9	10	-1	United States	24	41	-17
Slovenia	13	11	2	France	44	42	2
Dominican Republic	32	12	20	Kyrgyz Republic	26	43	-17
Madagascar	29	13	16	Canada	15	44	-29
Estonia	17	14	3	Luxembourg	48	45	3
Viet Nam	50	15	35	Cyprus	25	46	-21
Austria	10	16	-6	Malaysia	5	47	-42
Portugal	30	17	13	Morocco	56	48	8
Japan	11	18	-7	Czechia	28	49	-21
Georgia	51	19	32	Hungary	27	50	-23
Norway	1	20	-19	Belgium	47	51	-4
Spain	42	21	21	Ukraine	55	52	3
Philippines	14	22	-8	Belarus	39	53	-14
Paraguay	58	23	35	Netherlands	45	54	-9
Bangladesh	60	24	36	Armenia	40	55	-15
Ecuador	12	25	-13	Israel	20	56	-36
Ghana	31	26	5	Ireland	2	57	-55
North Macedonia	35	27	8	Uzbekistan	57	58	-1
Switzerland	49	28	21	New Zealand	19	59	-40
Mexico	59	29	30	Algeria	61	60	1
Slovak Republic	18	30	-12	Mongolia	53	61	-8
Italy	46	31	15				

Notes: 'Distance' is calculated as the difference between the rank of the environmental progress in the He group and the rank in the Xie group. The orderings here are neither ascending nor descending.

Source: Author's elaboration using the Sovereign ESG Data Portal of the World Bank.

Table A6. 2020 Ranking of the Social Pillar

Country	Rank_He	Rank_Xie	Distance	Country	Rank_He	Rank_Xie	Distance
Japan	1	1	0	United States	31	25	6
Switzerland	2	6	-4	France	32	10	22
Netherlands	3	4	-1	Peru	33	49	-16
Viet Nam	4	44	-40	Ukraine	34	36	-2
Germany	5	3	2	Serbia	35	41	-6
New Zealand	6	23	-17	Paraguay	36	52	-16
Belarus	7	34	-27	Italy	37	15	22
Norway	8	20	-12	Israel	38	24	14
Czechia	9	19	-10	Mexico	39	50	-11
Austria	10	9	1	Ethiopia	40	58	-18
Korea	11	13	-2	Armenia	41	46	-5
Denmark	12	5	7	Ecuador	42	51	-9
Poland	13	32	-19	Bangladesh	43	56	-13
Sweden	14	2	12	Dominican Republic	44	53	-9
Slovenia	15	16	-1	Spain	45	11	34
Estonia	16	18	-2	Ghana	46	57	-11
Finland	17	8	9	Georgia	47	45	2
Hungary	18	28	-10	Philippines	48	55	-7
Latvia	19	26	-7	Chile	49	29	20
Lithuania	20	21	-1	Kyrgyz Republic	50	42	8
Portugal	21	7	14	Mongolia	51	54	-3
Luxembourg	22	17	5	Brazil	52	38	14
Cyprus	23	30	-7	Uzbekistan	53	43	10
Canada	24	22	2	Colombia	54	47	7
Ireland	25	27	-2	Greece	55	12	43
Madagascar	26	60	-34	North Macedonia	56	48	8
Slovak Republic	27	31	-4	Costa Rica	57	37	20
Belgium	28	14	14	Morocco	58	39	19
Malaysia	29	35	-6	Nigeria	60	59	1
Dem. Rep. Congo	59	61	-2	Algeria	61	40	21
Romania	30	33	-3				

Notes: 'Distance' is calculated as the difference between the rank of the social progress in the He group and the rank in the Xie group. The orderings here are neither ascending nor descending.

Source: Author's elaboration using the Sovereign ESG Data Portal of the World Bank.

Table A7. 2020 Ranking of the Governance Pillar

Country	Rank_He	Rank_Xie	Distance	Country	Rank_He	Rank_Xie	Distance
Finland	6	1	5	Georgia	46	33	13
New Zealand	1	2	-1	Greece	35	34	1
Norway	2	3	-1	Hungary	26	35	-9
Sweden	4	4	0	North Macedonia	38	36	2
Denmark	8	5	3	Romania	34	37	-3
Switzerland	5	6	-1	Serbia	37	38	-1
Luxembourg	3	7	-4	Armenia	45	39	6
Netherlands	10	8	2	Dominican Republic	44	40	4
Germany	15	9	6	Mexico	57	41	16
Canada	7	10	-3	Colombia	52	42	10
Austria	11	11	0	Brazil	49	43	6
Ireland	13	12	1	Peru	41	44	-3
United States	33	13	20	Ghana	21	45	-24
Belgium	19	14	5	Morocco	59	46	13
Estonia	16	15	1	Ecuador	48	47	1
France	22	16	6	Viet Nam	29	48	-19
Japan	17	17	0	Mongolia	20	49	-29
Spain	25	18	7	Ukraine	53	50	3
Korea	28	19	9	Paraguay	40	51	-11
Portugal	9	20	-11	Philippines	55	52	3
Lithuania	12	21	-9	Belarus	47	53	-6
Latvia	23	22	1	Ethiopia	54	54	0
Slovenia	14	23	-9	Kyrgyz Republic	50	55	-5
Israel	39	24	15	Uzbekistan	56	56	0
Chile	43	25	18	Algeria	61	57	4
Costa Rica	32	26	6	Bangladesh	60	58	2
Czechia	18	27	-9	Nigeria	58	59	-1
Cyprus	27	28	-1	Madagascar	31	60	-29
Slovak Republic	24	29	-5	Dem. Rep. Congo	51	61	-10
Poland	30	30	0	Malaysia	42	32	10
Italy	36	31	5				

Notes: 'Distance' is calculated as the difference between the rank of the governance progress in the He group and the rank in the Xie group. The orderings here are neither ascending nor descending.

Source: Authors' elaboration using the Sovereign ESG Data Portal of the World Bank.

Table A8. Estimates of ESG Progress on Human Development between 2002 and 2020

Country	Baseline	TWFE
ESG_he	-0.0595** (0.0265)	-0.0330** (0.0151)
ESG_xie	-1.2720*** (0.0289)	-0.3897*** (0.0391)
Constant	1.2317*** (0.0061)	0.3798*** (0.0559)
Time FE	N	Y
Country FE	N	Y
Control	N	Y
Obs	1,065	1,063
R squared	0.8769	0.9967

Source: Author's elaboration using the Sovereign ESG Data Portal of the World Bank and Human Development Reports.