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Articles

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Franjo Mlinarič
Kozminski University, Poland
ORCID: 0000-0002-7480-3119
mfranjo2003@kozminski.edu.pl

Grygorii Kravchenko
Kozminski University, Poland
ORCID: 0000-0001-5269-6300
gkravchenko@kozminski.edu.pl

Boštjan Brezovnik
Maria Curie-Skłodowska University (Lublin), Poland
New University, Slovenia
ORCID: 0000-0001-8297-9862
bostjan.brezovnik@mail.umcs.pl

Harmonising Agency Theory and Sustainable Economic Paradigm – Improving Market Efficiency by Smart Regulation

Harmonizacja teorii agencji i paradygmatu zrównoważonej gospodarki – poprawa efektywności rynku poprzez inteligentne regulacje

CORRESPONDENCE ADDRESS: Franjo Mlinarič, PhD, Associate Professor, Kozminski University, Jagiellońska 57, 03-301 Warsaw, Poland; Grygorii Kravchenko, Assistant Professor, Kozminski University, Jagiellońska 57, 03-301 Warsaw, Poland; Boštjan Brezovnik, PhD, Associate Professor, Dean of the European Law Faculty, New University, Delpinova 18B, 5000 Nova Gorica, Slovenia, and Faculty of Law and Administration, Maria Curie-Skłodowska University (Lublin), Maria Curie-Skłodowska Square 5, 20-031 Lublin, Poland.

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ABSTRACT

We examined the intricate dynamics of agency theory within the framework of sustainable economic transition, which is incredibly capital intensive. Recognizing the gravity of sustainable transition, we address the challenges posed by the Second Order Agency Problem (SOAP) and market failures related to public goods. The research explores the subtle shift towards dominant credence goods and services, emphasizing the need for standardized non-financial information fuelling market's efficiency. The primary aim is to bridge the gap between classical agency theory and modern sustainable economics applications. Our findings introduce an innovative Regulation Curve Model (RCM) presenting a fresh perspective on the cost-benefit dynamics of regulation. This study's scope is international, with a specific focus on case studies from Poland and Slovenia. Our results from the RCM concept and from the sustainable strategy scoring model offer significant cognitive value for both academic science and practical policymaking. The research holds potential for guiding future sustainable policies and offers insights for nations navigating the complexities of economic transition.

Keywords: agency theory; sustainable economic transition; regulation curve; market

INTRODUCTION

Public strategic investment projects belong to the most capital intensive and ambiguous decisions, simultaneously having a long-term impact on future economic welfare. Their investors/sponsors have to deal with uncertainty for a very long-time horizon, under conditions of volatile market forces and unpredictable technology changes. Moreover, monopolistic nature and public demand for its products/services can contribute to corruption risk and "too-big-to fail" phenomenon. Such circumstances substantially decrease the acceptable margin of error in an investment decision process, carrying high economic, environmental, social and political consequences.

Under these conditions, the limitations of capital markets for efficient allocation of very long-term capital (15+ years) become apparent (e.g. energy sector). They mainly originate from investor's limited risk-taking capacity, market's time horizon boundaries, high information costs and especially from market failure in pricing externalities. Without a stern public policy remedy, the well-known problem of underinvestment is decreasing economic wealth, by reducing competitive advantage of various sectors and by contributing to irreversible deterioration of environment.

Theoretical explanation for the underinvestment problem lies in the agency theory,[1] exploring the relationship between principals (e.g. shareholders) and agents (e.g. managers) who act on their behalf. This theory suggests that conflicts of interest arise when agents are not fully aligned with the goals and objectives of the principals they represent. Thus, a non-zero total amount of agency costs is decreas-

[1] M.C. Jensen, W.H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, "Journal of Financial Economics" 1976, vol. 3(4), pp. 305–360.

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ing firm's value due to monitoring and bonding expenditures as well as potential residual losses for principals.

The classical agency theory has been widely used to understand theoretical and practical issues in corporate governance, capital structure, organizational behaviour and public policy. At the same time, it has been widely criticized for the domination of the price theory and the self-interest of the human nature,[2] and even for being unrealistically one-sided due to neglecting externalities as exploitation of workers.[3] However, we shall follow a more realistic approach based on agency theory, complemented by sustainability paradigm perspectives, thus capturing the new economic complexity.

The urgency of this research subject is demonstrated by the latest World Energy Transitions Outlook.[4] It estimated that investments of around 5% of global GDP are needed every year just for energy transition until 2030, in order to stay on the path for +1.5°C target. Unprecedented size and speed of energy transition investments in conditions of traditional capital market inefficiencies, public opinion scepticism and myopic behaviour of many governments, create additional risks of procrastination and mis-allocation of capital, which can lead to a durable and substantial loss of social wealth for future generations.

In order to address these immediate challenges, we aim at tweaking the classical theory of the firm by using a broader definition of principals, called stakeholders. In consequence, sophisticated common goal(s), as well as control and communication mechanisms along Environmental, Social, and Governance (ESG) principles shall become more efficient and practical when minimizing the total (sustainable) agency costs for a company and the whole society.

The research problem of this study is captured in two fundamental questions: (1) How to apply an adjusted agency cost approach in evaluation process of strategic investment projects for risks and opportunities associated with ESG? (2) How to evaluate the efficiency of a national institutional framework for supporting positive economic outcomes for the society?

Based on the complexity of the research problem on one side and the challenges in quantifying key research model relations on the other, we employed the case study method at the initial stage of our research. It enables us to observe market-based changes in the economic feasibility of a specific investment within a given public

[2] P. Hirsch, S. Michaels, R. Friedman, *"Dirty Hands" versus "Clean Models": Is Sociology in Danger of Being Seduced by Economics?*, "Theory and Society" 1987, vol. 16(3), pp. 317–336; K.M. Eisenhardt, *Agency Theory: An Assessment and Review*, "The Academy of Management Review" 1989, vol. 14(1), pp. 57–74.

[3] C. Perrow, A.J. Reiss, H.L. Wilensky, *Complex Organizations: A Critical Essay*, New York 1986.

[4] International Renewable Energy Agency, *World Energy Transitions Outlook 2023: 1.5°C Pathway Preview*, June 2023, https://www.irena.org/Publications/2023/Jun/World-Energy-Transitions-Outlook-2023 (access: 24.5.2023).

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sector policy, regulations and a broad societal context. Regulatory frameworks in Poland and Slovenia were chosen as particularly interesting, but diverse approaches in the area of sustainable development.

We start with a neo-classical theoretical framework focused on market inefficiencies and later use a modified agency cost theory approach for identifying common societal goals and key stakeholders. In the following step, we built a new concept of a Second Order Agency Problem (SOAP), which needs to be tackled efficiently in order to achieve higher signalling power and thus better systemic impact. Finally, we propose a cost-effective approach for evaluating the efficiency of key national development strategies and legislative solutions by means of text analysis and a development strategy scoring system, based on ML algorithm.

NEOCLASSICAL THEORY AND AGENCY COSTS IN THE ERA OF SUSTAINABILITY

Economic theories are used to explain how economic agents make decisions and how those decisions impact the overall economy. They provide a framework for understanding complex economic phenomena and can be used to make predictions about how the economy will perform in the future.

Paradoxically, the heated debate around climate change risks in economic theory and business practice unveils once again many pitfalls of isolated and entrenched perspectives. Accordingly, the spiritual heirs of M. Friedman[5] suggest passive waiting for the "invisible hand" to price in the risks of climate change. Even non-financial reporting standards, which can help mitigating information asymmetry, are often dismissed as unnecessary red tape. In worst cases, the whole ESG concept is being disqualified simply by focusing on more controversial social perspectives.[6] On the other extreme, we can find green regulation zealots, who tend to forget the risks of regulatory capture.[7]

The idea that free markets can efficiently allocate resources and maximize social welfare is challenged by facts like information asymmetry, externalities and public good status, particularly in relation to environmental issues. R. Coase acknowledged the need for regulation to reduce transaction costs and boost trade.[8]

[5] M. Friedman, *Capitalism and Freedom*, Chicago 1962.

[6] B. Cornell, A. Damodaran, *Valuing ESG: Doing Good or Sounding Good?*, "The Journal of Impact and ESG Investing" 2020, vol. 1(1), pp. 76–93.

[7] G.J. Stigler, *The Theory of Economic Regulation*, "The Bell Journal of Economics and Management Sciences" 1971, vol. 2(1), pp. 3–21.

[8] R. Coase, *The Nature of the Firm: Origin*, "Journal of Law, Economics, & Organization" 1988, vol. 4(1), pp. 3–17.

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Leading economists, including A. Smith,[9] M. Friedman[10] and G.A. Akerlof,[11] agree that assuming perfect market efficiency is unrealistic, necessitating regulation.

Hence, it is critical to find common theoretical ground for both camps, before drowning in a sea of low-level details. We identified the agency cost theory as the most integrative approach for pragmatic understanding of sustainable business models as well as for the new paradigms of sustainable economic growth policies. Our approach aims at creating an enhanced tool for solving conflict of interest issues on macro and micro level. It includes internal stakeholders, directly involved in the firm's operations and management (e.g. shareholders, employees, managers), as well as external stakeholders, who are indirectly affected by the firm's operations and outcomes (e.g. customers, suppliers, creditors, regulators, communities, NGOs).

PUBLIC GOODS AND SECOND ORDER AGENCY COSTS

Traditional agency theory concept is focused on the manager, who is hired by owners to run their company, thus it is centred on first order agency problem[12] with its key elements: principal-agent relationship; conflict of interest; information asymmetry; sustainable agency costs; contract design. However, in the context of public goods, it gets even more complex, due to the SOAP between the citizens and the government. The climate risk issue has been known for over 50 years, when the carbon dioxide problem was directly linked to economic growth by W. Nordhaus,[13] but the market mechanisms obviously failed to take notice despite some efforts towards voluntary reduction initiatives. Accordingly, we suggest some tweaking along the main components of agency theory building blocks in order to internalise high impact, but neglected externalities.

Principal-agent relationship. In the context of ESG, there are two types of principals: the citizens (ultimate principal) and the government/owners (proxy principal), who need to signal their goals and control mechanisms to managers (main agents). The government is expected to act (i) responsibly in raising public awareness on complex development issues and (ii) efficiently in nudging and supervising agents. Due to the special role of the government, which should follow the long-term interest of the country, the benefits of meritocratic decisions and

[9] A. Smith, *The Wealth of Nations*, New York 2000.

[10] M. Friedman, *op. cit*.

[11] G.A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, "Quarterly Journal of Economics" 1970, vol. 84(3), pp. 488–500.

[12] M.C. Jensen, W.H. Meckling, *op. cit*.

[13] W. Nordhaus, *Economic Growth and Climate: The Carbon Dioxide Problem*, "The American Economic Review" 1977, vol. 67(1), pp. 341–346.

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fact-based information campaigns have the highest social welfare benefits in form of lower systemic risks for the economy and the society.

Conflict of interest in public investments has at least two layers: (i) public governance layer and (ii) classical issues with agent prioritizing short-term financial gains and own benefits over long-term sustainability goals. Well-governed societies will display an efficient system of finding and implementing a long-term policy, thus providing guidance for the whole economy and diminishing "public" agency problem. Further integration of ESG goals into company's strategy and performance metrics, as well as a company's governance is just a matter of time and skills. Having a stable political system and coherent sustainability policy of the government, the potential for agency conflict on both levels will be minimized and vice-versa.

Information asymmetry. Transparency is a key aspect for complex sustainable transitions of whole societies as well as business models. Thus, proxy principals should support access to international public policy initiatives and comparable reporting standards. Once the policy and rules are agreed, key agents have to provide accurate, comprehensive and timely information about the company's overall performance to the general public. Voluntary reporting was a first step, but didn't bring a huge systemic effect. Finally, the latest round of obligatory non-financial reporting standards consolidation (e.g. IFRS and ESRS) shall allow decision makers within regulators, capital markets and goods markets, to understand and manage a whole new set of risks. This is a market conform approach, which directly reduces information asymmetry, thus enhancing general market efficiency.

Sustainable agency costs. Total agency costs are being systematically reduced by establishing market-conform ESG policies and reporting standards to benchmark against. Next steps need to be delivered by national governments, drafting just sustainable transition strategies, budgets and legal frameworks at least until 2050. The rest stays in the hands of the competitive market forces according to the neo-classical theory principles. Associated monitoring and education costs should be treated as an investment, if it enhances the company's competitive advantage and reputation over the long term. It can include investments in employee training and development, implementing effective corporate governance practices, creating a positive corporate culture, and ensuring that the company operates in an environmentally and socially responsible manner. These types of investments can lead to benefits such as increased employee retention, improved decision-making, enhanced brand reputation and reduced legal and regulatory risk.

Contract design. An efficient solution of the agency problems finally depends on the understanding of the conflict of interest and the inherent information asymmetry. Fortunately, we have now a "global contract" on a key sustainability issue, enshrined in the Paris Agreement on climate change since 2015 (covering 196 countries and almost 100% of GHS emitters). This way the global climate crisis is officially recognized, key causes identified, goals set and national solution paths

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evaluated on the basis of Nationally Determined Contributions (NDCs). A strong fundament for building transparency and awareness was laid, so it is crucial now to set further ESG standards, educate participants and boost the quality of information systems for non-financial reporting, so markets can do their magic.

Naturally, signatory nations face various obstacles for their adaptation strategy, and here the biggest public agency problems arise. Having in mind a just and competitive transition approach, it is now vital to observe the trajectory of applying the agreed sustainability principles into national policies, development strategies and finally their impact on market conditions. Thus, a minimum compliance approach to sustainable transformation is risky, when the global competitive landscape is being fully transformed and new strategic positioning rules apply.

ESTIMATING NET WELFARE EFFECTS WITH REGULATION CURVE MODEL

Market imperfections as well as their regulatory remedies can cause substantial costs to the national economy. Therefore, both costs and benefits need to be carefully estimated from the net welfare perspective. For this purpose, we reapply our Regulation Curve Model (RCM)[14] to demonstrate the benefits and limits of regulation. It is based on the principles of the public interest theory of regulation, which aims at optimizing societal welfare, achieved through an exhaustive comprehension of market inefficiencies and the impacts of incremental remedial measures. The ensuing cost-benefit assessment is intended to function as an unbiased standard for the modification or introduction of regulatory requirements.

Health care services can serve here as the best example of limitations of a market based solution when sophisticated long-term goals try to be achieved. K.J. Arrow actually demonstrated that smart regulation is crucial for sustainable economic growth and societal welfare.[15] He emphasized the role of preventive systemic solutions, influencing stakeholder decisions and creating positive externalities.

Our RCM model builds upon the idea of P. Nelson and M.R. Darby and E. Karni who used the criteria of information availability of goods quality on the market.[16] They introduced three information level classes for search, experience and credence goods. Without quality assurance mechanisms (regulation), the more sophisticated

[14] F. Mlinarič, Ž. Oplotnik, B. Brezovnik, *Economic Limits of (De)Regulation in Legal Services Market*, "Inzinerine Ekonomika – Engineering Economics" 2018, vol. 29(3), pp. 291–301.

[15] K.J. Arrow, *Uncertainty and the Welfare Economics of Medical Care*, "The American Economic Review" 1963, vol. 53(5), pp. 941–973.

[16] P. Nelson, *Information and Consumer Behavior*, "Journal of Political Economy" 1970, vol. 78(2), pp. 311–32; M.R. Darby, E. Karni, *Free Competition and the Optimal Amount of Fraud*, "The Journal of Law and Economics" 1973, vol. 16(1), pp. 67–889.

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credence goods quality (e.g. health services, vaccinations, food or car safety, etc.) is impossible to observe efficiently. In worst case, market forces aid adverse selection, which leads to a downward spiral of average quality.[17]

Sustainable development paradigm ultimately enables a holistic approach, internalizing the Life Cycle Assessment (LCA) of goods along the whole value chain. The environmental and societal impact of a product or service is now a critical factor in evaluating its quality, influencing decisions related to consumption, investment and financing. In the world of sustainable decision making there is practically no more search and experience goods, but predominantly credence goods, demanding for international, obligatory and transparent quality assurance standards (e.g. EU Taxonomy,[18] ESRS[19]).

The net loss in social welfare contribution can be avoided only by a smart regulation remedy, which provides a standardized quality assurance information. However, regulation needs to follow a clear cost-benefit analysis, because it normally suffers from the risk of regulatory capture and the law of diminishing benefits. Similar to the food or pharmaceutical safety issues, it has a huge potential for a net welfare contribution, but at the same time disrupts various national interests and business models.

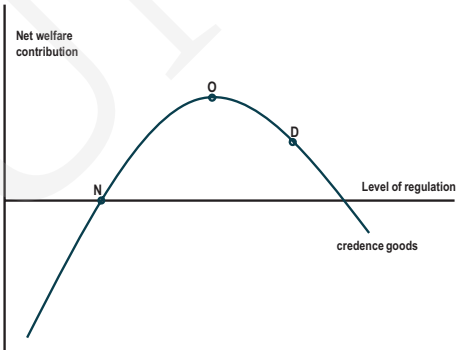


Figure 1. Regulation curve model for credence goods

Source: Authors' own elaboration.

Credence goods characteristics are difficult to assess due to high costs for an individual to obtain trustworthy data and knowledge of a product life-cycle impact on social welfare. In order to mitigate the inherent risk of a negative net contri-

[17] G.A. Akerlof, *op. cit*.

[18] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (OJ L 198/13, 22.6.2020).

[19] Commission delegated Regulation of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards C(2023) 5303 final.

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bution to social welfare, comprehensive regulation is essential for identifying and neutralizing adverse externalities (as indicated at regulation point N; see Figure 1). The point of optimal regulation (O) is much harder to establish, although it could be assessed with the help of diminished information asymmetry, which enables decisions with positive net welfare effect. Beyond the optimal regulation point (O), the curve illustrates the peril of excessive regulation, which can stifle sustainable economic activity (as shown at point D).

Until recently, the extent of regulation for specific goods was determined by their immediate or mid-term negative effects on people and the environment, including vital resources for survival. While much of this existing regulation will likely remain essential, the overall level of regulatory oversight across the economy must increase. This is due to the addition of a unified layer of regulation aimed at providing high-quality information to support sustainable development. Given that only certain industry sectors exert the most significant environmental impact, we can anticipate the highest net contributions to social welfare coming from the energy, transport, manufacturing and agriculture sectors.

The degree of regulation is determined by the comprehensiveness and specificity of the rules implemented, the depth and accessibility of data and the intricacy of particular value chains. However, given time constraints, a rapid and pragmatic approach should be employed to leverage the Pareto principle and move beyond the regulation point (N).

INSTITUTIONAL FRAMEWORK SUSTAINABILITY SCORING – THE CASE OF POLAND AND SLOVENIA

In the field of economic sciences, case study research has often been overshadowed by a prevailing focus on complex quantitative models. This emphasis has inadvertently contributed to a misleading perception of market efficiency and has even helped exacerbating the climate crisis. While both methodologies have their merits and limitations, the current phase of global sustainability transformation necessitates a more nuanced approach. The intricate nature of sustainability challenges, compounded by unique national characteristics, calls for in-depth examination. Such scrutiny demands a detailed exploration and a nuanced understanding that may be unattainable through the use of larger, but less granular, data sets. Most critically, case studies have the potential to generate novel insights or hypotheses that can be rigorously tested in subsequent research.

The SOAP stemming from the conflict of interest between the primary principal (citizens) long-term interest and the proxy principal (government) can be observed on an informal level (e.g. social capital/polarization, trust for government) and/or a formal level through the quality of policy documents, legislation and its ap-

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plication. It is not easy to assess these qualitative parameters, but there are a few rankings helping to obtain a first impression (e.g. Human Development Index, Rule of Law Index, Human Rights Index, etc.). Low values on these aggregated scores surely point towards accumulated socioeconomic and political tensions fuelling SOAP issues also in the area of sustainable development.

The "tone from the top" is important, because the complex and strategic sustainability issues in a society can be only solved by an internally informed consensus and external cooperation. For demonstration purposes, we use the national development strategies of Slovenia[20] and Poland.[21] The Slovene document declared a primary objective of a "high quality of life for all", and the Polish version is focused on "increasing incomes of the Polish citizens along with increasing cohesion". A simple preliminary analysis of both texts was focused on a simple keyword count, searching for these words: *sustainable*, *environment*, *social*, *climate*, *stakeholder*, *EU* (used as a benchmark), *EU funds*.

Table 1. Sustainable development keywords average usage per page

Keywords	Slovenia	Poland	Difference (%)
Sustainable	1.0556	0.7083	–32.9
Environment[*]	0.6250	0.5417	–13.3
Social	0.8194	2.2917	179.7
Climate	0.2917	0.1250	–57.1
Stakeholder	0.2083	0.0417	–80.0
EU (as a benchmark)	0.3056	0.2500	–18.2
EU funds	–	0.5417	n/a
Number of document pages	**72**	**24**	**–66.7**

[*] Only natural environment context of the word was counted.

Source: Authors' own elaboration.

This analytical approach is elementary, but it could help in identifying crucial differences between the two countries, without judging, which approach is superior. Starting with the assumption that even a big company strategic plan for the next decade or so should tackle many complex issues, it seems that 24 pages for the Polish document might be very modest. Especially after comparing with the Slovene document, which is three times larger despite covering a smaller economy with fewer transition challenges. The difference in frequency of using sample words

[20] Government of the Republic of Slovenia, *Slovenian Development Strategy 2030*, 7.12.2017, https://www.gov.si/assets/ministrstva/MKRR/Strategija-razvoja-Slovenije-2030/Slovenian-Development-Strategy-2030.pdf (access: 15.6.2023).

[21] Ministry of Development of the Republic of Poland, *Strategy for Responsible Development for the Period Up to 2020 (Including the Perspective Up to 2030)*, 2017, https://www.gov.pl/documents/33377/436740/SOR_2017_streszczenie_en.pdf (access: 15.5.2023).

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closely related to sustainability issues is surprising, especially in the case of words *climate* and *stakeholders*, which are at the centre of any internationally respected document. On the sidelines, it is worth to mention that the Slovene document implies a more governance-oriented approach, possibly focusing on policy frameworks rather than direct state interventions, whereas the Polish document seems to place a strong emphasis on the role of the "state", followed by "intervention". A special outlier in this context is the social perspective, which seems to be overemphasized in the Polish document.

Collected information demands a further analytical step for evaluating the whole strategic document by means of a methodology, benchmarking against the principles of management theory and best practice. For this purpose, we introduced a rating system encompassing 10 criteria: (i) Clarity of vision and mission, (ii) Specific objectives, (iii) Stakeholder involvement, (iv) Strategic analysis, (v) Action plan, (vi) Resource allocation, (vii) Monitoring and evaluation, (viii) Communication plan, (ix) Flexibility, (x) Overall coherence and presentation. We use a simple scoring from 1 (*worst*) to 5 (*best*). Naturally, this is a qualitative assessment based on the available information, and is subject to interpretation.

Table 2. National Strategic Development Plan scoring

Criteria	Slovenia	Poland
(i) Clarity of vision and mission	4	3
(ii) Specific objectives	3	2
(iii) Stakeholder involvement	4	2
(iv) Strategic analysis (SWOT or similar)	3	2
(v) Action plan	4	2
(vi) Resource allocation	3	1
(vii) Monitoring and evaluation	4	1
(viii) Communication plan	3	1
(ix) Flexibility	4	2
(x) Overall coherence and presentation	4	2
Average	**3.6/5**	**1.8/5**

Source: Authors' own elaboration.

The comparative analysis of national development strategies from Poland and Slovenia indicates a substantial gap between the scores of 1.8 and 3.6 out of a maximum 5. This disparity underscores the pivotal role that a well-crafted, high-rated strategic plan plays in efficient targeting of sustainable outcomes. Slovenia's clear vision and mission, robust stakeholder involvement and well-defined action plan serve as a focused and actionable roadmap, effectively communicated to all over the society and economy. These high-quality elements enhance governance by improving accountability, transparency and stakeholder engagement, thereby substantially increasing the likelihood of successfully achieving sustainability objectives. In contrast, the gaps in Poland's strategy around specificity, stakeholder engagement

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and action planning reveal missed opportunities for aligning development initiatives with sustainability goals. Whatever might be the reasons for a substantial diversion from the established norms in planning sustainable development, our low-cost analytical approach helps identifying SOAP risks already at the top of the governance value chain, which should alert the primary principal – the citizens.

We also have to point out that a top-rated national strategy is not a guarantee for efficient sustainable transformation, but it is the first milestone as evidence of national consensus and a key benchmark for markets, legislators and regulators. This way uncertainty is diminished for the markets, when countries succeed in decoupling strategic decisions from their 4-year politically induced cycle. The practical benefit of having a well prepared development strategy embedded in the crucial legislation and in the public debate can be observed by raised awareness and trust levels among all stakeholders, who start adapting their strategic plans and behaviours.

The Slovenian case can be used here to illustrate a possible way of influencing strategic investment already in the concept phase. A special Decree on the Uniform Methodology for the Preparation and Treatment of Investment Documentation in the Field of Public Finance[22] functions in the Slovene legal system as a support for any piece of legislation related to investing (e.g. the Investment Promotion Act,[23] Public-Private Partnership Act,[24] Certain Concession Contracts Act[25]). It is very technical in nature and it guarantees that any investment above EUR 300,000 in the domain of public finance (from local community to central government) respects investment documentation structure and key criteria related to financial, legal, regional, environmental, institutional and other factors.

We have also analysed the Polish Investment Support Act[26] and the Public-Private Partnership Act,[27] and found no indication of uniformly applicable rules for investment documentation nor clearly defined evaluation criteria (from financial to environmental).

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[22] Slovenian Decree on the uniform methodology for the preparation and treatment of investment documentation in the field of public finance, 2006. Text of the Decree is available at http://pisrs.si/Pis.web/pregledPredpisa?id=URED3708 (access: 10.5.2023).

[23] Slovenian Investment Promotion Act of 12 February 2018. Text of the Act is available at http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO7634 (access: 10.6.2023).

[24] Slovenian Public-Private Partnership Act of 23 November 2006. Text of the Act is available at http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO4323 (access: 10.7.2023).

[25] Slovenian Certain Concession Contracts Act of 13 January 2019. Text of the Act is available at http://www.pisrs.si/Pis.web/pregledPredpisa?sop=2019-01-0287 (access: 20.6.2023).

[26] Polish Investment Support Act of 10 May 2018 (Journal of Laws 2018, item 1162). Text of the Act is available in English at http://www.kssse.pl/upload/articles/prawo/ACT_of_support_of_new_investments.pdf (access: 24.6.2023).

[27] Polish Public-Private Partnership Act of 19 December 2008 (Journal of Laws 2009, no. 19, item 100). Text of the Act is available in English at https://www.ppp.gov.pl/file.php?i=przegladarka-plikow/Ustawa-o-PPP-EN-opublikowana-17-12-2018.pdf (access: 21.6.2023).

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In this case, we delved into the intricacies of institutional frameworks and their role in sustainable development, with a particular emphasis on Poland and Slovenia. Our findings underscore the paramount importance of thorough, high-quality strategic planning in driving sustainability outcomes. Moreover, the integration of these strategies into key legislative frameworks, as seen in Slovenia's case, paves the way for influencing strategic investments from their conception. As the world grapples with pressing sustainability challenges, nations must be vigilant in crafting and refining their institutional frameworks. A natural next step of our analysis shall be made towards a holistic assessment of effectiveness of key pieces of legislation in order to estimate the position of any country on the regulation curve. This is a complex research challenge, which demands a novel methodological approach and will be tackled in future research.

DISCUSSION AND CONCLUSIONS

The imperative for a sustainable economic transition is clear, yet before capital can be efficiently allocated, the inherent new set of risks should be thoroughly addressed. Our deep dive into the complexities of agency problems and the evolving paradigms of strategic investment highlights the necessity for an expanded and inclusive model. In essence, our research answers two pivotal questions. (1) We validate that an ESG-informed agency cost approach can refine the regulation curve's cost-benefit analysis in a market conform manner. (2) The efficacy of a nation's institutional framework can be gauged objectively *via* a sustainability scoring method grounded in machine learning.

This work offers an intersection between the classical agency theory and contemporary sustainable economic practice. It addresses gaps identified by predecessors like P. Hirsch, S. Michaels and R. Friedman and W. Nordhaus, thereby augmenting both academic discourse and practical application.[28] It stands as a testament to the vital role of transparency in ensuring market efficiency, while simultaneously navigating regulatory pitfalls.

Our proposition of the RCM presents an innovative perspective on regulatory cost-benefit dynamics. It should help highlighting the unnoticeable shift towards prevalent credence goods and services, whose quality requires advanced systems to recognize. The intricacies of the SOAP and challenges associated with public goods further highlight this point.

Future research should span diverse economic sectors and geographies to assess the sustainability scoring's temporal robustness and adaptability. An in-depth

[28] P. Hirsch, S. Michaels, R. Friedman, *op. cit.*; W. Nordhaus, *op. cit*.

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exploration of cost-benefit analyses on our proposed regulation curve, contrasted against various sustainability regulations, holds potential for actionable insights.

In summation, the path to sustainable transition, laden with the nuances of agency dilemmas, stakeholder interplay and investment strategies, is laden with challenges yet holds immense potential for social welfare. As we progress, harnessing the lessons, methodologies and strategies we have outlined becomes paramount in steering us toward a more sustainable future.

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ABSTRAKT

Zbadaliśmy skomplikowaną dynamikę teorii agencji w ramach zrównoważonej transformacji gospodarczej, która jest niezwykle kapitałochłonna. Uznając istotę zrównoważonej transformacji, zajmujemy się wyzwaniami związanymi z problemem agencji drugiego rzędu (SOAP) oraz niedoskonałościami rynku związanymi z dobrami publicznymi. W badaniach analizujemy subtelną zmianę w kierunku dominujących dóbr i usług bazujących na wiarygodności szeroko rozumianej jakości, podkreślając potrzebę standaryzowanych informacji niefinansowych napędzających efektywność rynku. Głównym celem jest wypełnienie luki między klasyczną teorią agencji a nowoczesnymi zastosowaniami zrównoważonej ekonomii. Nasze ustalenia wprowadzają innowacyjny model krzywej regulacji (RCM), prezentujący świeże spojrzenie na dynamikę kosztów i korzyści regulacji. Zakres tego badania jest międzynarodowy, ze szczególnym uwzględnieniem studiów przypadków z Polski i Słowenii. Wyniki dotyczące koncepcji RCM i modelu scoringowego zrównoważonej strategii oferują znaczącą wartość poznawczą zarówno dla nauki akademickiej, jak i praktycznego kształtowania polityki. Badania te mają potencjał do kierowania przyszłymi zrównoważonymi politykami i oferują wgląd dla narodów poruszających się w złożoności transformacji gospodarczej.

Słowa kluczowe: teoria agencji; zrównoważona transformacja gospodarcza; krzywa regulacji; rynek