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# Enhancing Global SME Financing through Prosperity Data Networks: An Integration of Hayek's and Sen's Economic Insights in the Digital Age

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## Abstract

Small and Medium-sized Enterprises (SMEs) play a vital role in the global economy, yet they often face challenges due to limited access to financing. To address this issue, we propose the implementation of Prosperity Data Networks (PDNs), a cutting-edge tool that leverages Artificial Intelligence (AI). PDNs are AI-powered, community-controlled and governed digital data repositories, drawing on principles from influential economists Friedrich Hayek and Amartya Sen. By democratizing access to valuable data on SMEs, PDNs enable lenders, investors, and policymakers to make more informed decisions, promoting inclusive economic development and entrepreneurship. PDNs' community governed framework aligns with Hayek's emphasis on individual liberty and decentralized decision-making, empowering communities to have a say in their economic future. Utilizing advanced AI technologies, PDNs analyze vast amounts of data, leading to improved understanding and risk assessment for SME financing. Moreover, PDNs incorporate Sen's inclusive conception of economic development, which embraces a wide array of factors including healthcare, education, political freedom, and social opportunities. This comprehensive approach fosters a positive environment for SMEs, encouraging them to adopt sustainable practices and contribute to the overall well-being of the economy.

## 1. Introduction

The role of Small and Medium-sized Enterprises (SMEs) in the global economy is crucial.<sup>1</sup> Globally they offer 53% to 86% of the formal employment.<sup>2</sup> Despite their significance, these enterprises face substantial challenges, notably a lack of access to adequate financing. According to Hayek, the involvement of SMEs in economic activities plays a pivotal role in driving economic prosperity, as they possess the "knowledge of the particular circumstances of time and space".<sup>3</sup> This paper presents a unique catalyst for accelerating and expanding SME financing. It proposes the development of Prosperity Data Networks (PDNs), which are AI-powered, community-governed digital data repositories. Their purpose is to enhance global SME financing by leveraging decentralized digital information and hence ensure Friedrich Hayek's principles on classical liberalism, free markets, and decentralized decision-making. Amartya Sen advocated a broader definition of economic development which sought to include aspects such as healthcare, education, political freedom, and social opportunities.<sup>4</sup> The use of PDNs allows decentralized digital information to be directly

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<sup>1</sup> OECD (2017). Enhancing the contributions of SMEs in a global and digitalized economy. Meeting of the OECD Council at Ministerial Level. <https://www.oecd.org/industry/C-MIN-2017-8-EN.pdf>

<sup>2</sup> Kamal-Chaoui (2017). Unlock the potential of SMEs for the SDGs. <https://oecd-development-matters.org/2017/04/03/unlocking-the-potential-of-smes-for-the-sdgs/>

<sup>3</sup> Hayek (1945). The Use of Knowledge in Society. *American Economic Review*, 35(4), pp. 519–30.

<sup>4</sup> Sen (2000). *Development as freedom*. New Delhi: Oxford University Press.

considered when lending to SMEs.<sup>5</sup> This promotes human prosperity and increases the economic resilience of communities in our interconnected world.

These AI-powered networks would serve as repositories of valuable data. They also consider non-financial indicators in accordance with Sen, such as social and environmental impact. By leveraging AI technologies, PDNs can analyze vast amounts of data, identify patterns, and assess risk more accurately. Hence, they provide insights into the financial health, market potential, and performance of SMEs. This enhanced understanding of SMEs can help mitigate the financing barriers they face. Furthermore, the community-governed and controlled nature of PDNs ensures that decision-making power remains decentralized, aligning with Hayek's emphasis on individual liberty and spontaneous order.<sup>6</sup> Democratizing access to data, PDNs could enable lenders, investors, and policymakers to make more informed decisions regarding SME financing.<sup>7</sup>

## **2. Drawing Inspiration from Hayek and Sen's Theories, with a hat tip to Ronald Coase**

The concept of PDNs draws inspiration from the economic insights of Friedrich Hayek and Amartya Sen. Hayek's emphasis on decentralized information highlights its crucial role in effective economic decision-making. According to Hayek, the economic problem of society is not limited to resource allocation but primarily revolves around utilizing dispersed knowledge efficiently. Hayek's insights highlight an invaluable form of knowledge that eludes central capture—the "knowledge of the particular circumstances of time and place". This knowledge grants individuals a unique advantage over others, but its optimal utilization can only be achieved within competitive, transparent, and inclusive markets. Emphasizing this concept underscores the significance of decentralized decision-making and the potential benefits of fostering an environment where this valuable knowledge can thrive.

On the other hand, Sen's economic approach surpasses profit-maximization as the sole objective. His capabilities approach proposes that economic development should prioritize enhancing human capabilities.<sup>8</sup> These capabilities encompass the substantive freedoms that empower individuals to lead lives they consider personally meaningful and valuable.

The modern global economy is navigating a "Perfect Long Storm," characterized by challenges such as climate change, global pandemics, aging societies, technological disruptions, and persistent inequality.<sup>9</sup> We address these challenges by prioritizing Sen's factors of economic development, which—in addition to adding humanity and nuance to the task of financing SMEs—demand a radical shift away from the antiquated, obsolete, and ineffective approaches to SME financing that have been tried in the past. Amid the "Perfect Long Storm," the proposed PDNs can serve as a global network connecting SMEs to global finance using standardized loan templates. In this new digital era, data replaces traditional collateral as the essential tool for risk mitigation, emphasizing the importance of a community-governed data landscape.

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<sup>5</sup>Fung and Flynn (2021). Getting it Right from the Get-Go: Establishing a Global Public Utility for SME Financing and Investment. SME Financing Forum.

[https://docs.google.com/file/d/1btLboIFHMj87I7QHO\\_Bb8uQOaSVH\\_vCI/edit?filetype=msword](https://docs.google.com/file/d/1btLboIFHMj87I7QHO_Bb8uQOaSVH_vCI/edit?filetype=msword)

<sup>6</sup>Hayek (1960). *The Constitution of Liberty*. Chicago: University of Chicago Press

<sup>7</sup> Singh et al. (2022). Global Public-Private digital utilities for MSME recovery and transition. Think7 Policy Brief. <https://www.think7.org/publication/global-public-private-digital-utilities-for-msme-recovery-and-transition/>

<sup>8</sup> Sen (1993). Capability and Well-being. In Nussbaum and Sen (eds.), *The Quality of Life*. Oxford: Clarendon Press, pp. 30-53.

<sup>9</sup> T. Shanmugaratnam (2022). *Confronting a perfect long storm*. IMF Finance & Development.

<https://www.imf.org/en/Publications/fandd/issues/2022/06/confronting-a-perfect-long-storm-tharman-shanmugaratnam>

Further, Ronald Coase's insights into the role of transaction costs and the existence of firms have helped shape our understanding of how economic activities are coordinated and organized in the real world.<sup>10</sup> Coase's Theory of the Firm is especially relevant to revisit now that digital technology and AI offer us the capacity to track individual transactions between firms, customers and suppliers, as Amazon, Alibaba, Tencent, Intuit, PayPal and others are doing.<sup>11</sup> PDNs will bring communities to the table, endowing them with locally-based influence and power that will help to balance the rapidly expanding digital capabilities of central governments and major public and private institutions. Building on the ideas of Hayek, Sen, and Coase, PDNs recognize the significance of decentralized information and the importance of promoting human capabilities. Only with PDNs can we accumulate the dispersed information, develop the intuition, and derive the insights needed for encouraging responsible investment decisions that align with long-term goals and sustainability. PDNs seek to leverage distributed knowledge and empower individuals to actively participate in designing better structures that improve our decision-making processes. This approach aligns with the goal of creating inclusive and meaningful economic systems that promote the well-being and freedom of all individuals.

### **3. The Digital Age and the Power of Decentralized Information**

The advent of the digital age has provided new tools for managing and analyzing information, including unprecedented degrees of fine-grained access control, which were not conceivable with physical goods. For instance, the application of digital technologies allows for differential access based on specific conditions - access for one purpose but not another, access for one person but not another, access at one time but not at other times, and combinations of all of these and many more dimensions.

The digital revolution has brought about an exponential growth in data and considerable advancements in communication, transaction, and governance mechanisms, reinforcing Hayek's insight into the power of decentralized information. The capability to access, analyze, and make decisions based on a vast array of decentralized data has been immensely augmented using digital technologies and big data.

The digital age, however, also brings challenges such as cybersecurity threats and issues related to digital asset ownership, selection, quality, and updates as well as the need to manage the above-mentioned complicated access control mechanisms.<sup>12</sup> Nonetheless, these challenges do not diminish the importance of decentralized information and well-managed access control systems for effective investment decisions.

### **4. Prosperity Data Networks (PDNs) and AI**

To harness the power of locally validated information, this paper proposes the establishment of PDNs. PDNs would be community-governed digital data repositories that use AI and machine learning technologies to analyze local information accurately and efficiently. The use of AI in this context overcomes the limitations of the human brain in comprehending dispersed local information, enhancing the effectiveness of Hayek's decentralization principle.

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<sup>10</sup> Coase (1937). The Nature of the Firm. *Economica* 4(16), pp. 386 - 405

<sup>11</sup> In a future paper we will investigate how firms, especially the SMEs are evolving given these new capacities.

<sup>12</sup> For an insight into the data rights situation in the science sector, compare Fung et al. (2022). Digital Utilities for Scientific Research towards an equitable World. T7 Policy Brief. [https://www.think7.org/wp-content/uploads/2022/03/Cohesion\\_Digital-Utilities-for-Scientific-Research\\_ML-Fung\\_D-Kirrane\\_K-Zatloukal\\_P-Taylor\\_A-Seely\\_Ev-Loukipoudis\\_T-Singh\\_G-Detta.pdf](https://www.think7.org/wp-content/uploads/2022/03/Cohesion_Digital-Utilities-for-Scientific-Research_ML-Fung_D-Kirrane_K-Zatloukal_P-Taylor_A-Seely_Ev-Loukipoudis_T-Singh_G-Detta.pdf)

## **5. PDNs: A Solution for Global SME Financing**

In a world increasingly interconnected and digital, PDNs propose to serve as a decentralized and globally networked system that connects SMEs with global finance. Currently, micro enterprises and SMEs in developing nations only manage to obtain 42% of the total amount of investment funding that they could put to productive use.<sup>13</sup> PDNs use standardized loan templates, replacing traditional collateral with data as the primary tool for risk mitigation. By systematically capturing and analyzing locally validated data, PDNs can provide investors with valuable insights that guide investment decisions and identify opportunities for SME growth and green job creation.<sup>14</sup>

## **6. Role of AI in PDNs**

The role of AI in this proposed model is pivotal. AI's potential lies in its ability to synthesize Hayek's insights with its superior capabilities to overcome the limitations of human comprehension of scattered local information.

One of the most significant advantages AI brings to the table is its capacity to recognize new patterns that can often be missed due to human assumptions, biases, and blinders. This ability is key in effectively managing and interpreting vast amounts of decentralized data. However, it is crucial to ensure that data aggregation and usage within PDNs adhere to ethical, inclusive, and sustainable practices by leveraging the immutability and security of distributed ledgers.

## **7. The Need for a Digital Common Law**

In establishing PDNs, we can benefit from evolving towards Digital Common Law, drawing from how British Common Law organically emerged over 700 years.<sup>15</sup> The digital common law approach would allow for the development of culturally appropriate, local-context usage and management of data in individual communities, with governance practices that emerge across PDNs worldwide providing the basis for a Digital Common Law that could be accessed on a voluntary basis by local communities worldwide.

The growth of a Digital Common Law could start with a coalition of the willing that would then attract additional participants as it became clear that SME financing and economic development (in the full Sen sense) were expanding and improving much more rapidly within the coalition than without.

As such, the Digital Common Law would act as both a regulatory framework and an economic magnet. It would ensure that data is used ethically and sustainably, fostering trust among all parties involved, and promoting community data sovereignty. Simultaneously, it would serve as an economic incentive for others to join, as they will see the prosperity achieved by the initial coalition. Over time, everybody who aspires to attain the same level of prosperity will seek to join the Digital Common Law as an economic necessity, reinforcing its universal acceptance.

## **8. Ethical, Inclusive, and Sustainable Data Management**

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<sup>13</sup> International Finance Corporation (2017). MSME Finance Gap: Assessment of the Shortfalls and Opportunities in Financing Micro, Small, and Medium Enterprises in Emerging Markets. <https://openknowledge.worldbank.org/handle/10986/28881>

<sup>14</sup> Sobir (2020). Micro-, Small and Medium -sized Enterprises (MSMEs) and their role in achieving the Sustainable Developments Goals (SDGs). [https://sdgs.un.org/sites/default/files/2020-07/MSMEs\\_and\\_SDGs.pdf](https://sdgs.un.org/sites/default/files/2020-07/MSMEs_and_SDGs.pdf)

<sup>15</sup> Skyrme (1991). History of the Justice of Peace. Barry Rose Law Publishers.

While harnessing the potential of AI and data, it is crucial for PDNs to respect the principles of ethical, inclusive, and sustainable data management.<sup>16</sup> This includes being cognizant of the inherent risks associated with AI and data usage. For example, the training data used by AI systems can unintentionally introduce biases, while decisions made by non-diverse, non-inclusive influencers, managers, and policy makers can potentially—either tacitly or unconsciously—violate future ethical norms.

PDNs consist of several nodes. Each PDN node should be governed by a local community, ensuring data sovereignty and ethical use. Establishing a Digital Common Law provides a regulatory framework for data management across the PDNs, fosters transparency and trust, and helps anticipate and address potential ethical pitfalls.<sup>17</sup>

Moreover, as we identify new forms of harm, ethics will need to evolve, necessitating the development and implementation of preventive measures. This will invariably challenge those who may wish to exploit the system, prompting them to invent new ways of circumvention. This ongoing dynamic will require our ethical frameworks and our understanding of Digital Common Law to be not only resilient but also inventive and adaptable to continuously protect the rights and interests of individuals and communities.

## **9. PDNs as Ethical Data-Management Assets**

PDNs can empower creatives by providing them with the ability to fund their future creativity. Digital asset registries integrated into PDNs can ensure clear provenance of how one person's micro creativity contributed to someone else's creativity, which was then designed into a final product. This ability to track provenance addresses a significant deficiency of the current legal system: the inability of those without the necessary funds to patent, copyright, or otherwise register the rights to their inventions or intellectual property.

By leveraging data as a collateral asset, adhering to ethical data management practices, and providing mechanisms to protect the rights of inventors and creatives, we can create a globally networked financial system. This system would foster SME growth and contribute to building resilient and flourishing societies while also promoting innovation and protecting the rights of individual creators.

## **10. Conclusion**

The Prosperity Data Networks proposal presented in this paper is more than just a technological solution. It is a philosophical shift in our approach to economic development. It combines the wisdom of two leading economists with the capabilities of modern technology. It acknowledges the centrality of data, not merely as a source of knowledge, but as a tool for enhancing economic decision-making. The proposed PDNs, governed by the principles of ethical, inclusive, and sustainable data management, offer a promising solution for harnessing the power of data to stimulate SME growth, foster human flourishing, and build resilient and prospering societies. The future holds much promise, but it also demands innovative solutions that are both pragmatic and respectful of the principles of participation, inclusivity, and sustainability. The PDNs offer a glimmer of hope, a possible way forward, as we navigate the complexities of the 21st century economy. Let us embrace

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<sup>16</sup> For a regulatory example from the health sector, compare WEF (2020). Chatbots RESET A Framework for Governing Responsible Use of Conversational AI in Healthcare.

[https://www3.weforum.org/docs/WEF\\_Governance\\_of\\_Chatbots\\_in\\_Healthcare\\_2020.pdf](https://www3.weforum.org/docs/WEF_Governance_of_Chatbots_in_Healthcare_2020.pdf)

<sup>17</sup> Fung et al. (2023). People-Centered Science and Digital Transformation: A Practical Proposal for the G7 and G20. T7 Policy Brief. <https://www.think7.org/publication/people-centered-science-and-digital-transformation-a-practical-proposal-for-the-g7-and-g20/>

the promise of Prosperity Data Networks, unlocking new horizons for SME financing, and fostering a world of shared, sustainable resilience and prosperity.

## 11. Future Research

Future research could focus on the practical aspects of implementing PDNs and their impact on SME financing. Additionally, studies can be conducted on the applicability of a Digital Common Law to regulate data usage and the mechanisms for ensuring community control over data repositories. Also, further research into how the integration of AI into PDNs can enhance the prediction of SME success and the provision of actionable insights for investors would be beneficial.

## 12. Acknowledgments

This paper does not exist in isolation. The concepts and ideas which are presented are built on the pioneering work of countless economists, computer scientists, data experts, and business strategists among others. It stands on the shoulders of giants, bringing together various disciplinary insights to tackle a pressing global issue – the challenge of SME financing.

By synthesizing the economic theories of Hayek and Sen, insights from the digital age, and the power of AI and data, this paper has proposed an innovative solution to the problem of SME financing. The potential of PDNs lies not only in its technological capabilities but also in its approach that recognizes the importance of local knowledge, decentralization, people centered data management and participation in general. The PDNs, if implemented effectively, could revolutionize the way we approach SME financing, fostering economic resilience and prosperity in the face of the "Perfect Long Storm."

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