

SNAP_2022_Full Paper_77

Inter-Relation between Digital Finance, Green Finance and Social Finance

Hidajat Sofyan Widjaja and Dwi Pramaya Bhakti
Both are Lecturer of Perbanas Jakarta

Abstract

Looking at the current development of digitalization, in general there are 3 slices that need to be studied, namely, Digital Finance, Green Finance and Social Finance. Identification and investigation of these three jargons is very important to promote financial, social and environmental development. This paper attempts to be a window into the relationship between digital finance, green finance, and social finance. Using a simple concept, a hypothesis will be made whether the relationship between these three terms can better affect the economic condition of the community. Conceptually it can be shown that digital finance offers a smooth, efficient channel for individuals and companies. At the same time, it can fund social projects. Digital finance can also be considered as an effort to fund green finance and social finance more massively. Overall, digital finance can help transform social finance and green finance into sustainable growth. Although green and social finance is not intended to boost economic growth during normal times, it helps smooth economic growth and leads to lower growth volatility. We also find that country's total carbon dioxide emissions decrease after the green bond inceptions. Overall, green and social finance has real beneficial effects during both the pandemic and normal times.

Keywords: green finance, social finance, digital finance, sustainable

1 Introduction

This paper analyses the link between digital finance, green finance, and social finance. Recently, some proponents of digital finance argue that the transfer of funds for all types of expenditure should be achieved using digital finance channels and products, while proponents of social finance want funds to be channeled to all activities or projects that deliver a social dividend to members of society.

Proponents of green finance are promoting green finance as a permanent solution for environmental sustainability. They have two major arguments. The first argument is that, if policymakers enforce policies that prevent financial institutions and investors from financing firms whose activities or projects harm the environment, then such firms will discontinue harmful activities and projects that harm the environment and pursue activities and projects that protect the environment for the greater good of society.

The second argument is one that does not require government policy intervention. Rather, it encourages investors to divest from firms whose activities harm the environment and channel their equity capital to firms whose activities or projects protect the environment in a sustainable way, which acts as a way for investors to show their support for green investing and environmentally sustainable.

Green finance is blossoming. Globally, the green bond market could be worth \$2.36 trillion by 2023. It is regarded as a way of meeting the needs of environmentalism and capitalism simultaneously – but what is green finance and how does it work? For the United Nations, green financing plays an important role in delivering several of its Sustainable Development Goals. Its Environment team is already working with public and private sector organizations in an attempt to align international financial systems to the sustainable development agenda.

Some of the activities UN Environment is involved in include helping countries re-engineer their regulatory frameworks – so that green borrowing becomes compliant, for example – and helping steer public sector planning in a more environmentally friendly direction.

Clean sources of energy can be brought to fruition through the right combination of planning consent, strategic priorities and availability of capital. Such projects could be given preferential treatment to make them a

more attractive option than, for example, fossil-fuel-derived energy infrastructure.

Green finance has been rapidly developing in recent years, especially after the 2015 Paris Agreement and the 2016 G20 Summit in Hangzhou. This study shows the beneficial effects of green and social finance during the COVID-19 pandemic and normal period. Firms are better able to raise capital and survive crisis when they establish green and social finance access. Green and social finance helps reduce economic volatility and carbon emission, as intended. (Economic Forum, 2019)

Various types of funds transfer are performed on a day-to-day basis through digital finance products and channels. But the extent to which green finance and social finance can benefit from the recent proliferation of digital finance have not been explored in the literature. Also, the extent to which digital finance can help to increase or reduce the volume of funding that goes to social projects and green projects – is another question yet to be explored. So far, the finance literature has not examined the link between digital finance, green finance and social finance. This paper attempts to fill these gaps in the literature.

Given the relatively large literature on digital finance and the relatively small literature on green finance and social finance, it is important to understand the

link between digital finance, social finance and green finance because it can offer some insights to synthesize the three literatures into one, and can help us determine whether there are synergistic benefits associated with promoting digital finance, social finance and green finance all at the same time.

2 Literature Review

This section reviews the literature on digital finance, social finance and green finance in relation to sustainable development. It begins with the definition of each concept, and then reviews the literature.

Digital finance is defined as ‘financial services delivered through mobile phones, personal computers, the internet or cards linked to a reliable digital payment system’ (Ozili, 2018, p: 330). The goal of digital finance is to contribute to efficient financial intermediation (Motsi-Omoijiade, 2018; Ozili, 2019), greater financial inclusion (Ozili, 2018; Arabehety et al, 2016), poverty reduction (Wang and He, 2020; Ozili, 2020a), financial stability and sustainable development (Nguyen, 2016; Afzal, 2017).

The benefits of digital finance are enormous. They include greater financial inclusion, expansion of formal financial services to non-financial sectors, the provision of affordable, convenient, and secure banking services to poor individuals in developing countries, increase in the

gross domestic product (GDP) and greater macroeconomic stability (see Ketterer, 2017; Ozili, 2018; Parada and Bull, 2018; Ozili, 2020b). Many studies document evidence that digital finance has positive benefits to poor communities and poor economies (e.g., Ozili, 2018; Ryu, 2018; Karlan et al, 2016; Zachariadis and Ozcan, 2017). Other studies focus on the critical success factors of digital finance. They show that financial literacy (Shen et al, 2018), digital literacy (Morgan et al, 2019), access to a mobile phone (Sapovadia, 2018), and access to the internet (Zhu et al, 2016) are major determinants of the use of digital finance products and channels.

Some challenges to digital finance have been identified in the literature. They include: its excessive focus on transaction accounts (Ozili, 2020a), weak and untimely regulation (Hu and Zheng, 2016; Ketterer, 2017), poor quality and non-affordable digital connectivity or broadband access (Ketterer, 2017; Ozili, 2018), increase in financial risk (Ozili, 2020a), and unexpected disruption in the payment system (Vives, 2019).

Social finance is the deliberate and intentional application of tools, instruments, and strategies to channel capital to activities that deliver a social dividend to society. Social finance can also be viewed as an approach to managing money that combines economic profits with a social dividend. Social financing is a concept used to describe lending to companies and investment into companies who consider themselves social enterprises,

charities, co-operatives and non-profit. Social finance is a term used to describe the phenomenon where corporate profits are used for lending or investment into companies who consider themselves social enterprises, and non-profit organisations.

Cornée et al (2018) show how the social contribution made by financial institutions depends on their funders' return requirements. They show that funders will sacrifice their financial return to achieve a much higher social return, and that social screening is necessary to attract social funders that will trade their financial benefits for greater social return or outcomes. Cooper et al (2016) state that investors with varying degree of interest in social return will adjust their portfolio in ways that maximizes both the financial and social return expectations of investors. In relation to poverty, Rexhepi (2016) argue that the best way to deal with poverty is through 'social finance' which is designed to help economies create situations where everybody will benefit financially. Rexhepi further suggest that social finance can help decrease unemployment levels, reduce income disparities in the long run, help to better manage poverty, encourage taking care of the environment, and redirect societal effort towards social innovation. Moore et al (2012) show that significant barriers and disincentives exist within the current mainstream economic system that limit the channeling of private capital into innovative social projects, products or processes while Myers and Conte (2013) state that a major challenge to social finance

is the need to balance social and financial goals and manage this tradeoff effectively.

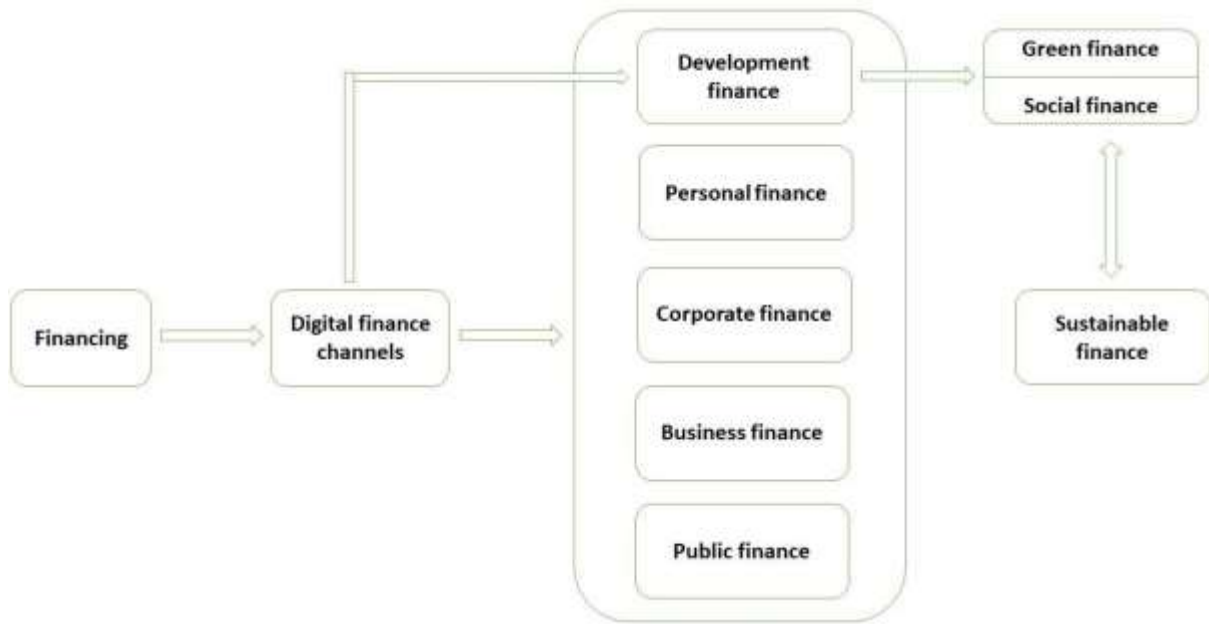
Green finance is an approach to managing money that combines economic profits with environmental protection. It emphasizes financing or investing in projects that yield economic benefits while promoting a sustainable environment. The motivation for green finance is either financial incentive, or a desire to preserve the planet, or a combination of both (Wang and Zhi, 2016). Green finance has attracted a lot of attention in the recent policy literature while gaining only limited attention in main stream finance journals (see, Zhang et al., 2019; Ehlers and Packer, 2017; Falcone and Sica, 2019).

Sachs et al (2019) emphasize the need for greater investment in green project financing, particularly those that provide environmental benefits for sustainable development, and this can be achieved using new financial instruments and new policies such as green bonds, green banks, carbon market instruments, fiscal policy, green central banking, financial technologies and community based green funds, which are collectively known as green finance. To encourage private investors to participate in green financing, Taghizadeh-Hesary and Yoshino (2019) suggest that green credit guarantee schemes (GCGSs) and some tax rebate should be granted to investors that participate in green investment.

A major challenge to green financing is its inability to attract private participation

from investors. Investors have little interest in green projects due to the low rate of return on green investments. Sachs et al

investments. They suggest that the Central Bank can enforce additional disclosure requirements, climate-related stress testing



(2019) argue that financial institutions show more interest in financing fossil fuel projects than green projects mainly because there are several risks associated with green projects and they offer a low rate of return. The difficulty to attract private investors to invest in green project has led to calls for the government, and its agencies, to get directly involved in promoting green finance such as the Central Bank and other public investment agencies. Volz (2017) suggests ways in which governments, through the Central Bank, can influence the investment and credit allocation decisions of financial institutions towards green

and differential capital requirements for climate change.

COVID-19 can be thought as shock to ESG, especially social and environmental issues. Hence, firms with better perceived social and environmental performance may be treated better by the market than other firms with worse past social and environmental performance. (Tang, 2020)

Figure 2.1 Basic Digital Finance

Figure 2.2 Digital Finance Think Ahead



Sources ; Ozili (2020)

Green bonds and green loans have become major financing instruments to combat environmental threats. Tang and Zhang (2020) show that green bonds are beneficial to the issuing firms in terms of broadening investor base. Flammer (2020) reports real environmental benefits associated with green bond issuance. Banks are also under pressure to change their traditional way of lending. Activists increasingly pressure major banks, including UBS, Credit Suisse, and Barclays, to curb lending to fossil fuel companies. Green and sustainability-linked loans have gained traction since 2019.

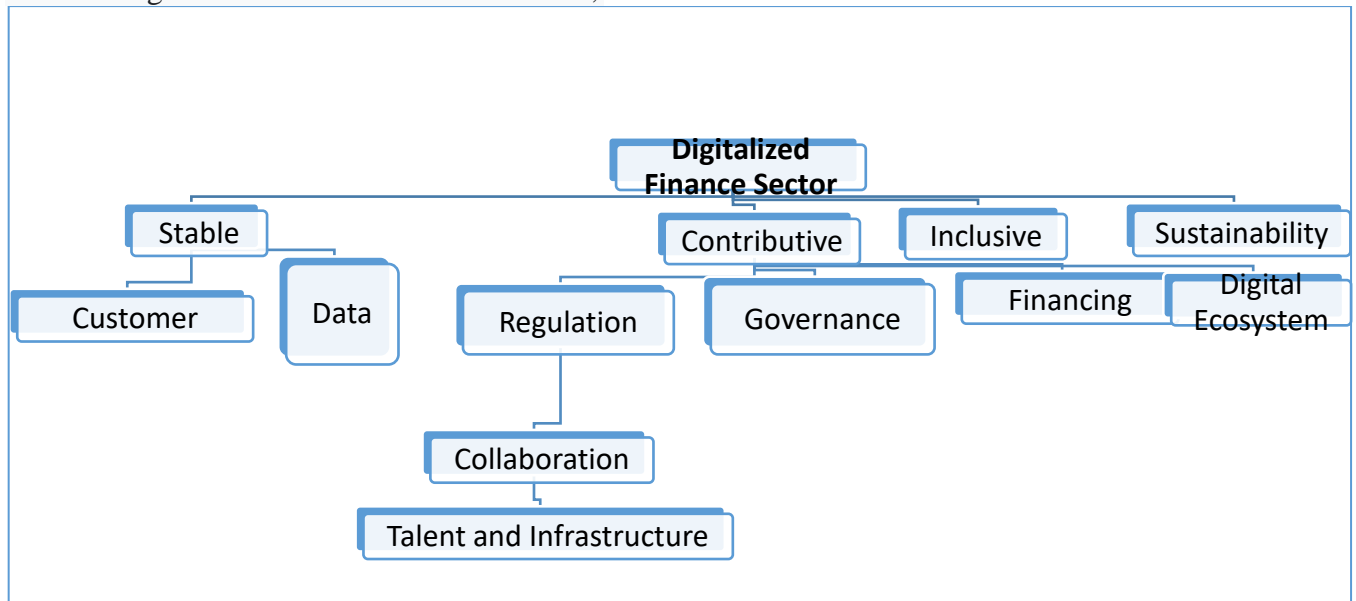
In Indonesia, green bonds will become an instrument used to overcome the threat of many companies experiencing climate and environmental damage that has hit Indonesia. Until today, forest destruction in Kalimantan has reached an alarming level. many ex coal companies have abandoned their land for granted and in large numbers. Sulawesi on the other hand, with the massive construction of nickel factories in Konawe and its surroundings as well as the Halmahera area,

will increasingly make the eastern region of Indonesia which was originally a buffer for nature conservation will become a threat in the future. This is why green bonds will become an important instrument in the future to overcome threats to environmental damage.

4 Data and Framework

Green bonds and green loans have become major financing instruments to combat environmental threats. Tang and Zhang (2020) show that green bonds are beneficial to the issuing firms in terms of broadening investor base. Flammer (2020) reports real environmental benefits associated with green bond issuance. Banks are also under pressure to change their traditional way of lending. Activists increasingly pressure major banks, including UBS, Credit Suisse, and Barclays, to curb lending to fossil fuel companies. Green and sustainability-linked loans have gained traction since 2019.

Figure 4. Roadmap Digital Finance, Social and Green Finance in Indonesia



Source OJK and Modified

OJK’s vision of a digital finance sector in Indonesia rests on four main factors: fintech that is stable, contributive, inclusive, and sustainable (Figure 1). Stable means the platform, technology, business process, and standard operating procedures used in the digital financial products are safe for consumers to use, and the regulations overseeing them ensure all risk management measures are in place and implemented. It also means that the technology and platform is reliable and resistant to hacking, security breaches, and systemic disruption during natural disasters or other operational risks. Contributive refers to the contribution that the digital financial service has on increasing access to financing for SMEs, as well as empowering consumers to improve their financial health by offering more suitable and beneficial financial products and services. The sector should also be competitive by offering services that are affordable and taking advantage of new technologies to reduce costs and expand outreach. Inclusive ensure the products and services developed by the industry reach out to as many underserved communities as possible. Sustainability focuses on ensuring that the technology and business processes are responsible, environmentally friendly, and support the achievement of the Sustainable Development Goals

OJK wishes to foster the development of a responsible digital finance sector that builds in consumer protection practices, including the responsible use of client data, while ensuring the highest data privacy standards, appropriate levels of good governance, and compliance with for anti-money-laundering (AML) and combatting the financing of

terrorism (CFT) requirements. OJK also sees the key role that collaboration plays not only with new fin-tech players, but also between traditional financial institutions and new fin-tech providers that focus on outreach to new sectors; expanding access to agricultural finance and value chain payments, as well as facilitating access to insurance, health, education, and other sectors. The building blocks for supporting the development of this sector are ensuring sufficient digital infrastructure, and ensuring there is an adequate pool of talent to build the sector.

Development of Digital Finance Innovation

The fintech industry in Indonesia sees its role as providing improved access to, and promoting greater and easier usage of, financial services that are convenient and affordable. OJK has taken an interactive and collaborative approach to provide a proportionate regulatory environment. To provide a balanced regulatory approach, OJK supports the application of new technologies that accelerate exponential growth in a responsible manner. To better enable the sector, OJK seeks to closely follow technology developments without creating barriers that may slow responsible innovation. It also seeks to ensure a competitive digital finance industry by enforcing rules that avoid any potential monopolistic practices. The combination of above-mentioned factors creates a balanced regulatory approach that supports responsible financial innovation that is safe and ensures adequate consumer protection. Under regulation, OJK No.13/POJK.02/2018, on digital finance innovation in the finance sector, OJK has set forth an appropriate fintech regulatory framework. In April 2020, OJK recorded 83 digital financial innovation providers. These providers are divided into 18 clusters and

business models: aggregator, claim service handling, credit scoring, property investment management, financial planners, financing agents, funding agents, online distress solution, online gold depository, project financing, social network and robo-advisor, blockchain-based, tax and accounting, electronic know your customer (e-KYC), customer due diligence verification, insurtech, regtech, and insurance broker marketplace, which will all follow the review process of the regulatory sandbox at OJK. Through the regulatory sandbox, considering the risks generated by certain use cases, or any other specific issues that need special attention, OJK may also formulate specific regulations on specific subject matter. As the purpose of this regulation is very specific, it should be more detailed and in-depth. To avoid regulatory overload, the issuance of such regulations should

5 Conclusion

This paper is based more on conceptual or looking for a roadmap for synergies between digital finance, green finance, and social finance. digital finance strongly encourages the development of social and green finance. In particular, green finance is a special problem for the Indonesian state considering the potential threat of environmental damage that occurs both in Kalimantan, Sulawesi and even the eastern region which was originally a buffer for a good environmental ecosystem for Indonesia and the world. For this, OJK must design a roadmap related to the development of digital finance with green and social finance. The theoretical implications of digital finance are felt at a

time when people's lives are socially highly dependent on IT and connected to one another. once again digital finance will increasingly become a booster for the development of social and green finance in the world and especially in Indonesia.

References

- Afzal, M. H. B. (2017). Sustainable development of rural communities in Bangladesh by integrating mobile internet and agent banking technology. In Leadership, Innovation and Entrepreneurship as Driving Forces of the Global Economy (pp. 361-370). Springer, Cham.
- Arabehty, P. G., Chen, G., Cook, W., & McKay, C. (2016). Digital Finance Interoperability & Financial Inclusion.
- Cooper, L., Evnine, J., Finkelman, J., Huntington, K., & Lynch, D. (2016). Social finance and the postmodern portfolio: Theory and practice. *The Journal of Wealth Management*, 18(4), 9-21.
- Cornée, S., Jegers, M., & Szafarz, A. (2018). A theory of social finance.
- Ehlers, T., & Packer, F. (2017). Green bond finance and certification. *BIS Quarterly Review* September.
- Falcone, P. M., & Sica, E. (2019). Assessing the opportunities and challenges of green finance in Italy: An analysis of the biomass

production sector. *Sustainability*, 11(2), 517.

Hu, B., & Zheng, L. (2016). Digital finance: Definition, models, risk, and regulation. In *Development of China's Financial Supervision and Regulation* (pp. 31-58). Palgrave Macmillan, New York.

Karlan, D., Kendall, J., Mann, R., Pande, R., Suri, T., & Zinman, J. (2016). Research and impacts of digital financial services (No. w22633). National Bureau of Economic Research.

Ketterer, J. A. (2017). Digital finance: New times, new challenges, new opportunities. IDB-Inter American Development Bank.

Moore, M. L., Westley, F. R., & Nicholls, A. (2012). The social finance and social innovation nexus.

Morgan, P. J., Huang, B., & Trinh, L. Q. (2019). The need to promote digital financial literacy for the digital age. IN THE DIGITAL AGE.

Motsi-Omojiade, I. D. (2018). Financial Intermediation in Cryptocurrency Markets—Regulation, Gaps and Bridges. In *Handbook of Blockchain, Digital Finance, and Inclusion*, Volume 1 (pp. 207-223). Academic Press.

Myers, K and Conte, N (2013). Can social finance improve the outcomes of employment and training programs? The Social Research and Demonstration Corporation (SRDC) Working Paper.

Nguyen, Q. K. (2016, November). Blockchain-a financial technology for future sustainable development. In 2016 3rd International conference on green technology and sustainable development (GTSD) (pp. 51-54). IEEE.

Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, 18(4), 329-340.

Ozili, P. K. (2020a). Contesting digital finance for the poor. *Digital Policy, Regulation and Governance*.

Ozili, P. K. (2019). Blockchain finance: Questions regulators ask. *Disruptive Innovation in Business and Finance in the Digital World* (International Finance Review, Vol. 20), Emerald Publishing Limited, 123-129.

Ozili, P. K. (2020b). Financial inclusion research around the world: A review. In *Forum for social economics* (pp. 1-23). Routledge.

Ozili P.K (2021)
Digital Finance, Green Finance and Social Finance: Is There a Link?, SSRN.com

Parada, M., & Bull, G. L. (2018). In the fast lane: Innovations in digital finance (No. 128219, pp. 1-24). The World Bank.

Rexhepi, G. (2016). the Architecture of Social finance. Othmar M. Lehner, Routledge *Handbook of Social and Sustainable Finance*. London: Routledge, 35-49.

Ryu, H. S. (2018, January). Understanding benefit and risk framework

of fintech adoption: Comparison of early adopters and late adopters. In Proceedings of the 51st Hawaii International Conference on System Sciences.

Sachs, J., Woo, W. T., Yoshino, N., & Taghizadeh-Hesary, F. (2019). Importance of green finance for achieving sustainable development goals and energy security. *Handbook of Green Finance: Energy Security and Sustainable Development*, 3-12.

Sapovadia, V. (2018). Financial Inclusion, Digital Currency, and Mobile Technology. In *Handbook of Blockchain, Digital Finance, and Inclusion*, Volume 2 (pp. 361-385). Academic Press.

Shen, Y., Hu, W., & Hueng, C. J. (2018). The effects of financial literacy, digital financial product usage and internet usage on financial inclusion in China. In *MATEC Web of Conferences* (Vol. 228, p. 05012). EDP Sciences.

Taghizadeh-Hesary, F., & Yoshino, N. (2019). The way to induce private participation in green finance and investment. *Finance Research Letters*, 31, 98-103.

Vives, X. (2019). Digital disruption in banking. *Annual Review of Financial Economics*, 11, 243-272.

Volz, U. (2017). On the role of central banks in enhancing green finance.

Wang, Y., & Zhi, Q. (2016). The role of

green finance in environmental protection: Two aspects of market mechanism and policies. *Energy Procedia*, 104, 311-316.

Wang, X., & He, G. (2020). Digital Financial Inclusion and Farmers' Vulnerability to Poverty: Evidence from Rural China. *Sustainability*, 12(4), 1668.

Zachariadis, M., & Ozcan, P. (2017). The API economy and digital transformation in financial services: the case of open banking.

Zhang, D., Zhang, Z., & Managi, S. (2019). A bibliometric analysis on green finance: Current status, development, and future directions. *Finance Research Letters*, 29, 425-430.

Zhu, X., Song, B., Ni, Y., Ren, Y., & Li, R. (2016). Digital finance—from traditional finance to digital and internet finance. In *Business Trends in the Digital Era* (pp. 161-190). Springer, Singapore.

Tang, Dragon Yongjun (2020) “The Effects of Green and Social Finance on Firms, Markets, and the Economy”