
Designing Regulation To Manage The Benefits And Downsides Of Financial Innovation

Joel Christoph

Tsinghua University
30 Shuangqing Rd, Haidian
District, Beijing, China
christophjn10@mails.tsinghua
.edu.cn

Abstract

Over the past century, financial innovations helped lower costs, diversify risk and improve allocative efficiency. A traditional *innovation-growth* view focuses on the beneficial aspects of financial innovation as instrumental to economic growth. An alternative *innovation-fragility* view highlights the downsides of financial innovation, such as the creation of unobserved and risky interlinkages, regulatory arbitrage and mis-

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

CHI 2020 Extended Abstracts, April 25–30, 2020, Honolulu, HI, USA.

© 2020 Copyright is held by the owner/author(s).

ACM ISBN 978-1-4503-6819-3/20/04.

DOI: <https://doi.org/10.1145/3334480.XXXXXXX>

*update the above block & DOI per your rightsreview confirmation (provided after acceptance)

selling of complex products. This paper argues that regulatory frameworks must continue to adapt in response to such innovations and policy must ultimately balance the growth benefits of financial innovations against increased risk and fragility. In doing so, I outline the benefits and downsides of financial innovations and the policy trade-off in optimizing these using a number of examples of product and structural innovations.

Author Keywords

Financial Innovation; FinTech; Money; Regulation; Technology.

Introduction

Over the past century, financial innovations helped to lower costs, diversify risk and improve allocative efficiency. A traditional *innovation-growth* view focuses on the beneficial aspects of financial innovation as instrumental to economic growth [1]. Empirical studies affirm this tendency of financial development to enable economic convergence [2], albeit with a threshold above which finance may start to have a negative impact on growth [3].

An alternative *innovation-fragility* view highlights the downsides of financial innovation, such as the creation

of unobserved and risky interlinkages, regulatory arbitrage and mis-selling of complex products. This view regards innovation as a source of financial system fragility and a cause of excessive credit expansion that contributed to the 2008 Great Financial Crisis [4] [5]. An example is the development of credit derivatives that were considered safe but bore neglected risks, such as credit default swaps (CDSs) and Mortgage-backed Securities (MBSs), which played a crucial role in US housing boom and "subprime" crisis [6] [7]. Such innovation helps banks to create products that exploit consumers' lack of knowledge of financial markets and increase exposure to systemic contagion risks [8].

How should regulators manage the benefits and downsides of financial innovations? This paper argues that regulatory frameworks must continue to adapt in response to such innovations and policy must ultimately balance the growth benefits of financial innovations against increased risk and fragility. I outline the benefits and downsides of financial innovations and the policy trade-off in optimizing these using a number of examples of product and structural innovations.

I. The Benefits of Financial Innovations

Financial innovation in processes, products and organisation can lower transaction costs and consumer prices, increase product choice and inter-bank competition, reduce information asymmetries, diversify risk, improve liquidity, capital allocative efficiency and credit access [5]. For instance, innovations such as credit scoring screens borrowers in advance, reducing the costs of credit provision. Similarly, internet banks reduce transaction costs, improve capital allocation and

grow the economy. Innovation can bring more efficient risk-sharing by decomposing, transferring and pooling risks to match differing risk appetites, thereby enabling greater economic welfare gains [9] [10]. Furthermore, disintermediation and securitisation provides a market mechanism to reduce banks' credit and interest rate exposures and exchange traded funds allow retail customers to diversify portfolios at low cost [11]. These examples demonstrate the broad variety of consumer, bank and wider societal benefits of ongoing financial innovation.

Innovation constitutes a strategy of non-price competition for financial intermediaries to attract and keep more consumers through product differentiation, cost reductions and offering bespoke services to suit differing risk appetites. Innovation has also created new and more efficient products such as automated teller machines (ATMs), tracker mortgages, debit cards, mortgage-backed securities and online banking. This improves the accessibility of consumers to financial services, risk management and product variety. For instance, ATMs introduced in the 1970s reduced the cost of operating a bank branch. This indirectly increased demand for tellers and for urban bank branches. As the number of ATMs in the US quadrupled from approximately 100,000 in 1995 to 400,000 in 2010, bank teller employment rose by approximately 50,000 and the number of urban bank branches rose by over 40 percent [12]. Together with a wave of bank deregulation allowing more branches to be opened, information technology freed bank clerks to focus on relationships with customers and to offer additional bank services including credit cards, loans and investment products [13]. This concrete example

illustrates the welfare gains enabled by a financial innovation that is in widespread use today.

II. The Downsides of Financial Innovations

Nevertheless, financial innovation can also lead to credit overexpansion, increased volatility and crash risk. It can also facilitate regulatory arbitrage and mis-selling and worsen the opacity of banks' financial statements. For instance, lower costs may be achieved through worse service quality and increased competition may encourage banks to mis-sell complex products to consumers who are unaware of the contagious risks in their purchases. Moreover, the development of products associated with higher levels of risk-taking and increased contagion between financial institutions engenders systemic risks. This can pose a threat across jurisdictions, complicating the effectiveness of national governments and regulators in responding to international financial crises.

Despite its benign effects, better borrower processing efficiency through credit scoring also fosters credit over-expansion and this leads to boom-bust cycle. In addition, other innovations such as high-frequency trading raises volatility and crash risk [14].

Innovations can also facilitate regulatory arbitrage, for instance by developing products that are not included in Basel III regulation lists or risk categories [15]. Although this circumvention of capital requirements is undesirable, a tightening of risk-weighted capital requirements is likely to encourage such innovations further. Thus, regulators face a dilemma between inaction despite current systemic risks and spurring

increased regulatory arbitrage through tougher regulation.

III. Regulation and Financial Innovation

To maximize the net benefits of financial innovations, regulators should force risk takers to internalize failure costs, focus policy on activities that raise competition, efficiency and stability, service the real economy and yield low-cost high-quality products for end-users. For instance, ring-fencing of deposit-taking banks restricts such institutions from using financial innovations to engender excessive risk and regulatory arbitrage. Further, higher capital charges could apply to new products that are pose excessive risk. Ultimately, regulation should promote banking competition to provide higher-quality innovations at lower prices as too-big-to-fail and large bureaucracies favour establishments and inhibit innovation [16] [17].

Banks' motivations for innovating reveal the relevant incentives that regulators must take into account. Innovation is undertaken when the expected discounted profit of an innovation, whether through cost savings or revenue increases, exceeds the upfront costs. This expectation depends on access to information on consumers and competitors that allows banks to identify probabilities of success and to estimate profit. Price competition also fosters innovation as it erodes margins and fosters innovation to remain competitive. Furthermore, innovation complements other competitive strategies by differentiating product selection, developing new risk management tools, altering corporate structures and influencing consumer choice. Regulators must therefore consider the impacts of regulatory measures on information asymmetries,

expected profit and price competition as indirect channels by which the quantity and quality of financial innovation will be affected.

Moreover, universal banking is an example of a structural innovation that is of regulatory concern. In recent decades, vertical bank integration has increased product innovation, lowered transaction and operations costs, improved risk pooling on larger equity buffers and raised capital flows across borders. Where there is sufficient competition between universal banks, this helps with financial stability, competition and economic growth objectives. Nevertheless, integration has enlarged banks, thereby amplifying moral hazard and risk amid less internal oversight. Such actors are more difficult to regulate, and retail consumers and taxpayers ultimately bear the cost of risk-taking in wholesale markets. Further, risks of anti-competitive behaviour are heightened, and reputation issues affect entire bank structures. Universal banks demonstrate the complex and non-product innovations that regulators must confront in balancing the benefits of innovations against the downsides. Economists such as John Kay (2009) argue for the separation of retail and wholesale banking to lessen the chance of financial crises, to lower the cost where one occurs and to reinstate public trust in the banking system [11]. Conversely, such “narrow banking” may reduce profit incentives for financial intermediaries and thereby limit credit provision to the non-financial sector. Regulators must therefore consider whether the disadvantages are sufficient to rule out the potential advantages of such structural reforms.

IV. Conclusion

Financial innovation can engender competitive benefits such as lower costs and prices and increased product choice. However, innovation can also enable undesirable outcomes such as increased risk-taking, complexity and systemic contagion risk. The contrasting *innovation-growth* and *innovation-fragility* views of financial innovation reflect this duality. Whereas the former emphasizes the developmental role of innovation for economic growth, the latter stresses the role of financial innovations in heightening contagion risk and amplifying financial crises. Designers of regulation thus face a trade-off: they must allow beneficial financial innovations while intervening to prevent overextension, excessive risk-taking and other malign effects. Too little regulation amplifies the worst tendencies of excessive risk-taking, while excessive regulation may stifle innovation and credit extension altogether. As financial innovations cause financial systems to evolve unpredictably, regulatory reform remains a moving target dependent on the technological and financial developments of the time. Going forward, macro-prudential regulators must make case-by-case decisions and international coordination will be necessary to limit regulatory arbitrage and to improve the effectiveness of national actors in response to a financial sector that is increasingly international in nature.

References

- [1] F. Allen and D. Gale, *Financial Innovation and Risk Sharing*, Cambridge, MA: MIT Press, 1994.

- [2] P. Aghion, P. Howitt and D. Mayer-Foulkes, "The Effect of Financial Development on Convergence: Theory and Evidence," *Quarterly Journal of Economics*, no. 120, pp. 173-222, 2005.
- [3] J. L. Arcand, E. Berkes and U. Panizza, "Too Much Finance?," *Journal of Economic Growth*, vol. 20, no. 2, pp. 105-148, 2015.
- [4] M. K. Brunnermeier, "Deciphering the liquidity and credit crunch 2007-2008," *Journal of Economic Perspectives*, no. 23, pp. 77-100, 2009.
- [5] T. Beck, T. Chen, C. Lin and F. Song, "Financial innovation: The bright and the dark sides," *Journal of Banking & Finance*, vol. 72, no. C, pp. 28-51, 2016.
- [6] M. Buffet, "How do CDOs and CDSs influence the crisis of 2008," *Lingnan Journal of Banking, Finance and Economics*, vol. 6, pp. 16-20, 2016.
- [7] J. Crotty, "Structural causes of the global financial crisis: a critical assessment of the 'new financial architecture'," *Cambridge Journal of Economics*, vol. 33, pp. 563-580, 2009.
- [8] B. J. Henderson and N. D. Pearson, "The dark side of financial innovation: A case study of the pricing of a retail financial product," *Journal of Financial Economics*, vol. 100, no. 2, pp. 227-247, 2011.
- [9] F. Allen and D. M. Gale, "Competition and Financial Stability," *Journal of Money, Credit, and Banking*, vol. 36, no. 3, pp. 453-480, 2004.
- [10] N. Jenkinson, A. Penalver and N. Vause, "Financial Innovation: What Have We Learnt?," *Bank of England Quarterly Bulletin*, vol. Q3, pp. 330-338, 2008.
- [11] J. Kay, "Narrow Banking: The Reform of Banking Regulation," Centre for the Study of Financial Innovation, London, 2009.
- [12] J. Bessen, "Toil and Technology.," *Finance and Development*, vol. 52, no. 1, 2015.
- [13] D. H. Autor, "Why Are There Still So Many Jobs? The History and Future of Workplace Automation," *Journal of Economic Perspectives*, vol. 29, no. 3, pp. 3-30, 2015.
- [14] T. Beck, "Finance and Growth: Too Much of a Good Thing?," *Revue d'économie du développement*, vol. 22, no. HS02, pp. 67-72, 2014.
- [15] S. Cecchetti and K. Schoenholtz, *Money, Banking and Financial Markets*, 4th ed., New York: McGraw-Hill Education, 2014.
- [16] HM Treasury, "The Government response to the Independent Commission on Banking," HM Treasury, London, 2011.
- [17] Independent Commission on Banking, "Final Report: Recommendations," Independent

Commission on Banking, London, 2011.

- [18] N. Gennaioli, A. Shleifer and R. Vishny, "Neglected risks, financial innovation, and financial fragility," *Journal of Financial Economics*, vol. 104, no. 3, pp. 452-468, 2012.
- [19] R. G. King and R. Levine, "Finance and Growth: Schumpeter Might be Right," *The Quarterly Journal of Economics*, vol. 108, no. 3, pp. 717-737, 1993.
- [20] J. Blach, "Financial Innovations and their role in the Modern Financial System - Identification and Systematization of the Problem," *e-Finanse Quarterly*, vol. 7, no. 3, pp. 13-26, 2011.