Chapter 12
Nonlinear Effect of Financial Efficiency and Financial Competition on Heterogeneous Firm R&D:
A Study on the Perspective of Sustainable Finance

Min Xiao Du
Yingkou Institute of Technology, China

Yang Gao
Dalian University of Technology, China

Yu Wang
Dalian University of Technology, China

Bei Bei Chen
Dalian University of Technology, China

Sang-Bing Tsai
https://orcid.org/0000-0001-6988-5829
University of Electronic Science and Technology of China Zhongshan Institute, China & Civil Aviation University of China, China & WUYI University, China

ABSTRACT

Green finance focuses on the coherence and sustainability of finance. This chapter studies the influence of financial scale, financial efficiency, and financial competition on enterprise R&D investment, which includes the different side effects of financial quantity and quality, and to some extent reflects the coherence and sustainability of financial development. The authors use manufacturing company data, regional financial quantity, and quality indicators from 2005 to 2007. The results reveal that

DOI: 10.4018/978-1-5225-7808-6.ch012

(1) less developed area enterprises, or low- and medium-technology enterprises, a large amount of financial quantity expansion cannot support the R&D activities of high innovation efficiency, and (2) financial efficiency and financial competition have a nonlinear effect on firm R&D. Low financial efficiency leads to a lack of efficient firm R&D financial development. The results of the chapter reveal a crucial approach to improve the effect of financial inefficiency on firm R&D by changing from merely expanding financial quantity to improving quality instead.

INTRODUCTION

Enhancing the key role of the market mechanism in the allocation of resources, encouraging enterprise innovation and technological progress, and improving the investments of financial capital in the real economy are crucial to achieving sustained economic growth, industrial upgrading, and avoiding China's "middle income trap". Nevertheless, the financial sector has double characteristics. On one hand, as the core role of modern economic resource allocation, the efficient operation of the financial industry is conducive to the promotion of the development of the real economy. On the other hand, both the sharp expansion of financial scale and excessive speculation will lead to the departure of the initial objective of financial services in the real economy. Financial development theory does not clearly define how to invest limited capital into a firm's innovation and technological progress at the micro level. Since 2015, China's economic growth has entered the "New Normal," and from 2016 to 2020, potential gross domestic product (GDP) growth will increase from 5.7 to 6.7%. Besides, an apparent L-type downward trend indicates that profit driven industrial capital is pursuing short-term profits through the penetration of the financial sector, which leads to a shortage of core technologies in the entity sector, a decline in investment rate, and unsustainable economic growth. While China's financial development is undergoing a quantitative expansion, it is relatively inefficient. Thus, from this point of view, it is of great theoretical value to study the influence of financial development on enterprise innovation. Howbeit, current studies on the relationship between financial development and innovation investment, most of which concentrated on either financing constraints or the interests and challenges of financial structures, lacked integration of the quality level of the financial sector resulting from financial efficiency and financial competition. So it is hard to explicate the demand for the logical shift of financial development from scale expansion to efficiency improvement. Thus, in view of the vital factor of enterprise heterogeneity characteristics—i.e., total factor productivity—this chapter chooses the relationship among financial efficiency, financial competition, and micro-level firm R&D investments as its basic research object. This chapter