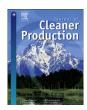
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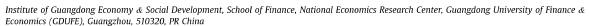
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Order financing for promoting green transition

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ABSTRACT

Green finance plays a key role to drive the green transition, which is popular in both developed and developing countries. Different from direct financial subsidies, order financing, an emerging type of green finance, mainly contributes to the improvement of supervision mechanisms and the effectiveness of incentive mechanisms. This study focuses on the effects of order financing by considering carbon taxes. Based on game theory model, three major findings from the theoretical analysis are obtained. First, whether the firm launches a green transition or not mainly depends on the efficiency of clean technology, carbon taxes, marginal costs of energy, and the elasticity of effective energy input. Second, order financing encourages more firms to engage in green transition than mortgage financing does. With order financing, more firms can invest in clean technologies. Third, price fluctuation risk restricts the supply of order financing and the application of clean technologies. Third, this paper shows that mature clean technologies are easily adopted by firms. And to avoid price risk, banks would reduce order financing. Therefore, the policy implication is to encourage green finance for green transition with mature technology and a stable price.

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1. Introduction

Fossil energy consumption yields a large amount of emissions, which has caused serious climate change and many natural hazards in recent years. Global climate change (GLC) has attracted world-wide attention, and both energy conservation and emission reduction are two crucial ways to manage GLC. In order to overcome the negative externality of fossil energy consumption, many policies are introduced in practice, including carbon trade, emission taxes, and emission restriction. Such policies result in energy conservation and emission reduction to deal with climate change.

Moreover, to implement energy conservation and emission reduction, firms require large-scale financial support. In recent years, many countries adopt policies to stimulate firms' finances to implement green transition. Green finance also plays a key role to drive the green transition, which is popular in both developed and developing countries (Li et al., 2014; Nie, 2012; Nie et al., 2016; Nie and Chen, 2016; Silajdžić et al., 2015). Generally, green financing products could be divided into commercial bank products,

investment bank products, information management products, and insurance products. The upsurge in green financing stimulates the development of the green economy significantly and evidence can be found in China. Compared with 2016, sales of new energy vehicles in China increased by 53.3%, where sales of pure electric vehicles increased by 82.1% in 2017. Some well-known domestic vehicle brands, such as the BYD E6, SAIC Roewe E50, and BYD Daimler electric vehicles, are all clean energy vehicles, and their production is supported by green finance (Guo, 2018).

As the green economy expands, more banks are adopting new patterns of green finance to fulfill the market demand, for example, the order financing of green finance was proposed by Industrial Bank Co. Ltd. Order financing is defined as capital financing based on quality orders received where in lenders rely on the future revenue of the orders as the source of repayment. Likewise, green order financing is order financing earmarked for enterprises that are engaged in the manufacturing of energy conservation and environmental protection equipment (China Newsweek, 2016). As a pioneer of green finance, Industrial Bank Co. Ltd is devoted to the green transition with order financing. As of June 2016, the total green financial investment conducted by Industrial Bank Co. Ltd was over RMB 900 billion, supporting over 6400 energy conservation projects and firms. The investment resulted in 73.83 million tons of emission reduction of carbon dioxide, which is equal to

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