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The Effect of Supply Chain Finance Initiatives on the Market Value of Service Providers

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Abstract

Supply chain finance (SCF) aims to optimally align financial resource flows with material and information flows within supply chains. Although an increasing number of studies have demonstrated the potential of SCF resulting in improving cash-flow management and obtaining loan opportunities for suppliers and buyers, little is known about whether SCF initiatives can result in positive market value for service providers. Accordingly, the purpose of this study is to examine the effect of SCF initiatives with the distinctive characteristics (that is, firm characteristic, collaborative mechanism, and service type) on service providers' market value. We adopted the event study methodology to analyse 177 SCF initiatives announced between 2008 and 2018 (Quarter 1) in the Chinese market. The event study results showed that the average abnormal returns over a three-day event window around the SCF announcements are 0.793%, representing an average increase of CNY 1.66 billion in market value for the service providers. Moreover, we found that such increase in market value is significantly higher when the SCF initiatives are announced by non-bank investors (e.g., fintechs), when the service providers collaborate to provide SCF services, and when the service providers upgrade existing SCF

services rather than introduce new SCF services. As the market value of an SCF announcement is evaluated with several essential characteristics examined to understand which types of service providers and initiatives are considered to be the most valuable service offerings, this study offers important insights to SCF practitioners and supply chain stakeholders.

Keywords: Supply chain finance, financial service providers, event study, stock market reaction, China

1 INTRODUCTION

Managers of world-leading firms view supply chain management as a significant driver of competitive differentiation and market value (Ketchen and Hult, 2007; Christopher, 2016; McKinsey, 2015). Novel innovations such as just-in-time systems (Kannan and Tan, 2005), cross-docking logistics (Lee et al., 2006), and RFID technologies (Delen et al., 2007; Michael and McCathie, 2015) have been studied to grow the strategic impact of supply chain management. However, the primary focus was traditionally confined to dealing with information flows (e.g., integrated information systems) and material flows (e.g., physical inventory) (Wuttke et al., 2013; Martin and Hofmann, 2017). Today, firms are tapping into the financial resource flows in supply chains in order to outcompete competitors (More and Basu, 2013; McKinsey, 2015; Gelsomino et al., 2016). Rather than emphasising the development of product and information processes, the study of supply chain finance (SCF) focuses on the integrated management of financial flows along supply chains to reduce costs and improve working capital for suppliers and buying firms (Wuttke et al., 2016).

Opportunities can be generated by managing the flows of financial resources in supply chains effectively and efficiently (Hofmann and Belin, 2011; McKinsey, 2015; Gelsomino et al., 2016). According to More and Basus (2013), SCF is composed of suppliers, buyers and financial service providers who might collaborate with financial institutions and high-tech firms to provide the capital requirements along the entire supply chain. Distinct from traditional bank loans, SCF has the advantages of not creating a liability, lower interest rates and more flexible payment terms (Demica, 2007; Wuttke et al., 2016). Past studies pointed out that SCF can create a win-win solution for both trading partners and the service providers (Hofmann, 2009; Steeman, 2014; Wuttke et al., 2016). In particular, the buyers can extend their payment terms and establish an increasingly reliable connection with their suppliers; the suppliers can access capital at a lower cost and have the option to sell their receivables to obtain immediate payments; and the service providers can deal with the buyers as a less risky prospect and improve their involvement in worldwide supply chains through providing SCF plans that fit the evolving needs of the buyers and suppliers (Hofmann and Belin, 2011; Cavenaghi, 2014).

Traditionally provided by commercial banks, the SCF marketplace has more recently been entered by

non-bank investors that can leverage cloud-based technologies and the Internet to serve customers with enhanced working capital finance, either before or after the invoice approval process (More and Basu, 2013; Wuttke et al., 2013; Martin and Hofmann, 2017), such as the rise of fintechs, which refer to high-tech financial firms that offer web-based platforms and online services to improve SCF operations (McKinsey, 2015; Abbasi et al., 2017). For instance, the world-famous Chinese e-commerce firms, such as Alibaba and JD.com, have started to offer SCF services for their supply chain members or online retailers who sell their products via these platforms. Also, Chinese fintechs Dianrong and FnConn have initiated the "first-ever" blockchain platform for SCF. It has secured $6.5 million in loans for SME supply chain operators and generated over $300 million in monthly assets for 3.7 million retail lenders (BankingTech, 2018).

However, research on SCF service providers is scare (Hofmann, 2009; Cho et al., 2012; Seifert and Seifert, 2011). Although prior studies have offered valuable insight into the practices and challenges of SCF (Hofmann, 2009; More and Basu, 2013; Gelsomino et al., 2016), they have not investigated its effect on the market value of service providers using stock market reactions, which could be regarded as an important financial effect indicator of a corporate event (Fama, 1970). In addition, a review of the literature in our article will also show that it is still not clear which service characteristics of the SCF can lead to better market value. The lack of empirical examination of the impact of SCF from the perspective of service providers motivated us to answer the following research questions:

RQ1: How do SCF initiatives impact on service providers' market value?
RQ2: What are the services characteristics that enhance the abnormal returns brought by the SCF initiatives?

To address the above research questions, this study aims to empirically verify the impact of SCF initiatives on the stock market reactions in the Chinese context. As a major, global manufacturing hub, China is a *"laboratory"* for supply chain researchers. However, because of the slowing economic growth, China is going through a re-adjustment. The change of the macro environment has encouraged Chinese companies to optimise their financial flows in the supply chain to increase efficiency so as to survive in this turbulent environment. As a tool for smoothing financial flow in the supply chain, the manufacturing companies, especially in China, have widely adopted SCF. The scale of financing by SCF in China is maintaining a stable growth rate of 4.5 per cent to 5 per cent and is expected to reach CNY 15 trillion (around £1.6 trillion) in 2020 (ChinaDaily, 2018; PwC, 2018). Although China has been widely regarded as an ideal setting to research SCF, to the best of our knowledge, this is the first study to investigate the effect of SCF through the initiatives of service providers in the Chinese stock market. Therefore, in order to close this gap, we empirically tested the hypotheses with a sample of 177 individual SCF initiatives announced between 2008 and 2018. As numerous services are offered in

supply chains that extend through emerging economies (Zhao et al., 2013; Timmer et al., 2014), this particular study has implications for China as an example of emerging economies.

Applying both an event study approach and an ordinary least squares (OLS) analysis, this article empirically examines two issues to address the research questions. The *first issue* concerns the direct impact of SCF initiatives. Even though studying the long-term effect of SCF initiatives on service providers' business performance is difficult (Zhao et al., 2013), the short-term impact on service providers' market value can be estimated by using the event study methodology (Lam et al., 2016; Wood et al., 2017; Ni et al., 2014). Viewing SCF initiatives from the event study perspective, an investigation of the market value effect of SCF initiatives offers a better understanding of the benefit of SCF to the service providers (Zhao et al., 2013; Pruitt and Peterson, 1986). Therefore, a rigorous study of the effect of SCF initiatives on service providers' market value appears particularly timely (Chen et al., 2018). The *second issue* we strived to research was associated with the antecedent factors of the abnormal returns brought by the SCF initiatives. Three potential factors were proposed in this study: firm characteristics (i.e. bank or non-bank organisation), the collaborative mechanism (i.e. whether more than one service provider provided the SCF service) and service type (newly developed service or an upgrade of an existing service). Our results enable managers to gain a better understanding of how stock market reactions of service providers could vary across different situations. In addition, the evidence can be applied as an additional justification for the government as well as business incentives facilitating the SCF phenomenon. The rest of this study is organised as follows. First of all, we reviewed relevant literature and proposed our hypotheses on how the SCF initiatives can potentially impact the stock market returns of service providers. Then, we described the methodology applied in this study. After that, we displayed the data analysis and results. Finally, we discussed the implications and limitations of our research and provided possible directions for future study.

2 LITERATURE AND HYPOTHESIS DEVELOPMENT

SCF has developed as an emerging topic at the intersection of supply chain management and financial management (Gomm, 2010; McKinsey, 2015; Fairchild, 2005; Martin and Hofmann, 2017). Lately, Wuttke et al. (2016) pointed out that the emphasis of firms on developing their supply chains is just partially successful because the financial flows are overlooked. What is more, there is only a partial consensus on a single widespread definition about the concept of SCF (More and Basu, 2013; Gelsomino et al., 2016). In other words, the review of literature identifies the presence of the finance-oriented as well as the supply chain-oriented perspectives. The former is associated with financial elements and considers the SCF strategy as a set of financial tools, frequently offered by financial institutions (Hertzel et al., 2008; Klapper et al., 2011). The latter relates to the business and financing process that connects the various supply chain participants in a transaction – the suppliers, buyers and

financial service providers – to optimise working capital and lower financing costs (Pfohl and Gomm, 2009; Wuttke et al., 2013). This particular perspective extends the boundaries of SCF beyond merely financial tools, taking account of supply chain approaches, inventories, as well as collaborative methods for fixed assets financing (Hofmann and Belin, 2011). As a result, a number of conceptual studies emphasise the advancement of a unique understanding for SCF from the supply chain management perspective (Martin and Hofmann, 2017; Hofmann and Belin, 2011; Pfohl and Gomm, 2009).

SCF concentrates on the integrated management of financial flows with information and material flows in supply chains (Bowersox et al., 2002; Hofmann and Belin, 2011). The basic idea of SCF aims at mutual value delivered to all the supply chain participants (Cavenaghi, 2014). According to Wesley et al. (2009), SCF extends classic firm-oriented practices dealing with cash-to-cash cycles, weighted average cost of capital (WACC), cash flow, and payables and receivables. Many studies have demonstrated that the use of these SCF techniques (e.g., cash-to-cash cycle, WACC, payables and receivables) can significantly reduce financial costs and increase profitability throughout the entire supply chain (Wesley et al., 2009; Theodore Farris and Hutchison, 2002; Hofmann and Kotzab, 2010). However, only a small amount of research has applied an analytical model or empirical data on SCF studies (Wu et al., 2013; Filbeck et al., 2016; Hofmann, 2009; More and Basu, 2013; Kouvelis and Zhao, 2011; 2017). For example, More and Basu (2013) developed a hierarchical model to analyse the complex relationship dynamics among different SCF challenges. Filbeck et al. (2016) explored the effect of supply chain finance and financial contagion from disruptions in the automotive sector. Kouvelis and Zhao (2017) proposed an analytical model and offered insights on who should finance supply chain inventories and at what rates when there is a differential credit rating between the supplier and retailer. Notably, studies highlight that financial service providers as an essential element for the successful implementation of SCF (McKinsey, 2015; Silvestro and Lustrato, 2014; Martin and Hofmann, 2017). Research focusing on financial service providers is limited in the SCF literature (Seifert and Seifert, 2011; Martin and Hofmann, 2017). Silvestro and Lustrato (2014) identified the role of financial service providers in terms of supply chain integration. However, they did not evaluate the effect of SCF initiatives, and the analysis was descriptive. Also, it only targets commercial banks as SCF service providers and pays no attention to substitute non-bank service providers. With rapidly evolving technology, more and more financial high-tech firms moved into the marketplace and acted as alternative SCF service providers (McKinsey, 2015; More and Basu, 2013). These new SCF service providers often bring together suppliers, buyers, and financial institutions such as banks, hedge funds, and investors (Gelsomino et al., 2016). Nevertheless, from a supply chain management viewpoint, most of the existing research has merely concentrated on the involvement of third-party logistics (Evangelista and Sweeney, 2006) and information technology services (Bowersox et al., 2002) in supply chains, while within the finance literature, financial service providers are mainly studied from a company focus but not a supply chain point of view (Hertzel et al., 2008; Klapper et al., 2011).

The review of literature reveals minimal contributions on the management of financial flows in supply chains. Prior studies on SCF mainly introduce the integrated management of supply chain flows through SCF applications and highlight the contribution of SCF service providers (More and Basu, 2013; Wuttke et al., 2013; Zhao et al., 2015; Gelsomino et al., 2016). However, the roles of the SCF service providers from a supply chain management perspective have seldom been studied. Accordingly, we investigate the roles and effective collaborative mechanisms among the different types of service providers being involved in SCF initiatives. The study was conducted underpinned by a risk perspective. Risk management is an important issue in supply chain management considering different industry trends currently in place such as globalisations of the market, increase in strategic outsourcing, reliance on networks for specialised capabilities and innovation, and development of new technologies that make it possible to coordinate and control extended supply chains (Narasimhan and Talluri, 2009; Sodhi et al., 2012). Therefore, the study enhances prior research and makes new contributions to the SCF literature.

2.1 SCF initiatives and its impact on market value

The supply chain management literature has long disregarded the financial flows of supply chains (More and Basu, 2013; McKinsey, 2015; Gelsomino et al., 2016). According to McKinsey (2015), there are substantial opportunities for the broader adoption of SCF, with an expected $2 trillion in readily financeable payables globally. Nonetheless, even though the adoption of SCF is anticipated to keep growing, just about a tenth of the marketplace is presently tapped (McKinsey, 2015). Typically, SCF services are automated through a web-based service platform offering all of the involved supply chain participants with real-time access to the valid financial transactions (Wuttke et al., 2013; Filbeck et al., 2016). The service providers of SCF are specialised in the balance of financial requirements and assets between buyers and suppliers within an economy based on the division of labour (Martin and Hofmann, 2017). In particular, SCF service providers offer the required services and credit to SMEs by collaborating with core firms within the supply chain. According to Pfohl and Gomm (2009), SCF service providers play an essential role in reducing capital cost and improving business efficiency by applying a better mutual adjustment or new financing approaches in the supply chain. In particular, risk management makes supply chains more time sensitive and complicated than ever before, and SCF can create value in supply chain management by strategically cooperating with key trading partners to reduce the supply and demand coordination uncertainty, such as uncertain capital requirements between buyers and suppliers (Sodhi et al., 2012; McKinsey, 2015). For instance, shareholders may be concerned about the risk of bad debt of service providers in each loan, while appropriate SCF initiatives can mitigate the uncertainties. Many studies suggest that SCF initiatives can provide a pathway that integrates buyers, their suppliers and SCF service providers to reduce the financing and operational risks, and improve the shareholder wealth, data visibility, availability and delivery of cash (HM

Government, 2015; Abbasi et al., 2017; Silvestro and Lustrato, 2014). In this study, we expect the financial service providers will significantly benefit from SCF initiatives in terms of positive stock market reactions.

Additionally, when SCF service providers announce an initiative, they indicate that their operations and businesses are running steadily (Fairchild, 2005; Demica, 2007; BankingTech, 2018). Consequently, the service providers convey the information to the public that they are able to collaborate and coordinate with participants of the supply chain effectively. Notably, the stock market would take such information as a positive signal when those service providers are listed firms (Fama, 1970; Klapper et al., 2011). On the one hand, when service providers announce SCF initiatives, the requirement for their SCF services is clear, that is, positive revenue and sales growth anticipations are expected (Xia et al., 2016). This information can improve the confidence of investors in the service providers' future businesses since positive revenue growth outweighs operational risks such as logistics risks and capacity disruption (Yang et al., 2014). As a result, the stock market response towards the service providers is favourable. On the other hand, when SCF initiatives are announced, it also suggests the service providers' confidence in their future businesses (Seifert and Seifert, 2011). It offers a method to solve not only the short-term liquidity-profitability dilemma but also the long-term financial risks in the supply chain represented (McKinsey, 2015). Therefore, we anticipate that SCF initiatives can increase the market value of the service providers through improving revenue growth and reducing financial costs. Our hypothesis is as follows:

Hypothesis 1. Firms announcing SCF initiatives experience an increase in their market value.

2.2 The effect of firm characteristics on market value

The landscape of accessible SCF service providers along with their services for managing an integrated supply chain flow is variable (Pfohl and Gomm, 2009; McKinsey, 2015; Martin and Hofmann, 2017). Traditionally, SCF is offered by banks who extended their services to provide the financing triggers depending on the occurrence of one or multiple supply chain events (Hertzel et al., 2008). However, the role and position of SCF service providers have changed rapidly. As banks often face tighter balance sheets, more stringent regulations, and a loss of investor confidence (Steeman, 2014; Wuttke et al., 2016), new competitors to the banks start to surface, such as logistics service providers, retailers and high-tech financial institutes (Gelsomino et al., 2016). These firms are changing how suppliers and buyers think about the financial market, disrupting current service providers and financial solutions, as well as beginning to control a significant proportion of market shares (McKinsey, 2015). For example, Fintechs now take an estimated 10-15% of the SCF marketplace through partnership with supply chain firms (McKinsey, 2015). Recently, the Financial Stability Board (2017) published a report which led to the creation of a new regulatory framework that is aimed at decreasing the risks associated with these non-bank service providers. Hence, both micro and macro-financial risks which are related to financial

dealings, the interaction between supply chain firms, investors and clients can be mitigated through better information sharing processes within these non-bank service providers. Thus, this study was keen on determining whether the market value could vary considerably depending on different characteristics of service providers announcing the SCF initiatives.

The rapid growth of SCF is driving innovation among more and more non-bank firms to become SCF service providers (Steeman, 2014; McKinsey, 2015; Martin and Hofmann, 2017). Unlike commercial banks, most of these new competitors are supply chain oriented firms and have stronger buyer-supplier interdependencies, flexible purchasing processes, technical product complexity, and use a large amount of data effectively to reduce asymmetries in information (Ambos and Schlegelmilch, 2007; HM Government, 2015; BankingTech, 2018). These companies are extending their existing roles in the supply chain and building new eco-system-based business models, which allow them to work with each other and make use of their financial resources to provide innovative SCF services (Steeman, 2014). Although an SCF initiative from commercial banks can be more reliable as most banks are the pillars of their national economies, they tend to be bureaucratic (Steeman, 2015). For the non-banks, they can reduce the risk of supply chain disruptions as well as SCF service development cost as they are already working in supply chains and have a better network and understanding of the needs of their supply chain members (Wallenburg and Lukassen, 2011; Stank et al., 2003). In addition, newly emerged SCF service providers obtain less press attention and are less monitored by analysts, and hence SCF initiatives announced by these firms will receive greater surprises on the stock market when compared to commercial banks (Brown et al., 1987). Therefore, we proposed the following:

Hypothesis 2. The stock market reaction is less positive for SCF initiatives announced by banks than by firms in other industries.

2.3 The effect of collaborative mechanisms on market value

The central role that is particularly prominent in supply chain management is collaboration (Steeman. 2014). As firms continuously seek to offer their services to consumers cheaper, faster, and better than their competitors, managers come to realise that they cannot achieve this alone (Demica, 2007; Manthou et al., 2004; Mitra and Singhal, 2008). In this study, we defined collaboration as more than one firm working together to provide the SCF service. Well-collaborated firms can create additional value by combining the strength of individual firms and gain the advantages of synergies that may exist, thereby making the whole more significant than the sum of its parts (Mitra and Singhal, 2008). According to Hofmann (2009), the vast majority of research highlights collaboration as a core characteristic of SCF. Some would say it is a collaboration between the service providers and the firms (Seifert and Sifert, 2011; Silvestro and Lustrato, 2014). Others would include logistics and information technology providers (Fairchild, 2005; Cavenaghi, 2014). We examine the effective collaborative mechanisms by hypothesising that SCF initiatives announced by non-collaborative service providers have a less positive

impact on market reaction compared to SCF initiatives announced by collaborative service providers.

According to Holtzman and Anderberg (2011), the need to diversify and achieve more with less should be a primary focus of forward-thinking firms. SCF service providers collaborating with external parties can be more accessible to diversify their services from others (Hofmann, 2009). Collaboration refers to the formation of long-term, close partnerships where all partners work together and share resources, information and risk to achieve mutual goals. Thus, collaborative relationships can deliver benefits to all partners, for instance, they can support partners in reducing their transaction costs, access complementary resources, share risks, improve productivity, and enhance profit performance and competitive advantage over time (Cao and Zhang, 2011). In other words, they can have more comprehensive services and be more diversified for complex needs while reducing risk and costs and increasing productivity and profit. Many studies show that collaboration continues to be proven as a vital source of economies of scope that enhance firms' business efficiency (Hendricks et al., 2009; Zsidisin et al., 2015; Wood et al., 2017). Economies of scope take place when it is less expensive to integrate multiple service lines in a single firm than creating them individually since the repeated utilisation of the same resources on different services decreases operational costs (Christopher, 2016; Wood et al., 2017). Therefore, collaborative service providers may gain improved cost efficiencies that enables them to solve problems by combining the different competencies of the partners and jointly exploiting a particular business opportunity. In addition, the recurrent and common application of proprietary knowledge throughout a firm's different service departments facilitates the organisational learning about service improvement (Cho et al., 2013; Duffield and Whitty, 2015). For example, firms announcing SCF initiatives may quickly learn from each other and enhance the services of their overall business operations. Also, compared to an individual service provider, high-quality SCF initiatives announced by collaborative service providers can help investors to gain more confidence and attract much public attention (Wuttke et al., 2013). Thus, the collaborative service providers tend to be more likely to receive positive feedback and attract more investors for their market value.

Hypothesis 3. The stock market reaction is less positive for SCF initiatives announced by an individual service provider than by collaboration.

2.4 The effect of SCF service types on market value

According to Prajogo and Sohal (2003), in order to remain competitive, firms not only need to innovate and launch new services but also phase out old services and provide improved substitutes for the existing services. For SCF service providers, the initiatives of new SCF services and improvement of existing SCF services are necessary conditions to achieve competitive advantage (Hofmann and Belin, 2011). In this study, we anticipate the market response to be less favourable for service providers that announce entirely new SCF initiatives than those announcing an upgrade or improvement of existing initiatives. Releasing SCF services comes with risks. Compared to the release of an entirely new SCF

service, releasing an update service is much easier for shareholders to see the new features and improvements, and if something goes wrong it is much simpler for service providers to make changes. This helps SCF service providers remove much of the potential for risks and uncertainties and tend to be more likely to receive positive feedback and improve the confidence of investors in the service providers' future businesses. Also, announcing SCF initiatives can indicate the following to investors. On the one hand, it can improve the likelihood of success of the SCF services in the market as the consumer receives positive and new information regarding the service which may significantly affect their choices (Conney and Kalay, 1993; Wu et al., 2005). On the other hand, SCF initiatives can imply positive information about the improved service capabilities of the service providers, which could favourably affect expectations about the attractiveness and quality of the service providers' current and future businesses performance (Xia et al., 2015). The stock market will consider each aspect and react to the future profitability of the SCF service providers.

It is believed that announcing an upgrade or improvement to existing SCF initiatives can offer more positive information regarding the improved service quality of the service provider than announcing an entirely new SCF initiative. Moreover, when an SCF initiative is announced, it often reflects information about the service providers' confidence in their services (Steeman, 2014; Hofmann, 2009). In this way, the market response to an initiative upgrade or improvement indicates the combined effect of information about improved service quality and the success of the previous SCF initiatives. An initiative upgrade can also indicate the improvements based on previous failures. According to Edmondson (2011), firms in the vast majority of industries can learn from failures to improve future performance. Thus, failure can play an important role in supporting how firms learn and grow, and the best firms are those that embrace out-of-the-box thinking, encourage failure, and encourage managers to make mistakes (Edmondson, 2011; Hora and Klassen, 2013). Announcing an entirely new SCF initiative may offer less information about the service quality as well as the performance of previous initiatives (Wu et al., 2005). Furthermore, due to the learning effect, the market will learn about an SCF service provider's service quality through repeated upgrades and improvements. As a result, an entirely new SCF initiative may bring less confidence to investors, leading to a less positive market response (Xia et al., 2015). Therefore, our hypothesis is:

Hypothesis 4. The effect of SCF initiatives on market reaction is less positive for the announcement of new initiatives than for the announcement of initiative upgrades.

3 METHODOLOGY

3.1 Data collection

Consistent with prior event studies in the Chinese context (e.g., Lam et al., 2016; Xu et al., 2012), we searched company websites, press releases, and news aggregators such as Sina, Sohu, and Toutiao to

identify SCF initiatives announced by Chinese firms. As SCF is a relatively new phenomenon, we limited our search to the past 10 years from 2008 to 2018 (Quarter 1). A focus on more recent years (i.e., 2008-2018) in the Chinese context can also made our research more likely to meet the Efficient Market Hypothesis (Fama, 1970), the fundamental assumption of conducting short-term event studies (Ding et al., 2018). In particular, as pointed out by Lo et al. (2018), the Chinese government implemented a non-tradable share (NTS) reform in 2005, improving the efficiency of the Chinese markets in more recent years. We read the text of each identified announcement and only retained those announcing firms' initiatives to provide SCF services to supply chain members such as suppliers and buyers. We thus excluded announcements related to, for example, the appointments of new executives and mergers and acquisitions of firms. Moreover, to make our analysis more consistent, our search was focused on firms listed on the Chinese stock exchanges including Shanghai, Shenzhen, and Hong Kong, and thus excluded SCF initiatives announced by private firms or firms listed on other stock exchanges such as NYSE and NASDAQ. Finally, we cross-checked the same SCF initiative reported on different websites and used the earliest reporting date as the event date. As a result, we obtained 222 SCF announcements from 2008 to 2018 (Quarter 1). Some examples of these SCF announcements are shown below.

- ICBC launched online supply chain finance services.
- CITIC Bank launched next-generation electronic supply chain finance services.
- Ping An Bank upgraded supply chain finance services.
- JD.com collaborated with Bank of China to launch supply chain finance services.
- NetSun announced new online supply chain finance with Shanghai Pudong Development Bank.

While we have collected 222 SCF initiatives for this research, the sample size for the event study as discussed below was reduced to 177 for the following two reasons. First, we excluded 32 SCF initiatives with confounding events such as mergers and acquisitions, major contract awards, and critical executive changes as these confounding events may affect firms' stock returns (McWilliams and Siegel, 1997). We further removed 13 SCF initiatives because the corresponding firms' stock return data were not available in the estimation period or the event window used in the event study, leading to a final sample size of 177. The detailed descriptions of our final sample are presented in Table 1. In particular, Panel A shows the distribution of the sample across years, indicating that there were less than 10 announcements in each of the first five years (2008-2012), but the number of announcements has increased significantly in the recent few years. Panel B shows the distribution of the sample across the three hypothesized variables including industry (banks or non-banks), collaborative mechanism (collaborating with other firms or working independently to provide SCF services), and service type (new service or upgrade of existing service). Particularly, we identified that most of the Chinese non-banks are fintechs, leading e-commerce and retail companies such as JD.com and Alibaba. By

establishing partnership and offering SCF to their supply chain members, these non-banks have embedded knowledge and experience of partners and improved their existing supply chain service performance and customer loyalty. Finally, Panel C shows the descriptive statistics of the sample firms in terms of sales, total assets, number of employees, operating income, age, long-term debt, and cash.

Table 1: Sample descriptions

Panel A: Distribution of the sample across years

Year	Frequency	Percent
2008	3	1.7
2009	3	1.7
2010	3	1.7
2011	7	4.0
2012	5	2.8
2013	21	11.9
2014	23	13.0
2015	23	13.0
2016	28	15.8
2017	34	19.2
2018 (Quarter 1)	27	15.3

Panel B: Distribution of the sample across the three hypothesized variables

Industry	Frequency	Percent
Banks	139	78.5
Non-banks	38	21.5

Collaborative Mechanism	Frequency	Percent
Collaborating with other firms to provide SCF services	78	44.1
Working independently to provide SCF services	99	55.9

Service Type	Frequency	Percent
New service	127	71.8
Upgrade of existing service	50	28.2

Panel C: Descriptive statistics of the sample firms

Variable	Unit	Mean	Standard Deviation	Minimum	Maximum
Sales	Billions (CNY)	215.92	243.23	0.16	1067.75
Total assets	Billions (CNY)	4513.98	5931.67	0.59	26087.04
Number of employees	Thousands	120.46	159.13	0.10	503.08
Operating income	Billions (CNY)	145.45	172.74	-0.95	747.33
Age	Years	12.22	7.58	2.00	30.00
Long-term debt	Billions (CNY)	154.40	211.40	0.00	1304.98
Cash	Billions (CNY)	165.53	174.75	0.09	775.01

For all the firms with SCF announcements, we obtained their daily stock return data from Compustat Global as our research relied on the event study methodology as discussed below to quantify the impact of SCF initiatives in terms of abnormal stock returns (MacKinlay, 1997; McWilliams and Siegel, 1997).

On the other hand, we used the S&P Greater China Index (excluding Taiwan market) as the daily market return and obtained the relevant data from S&P Dow Jones Indices' website (https://asia.spindices.com) directly.

We read each SCF announcement collected to identify firm characteristic (whether the SCF service is provided by a bank or not), collaborative mechanism (whether more than one firm work together to provide the SCF service), and service type (whether the SCF service is a new service or an upgrade of existing service). We also collected accounting and financial data from Compustat Global to consider more firm-specific measurements including firm size, firm profitability, firm age, financial leverage, and cash holdings. The data sources of all the variables used in our research are summarized in Table 2, and the detailed measurement procedures are discussed below.

Table 2: Variable descriptions

Variables	Definitions	Measurements	Data Sources	References
Supply Chain Finance (SCF) Initiative	A firm's initiative to provide SCF service to buyers and suppliers	Identify a firm's SCF initiative based on its announcement and code each initiative as an event	Company Websites, Press Releases, News Aggregators	Lam et al. (2016), Xu et al. (2012)
Abnormal Return	Difference between the actual return with the SCF initiative and the expected return without the SCF initiative	Abnormal Return = Actual Return - Expected Return	Compustat Global, S&P Dow Jones Indices	MacKinlay, (1997), McWilliams and Siegel (1997)
Cumulative Abnormal Return	Sum of abnormal returns over an event window	Cumulative Abnormal Return = $\sum$Abnormal Returns	Compustat Global, S&P Dow Jones Indices	MacKinlay, (1997), McWilliams and Siegel (1997)
Firm Characteristic	Whether the SCF service is provided by a bank or not	Code banks as 1 and 0 otherwise	Specific SCF Announcements	Haan and Kooreman (2002), Petroni and Beasley (1996)
Collaborative Mechanism	Whether more than one firm works together to provide the SCF service	Code collaborations as 1 and 0 otherwise	Specific SCF Announcements	Motohashi (2005), Shrader (2001)
Service Type	Whether the SCF service is a new service or an upgrade to an existing service	Code new services as 1 and 0 otherwise	Specific SCF Announcements	Abel-Koch (2013), Hoegl and Proserpio (2004)

Firm Size	Size of a firm prior to the SCF initiative	Natural logarithm of sales	Compustat Global	Lam (2018), Hendricks and Singhal (2014)
Firm Profitability	Profitability of a firm prior to the SCF initiative	Return on assets (ROA)	Compustat Global	Flammer (2013), Lam et al. (2016)
Firm Age	Age of a firm prior to the SCF initiative	Natural logarithm of the number of years since IPO	Compustat Global	Carter et al. (1998), Li et al. (2010)
Financial Leverage	Leverage of a firm prior to the SCF initiative	Total long-term debt divided by total assets	Compustat Global	Ba et al. (2013), Lam (2018)
Cash Holdings	Cash held by a firm prior to the SCF initiative	Cash and cash equivalent divided by total assets	Compustat Global	Han and Qiu (2007), Kumar and Ravi (2007)
Time Period	Whether the SCF initiative is announced in early years or recent years	Code early years (2008-2012) as 0 and recent years (from 2013 onwards) as 1.	Specific SCF Announcements	Flammer (2013), Lam et al. (2016)

3.2 Event study methodology

To test H1, we employ the well-established event study methodology (MacKinlay, 1997; McWilliams and Siegel, 1997) to quantify the impact of an SCF initiative in terms of abnormal stock return, which is the difference between the actual stock return with the occurrence of an event and the expected stock return had there been no such event. In our research context, it represents the difference between the actual stock return when a firm makes an SCF announcement and the expected stock return assuming that the firm did not make this SCF announcement. While the actual stock return can be calculated directly using a firm's actual stock prices, the expected stock return can be calculated by estimation only. Following prior event studies (e.g., Lam et al., 2016; Zhao et al., 2013), we employ the Market model to estimate a firm's expected stock return had there been no SCF announcement. Specifically, we first regress the stock return of firm i on day t, i.e., R_{it}, on the stock return of a market portfolio on day t, i.e., RM_t, over an estimation period, as shown in Equation (1).

$$R_{it} = \alpha_i + \beta_i RM_t + \varepsilon_{it} , \qquad\qquad\qquad\qquad (1)$$

Where i and t are firm and day indices, respectively. As our sample firms are public firms listed on the Chinese stock exchanges including Shanghai, Shenzhen, and Hong Kong, we chose the S&P Greater China Index (excluding Taiwan market) as our market portfolio (RM_t). Following MacKinlay's (1997) suggestion, our estimation period includes 120 trading days ending 11 days before the event date. We separate the estimation period from the event period to avoid the influence of the event on the estimation of the expected stock return (MacKinlay, 1997).

After regressing Equation (1) over the estimation period, we obtain $\hat{\alpha}_i$ and $\hat{\beta}_i$ for each sample firm and use these parameters to estimate the expected stock return in the event period, i.e., $E(R_{it})$, had there been no SCF announcement, as shown in Equation (2).

$$E(R_{it}) = \hat{\alpha}_i + \hat{\beta}_i RM_t .$$ (2)

Finally, we calculate the abnormal stock return in the event period, i.e., AR_{it}, as the difference between the actual stock return, i.e., R_{it}, and the expected stock return, i.e., $E(R_{it})$, as shown in Equation (3).

$$AR_{it} = R_{it} - E(R_{it}) = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i RM_t \right) .$$ (3)

Consistent with prior event studies (e.g., Ba et al., 2013; Lam et al., 2016), our event window includes three trading days ranging from one day before the event ($t = -1$) to one day after the event ($t = +1$). We include the day before the event to account for possible information leakages before SCF initiatives are announced and the day after the event to capture possible slow market reactions to SCF announcements (Ding et al., 2018; MacKinlay, 1997). As a result, the cumulative abnormal stock return of firm i, i.e., CAR_i, over the event window can be computed as shown in Equation (4).

$$CAR_i = \sum_{t=-1}^{+1} AR_{it} .$$ (4)

We rely on the test statistics of CAR_i across all the sample firms to determine whether firms' SCF initiatives have a statistically significant impact on their stock returns. In addition to performing the standard t-test, we employ the crude dependence adjustment test and calendar-time test to address the potential issue of event date clustering (Ding et al., 2018). Specifically, it is likely that several firms are involved in the same SCF initiative or several SCF initiatives are announced on the same date, leading to the possible cross-sectional correlation of stock returns. The crude dependence adjustment test and calendar-time test adopt a portfolio approach to control for the possible cross-sectional dependence between individual stock returns and thus help ensure the robustness of our findings (Ding et al., 2018; MacKinlay, 1997; Wiles and Danielova, 2009).

3.3 Cross-sectional regression model

We construct a cross-sectional regression model to analyse the roles of firm characteristic (H2), collaborative mechanism (H3), and service type (H4), as shown in Equation (5)

$$CAR_i = \beta_0 + \beta_1 Firm\ Characteristic\ _i + \beta_2 Collaborative\ Mechanism_i + \beta_3 Service\ Type_i$$
$$+ \beta_4 Firm\ Size_i + \beta_5 Firm\ Profitability_i + \beta_6 Firm\ Age_i$$
$$+ \beta_7 Financial\ Leverage_i + \beta_8 Cash\ Holdings_i + \beta_9 Time\ Period_i + \varepsilon_i ,$$ (5)

Where CAR_i is the cumulative abnormal stock return of firm i obtained from the event study. For firm characteristic, we code a sample firm as 1 if it is a bank and 0 otherwise (Haan and Kooreman, 2002;

Petroni and Beasley, 1996). If more than one firm works together to provide the SCF service, we code collaborative mechanism as 1, and code it as 0 for a firm providing the SCF service individually (Motohashi, 2005; Shrader, 2001). For service type, we code a new SCF service as 1 and an upgrade of existing SCF service as 0 (Abel-Koch, 2013; Hoegl and Proserpio, 2004).

In addition to the three hypothesised variables, we control for a list of variables including firm size, firm profitability, firm age, financial leverage, and cash holdings in the regression model as they may be related to firms' stock returns. Specifically, based on the findings of prior event studies (e.g., Ba et al., 2013; Flammer, 2013; Hendricks et al., 2009; Joe and Oh, 2017; Lam et al., 2016), we expect firm size and firm profitability to be positively related to stock returns while firm age, financial leverage, and cash holdings to be negatively related to stock returns. We measure firm size as the natural logarithm of sales (Lam, 2018; Hendricks and Singhal, 2014), firm profitability as return on assets (Flammer, 2013; Lam et al., 2016), firm age as the natural logarithm of the number of years since IPO (Carter et al., 1998; Li et al., 2010), financial leverage as the total long-term debt divided by total assets (Ba et al., 2013; Lam, 2018), and cash holdings as cash and cash equivalent divided by total assets (Han and Qiu, 2007; Kumar and Ravi, 2007). We also control for the time period in which a SCF initiative is announced, which is coded as 0 for early years (2008-2012) and 1 for recent years (from 2013 onwards) (Flammer, 2013; Lam et al., 2016).

We estimate Equation (5) using ordinary least squares (OLS) and rely on the coefficients β_1, β_2, and β_3, to interpret the effects of firm characteristic, collaborative mechanism, and service type, respectively.

4 RESULTS

4.1 Event study results

Table 3: Test results of event study

Panel A: Average Abnormal Return (AAR)					
Day	N	AAR	t-test	Crude dependence adjustment test	Calendar-time test
-1	177	0.159%	1.239	0.883	1.575
0	177	0.327%	1.987**	1.820*	1.777*
+1	177	0.307%	1.742*	1.710*	1.953*

Panel B: Cumulative Average Abnormal Return (CAAR)					
Days	N	CAAR	t-test	Crude dependence adjustment test	Calendar-time test
-1, 0	177	0.486%	2.184**	1.911*	2.203**
0, +1	177	0.635%	2.601**	2.496**	2.440**

-1, +1	177	0.793%	2.685***	2.548**	2.852***

The event study test results are presented in Table 3. Panel A shows the average abnormal returns (AARs) across the 177 samples on the three days ranging from the day before the event (-1) to the day after the event (+1). It shows that AARs on days -1, 0, and +1 are all positive. AAR on day -1 is not statistically significant ($p > 0.1$), suggesting that we have no evidence that there are information leakages before SCF initiatives are announced. AARs on days 0 and +1 are statistically significant ($p < 0.1$) across the three parametric tests, indicating that SCF initiatives have a significant positive impact on the event date and the day after the event.

Panel B shows the cumulative average abnormal returns (CAARs) across different event windows. In addition to the three-day CAAR (-1, +1), we also calculate two two-day CAARs: one is from the day before the event to the event date (-1, 0) and another is from the event date to the day after the event (0, +1). All of the three CAARs are positive and statistically significant ($p < 0.1$) across the three tests, suggesting that SCF initiatives do have a positive impact on stock returns. Moreover, CAAR over the three-day event window is 0.793%, representing an average increase of CNY 1.66 billion in firms' market value due to their SCF initiatives. Thus, H1 is supported.

We also conducted several additional tests as shown in Table 4 to check the sensitivity of our findings. First, we recalculate CAR by changing the estimation period from 120 trading days to 250 trading days (Homburg et al., 2014). The three-day CAAR based on this new estimation period is 0.815%, which is similar to that shown in Table 3 and statistically significant ($p < 0.05$) across the three parametric tests as shown in Model 1 of Table 4. Second, we change the event window from three days to 11 days which includes five days before the event to five days after the event (Kiesel et al., 2017) and obtain consistent results as shown in Model 2 of Table 4. We also plot CAAR over the 11-day event window in Figure 1. It shows that the stock returns increase more significantly on days 0 and +1, and remain relatively stable on other days. Third, consistent with Kiesel et al. (2017), we conduct two additional parametric tests: BMP-test (Boehmer et al., 1991) and KP-test (Kolari and Pyönnen, 2010). As shown in Model 3 of Table 4, the results based on these two tests remain positive and significant ($p < 0.05$). Finally, we conduct three nonparametric tests, including sign test, Corrado rank test, and Wilcoxon signed-rank test (Ba et al., 2013; MacKinlay, 1997) and obtain consistent results, as shown in Model 4 of Table 4. Overall, these additional sensitivity tests provide further support to our findings of the positive stock market reactions to firms' SCF initiatives.

Table 4: Sensitivity test results of event study

Model	N	CAAR	*t*-test	Crude dependence adjustment test	Calendar-time test
1. 250-day estimation period	177	0.815%	2.794***	2.593***	2.544**
2. 11-day event window	168	1.050%	2.068**	1.769*	2.328**
	N	CAAR	BMP-test	KP-test	
3. Additional parametric tests	177	0.793%	2.575**	2.156**	
	N	Median CAR	Sign test	Corrado rank test	Wilcoxon signed-rank test
4. Non-parametric tests	177	0.250%	2.105*	2.131**	2.462**

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure 1: CAAR over an 11-day event window
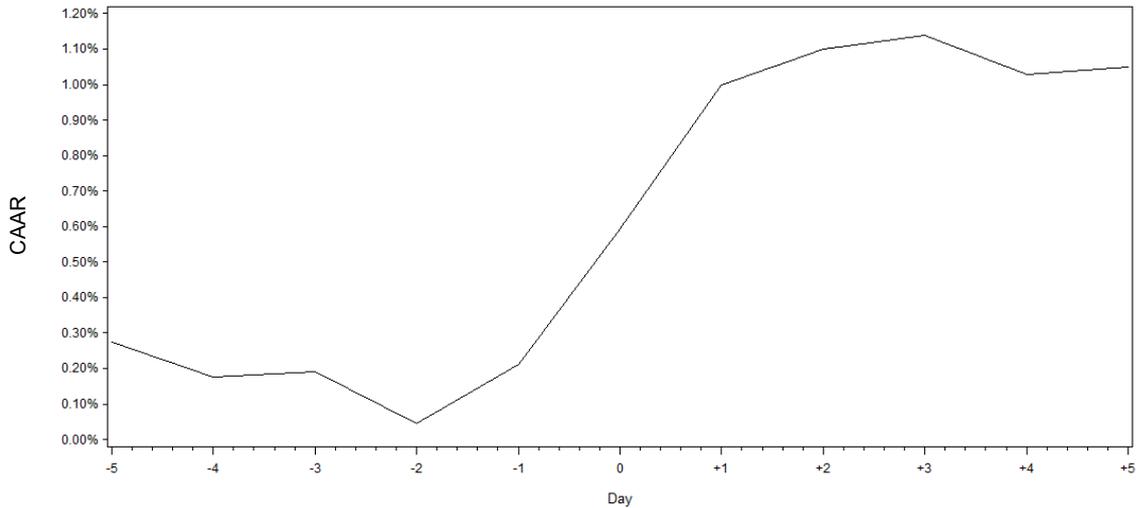
4.2 Cross-sectional regression results

The correlations, means, and standard deviations of all the variables included in Equation (5) are shown in Table 4, while Table 5 presents the cross-sectional regression results with CAR over the three-day event window (-1, +1) as the dependent variable. In Table 5, Model 1 is a basic model including all control variables. Models 2 to 4 add the three hypothesised variables, i.e., firm characteristic, collaborative mechanism, and service type, to Model 1, sequentially. All of the four models are significant ($F \geq 1.984$, $p < 0.1$) with adjusted R-squares ranging from 0.038 to 0.129. R-square change shown in Table 5 represents the improvement in R-square as the three hypothesised variables are added sequentially. Such improvement is tested based on the change in the corresponding F-value. In Models 2 to 4, the changes in F-value are statistically significant ($p < 0.05$), suggesting that the inclusion of the three hypothesised variables helps improve the predictive power of the regression models. We also calculate the variance inflation factor (VIF) values for all the variables included in the regression

analysis, which range from 1.24 to 3.90 and have an average value equal to 1.95. As all the VIF values are well below the maximum acceptable threshold of 10 (Neter et al., 1996; Oh et al., 2012), multi-collinearity is not a serious concern in our research. The sample size is reduced from 177 in the event study to 151 in the four regression models due to missing data for some control variables.

Table 5: Correlation, mean, and standard deviation

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. CAR	1									
2. Firm Characteristic	-0.230***	1								
3. Collaborative Mechanism	0.122*	-0.173**	1							
4. Service Type	-0.024	-0.053	0.279***	1						
5. Firm Size	-0.275***	0.616***	0.009	0.035	1					
6. Firm Profitability	0.021	-0.468***	0.141**	0.030	-0.129**	1				
7. Firm Age	-0.029	-0.214***	0.284***	-0.116*	-0.063	0.105	1			
8. Financial Leverage	-0.108*	-0.325***	0.210***	-0.063	-0.123*	0.161**	0.193***	1		
9. Cash Holdings	0.096	-0.642***	0.101	0.030	-0.604***	0.356***	0.057	0.060	1	
10. Time Period	-0.036	-0.149**	0.115*	0.003	-0.005	0.051	0.360***	0.111*	0.017	1
Mean	0.008	0.785	0.441	0.718	11.472	0.040	2.304	0.049	0.085	0.881
Std. Deviation	0.039	0.412	0.498	0.451	1.714	0.024	0.660	0.051	0.122	0.324

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Variables	Model 1	Model 2	Model 3	Model 4
Intercept	0.099**	0.143***	0.167***	0.188***
	(2.359)	(3.203)	(3.730)	(4.147)
Firm Size	-0.007**	-0.007**	-0.008**	-0.008**
	(-2.234)	(-2.098)	(-2.558)	(-2.501)
Firm Profitability	0.114	-0.062	-0.114	-0.140
	(0.696)	(-0.355)	(-0.657)	(-0.812)
Firm Age	0.000	-0.003	-0.006	-0.009
	(-0.078)	(-0.511)	(-1.141)	(-1.639)
Financial Leverage	-0.145**	-0.206***	-0.242***	-0.277***
	(-2.163)	(-2.939)	(-3.454)	(-3.896)
Cash Holdings	-0.038	-0.109**	-0.132**	-0.144***
	(-0.876)	(-2.133)	(-2.579)	(-2.831)
Time Period	-0.002	-0.001	0.000	0.001
	(-0.170)	(-0.122)	(-0.044)	(0.083)
Firm Characteristic		-0.037**	-0.039***	-0.046***
		(-2.532)	(-2.743)	(-3.181)
Collaborative Mechanism			0.017**	0.023***
			(2.530)	(3.174)
Service Type				-0.016**
				(-2.161)
Number of Observations	151	151	151	151
R-square	0.076	0.116	0.154	0.181
Adjusted R-square	0.038	0.073	0.106	0.129
F-value	1.984*	2.681**	3.235***	3.468***
R-square Change		0.040	0.038	0.027
F-value Change		6.411**	6.403**	4.670**

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; t-statistics are in parentheses.

Two control variables, firm size and financial leverage, remain negative and significant ($p < 0.05$) across the four models. It suggests that firms with larger sizes and higher leverages benefit less from their SCF initiatives. Firm characteristic is also negative and significant ($p < 0.05$) in Models 2 to 4, indicating that the impact of SCF initiatives is less positive when the SCF services are provided by banks rather than other types of firms. Therefore, H2 is supported. On the other hand, the collaborative mechanism

is positive and significant ($p < 0.05$) in Models 3 and 4. It suggests that firms reap more benefits from their SCF initiatives if they collaborate with other firms to provide the SCF services, supporting H3. Finally, the service type is negative and significant ($p < 0.05$) in Model 4. It shows that firms gain fewer benefits from providing new SCF services rather than upgrading existing SCF services. Thus, H4 is supported.

We also conduct several alternative analyses of the cross-sectional regression model and obtain consistent results as shown in Table 7. First, we change the dependent variable from three-day CAR (-1, +1) to two-day CAR (0, +1). The three hypothesised variables, i.e., firm characteristic, collaborative mechanism, and service type, remain significant ($p < 0.1$) with this new dependent variable, as shown in Model 1 of Table 7. Second, we measure the collaborative mechanism as a continuous variable to represent the number of partners involved in a firm's SCF initiative. The regression results based on this new measure of collaborative mechanism remain consistent, as shown in Model 2 of Table 7. Third, we run the regression model for a subset of sample firms that include banks only. The regression results shown in Model 3 of Table 7 suggest that collaborative mechanism and service type remain significant ($p < 0.05$) for this subset of sample firms. The result for firm characteristic is not available because this subset of sample firms include banks only. Finally, as the OLS estimation assumes that the standard errors in the cross-sectional regression model are homoscedastic, we drive a heteroskedasticity-consistent (HC) estimation proposed by White (1980) to relax the homoscedasticity assumption and obtain similar regression results, as shown in Model 4 of Table 7.

Table 7: Sensitivity test results of cross-sectional regression models

Variables	Model 1	Model 2	Model 3	Model 4
Intercept	0.149*** (4.129)	0.176*** (3.792)	0.089* (1.868)	0.188** (2.219)
Firm Size	-0.007*** (-2.760)	-0.008** (-2.395)	-0.004 (-1.348)	-0.008* (-1.711)
Firm Profitability	-0.042 (-0.309)	-0.055 (-0.318)	0.278 (0.459)	-0.140 (-0.925)
Firm Age	-0.007* (-1.687)	-0.006 (-1.102)	-0.011** (-2.564)	-0.009** (-2.231)
Financial Leverage	-0.201*** (-3.543)	-0.250*** (-3.488)	-0.114 (-1.470)	-0.277** (-2.453)
Cash Holdings	-0.129*** (-3.201)	-0.127** (-2.479)	-0.166 (-1.554)	-0.144 (-1.411)
Time Period	-0.003 (-0.331)	-0.002 (-0.171)	-0.004 (-0.446)	0.001 (0.129)

Firm Characteristic	-0.029**	-0.042***		-0.046*
	(-2.519)	(-2.887)		(-1.733)
Collaborative Mechanism	0.020***	0.012**	0.015**	0.023***
	(3.394)	(2.058)	(2.444)	(2.619)
Service Type	-0.010*	-0.013*	-0.013**	-0.016***
	(-1.732)	(-1.745)	(-2.116)	(-2.885)
Number of observations	151	151	125	151
R-square	0.167	0.148	0.134	0.181
Adjusted R-square	0.113	0.094	0.075	0.129
F-value	3.133***	2.729***	2.248**	3.468***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; *t*-statistics are in parentheses.

5 DISCUSSION

Supply chain finance is an essential and emerging topic in supply chain management. More and more companies are providing SCF services to their supply chain members in an attempt to improve services, lower costs and achieve a competitive advantage. Although an increasing number of studies have analysed the potential of SCF resulting in improving the wealth of stakeholders within supply chains, there is a lack of understanding on whether SCF initiatives can result in positive market value for service providers. This study addressed this gap by exploring the essential characteristics of SCF initiatives (i.e., firm characteristic, collaborative mechanism, and service type) and examining their effects on the market reactions of service providers. By analysing 177 announcements of SCF initiatives in a ten-year period on the Chinese market, the key finding of this study shows that SCF initiatives announced by service providers lead to positive abnormal returns on the announcement day and one day following the announcements.

While SCF can be important and beneficial for most of the companies, they are not appropriate in all situations. Considering the different characteristics of SCF initiatives, this study finds that SCF initiatives effectively announced by non-bank service providers could attract more interest from investors than banks. This may be due to the fact that most of the non-bank service providers are fintechs and supply chain oriented firms. These companies are in an advantageous position to provide SCF services due to their well-developed supply chain networks, distribution and warehousing facilities, high credibility, and new financial technologies (Steeman, 2014; Mckinsey, 2015; Martin and Hofmann, 2017). It also indicates that the entry requirements are low for these supply chain oriented service providers to enter the SCF market (Steeman, 2014). Moreover, most of the non-bank service providers

tend to have a better relationship and understanding of their supply chain members (McKinsey, 2015; Wallenburg and Lukassen, 2011). Some of them built strategic partnerships with their clients (Shi et al., 2016). Therefore, these companies would have a lower risk for supply chain disruptions as well as SCF service development. Furthermore, supply chain oriented SCF providers have already been providing supply chain services (e.g., logistics, retail) to their customers, making it easier and more cost-effective for them to upgrade the existing information platforms to offer the SCF services. The results also suggest that the effect of SCF initiatives on the market reaction is higher when the SCF services are upgraded or improvements of previous services rather than entirely new. This is probably because of the learning effect that the market will learn about an SCF service provider's service quality through repeated upgrades and improvements. Therefore, SCF service providers should provide updated services regularly to strengthen the relationships between service providers and SCF users. In addition, we have identified the importance of collaboration in SCF initiatives. Our results provide evidence that the effect of SCF initiatives on the market value is more positive when service providers work together to provide the SCF service. It implies that the collaborative service providers can gain improved cost efficiencies that enable them to solve problems by combining the different competencies of the partners and jointly exploiting a particular business opportunity.

5.1 Implications for research

This paper has implications for research. First, although a number of studies pointed out that SCF can improve business performance, rigorous empirical evidence that connects SCF initiatives to the service providers' market value is scarce (Demica, 2007; Filbeck et al., 2016; McKinsey, 2015; Hofmann and Belin, 2011). To the best of our knowledge, this is the first study that provides a scientific estimation of how effective SCF initiatives play a role in the market value of the service providers. More specifically, this study contributes to an increasingly vital body of literature discussing the importance of SCF (Pfohl and Gomm, 2009; Steeman, 2014; Abbasi et al., 2017), SCF service providers (Seifert and Seifert, 2011; Silvestro and Lustrato, 2014; Martin and Hofmann, 2017), and its impact on the business performance (Cho et al., 2012; Wuttke et al., 2013; Chen et al., 2018).

Second, this research complements prior studies on SCF and extends the literature by focusing on SCF service providers. Many studies have pointed out the potential value of SCF such as improved working capital and minimised procurement costs, but none of them paid attention to how these values can be achieved from the supply chain service providers' perspective (Fairchild, 2005; Klapper et al., 2011; McKinsey, 2015; Abbasi et al., 2017). In this paper, we investigate the relationships between SCF initiatives and the market value of service providers. Traditionally, SCF service providers have been paid less attention in the supply chain management literature as they are often related to finance research (Pfohl and Gomm, 2009; Seifert and Seifert, 2011; Silvestro and Lustrato, 2014). This paper positions financial service providers in the domain of SCF and shows the importance of other critical factors in

fully understanding the role of service providers in complex SCF phenomena. It sheds light on how effective SCF initiatives can impact service providers' market value. Besides, studying the reaction of investors to SCF initiatives is very important (Yang et al., 2014; Wuttke et al., 2016; Ni et al., 2014), since they have different concerns than suppliers and buyers, and their impact on SCF service providers can be substantial.

Finally, the absence of significant research effort on SCF might be due to the reasons that SCF can refer to different concepts to individuals in different fields (e.g., finance, supply chain management), which in turn makes it difficult to define and determine its effectiveness (Bowersox et al., 2003; Pfohl and Gomm, 2009; Martin and Hofmann, 2017). This study combines supply chain and financial perspectives on the involvement of financial service providers in SCF. It applies SCF initiatives as proxies for studying the effectiveness of SCF initiatives (Yang et al., 2014; Xia et al., 2015). It focused on announced SCF initiatives which can be used to determine the magnitude of the market impact of effective SCF initiatives. In doing so, studying the effect of SCF initiatives on service providers' market value can support managers to identify the best practices for announcing their SCF initiatives.

5.2 Implications for practice

This study offers several managerial implications for firms in emerging markets in general and China in particular. First, because of the size and rapid growth rate of China's economy, Chinese stock market has emerged as an important context for studying SCF. Our study reveals that SCF service providers' market value can be enhanced by announcing their SCF initiatives effectively and properly. This particular finding is useful for SCF service providers, suggesting that they should be more prepared to disclose SCF related information. Also, our results suggest that the characteristics of service providers can lead to different market reactions when a SCF initiative is announced. It offers a benchmark of the magnitude of the market value increase that can be anticipated by service providers from announcing SCF initiatives. For instance, our results showed that the average abnormal returns over a three-day event window around the SCF announcements are 0.793%, representing an average increase of CNY 1.66 billion in market value for the service providers. More important, since announcing an SCF initiative appropriately can result in a significant gain of market value, SCF service providers should not look at SCF as merely a financial solution, but instead need to utilise it as a strategic plan and invest in financial technologies and build SCF capabilities (McKinsey, 2015; Xia et al., 2015). Notably, the trend at several nonbank industries to include SCF service as one of their top investment priories is a testimony of the strategic significance of SCF in today's rapidly changing business environment.

Second, by examining the distinctive characteristics of SCF initiatives, this study offers a deeper understanding of how an SCF initiative is more likely to improve service providers' market value. For instance, we identify that market value is more favourable for non-bank and collaborative SCF service

providers. This indicates that service providers need to use their resources to establish collaboration mechanisms that have a greater chance of producing an effective SCF initiative. We also identify that markets respond more positively to the upgraded SCF service than to new SCF services. Therefore, SCF service providers need to pay particular attention to improving their existing services as they are vital for investors as well as their market value.

Third, the results indicate that listed SCF service providers could have more inducement to revise their business actions to facilitate their market value. Thereby, additional attention to market valuation management could be appropriate (Yang et al., 2014; Wuttke et al., 2016). Investors need to evaluate SCF service providers' future profitability by analysing their initiatives and information that is relevant (Lam et al., 2016). As this study positions financial service providers into the domain of SCF, service providers should also improve their financial service expertise (Steeman, 2014). A comprehensive analysis of the announced SCF initiatives, the characteristics of service providers, collaborative mechanisms and service types and how they inhibit or enable active engagement in SCF is valuable for further study.

5.3 Limitations and future research

Our study has three limitations. Each leads to an interesting direction for the future study of this topic. First of all, considering the aggregate nature of our sample data, we are unable to collect adequate details about service providers' SCF initiatives and its development procedures. Thus, it is interesting to learn how service providers create their SCF initiatives and what elements contribute to the more effective development of SCF initiatives. Secondly, just like other event studies (Zhao et al., 2013; Yang et al., 2014; Wood et al., 2017; Ding et al., 2018), this research focuses on short-term stock market reactions. This method is justified by the efficient markets theory pointing out that stock market prices will instantly reflect the whole effect of relevant events (Fama, 1970). Nevertheless, a number of studies identify issues of investors' over or under reactions to firm-relevant events (De Bondt, 1989; Abraham, 2013). For example, under reaction suggests that market returns stay significantly positive over longer periods after SCF initiatives' announcement dates, while overreaction indicates that a downward stock market correction after SCF initiatives has occurred (Brandon-Jones et al., 2017). To address this issues, it would be helpful to study long-term market returns following SCF initiatives (Ding et al., 2018). Finally, while this study addresses SCF initiatives from service providers' perspective, it could be instructive to investigate this issue from other supply chain participants' perspectives (e.g., supplier and buyer). Therefore, future study should be conducted to apply different methods such as case study and survey to address the issue. We believe that by examining stock market reactions to SCF initiatives, we can gain a better understanding towards the perceived values of SCF initiatives in the investment community (Lam et al., 2016). It will allow practitioners and researchers to gain a better understanding regarding the market values of SCF initiatives, and thus offer essential implications for supply chain

management as well as policy formulation.

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