

Evaluating Theoretical Conceptualisations for Supply Chain and Finance

Integration: A Scottish Focus Group

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Highlights

- Uses focus group for delineating relevant theories to supply chain finance.
- Evidence for network theory, transaction cost economics and social exchange theory.
- Evidence on agency theory includes reverse principal-agent relationships.
- Theory for collaborative networks less appropriate, except game theory.
- Intra-firm collaboration with financial departments needs to be bolstered.

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Abstract

With supply chain finance gaining more prominence in practice and drawing increasing attention from researchers, the question arises how this emerging discipline can build on existing theoretical conceptualisations. However, few studies have incorporated theoretical frameworks and there remains therefore a gap in literature. To fill this gap, the study reviews five theories on their suitability for supply chain finance: transaction cost economics, agency theory, network theory, collaborative networks and social exchange theory. A Scottish focus group consisting of practitioners involved in supply chain finance provided empirical data for the evaluation. The findings suggest that there is supporting evidence for using agency theory, network theory, transaction cost economics and social exchange theory as theoretical frameworks for studying phenomena of supply chain finance. Furthermore, the results indicate that the conceptualisations based on agency theory should be extended with ‘reverse principal–agent theory’ to fit with the contingencies of supply chain finance. The frameworks of collaborative networks are found less suitable. In addition to these theoretical considerations, the focus group discussion also points out that the financial department’s collaboration with other departments involved in the primary supply chain process in firms needs to be improved. To achieve this training and supplier development, particularly for smaller firms, is seen as key. These outcomes have informed a research agenda for research groups, early career researchers and doctoral students.

Keywords

financial supply chain management; supply chain finance; transaction cost economics; agency theory; network theory; collaborative networks; social exchange theory

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1. Introduction

It was 2001 when Mentzer et al. in their seminal contribution towards the definition of the concept of supply chain management expanded the conceptualisation of flows in supply chains by including finance; accordingly, products (or services), information and finance constitute the backbone of a supply chain; until this postulation finance was represented as a function (or department), for example, Lambert and Cooper (2000, pp. 69–70). Noteworthy is that Mentzer et al. (2001) did not provide any rationale for including finance, whereas none of the definitions or descriptions of supply chain management they (ibid., pp. 3–6) provided encapsulates it. However, with confidence it can be said that these three distinct types of flow – products, information and finance in Mentzer et al. (2001, p. 4) – have received differing attention from the academic community so far. The management of product flows is arguably the most consolidated stream of research in supply chain management, with several strands focused on management and optimisation (e.g. Pourhejazy & Kwon, 2016; Vidal & Goetschalckx, 1997; Zhang et al., 2014). Along the same lines, recent developments resulted in studies looking into more complex information management systems for intra- and inter-firm coordination in the supply chain (for example, Denolf et al., 2015; Koh et al., 2011; Wong et al., 2015). For the third type of flow, as highlighted by several authors (for instance, Blackman et al., 2013, p. 132; Pfohl & Gomm, 2009, p. 149), finance has received considerably less attention compared to product or information flows. This gap is not only restricted to the management of financial flows, but extends to holistic management of the three flows in integrated supply chain frameworks (e.g. Hofmann, 2005, p. 3; Pfohl & Gomm, 2009, p. 149; Wuttke et al., 2013b, p. 2). However, since the late 2000s, the concept of supply chain finance has sprung up in

literature driven by the attention of both practitioner and academia towards the management of financial flows in supply chains.

1.1 Background and Research Objective

The emerging literature on supply chain finance can be divided into two themes. The first one views the financial aspect of supply chains as a set of financial arrangements, usually driven by a large, credit-worthy buyer (for example, More & Basu, 2013; Wuttke et al., 2013a). The second theme looks at it from a standpoint of supply chain management, highlighting its impact on the financial performance of an entire supply chain, and enlarging its scope to typical collaborative solutions and fixed assets (for instance, Gomm, 2010; Hofmann, 2005; Pfohl and Gomm, 2009; Randall and Farris II, 2009). Following the second theme, supply chain finance can be defined as the financial flows and allocation of financial resources in a supply chain through the collaboration of at least two primary supply chain members, i.e. firms as resources delivering products in the primary process (see Dekkers [2017, pp. 124–7] for the distinction between primary and secondary processes). Note that Mentzer et al. (2001, p. 4) state that a set of three or more entities is involved in the flow, probably having external service providers in mind; a thought we will not pursue here because it excludes mechanisms such as financing of assets, for instance tooling, by buyers. Nevertheless, the financial flows and allocation of financial resources can possibly be facilitated by external service providers (these should be considered as part of secondary supply chain members). Benefits of managing supply chain finance are derived from optimisation of financial flows at the level of supply chains to increase financial returns for all, and from a more adequate allocation of financial resources to actors in these chains to increase resilience of the supply chain. Such more effective management can be translated into reduced cost or need for financial resources; an example of this thinking is the ‘supply chain finance cube’ (Gomm, 2010; Pfohl & Gomm, 2009), describing the positive impact of optimising supply chain finance in terms of reduction in volume, duration and cost of

financing. Additional benefits are reduced risk of bankruptcy along the supply chain (e.g. Bakker et al., 2004; Klapper, 2006) and easier access to liquidity for small high-risk suppliers (for example, Berger et al., 2004; van der Vliet et al., 2015). Moreover, supply chain finance increases visibility for supply chain members and stimulates further information sharing, integration and collaboration (Hofmann and Belin, 2011; Lamoureux and Evans, 2011; Pfohl and Gomm, 2009). Supply chain finance defined in this paper could be classified as belonging to the second theme.

Despite the expanding literature about supply chain finance, contributions so far are relatively practical; the development of more solid theoretical bases has already been identified as one of the major gaps (Gelsomino et al., 2016, p.362). Thus, empirically based literature positions the topic of supply chain finance within existing foci of supply chain management (for example, supply chain collaboration), but seldomly frames studies and results in theoretical lenses, with the exception of Vázquez et al. (2016) and Wuttke et al. (2013b). However, if mentioning so, empirical studies limit theoretical perspectives to sporadic referral (for instance, Liebl et al., 2016, p. 410). Although this is understandable, considering the relative novelty of the topic and its practical orientation, it also provides an opportunity to advance theoretical conceptualisations. Capturing such theoretical conceptualisations offers the opportunity to more consistently generalise findings across studies in supply chain finance, consider contingencies for supply chain finance and develop more robust methods for this domain using technological rules, the latter being formulated as conditional statements (for example, van Aken 2005, p. 23). It should be noted the evaluation of theories by using a focus group for supply chain finance classifies as a contribution between ‘qualifiers’ and ‘builders’, using Colquitt & Zapata-Phelan’s (2007, p. 1283) taxonomy; the use of existing theories is applied to a new phenomenon and is inductive using while using these theories for categorisation of observations. Nevertheless, this first step in appraising theory for supply chain finance will also provide understanding of how such theoretical constructs could be used for further studies or extension of theories for supply chain finance. Therefore, the purpose of this article is to

connect theories of the networked firm, as manifest in supply chains, with the concept of integrated management of supply chain finance, underpinned by an empirical study to advance the research agenda for further studies.

1.2 Scope and Outline of Paper

Thus, this paper aims at making a twofold contribution to extant literature. First, it provides direction to the calls of Caniato et al. (2016, p. 546) about theoretical underpinnings for inter-firm collaboration and complements Wuttke et al.'s (2013b, pp. 784–5) search for a specific theoretical framework for supply chain finance; a similar notion is found in Croom et al. (2000), who note the lack of theoretical work in the context of supply chain management. The extension in our study is relevant because the resulting theoretical conceptualisations should allow researchers to consider which theories are most appropriate for investigating the phenomena of supply chain finance. Consequently, methods and practices could be based on prescription-driven research (see van Aken, 2004) related to the appropriateness of theoretical backgrounds. Second, conversely, this study augments the domain of applications for theories that will be evaluated based on the empirical data in our study. However, it is not the intention to develop new theories, thus the contribution will be restricted to 'borrowing' existing theories; see Zahra and Newey (2009, pp. 1066–7) for generic reflections on this mode of building theory in business and management studies. The relationship between existing theories and phenomena in supply chain finance is the focus of this study.

To this end, the paper provides a narrative review of theoretical lenses and connects these to the results of a focus group conducted in Scotland in 2017. The narrative review follows the guidelines from Green et al. (2006, pp. 103–4). After the narrative review of theories, Section 3 sets out the research methodology for the focus group. Its results are presented in Section 4, followed by a discussion of the findings in Section 5. Thereafter, Section 6 concludes with practical implications and an extensive research agenda.

2. Theoretical Perspectives Pertaining to Supply Chain Finance

These implications and this research agenda are derived from theoretical lenses. This follows the thought of Lewis and Grimes (1999) on lenses for multi-paradigm understanding of phenomena, in the current paper 'supply chain finance'. Relevant theoretical lenses should cover at least (i) the interaction between two actors in the supply chain following our definition of supply chain finance and (ii) be suitable to cover financial aspects. We have limited these lenses to five theories that present potential explanatory power for supply chain finance: transaction cost economics, agency theory, network theory, collaborative networks, and social exchange theory; Table 1 summarises the key theoretical concepts of these theories pertinent to supply chain finance.

[INSERT TABLE 1 ABOUT HERE]

2.1 Transaction Cost Economics

As the first of these five theories, transaction cost economics (Williamson, 1979) is considered a foundational theory that provides understanding of firms' motives and behaviour concerning entering and governing inter-organisational arrangements. As a result, it has been very influential in supply chain management literature addressing such themes as strategic sourcing and outsourcing decisions (for instance, Arnold, 2000; Dekkers, 2011; McIvor, 2009; Williamson, 2008); market entry strategy (for example, Anderson & Gatignon, 1986; Brouthers et al., 2003; Madhok, 1997); buyer-supplier relationships in general (e.g. Carr & Pearson, 1999; Heide & Stump, 1995); and more recently supply chain risk management (for example, Blome & Schoenherr, 2011; Ellram et al., 2008). Transaction cost economics assumes that organisations in their attempt to improve efficiency not only concentrate on production costs, but also include transaction cost in their evaluation as representing 'the cost of running a relationship' (Frazier et al., 1988, p. 65, cited in Carr & Pearson, 1999, p. 498). These costs to 'contact, contract, and control' (Halldorsson et al., 2007, p. 287) include both ex ante transaction cost (searching, evaluation and negotiation) as well as ex post control cost

(measuring, monitoring and enforcing). Within the framework of transaction cost economics, decisions are not only influenced by Coase's (1937) postulation of transaction cost, but also, among other factors, determined by frequency of transactions, uncertainty about future transactions and asset specificity; thus, transaction cost economics adds a behavioural perspective to the concept of transaction cost.

Four key concepts underpin transaction cost economics. In a work by Williamson (1998, pp. 29–31, 36) they are described as:

- *Bounded rationality.* Because managers are limited in their available time, the (cognitive) perception of situations, access to relevant information and capability to process it, they cannot accurately evaluate all feasible alternatives. Consequently, their decisions will not be perfectly rational. The concept of bounded rationality is derived from Simon's (1957) work.
- *Asset specificity.* Transaction specific investments have limited value in alternative applications, which may result in *small numbers bargaining* (decrease in the number of alternative suppliers or customers) or even to 'bilateral monopoly', which occurs if both the supplier and the buyer are locked into the transaction.
- Potential for opportunism. Asset specificity often causes the party that has not invested in relevant resources to have leverage in the relationship.
- *Alternative modes of governance.* In order to mitigate the risk of opportunism, parties strive to implement the most suitable governance structures. These arrangements may vary from occasional highly standardised purchases, which require a minimum amount of governance, to long-term contracts with penalty or shared revenue clauses, equity investments or even vertical integration. According to transaction cost economics, trust between the parties is not equal to personal trust between individuals, but based purely on 'calculated risk' (Williamson, 1979, p. 27).

Transaction costs economics is mentioned in relation to financial aspects of supply chain management in several papers (e.g. Hofmann & Locker, 2009; van der Vliet et al., 2015), however, without developing a theoretical framework based on these four key concepts. Similarly, Liebl et al. (2016, p. 410) state that a theoretical framework is missing from their case study and suggest that the relationship between buyers, suppliers and banks could have been analysed through a transaction cost economics lens. The study by Wuttke et al. (2013b) is the only one that bases its framework on transaction cost economics, arguing it helps understanding the implementation and use of supply chain finance. They (ibid., p. 775) justify the lens of transaction cost economics by stating that friction within financial flows in supply chains is an important component of transaction costs, but they do not elaborate this argument. That only four studies relate transaction cost economics in one way or another to supply chain finance either indicates that transaction cost economics is inadequate or confirms the lack of theoretical conceptualisation for supply chain finance.

Looking at its four key concepts, transaction cost economics must bear relevance to supply chain finance. First, bounded rationality indicates that not always the most optimal choice is made with regard to instruments for supply chain finance, instigated by cognitive limitations or insufficient access to relevant information. Second, the concept of asset specificity relates to investments made and lock-in due to specific use of assets; in the case of supply chain finance this may point to how the schemes' initial costs of investment is divided between members of the supply chain and how financial benefits are appropriated. Third, in relation to asset specificity opportunism may arise from supply chain members taking advantage of particular arrangements. Fourth, alternative modes of governance imply that calculated risk points to most suitable short-term and long-term arrangements. Thus, in addition to minimising costs, these four key concepts can be related to specific phenomena of supply chain finance.

2.2 *Agency Theory*

This raises the question whether the same is the case for the second theoretical concept: agency theory. In a principal–agent relationship, the agent works for the principal and therefore both parties are engaged in a cooperative partnership. However, the principal and the agent have different attitudes towards risk and different goals (Eisenhardt, 1989, p. 58; Jensen & Meckling, 1976, p. 308). The so-called agency problem arises when there are competing goals and when there is information asymmetry (Whipple & Roh, 2010, p. 342). Goal conflicts and information asymmetry stimulate opportunistic behaviour and can lead to moral hazard, lack of effort by the agent, and adverse selection, when the agent falsely describes its capabilities (Eisenhardt, 1989, p. 61). Agency costs exist when there is a deviation by the agent from the principal's interest. The principal can try to reduce agency costs by incentivising and monitoring the agent's behaviour. The focus of the theory is on the determination of the most suitable contract: a behaviour based contract or an outcome based contract (ibid., p. 58). Agency theory is relevant for buyer–supplier relationships, because information asymmetry and goal conflicts are present in these relationships (Fayezi et al., 2012, pp. 563, 566; Zsidisin & Ellram, 2003, p. 24).

However, few studies use agency theory in supply chain finance. Wandfluh et al. (2015) link agency theory to buyer–supplier relationships in the financial supply chain. They take the principal–agent perspective to see how purchasing and finance departments (two principals) can improve cooperation with suppliers (agents) and how this influences the overall financial performance. Gomm (2010) takes banks as principals and the companies that need capital as agents. He mentions information asymmetry: banks are external to the supply chain and, therefore, have less information than the companies in the supply chain. These two studies imply that consideration of which members of the supply chain to include depends on the perspective of the study; hence, studies could benefit better from using the distinction between primary and secondary supply chain members. In addition to these two studies, Pfohl & Gomm (2009) adopt the principal–agent theory to compare an internally financed supply chain with an

externally financed supply chain, and mention monitoring and long-term commitment as methods to reduce agency costs. Liebl et al. (2016, p. 410) state that ‘alternatively the principal agent theory could be applied in order to investigate informational flows as well as different intentions of the collaborating supply chain partners’. These four examples show there are conceptualisations using agency theory for the financial supply chain; however, neither decisive modelling has emerged nor has the potential of agency theory been fully exploited.

2.3 *Network Theory*

With agency theory having found a foothold in supply chain finance, the question is whether network theory as a third theoretical perspective offers an explanatory framework. Network theory defines a network as two or more organisations (‘nodes’) that are connected via relationships (‘links’) that according to Thorelli (1986, p. 38) develop through interactions, albeit that his writing arrives from a strategic perspective. Such interactions comprise exchange processes, consisting of transactions, social exchange and information exchange in addition to adaption processes, where parties mutually influence and adapt to each other technically, logistically and administratively (Johanson & Mattsson, 1987, pp. 37–8). This means supply chains are not only simple linear systems that exchange goods, information and money, but complex adaptive systems (e.g. Choi et al., 2001; Surana et al., 2005). In terms of complex systems, interactions are seen as dynamic with regard to collaboration, inter-organisational integration and decentralisation of decision making (Dekkers & Bennett, 2010, p. 14). The existence of two different views on network theory – one as strategic, one as dynamic – implies that its application to supply chain finance should consider which one is appropriate to the phenomena studied.

Although from a strategic perspective network links may contain strong as well as weak ties, and both may contribute to supply chain performance, providing reliability and flexibility respectively (Ketchen & Hult, 2007, p. 457), network theory mainly focuses on developing long-term, trust-based relationships between supply chain members. Such beneficial, stable

relationships contribute to joint value creation, simplify decision processes and ensure access to resources and activities. According to Thorelli (1986, p. 38), power is ‘the central concept in network analysis’, because it offers firms a differential advantage to shape a network or to influence members in a network. Sources of power could include size, market position, technology, expertise, trust and legitimacy. Using these sources of power, organisations that are able to establish a more central position in the network or create stronger relationships with focal firms are assumed to have a competitive advantage related to better access to resources and information, and more control over coordination (concept of centrality). However, this demands strong internal collaboration between functions (or departments). Thus, effective managers are not only looking for direct savings, but are also interested in building intra- and inter-organisational trustworthy long-term relationships, by sharing information and knowledge and investing in trust; therefore, appropriate mechanisms for supply chain finance could contribute to achieving these goals.

Although network theory has been widely adopted in supply chain management literature, topics such as long-term relationship development, intra-firm coordination, information sharing and administrative adaption are implicitly considered multiple times for supply chain finance; cases in point are More & Basu (2013), Randall & Farris II (2009), Song et al. (2015), Wandfluh et al. (2015) and Wuttke et al. (2013b). However, in none of these works is explicit reference to network theory made. The only exception is Song et al. (2015), who base their hypothesis on the premise that information sharing can lead to improved availability of capital for small and medium-sized enterprises (SMEs) derived from network theory; again, they do not explicitly specify which network theory they are using. Thus, it can be concluded that network theory has been implicitly adopted for supply chain finance, but that these works insufficiently build towards theory. This is surprising since Thorelli (1986, p. 46) describes an example of adding financing facilities to existing products and services as a repositioning move to increase centrality in a network. In this sense, Johanson & Mattsson (1987, p. 38) argue that financial adaption between members may reduce misfit in the relationship. The implicit mentioning of

adaption in exchange relationships characterises their work as they set it off against transaction cost economics. This all means that network theory, also when used for supply chain finance, focuses on mutual adaption in exchange relationships between firms, and as such includes a temporal dimension; from a strategic network perspective, the position of the firm in relation to others plays a key role in achieving strategic objectives and forming the network to this purpose.

2.4 *Collaborative Networks*

Whether theory building relevant to supply chain finance has taken place from the fourth theoretical perspective – collaborative networks – is now evaluated. Collaborative networks are defined as ‘a distinct mode of organisation in which participant organisations work together in equity, commitment and trust exchanging information, sharing activities and resources and complementing and enhancing one another’s capacity for mutual benefit and a common purpose by sharing risks, responsibilities and rewards’ (Bititci et al., 2004, p. 263). Common forms of collaborative networks include virtual enterprises, (dynamic) virtual organisations, extended enterprises, virtual laboratory, industry clusters, and so on (Bititci et al., 2004, p. 256; Camarinha-Matos & Afsarmanesh, 2005a, pp. 440–1). However, there is not much concordance on which entity might or might not be classified as collaborative networks, such as supply chains. For example, Bititci et al. (2004, p. 251) state that supply chains are a form of collaborative networks, whereas Camarinha-Matos & Afsarmanesh (2005a, p. 439) identify as an example of collaborative networks ‘advanced and highly integrated supply chains’. Notwithstanding these subtle differences about the inclusion of supply chains in classifications for collaborative networks, the referrals imply that conceptualisations derived from collaborative networks may apply to supply chains.

Whatever perspective adopted, this strand of studies tends to focus on structure, behaviour and evolving dynamics of such entities, to understand the way in which they collaborate towards the achievement of pre-defined goals (Dekkers, 2009, p. 2035). In this sense, research on

collaborative networks has clearly potential for supply chain finance, particularly the integration of product and information flows with financial flows in supply chains. In fact, supply chain finance agreements often require the creation and consolidation of network relationships that go beyond the typical buyer–supplier dyad. For example, Martin & Hofmann (2016) show how reverse factoring (one of the most common supply chain finance instruments) can be interpreted in terms of collaborative triads between buyer, supplier and financial service providers. At the same time, the authors show how the level of inter- and intra-firm collaboration plays a significant role in implementing supply chain finance instruments, often beyond standard expectations of the traditional buyer–supplier network relationships as found in Caniato et al. (2016) and Wuttke et al. (2013b). Such evidence represents a significant overlap with collaborative networks, as literature on the topic highlights how collaborative networks might be organic in nature, with the potential to grow and to extend in an adaptable structure. Although evidence of collaborative networks as a theoretical background in supply chain finance is weak, it would seem to be straightforward to theorise based on the explanatory potential of collaborative networks in relation to supply chain finance and the integration of physical and financial flows; such interconnection may result in supply chain finance being examined, for example, in terms of collaborative networks’ knowledge integration methods (Jayaram & Pathak, 2013), decisions models (Renna, 2013) and impact on adoption of new practices (Chong et al., 2013). Moreover, Cao & Zhang (2011, p. 175) and Dekkers (2009, p. 2043 ff.) have highlighted the relevance of private and common benefits for collaborative networks; the distribution of these benefits across the supply chain may determine the effectiveness of instruments for supply chain finance. Therefore, the concepts of collaborative networks – integration of primary processes with finance, dynamic relationships between their constituent entities, distribution of common and private benefits – are directly related to the use of instruments for supply chain finance.

2.5 *Social Exchange Theory*

The final theoretical perspective for supply chain finance – social exchange theory – assumes that interactions between organisations or groups and individuals in organisations are driven by the rewards these interactions are expected to generate relative to the allocation of resources to achieve outcomes (Griffith et al., 2006; Wu et al., 2014), albeit that it could be framed within the conceptualisation of transaction cost economics (Nyaga et al., 2010). However, social exchange theory argues that returns and allocation of resources are not purely limited to economic aspects, but also include social aspects, such as autonomy, power and reciprocity. When taking decisions, companies evaluate expected intermediate and long-term outcomes of different alternatives and choose the one that promises the best overall trade-off between rewards and allocation of resources. The accumulation of such results determines the satisfaction with each relationship, or its ‘social capital’, which can vary over time. However, the standards that individual entities use to evaluate allocation of resources (including monetary) and rewards (such as status and monetary rewards) may vary across the temporal dimension (West & Turner, 2013, p. 182). This can create relative dependencies, which may result in power inequalities. Due to these dynamics, relationships are not static, but develop over time. Thus, relationships can deteriorate through lack of commitment and trust as well as diverging priorities and visions (Storey et al., 2005, pp. 256–7). However, trust, open communication and informational transparency can lead to improved business performance, which in turn leads to increased trust, according to the self-enforcing dynamics encapsulated in feedback loops of the model by Akkermans et al. (2004, p. 448). Fynes et al. (2008, p. 63) suggest that parties should strive for positive relationships as these warrant stability and beneficial outcomes, whereas negative relationships increase risk and may lead to termination. Despite being adopted in supply chain management literature (e.g. Griffith et al., 2006; Kwon & Suh, 2005), this lens is only used in supply chain finance by Martin (2017, pp. 197, 216) who explicitly takes social exchange variables into account for analysing predictors and outcomes for suppliers’ participation in schemes. Notwithstanding the low uptake of this lens, trust is a

recurring theme in supply chain finance (Klapper & Randall, 2011; Wuttke et al., 2013a, p. 11, 2013b, pp. 155, 158). Because trust and commitment play a central role in social exchange theory, this theory has been included in our analysis for supply chain finance.

2.6 Transition Zones of Selected Theoretical Paradigms

Following Lewis & Grimes' (1999, p. 1999) thoughts on lenses, we also explored the so-called transition zones between the five theoretical conceptualisations; these overlaps have been captured in Table 2. A study by Kochhar (1996) shows dissimilarities between transaction cost economics and agency theory, albeit focusing on capital structures of firms. Aligned with Kochhar's argumentation, Williamson (1998, p. 35) declares that the two conceptualisations are complementary, while noting that an unpublished manuscript by Holmstrom claims that they are not mutually exclusive. In this respect, the critical reviews of Ghoshal & Moran (1996) on transaction cost economics and Fayezi et al. (2012, p. 558) on agency theory point out that relationships extend beyond 'rationalisation' of behaviour, and thus may be in conflict with the concept of opportunism as central tenet of transaction cost economics; also, Ketchen & Hult (2007, p. 456) hint implicitly at this similarity. For our study, this means that exchange relationships are a mutual concept of both theories, though interpreted differently. The social-economic exchange relationships also appear for the link between transaction cost economics and network theory. Jones et al. (1997) merge these two theories by emphasising the construct of structural embeddedness as 'mediating factor', which is also found in Borgatti & Foster (2003), whereas Foss & Koch (1996) see opportunism as the intersection. The connection between transaction cost economics and theories of collaborative networks has been more weakly developed in literature, although, according to Dekkers (2009, p. 2048) dynamic applications of game theory could be used to describe exchange relationships. With regard to transaction cost economics and social exchange theory, these are often seen as delineated (for example, Ambrose et al., 2010; Johanson & Mattson, 1987), although Kwon & Suh (2005, p. 31) relate trust as a key construct of social exchange relationships to specific asset investments.

These social-economic exchange relationships also appear in the context of agency theory and network theory; for example, Soosay & Hyland (2015, p. 619) connect supply chains as networks to agency theory with respect to dynamics of relationship, and issues of trust and power, but provide hardly any conceptualisation. How agency theory connects to collaborative networks and social exchange theory is less investigated. However, the intersection should be positioned at social-economic relationships, and power and trust for social exchange theory. Also, network theory has been less explored in its relation to collaborative networks and social exchange theory. For example, Chituc & Nof (2007) relate collaborative networks to (social) network theory by using game theory; in this conception the relationships are based on mutual benefits. Social exchange theory and network theory have been treated as similar in many instances; in both, structural embeddedness plays a key role, though from a different perspective. Finally, the connection between collaborative networks and social exchange theory can be found in the concept of private and common benefits. Putting it all together, the overlap between the theories focuses on exchange relationships, though from different perspectives; it also means that any empirical study cannot delineate the theories just from observations of exchange relationships.

[INSERT TABLE 2 ABOUT HERE]

Moreover, studies have connected some concepts that we use to each other in the context of supply chain management and supply chain finance in addition to the ones already mentioned in the text. For transaction cost economics it is noteworthy that Williamson (2008, p. 7) keeps referring to agency theory, but seems to discard it at the same time. Also, some papers (for instance, Hobbs, 1996, p. 16) wrongfully state that agency theory was derived from transaction cost economics; see Eisenhardt (1989, p. 58) for a brief overview concerning the origins of agency theory. However, these argumentations may originate in confusing the concept of ‘agency costs’ with that of ‘transaction costs’. Some others (e.g. Kwon & Suh, 2005, p. 27) clearly distinguish transaction costs from agency costs; in this perspective, transaction costs could be seen as part of the construct for agency costs (see Table 2). Moreover, Hitt (2011, p.

11) points to the possibility for (structural) network theory to be amalgamated with transaction cost economics for investigating supply chain management. Transaction cost economics and social exchange theory are declared complementary for understanding supplier–buyer relationships by Ambrose et al. (2010, p. 1283). The other combinations of theories do not appear in the context of supply chain management and supply chain finance; however, it should be noted that the development of theoretical conceptualisations is not considered the strongest point of supply chain management literature, akin Defee et al.’s (2010) remarks.

3. Research Methodology

Because these five theories could provide lenses for a better understanding of the motives and behaviour of firms and other agents with regard to financial aspects of supply chain management, albeit in quite different ways, we constructed our research design adopting a focus group methodology. The use of focus groups aims primarily at understanding the meaning and interpretations of a select group of people regarding a specific issue or set of topics (Kitzinger, 2005, p. 57; Liamputtong, 2011, p. 3). Thanks to group dynamics, which are lacking in one-to-one interviews, this approach usually results in the generation of ‘deeper and richer data’ (Rabiee, 2004, p. 656). As we want to explore and better understand the processes and intentions that drive decisions of supply chain members regarding the management of financial flows, this interpretive method is a good fit as interactions within the group serve the participants to better express and clarify their points of view (the ‘group effect’). Moreover, the results of a focus group can inform theoretical generalisability, though not statistically validated, as put forward by Barbour (2005, pp. 747–8). Furthermore, outcomes of focus groups can be used for (post-)positivist studies (e.g. *ibid.*, p. 743), following Johnson & Onwuegbuzie’s (2004, pp. 19–21) rationale for sequential conduct of studies. Following Halldórsson & Aastrup’s (2003, p. 329) thoughts this leads to so-called correspondence with constructed realities by participants, in our case the focus group; thus, it will lead to interpretations of the perceptions of the participants representing firms and other agents with

regard to supply chain finance. However, this approach to the research leads to the limitation that the onus will be mostly on evaluating constructs and their relationships; after all, the nature of causal relationships, according to Sutton & Staw (1995, p. 378) what defines theories, has already been set in theory formation for the five selected, relevant theoretical conceptualisations. These key concepts of the appraised theories are found in Table 1.

Therefore, the outcomes of the adopted research method – focus group – not only leads to insight into motives and behaviour of supply chain members, but can also serve as pretext for development of specific conceptualisations based on existing theories and further studies.

3.1 Design of Focus Group

The focus group session was opened with a 25-minute presentation of the core concepts of financial supply chain management and supply chain finance. The purpose of this presentation was to get the participants acquainted with basic terminology as well as to provide a basic framework of supply chain finance. Following Barbour's (2005, p. 747) caution towards 'stimulus' material, it was established that its contents were about the instruments being used in supply chain finance in addition to some context to the topic. This ensured that throughout the focus group and during interactions key concepts could be addressed in the same manner, thus avoiding confusion about terminology and context.

In line with Kitzinger (1994, p. 107), the group was divided into three subgroups each addressing a different theme. The subgroups' themes were financial aspects, processes and relationships. In each subgroup, a group discussion, led by a moderator and one observer (all appearing as authors of this paper), lasted for 30 minutes. After each session, the participants were rotated between groups to increase group dynamics and so minimising the probability of dominance of certain group members; the latter is a common disadvantage of focus groups. In total, three rounds of discussion were held, totalling 90 minutes. In order to stimulate exploration, check understanding and promote discussion, self-adhesive notes and flip charts were used, which also served the purpose of triangulation. Therefore, our research design with

three subgroups was not only aiming at increasing interaction between participants, but also capturing data and information as much as possible through multiple media.

3.2 *Profile of Participants*

Potential participants were invited through the Centre for Engineering Education and Development (CeeD), Scotland, a regional business network, and West of Scotland Branch of the Chartered Institute of Procurement and Supply. Hence, we applied convenience sampling based on experience and interest in the relevant subject area, which is common practice in focus groups (Liamputtong, 2011, pp. 50–2). In total thirteen participants representing ten different organisations of varying industries were present; see Table 3. The participants came mostly from functions in organisations relevant to supply chain finance, congruent with canonical functions mentioned in literature, such as finance and procurement (e.g. Seifert & Seifert, 2009, p. 4; Wuttke et al., 2013a, p. 150 ff.). Also, a CEO, production managers, project managers and sales managers attended the focus group; however, such functions are less object of study, even though deemed relevant by Gomm (2010, p. 134) in the context of collaboration for supply chain finance. Thus, the composition of our focus group contained participants representing relevant functional perspectives. Furthermore, the organisations represented were small companies (2), medium-sized firms (2) and large corporations (6). Moreover, the Scottish manufacturing industry is seen as to be patchy and struggling in the setting of a developed economy, making it difficult to benefit from sector-led initiatives. This allows to take in views from very different industrial sectors. What is more is that the behaviour of Scottish companies is associated with myopic views, which could potentially provide a contrast to collaborative behaviour in the context of supply chain finance. In addition, with regard to the size of the focus group, the division into smaller subgroups and rotation was beneficial, because smaller groups consisting of four to ten participants provide more room for each individual to contribute, to interact optimally, and to explore relevant themes in more detail, hence generating more relevant data (Krueger & Casey, 2009, pp. 67–8). Thus, the size and composition of the

focus group ensured sufficient content validity (derived from Kidd & Parshall [2000, pp. 303–4]).

[INSERT TABLE 3 ABOUT HERE]

3.3 Data Collection and Analysis

The group discussions were recorded and these recordings were transcribed at a later date. Both the moderator and the observer took notes independently during the session, and special attention was paid to non-verbal interactions between group members. Directly after the session, the post-its, flip charts and notes were collected and compared in order to increase reliability and internal consistence (commensurate with Kidd and Parshall's (2000, p. 299) recommendation for 'debriefing'). The data was then grouped logically to identify main categories of key themes and concepts.

In the weeks following the session, the authors used the transcriptions and other data to code the findings using the categorisation of the debriefing session. This coding aided in identifying matching key theoretical concepts. The coding was done by three researchers working independently and results compared afterwards. Thus, the research design and the analysis of the data obtained during the focus group reflected the consolidated criteria of Tong et al. (2007).

4. Results

The next sections will discuss the perceptions of participants regarding the processes, relationships and financial aspects of supply chain finance, supported by tables that summarise results of the three subgroups; note that findings are mostly organised in order of appearance during the analysis.

[INSERT TABLE 4 ABOUT HERE]

4.1 Results of Subgroup 'Processes'

The subgroup 'processes' focused on factors influencing the process of integration between finance and supply chain as well as introducing and implementing supply chain finance

instruments. Key points in this session, summarised in Table 4, centred on a mutual understanding of the solutions and communication between buyer and supplier, but also internally, between different departments in a firm. During the first round of 30 minutes there was a lot of attention to internal alignment from the supplier's point of view, when a supply chain finance offer is received from a buyer. Multiple participants mentioned that the financial department in their company is in a better position to evaluate the financial aspects of supply chain finance. They also stressed that finance and sales are often not aligned, because of financial managers having a transactional view ('getting paid') and sales managers having a relational view ('keeping customer happy'). In this respect, one sales manager referred to financial departments exerting 'sales prevention'. The second round focused on the alignment between buyers and suppliers. It was duly noted that suppliers, especially smaller ones, often look at supply chain finance offers with scepticism ('the S in SMEs stands for scepticism and suspicion', as one participant stated). Participants highlighted how scepticism often stems from a lack of understanding of supply chain finance instruments, either due to the inability to perform correct financial analyses to understand effects or because suppliers do not receive the required information; in this context there was also agreement that whereas for larger suppliers the use of instruments relating to supply chain finance may be standard practice, small suppliers often cannot rely on previous experience. Transparent communication was considered as a way to overcome these issues. Furthermore, it was deemed necessary that from both the buyer and supplier side the two people who take part in discussions are knowledgeable and adequately informed. However, in the third round one purchasing manager mentioned that when suppliers are open about asking for early payment, e.g. reverse factoring, he will perceive them as financially weak and will evaluate the possibility of looking for new suppliers to mitigate supply risk. Thus, the conversations in this subgroup led to four findings:

- (1) To effectively deploy appropriate instruments of supply chain finance the financial department of firms needs to be involved; however, its involvement may also lead to differing views on the appropriation of selected instruments, particularly for suppliers.

- (2) Especially, SMEs may be apprehensive of supply chain finance, partly caused by lack of experience.
- (3) Knowledge of all involved about instruments of supply chain finance is essential for discussions about their use.
- (4) Some actors perceive the use of instruments related to supply chain finance as a manifestation of financial risks from the supplier, and this may trigger the search for alternative suppliers.

[INSERT TABLE 5 ABOUT HERE]

4.2 Results of Subgroup 'Relationships'

The second subgroup addressed the role of relationships in engaging with supply chain finance schemes and vice versa (see Table 5). In the first round, it soon became clear that relationship maturity, and in particular trust is key when it comes to inter-company finance; they determine both the level of openness as well as the acceptance and success of supply chain finance schemes. Suppliers sometimes do not want to let a buyer know they are in need of cash for fear that this may be perceived as a sign of weakness. However, well-developed relationships usually result in more confidence to address this issue. Note that this stance recurred in all rounds of this subgroup. Furthermore, a lack of integration between different functions within the organisation results in a deficiency in addressing financial issues in buyer–supplier relationships: they are simply not addressed, or discussed too late.

The second round made it very clear that power and trust are the two major factors in supply chain finance. The existing power differences between parties usually result in the bigger party dictating the financing conditions. Another related finding in this round was that there is a fear that the organisation that offers [supply chain] finance determines the rules. As one participant stated it: 'the alarm bell in my head on this one: the person offering the finance changing the rules ... you've given them power'. Furthermore, participants distinguished between two levels of trust: organisational trust (between the buying and supplying organisation) and personal trust

(or one-to-one trust, i.e. between individuals of different organisations). It was also noted that when a key individual transfers to a different organisation, personal trust needs to be built again, whereas trust between organisations remains. Such trust (at both levels) can be extended by a track record of reliability, as well as transparency ('come and see the factory' rather than 'speak to a salesman'). If trust is present, it results in more readiness to discuss finance. However, if it does not exist, trust may be substituted by contractual control mechanisms, such as a retention clause (late payment that is withheld pending the completion of some specified condition). Finally, it was found that culture often dictates the level of openness (e.g. the attitude in the United States is more open than Asia to talk about financial arrangements).

The final round of the subgroup 'relationships' confirmed that long-term relationships and reliability improved the likelihood a supply chain member will adopt a supply chain finance proposal. Since relationships are crucial, the person with the best relationship with the supplier should lead discussions on financial arrangements, according to the participants. Vice versa, relationships with other parties could be positively influenced by implementing supply chain finance arrangements. An example put forward is the improved relationship with a bank, as in such arrangements it provides proof that a large buyer is willing to invest in a firm. Furthermore, participants stated that finance is never prevailing in discussions between supply chain members in contrast to quality, delivery time, price, etc., and it is never discussed as a separate topic; fear of raising the topic can be reduced by educating small companies. It was tabled that one way to provide training could be through professional supply chain bodies, such as APICS and CIPS. Last, it was found that in order to fully understand the impact of certain supply chain finance arrangements, companies need a holistic understanding (for example, consignment stock might worsen working capital requirements, but efficiency gains by more operational data on usage might outweigh such). Discussants noted that small companies usually lack this integration of operational and finance expertise and often lack a true supply chain perspective. This makes it harder for them to evaluate proposed supply chain finance arrangements and be an equal negotiating party

Hence, some outcomes of this subgroup corroborate earlier findings, particularly the second finding that size of firms is correlated to appreciation, or for that matter, apprehensiveness towards supply chain finance, the third finding about knowledge of supply chain finance instruments and their impact, and the fourth finding that suppliers enquiring about the use of these instruments may signal financial weakness; in addition to providing support for these three findings, the discourse also adds five more findings:

- (5) Trust is built at two levels: organisational and individual; organisational trust remains in place longer than individual trust, but individual trust needs to be rebuilt when key individuals move to other organisations.
- (6) Rules for supply chain finance are set by the firms putting it forward, particularly larger firms relative to the size of suppliers; thus, the one tabling financial arrangements has power in the relationship.
- (7) National culture influences the openness about discussing instruments of supply chain finance.
- (8) The use of appropriate instruments for supply chain finance affects access of suppliers to financial service providers, e.g. banks, which decreases financial risks.
- (9) The frame of mind – focus on individual firm or supply chain perspective – determines the willingness to engage with supply chain finance

[INSERT TABLE 6 ABOUT HERE]

4.3 Results of Subgroup 'Financial Aspects'

The subgroup 'financial aspects' revolved around the structure and details of financial arrangements between buyers and suppliers, how different departments and roles within the supply chain approach financial arrangements in addition to what characteristics of companies most influence financial arrangements (see Table 6). In the first round, the discussion diverted towards lack of knowledge on supply chain finance, especially in small companies, albeit in a generic manner; some participants would find it difficult to discuss and evaluate some of the

schemes presented (during the introductory presentation). Consequently, participants highlighted how financial departments in large organisations are generally in a stronger position ('finance rules') and the implementation of even the simplest of schemes could become impossible without their support. More specifically, one outlined how it would be very difficult to implement supply chain finance schemes in their local branch, as those kind of decisions can only be taken by headquarters in the US. Finally, participants agreed that such schemes can only involve suppliers that are 'on the radar'. When the moderator introduced the Kraljic (1983) matrix (which they were not familiar with), discussants all agreed that strategic suppliers are likely to be the target of any implementation. In the second round, a procurement officer illustrated how from time to time they receive supply chain finance proposals from suppliers (mostly cash discount requests), and how they forward them to finance as they 'have no idea' about how to evaluate them properly. Discussion moved then to how financial details and arrangements are different for capital and material requirements. In this context, a smaller company pointed out how understanding financial aspects of supply chain finance instruments does not seem overly complex, but technical requirements, for example induced by changes to information systems such as new modules or platforms that needs to be managed, are sometimes more cumbersome. During the last session one participant (from the sales department of a small company) stated that he had developed his own tool to quickly evaluate simple schemes proposed by customers. This led to a discussion on how financial awareness has extended beyond financial departments in the last five years, especially in smaller companies. Finally, participants debated how sometimes small suppliers might not offer supply chain finance arrangements that could provide mutual benefits to buyer and supplier to avoid being perceived as 'cash starved'. Therefore, discussions from this subgroup on financial aspects support earlier findings, particularly the first, third and fourth findings; furthermore, there is an additional finding:

- (10) Perhaps the implementation of these supply chain finance instruments can be most relevant to the strategic items (and suppliers) in Kraljic's matrix.

5. Discussion of Findings

The results and the ten findings from the three subgroups can be divided into four themes, see Figure 1, and be attributed to theories; note that in the figure the numbering of the findings has been retained. The discussion of the themes and the pertaining to theories follows in the next subsections.

[INSERT FIGURE 1 ABOUT HERE]

5.1 Themes

The first of the four themes is that knowledge and methods for evaluation of tools need to be made accessible beyond the financial departments of firms. This could be done through professional development and inclusion of this topic in courses at educational institutes, but also by financial departments engaging with purchasing and sales departments (depending on whether the firm is a buyer or supplier). The need for training appears also in More & Basu (2013, pp. 640–1), although they did not articulate the impact of the lack of training on intra-organisational relationships and are less explicit on the effects on inter-organisational relationships. With regard to the role of the financial department, Gomm's (2010, p. 137) propositional work also intimates the dominant role of the financial department, but provides no insight about the specific working methods and interactions between departments.

The second theme, how the implementation of supply chain finance instruments is perceived, is reflected in internal collaboration and communication, and ditto for inter-organisational relationships. The financial department may have different views from the purchasing or sales departments; in this respect, Wuttke (2013, p. 10) points out how lack of coordination between finance and purchasing increases financial risk related to supply chain finance solutions, whereas Gomm's (ibid., p. 13) tentatively states that the financial department considers reporting periods, whereas participants point to these departments being transaction-orientated. Also, firms as part of a conglomerate could be subject to centralised guidelines and decision making, which could also limit beneficial arrangements. In terms of buyer–supplier

relationships, more adequate instruments for supply chain finance may be perceived as a signal of financial weakness when triggered by a supplier; this perception by suppliers of the buyer's views inhibits sometimes further initiatives. This is different from financial service providers, who may be willing to view appropriate supply chain finance schemes as improving the credibility of firms.

A third theme is inter-organisational relationships related to trust and power. According to the outcomes of the focus group, trust exists at organisational level and individual level; key individuals may have a strong influence. Moreover, the agent in a buyer–supplier relationship that triggers supply chain finance schemes may be in a position to exert power and set the rules. Also, larger companies may impose their arrangements on smaller firms, which have less knowledge and experience to create leverage.

A potential fourth theme emerging from the focus group is that national culture may have an impact on the implementation of supply chain finance instruments. There was little evidence provided, but the practices in Scotland were said to be different from those in Asia and the US. Somehow this seems different from other views on the impact of national cultures, such as Patel and Pavitt (1994, pp. 90–2), who classify the UK and the US as myopic social-economic systems, as opposed to dynamic systems. This final, fourth theme may be subject to further research.

[INSERT TABLE 7 ABOUT HERE]

5.2 Evaluation of Theories

The results, findings and themes from the focus group allowed evaluation of theoretical conceptualisations, transaction cost economics being the first one of the five; see Table 7 for results of the focus group correlated to the theories. Its concept of bounded rationality manifested clearly in the focus group sessions. Especially, SMEs seem to be disadvantaged with regard to knowledge about financial flows and supply chain finance arrangements; their practices are much less matured than those of their larger counterparts in the supply chain. In

all groups, the expressed opinions quickly converge to this stance. Participants stated that consequently (most) SMEs have trouble understanding financial solutions, which may lead to increased risk or excessive cautiousness on their side. One participant confessed that when a buyer offered him vendor managed inventory, he did not understand the scheme nor its cash flow implications sufficiently and, therefore, made the decision on 'gut feeling'. This phenomenon leads to increased relation specific implementation cost (such as legal advice and learning cost), which may increase 'lock-in' and stimulate opportunism. As one participant asserted: '... this is the red light that flashes'. Thus, not only bounded rationality, driven by cognitive limitations, and opportunism, but also transaction cost inherent in supply chain finance instruments, and asset specificity (financing of assets, such as tooling), are appearing as explanatory factors; this means that transaction cost economics could be seen as an explanatory theoretical framework (eleventh finding), though the conceptualisation of cost is restricted to an economic perspective and related to a limited number of issues raised during the focus group (twelfth finding).

As a second theoretical framework, agency theory presents potentially significant explanatory power for supply chain and finance integration (see Table 7). As presented in Subsection 2.2, it is a widespread framework for interpretation of buyer–supplier relationships, and therefore also suitable for understanding issues in supply chain and finance integration. More specifically, one of the most relevant outcomes of the focus group concerns the competing goals, for both inter- and intra-firm relationships. The referral of one participant to the 'S' in SME (see Subsection 4.1) intimates this relative mistrust that may characterise every principal–agent relationship. However, several participants highlighted how more transparency and clarity of communication could improve management of financial flows, for example, by facilitating the adoption of supply chain finance by suppliers. However, some buyers will consider it as a sign of weakness when one of its suppliers asks for early cash. This may lead to suppliers not letting buyers know their needs, which may in turn lead to suboptimal decisions (agency cost). An interesting phenomenon that emerges is that, as financial flows typically

move in opposite directions to the flow of goods, there appears to be also a reverse principle-agent situation in the buyer-supplier dyad, as there are conflicting goals (the buyer wants to pay as late as possible, while the supplier wants the opposite), the agent (the buyer) has more information (invoice approval status, adherence to payment terms, etc.) and could (and frequently does) act against the principal's (supplier's) best interest by paying late. This evidently brings agency cost into the relationship, as the supplier needs to hedge this risk with additional cash or insurance. This evidence points to a theory of 'reverse principal-agent theory', thus, extending this theory to supply chain finance (Mode 2 of Zahra & Newey [2009, pp. 1067-8]); this could open a new strand of research for agency theories. Note that only Quick (2011, p. 588) refers to reverse principal-agent theory, but only in the context of jurisdiction with regard to liability within supply chains. Principal-agent relationships can also be identified within a firm between different departments (in alignment with literature on supply chain finance, e.g. Caniato et al. [2016, p. 544]), for example, when participants depicted the financial department as a principal, 'ruling' over purchasing as the agent on terms and conditions of transactions one participant illustratively referred to the financial department as 'sales prevention'. Therefore, based on the evidence from the focus group, agency theory is a suitable theoretical framework for inter-organisational and intra-organisational relationships (thirteenth finding); moreover, our analysis indicates also that a reverse principal-agent theory may be more appropriate for supply chain finance (fourteenth finding), thus paving the way for a new variant of agency theory.

For the conceptualisation and use of network theory, the third theoretical framework considered, the evidence indicates that it has common ground with the underlying mechanisms of financial management in supply chains (see Table 7). Financial aspects are clearly considered as part of the original power concept in network theory, as put forward by Thorelli (1986). According to network theory, companies with a better financial position have more leverage to influence the network; this was confirmed by the focus group discussion ('the big party dictates'). These dominant parties could utilise their influence to optimise financial flows

in the network, and consequently improve overall network performance. Conversely, firms with less power in the network could benefit from being in a supply chain finance scheme with an important supply chain member, because it may increase their centrality, which facilitates access to resources, such as (cheaper) capital provided by the bank. Participants clearly indicated that they are interested in long-term cooperative relationships, and that if there is enough commitment and trust, parties are more eager to invest in the relationship. This means that early payments may be accepted more rapidly (by buyer), or supply chain finance agreements, such as reverse factoring, might be adopted more easily. However, if the relationship is weak, a request for speedier payment may result in switching to another supplier. This evidence positions network theory as a powerful theoretical framework for supply chain finance, because it can explain behaviour by agents from the perspective of the position in a network, and, consequently, trust and power in buyer–supplier relationships (fifteenth finding). Unlike the previous three theoretical frameworks, the conceptualisations of collaborative networks present a somehow more limited scope for application to the integration of supply chain and finance. Although collaboration has been a key topic throughout all of the three subgroups, limited evidence was gathered to connect supply chain finance implementation or financial supply chain management to archetypes of collaborative networks reported in literature. The most relevant result stemming from the focus group sessions pertains to the stages of maturity for the collaboration between buyer and supplier: long-term, stable relationships facilitate collaboration and sharing of information, hinting towards the strengthening of links typical of a collaborative network, whereas a less long-term and strategic relationship might result in lack of collaborative effort. As put forward by a buyer discussing the collaborative management of financial flows: ‘the supplier must be on the radar’. A second result of interest is related to the (de)centralised decision-making process in large corporations. Evidence from the focus group shows that the level of centralisation plays a crucial role in mediating the ability of companies towards implementing financial supply chain management practices, even at the single company level (e.g. accepting or refusing cash discount proposals),

thus contravening decentralised decision making in collaborative networks (for the latter, see Dekkers [2009, p. 2032]). A final point for collaborative networks is that the evidence indicates that supply chain finance could be viewed from a game-theoretical perspective, particularly common and private benefits (e.g. *ibid.*, p. 2043 ff.). Although from a limited perspective, this could be viewed from the search for an evolutionary strategy rather than optimisation (for instance, Vincent & Vincent, 2000, p. 22, 34); however, the implication for (mathematical) models is beyond the scope of the current study. Thus, we identify the potential of interpreting the body of research on collaborative networks, though limited to perspectives on long-term relationships, centralisation in intra-organisational networks and game-theoretical applications (sixteenth finding); particularly, the use of game-theoretical modelling for finding evolutionary strategies based on private and common benefits could explain behaviour in inter-firm relationships (seventeenth finding).

Last, we found that social exchange theory has strong links to the results and findings of the focus group's conversations. In almost every session, trust came up as a self-evident prerequisite for effective financial management in supply chains. Comments, such as 'trust comes first' and the barrier that a lack of trust creates in exchanging crucial information, speak for themselves. The discussions made clear that levels of social capital exist, not only between organisations, but also between different persons in those organisations ('people buy from people, but still there is a relationship between organisations'). This may indicate that it may be sensible to let the person that has the best relationship with the supplier discuss the more sensitive topic of supply chain finance; although it should be noted that participants highlighted also the need to enhance relevant financial knowledge across all functions involved (third finding), which could affect this notion. Additionally, different departments within organisations appear to espouse different paradigms towards optimal interactions with supply partners: development of business relationship versus purely transactional relationship ('a happy customer or supplier versus getting paid'); this difference persists as internal communication between departments is far from optimal and functional silos exist, which

hampers the integration of financial and logistical flows. Finally, although large companies can exert relatively more power, data from the focus group seems to indicate that SMEs have other strengths, such as higher commitment and flexibility, which could be deployed to improve the quality and interdependency of the relationship. For these reasons, constructs of social exchange theory surfaced throughout the subgroups and this theory explains behaviour, the development of relationships – even intra-organisational – and trust (eighteenth finding)

6. Concluding Remarks

This paper has explored the validity of theoretical foundations for the conceptualisation of supply chain finance by looking for alignment with five theories for the networked firm. The results of a focus group with Scottish firms used for this purpose show that there are clear linkages to agency theory, network theory, social exchange theory and transaction cost economics, but, surprisingly, to a lesser extent the relationship between supply chain finance and collaborative networks could be established. The findings of our study provide further evidence to the few studies that have used transaction cost economics (Vázquez et al., 2016; Wuttke et al., 2013b) or, that use or have suggested using agency theory as a theoretical base (Hofmann, 2005; Liebl et al., 2016; Pfohl & Gomm, 2009). The result also complements Wuttke et al.'s (2013b, pp. 784–5) propositional theoretical framework for supply chain finance, but counteracts that a specific framework is necessary in the first instance. The evaluation of the theories in Section 5.2, supported by Table 7, advances insight into which phenomena can be explained by which theory; even the application of mathematical modelling for supply chain finance has been pointed out. While again noting that the contribution of this paper falls between ‘qualifiers’ and ‘builders’ of Colquitt & Zapata-Phelan’s (2007, p. 1283) taxonomy, and in addition, extends four theories to supply chain finance (mode 2: borrowing and extending, according to Zahra & Newey [2009, pp. 1067–8]), it also points to an extension of agency theories (fourteenth finding): the reverse principal-agency theory; this should be seen as a refinement of the principal-agency theory, transforming its core, mode 3, according to

Zahra & Newey (2009, pp. 1069–70). Thus, the outcomes of our study provide corroborating evidence for agency theory and transaction cost economics as theoretical frameworks for studying the phenomena of supply chain finance, introduce an extension of the principal-agency theory. point to extending theoretical conceptualisations with network theory and social exchange theory, and find the theory of collaborative networks less suitable; this means that further studies can build on the findings not only to develop underpinning theory for supply chain finance but also to inform effective methods and practices.

6.1 Managerial Implications

With regard to more effective methods and practices, our results show the need for alignment between buyers and suppliers, and alignment between different company departments. In terms of strengthened intra-firm collaboration, managers should focus more closely on the relevance and impact of bounded rationality and competing goals on the relationship between finance and sales or procurement departments. In terms of inter-firm collaboration, managers willing to strengthen supplier relationships in supply chain finance, especially with SMEs, should pay close attention to scepticism and mistrust that can come from information asymmetry; also suppliers, especially smaller ones, should be encouraged to table supply chain finance rather than fear being perceived as weak.

A second managerial implication is the duly noted knowledge gap. This gap between employees in different functions within a firm potentially hinders collaboration and coordination; the latter surfaced in the form of objectives assigned to different departments conflicting with the overall purpose of integrated supply chain and finance or effectively adopting specific supply chain finance schemes. This knowledge also extends to (smaller) suppliers, who may not be aware of all relevant supply chain finance instruments, lack experience or have insufficient resources at their disposal. Therefore, our results indicate the paramount need for enhancing knowledge about supply chain finance, both inter-organisational and intra-organisational, through training, professional development and support.

6.2 *Limitations*

Notwithstanding the findings and compelling managerial implications, this research has four limitations. The first limitation is that there might be additional firm theories that have a better fit with supply chain finance that we did not consider; a case in point could be resource dependency theory, mentioned by Wuttke (2013, p. 100). The second limitation is the use of a focus group as a research method. However, in the spirit of Sutton & Staw's (1995) and Weick's (1995) writings, the current study should be seen as a step towards formulating a more appropriate theory for supply chain finance; it means that other studies should follow up on the findings in this paper. The third limitation is that we did not consider amalgamation of theories, though evidence points to social-economic exchange relationships being a common theme. The fourth limitation is the geographical context, because only Scottish firms participated in the focus group; the outcomes could have been influenced by the specific business environment of the UK, which is seen as myopic. A similar focus group could be reproduced in other countries to test our findings in different geographical contexts. However, the design of our focus group implies that these limitations have limited impact on findings and implications.

6.3 *Directions for Future Research*

These limitations, in addition to the findings, set out further directions for research to develop appropriate theory for the domain of supply chain finance:

- The evaluation and comparison of theoretical concepts should be extended not only by focus groups in other countries using the insight from this paper, but also by comparative studies for theories by interviews, Delphi studies, surveys, etc. Each study should compare at least two theoretical frameworks for their appropriateness to supply chain finance.
- The findings from the focus group point to agency theory and transaction cost economics as theoretical frameworks for studying phenomena of supply chain finance and, highlight the need extending network theory and social exchange theory to fit with this research

domain; particularly, these theories should be used for comparative studies and other research in the domain of supply chain finance.

- The conceptual amalgamation of existing theories for the domain of supply chain finance is recommended. As apparent during this study, social-economic exchange relationships appear in each theory, albeit building on different perspectives; however, this also provides the opportunity to build adequate theory.
- The further development of a reverse principal-agency theory for the domain of supply chain finance. Such is caused by (i) the financial flow and information flow being asynchronous, and (ii) asymmetry of information, where the buyer possesses more adequate information about downstream processes and the supplier about downstream processes. Note that only this point may answer Wuttke et al.'s (2013b, pp. 784–5) call for a specific theory for supply chain finance, although in the first instance it is an extension of the principal-agency theory.
- This also implies that specific theories are related to specific phenomena; therefore, studies should justify their rationale for theories and constructs relative to other theoretical frameworks. For example, transaction cost economics or agency theory can be used as theoretical basis for developing case study applications further investigating the behaviour of suppliers in reverse factoring applications. Only through providing this explicit reasoning a more coherent theoretical body of knowledge can be built.
- The framework in Figure 1 that captures relationships, themes and outcomes could also be subject to further studies. It is suggested that this overview is used for both case studies of supply chains, involving original equipment manufacturers and tiers of their supply chain, and quantitative studies, such as survey-based research methods. Those doing so, may benefit from reading Woodside's (2016, pp. 6–7) advice to undertake case studies before quantitative studies and to consider non-linear relationships that are present in the framework.

This also implies that research groups that want to devote significant attention to the topic of supply chain finance and to integration between supply chain and finance generally, might devote their effort towards consolidating the topic as a new scientific discipline, consolidating existing knowledge, clarifying its scope against existing literature and producing an effort towards the definition of a specific research agenda that would be similar to the effort produced to differentiate supply chain management from logistics in the early 2000s (congruent with Mentzer et al.'s call [2001, p. 16]).

For doctoral candidates or early career researchers, there are possibilities to develop contributions spanning over multiple articles, investigating theoretical areas that need further development using the integration of supply chain and finance as potential fertile terrain for fruitful contributions. For instance, while collaborative networks and game theory are often connected (Camarinha-Matos and Afsarmanesh, 2005b; Dekkers, 2009), there is a need for further investigation to apply these to supply chain finance. From a methodological point of view, Fisher and Aguinis (2017) provide excellent guidance towards using empirical evidence in the context of supply chain finance or supply chain and finance integration to make theoretical advancements.

6.4 A Final Thought

This study based on a focus group is only a first step towards evaluating theory. It is also clear that not only supply chain management and finance needs further integration in the emergent domain of supply finance, but also that theory needs to better embedded in this discipline.

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Table 1: Key theoretical concepts

	Key theoretical concepts
Transaction cost economics	Bounded rationality Potential for opportunism Asset specificity Ex ante/ex post transaction cost minimisation Alternative modes of governance
Agency theory	Principal–agent relationship Competing goals (conflicts of interest) Information asymmetry Moral hazard Agency cost Adverse selection Information as commodity Behaviour/outcome based contracts
Network theory	Relationships ensure access to resources and activities Interdependency Centrality Focus on developing long-term trust-based relationships Information and knowledge sharing
Collaborative networks	Collaborative advantage based on unified approach to value creation ('win-win-win') Central coordination mechanism (information and communication technology as enabler) Network as organism with adjustable structure and phase transitions
Social exchange theory	Rewards and costs drive relationship decisions Social capital Power differentiation Evaluation standards vary Development of relationships Positive relationship ensure stability and beneficial outcomes

Table 2: Transition zones for theoretical constructs.

	Agency theory	Network theory	Collaborative networks	Social exchange theory
Transaction cost economics	<ul style="list-style-type: none"> • Social exchange relationships • Transaction costs part of agency costs 	<ul style="list-style-type: none"> • Structural embeddedness • Opportunism • Social-economic exchange relationships 	<ul style="list-style-type: none"> • Dynamic applications of game theory 	<ul style="list-style-type: none"> • Trust and specific asset investments
Agency theory		<ul style="list-style-type: none"> • Social-economic exchange relationships 	-	<ul style="list-style-type: none"> • Social-economic exchange relationships • Trust and power
Network theory			<ul style="list-style-type: none"> • Mutual exchange relationships • Dynamic applications of game theory 	<ul style="list-style-type: none"> • Structural embeddedness • Social-economic exchange relationships
Collaborative networks				<ul style="list-style-type: none"> • Common and private benefits

Table 3: Profile of participants

Function	Large companies	Medium-sized companies	Small companies
CEO/managing director			1
Finance	1		
Purchasing/ <u>procurement</u>	2	1	
Sales		1	1
Operations	2		
Project manager	2		
Consultant	1		1
Total	8	2	3

Table 4: Main results of subgroup ‘processes’

Results of discussions	
Round 1	<ul style="list-style-type: none"> • Finance in the lead for assessing supply chain finance offers. • Sales does not understand finance, therefore does not want to discuss financial terms with customers. Finance (‘sales prevention’) does not understand sales. • General tension accounts payable (buyer) versus accounts receivable (supplier). • <u>Information technology platforms speed up payment approval process.</u>
Round 2	<ul style="list-style-type: none"> • Transactional focus in finance, relational focus in sales (getting paid versus keeping customer loyalty). • Communication is key. Two people representing buyer and supplier need to understand what they are talking about (have knowledge) and understand each other (respect the relationship). • Especially, small suppliers may be sceptic and suspicious about supply chain finance. • Lack of knowledge of (small) suppliers, not doing the right assessment on effects of supply chain finance and not having previous experience. • <u>Lack of information shared with suppliers on supply chain finance.</u>
Round 3	<ul style="list-style-type: none"> • Suppliers who ask for supply chain finance or early payment perceived as weak by purchasing manager: reason to check for other suppliers to mitigate supply risk. • Limited communication between operations and finance about working capital and supply chain finance.

Table 5: Main results of subgroup ‘relationships’

Results of discussions	
Round 1	<ul style="list-style-type: none"> • Suppliers sometimes do not bring up the discussion on early payment, as they fear it is perceived as a sign of weakness. There needs to be a certain level of trust to bring up the sensitive topic of finance. • In long-term relationships, supply chain finance adoption is much easier. • The discussion of finance is often hindered due to functional siloes within companies.
Round 2	<ul style="list-style-type: none"> • There is usually a strong power difference in supply chains, with the larger party dictating conditions. • The openness of parties to discuss finance issues seems to be not only related to the maturity of the relationship, but also culture plays a very significant role. • There are two levels of trust: between buyer and supplier, and between the two individuals from the organisations that interact with each other. • This trust is built by transparency (showing them the factory rather than only talking to a sales person) and reliability. If these are not in place, they may be replaced by contractual control mechanisms, such as a retention clause (late payment that is withheld pending the completion of some specified condition). • Who offers finance has more negotiating power.
Round 3	<ul style="list-style-type: none"> • If there is a long-term relationship, which showed to be reliable, then there is better chance they will accept a new supply chain finance initiative. • Finance is never discussed as a separate topic. • Supply chain finance can have a positive impact on the relationship with a bank, as it implies that the buyer is investing. • The person that has the best relationship with the supplier should discuss financial arrangements (not always the case). • APICS/CIPS* standards for supply chain finance schemes are needed. • It takes a holistic understanding in order to be able to understand the benefits of SCF schemes. • Suppliers should be educated so that fear of being perceived as cash starved can be reduced. • Small companies do not have a supply chain perspective and knowledge (no-cross functional expertise), which makes it harder for them to evaluate proposed supply chain finance arrangements and be an equal negotiating party.

* APICS: American Production and Inventory Control Society; CIPS: Chartered Institute of Procurement &

Supply.

Table 6: Main results of subgroup ‘financial aspects’

Results of discussions	
Round 1	<ul style="list-style-type: none"> • There is a general lack of knowledge about supply chain finance schemes that hinders its adoption. • Adoption of supply chain finance schemes depends on structure: global structure will likely see adoption from headquarters and different regulations. • Finance has a key role in evaluating any scheme that might be adopted. • Supplier has to be on the radar (strategic suppliers more likely to be target of implementation).
Round 2	<ul style="list-style-type: none"> • Procurement forwards supply chain finance proposals to finance due to lack of proper knowledge to evaluate them. • Financial aspects related to capital equipment and materials present significant differences. • Financial aspects of supply chain finance schemes do not present significant complexity, but technological needs are more worrisome.
Round 3	<ul style="list-style-type: none"> • A buyer developed its own evaluation tool for supply chain finance schemes. • Financial awareness grown out of the finance department in the last five years. • Key role of trust is a prerequisite to evaluate financial parameters. • Suppliers that ask for money risk to be perceived as cash starved.

Table 7: Key theoretical concepts and corresponding evidence from focus group

	Key theoretical concepts	Financial aspects	Relationships	Processes
Transaction cost economics	• Bounded rationality	• Purchasing has no finance knowledge	• SMEs do not have supply chain perspective	• Info available to supplier might be limited
	• Potential for opportunism	• Assessing financial proposals would take up too many resources	–	–
	• Asset specificity	• Technological needs are not clear	–	–
	• Ex ante/ex post transaction cost minimisation	–	–	–
	• Alternative modes of governance	–	–	–
Agency theory	• Principal-agent relationship	–	–	–
	• Competing goals (conflicts of interest)	• Finance rules over supply chain	–	• SMEs might show scepticism and suspicion
	• Information asymmetry	–	–	• Communication and understanding is key
	• Moral hazard	–	–	• Larger suppliers have knowledge about supply chain finance
	• Agency cost	–	• Suppliers might hinder relevant information to avoid seeming weak	• Supplier asking for money is a sign of weakness and damages the relationship
	• Adverse selection	–	–	–
	• Information as commodity	–	• Common standards of evaluation do not include finance	–
• Behaviour/outcome based contracts	–	• Right incentive can bring right focus to suppliers	–	
Network theory	• Relationships ensure access to resources and activities	• Only supplier with some degree of strategic relevance can access supply chain finance	• Supply chain finance has positive impact on relationship with bank (your buyer is investing in you)	–
	• Interdependency	–	• Larger party dictates terms	–
	• Centrality	–	• Lack of integration between departments	–
	• Focus on developing long term trust-based relationships	–	–	–
	• Information and knowledge sharing	–	• Suppliers might hinder relevant information to avoid seem weak	–
Collaborative networks	• Collaborative advantage based on unified approach to value creation ('win-win-win')	• Trust comes before supply chain finance	•	–
	• Central coordination mechanism (IT as enabler)	–	–	• Sales is focused on relationship management, finance on transaction
	• Network as organism with adjustable structure and phase transitions	• Local decisions are limited by HQ policies • Suppliers with cash needs are perceived differently based on maturity of relationship	– Long-term relationships facilitate adoption	–
Social exchange theory	• Rewards and costs drive relationship decisions	–	–	–
	• Social capital	–	–	–
	• Power differentiation	–	• There are differences in power btw buyer and supplier	–
	• Evaluation standards vary	• Ad-hoc evaluation models might be created	• Larger suppliers more open than smaller • Culture affects willingness to discuss finance	–

• Development of relationships	-	-	• Relevance of interpersonal relationships between buyer and supplier
• Positive relationship ensure stability and beneficial outcomes	-	-	-

Findings

Themes

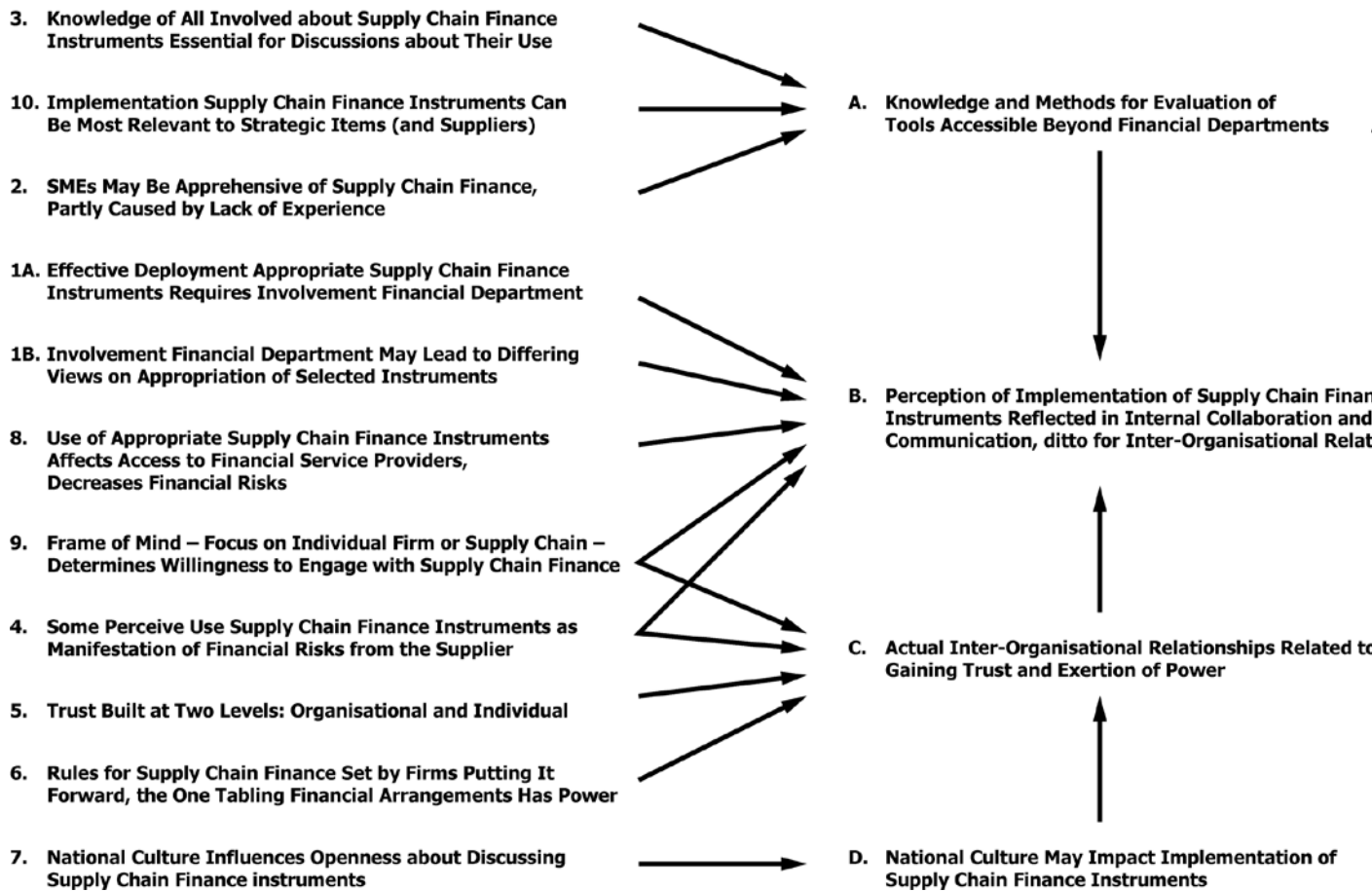


Figure 1: Relationship between findings, themes and outcomes