

Banks as Supply Chain Risk Managers: A Management-Oriented Review

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Abstract

This paper explores the importance of banks in defining supply chain risk at a management and system-level. Although the existing literature has mainly concentrated on the efficiency of the supply chain and financial intermediation, little has been done on the role of banks in shaping risk dynamics in interrelated production networks. This gap is filled in this paper through the conceptualization of banks as active participants in supply chains and not as passive providers of capital. Based on the literature on banking, supply chain management, and organizational theory, the study determines three important mechanisms by which banks affect supply chain risk: financial, informational, and governance mechanisms. These processes influence the way liquidity is distributed, the transmission of risks, and responses of firms to uncertainty in supply networks. The results indicate the duality of banks as stabilizers and amplifiers of supply chain risk. In normal circumstances, banks make the banking system resilient through liquidity provision and coordination of the firms. Banks can however limit credit during times of financial strain, causing liquidity crises and ripple effects throughout supply chains. In general, the research adds to the literature by uniting the financial and management viewpoints and highlighting the significance of a system-level approach to the concept of supply chain risk.

Keywords

supply chain risk, supply chain finance, banks, financial intermediation, system risk

1. Introduction

The recent global shocks such as financial crises, pandemics and geopolitical conflicts have revealed the systemic instability in the modern supply chains. Those events have underscored the interdependency of production networks and the importance of financial flows in ensuring continuity in operations. In the modern supply chains, companies rely on the external financing to handle the working capital, uphold the production timelines, and to organize payments at various levels of suppliers and customers. Recent studies have highlighted the increasing importance of financial institutions in supply chain operations and risk management [1-2]. This has led to the fact that financial institutions especially banks are becoming a greater determinant of supply chain networks stability. This article would analyze the reason behind phenomenon and discuss the application based on the reasons.

2. Background

The integration between banks and the supply chain operations has been greatly enhanced by the increasing significance of the supply chain finance. Historically, financial institutions were not part of the production systems, offering funds to companies without having a direct impact on the operational processes. Nonetheless, the growing dependence on external financing of contemporary supply chains has erased the distinction between financial and operational operations. Banks now enable interfirm transactions, and organize financial flows through supply networks through financial arrangements including trade finance, reverse factoring, and inventory financing [3]. These mechanisms are not simply a transactional instrument but structural elements that determine the distribution of liquidity among firms. Banks can affect the timing of cash flows, availability of working capital, and financial resilience of firms in the supply chain by dictating when and how payments are made.

Although this integration is on the rise, the contribution of banks to supply chain risk management is not well-investigated. The literature on enhancing operational efficiency and lowering financing costs concentrates much on supply chain finance as an operational technique and not a structural element that affects risk. This method does not consider the ways in which financial arrangements can change the allocation of risk between firms and establish new dependencies in supply networks.

Simultaneously, there is an obvious disciplinary gap between financial research and supply chain management research. Financial research mainly analyses risk in the banking system which is systemic risk, regulatory frameworks and financial stability [1]. Conversely, supply chain studies focus on interdependence between companies, cascading effects, and network strength [4]. Although the two viewpoints deal with risk, they work at different levels of analysis and seldom overlap. This disaggregation restricts our knowledge about the impact of financial decisions on the operational risk at the network level. With the increasing interconnection and financial integration of supply chains, there is an increasing necessity to have a single-minded approach that bridges the financial mechanisms and managerial decision-making processes and the dynamics at the system level.

3. Research Objectives

The main aim of the research is to investigate the role of banks in supply chain risk management and system level. Instead of considering banks as passive sources of capital, this paper tries to learn about their involvement as active participants in the formation of the structure and dynamics of supply chain risk.

To attain this goal, the research concentrates on two research objectives:

Research Objective 1: To examine the ways in which banks redefine supply chain risk using financial, informational, and governance processes in supply chain networks.

Research Objective 2: To measure the duality of the banks as stabilizers and amplifiers of supply chain risk in varying economic and institutional environments.

The first objective is to go beyond a financial focus to determine the mechanisms behind the way banks impact risk. In particular, it studies the interaction between liquidity allocation, information asymmetry, and contractual arrangements to determine the risk distribution and firm behavior. In this way, the paper is able to emphasize the interdependence between financial and operational processes within supply chains. The second goal will deal with the dynamic aspect of banking influence on supply chains. Although banks can increase stability through the provision of liquidity and facilitation of coordination, they can also increase disruptions by limiting credit or changing financing terms in times of uncertainty. This duality indicates the multifaceted nature of financial institutions as part of interconnected systems and the criticality of contextual factors of economic conditions, governance structures, and network dependencies.

4. Theoretical Background

The classical financial theory views banks as distributors of capital and as reducing information asymmetry between borrowers and lenders. The relationship lending literature emphasizes the fact that banks establish

long-term relationships with companies to obtain confidential information and enhance credit provision [2]. Simultaneously, the systemic risk theory highlights the interdependence between balance sheets and regulatory frameworks in promoting financial instability [1].

Nevertheless, these views are mostly restricted to the financial sector and give little information on the effects of banks on the risk of interconnected firms in the supply chains. Conversely, the literature on supply chains points out that companies are embedded in interdependent networks in which disturbances can spread through various levels, with a focus on resilience and coordination [4].

Recent interdisciplinary research fills these gaps by acknowledging that financial arrangements are situated in organizational and institutional settings. Supply chain finance is also increasingly considered as a system that combines both financial decision making and operational processes and governance systems [5]. The technological advancements like blockchain also contribute to transparency and enable banks to track transactions more efficiently, increasing their power in supply networks [6].

5. Literature Review

The role of banks in supply chains has been widely discussed in the literature, which can be roughly divided into two prevailing viewpoints, the traditional financial intermediation view and the emerging embeddedness perspective. Although both views offer some useful information, they have fundamental differences in their assumptions regarding the interaction between banks and firms and the effects of such interactions on risk.

5.1 External Intermediaries Theory

The classical view of banks is that of external intermediaries whose main role is to distribute capital and take care of credit risk. In this context, the emphasis is on the interactions between firms, especially in the form of relationship lending. Banks lessen information asymmetry through amassing personal data about borrowers, which enhances credit distribution and risk evaluation [2]. This view presupposes that risk is mostly predetermined by the firm-specific factors and financial situations.

Nonetheless, this perception has significant shortcomings when it is extended to the contemporary supply chains. It ignores the interdependencies among firms that define the supply chain systems by concentrating on bilateral relationship between banks and individual firms. Risks are not limited to individual firms but can spread across different levels in highly interconnected networks. Consequently, the conventional approach does not reflect the role of financial decisions in the overall framework of the risk in supply chains.

This limitation is partially resolved in the literature on systemic risk by looking at the accumulation of risks in the financial system. It underlines that the interrelated balance sheets and regulatory frameworks may cause the extensive instability in the times of economic pressure [1]. Although this literature offers valuable information on financial contagion, it continues to largely ignore the real economy as a distinct entity in the financial networks. It therefore fails to elaborate on the impact of banking decisions on production systems and interfirm relationships.

5.2 Embeddedness Perspective Theory

Conversely, the new literature focuses on the inherent position of banks in the supply chain networks. Supply chain finance arrangements explicitly tie financing choices with interfirm transactions, allowing banks to determine liquidity flows and financial interdependence between firms [3]. This view acknowledges that the financial relationships are not in isolation but are incorporated into the working system of supply chains.

In this perspective, banks are not just distributors of capital but constructors of the financial structure of the supply chains. The creditworthiness of dominant firms, e.g. large buyers, is frequently used to finance structures, resulting in asymmetric dependencies between supply chain participants. These structures make smaller firms dependent on them to access liquidity, which makes them more susceptible to disruption of important nodes. This implies that financial structures may generate both efficiency and systemic weaknesses.

5.3 Triple Interrelated Mechanisms

In order to gain a clearer insight into the impact of banks on supply chain risk, literature singles out three mechanisms that are interrelated: financial, informational, and governance mechanisms.

To begin with, financial mechanisms dictate the allocation of liquidity and credit risk among firms. Supply chain finance programs enhance the access to funding of smaller suppliers through the creditworthiness of bigger companies. Although this lowers financing costs, it also puts risk in a few nodes of the supply chain. Consequently, any disturbances to these nodes may have a disproportionate impact on the whole network. This points out that financial arrangements do not only reduce risk at the firm level but can also enhance systemic risk.

Second, banks play the role of central information processors in the supply chains due to information and monitoring mechanisms. Banks can obtain a detailed picture of the flow of transactions and the performance of firms through relationship lending and digital technologies. This improves their capability to spot arising risks and modify financing terms in line with them [2, 6]. But with this informational advantage new dynamics are also introduced. Depending on the financing needs, firms can change their behavior, and this can affect the operational decisions and risk-taking behavior. In this respect, the banks indirectly influence the way in which firms deal with risk.

Third, financial contracts that have governance mechanisms bring the control of the banks in the decision-making process of organizations. Loan covenants, payment terms and compliance conditions place limitations on firms, which influence decisions regarding inventory management, supplier relationships, and production planning [5]. These processes show that financial arrangements are not neutral, but they serve as governance tools that influence organizational behavior in supply chains.

5.4 Summary

Notably, these mechanisms are not independent of each other. Rather, they coexist to form a complex system where financial, informational and organizational processes mutually support one another. As an example, the distribution of liquidity is dependent on financial arrangements, which impacts the behavior of firms, and the adjustment of these arrangements over time depends on information and monitoring. The governance mechanisms also influence the responsiveness of firms to these constraints. This exchange underscores the systemic aspect of supply chain risk and the pivotal role of banks in its formation.

In general, the literature recommends that banks be viewed as embedded actors that actively shape the supply chain risk structure and dynamics. Banks are strategic in the allocation, transmission, and management of risk in interconnected production networks, rather than being passive providers of capital. This view demands that we move beyond the analysis of firms to a network approach to the analysis of financial intermediation.

6. Key Finding

6.1 Research Objective Reflection

The literature synthesis indicates that banks can affect supply chain risk via a complex of interdependent processes that work on financial, informational, and organizational levels. But in addition to the identification of these mechanisms, the literature also indicates that the power of banks is structurally entrenched in the way supply chain systems operate.

To begin with, banks are vital in determining the distribution of risk among supply chain players. Banks reallocate liquidity and credit risk among the firms through financial schemes like supply chain finance. This redistribution is not a neutral one. Rather, it tends to be a measure of comparative bargaining power and creditworthiness of firms in the network. Large buyers with strong credit ratings tend to become central nodes through which financing is channeled, while smaller suppliers become dependent on these structures. This leads to the unequal distribution of financial risk, and the stability of the supply chain is more and more reliant on a few key players.

Second, the transmission of risk is affected by banks as information intermediaries. Banks can detect risks that arise in a number of firms at the same time by having access to the transaction level data and tracking of

financial flows. This will enable the banks to dynamically change the financing conditions. Nevertheless, these modifications may also increase the spread of risk. As an example, the liquidity constraints may be transmitted to other interconnected firms as banks reduce credit in reaction to perceived risks and enhance disruptions in the supply chain.

Third, financial contracts have governance mechanisms that determine the responses of firms to uncertainty. Loan covenants, payment conditions, and compliance requirements impose constraints on managerial decision-making. These limitations affect operational plans like inventory, selection of suppliers and payment schedules. Consequently, financial arrangements are not necessarily limited to the capital provision but are instruments that influence organizational behavior in supply chains.

Notably, these mechanisms are not independent of each other. Rather, they are interrelated to create a complex system where financial, informational, and organizational processes support one another. This interconnectedness highlights that banks are not peripheral actors but integral components of supply chain systems.

6.2 Insight of Key Finding

The results of this research can lead to the conclusion that the role of banks in supply chain risk can be regarded as a multidimensional phenomenon that combines the financial, managerial, and system-level dynamics. This part critically analyzes these findings and brings out their theoretical implications.

As a management aspect, the relationship between banks and firms goes beyond financial dealings and entails intricate decision-making. Banks do not only determine access to capital but also the way firms organize their activities and relationship with their partners in the supply chain. This implies that supply chain risk has become part of managerial practices. Companies need to strike a balance between financial limitations and business goals and such decisions are frequently influenced by the terms and conditions that financial institutions set. Thus, supply chain risk management cannot be complete without taking into account the managerial behavior and organizational processes.

Governance wise, the role of banks brings about coordination and constraint into supply chains. On the one hand, financial solutions like supply chain finance can be used to improve coordination through stabilization of cash flows and harmonization of incentives between firms. Conversely, the contractual requirements can add some form of rigidities which can restrict flexibility. This poses a basic contradiction: the very financial mechanisms which enhance efficiency in a stable environment can decrease adaptability in times of disruption. This duality underscores the need to explore the interaction between governance structures and environmental uncertainty.

Systemically, the supply chains are to be considered complex adaptive systems with interdependencies and feedback loops. Banks are at the center of these systems as they provide liquidity and facilitators of financial flows. Their choices can thus be system-wide. To illustrate, liquidity shocks may spread via financial connections, causing cascading failures among companies [7]. Likewise, structural interdependencies can propagate disruptions through various levels of supply chains [4]. Such dynamics show that the effects of banks cannot be well represented at the firm level but have to be studied at the network level. Supply chain resilience also depends on coordination and adaptive capacity among firms [8].

One of the main lessons that come out of this discussion is that banks play a dual role of stabilizing and amplifying supply chain risk. In stable economic conditions, banks increase resilience through the provision of liquidity, coordination, and continuity of operations. Nevertheless, at times of financial strains, banks can pull out funding or restrict credit facilities, leading to shortages of liquidity and magnifying disruptions. The tension that is inherent in this dual role is the conflict between risk management on an institutional level and stability on a system level.

7. Discussion

7.1 Limitation

There are a number of limitations of this study. First, being a literature review, the analysis is not founded on empirical data but on previous studies and thus, it is not possible to develop causal relationships between

banking activities and supply chain risk outcomes. Second, the research largely takes a conceptual and theoretical approach which might not be adequate in reflecting industry-specific variations in supply chains and financial systems. Practically, the supply chains in different industries differ considerably, and the role of banks can be different based on the industry peculiarities. Third, the role of banks is prioritized in this research, whereas other financial actors like non-bank financial institutions and fintech platforms are not discussed in detail. These actors can also become more and more significant in forming the supply chain risk. Lastly, the analysis has assumed comparatively stable institutional and regulatory conditions, which in reality, supply chains are subject to different economic conditions and policy frameworks.

The limitations may be overcome in future studies through the use of empirical data, industry-specific analysis, and extending to a wider array of financial participants.

7.2 Future Research

This analysis gives rise to several important research directions.

To begin with, the role of various financial structures on supply chain risk dynamics should be studied in the future. The structure of supply chain finance, ownership structure, and institutional structure can result in varying risk allocation and transmission patterns.

Second, the role of banks in supply chains can be radically transformed by technological advances like blockchain and digital platforms. Such technologies are able to improve transparency and make transactions real-time which may help to improve risk management. Nevertheless, they can also bring new types of addition and structural weaknesses.

Third, there is a need for network-based and multi-level research approaches. The conventional firm level analysis is not adequate to reflect the complexity of the supply chain systems. The application of network theory and systems thinking to the interaction between financial and operational risks should be incorporated in future research.

Lastly, the behavioral aspects of supply chain risk need to be investigated in future studies. Decision-making processes by managers, organizational routines, and institutional pressures are all involved in the perception and management of risks. Additional behavioral and organizational perspectives can help gain more insight into how banks impact supply chain risk.

8. Conclusion

This paper re-conceptualizes banks as risk managers in supply chains and emphasizes their key position in determining how risk is allocated, transmitted, and amplified in supply networks. The study goes beyond the conventional view of banks as passive intermediaries by considering financial, managerial, and system perspectives and putting banks in the forefront as active participants in supply chain systems. The results indicate that banks can impact supply chain risk via interrelated financial, informational, and governance processes. These processes redefine the allocation of liquidity, transmission of risks and firm responses to uncertainty. Notably, the influence of banks is not equal. Rather, it is reliant on economic conditions, organizational structures, and institutional contexts.

One of the major contributions of this research is the dual nature of banks as stabilizers and amplifiers of supply chain risk. This observation underscores the importance of taking into account the advantages and potential disadvantages of financial intermediation in supply chains. In general, this paper recommends that the concept of supply chain risk be viewed as a management and system phenomenon, and not necessarily a financial concern. With this point of view, future studies are able to create more extensive models of risk analysis and management in complex supply chain systems.

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Conflicts of Interest

The authors declare no conflict of interest.

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