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SCUOLA DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE

EXECUTIVE SUMMARY OF THE DISSERTATION

Supply Chain Finance and macroeconomic trends: what's the link?

A Historical Research approach to understand the evolution of the phenomenon

Tesi Magistrale in Management Engineering – Ingegneria Gestionale

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1. Introduction

In the Supply Chain Finance (SCF) literature the consensus is that the explosion of the phenomenon can be attributed to the Global Financial Crisis (GFC). Until recently, Supply Chain Management (SCM) practices revolved around optimising the physical and information flows in SCs, while financial flows were not considered. However, the disruptions in the financial system and the subsequent tightening of banking regulations forced companies to optimise cash flows. Limited funding from traditional channels, especially for Small and Medium Enterprises (SMEs), which find it more difficult to obtain credit lines [1], has to be complemented with alternative source of liquidity. SCF is one of the answers that companies have found, as it focuses on the liquidity tied up in the Net Operating Working Capital (NOWC). However, the GFC is not the only scenario that can be associated with SCF. In the case of the recent COVID -19 pandemic, many companies have used such tools to cope with contingencies and uncertainty [2]. Nevertheless, the literature lacks an explicit model to relate SCF to the macroeconomic context. The summary is structured as follows: Section 2 provides a literature review on the topic; Section 3 explains the objectives and the research process; Section 4 describes the research methodology, while Section 5 describes and discusses the results; finally, Section 6 presents the conclusions and limitations.

2. Literature Review

The literature review phase of the project consists of two sections conducted in parallel. On the one hand, SCF was covered in detail, examining solutions, actors, drivers for adoption and barriers. On the other hand, how monetary and fiscal policies as well as banking regulation affect economies and the competitive environment for businesses was studied. The topic of macroeconomics was re-examined with particular attention to the implications for businesses, finally converging to business practices during a crisis. The first point of convergence between the two areas is the use of trade credit in times of crisis [3]. Thanks to the integration of these two research topics, it was possible to identify the gaps that exist in the academic literature.

Supply Chain Finance SCF has been defined as *"a mix of models, solutions, and services aiming to both optimise the financial performance and control working capital within a supply chain, exploiting a deep knowledge of supply chain relations and dynamics."* [4]. The main objective of SCF is to optimise the liquidity that is tied up in the NOWC and the Cash Conversion Cycle (CCC) as a result [4]. An individualistic approach to NOWC management means advantages for a company at the expense of its SC partners, especially in extending payment terms and overall lower performance.

The implementation of SCF programmes is often initiated by a focal firm (usually a large company), which is the reference point of SC and is characterised by easy access to cheap capital. Intermediation of the focal firms allows weaker SC players to access financing [1], especially relevant for the upstream SC. Financial institutions (FI) are important partners in SCF, providing financing and acting as *super partes* actors enabling improved SC performance. Besides banks, fintechs have also gained popularity after the GFC, turning the financial sector upside down thanks to the combination of finance and technology and the lack of regulation. The technological aspect is central to SCF and can increase the benefits for both innovative and traditional solutions. [5]. Technology service providers have developed creative solutions to optimise cash flows and offer platforms that facilitate exchange of information and funds [6]. The ecosystem of SCF has expanded over the years to include Logistics Service Providers (LSPs), as they are able to manage physical flows of goods. They can offer SCF collaboration by supporting coordination while providing value-added services.

The range of solutions grouped under the term SCF is broad and there are several categorisation principles. The one that is most appropriate for the scope of this project is the one where one of the dimensions of analysis is the component of the NOWC targeted, distinguishing among: (1) Receivable financing; (2) Payable financing; and (3) Inventory financing.

The implementation of SCF requires the coexistence of several factors. Considering the focus on NOWC, the presence of a strong WC orientation has a positive influence on the adoption of SCF. In addition, the need for alternative sources of funding beyond credit increases the benefits of SCF and facilitates the adoption process [1]. When SCF becomes more widespread and there are instances of its success, firms might be compelled to conform to its adoption, especially if competitors do so [6].

SCF Dissemination also has to deal with challenges and obstacles. The obstacles can be due to problems within the company, in the relationships between SC partners or in the external context, which are beyond the control of companies. The lack of cooperation between and within companies hinders the implementation of a complex scheme such as SCF [5]. There are also human-related barriers, in the form of cultural resistance and lack of knowledge about the topic, which are cited in the literature as main obstacles. Companies implementing SCF are still perceived as financially unstable in some contexts, which reduces their popularity.

Macroeconomics The macroeconomic scenario determines the competitive context for companies and has the potential to influence their performance and business practises. In the recent past, there have been three major crises that have disrupted the business environment: (1) the Global Financial Crisis; (2) the Sovereign Debt Crisis (SDC); (3) the COVID-19 pandemic.

In response to a crisis, there are three main mechanisms through which institutions can attempt to mitigate the impact and take corrective action: Monetary policy, fiscal policy and banking regulation [7].

Monetary policies are implemented by central banks and they focus on the management of liquidity flowing through an economic system. They revolve around two channels: the bank lending channel and the interest rate channel. An expansionary monetary policy is associated with an injection of liquidity and low interest rates. Contractionary policies, on the contrary, aim at decreasing the demand for money and are mainly used to deal with the presence of inflation to avoid uncontrollable prices growth [7].

Policy transmission depends on the ability of banks to reallocate liquidity and pass on interest rates, which could be incomplete due to asymmetries and the influence of sovereign bond spreads in the country [8]. During the GFC, banks were unable to reallocate the liquidity they received from central banks as they struggled with balance sheet problems, especially low-capital ones. In the case of the SDC, growing concerns about public debt led to a deterioration of funding conditions for countries , despite the expansionary monetary policy of the ECB. In the case of the COVID-19 pandemic, the strength of the financial system allowed the monetary stimulus to be properly passed on to the corporate sector, supporting businesses in facing unprecedented challenges.

Fiscal policies are set by governments and implemented through the management of the national budget. In particular, they influence national income, i.e. the Gross Domestic Product (GDP). Expansionary fiscal policy is applied by governments when GDP and employment fall, through liquidity and budgetary measures on both the expenditure and liquidity side. These measures were taken during the GFC to shore up the financial system by reducing tax pressure and providing credit guarantees for loans. Many FIs were rescued or nationalised thanks to government intervention. [7] Contractionary fiscal policies have characterised SDC because governments had to reduce public debt. Fiscal consolidations have serious effects on economies and can always be successful. If the composition of the consolidation is appropriate and there is credibility that it will be maintained over time, it will bring long-term benefits to the economy and higher GDP with lower public debt. Another problem is that this measure is factored into the cost of financing for businesses, so fiscal consolidation can be detrimental to national businesses when they seek loans.

Finally, banking regulation has the task of monitoring the operations carried out in the financial system in order to ensure its stability and avoid systemic risks. Excessive risk-taking practices by the banking sector can be harmful to economies, as the world has experienced in the case of the GFC. Over the years, the Basel Committee has proposed guidelines to adequately supervise banks and FIs. After the GFC, the agreement was most recently updated with Basel III, acknowledging the miscalibration of risk with Basel II [7]. Greater regulation of the banking sector is a preventive measure, but it also brings disadvantages. Banks are more sensitive to the downgrading of companies' ratings, which results in a general increase in financing costs. This is confirmed by the fact that the completeness of interest rate pass-through has suffered a setback after the introduction of Basel II [8]. The conditions of bank financing have become less favourable, especially for companies in distress.

The macroeconomic developments determine the environment in which businesses operate and work, which directly affects their performance. Crises bring disruption to the business context and force companies to face the challenges. Liquidity is always at the heart of business strategy, and in times of need, accumulating cash is a common solution. SCF Unlike trade credit, liquidity credit is a way to create win-win scenarios for all parties involved. As it is a liquidity-focused instrument, there is interest in understanding its evolution in response to crises and the resulting corrective actions taken by institutions.

3. Research Objectives & Questions

Objectives The aim of this research is to analyse the interplay between SCF and the macroeconomic situation and to develop a qualitative understanding of how the external financial and economic environment influences the adoption of SCF, in terms of composition of actors and solutions used. The literature only acknowledges that the GFC has contributed to SCF becoming a more popular tool, but there is no clear definition of the relationship between the two phenomena. Moreover, the GFC is not the only event that may have contributed to the development of SCF. Thanks to the analysis of the interplay between the above-mentioned crises and SCF, an attempt is made to inductively derive a general understanding of how macroeconomic scenarios influence SCF.

Questions To reach the objectives underline, a single research question was formulated, which is then deployed for each of the three macroeconomic scenarios. Associated to it, the research framework is displayed in Figure 1, which highlights the variables chosen to assess the connection between the economic & financial situation and SCF.

RQ1: "How do the different types of policies and the economic-financial situation influence the firms' choice of the SCF scheme, taking into account the (firm's) contingent factors?"

Whenever a crisis occurs, it has an impact on performance at the micro level of the individual company, organisation or institution. Policymakers can also mitigate these effects through corrective actions. Often, companies use trade credit to deal with contingencies [3], which can be considered a precursor to SCF given the focus on the NOWC. SCF is one of the other options used to manage short-term liquidity, and its use cannot be detached from the external business environment. The three scenarios considered are characterised by different sets of problems and may have led to different changes in the adoption of SCF. The GFC saw the collapse of the financial system due to a corporate debt bubble. The SDC was caused by a shift of this bubble to the public sector instead of the private sector. The COVID -19 pandemic, as the name suggests, was both health and economic in nature and had unprecedented consequences for SCs and the people. Overall, the study is divided into the three sub-questions listed below.

RQ1.1: "How did the different types of policies and the Global Financial Crisis influence the firms' choice of the SCF scheme, taking into account the (firm's) contingent factors?"

RQ1.2: "How did the different types of policies and the Sovereign Debt Crisis influence the firms' choice of the SCF scheme, taking into account the (firm's) contingent factors?"

RQ1.3: "How do the different types of policies and the COVID-19 pandemic influence the firms' choice of the SCF scheme, taking into account the (firm's) contingent factors?"

4. Methodology

The literature was used as a basis to gain a holistic perspective on SCF and macroeconomy and to identify the resulting research gaps. The research framework was developed to fill the gap regarding the relationship between SCF and the economy & it was possible to conduct both a vertical (limited to the individual crises) and a horizontal (cross-crisis) analysis, which made it possible to extrapolate more general findings from the research conducted.

Historical Research The method chosen to answer the research questions was historical research, which aims to reconstruct history as it happened. The aim of this methodology is to bring history and theory together and draw conclusions from a specific context of the past. The immersive approach of these methods offers a unique opportunity to capture and understand events as they happened, without filtering them through knowledge built up ex-post. [9].

The historical narrative is constructed by gathering data from primary and secondary sources. A source is defined as primary if it originated in the period in question; secondary if it is based on the analysis of primary sources. More specifically, within this

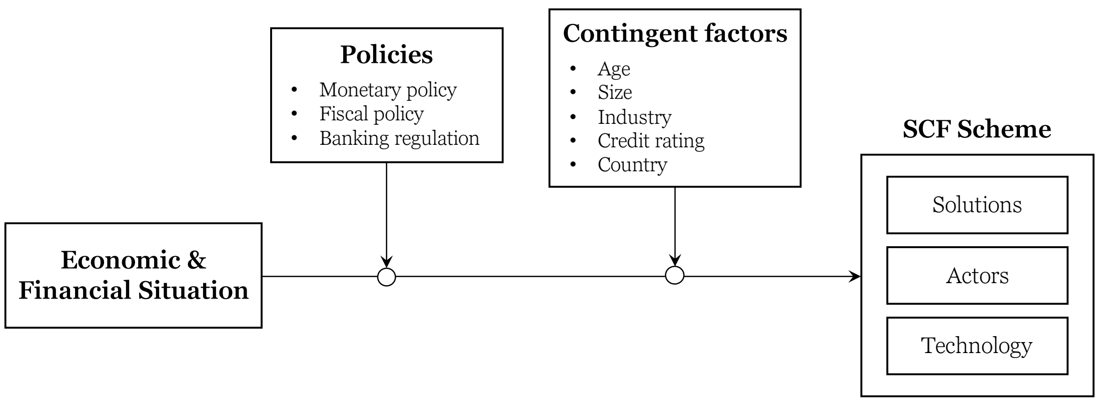

Figure 1: Research framework

spectrum of documents, similar to previous work, the major and well-known journals were selected as primary data sources. They represent a reliable source of information and are relatively easy to retrieve, so that a large database can be built up.

Data collection Three principles were observed in the selection of newspapers: (1) they had to be reputable in order to provide reliable information; (2) they had to be financially oriented or contain dedicated sections; (3) the language of the articles was limited to Italian and English. Based on these three filters to guide the following newspaper archives were researched: *Sole24Ore, Corriere della Sera, Milano Finanza, Wall Street Journal, The Economist, Financial Times and New York Times*. Then, the time interval for each crisis was determined, as shown in Figure 2, even though it is not possible to find a clear-cut end point to macroeconomic phenomena.

For the actual research in the archives, a number of explanatory keywords were identified and related to the macro variables of the research framework. The keywords were selected through a detailed breakdown of the variables according to their most important aspects. For crises, the main element of disruption and areas of impact were highlighted. For policies, the keywords reflect the main channel(s) of policy implementation. For SCF, in addition to the main categories of actors, solutions and technology, it was decided to include the element of working capital to capture the short-term liquidity needs of businesses. For the research in the archives, in some cases it was necessary to combine keywords to find information that remained within the scope of the project. For example, tax policy was examined in terms of its impact on the liquidity management of companies, or the supply crisis caused by the pandemic influenced the monetary policy of central banks.

The criteria to determine if an article was valuable or not were related to the topics that were discussed within it and the approach taken by the text. Even if the keywords sought were present in the article, this did not necessarily mean that they were the central theme, as in some cases they played only a minor role: in this case, the article was excluded. The outcome of the digital archives research process was a database composed of 374 newspaper articles, and for each the very basic information as well as a short summary was recorded.

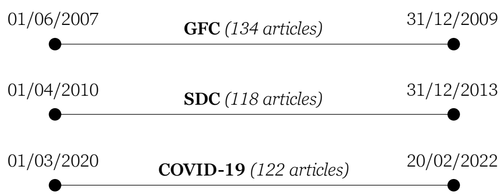

Figure 2: Time intervals chosen for each crisis

Data analysis As with any form of data, a fundamental task of the researcher is to establish meaningful procedures for a systematic analysis. The categorisation process could be addressed through a thematic content analysis where the main concepts related to the research are identified within the sources employed. To the data found was then associated a categorisation based on the same keywords employed in the digital research. Although they appear to overlap, the articles found in relation to a particular combination of words often provided insights into other aspects of the framework. The fields recorded for each entry in the databases were: date, title, detailed keywords, key message of the article, geographical region of interest and the categories associated. To support this analysis with a more quantitative outcome, it was decided to accompany this step with a counting process based on the categories shown in Figure 3. The meaning attributed to the quantitative element in the analysis is marginal: indeed, the counting process is useful to assess at first glance the relevance of the categories and if, for example, one is present at all.

After the counting processes, it was possible to look

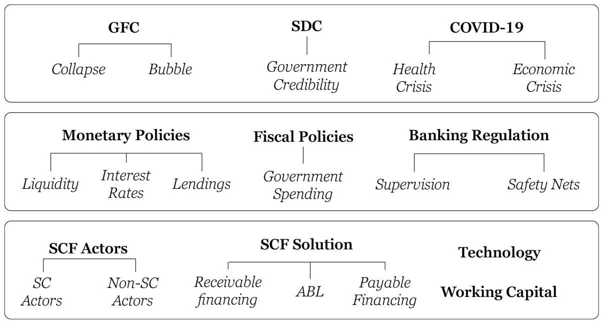

Figure 3: Set of keywords used to categorise the articles

for patterns and recurring schemes within the data, inferring causal relationships among the variables by matching together information found in the articles.

5. Results and Discussion

Results The following chapter presents the results of the historical methodology in the chronological order of the three macroeconomic scenarios. Each of the crises is analysed in detail, taking into account all the components used to describe the variables of the research framework. The three crises made it possible to reach more general and abstract conclusions through inductive reasoning so that the macro research question can be answered. Each paragraph deals with different implications that the crises and policies had for SCF.

RQ1.1: "How did the different types of policies and the Global Financial Crisis influence the firms' choice of the SCF scheme, taking into account the (firm's) contingent factors?"

The GFC caused a shock in the global financial system that brought many banks to the brink of collapse. Uncontrolled debt over the years led to an unstable system that could no longer function properly. Monetary policy measures that introduce high levels of liquidity are not perceived by the end market when the banking sector uses this liquidity to replenish its reserves. This pushes for alternative funding, and for short-term requirements, SCF is the main instrument that can fill this gap [1]. The most damaged companies are those whose credit ratings have been downgraded because they no longer had access to new credit lines, and SMEs, which are known to suffer from information asymmetries in their relations with FIs. Indeed, company size and company rating emerge as key contingent factors, both in the narrative and in the counting process. To compensate for the lack of liquidity in the financial system, companies resorted to receivables financing. Considering that smaller and financially unstable enterprises were most affected by the credit crunch, the use of SCF is mainly counted in these categories of enterprises. The driving force of SCF, which is related to the need for alternative sources of liquidity, is amplified for these enterprises, but not for the other enterprises that were able to maintain a stable flow of financing from the banking sector. However, this impact depends on the country. For example, not only is SCF not used in all the regions studied, but when it is, it takes different forms. In Italy, there has been a significant upsurge in the spread of Factoring, which was already being used, albeit to a lesser extent. In the UK, companies are resorting to the alternative of invoice discounting because this solution was well-known and thus more accessible to companies. This suggests that the country where the companies are located is a key parameter: SCF was the response in these regions where the solution was already known to the companies, which explains why the company's country appeared relevant in the relationship between the crisis and SCF. As for the interest rate channel, the waves of downgrades worsened financing conditions and made the few loans granted more expensive. In a scenario where lending is severely constrained and overall more expensive than firms were used to, the competitiveness of the interest rate at SCF loses some of its relevance. This contradicts the view that the interest rate differential between the two alternatives is a key element in the decision-making process. When traditional financing options are not available for weaker companies, SCF becomes the best and only alternative to find financial relief.

In all the regions studied, guarantees for loans have been introduced as part of fiscal policy to facilitate access for businesses. This could reduce the value of SCF as it promotes access to traditional bank financing. However, the impact of this measure depends on the success of its implementation. In a credit crunch, it could facilitate access to credit lines, but still leave a funding gap that needs to be filled through other means. The government could also play an indirect role in the proliferation of SCF. One of the markets tapped through receivables financing is the market for trade credit to public administrations. The value of these instruments is linked to the sector in which a company operates and to the country in question (payment terms). In Italy, it is a widely used instrument because the Italian government's payment terms are unusually long and far above the EU average. Companies that have taken advantage of this practice are mainly in the health and construction sectors because they are the busiest. Therefore, SCF was observed with PAs in those industries that cooperate with the government and mediate the relationship between tax policy and SCF. Trade receivables held against PAs provided a reason for the growth of SCF, considering that in European countries the share of GDP generated by government is significant.

RQ1.2: “How did the different types of policies and the Sovereign Debt Crisis influence the firms’ choice of the SCF scheme, taking into account the (firm’s) contingent factors?”

The central bank response to growing public debt and rising yields is usually a bundle of measures grouped under the umbrella of QE to avoid a self-fulfilling debt crisis. However, the targeting of liquidity to the public debt leads to a restriction of credit lines for businesses and individuals. The result is another credit crunch that businesses experienced immediately after the GFC crisis. The failure to meet liquidity needs through traditional forms of financing has again driven the proliferation of alternative forms. In this scenario, however, there is an evolution of the solutions recorded in the SCF database. Indeed, fee-based forms of financing, especially Reverse Factoring (RF), have become increasingly popular. The category of companies that benefits most from this instrument are smaller companies that can obtain financing thanks to the intermediation of a more solid buyer. Here it can be seen that the focal firms are the initiator of the RF programme and primarily target SMEs in their upstream SC. In parallel, instruments for financing receivables have become established in the financial culture of companies, especially when they have not been able to access a strong buyer (as in the case of RF). When analysing SCF during this crisis, it turns out that the size of the company plays a role. On the one hand, smaller companies are the most affected by the new credit crunch. On the other hand, the implementation of RF is only possible thanks to the mediation of the focal enterprise, which is usually characterised by a large size. Therefore, the size of the company plays an important role. When considering the impact of the crisis on the financing conditions of companies, it should be noted that the increase in spreads on government bonds also implies an incomplete pass-through mechanism, which makes credit more expensive [8].

The implementation of fiscal consolidation by a government implies a reduction in economic activity, at least in the short term. Moreover, the decision to pursue this strategy in European countries was ill-timed, as it was implemented during a period of mild recovery after the GFC. For this reason, fiscal consolidation caused a double-deep recession and was not as successful as predicted in terms of reducing public debt [7]. Since NOWC is related to trade volume, a decline in GDP means a decline in the SCF potential market. Therefore, the Sovereign Debt Crisis directly reduced the market for SCF by causing a decline in trading activity. This consideration suggests that SCF is linked to the development of GDP (although other factors may play a role). Another element to consider is the fact that countries undertaking fiscal consolidation have chosen to defer payments to companies involved in public initiatives in order to reduce spending as much as possible. Companies have been unevenly hit by the crisis: the sectors that were more involved in public initiatives suffered from the reduction in national spending because the government had not made all the payments. This side effect of SDC initially led to an increase in the market for SCF related to receivables from PAs, especially in Italy where Factoring was already common in this context. Even if a crisis could increase the acceptance of SCF solutions because they are a real alternative to bank financing, another argument can be made for the volume. The country in which the company is located is an important determinant of the impact of the crisis on SCF. Firstly, the effects of fiscal consolidation are visible in the country that follows it and also have an impact on businesses. For this reason, Factoring has continued to increase in Italy. Secondly, the spread for government bonds is included in the financing costs of bank loans, which hurts national companies. In the EU, we can see how fiscal consolidation in peripheral countries is widening the gap between companies in solid countries and those in more unstable countries. Overall, the country of the firm is the second most common factor in counting these two effects together.

Although regulation aims to protect the economy from systemic risk, it has a downside when it comes to the financial system's support of firms. However, it has the potential to exacerbate asymmetries in the banking sector in terms of its response to monetary policy. Tighter regulation means lower overall lending capability and higher eligibility requirements. In this highly supervised environment, fintechs have been able to establish themselves in the financial market by being able to circumvent the strict regulation that constrains banks. One of their strengths was the flexibility they gave to those customers who were left behind or priced out by the established financial institutions. The other element is the technological aspect, which has further disrupted the market. In this sense, fintechs often offered dedicated platforms to support their activities. Overall, the introduction of more regulation in the banking sector is leading to the emergence of new categories of financial actors. These actors have become providers or supporting actors on SCF, broadening the spectrum of actors. The presence of fintechs and technology (in the form of platforms) became even more evident during the SDC.

RQ1.3: "How do the different types of policies and the COVID-19 influence the firms' choice of the SCF scheme, taking into account the (firm's) contingent factors?"

The COVID-19 pandemic posed unprecedented challenges to organisations and people by causing an economic and health crisis at the same time. Moreover, these two factors can be seen as opposing each other, as closures hamper economic activities. The demand crisis beforehand and the supply crisis afterwards affected the physical flows within SCs and forced companies to rethink their SCM practises. Some sectors were affected more than others. Tourism and personal services could not switch to other channels to secure sales, which made them more vulnerable. Especially in the early stages of the pandemic, businesses cut their production lines and were unprepared when demand picked up in the subsequent recovery phases. The result of these decisions was that special attention was paid to optimising inventories, as they are the main means of coping with unpredictable demand. During the current supply crisis, some companies have decided to build additional stock buffers to secure materials when they are available and to cope with volatility. As a result, inventory financing solutions have become more valuable to a company from a financing perspective as they focus on physical inventory on the balance sheet. The downside is that they require higher purchasing and maintenance costs. Thanks to the implementation of inventory financing programmes, a company has the opportunity to mitigate the impact of higher cash outflows related to inventory while increasing resilience by using assets as collateral to obtain additional funding. In addition, sectors that have been more affected by material shortages (e.g. IT) have benefited from inventory financing as they have been able to increase their stock levels. This solution is therefore not evenly distributed among the different sectors.

Thanks to effective monetary policy, companies have easier access to bank credit, especially large companies. At the same time, governments have increased the liquidity of enterprises through loan guarantees and other measures. Overall, companies (especially the larger ones) had unprecedented liquidity. One of the ways in which the excess liquidity can be used by companies is to strengthen their supply network. In particular, Dynamic Discounting (DD) is encouraged by the excess liquidity, which is one of the drivers for adoption. DD SC strengthens relationships by showing a willingness to directly support weaker suppliers and improving cooperation between companies. In some extreme cases, it has been reported that some MNCs have decided to shorten (even halve) payment terms to suppliers in order to reduce financial pressure and show a willingness to create stronger SC relationships. The size of a company matters as it is directly related to the more widespread SCF solutions: payable financing is designed to benefit smaller suppliers of focal firms, so this category of company has more interest in the programmes.

The introduction of fiscal credits combined with the possibility to sell them to FIs creates a new market for SCF. Fiscal credits differ from commercial credits for two reasons: they are recorded in a separate voice of the income statement and they are not part of NOWC. However, if they can be sold, there are similar mechanisms to SCF. The advantage from the point of view of the FI or the company buying the fiscal credit is that the debtor is the government, which is considered the safest entity. In the Italian context, secondary markets were even created where these credits were resold to other financial institutions so that the demand for this instrument could be better absorbed by the companies involved. SCF In this sense, the credit became a valuable instrument for the construction sector, as it is the one interested in the fiscal credits. So there is a clear influence of the specific sector when studying the evolution of SCF during the pandemic.

Discussion After the vertical and separate analysis of the three macroeconomic scenarios it is necessary to integrate the takeaways and find cross-case contributions, using the historical narrative as baseline to develop new theoretical concepts. In the following sections it will be provided a set of propositions that aim at abstracting findings from the individual contingencies and offer a generalised perspective.

Proposition 1. *Both monetary and fiscal policies that stimulate the economic activity have the possibility to increase the potential market for SCF.*
Monetary and fiscal policies are designed to mitigate emerging problems in economies and counteract negative trends, with the ultimate aim of stimulating overall economic activity. Overall, GDP growth achieved through the right combination of monetary and fiscal policy is an indirect driver of growth for SCF. When economic activity is stimulated and companies make investments, the volume of NOWC develops similarly. As SCF solutions aim to free up capital tied to short-term operations, there is a larger potential market for SCF if more NOWC flows through the economy. In addition, the composition of fiscal policy could increase the market of SCF as there are more claims against PAs and the possibility to sell fiscal credits.

Proposition 2. *The macroeconomic scenario represents an accelerator of SCF diffusion.*
Crises have the peculiarity of causing major macroeconomic changes within a limited period of time. It is important to stress that SCF is influenced by the macroeconomic context, as it is one of the phenomena accelerated by a crisis, but this does not mean that there is a strict dependence. SCF is a set of instruments that undergoes a natural evolution. In a financial crisis characterised by a tightening of credit, SCF is becoming an increasingly popular way to diversify sources of liquidity. The results of this research confirm the view that SCF is a reaction to the reduction in lending from traditional channels. [1]. This leads to an accelerated diffusion of solutions already on the market from SCF. During the GFC this enabled the spread of factoring and invoice discounting, during the SDC it promoted the use of RF solutions and during the COVID -19 pandemic it drew attention to inventory financing tools. One trend that emerged over time is that the level of collaboration within SCs increased, enabling the use of SCF. From this study, it appears that companies chose to support their upstream partners in times of need, including through SCF. [5]. Looking at COVID -19, it can be seen that the Just-In-Time system reaches its limits when it comes to managing unpredictable flows of goods. The need to optimise inventories set the stage for the development of better inventory financing solutions. A final consideration regarding the proliferation of SCF during stressful macroeconomic developments is that the principle of legitimacy may contribute to this phenomenon. The advantages observed among competitors became an additional motivation to pursue the same strategy and strengthen SCF through its successful implementation, as found in the research. The more companies used SCF, the stronger the impression became that it was a powerful tool to improve resilience to stressful events. SCs using this tool were less at risk of disruption compared to others using an individualistic approach, especially considering a long-term perspective. Inter-firm cooperation is crucial for the success of SCF, even more so when the external context is more challenging [6].

Proposition 3. *Monetary policies, both contractionary and expansionary ones, create the conditions for the spread of SCF.*
FIs react to contractionary monetary policies by reducing new credit origination and an overall risk-averse attitude and credit rating decline for many companies that cannor refinance their debts. The first coping mechanism is to get financing from the SC through the extension of payment terms, using the informational advantage of firms. Even though the scenarios are different from one another, in all the three crises there is the systematic extension of payment terms, confirming that trade credit is exploited in times of distress [3]. A better alternative to using SC relationships to obtain funding is to implement SCF, because it allows for win-win scenarios. One thing to consider is the interest rate of SCF. In the literature, the interest rate of the solution is considered in competition with that of traditional loans, with the company choosing the better alternative. However, this research shows that the interest rate of SCF does not play a role in decision-making when the bank channel charges high financing costs and reduces lending. This is even more true when credit lines are almost inaccessible and SCF is the only source of liquidity available to a company [6].

On the contrary, when monetary policy is loosened, banks are less sensitive to risk and finance even companies with lower credit ratings, thereby increasing the liquidity flowing through the economic system. The resulting excess liquidity could be used by cash-rich companies in SCs to provide financial support to their upstream counterparts through DD programmes. What happened during the pandemic, where there was an effective monetary policy, is a practical example of the validity of this principle: excess liquidity actually stimulates the adoption of DD programmes. [5]. Moreover, the perspective given in **Proposition 3** supports the vision that SCF and bank financing are not in competition with one another. These two liquidity channels can be considered as complementary is supporting firms. Indeed, banks themselves were pushing for SCF when unable to originate new credit lines for companies. SCF allowed to provide liquidity and reduce default risk without having to grant new loans.

Proposition 4. *Fiscal policies have required SCF to unlock receivables against Public Administrations and tax claims, as there is no direct support with advance payments.*

Across the three scenarios analysed, governments have never chosen to reduce payment terms to companies involved in public initiatives, an issue especially relevant in those countries where these terms were already long. Even during the COVID-19 pandemic the choice by the Italian government was to introduce the possibility to sell fiscal credits. This lack of direct support in respect to the actual debits held by government against national enterprises has allowed to increase the market for SCF. These instruments have become the only way to find relief from these outstanding payment terms.

6. Conclusions

The aim of this research was to contribute to the understanding of the phenomenon SCF by filling the gap in the literature on its relationship with the macroeconomic context. The three crises made it possible to examine this link in specific cases, which served as a basis for extrapolating more general statements. Historical research offered a unique opportunity to achieve the goal by providing possible explanations for what was observed.

Theoretical Implications. The framework allowed to identify the relevant variables that link a crisis to the SC, considering contingent factors in the process. It set the stage for researchers to employ the contingency theory to better understand the evolution of the phenomenon. In many instances, scholars have mentioned the GFC as the trigger of the diffusion of SCF but there has never been an explicit and verifiable model linking the two phenomena. The project went beyond by looking for a connection with the subsequent SDC, which had never been studied before from this viewpoint, and the COVID-19 pandemic, where the relationship was only inferred [2]. In addition, a detailed analysis of policy measures was also undertaken, with monetary policy, fiscal policy and banking regulation being considered as drivers for the introduction of SCF. It was made clear that liquidity management cannot be separated from the health of the financial system: monetary policy emerges as an important driver for the adoption of SCF, albeit in different ways depending on the viewpoint. The role of governments was also examined, highlighting how PA payment terms create the same conditions for SCF as traditional business-to-business exchanges. Fiscal policies have not previously been considered in the study of the development of SCF, which opened up a new area of research. The macroeconomic context has been included in the understanding of the development of SCF, as it is considered an accelerator for the diffusion of. Finally, the application of historical research methodology is a novelty in understanding the development of SCF.

Managerial Implications The study of SCF in three different crises, each characterised by different elements, provides a comprehensive understanding of the way SCF responds to a change in the business context. The results of the project allow conclusions to be drawn about what can be expected from a particular scenario. The research provides insights into whether SCF is an appropriate tool to manage a contextual situation and, if so, how best to use it. It also highlights how the COVID -19 pandemic has disrupted SCs and forced companies to rethink SC design and management practices. Building SC resilience has become a central aspect of corporate strategy, but cannot be achieved without collaboration between actors. SCF is a powerful tool to improve SC collaboration and strengthen relationships with partners to ultimately address issues in macroeconomic and geopolitical scenarios that one company cannot address alone. The current war between Russia and Ukraine will put more pressure on SCs and test the ability to adapt and cooperate to remain competitive.

Limitations and Future Research The historical method, valuable as it is, represents a way of providing possible explanations for observed phenomena that are not intended as universal truths. The claims formulated need to be tested by future studies that could confirm or modify the inferred relationships. Moreover, crises are not the only macro variables that have the potential to change business practices and SCF: trade barriers, wars and phenomena beyond the control of business need to be considered in future research. The use of newspaper articles could also limit the depth of analysis of SCF programmes. A more detailed understanding of a broader range of actors and solutions could be achieved by changing the sources used. For example, rating agencies and LSPs are not mentioned in the articles, although they are known to support SCF programmes, especially in recent years. Finally, an objective limitation was that only the European and North American regions were considered in the historical account and the Asian reality, which has developed a significant market and academic knowledge on SCF, was not taken into account.

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