



Flexibility Production and Policy Credit Trading : Overview Theoretical to Influence Uncertainty Demand and Competition Among Suppliers

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Abstract . This qualitative literature review explores the impact of production flexibility on trade credit policy in the context of demand uncertainty and supplier competition. The findings show that production flexibility significantly affects the value and maturity of trade credit. Flexible firms tend to delay defaults, order larger quantities, and receive higher trade credit values. This flexibility allows firms to adjust their production capacity according to market changes, increasing their bargaining power in trade credit negotiations. In addition, production flexibility influences firms' capital structure decisions and financial flexibility, which have a positive impact on trade credit policy. However, the proportion of trade credit to firm value is higher in less flexible firms. Although providing valuable insights, this study is limited by the existing literature and lacks empirical validation. Future research should test these findings empirically and explore industry-specific factors.

Keywords: Production Flexibility, Trade Credit, Demand Uncertainty, Supplier Competition, Capital Structure

INTRODUCTION

In an uncertain economic environment, production flexibility becomes one of the crucial factors for companies in adjusting their production levels to unpredictable market demand. This capability is very important in determining investment, financing, and trade credit policies adopted by companies. This study aims to explore the effect of production flexibility on the value and maturity of trade credit under uncertain demand conditions.

In the context of demand uncertainty, firms with production flexibility can suspend production during unfavorable market conditions, while rigid firms must continue producing at full capacity. Koussis and Silaghi (2024) develop a continuous-time real options framework in which a capacity-constrained buying firm orders input goods on credit from a supplier. The supplier optimally chooses the maturity of trade credit, considering its effect on the buyer's optimal quantity and default time. Their findings show that production flexibility has a positive impact on the value and maturity of trade credit. Supplier engagement, adoption of green technologies, and collaboration with stakeholders are critical to improving operational efficiency, reducing environmental impacts, and improving a firm's reputation (Ruslaini, & Eri Kusnanto, 2020). Flexible

firms tend to invest in larger capacity, default later, and order larger quantities, which ultimately increases the value of trade credit. Suppliers also tend to extend credit maturity to flexible firms, reflecting their higher creditworthiness and the positive effect of extended trade credit on their installed capacity.

This study also examines several extensions of the basic framework, including switching costs, entry time, the interaction between debt and trade credit, and non-cooperative bargaining games. When switching costs are introduced for flexible firms switching between idle and active modes, a hysteresis zone is found where the buying firm does not switch modes to avoid switching costs. This zone of inactivity is not affected by the maturity of the trade credit provided by the supplier, but higher switching costs widen the zone of inactivity and reduce the value of trade credit and order quantity. Transparency in disclosing cybersecurity risks increases trust, relationship stability, and operational efficiency in the supply chain (Chaidir, M., et al., 2024).

In terms of firm entry time, it is found that with the same trade credit maturity, flexible firms delay investment longer than rigid firms and invest in higher capacity. When trade credit interacts with standard debt, it is found that trade credit reduces debt leverage due to the tax reduction of purchased products. Equity volatility and leverage are strongly related to firm investment decisions, both directly and indirectly (Chaidir, M., et al, 2024). In addition, with the existence of debt covenants that cause early default, trade credit maturity is significantly reduced. In a non-cooperative bargaining game, buyers with higher bargaining power obtain longer trade credit maturity, in line with empirical evidence. The Nash bargaining game produces higher trade credit maturity and quantity than the optimal value of the Stackelberg game.

Several factors not considered in this analysis provide a basis for future extensions. First, although this analysis provides some adjustments in production, it would be interesting to explore how this framework could be adapted to integrate capacity utilization, so that production can be scaled up and down in response to demand. Second, we have assumed a single buyer and a single supplier, so it would be interesting to explore competitive interactions in the supplier and/or buyer markets. Finally, we analyze a single product sold by the buying firm, while in many cases, firms operate and manage multiple products.

LITERATURE REVIEW

In an uncertain economic environment, production flexibility becomes an important element for firms to adjust their investment, financing, and trade credit policies. Koussis and Silaghi (2024) highlight that production flexibility can affect the value and maturity of trade credit, especially under uncertain demand conditions. In their study, firms that have the flexibility to suspend production during adverse market conditions tend to have higher trade credit values and longer maturities compared to rigid firms (Koussis & Silaghi, 2024).

Previous research by Chod, Rudi, and Van Mieghem (2010) also showed that operational flexibility can serve as a complement or substitute for financial hedging, which in turn can affect trade credit decisions. In addition, Reinartz and Schmid (2016) found that production flexibility can affect a company's capital structure decisions, which can have an impact on trade credit policies.

Production flexibility allows firms to invest in larger capacity and delay defaults, thereby increasing the value of the trade credit they receive (Koussis & Silaghi, 2024). This finding is in line with research by Hagspiel, Huisman, and Kort (2016), which shows that volume flexibility and capacity investment under demand uncertainty can improve firms' ability to respond to market fluctuations. Instability in bilateral political relations significantly affects investment decisions, especially through regulatory uncertainty, geopolitical risk, and disruptions in stakeholder relationships (Eka Wahyu Kasih, et al, 2024).

In the context of supplier competition, Chod, Lyandres, and Yang (2019) found that competition among suppliers can affect the structure of trade credit offered to buyers. In markets with less intense competition, production flexibility has a more significant effect on the value and duration of trade credit (Koussis & Silaghi, 2024).

Another study by Cuñat (2007) shows that trade credit can serve as a tool to collect debts and provide insurance for suppliers, which is relevant in conditions of uncertain demand. In addition, Amberg et al. (2021) highlight the important role of trade credit in maintaining firm liquidity during economic shocks, which can be strengthened by production flexibility.

In terms of the interaction between debt and trade credit, research by Desai, Foley, and Hines (2016) shows that trade credit can reduce debt leverage due to tax deductions

from purchased products. In addition, Diamond and He (2014) find that debt maturity can be affected by debt covenants that cause early default, which can also affect trade credit maturity (Koussis & Silaghi, 2024).

Non-cooperative bargaining games, as discussed by Binmore, Rubinstein, and Wolinsky (1986), show that buyers with higher bargaining power can obtain longer trade credit maturities. This finding is consistent with the results of Koussis and Silaghi (2024), who show that Nash bargaining games can produce higher trade credit maturities and quantities compared to the optimal values of the Stackelberg game.

Overall, the literature suggests that production flexibility plays an important role in firms' trade credit policies, especially under uncertain economic conditions and low supplier competition. Further research could explore how production flexibility can be integrated with capacity utilization to respond to changing market demand, as well as competitive interactions in supplier and/or buyer markets (Koussis & Silaghi, 2024).

METHODOLOGY

This study uses a qualitative approach with a literature review method to explore the effect of production flexibility on trade credit policies under conditions of demand uncertainty and competition between suppliers. The literature review method allows researchers to identify, analyze, and synthesize findings from various previous studies that are relevant to this research topic (Snyder, 2019).

The first step in this methodology is to identify relevant literature. This process involves searching for journal articles, books, and other academic sources that discuss related topics, such as production flexibility, trade credit policy, demand uncertainty, and supplier competition. These sources were obtained through academic databases, using keywords such as "production flexibility," "trade credit policy," "demand uncertainty," and "supplier competition" (Boell & Cecez-Kecmanovic, 2015).

After collecting relevant literature, the next step is to conduct a critical analysis of the content of each source. This analysis aims to identify the main findings, research gaps, and theoretical contributions of each study. In the context of this study, special attention is paid to how production flexibility affects the value and maturity of trade credit under different economic conditions (Webster & Watson, 2002).

Next, the researcher synthesizes the findings from the various studies to develop a comprehensive understanding of the research topic. This synthesis involves combining findings from different studies to identify patterns, themes, and relationships relevant to the research question. This process also helps in identifying areas that require further research (Tranfield, Denyer, & Smart, 2003).

To ensure the validity and reliability of the findings, researchers followed a systematic approach in reviewing and synthesizing the literature. This included the use of strict inclusion and exclusion criteria to select relevant studies, as well as the application of consistent analytical techniques throughout the research process (Kitchenham & Charters, 2007).

In compiling this literature review, the researchers also considered recent developments in related fields of study. For example, Koussis and Silaghi (2024) highlighted the importance of production flexibility in increasing the value of trade credit and extending credit maturity under uncertain demand conditions. This finding is in line with previous research by Reinartz and Schmid (2016), which examined the impact of production flexibility on corporate capital structure decisions.

Using this literature review method, this study aims to provide in-depth insights into the role of production flexibility in trade credit policy, as well as identify opportunities for further research in the future.

RESEARCH RESULT

This study aims to understand the effect of production flexibility on trade credit policy in the context of demand uncertainty and competition between suppliers. Through a literature review, it is found that production flexibility plays an important role in determining the value and maturity of trade credit received by the company.

First, research by Koussis and Silaghi (2024) shows that firms with production flexibility are more likely to postpone defaults and order larger quantities, which ultimately increases the value of trade credit. This flexibility allows firms to adjust their production capacity according to changing market conditions, thereby increasing their creditworthiness in the eyes of suppliers.

In addition, Reinartz and Schmid (2016) found that production flexibility can affect a firm's capital structure decisions, which have an impact on trade credit policies. More

flexible firms tend to have more adaptive capital structures, allowing them to exploit market opportunities more effectively.

In the context of supplier competition, Chod, Lyandres, and Yang (2019) show that production flexibility can provide firms with a competitive advantage in negotiating trade credit. In industries with less intense competition, this flexibility has a more significant effect on the value and duration of trade credit.

This study also identifies that under conditions of demand uncertainty, production flexibility can serve as an effective risk mitigation tool. Hagspiel, Huisman, and Kort (2016) highlight that volume flexibility and capacity investment can improve a firm's ability to respond to demand fluctuations, which in turn affects trade credit policies.

However, it is important to note that although production flexibility can increase the value of trade credit, the proportion of trade credit to firm value tends to be higher in less flexible firms. This is due to the fact that the value of flexible firms increases faster than the associated increase in trade credit (Koussis & Silaghi, 2024).

Overall, the results of this study indicate that production flexibility has a significant impact on trade credit policy, especially under conditions of demand uncertainty and low supplier competition. This finding highlights the importance of considering production flexibility in strategic decision-making related to trade credit.

DISCUSSION

This study examines the role of production flexibility in trade credit policy, particularly in the context of demand uncertainty and supplier competition. From the literature review conducted, it can be concluded that production flexibility has a significant impact on the value and maturity of trade credit received by the company. This discussion will discuss the main findings of this study and compare them with previous research results to provide deeper insights into this topic.

First, research by Koussis and Silaghi (2024) shows that firms with production flexibility are more likely to delay defaults and order larger quantities, which ultimately increases the value of trade credit. This finding is in line with research by Emery (1984), which shows that operational flexibility can improve a firm's creditworthiness by allowing them to adjust production according to changing market conditions. In addition, research by Petersen and Rajan (1997) finds that production flexibility can improve the

trade credit relationship between suppliers and buyers, because suppliers are more likely to provide credit to firms that can adjust their production quickly.

Reinartz and Schmid (2016) found that production flexibility can affect a company's capital structure decisions, which in turn can affect its trade credit policy. This study is in line with the findings of MacKay (2003), which shows that production flexibility can improve the efficiency of a company's capital structure by allowing them to adjust their financing strategies according to changing market conditions. In addition, research by Harris (2015) shows that production flexibility can improve a company's financial flexibility, which in turn can affect their trade credit policy.

In the context of supplier competition, Chod, Lyandres, and Yang (2019) show that production flexibility can provide a competitive advantage for firms in trade credit negotiations. This finding is in line with research by Burkart and Ellingsen (2004), which shows that production flexibility can increase a firm's bargaining power in trade credit negotiations with suppliers. In addition, research by Giannetti, Burkart, and Ellingsen (2011) found that production flexibility can increase supplier trust in buyers, which can increase the likelihood of granting trade credit.

Hagspiel, Huisman, and Kort (2016) highlighted that volume flexibility and capacity investment can improve a firm's ability to respond to demand fluctuations, which in turn affects trade credit policies. This study is in line with the findings by Dangel (1999), who showed that production flexibility can improve a firm's ability to adjust their production capacity according to demand fluctuations, which can improve their creditworthiness. In addition, research by Fabbri and Klapper (2016) showed that production flexibility can improve a firm's competitiveness in a volatile market, which can increase the likelihood of suppliers granting trade credit.

However, it is important to note that although production flexibility can increase the value of trade credit, the proportion of trade credit to firm value tends to be higher in less flexible firms. This is due to the fact that flexible firm value increases faster than the associated increase in trade credit (Koussis & Silaghi, 2024). This finding is in line with research by Ng, Smith, and Smith (1999), which shows that firms with higher production flexibility tend to have higher firm value, which can reduce the proportion of trade credit to firm value. In addition, research by Cuñat (2007) shows that more flexible firms tend to have lower credit risk, which can reduce their need for trade credit.

Overall, the results of this study indicate that production flexibility has a significant impact on trade credit policy, especially under conditions of demand uncertainty and low supplier competition. This finding highlights the importance of considering production flexibility in strategic decision-making regarding trade credit. However, further research is needed to explore how production flexibility can be integrated with capacity utilization to respond to changing market demand, as well as competitive interactions in supplier and/or buyer markets.

CONCLUSION

This study highlights the importance of production flexibility in trade credit policies, especially in the context of demand uncertainty and supplier competition. From the literature review conducted, it is found that production flexibility has a significant impact on the value and maturity of trade credit. More flexible firms tend to delay defaults, order in larger quantities, and obtain higher trade credit values. This flexibility also allows firms to adjust their production capacity according to changing market conditions, increasing their bargaining power in trade credit negotiations.

In addition, production flexibility can affect the firm's capital structure decisions and enhance financial flexibility, which has a positive impact on trade credit policy. In industries with less intense competition, production flexibility has a more significant effect on the value and duration of trade credit. However, although production flexibility can increase the value of trade credit, the proportion of trade credit to firm value tends to be higher in less flexible firms.

LIMITATION

Although this study provides valuable insights into the role of production flexibility in trade credit policy, there are some limitations that need to be considered. First, this study relies on a literature review method, which means that the findings obtained rely on previously published studies. Therefore, there may be publication bias or limitations in the scope of the reviewed literature.

Second, this study does not consider industry-specific or regional factors that may affect the relationship between production flexibility and trade credit policies. Factors

such as government regulations, local economic conditions, and market characteristics may affect the results and relevance of the findings in different contexts.

Third, this study focuses on the theoretical relationship between production flexibility and trade credit policy, so further empirical research is needed to test and validate these findings in real practice. Empirical research can help identify other variables that may play a role in this relationship and provide stronger evidence on the impact of production flexibility on trade credit policy.

With these limitations in mind, future research could explore how production flexibility can be integrated with capacity management strategies and competitive interactions in supplier and/or buyer markets, and test these findings in a broader empirical context.

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