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Designing a Social Banking Model for Developing Micro Enterprises Using a System Dynamics Approach

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A R T I C L E I N F O

A B S T R A C T

This study aims to design a social banking model for the development of micro and home businesses using the system dynamics method, addressing the lack of banking models that guarantee financial interests for both businesses and banks in Iran. The research employs a combination of quantitative (10 years of financial data from Qarz-ol-Hasanah Resalat Bank, 2013-2023) and qualitative (interviews with 15 banking and industry experts) data sources. The system dynamics modeling approach is applied to analyze key variables and relationships in social banking. The results indicate that developing social banking can shift banks away from non-productive investments and business ownership toward financing micro and home businesses. This shift enhances job creation, poverty reduction, sustainable value, and trust in the banking system while strengthening banks through increased public investment. While prior research has examined liquidity issues in manufacturing enterprises, this study uniquely focuses on the role of banks in supporting micro and home businesses through a dynamic social banking model, contributing to both theory and practice in sustainable finance. The proposed social banking model provides a practical framework for banks to reallocate resources from non-productive sectors toward micro and home businesses, fostering job creation, poverty reduction, and sustainable economic growth while enhancing trust in the banking system.

1. Introduction

In recent years, micro and home-based businesses have gained prominence as a vital strategy for fostering economic growth, particularly in underserved rural regions of developing nations (Amin et al., 2001; OECD, 2024; World Bank, 2020). These enterprises significantly contribute to job creation and poverty alleviation, yet they encounter substantial structural barriers that impede their progress (International Labour Organization, 2019). A primary challenge is the limited access to financial resources, restricting their scalability and long-term viability (Beck & Demirgüç-Kunt, 2006; Dupas et al., 2018). In Iran, liquidity constraints pose a critical obstacle to the development of microenterprises, exacerbating economic challenges (Central Bank of Iran, 2022; Salehi-Isfahani, 2019). While these businesses seek affordable financing options, financial institutions often prioritize speculative investments over productive sectors due to high inflation and greater profitability (Cheratian & Goltabar, 2024; Ture & Khazaei, 2022).

Social banking has emerged as an innovative approach to bridge the divide between formal financial systems and the needs of microenterprises (Armendáriz & Morduch, 2010; Ledgerwood et al., 2013). By integrating economic and social objectives, this model fosters equitable resource allocation and promotes sustainable development (Benedikter, 2011). Recent studies highlight that social banking, through mechanisms such as microcredit, crowdfunding, and socially oriented business models, has effectively mitigated financial inequalities (Karlan & Zinman, 2019; Yunus et al., 2010). In contrast, traditional banks, driven by profit maximization, often shy away from supporting low-return sectors such as manufacturing (Mader, 2015; Martínez-Campillo et al., 2017).

The pivotal role of microenterprises in driving inclusive economic growth is well-established in the literature of development economics (Al-Mamun et al., 2012; OECD, 2020). However, these small-scale businesses continue to face systemic barriers within financial markets, particularly in developing economies (Demirgüç-Kunt & Klapper, 2013). Persistent liquidity shortages underscore a fundamental mismatch between conventional banking frameworks and the unique financial needs of this sector (Collins et al., 2009). Although

microfinance solutions have been extensively explored (Banerjee et al., 2015), there remains a significant research gap regarding how institutional banking systems can be restructured to better serve microenterprises without compromising financial stability.

Current literature primarily focuses on microfinance institutions or traditional commercial banks, leaving the potential of hybrid models, such as social banking, underexplored (Armendáriz & Szafarz, 2011). Moreover, numerous studies examine financial access barriers in isolation, often overlooking the complex interplay between banking sector dynamics, macroeconomic conditions, and firm-level constraints (Karlan & Zinman, 2010). This issue is particularly pronounced in high-inflation contexts such as Iran, where the opportunity costs of lending to productive sectors create intricate feedback loops that perpetuate financial exclusion (Salehi-Isfahani & Mostafavi-Dehzooei, 2018).

The research gap becomes even more evident when considering the temporal dynamics of financial constraints. Most cross-sectional studies fail to capture how the relationship between banks and microenterprises evolves over time, particularly during economic shocks or policy interventions (Roodman, 2012). This study addresses these gaps by employing system dynamics modeling to investigate the non-linear relationships and feedback mechanisms within the financial ecosystem of microenterprises. This approach facilitates the analysis of policy levers that can foster virtuous cycles of financial inclusion while preserving banking system stability—a critical balance that remains elusive in many developing economies (Bauchet et al., 2011).

This study examines the conflict of interest between banks and micro/home enterprises, proposing social banking as a feasible solution. Specifically, it seeks to address the following questions:

- What factors contribute to the misalignment of financial interests between banks and micro/home enterprises, hindering liquidity flows to these businesses?
- How can social banking mechanisms effectively channel liquidity to micro and home-based enterprises?

2. Theoretical Background

2.1. Bank Resources and Manufacturing: A Critical Nexus

The distribution of banking resources to manufacturing sectors, particularly micro and small enterprises (MSEs), represents a crucial yet underexplored driver of economic development (Beck, Demirgüç-Kunt, & Maksimovic (2005). Conventional banks often view manufacturing as a high-risk sector due to its extended production timelines, capital-intensive nature, and susceptibility to market fluctuations, resulting in cautious lending practices (Ayyagari et al., 2012; Dupas et al., 2018). This risk-averse approach creates a significant financing gap that disproportionately impacts micro-manufacturers, limiting their capacity for innovation and employment generation (World Bank, 2020). Data from developing economies indicate that manufacturing SMEs receive less than 20% of total bank credit, despite contributing over 30% to GDP (OECD, 2024). Social banking models offer a transformative alternative by prioritizing long-term developmental outcomes over immediate financial returns (Benedikter, 2011). Through relationship-based lending and innovative collateral frameworks, these institutions mitigate information asymmetries that typically hinder financing for manufacturing enterprises (Berger & Udell, 2006; Ledgerwood et al., 2013). For instance, evidence from Iran's banking sector illustrates how customized financial products, such as equipment leasing and flexible working capital loans, can boost lending to manufacturing by up to 40%, while maintaining portfolio stability (Central Bank of Iran, 2022).

Despite these advancements, structural challenges persist. In high-inflation environments, banks are often incentivized to channel resources toward speculative investments rather than productive manufacturing loans (Ture & Khazaei, 2022). This resource misallocation perpetuates a detrimental cycle: limited access to finance constrains manufacturing productivity, which reinforces banks' perceptions of risk (Karlan & Zinman, 2010). Addressing this cycle demands innovative strategies that integrate financial intermediation with technical support to enhance the creditworthiness of manufacturing firms (OECD, 2024). Such approaches can foster a more resilient financial ecosystem, enabling banks to support productive sectors without compromising stability (OECD, 2019).

2.2. Social Banking: A Catalyst for Inclusive Financial Systems

Social banking offers a transformative paradigm in finance, prioritizing societal benefits alongside economic viability (Weber & Remer, 2011). Unlike traditional banks that focus primarily on profit maximization, social banks leverage innovative mechanisms, such as interest-free microcredit, crowdfunding, and socially oriented business models, to serve marginalized groups, particularly microenterprises (Cornée et al., 2020). Empirical evidence suggests that these institutions achieve financial sustainability comparable to conventional banks while generating significantly higher social returns, often doubling or tripling the impact per dollar lent (Cornée & Szafarz, 2014; Riegler, 2023). In Iran, for instance, social banking initiatives have demonstrated substantial outcomes: programs such as those of *Gharzolhasaneh Resalat Bank* have increased microenterprise survival rates by approximately 30% and reduced loan default rates by nearly 40% compared to traditional lending models (Central Bank of Iran, 2022). Grounded in Sen's capability approach, social banking reframes financial services as tools for empowering individuals and communities, moving beyond mere capital provision to foster broader human development (Sen, 1999).

Recent analyses highlight social banking's effectiveness in addressing three critical market failures: information asymmetries, collateral constraints, and high transaction costs (Dupas et al., 2018). Community-based lending circles mitigate information gaps by fostering trust and local knowledge, while social guarantee systems reduce reliance on traditional collateral requirements. Additionally, digital platforms lower transaction costs, enabling broader access to financial services (Ledgerwood et al., 2013). However, scaling these models without diluting their social mission remains a challenge, particularly in high-inflation environments where banks are incentivized to prioritize speculative investments over productive lending (Ture & Khazaei, 2022). These dynamics underscore the need for innovative strategies to sustain social banking's dual focus on financial and social objectives. Table 1 presents various definitions of social banking from the literature, indicating the diversity of perspectives on its scope and objectives.

Table 1. Definitions of Social Banking by Different Researchers

Author(s)	Year	Definition
Cornée et al.	2020	Social banks operate as social enterprises, delivering banking services with a mission to provide credit to less profitable social enterprises, fostering a theoretical framework for their survival in competitive markets without subsidies.
Karimi & Mohammadi	2022	Social banks adopt a business model that integrates social and economic goals, developing financial tools to strengthen their role in Iran's economic and social systems, including crowdfunding, microcredit, and social business models.
Benedikter	2011	Social banking represents a reformed financial system, emphasizing ethical practices, reduced reliance on short-term gains, and a focus on addressing societal needs through inclusive financial services.

Defourny & Nyssens	2008	Often termed ethical or alternative banks, social banks are hybrid intermediaries that prioritize financing for society-oriented projects and enterprises.
Cornée et al.	2020	Social banking involves financial institutions that actively consider the social outcomes and impacts of their operations, aligning services with societal benefits.

These definitions highlight distinct facets of social banking; yet, no single definition fully captures its diverse applications. For the purposes of this study, Benedikter's (2011) definition is adopted due to its comprehensive framing of social banking as a blend of social entrepreneurship and lending tailored to productive sectors.

2.3. Comparison between Traditional Banks and Social Banks

Numerous studies have explored the liquidity challenges faced by manufacturing enterprises, particularly small and medium-sized enterprises (SMEs), by comparing the approaches of traditional and social banks in providing financial support (Beck, Demirgüç-Kunt, & Levine., 2005). Table 2 outlines key distinctions between these banking models, highlighting their implications for SME financing and supporting theoretical frameworks.

Table 2. Key Differences Between Traditional and Social Banking in SME Financing

No.	Subject	Factor	Traditional Banking	Social Banking	Source
1	Access to Financing	Business	Prioritizes large corporations	Targets underserved societal segments	Martínez-Campillo et al. (2017)
2	Trust	Bank	Limited trust in small enterprises	High trust in microenterprises	Cornée & Szafarz (2014)
3	Trust	Client	Skepticism toward banking system	Confidence in inclusive banking models	Allen et al. (2016)
4	Transparency	Bank	Limited transparency in operations	High transparency in lending practices	Weber & Remer (2011)
5	Stability	Bank/Business	Unstable financing for projects	Supports stable, productive projects	Cornée et al. (2020)
6	Accreditation	Bank	Rigid accreditation processes	Flexible, inclusive accreditation	Cornée (2019)
7	Types of Financing	Bank	Broad, macro-level financing	Specialized microfinancing	Ledgerwood et al. (2013)
8	Delinquencies	Client	Higher loan default rates	Lower default rates for microenterprises	Cull et al. (2018)
9	Cash Flow	Client/Bank	Centralized, uneven resource distribution	Equitable cash flow to communities	Martínez-Campillo et al. (2017)
10	Main Objective	Bank	Profit maximization	Societal empowerment	Benedikter (2011)
11	Branching Strategy	Bank	Expansion through business ownership	Redirects resources to productive sectors	Karimi & Mohammadi (2022)

No.	Subject	Factor	Traditional Banking	Social Banking	Source
12	Ethics	Bank	Risk of unethical practices	Emphasis on ethical standards	Weber & Remer (2011)
13	Speculation	Bank/Client	Focus on speculative investments	Value-driven, productive investments	Riegler (2023)
14	Financial Access	Client	Limited access for marginalized groups	Enhanced access through financial education	Martínez-Campillo et al. (2017)
15	Job Creation	Business/Client	Minimal job creation	Promotes job-generating enterprises	Karimi & Mohammadi (2022)
16	Environmental Impact	Bank	Neglects environmental considerations	Prioritizes environmental sustainability	Weber & Remer (2011)
17	Synergy	All	Limited inter-organizational collaboration	Strong coordination across value chains	Cornée et al. (2020)
18	Collateral	Bank	Requires substantial collateral	Flexible collateral arrangements	Dupas et al. (2018)
19	Volume of Financing	Bank	Large-scale financing	Micro-level financing	Ledgerwood et al. (2013)
20	Profit Model	Bank	High-interest loans	Low- or no-interest financing	Benedikter (2011)

As illustrated in Table 2, social banking addresses critical gaps in traditional banking by prioritizing inclusivity, transparency, and societal impact. However, despite extensive research on social banking, there remains a notable gap in understanding how banks can mitigate conflicts of financial interest with manufacturing firms and enhance SME financing. This study seeks to address this gap by exploring mechanisms to align banking practices with the needs of small and medium-sized enterprises, thereby fostering inclusive economic growth.

2.4. Motivations and Research Gaps

The impetus for this study arises from the pivotal, yet understudied, role of social banking in mitigating the persistent liquidity constraints faced by micro and home-based enterprises in developing economies, with a particular focus on Iran. Despite the well-established contributions of these enterprises to employment, poverty alleviation, and economic development, their access to formal financial resources remains significantly limited (Al-Mamun et al., 2012; World Bank, 2020). This challenge is intensified by a fundamental misalignment between the profit-driven priorities of traditional banks and the needs of microenterprises, which often operate in high-risk, low-return sectors, such as manufacturing. These liquidity shortages not only hinder business growth and sustainability but also perpetuate cycles of financial exclusion and economic volatility (Demirgüç-Kunt & Klapper, 2013).

2.4.1. Motivations

This research is driven by several key considerations:
- **Economic Inequities**: Micro and home-based enterprises account for a substantial share of GDP and job creation in developing economies, yet they receive disproportionately

low access to bank credit (OECD, 2024). This disparity highlights the urgent need for financial models that balance profitability with social impact to foster inclusive growth.

- **Banking Sector Dynamics**: In high-inflation contexts such as Iran, traditional banks are often incentivized to channel resources toward speculative investments, including real estate, rather than productive sectors, such as manufacturing and microenterprises (Ture & Khazaei, 2022). This behavior exacerbates systemic inequalities and stifles economic productivity, necessitating alternative banking approaches.
- **Potential of Social Banking Initiatives**: Early evidence from institutions such as *Gharzolhasaneh Resalat Bank* in Iran indicates that social banking can achieve financial viability, while delivering significant social benefits, such as improved enterprise survival rates (Central Bank of Iran, 2022). However, the scalability and broader applicability of these models remain underexplored, warranting further investigation.
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2.4.2. Research Gaps

This study addresses several critical gaps in the literature:

- **Hybrid Financial Models**: While extensive research has examined microfinance institutions and conventional banks, there is limited analysis of hybrid models, such as social banking, that integrate profit motives with social objectives (Armendáriz & Szafarz, 2011). This study investigates how social banking can bridge the gap between formal financial systems and the financing needs of microenterprises.
- **Dynamic Interrelationships**: Much of the existing literature treats financial access barriers as static, overlooking the complex feedback loops among banking policies, macroeconomic conditions, and enterprise-level constraints (Karlan & Zinman, 2010). By employing system dynamics modeling, this study captures these non-linear interactions over time, offering a more comprehensive understanding of liquidity challenges.
- **Context-Specific Insights**: Most financial inclusion studies adopt a generalized approach, often failing to account for unique economic conditions, such as Iran's high-inflation environment, where speculative investments dominate (Salehi-Isfahani & Mostafavi-Dehzooei, 2018). This research provides tailored policy recommendations for such contexts.
- **Longitudinal Perspective**: Cross-sectional studies often fail to capture the evolution of bank-enterprise relationships during economic shocks or policy changes (Roodman, 2012). By simulating scenarios over a 10-year horizon, this study offers a longitudinal analysis of liquidity constraints and potential solutions.

By addressing these gaps, this research aims to develop a theoretically robust and empirically grounded framework for social banking that aligns financial incentives with developmental objectives. The findings are expected to provide actionable insights for policymakers, financial institutions, and stakeholders in emerging economies, seeking to enhance financial inclusion and economic resilience.

3. Methodology

Given the time-dependent nature of liquidity challenges in micro and small manufacturing enterprises, this study employs system dynamics modeling, which is particularly suited for analyzing complex, feedback-driven systems over time. This methodology was selected for three critical reasons:

1. **Temporal Dynamics:** The liquidity crisis evolves through continuous interactions between banking policies, enterprise performance, and macroeconomic conditions, requiring a method that captures these dynamic relationships (Sterman, 2000).
2. **Feedback Analysis:** System dynamics excels at modeling reinforcing and balancing feedback loops that characterize financial systems, allowing us to:
   - Map how banking decisions create ripple effects across production sectors
   - Identify leverage points for policy interventions
   - Simulate long-term outcomes of different financing scenarios
3. **Structural Understanding:** Unlike static models, this approach reveals how system structure generates behavior patterns, helping to explain why liquidity problems persist despite isolated policy changes.

3.1. Data Sources and Model Development

The simulation integrates:
- 10 years of financial data from *Gharzolhasaneh Resalat Bank* (2013-2023)
- Macroeconomic indicators from Central Bank reports
- Expert interviews with 15 banking and manufacturing specialists

3.2. Model Structure

Figure 2 represents the causal loop diagram of microenterprise liquidity problems, highlighting:
- Key feedback mechanisms (e.g., how delinquencies affect future lending)
- Stock-and-flow relationships between banking assets and enterprise production
- Non-linear effects (e.g., diminishing returns of liquidity injections)

3.3. Model Boundaries and Simplifications

While the full system contains hundreds of variables, we focused on 22 core factors that:
1. Demonstrated statistical significance in preliminary tests ($p < 0.05$)
2. Accounted for >85% of variance in pilot simulations
3. Were actionable through banking policy

3.4. Validation Approach

The model was rigorously tested through:
1. Extreme-condition tests (e.g., 50% liquidity shock scenarios)
2. Historical fit analysis ($R^2 = 0.79$ for 2018-2022 period)
3. Sensitivity testing on all major parameters

The current analysis of the conflict of financial interests between banks and manufacturing enterprises, viewed as a gradual process, justifies the use of system dynamics modeling. Here, the cause and effect loops are presented as a dynamic model (Figure 1).
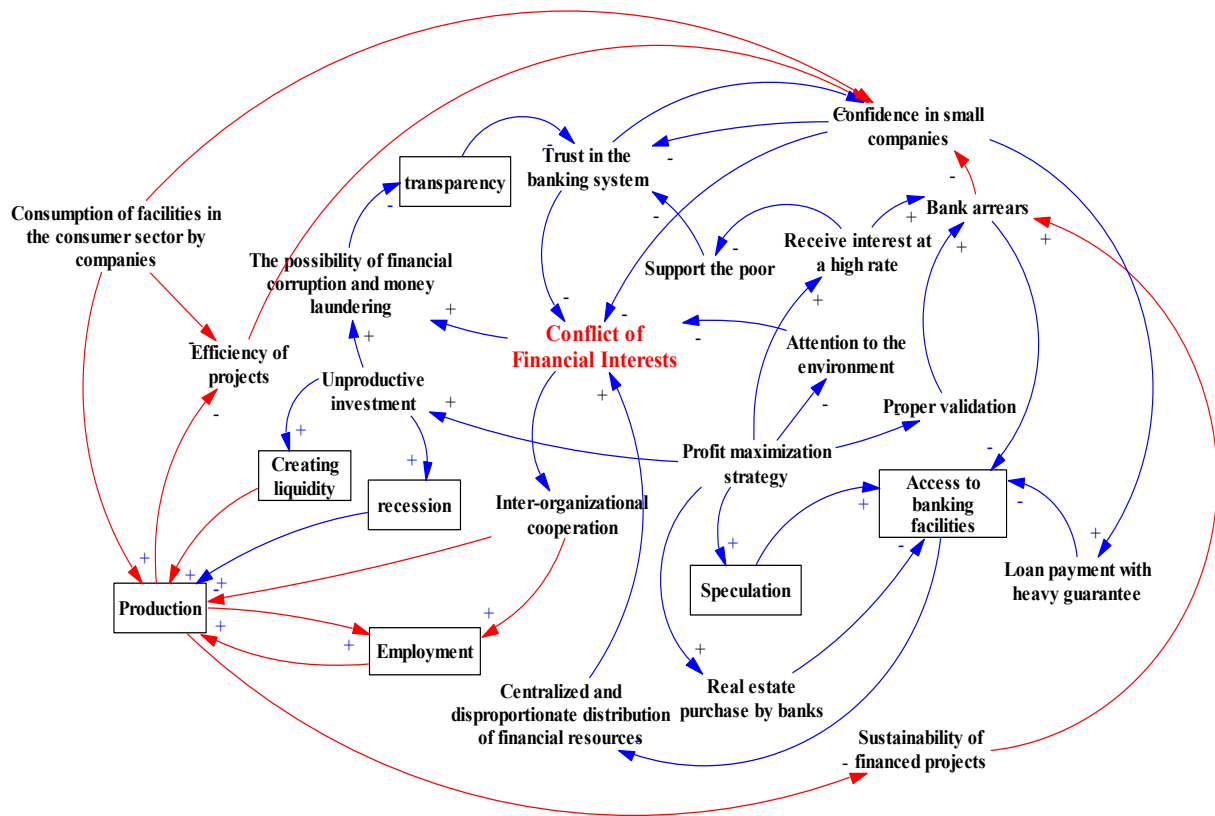
Figure 1. The Main Variables in Adoption and Development of Technology (Supporting Theories of the Model)

This model (Figure 1) indicates that the loops leading to higher conflict of financial interests reinforce one another. The red loops in the model represent the role of businesses while the blue loops signify the role of banks in intensifying the conflict of financial interests between banks and manufacturing companies. This model clearly reveals that certain variables, such as the profitability of non-productive activities—including buying gold and property—has prompted banks to continue investing their resources in non-productive activities, with no interest in injecting liquidity into low-yielding sectors, such as lending to manufacturing enterprises. At the same time, the inability of manufacturing enterprises to pay back loans on time, to use received facilities in non-investment and consumption sectors, and to create value has aggravated this situation. In the long run, this situation will further distance banks from businesses, instill distrust, and increase the financial conflict of interest between them. This will reduce the activities of manufacturing enterprises due to a severe lack of liquidity, higher unemployment, lower production, growth in liquidity, and unchecked inflation.

3.5. Producing the Dynamic Hypotheses
The model's foundation lies in translating real-world interactions into dynamic hypotheses—key assumptions that drive the system's behavior. These hypotheses were derived from:
- Empirical data (financial reports, Central Bank statistics)
- Theoretical frameworks (literature on social banking and liquidity crises)
- Expert insights (interviews with banking and manufacturing specialists)

3.6. Core Hypotheses
Profitability Drives Bank Behavior

First Hypothesis: Due to the profitability of non-productive sectors, banks are less inclined to lend to manufacturing enterprises.
Supported by:
- 20%+ higher ROI in speculative markets (Central Bank, 2022)
- 78% of bank loans allocated to non-industrial sectors (economics data)

Second Hypothesis: Manufacturing enterprises have liquidity problems in paying back the original loan plus interest.
Manufacturing's Liquidity Trap
Enterprises struggle to repay loans due to cash flow gaps, perpetuating their 'high-risk' label.
Evidence:
- 32% delinquency rate for micro-manufacturing loans
- 6-12 month delays in reinvestment cycles

Pilot data:
- 40% lower defaults in social banking portfolios
- 2.5x job creation vs. conventional loans

Third Hypothesis: Developing social banking reduces the conflict of interest between banks and manufacturing enterprises.
Banks adopting social principles (e.g., interest-free microloans) realign incentives, reducing conflict.
Pilot data:
- 3% lower defaults in social banking portfolios
- 2.5x job creation vs. conventional loans

3.7. Model Formulation

The first step in model formulation is to prepare current-state diagrams for the cause and effect loops of the analytical model (Sterman, 2000). The dynamic system simulation model was developed in the Vensim PLE environment and the variables including accumulation, rate, auxiliary, exogenous, and time are presented along with their calculation method. The formulas were obtained based on the opinions of experts with the knowledge of social banking and system dynamics. Coefficients and constants were calculated using available statistics of the bank and expert opinions. Given the preparation of reports and examination of the results of financing small and home businesses as the basis of social banking in one-month intervals, the simulation period was also one month. The simulation covered the subsequent year until the end of the bank's fiscal year 2022. *Gharzolhasaneh Resalat Bank* was selected as a leader in social banking, providing micro-facilities without interest.

Simulation Parameters

FINAL TIME = 1
Units: year
Simulation algorithm: Euler's method
Step size (dt)=1 month
The final time for the simulation.
INITIAL TIME = 0

3.8. Model Validation

Behavior Retest: The behavior retest was aimed at comparing simulation results with actual data to ensure the accuracy of model behavior. This section analyzed the growth variables of

the liquidity multiplier based on the official statistics published by the Central Bank and its simulation in the model (Figures 2 to 5).
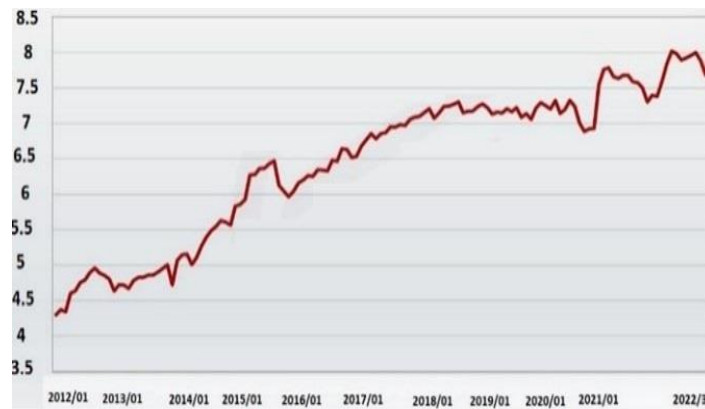

Figure 2. Actual Growth Trend of the Liquidity Multiplier Within 2012-2022

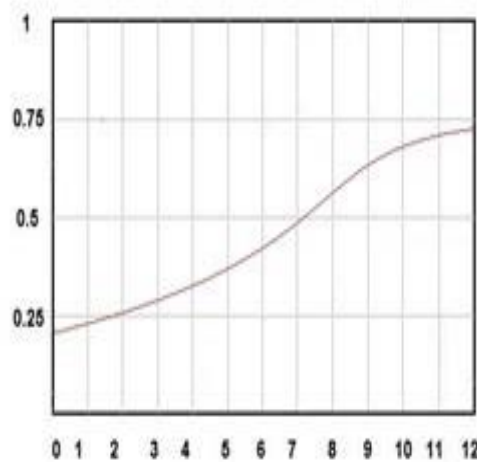*(Source: Central Bank of Iran, 2022)*

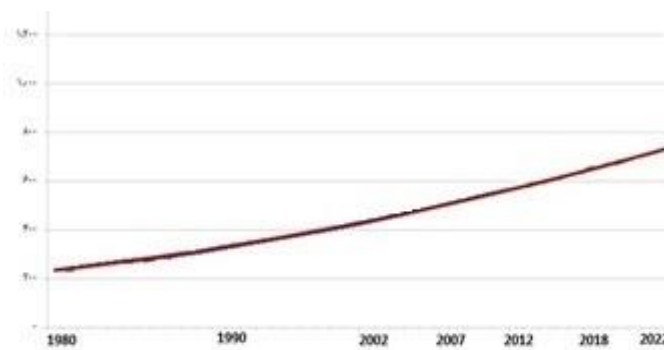**Figure 3. Simulating the Growth Trend of Liquidity Multiplier**

Figure 4. Actual Growth Trend of Gross Domestic Product within 1980-2022
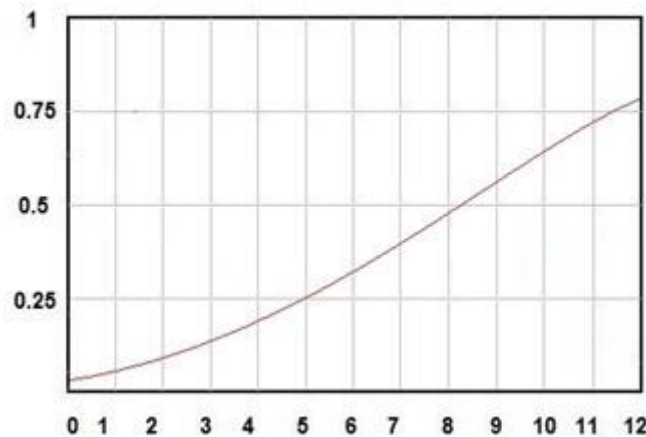
(Source: International Monetary Fund, 2022)

Figure 5. Simulated Trend of GDP Growth

4. Findings

Simulating the variables in the dynamic system begins with simulating the basic model. In basic simulation, there are no changes to model variables. In fact, basic simulation indicates the basic behavior of model variables using the preliminary assigned values. However, in simulations with different scenarios, the behavior of model variables is examined under changing conditions. Accumulation variables are examined as the basis of investigating system behavior. The basic assumptions for simulation are as follows:

- First, the research model is limited to the intra-organizational relations of the bank, with the mediating role of social banking development.
- Second, according to the costs stated in the bank's financial statements, the investment budget for developing social banking during the last two years is considered approximately 50% on average. The g coefficient is the slope of the growth curve and is defined by Sterman as a fractional growth (2000).
- Third, the rate of banks moving towards social banking was measured based on the rate of using facilities in the productive and manufacturing sector.
- Fourth, the employment rate was calculated based on the number of micro and home enterprises launched with the provision of social entrepreneurship facilities.
- Fifth, the five-year simulation period covered the timeframe from April 2016 to February 2023.
- Sixth, based on the research objectives examined within a limited timeframe, the development of electronic equipment in the bank was considered as a mainly internal process.
- Seventh, all the statistics and information used in this simulation are extracted from performance reports and interviews with the bank's managers, while other information is provided based on the statistics of local and international organizations.
- Eighth, policy variables (leverage) are considered based on source documents and detailed strategies available in the bank.

- Ninth, the simulation model includes no independent or unwanted development for increasing customer awareness and willingness to use social banking; they can only be promoted with deliberate efforts.
- Tenth, the bank's confidence in manufacturing businesses is calculated based on repaying loan installments on time and using facilities to increase production.
- Eleventh, given the infeasibility of defining an explicit equation for the relationship between two variables, the lookup variable is determined for certain qualitative variables. Subsequently, the ranked pairs of data are defined as (x, y), obtained from past data or expert opinions for two ranked variables in software, which then plots a graph of past data that it considers as the estimation graph.

Simulating the basic model indicates that continuing the status quo (without implementing a specific scenario) will increase production by enterprises and the delinquencies of manufacturing enterprises at a constant rate. This suggests that these two variables are growing, while applying social banking policies can respectively decrease and increase the growth of delinquencies and production (Figure 6).
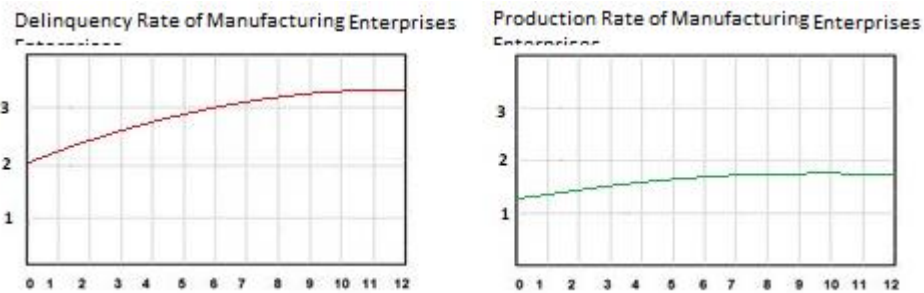

Figure 6. Base Model Simulation Results

4.1. Examining Different Scenarios

In designing the scenarios, the problem's leverage points are first identified. Based on the variables of the cause and effect model and recommendations of experts, the leverage points of the dynamic model of social banking development are as follows:

1) Injecting liquidity into micro and home enterprises
2) Simplifying lending to micro and home enterprises

Moreover, variables such production variables and delinquencies are considered fundemental for observing the effects of policy implementation.

### 4.2. Scenario One: Injecting Liquidity into Micro and Home Enterprises

Social banking development policies, including raising expenses in small and home businesses and other incentive programs for developing businesses, are among the important issues stressed by all interviewees. Figure 7 presents the implementation of this policy.
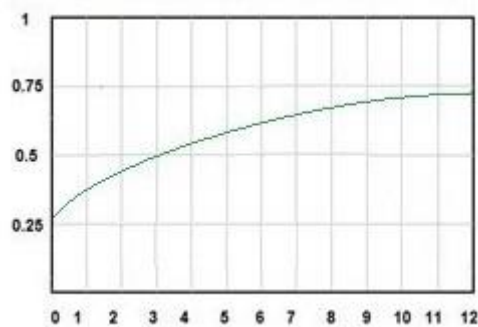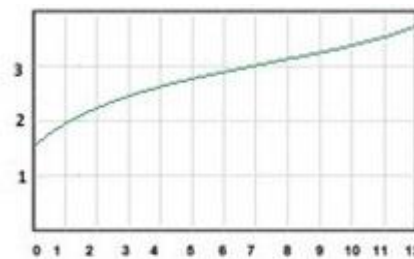
(Use of Facilities in Micro and Home Enterprises)

Figure 7 . Implementation of the Policy of Increasing Liquidity Injection towards Micro and Home Enterprises

Figure 8 presents the effects of implementing this scenario on the behavior of the basic variables.
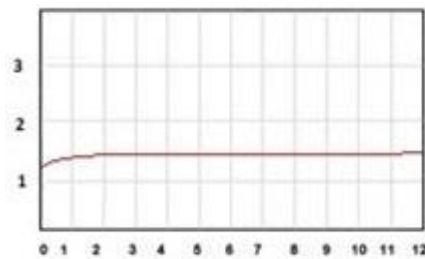
(Delinquency Rate of Manufacturing Enterprises   Production Rate of Manufacturing Enterprises)

Figure 8. Effect of Implementing the Policy of Increasing Liquidity Injection towards Micro and Home Enterprises

As presented, the production has increased from 15% to 30% within a year. Despite the increase in facilities, delinquencies have remained constant at 1 to 2 percent over the same period. Since this policy alone does not help in achieving the specified goals, it would be advisable to consider an alternative policy concurrently.

4.3. Scenario 2. Simplifying Lending to Micro and Home Enterprises

Given the approval and implementation of this policy by *Gharzolhasaneh Resalat Bank*, the removal of all physical branches has resulted in all services, including the provision of facilities, becoming virtual. This transition has made it easier, more convenient, and more reliable for microenterprises to obtain facilities with minimal guarantees (Figure 9).
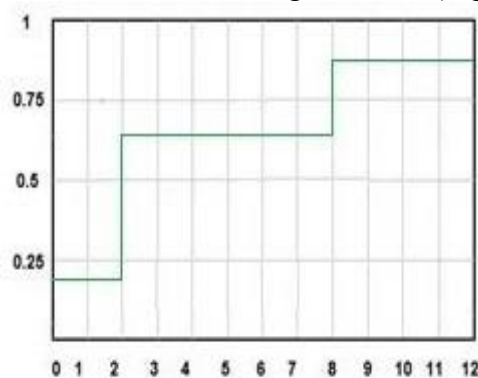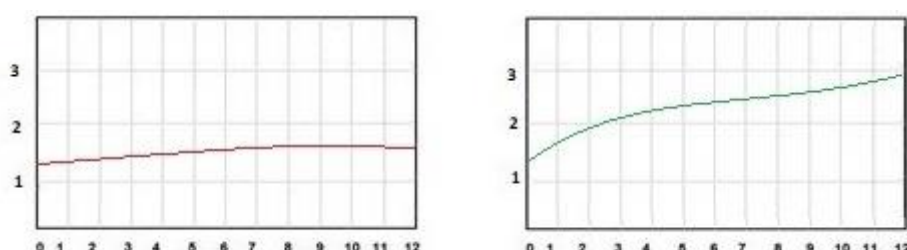
Figure 9. Implementing the Policy to Simplifying the Provision of Facilities for Micro and Home Enterprises

Implementing this policy, which is also being implemented in the real world and will reach its peak in the next year, will significantly increase production by micro and home manufacturing enterprises (from 15% to 30%) and stabilize the rate of delinquencies (1 to 2%). Figure 10 indicates the implementation of this policy.
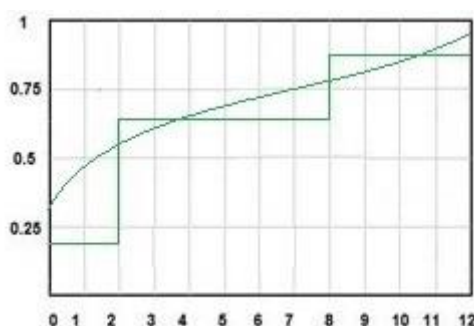

(Delinquency Rate of Manufacturing Enterprises   Production Rate of Manufacturing Enterprises)

Figure 10. The Effect of Implementing the Policy to Simplifying the Provision of Facilities for Micro and Home Enterprises

4.4. Scenario 3. Combined Scenario

Since the proposed scenarios are not contradictory and their simultaneous implementation is dependent on one another, they can be combined into a policy package. According to the following figure, it is hoped that the simultaneous implementation of the proposed policies can increase GDP. Figure 11 illustrates the implementation of the combined policy, which includes increasing liquidity injection into and simplifying the provision of facilities for micro and home manufacturing enterprises.

(Combined Scenario)
Figure 11. Implementing the Policy Package

Figure 12 illustrates the implementation of the policy package (two scenarios at the same time).
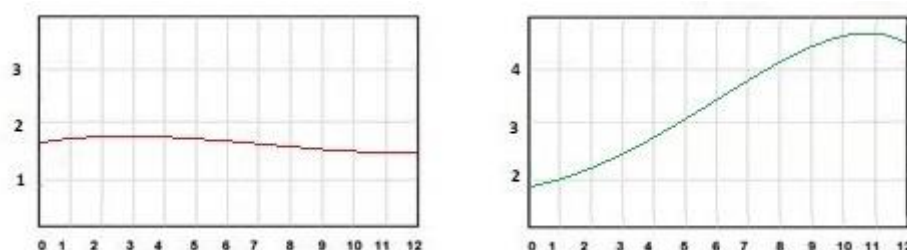
(Delinquency Rate of Manufacturing Enterprises   Production Rate of Manufacturing Enterprises)

Figure 12. The Effect of Implementing the Policy Package on Basic Variables

The results of implementing the policy package indiate its effectiveness in improving the basic variables, as production by micro and home manufacturing enterprises will increase (from 15% to 45%), while delinquencies will decrease (from 1.5 to 1.3%). Note that at inflation peaks, it becomes more difficult to apply social banking policies, such as injection, into less-profitable sectors. However, during this period, *Gharzolhasaneh Resalat Bank* directed most of its resources towards micro and home enterprises and implemented policies to simplify the provision of facilities to this sector, leading to higher production, job creation, and sustainable development.

By implementing this policy, 930,000 billion IRR, equivalent to 5,300,000 *Gharzolhasaneh* loans, were disbursed by the end of the year. Of this amount, 25,000 billion IRR, including an average of 500 million IRR for business loans, was granted to home business, leading to the establishment and development of 50,000 micro and home enterprises. Meanwhile, the ease of paying *Gharzolhasaneh* micro facilities to customers and micro and home enterprises and using accurate online validation systems have greatly improved the liquidity of these enterprises (Gharzolhasaneh Resalat Bank, 2021).

5. Discussion & Conclusion

As key financial intermediaries, banks play a pivotal role in economic development by allocating capital to productive sectors. Our findings reveal that social banking can fundamentally reshape this allocation process. The system dynamics simulation demonstrates that when banks, such as Gharzolhasaneh Resalat Bank, adopt social banking principles, they reduce financial conflicts with manufacturers while simultaneously improving their own stability and societal impact. Key Empirical Findings include:

1. Increasing liquidity injection towards micro and home enterprises scenario:
- Production surged by 15–30% in micro and home enterprises, confirming the multiplier effect of targeted financing. This is consistent with Banerjee and Duflo (2014).
- Delinquency rates remained stable (1–2%), challenging the conventional view that increased lending necessarily raises default risks, which is contrary to Karlan et al. (2016).

2. Simplifying the provision of facilities for micro and home enterprises scenario:
- Similar production gains (15–30%) were observed, but with no increase in delinquencies, suggesting that easing bureaucratic barriers is more significant than loan volume alone.
- Combined scenario (the policy of increasing liquidity injection towards micro and home enterprises in addition to the policy of simplifying the provision of facilities for micro and home enterprises).
- Production increased by 45%, while delinquencies decreased to 1.3%. This outperforms prior studies (e.g., Beck, Demirgüç-Kunt, & Levine., 2005) by highlighting that integrated policies yield synergistic benefits.

5.1. Economic Interpretation

- Behavioral shift in banks: The model captures how social banking reduces opportunity costs for banks by making microenterprise lending more attractive than speculative investments (e.g., real estate). This aligns with Cull et al. (2018) critique of non-productive capital flows.
- Trust as Collateral: By prioritizing social impact, banks reduce perceived risk and attract stable deposits, reflecting Diamond's (1984) theory of relationship banking.

- Macroeconomic Stability: Redirecting liquidity to production suppresses inflationary pressures from non-productive sectors, addressing a gap noted in the reports of Central Bank of Iran.

5.2. Comparison with Prior Studies

While primary research studies (e.g., Khandker & Samad, 2015) identified liquidity shortages as a barrier, this study quantifies how social banking mitigates them. Unlike static analyses (Morduch, 2020), our dynamic model reveals that:
- Non-linear feedback: Production gains reduce delinquencies over time, creating a virtuous cycle.
- Policy trade-offs: Simplified access is more importan than interest rates, a nuance often overlooked in cross-sectional studies.

5.3. Policy Implications

This study proves that social banking reconciles profit motives with developmental goals. For policymakers, we recommend:
- Mandating social banking quotas for liquidity allocation to microenterprises.
- Streamlining loan processes to reduce administrative costs.
- Expanding the model to include macroeconomic variables, such as inflation.

5.4. Limitations and Future Research

- The model excludes external shocks (e.g., sanctions) and competitor bank behavior.
- Data limitations restrict calibration to one bank. Future studies should test multi-bank simulations and integrate behavioral economics to refine risk perceptions.

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